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UNITED STATES  
PATENT OFFICE  
VOL NO 1009

AUGUST

1981

MICRO PHOTO DIVISION



BELL & HOWELL

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Vol. 1009 Number 1

# OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE



PATENTS

August 4, 1981

**U.S.  
DEPARTMENT  
OF COMMERCE**

**Patent  
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# OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

August 4, 1981

Volume 1009

Number 1

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## PATENT AND TRADEMARK OFFICE NOTICES

### Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90-95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	\$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,  
Assistant Commissioner  
for Patents.

### Availability of Patent and Trademark Office Notices on a Subscription Basis

Effective Mar. 3, 1981, a separate publication of a part of the *Official Gazette* entitled *Patent and Trademark Office Notices* is being made available on a subscription basis. This weekly periodical contains all notices which appear in the *Patent Official Gazette* and the *Trademark Official Gazette*. Additionally, current information regarding the general date status of trademark and patent applications is provided.

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### Board of Appeals Decisions Rendered in the Month of June 1981

Affirmed	200
Affirmed in Part	25
Reversed	65
Total	290

### REISSUE APPLICATION FILED

Notice under 37 CFR 1.11(b). The reissue application listed below is open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,150,867, Re. S.N. 255,441, Filed Apr. 20, 1981, Cl. 339/97P, PRE-WIRED TERMINAL CONNECTING BLOCK, Robert H. Knickerbocker, Owner of Record: The Siemon Co., Watertown, Conn., Attorney or Agent: David S. Fishman, et al., Ex. Gp.: 322

### REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 30,315, Reexam. No. 90/000,019, Requested: July 2, 1981, Cl. 313/51, PRECISION BASE MERCURY VAPOR LAMP, Carlo F. LaFiandra, Owner of Record: Perkin-Elmer Corp., Attorney or Agent: John B. Young, et al., Ex. Gp.: 252, Requester: Perkin-Elmer Corp., Norwalk, Conn.

3,187,234, Reexam. No. 90/000,010, Requested: July 1, 1981, Cl. 361/182, SELECTIVE SIGNAL-RESPONSIVE CIRCUIT, Dwight M. Muranka, et al., Owner of Record: Y2 Associates, Attorney or Agent: Beehler and Arant, Ex. Gp.: 212, Requester: Arthur V. Smith, Curtis, Morris & Safford, New York, N.Y.

3,253,944, Reexam. No. 90/000,004, Requested: July 1, 1981, Cl. 427/213, PARTICLE COATING PROCESS, Dale E. Wurster, Owner of Record: Wisconsin Alumni Research Foundation, Attorney or Agent: Howard W. Bremer, Ex. Gp.: 162, Requester: Wegner & Bretschneider, Washington, D.C.

3,747,228, Reexam. No. 90/000,011, Requested: July 1, 1981, Cl. 434/320, INTERVIEW MACHINE, Yujiro Yamamoto, Owner of Record: Inventor, Attorney or Agent: Beehler, Arant, Jagger & Bethel, Ex. Gp.: 334, Requester: Curtis, Morris & Safford, New York, N.Y.

3,751,826, Reexam. No. 90/000,013, Requested: July 1, 1981, Cl. 434/349, DEVICE FOR THE APPLICATION OF PRINTED LEARNING PROGRAMS, Heinz Kunert, Owner of Record: Inventor, Attorney or Agent: Stowell & Stowell, Ex. Gp.: 334, Requester: Peter Neubauer, Eustis, Fla.

3,936,257, Reexam. No. 90/000,002, Requested: July 1, 1981, Cl. 425/125, CLOSED STROKE MOLDING, Keith W. Christiansen, et al., Owner of Record: Chicago Rawhide Mfg. Co., a Corp. of Illinois, Attorney or Agent: James T. FitzGibbon, Ex. Gp.: 147, Requester: Federal-Mogul Corp., Detroit, Mich.

3,952,776, Reexam. No. 90/000,005, Requested: July 1, 1981, Cl. 138/39, FLUID FLOW DEVICE, James F. Eversole, et al., Owner of Record: Dresser Industries, Inc., Attorney or Agent: Arthur G. Connolly, et al., Ex. Gp.: 243, Requester: Fitzpatrick, Cella, et al., New York, N.Y.

3,986,378, Reexam. No. 90/000,003, Requested: July 1, 1981, Cl. 72/38, METHOD OF REDUCTION OF AN OXIDIZED SURFACE OF COPPER OR ITS ALLOYS, Vladimir Yakovlevich Alekhin, et al., Owner of Record: Inventor, Attorney or Agent: Holman & Stern,

Ex. Gp.: 321, Requester: Southwire Co., Carrollton, Ga.

4,092,776, Reexam. No. 90/000,007, Requested: July 1, 1981, Cl. 30/253, CUTTING TOOL, William C. Ferguson, Owner of Record: Cooper Industries, Inc., Attorney or Agent: Jacobs and Jacobs, Ex. Gp.: 323, Requester: Jacobs and Jacobs, New York, N.Y.

4,103,753, Reexam. No. 90/000,014, Requested: July 1, 1981, Cl. 180/257, MANUALLY SHIFTABLE PLANETARY GEARSET, John William Holdeman, Owner of Record: Borg Warner Corp., Attorney or Agent: Julian Schachner, et al., Ex. Gp.: 316, Requester: Borg Warner Corp., Chicago, Ill.

4,104,156, Reexam. No. 90/000,001, Requested: July 1, 1981, Cl. 209/521, DETACHABLE SLING LET-DOWN APPARATUS FOR LUMBER SORTER, John K. Fletcher, Owner of Record: Harvey Engineering & Mfg. Corp., a Corp. of Arkansas, Attorney or Agent: John R. Walker, III, Ex. Gp.: 311, Requester: Lumber Systems, Inc., Portland, Ore.

4,117,195, Reexam. No. 90/000,009, Requested: July 1, 1981, Cl. 428/379, MANUFACTURE OF EXTRUDED PRODUCTS, Peter Swarbrick, et al., Owner of Record: BICC Ltd., Etablissements Moillier S.A., Attorney or Agent: Buell, Blenko & Ziesenheim, Ex. Gp.: 164, Requester: Klein and Vibber, New York, N.Y.

4,142,926, Reexam. No. 90/000,008, Requested: July 1, 1981, Cl. 148/187, SELF-ALIGNING DOUBLE POLYCRYSTALLINE SILICON ETCHING, William L. Morgan, Owner of Record: Intel Corp., Attorney or Agent: Edwin H. Taylor, Ex. Gp.: 111, Requester: Lyon and Lyon, Washington, D.C.

4,144,212, Reexam. No. 90/000,012, Requested: July 1, 1981, Cl. 260/29.7H, AIR-CURING COPOLYMER LATICES, Seymour M. Linder, et al., Owner of Record: Alcolac, Inc., Attorney or Agent: George L. Tone, Ex. Gp.: 144, Requester: James Waldron, Washington, D.C.

4,231,383, Reexam. No. 90/000,006, Requested: July 1, 1981, Cl. 137/1, METHOD FOR CONTROLLING MASS FLOW RATE, James F. Eversole, Owner of Record: Dresser Industries, Inc., Attorney or Agent: Richard M. Beck, Ex. Gp.: 341, Requester: Fitzpatrick, Cella, et al., New York, N.Y.

4,232,619, Reexam. No. 90/000,016, Requested: July 2, 1981, Cl. 112/417, LIFTING LOOP, Bengt Evert Lindahl, Owner of Record: Svensk Lasthantering Bengt Lindahl, Attorney or Agent: J. King Harness, et al., Ex. Gp.: 353, Requester: Holman & Stern Chartered, Washington, D.C.

### Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before Sept. 8, 1981:

Clark, Conrad J., 5513 N. 9th Rd., Arlington, Va. 22205  
delos Reyes, Ben W., 13136 Morning Spring La., Fairfax, Va. 22033

Favreau, Richard E., 5628 Overly Dr., Alexandria, Va. 22310

Miller, Lawrence O., 404 Monticello Blvd., Alexandria, Va. 22305

Vaughn, Irving, P.O. Box 4665, Washington, D.C. 20020

LUTRELLE F. PARKER

Chairman, Committee  
on Enrollment.

July 7, 1981

### Errata

The following registration numbers, listed in the "Trademark Registrations Issued" sections of the Official Gazette of June 9, 23, and 30, 1981, and July 7, 1981, were assigned, prematurely, to published marks for which the opposition period had not yet run:

TMOG June 9, 1981	TMOG June 23, 1981	TMOG June 30, 1981	TMOG July 7, 1981
1,157,116	1,157,845	1,158,827	1,159,641
	1,158,005	1,158,828	1,159,663
	1,158,319	1,158,829	1,159,839
	1,158,571	1,158,830	1,159,879
		1,158,832	1,159,901
		1,158,833	1,160,063
		1,158,834	1,160,070
		1,158,835	1,160,094
		1,158,841	1,160,112
		1,158,842	1,160,286
		1,158,843	1,160,412
		1,158,844	1,160,448
		1,158,922	
		1,158,960	

Consequently, certificates of registration bearing the above-identified numbers were not issued on the dates indicated, and these registration numbers have been vacated.

MARGARET M. LAURENCE,  
Assistant Commissioner  
for Trademarks.

July 10, 1981



# PATENT NOTICES

## Certificates of Correction for the Week of Aug. 4, 1981

Re. 30,576	4,243,075	4,256,883	4,264,817
3,674,144	4,243,357	4,259,295	4,265,069
3,966,751	4,243,615	4,259,390	4,265,081
3,998,827	4,243,627	4,259,400	4,265,186
4,001,502	4,244,071	4,259,436	4,265,374
4,044,148	4,244,187	4,259,564	4,265,665
4,097,261	4,244,679	4,259,567	4,265,933
4,133,779	4,245,380	4,259,569	4,265,956
4,165,996	4,245,627	4,259,618	4,266,125
4,182,732	4,246,327	4,259,729	4,266,145
4,200,795	4,247,121	4,259,943	4,266,185
4,205,206	4,247,144	4,259,981	4,266,701
4,210,123	4,247,402	4,260,098	4,266,822
4,214,158	4,249,137	4,260,338	4,266,840
4,214,750	4,249,436	4,260,363	4,266,931
4,217,148	4,249,500	4,260,432	4,267,137
4,218,194	4,250,129	4,260,473	4,267,481
4,220,574	4,250,562	4,260,614	4,267,680
4,220,661	4,250,807	4,260,616	4,268,380
4,222,997	4,251,513	4,260,884	4,268,538
4,223,576	4,252,691	4,261,104	4,268,553
4,225,517	4,252,736	4,261,356	4,268,744
4,225,682	4,252,772	4,261,426	4,268,792
4,226,421	4,253,021	4,261,429	4,268,906
4,227,644	4,253,355	4,261,456	4,268,914
4,227,652	4,253,468	4,261,527	4,270,475
4,228,964	4,253,788	4,261,556	4,270,665
4,229,286	4,253,836	4,261,755	4,270,669
4,230,412	4,254,044	4,261,760	4,270,694
4,233,857	4,254,125	4,261,811	4,270,749
4,234,271	4,254,418	4,261,875	4,270,912
4,234,663	4,254,698	4,261,950	4,270,944
4,237,063	4,255,019	4,262,760	4,271,049
4,237,448	4,255,359	4,262,845	4,271,447
4,238,530	4,256,022	4,263,712	4,271,510
4,240,724	4,256,166	4,264,230	4,271,940
4,240,760	4,256,176	4,264,444	
4,241,207	4,256,615	4,264,580	
4,241,697	4,256,856	4,264,788	

## Disclaimers

4,139,645.—*Raymond E. Werner*, Cincinnati, Ohio COLORING AGENTS FOR EDIBLE MATERIALS. Patent dated Feb. 13, 1979. Disclaimer filed Apr. 7, 1981, by the assignee, *Sterling Drug, Inc.*

Hereby enters this disclaimer to claims 1 to 6 inclusive, and claim 10 of said patent.

3,822,838.—*Richard A. Butler, Jr.*, Chestnut Hill and *Jack T. Hansen*, Needham, Mass., *August R. Rump*, Chicago, Ill., and *Rudy R. Arendt*, South Wales, N.Y. WEB HANDLING APPARATUS. Patent dated July 9, 1974. Disclaimer filed May 14, 1981, by the assignee *Butler Greenwich, Inc.*

Hereby enters this disclaimer to claims 1 to 5 of said patent.

# Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

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	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(404) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
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	Milwaukee Public Library	(414) 278-3043

\*Collection organized by subject matter.

\*\*Call only between the hours of 10:00 a.m. and 5:00 p.m.





T100,904

**PLUNGER TYPE ELECTROMAGNETIC RELAY**

Siyoutaro Kawamura, 55, Tonokicho-2-chome, Toyokawa-shi, Japan

Filed Aug. 23, 1979, Ser. No. 69,077

Claims priority, application Japan, Sep. 29, 1978, 53-134485

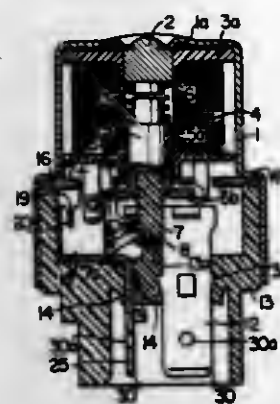
Int. Cl.<sup>3</sup> H01H 67/02

U.S. Cl. 335-131

2 Sheets Drawing. 13 Pages Specification

A plunger type electromagnetic relay includes a contact spring provided with a moving contact at one end thereof and having the other end rotatably fitted to a terminal, and the contact spring is further provided with a projection on the central portion thereof. When an electromagnetic coil is not energized, the projection on the contact spring is urged downward by the bottom portion of an operating rod attached to the lower portion of a movable core, thus establishing a normally-open condition. When the electromagnetic coil is energized, the movable core is moved upward and consequently the bottom portion of the operating rod and the projection of the contact spring are also moved upward in their engaged condition. When this occurs, an electric connection is completed

between the moving contact at one end of the contact spring and a fixed contact provided in a relay housing, the contact structure comprising the bottom portion of the operating rod



and the projection of the contact spring reduces the assembly errors due to the automatic assemblage of electromagnetic relays of the same type.

**REISSUES**

AUGUST 4, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,693

**PROCESS FOR INCREASING THE FILLING CAPACITY OF TOBACCO**

James D. Fredrickson, Winston-Salem, N.C., assignor to Reynolds Leasing Corporation, Jacksonville, Fla.

Original No. 3,524,451, dated Aug. 18, 1970, Ser. No. 720,406, Apr. 10, 1968. Application for reissue Mar. 17, 1975, Ser. No. 558,674

Int. Cl.<sup>3</sup> A24B 3/18

U.S. Cl. 131-296

11 Claims

1. A process for increasing the filling capacity of tobacco which comprises contacting tobacco with a sufficient quantity of a volatile organic liquid to impregnate same, thereafter without substantially increasing the pressure rapidly passing a gas into contact with said impregnated tobacco, said gas being heated to a temperature of at least 30° F. above the boiling point of said liquid at the gas contacting pressure, whereby said liquid in the tobacco is essentially completely and rapidly vaporized within said tobacco and said tobacco is expanded and separating the vaporized liquid from the tobacco in the vapor state.

Re. 30,694

**FLEXIBLE SKIRT COMPONENTS FOR AIR CUSHION VEHICLES**

Lavis A. H. Riddle, East Cowes, England, assignor to Westland Aircraft Limited, Yeovil, England

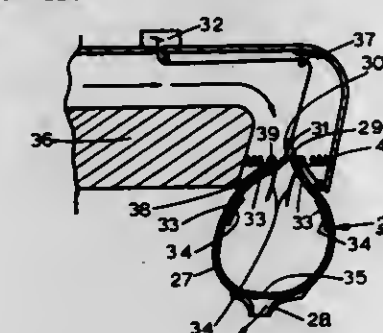
Original No. 3,375,894, dated Apr. 2, 1968, Ser. No. 482,343, Aug. 25, 1965. Application for reissue Aug. 28, 1978, Ser. No. 937,592

Claims priority, application United Kingdom, Aug. 28, 1964, 35257/64

Int. Cl.<sup>3</sup> B60V 1/16

U.S. Cl. 180-128

2 Claims



17. In a vehicle of the type adapted for hovering over a surface on at least one cushion of pressurized gaseous fluid, said vehicle comprising a rigid base structure and a flexible skirting assembly attached to at least a portion of the periphery of the base structure, the improvement wherein the flexible skirting assembly comprises essentially a substantially one piece sheet of flexible substantially fluid impermeable material forming a single continuous length extending downwardly between a first line on the undersurface of said rigid base structure and then upwardly to a substantially coplanar second line on the undersurface of said rigid base structure spaced inwardly from said first line of attachment to form a loop in vertical cross section that is free from internal rigid restraining and bracing members, the space being encompassed by said sheet being inflatable outwardly away from said rigid base structure, ports disposed in the lower portion of the loop formed by said flexible material, and flexible nozzle extensions cooperating with said ports, said flexible nozzle extensions comprising flexible walls depending from the loop formed by the flexible material, wherein the loop formed by the flexible material is of woven fabric having weft and warp threads, and wherein the weft threads have been removed from the region of the flexible material in which the ports are provided, and the remaining warp threads are gathered

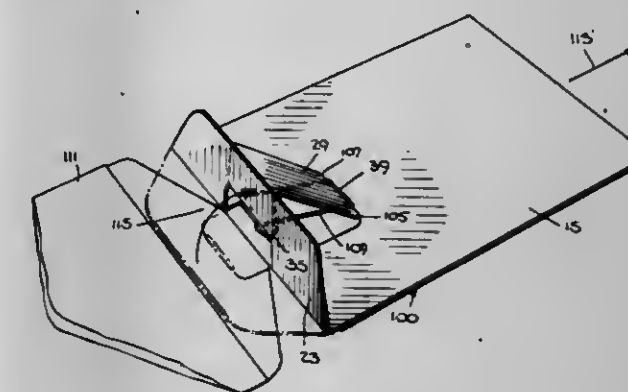
together to form bunched tension members which act as webs between adjacent ports.

Re. 30,695

**COLLAPSIBLE EASEL SUPPORT**Felix Transport, 98 Riverside Dr., New York, N.Y. 10024  
Original No. 4,149,630, dated Apr. 17, 1979, Ser. No. 792,552, May 2, 1977. Application for reissue Mar. 31, 1980, Ser. No. 135,368Int. Cl.<sup>3</sup> B65D 5/52

U.S. Cl. 206-45.24

18 Claims



1. A collapsible easel support means for supporting a display on a surface at an angle comprising:  
a back panel having a bottom edge;  
a stay flap hinged to said back panel along said bottom edge to rest on said surface;  
two slits extending across said bottom edge from the interior of said stay flap to the interior of said back panel;  
a first score in said stay flap extending between said two slits;  
a second score in said back panel extending between said two slits;  
a third score between said first and second scores extending between said two slits;  
said first and third scores defining a stay panel and said second and third scores defining a support panel;  
said stay panel folded into co-planar contact with said stay flap when said stay flap makes a predetermined angle of less than 90° with said back panel, whereby said support panel between said back panel and said stay flap supports said back panel at said predetermined angle to said surface when said stay flap rests on said surface.

Re. 30,696

**SOLDERING FLUX COMPOSITION**

Gordon F. Arbib, and Wallace Rubin, both of Hemel Hempstead, England, assignors to Multicore Solders Limited, Hertfordshire, England

Original No. 4,092,182, dated May 30, 1978, Ser. No. 795,635, May 10, 1977. Application for reissue May 19, 1980, Ser. No. 150,945

Claims priority, application United Kingdom, Jun. 11, 1976, 24410/76

Int. Cl.<sup>3</sup> B23K 35/34

U.S. Cl. 148-23

13 Claims

1. A flux composition, comprising, as essential constituents:  
(1) at least one ester derived from a polyhydric alcohol and at least one saturated or unsaturated fatty acid or monocarboxylic mononuclear aromatic acid, said ester having a molecular weight of at least 300; and  
(2) at least one additional constituent selected from:

- (a) organic acids which are substantially soluble in said ester of a polyhydric alcohol when in a molten condition;
- (b) flux activating agents; and
- (c) flux residue hardening agents, said ester being present in an amount of at least 25% by weight based on the total weight of constituents (1) and (2).

Re. 30,697

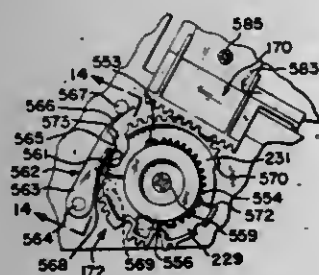
## HAND-HELD LABELER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio  
Original No. 4,125,421, dated Nov. 14, 1978, Ser. No. 817,086, Jul. 18, 1977. Application for reissue Mar. 5, 1980, Ser. No. 127,345

Int. Cl.<sup>3</sup> B32B 31/00

U.S. Cl. 156—384

23 Claims



18. Hand-held apparatus for printing and applying pressure sensitive labels releasably carried on a web of supporting material, comprising: a frame having a handle, an actuator disposed at the handle and movable between an initial position and an actuated position, a platen, a print head, means mounting the print head on the frame for movement into and out of printing cooperation with the platen, means disposed adjacent the platen for delaminating printed labels from the supporting material web, means for applying printed labels, means engageable with the web for advancing the web, means responsive to movement of the actuator for moving the print head into printing cooperation with the platen and for thereafter moving the web advancing means to advance the just printed label into label applying relationship with respect to the applying means, the moving means including a first gear section coupled to the actuator, a second gear section meshing with the first gear section, a spring for driving the print head in response to movement of the second gear section, a third gear section coupled to the second gear section, a fourth gear section coupled to the print head and meshing with the third gear section, means providing relative movement between the second gear section and the print head, actuation of the actuator effecting loading of the spring when the actuator is moved from the initial position toward the actuated position, means for preventing movement of the print head toward the platen during movement of the actuator from its initial position toward its actuated position until the actuator has moved through a predetermined distance, and means responsive to movement of the actuator through a predetermined distance for releasing the print head into printing cooperation with the platen.

Re. 30,698

## HYDRAULIC FLUIDS COMPRISING ORTHOSILICATE ESTERS

John S. Elliott; Gerald J. J. Jayne; Herbert F. Askew, and Colin J. Harrington, all of Swindon, England, assignors to Castrol Limited, Wiltshire, England

Original No. 4,051,053, dated Sep. 27, 1977, Ser. No. 679,440, Apr. 22, 1976. Continuation of Ser. No. 431,889, Jan. 9, 1974, abandoned. Application for reissue Oct. 10, 1979, Ser. No. 950,047

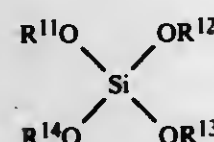
Claims priority, application United Kingdom, Jan. 10, 1973, 01409/73

Int. Cl.<sup>3</sup> C07F 7/04; C09K 3/00

U.S. Cl. 252—78.3

5 Claims

9. [A compound according to claim 8] An orthosilicate ester having the general formula:



wherein R<sup>11</sup> is a t-butyl group and R<sup>12</sup>, R<sup>13</sup> and R<sup>14</sup> are triethylene glycol monomethyl ether residues; R<sup>11</sup> is a neopentyl group and R<sup>12</sup>, R<sup>13</sup> and R<sup>14</sup> are tripropylene glycol monomethyl ether residues; R<sup>11</sup> and R<sup>14</sup> are t-butyl groups and R<sup>12</sup> and R<sup>13</sup> are dipropylene glycol monomethyl ether residues; R<sup>11</sup> and R<sup>14</sup> are t-butyl groups, R<sup>12</sup> is a dipropylene glycol monomethyl ether residue and R<sup>13</sup> is a triethylene glycol monomethyl ether residue; R<sup>11</sup> is a t-butyl group and R<sup>12</sup>, R<sup>13</sup> and R<sup>14</sup> are dipropylene glycol monomethyl ether residues; R<sup>11</sup> and R<sup>14</sup> are t-butyl groups and R<sup>12</sup> and R<sup>13</sup> are triethylene glycol monomethyl ether residues; R<sup>11</sup> and R<sup>14</sup> are t-butyl groups and R<sup>12</sup> and R<sup>13</sup> are tripropylene glycol monomethyl ether residues; or R<sup>11</sup> is a t-butyl group and R<sup>12</sup>, R<sup>13</sup> and R<sup>14</sup> are tripropylene glycol monomethyl ether residues.

Re. 30,699

## POLYURETHANES CONTAINING AMINO ORGANOSILANE MODIFIED CLAY

Joseph Iannicelli, Macon, Ga., assignor to J. M. Huber Corporation, Locust, N.J.

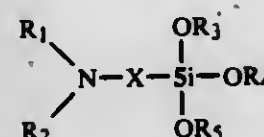
Original No. 3,390,120, dated Jun. 25, 1968, Ser. No. 480,090, Aug. 16, 1965. Continuation-in-part of Ser. No. 269,695, Apr. 1, 1963. Application for reissue Apr. 2, 1979, Ser. No. 26,381

Int. Cl.<sup>3</sup> C08L 75/04

U.S. Cl. 260—37 N

4 Claims

1. A polyurethane polymer composition containing as a filler, modified kaolin clay, said kaolin clay having been modified by treatment with from 1% to 3% by weight with an aminoorganosilane of the formula



wherein R<sub>1</sub> is selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl, and alkaryl, R<sub>2</sub> is selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl, and alkaryl, R<sub>3</sub> is selected from the group consisting of hydrogen, lower alkyl, aryl, lower alkylaryl, and lower arylalkyl, R<sub>4</sub> is selected from the group consisting of hydrogen, lower alkyl, aryl, lower alkylaryl, and lower arylalkyl, R<sub>5</sub> is selected from the group consisting of hydrogen, lower alkyl, aryl, lower alkylaryl, and lower arylalkyl, and X is selected from the group consisting of alkylene, arylene, alkylarylene, arylalkylene, cycloalkylene, cycloalkylene containing secondary amino nitrogen and cycloalkylene containing tertiary amino nitrogen, the modification of said kaolin clay being carried out by spray drying kaolin slurries having one or more of said aminoor-

ganosilanes dispersed therein, said spray drying effecting a uniform distribution of said aminoorganosilane on the kaolin.

Re. 30,700

## INSECTICIDAL COMPOSITIONS FOR ULTRA-LOW VOLUME APPLICATION

Heinz Frensch, Frankfurt am Main; Konrad Albrecht, Fischbach, and Klaus-Detlev Bock, Kelsterbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Original No. 3,996,375, dated Dec. 7, 1976, Ser. No. 536,362, Dec. 26, 1974. Application for reissue Jan. 12, 1979, Ser. No. 3,039

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1973, 2364894

Int. Cl.<sup>3</sup> A01N 43/24

U.S. Cl. 424—276

6 Claims

1. Insecticidal compositions for ultra low volume (ULV) application which comprises

a. from 15 to 35 weight percent of 6,7,8,9,10,10-hexachloro-

1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepine-3-oxide;

- b. from 60 to 84.5 weight percent of a solvent mixture consisting of 15 to 85 weight percent of a liquid ester formed from a monoalcohol of 1 to 12 carbon atoms and a monovalent or bivalent carboxylic acid of 2 to 10 carbon atoms, said ester containing at least 8 and a maximum of 12 carbon atoms in the case of an ester of a monovalent acid and at least 8 and a maximum of 32 carbon atoms in the case of esters of a bivalent acid and from 15 to 85 weight percent of an aromatic hydrocarbon consisting essentially of an alkyl substituted benzene of 9 to 11 carbon atoms or a 1- or 2-methyl substituted naphthalene having a boiling range of from 168° to 250° C.; and
- c. from 0.5 to 5 weight percent of an epoxide selected from the group consisting of epichlorohydrin, epoxypropane, styrene oxide, phenyl epoxy-propane, and an epoxide of an unsaturated vegetable oil.



## PLANT PATENTS

GRANTED AUGUST 4, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,756

WHITE ASH

William H. Collins, Circleville, Ohio, assignor to American  
Garden Cole, Inc., Circleville, Ohio

Filed Apr. 14, 1980, Ser. No. 140,012

Int. Cl.<sup>3</sup> A01H 5/12

U.S. Cl. Plt.—51

1 Claim

1. A new and distinct variety of white ash tree, *Fraxinus americana*, substantially as described and illustrated, characterized by a strong, sturdy, upright branching habit which forms a compact, oval to globe-shaped head.

## PATENTS

GRANTED AUG. 4, 1981

### ERRATA

For	See
CLASS	PATENT NO.
411-548.....	4,281,580
411-019.....	4,281,581
493-045.....	4,281,591
411-176.....	4,281,699
244-082.....	4,281,816
493-012.....	4,281,828
219-314.....	4,282,241
525-336.....	4,282,343
260-002.....	4,282,367
568-471.....	4,282,374
235-310.....	4,282,514
568-063.....	4,282,593

# PATENTS

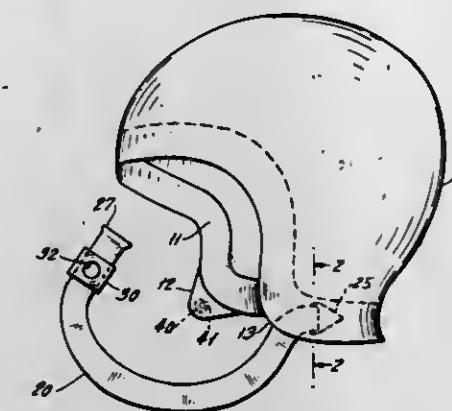
GRANTED AUGUST 4, 1981

## GENERAL AND MECHANICAL

**4,281,417**  
**INFLATABLE WATERPROOF BATHING CAP**  
 Michael Valentine, 78 Tower Rd., Pine Lakes, Wayne, N.J.  
 07470

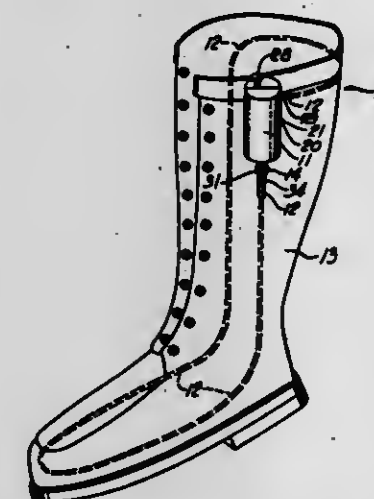
Filed May 16, 1980, Ser. No. 150,307  
 Int. Cl.<sup>3</sup> A42B 1/12

U.S. Cl. 2-68



1. In a bathing cap of the type having an inflatable band portion and a tubular chin strap having a first end and a free end and the first end being connected to the inflatable band portion and through which the latter can be inflated, the improved means for attaching the free end of said chin strap to the cap comprising projecting means having a neck portion and a bulbous head portion attached to a region of the cap opposite the region where the first end of said tubular strap is attached, flexible sleeve means slidably mounted on said tubular chin strap, said flexible sleeve means having orifices on opposite sides thereof which are adapted to admit the bulbous head of the projecting portion whereby the free end of the strap may be attached to the projecting portion by forcing the head through said orifices.

**4,281,418**  
**PORTABLE FURNACE FOR WEARING APPAREL**  
 Stanley Cieslak, 14 Creek Rd., and Leonard K. Cieslak, 15 Creek Rd., both of McKees Rocks, Pa. 15136  
 Continuation-in-part of Ser. No. 875,815, Feb. 7, 1978. This application Jun. 18, 1979, Ser. No. 49,059  
 Int. Cl.<sup>3</sup> A41D 19/00; A43B 7/02; A41F 7/00  
 U.S. Cl. 2-160



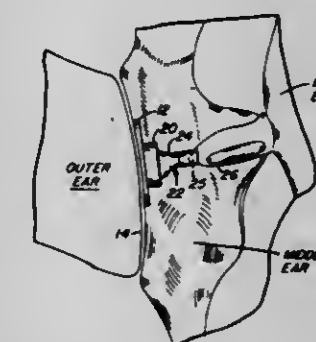
1. A portable furnace for generating and circulating heat in wearing apparel or the like comprising a compact insulated case capable of being carried on a person and having a cavity therein and further adapted to be opened to receive slow burning solid fuel agglomerates in said cavity for combustion, a

liquid reservoir in said case positioned for radiant heat transfer from ignited fuel agglomerates in said cavity to a liquid in said reservoir, a flexible liquid conduit having both ends thereof connected for circulation of the heated liquid from said reservoir through said conduit in a closed circuit adapted for circulation of heated liquid from said reservoir through said conduit, and pump means connected to said conduit for hand manipulation thereof to circulate heated liquid from said reservoir through said conduit on demand, said cavity having top and bottom walls and side walls with one side wall providing a heat exchanger for said radiant heat transfer, said side walls except said one side wall being insulated for prevention of heat transfer, said one heat exchanger side wall being lightly insulated on the inside such as to permit heat transfer through said one side wall from said cavity to said reservoir but at the same time prevent excessive moisture buildup on said one side wall which would otherwise be capable of extinguishing a solid fuel agglomerate under combustion in said cavity, and vent apertures in at least one of said top and bottom walls.

**4,281,419**  
**MIDDLE EAR OSSICULAR REPLACEMENT PROSTHESIS HAVING A MOVABLE JOINT**  
 Harry T. Treace, Forest Hill, Tenn., assignor to Richards Manufacturing Company, Inc., Memphis, Tenn.  
 Filed Dec. 10, 1979, Ser. No. 101,774  
 Int. Cl.<sup>3</sup> A61F 1/24, 1/18

U.S. Cl. 3-1.9

7 Claims



1. In a middle ear ossicular replacement prosthesis having a head portion and a shaft portion, the improvement comprising: a movable joint connecting said head portion and the captured end of said shaft portion to permit pivotal movement of said shaft portion relative to said head portion, said movable joint being a ball-and-socket joint which permits universal pivotal movement of said shaft portion relative to said head portion.

**4,281,420**  
**BONE CONNECTIVE PROSTHESES ADAPTED TO MAXIMIZE STRENGTH AND DURABILITY OF PROSTHESES-BONE CEMENT INTERFACE; AND METHODS OF FORMING SAME**  
 Simon Raab, 5872 Westbury Ave., Montreal, Quebec H3W 2W9, Canada

Filed Jun. 5, 1979, Ser. No. 45,657  
 Claims priority, application United Kingdom, Feb. 15, 1979, 05445/79

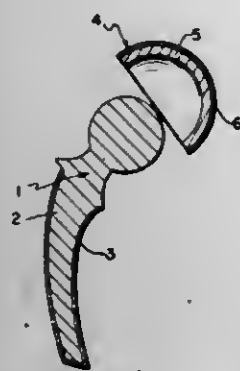
Int. Cl.<sup>3</sup> A61F 1/24; A01N 1/02  
 U.S. Cl. 3-1.912

23 Claims

1. A process comprising joining a prosthesis to bone by applying bone cement to a polymethylmethacrylate film fixedly adhered to a prosthetic element, said prosthesis having been prepared by the steps of:



treating said prosthetic element to eliminate any weak boundary layer; applying polymethylmethacrylate to said



treated surface to form a film thereon; and thereafter annealing said polymethylmethacrylate film.

4,281,421

### PASSIVE DOSING DISPENSER WITH IMPROVED HYPOCHLORITE CAKE

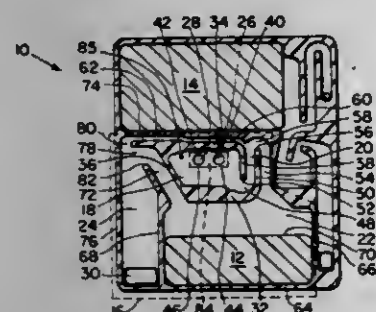
John D. Nyquist; David J. Kitko, and Richard F. Stradling, Jr., all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 12, 1979, Ser. No. 19,547

Int. Cl.<sup>3</sup> E03D 9/02

U.S. Cl. 4-228

11 Claims



1. In a dosing dispenser comprising a reservoir; a cake containing hypochlorite within said reservoir; and means to allow a volume of water to enter said reservoir, contacting and immersing said cake, dissolve a portion of said hypochlorite and be contained therein for release at a later time; the improvement wherein said cake comprises an effective amount of a source of hypochlorite and at least one component which when exposed to water is capable of forming an insoluble, porous matrix which entrains and displaces a portion of said water in said reservoir while allowing said hypochlorite to gradually dissolve, whereby to prevent an increase in the pourable fluid capacity of said reservoir as the hypochlorite in said cake is exhausted.

4,281,422

### SWIMMING POOL WINTERIZING DISCONNECT UNIT

Louis R. Simonelli, 40 Diaz St., Stamford, Conn. 06902

Filed Sep. 28, 1979, Ser. No. 80,156

Int. Cl.<sup>3</sup> E04H 3/18

U.S. Cl. 4-496

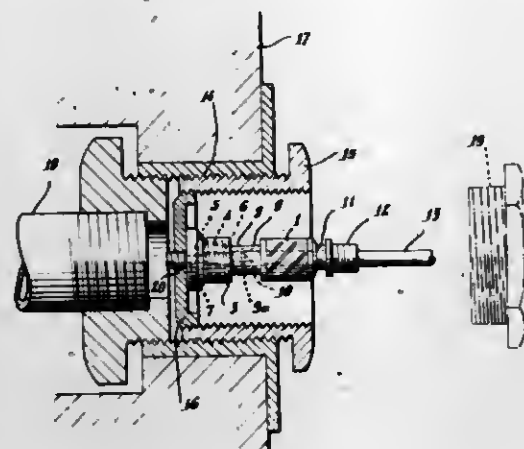
1 Claim

1. A disconnect unit for the isolation of the aqueous contents of a swimming pool from pump lines running into said pool which comprises:

- a pool inlet fitting having a check valve permanently mounted therein adapted to having inserted within the check valve at its distal end a compressed air nipple,
- said fitting further adapted at its proximal end to be inserted into the terminal end of a pump line or lines which feed the pool with water and,
- said fitting containing a spring mechanism which when compressed opens the passageway of the valve for the passage of water or air, and when relaxed, closes the

passageway for water or air into the passageway and wherein,

(d) said fitting is adapted by means of a plurality of ball bearings positioned in the wall of the inner sleeve 2 which pop out to fit into the nipple locking groove 10 to hold the



valve open to permit the flow of air or water peripherally about the circumference of the fitting when the compressed air nipple has been inserted and the spring mechanism compressed, and to halt the flow when the nipple has been removed and the interior spring mechanism has been relaxed.

4,281,423

### FOAM BATHING APPARATUS

Masao Fukunaga, Matsubara; Fusao Niino, Suita, and Hiroshi Nonoguchi, Yao, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

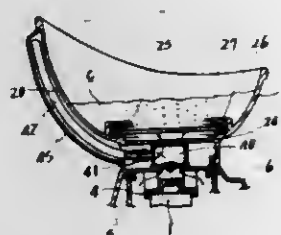
Filed Apr. 24, 1980, Ser. No. 143,345

Claims priority, application Japan, Apr. 27, 1979, 54-053107; Apr. 27, 1979, 54-053108

Int. Cl.<sup>3</sup> A61H 33/06

U.S. Cl. 4-537

12 Claims



1. In a foam bathing apparatus having a main body including blower means, a container mounted on the main body for containing a bath, a porous body disposed at an inner bottom portion of the container and passage means for feeding air from the blower means to the porous body, the improvement comprising a pressure chamber provided within the main body and positioned downstream from the blower means immediately

adjacent thereto, and means for adjusting the pressure of the chamber.

4,281,424

### BED FRAME

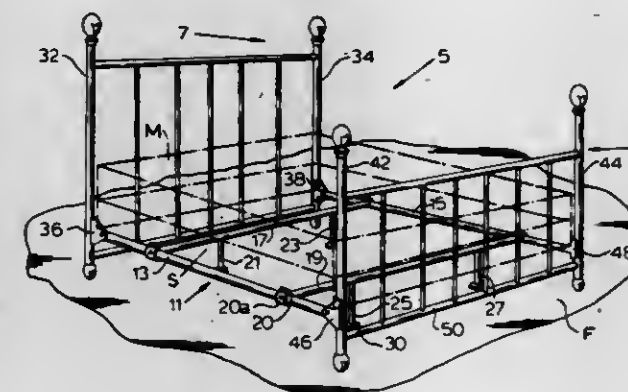
Richard A. Singer, Oak Brook, and Gerry D. Welton, Morton, both of Ill., assignors to Berkshire Furniture Co., Inc., Chicago, Ill.

Filed Nov. 23, 1979, Ser. No. 96,664

Int. Cl.<sup>3</sup> A47C 19/00

U.S. Cl. 5-282 R

2 Claims



1. A mounting clamp to attach a cylindrical vertical supporting leg of a headboard or a footboard to an end of a tubular bed frame member comprising:

- a pair of shaped, rigid, spaced apart, side members, each said spaced apart side member is joined, along a first elongated side, to a substantially concave, elongated, rigid, three sided sheet member;
- a first U-shaped bracket with a central region adapted to slide within the end of the tubular bed frame member and curved side members adapted to simultaneously contact opposite interior curved regions thereof, said first bracket is fixedly attached to a central region of said concave three-sided member, a hole in said central region of said first U-shaped bracket;
- a second U-shaped bracket adapted to fit within and be fixedly attached to first and second interior regions of the tubular bed frame member adjacent the end thereof, said bracket has a threaded hole centrally located therein;
- a threaded means for removably connecting, said threaded means has a threaded end that is adapted to pass through said hole in said first U-shaped bracket and engage said threaded hole in said second U-shaped bracket thereby drawing said first U-shaped bracket into the end of the tubular bed frame member until selected regions of the end of the tubular member are tightly forced against selected regions of said central portion of said concave three-sided member thereby forming a rigid connection between said clamp and the tubular bed frame member; said concave member when oriented substantially vertically is adapted to receive the cylindrical, vertical, supporting leg of the headboard or footboard;
- means for retaining to retain the vertical support leg within said concave, elongated sheet member and to distort the vertical support leg slightly so that at least three selected regions of the cylindrical support leg contact corresponding regions on said concave, elongated, rigid, sheet member.

4,281,425

### NEONATAL FLOTATION PAD

Annela E. Jacobs, 3648 S. Margarita Way, Las Vegas, Nev. 89103

Filed Aug. 6, 1979, Ser. No. 63,790

Int. Cl.<sup>3</sup> A47C 27/08; A61G 11/00

U.S. Cl. 5-455

9 Claims

1. A flotation pad for premature infants comprises a unitary liquid-impermeable, flexible bladder having a plurality of adja-

cent separate fluid-containing sealed transverse compartments, wherein each compartment is in overlapping relationship with



the next adjacent compartment in the amount of at least 10% of the length of each compartment, such that when the pad is tilted, the thickness thereof remains relatively uniform.

4,281,426

### BOAT SEAT MOUNTING UNIT

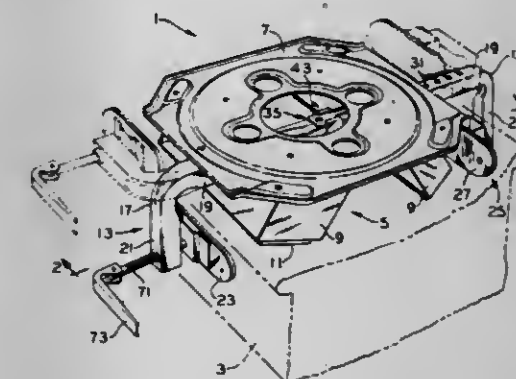
Denis S. Moeser, Clayton, Mo., assignor to Leisure Products, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 804,995, Jun. 9, 1977, Pat. No. 4,122,571. This application May 26, 1978, Ser. No. 909,378

Int. Cl.<sup>3</sup> B63B 29/00

U.S. Cl. 9-7

21 Claims



1. A unit for mounting a seat on a boat thwart or the like, said unit comprising a base adapted to rest on the thwart and to have said seat secured thereto, means carried by the base for clamping it on the thwart, said clamping means comprising a pair of arms extending outwardly from opposite sides of the base, a clamping shoe at the outer end of each arm, said shoes being engageable with opposite sides of the thwart for clamping the base thereto, rough adjustment means for quickly adjusting the shoes to space them apart a distance somewhat greater than the width of the thwart for application of the unit to the thwart, fine adjustment means for precisely adjusting the shoes to draw them into clamping engagement with opposite sides of the thwart, said arms being readily movable in the base between an unfolded clamping position in which the shoes are engageable with said thwart and a folded portable position, and means for locking the arms in said unfolded position, said arms being telescopically fitted together for slidably adjusting the arms relative to one another, said rough adjustment means comprising a snap fastener assembly for snap-fastening the arms in any one of a plurality of predetermined adjusted positions, said assembly comprising a series of openings in one arm spaced along the length of the arm, a detent on the other arm, and spring means on said other arm for biasing the detent into any selected opening, said spring means comprising a leaf spring extending lengthwise of said other arm, said spring being secured at one end to said other arm and having said detent at its other free end adapted to snap into any selected opening, said spring being held on said other arm by a clip at said one end of the spring, said clip being of separate construction from the spring and the latter having a boss thereon receivable in a hole in said other arm for preventing the spring from sliding along the arm.



4,281,427

**WARNING AND SIGNALLING DEVICE, ESPECIALLY FOR MARITIME PURPOSES**

Claus Petters, Hamburg, Fed. Rep. of Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Fed. Rep. of Germany

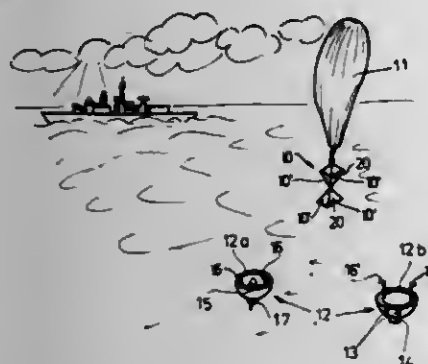
Filed Nov. 20, 1979, Ser. No. 95,991

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851588

Int. Cl.<sup>3</sup> B63B 21/52

U.S. Cl. 9-9

10 Claims



1. A warning and signalling apparatus particularly for maritime use comprising: a first buoyancy element comprising collapsible balloon means; collapsible radar reflector means coupled to said balloon means; a second buoyancy element comprising buoy means, said buoy means comprising opening members and locking means coupling said opening members together to form a buoyant watertight compartment for housing said balloon means and radar reflector means; gas generating means also housed within said buoy means for inflating the collapsible balloon means; said buoy means further comprising anchoring means for retaining said buoy means on or below the surface of a water body, releasing means for releasing said buoy means and anchoring means, first underwater sensor means coupled to actuate said releasing means for releasing said buoy means sensing signals of predetermined character, second sensor means coupled to actuate said locking means for opening of the opening members of said buoy means at the surface of a water body upon release of said buoy means; said second sensor means being coupled to actuate said gas generator means for inflating said balloon means upon opening of the buoy means at the water surface, whereby said balloon means lifts the radar reflector means to a height over the water surface sufficient for radar detection after sensing of signals of said predetermined character.

4,281,428

**FLOATATION PADS FOR LIFE-SAVING VESTS**

Morris Rochlin, 1220 Morse St., Royal Oak, Mich. 48068

Filed Feb. 19, 1980, Ser. No. 122,239

Int. Cl.<sup>3</sup> B63C 9/10

U.S. Cl. 9-342

2 Claims



1. In a flotation garment, such as a life preserver vest, having walls for fitting around and for being worn by the human body for increasing the water floatation ability thereof, and including relatively thick, foam plastic pads secured to the garment walls, the improvement comprising: each of said pads being formed of numerous, relatively thin,

separate, resilient, flexible, closed cell, polyethylene, foamed plastic sheets arranged in a stack, with one sheet upon another, in face to face contact and all of the sheets being of the same size, so that their edges are in alignment; at least one edge portion of each sheet being secured to adjacent sheet edge portions of the other sheets in a pad by heat welding so that the sheets are secured together as a unitary pad along at least one edge of the pad, while the sheet portions between the sheet edge are free of positive securement to each other, said heat welding being applied by pressing a heated wire along spaced apart lines upon the one edge of the pad to form spaced apart heat weld lines on said one edge whereby said sheets are secured in face to face contact without being compressed at any point along their lengths;

wherein the pads are like unitary blocks, but are highly flexible and tend to closely drape around adjacent portions of the wearer's body, and the pad portions between the edges thereof tend to be puffy and separately move one from another, rather than to form a tightly compressed unit, to thereby tend to maintain its maximum floatation volume while resiliently conforming to body shape.

4,281,429

**METHOD FOR MAKING FASTENERS**

Jaak S. Van den Sype, Scarsdale, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 9, 1979, Ser. No. 93,015

Int. Cl.<sup>3</sup> B21K 1/46

U.S. Cl. 10-27 E

10 Claims

1. A method for making a fastener having a head and a shank from a slug consisting essentially of an AISI 200 or 300 series stainless steel having an Md<sub>30</sub> temperature in the range of about 50° C. to about 50° C. comprising the following steps:

- (a) cooling the slug to a temperature of at least about 50° C. below the Md<sub>30</sub> temperature of the stainless steel minus 30° C.;
- (b) extruding a portion of the cooled slug to provide the shank while simultaneously heating the remaining portion of the cooled slug to a temperature in the range of about Md<sub>30</sub> minus 30° C. to about 500° C.; and
- (c) upsetting the heated portion to provide the head.

4,281,430

**METHOD AND APPARATUS FOR MACHINING PIPE COLLARS**

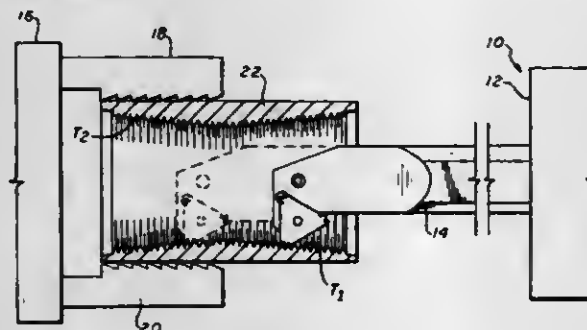
Dieter H. Hellnick, Houston, Tex., assignor to Jo-Way Tool Company, Inc., Houston, Tex.

Filed Aug. 20, 1979, Ser. No. 67,902

Int. Cl.<sup>3</sup> B23G 1/22

U.S. Cl. 10-101 R

6 Claims



1. A method of machining a cylindrical workpiece having coaxial opposed first and second tapered internal surfaces to form an internally threaded pipe collar having coaxial, oppositely tapered first and second threaded surfaces, said method comprising:

- providing a threading tool having a single thread cutting tooth and having a first thread topping disposed on one

side of said thread cutting tooth and a second thread topping disposed on the opposite side of said thread cutting tooth, said first and second thread toppings defining a line tangential thereto;

continuously rotating said pipe collar to be internally threaded about the longitudinal axis thereof; moving said threading tool in one linear direction along said first tapered internal surface of said collar in thread cutting manner with said tangential line parallel to the axis of said collar and with said tooth cutting the thread groove and said first thread topping forming the topping of said first tapered thread, and with said second thread topping remaining clear of said topping of said first tapered thread; and

moving said threading tool in said one linear direction along said second tapered internal surface of said collar in thread cutting manner with said tangential line parallel to the axis of said collar and with said tooth cutting the thread groove and said second thread topping forming the topping of said second tapered thread, and with said first thread topping remaining clear of said topping of said second tapered thread.

4,281,431

**SHEET CLEANING**

Jean Nierlich, Antony, and Yves Lavoisey, Asnieres, both of France, assignors to Saint-Gobain Industries, Paris, France

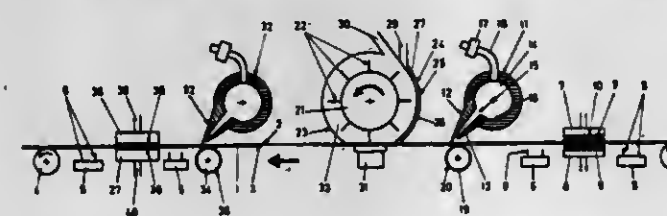
Filed Jul. 3, 1979, Ser. No. 54,556

Claims priority, application France, Jul. 5, 1978, 78 19982

Int. Cl.<sup>3</sup> B08B 6/00, 1/02, 5/04

U.S. Cl. 15-1.5 R

18 Claims



1. Apparatus for removing particles from a sheet, comprising:

- a conveyor for transporting the sheet;
- means adjacent said conveyor for removing static charge from the sheet as it passes along said conveyor;
- means adjacent said conveyor for wiping at least one side of the sheet as it passes along said conveyor;
- means adjacent said conveyor for scraping at least one side of the sheet as it passes along said conveyor; and
- means associated with said wiping and scraping means for removing the wiped and scraped particles from the sheet.

4,281,432

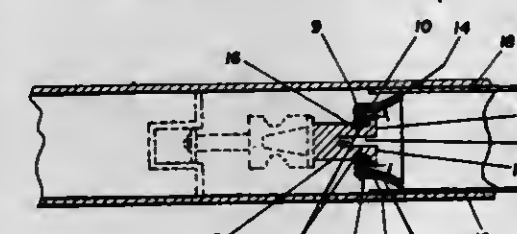
**TUBE CLEANER**

George E. Saxon, Oakmont, Pa., assignor to Condenser Cleaners Mfg. Co., Inc., Verona, Pa.

Filed Aug. 2, 1979, Ser. No. 63,149

Int. Cl.<sup>3</sup> B08B 9/04

U.S. Cl. 15-104.06 R



1. A fluid propelled projectile for cleaning the inner wall of

a condenser tube which is fitted with an internal sleeve over at least a portion of the tube comprising:

- (a) a forward elongated body section, of a diameter which allows it to pass through said internal sleeve, having a depending scraper element extending radially outward to contact and scrape the inner wall of said tube as said projectile is propelled therethrough, said scraper being resilient in the radial direction such that said scraper can pass through said internal sleeve and over dents in said tube;
- (b) a terminal section comprising:
  - (I) a resilient annulus having an integral, rearwardly and outwardly extending skirt; and
  - (II) two rigid annular discs, each of said disc abutting opposite sides of said resilient annulus; and
- (c) a rearward axial extension from the body section, having a diameter less than the diameter of the body section, and having an axial bore and a terminal crimp, said axial extension passing through the resilient annulus and the annular discs such that the terminal section is returned on said axial extension between the body section and the terminal crimp.

4,281,433

**COMPOUND TOOL**

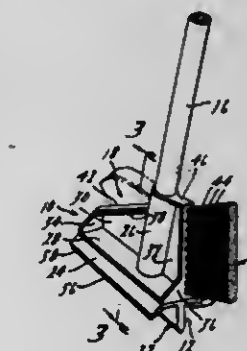
Jack J. Sendoykas, 23510 Denton, Apt. 227 T, Mt. Clemens, Mich. 48083

Filed Jan. 25, 1980, Ser. No. 115,423

Int. Cl.<sup>3</sup> A47L 1/08, 23/04

U.S. Cl. 15-105

13 Claims



1. A multi-purpose tool for automotive vehicles and the like having a handle and an ice breaker extending longitudinally in opposite directions and having also a brush, a shoe scraper, a snow scraper and a squeegee extending laterally therefrom in different directions behind said ice breaker, said tool adapted to be held manually by the handle with said ice breaker on the ground and when said tool is so placed said ice breaker supporting said brush, said squeegee and said snow scraper above and clear of the ground and said shoe scraper in position for use.

4,281,434

**APPARATUS FOR CLEANING THE SURFACE OF A ROTATING ROLLER**

1 Claim Lawrence G. Sullivan, Halifax, England, assignor to Crocorol Limited, Halifax, England

Filed Feb. 20, 1980, Ser. No. 123,419

Claims priority, application United Kingdom, Feb. 23, 1979, 06454/79

Int. Cl.<sup>3</sup> D01H 11/00

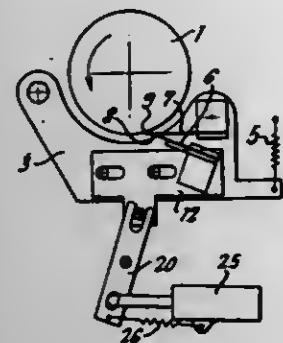
U.S. Cl. 15-256.51

7 Claims

1. Apparatus for cleaning the surface of a rotating roller comprising first and second cleaning blades each having an edge extending axially across the surface of said roller and adjacent thereto, said two blades being mounted so that their said edges are substantially parallel and directed against the direction of rotation of said roller with said edge of said second blade disposed behind said edge of said first blade relative to



said direction, and means for causing relative movement of said blades to reverse the disposition of said edges and to cause said



edge of one of said blades to scrape a surface of the other of said blades during such reversal.

4,281,435

## SLIDING DOOR CLOSET

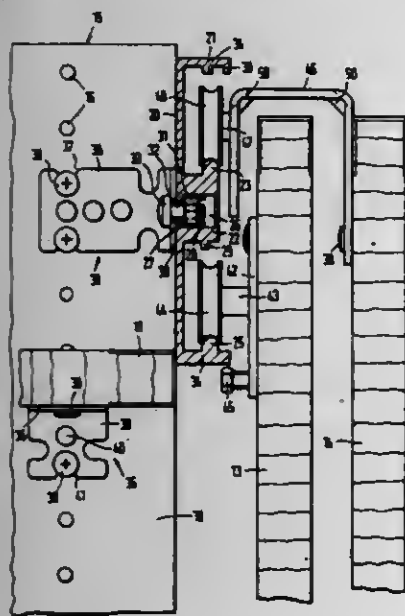
Claus Winter, Hamburg, and Wolfgang Ehrmann, Ruppichterth, both of Fed. Rep. of Germany, assignors to Inbauprodukt Innenausbausysteme GmbH & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,856

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1978, 2844396

Int. Cl.<sup>3</sup> A47N 1/04, 15/00

U.S. Cl. 16—94 R



1. Apparatus for hanging the sliding doors of a closet comprising:

- upper and lower track members each of which includes a rear wall and guide rail means for guidingly supporting the rollers of at least two sliding doors;
- at least one longitudinally extending groove in each of said track members accessible through said rear wall thereof;
- a threaded nut positioned non-rotatably but displaceable lengthwise within each said groove;
- a bracket comprising a pair of mutually substantially perpendicularly extending legs connected to each of said track members by one of said legs, the other leg of each said bracket having at least one hole formed therein for reception of fastening means to secure said other leg to a selected vertical wall of the closet;
- and threaded fastening means insertable through said one leg of each said bracket into said groove and threadably cooperating with one of said nuts for connecting said one leg of each bracket with one of said track members.

4,281,436

## SHRIMP PROCESSING MACHINE

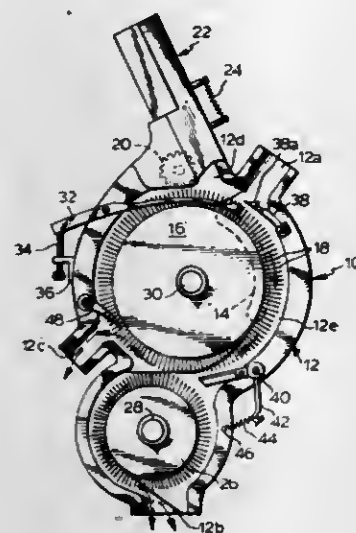
Paul H. Hoffman, 18003 NW. 78th Ave., Hialeah, Fla. 33015, and John A. Lessig, 4140 Hardie Ave., Miami, Fla. 33133

Filed May 8, 1979, Ser. No. 37,396

Int. Cl.<sup>3</sup> A22C 29/02

U.S. Cl. 17—72

1 Claim



1. A device for processing shrimp and the like arthropoda comprising:

- a housing, a tunnel opening through said housing including a main portion and outwardly opening infed and discharge end portions interconnected by said main portion; means to ventrally impale shrimp fed into said infed portion of said tunnel and to transport them through said main tunnel portion and said discharge end portion;
- an operating means positioned relative to the path of advance through said main tunnel portion to longitudinally disrupt and remove the abdominal membrane of each shrimp positioned thereupon to loosen the front shell sections therefrom;
- said operating means disposed within said main portion of said tunnel to longitudinally slit the dorsal side of the shrimp meat to expose the mid-gut vein as said ventrally impaled shrimp are advanced by said transport means through said main tunnel portion; and
- air flow inducing vacuum means opening into said main tunnel portion to pneumatically advance the shrimp fed into said infed portion therethrough into ventral engagement with said transport means and to pneumatically displace the swimmerets, front shell section and mid-gut vein from each impaled shrimp meat being transported through said main tunnel portion and to discharge such debris from the device, said air flow induced pneumatic means including an enlarged opening disposed on each side of said housing strategically positioned in fluid communication relative to said transport means and said discharge section for displacement of the shrimp shell from the meat without displacement of the meat from the transport means;
- a second transport means having an impaling means disposed thereupon in communication with said first transport means and disposed within said tunnel;
- said second transport means impaling said shrimp in a dorsal direction and receiving said shrimp from said first transport means;
- said tunnel including a wall portion shaped for removing said shrimp from said second transport means for ejection from said housing.

4,281,437

## METHOD AND APPARATUS FOR OPENING TEXTILE FIBER BALES

Hans-Jürgen Marx, München-Gladbach, Fed. Rep. of Germany, assignor to Trittschler GmbH & Co. KG, München-Gladbach, Fed. Rep. of Germany

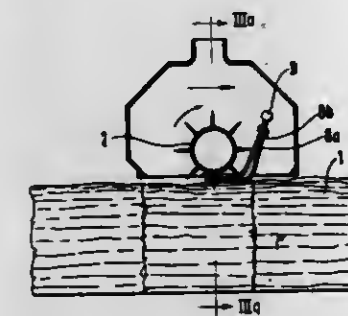
Filed Oct. 17, 1979, Ser. No. 85,476

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847460

Int. Cl.<sup>3</sup> D01G 7/06

U.S. Cl. 19—80 R

4 Claims



1. In a method of opening fiber bales with an apparatus having a traveling opening member propelled along serially positioned fiber bales to execute opening passes, a grate having parallel-spaced grate bars extending, in their operative position, in the traveling direction and pressing down on an upper surface of the bales; the opening member having opening elements projecting through the clearance defined by adjoining grate bars; the improvement comprising the step of periodically and in opposing phases lifting and lowering several grate bar groups of the grate between operative and inoperative positions for periodically varying the relative position between the upper surface of the bales and the grate to periodically expose ridges of bale material formed underneath the grate bars during the opening operation.

4,281,438

## FLAT COMBING MACHINE

Manfred Welker, Limbach-Oberfrohna, and Hans-Joachim Scholz, Karl Marx Stadt, both of German Democratic Rep., assignors to VEB Kombinat Textima, Karl Marx Stadt, German Democratic Rep.

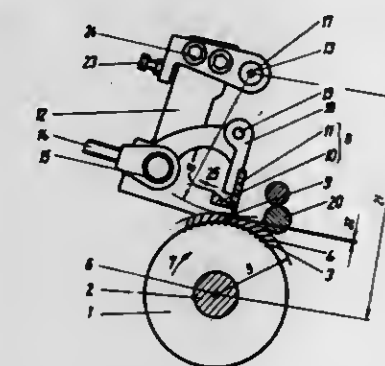
Filed Oct. 15, 1979, Ser. No. 84,946

Claims priority, application German Democratic Rep., Oct. 24, 1978, 208629

Int. Cl.<sup>3</sup> D01G 19/10, 19/16

U.S. Cl. 19—225

3 Claims



1. Flat combing machine whereby the needle rows are rigidly and solidly arranged on the round comb and the tong, driven by a crankdrive mechanism, is fastened to a suspended pendulum, characterized by the fact that the distance (21) between the pivot (6) of the round comb (1) and the pivot (17) of the suspended pendulum (12) is smaller than the sum of the maximum radius (5) of the needle points (4) to the pivot (6) of the round comb (1), plus the minimum distance (22) between the jaw (9) of the tong (8) and the points of the needles (4) and plus the radius (16) of the jaw (9) of the tong (8) to the

pivot (17) of the suspended pendulum (12), wherein the radius (5) of the needle points (4) to the pivot (6) of the round comb (1) of the needle rows (3), lying side by side to each other, decreases at first and subsequently increases, counter to the direction of rotation (7) of the round comb (1).

4,281,439

## SELF-CLEATING ROPE HOLDER

Keith W. Klein, 18 Walker Dr., Simsbury, Conn. 06070

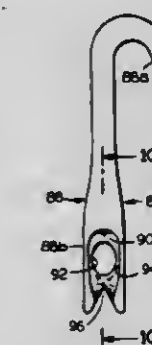
Division of Ser. No. 911,374, Jun. 1, 1978, Pat. No. 4,178,661.

This application Aug. 16, 1979, Ser. No. 67,098

Int. Cl.<sup>3</sup> F16G 11/00

U.S. Cl. 24—130

1 Claim



1. A holder for adjustably belaying the free end of a rope or the like, said holder comprising, in combination:

- A. an elongated body;
- B. a laterally extending hook integrally formed with said body adjacent one end thereof for anchoring the holder to a desired object;
- C. means defining a first aperture in said body through which the free end of the rope is drawn;
- D. means defining a second aperture in said body through which the rope free end extending from said first aperture is drawn, said first and second aperture defining means provided by a conical passageway formed in said body adjacent its other end and extending perpendicular to the longitudinal axis of said body, the opposite ends of said passageway constituting said first and second apertures, and
- E. means forming a V-shaped slot in the sidewall of said conical passageway, said slot having its wide end in open communication with said second aperture and extending generally toward said first aperture,
- (1) whereby, the free end of the rope is pulled in a given direction to draw the rope through said first and second apertures and said passageway to a desired tension, and then deflected laterally from said given direction to move the rope out of said second aperture into said slot,
- (2) thereby wedging the rope in said slot to maintain the desired rope tension, which inherently pulls the rope deeper into said slot.

4,281,440

## BELT BUCKLE CONSTRUCTION

Jeffrey E. Britz, 295 Fifth Ave., New York, N.Y. 10016

Filed Feb. 22, 1980, Ser. No. 123,533

Int. Cl.<sup>3</sup> A44B 11/00, 11/12

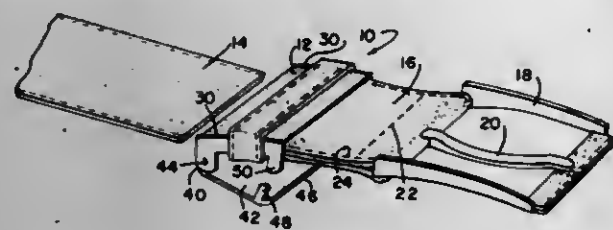
U.S. Cl. 24—191

7 Claims

1. Improved belt buckle construction for receiving a removable flexible belt loop and material covering on a buckle frame comprising a generally flat frame having raised sides on two opposite edges for forming a recessed flat section intermediate the raised sides, said raised sides having extensions in an opposite direction forming mating hinge elements at an end thereof, a flanged locking member pivotally mounted onto said mating hinge elements adjacent a flange-formed portion thereof, a claw grabbing surface disposed between said mating hinge elements on said flanged locking member for engaging a belt



strap end, snap formed tabs at the other end of said flanged locking member, said raised sides further having mating snap elements extending from the other end thereof and for lock-



ingly engaging with said snap formed tabs, and clamp elements extending from intermediate portions of the raised sides adapted to be folded over and retain a leather member in fixed relation.

4,281,441

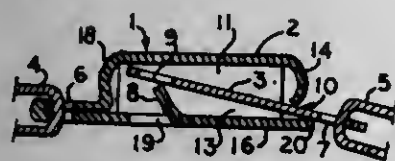
## JEWELRY CLASP

James W. Rasner, 8545 Mission Gorge Rd., Santee, Calif. 92071  
Filed Sep. 10, 1979, Ser. No. 73,959

Int. Cl.<sup>3</sup> A44B 11/00, 19/00

U.S. Cl. 24—230 R.

6 Claims



1. A clasp for joining together first and second parts of a piece of jewelry or the like which comprises:
  - a first embodiment attached to said first part having a slot-like aperture and an anchoring means behind said aperture;
  - a second flat element attached to said second part, said second element insertable into said slot and having means for engaging said anchoring means;
  - said first element further comprises an oblong enclosure having:
    - a generally flat floor;
    - sidewalls extending upward from said floor;
    - a generally horizontal roof;
    - front and back walls extending downward from the roof;
    - the back wall being secured at its base to the floor;
    - the front wall being dimensioned to leave a slot-like aperture between its bottom edge and the floor;
    - said roof and front wall are free to resiliently move up and down, thereby enlarging or narrowing the aperture;
    - said anchoring means comprises:
      - a stub extending from the floor within the enclosure; and
      - said second flat element having a hole engageable around the stub.

4,281,442

## APPARATUS FOR APPLYING CONNECTORS TO MULTICONDUCTOR FLAT CABLE

Robert B. Senior, Grand Haven, and Frederick Karasinski, Grand Rapids, both of Mich., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Jun. 18, 1979, Ser. No. 49,842

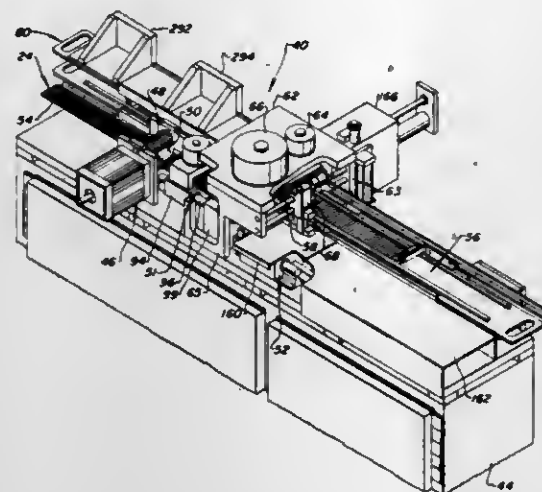
Int. Cl.<sup>3</sup> H01R 43/00

U.S. Cl. 29—33 M

28 Claims

1. Apparatus for applying a two-part electrical connector to flat multiconductor cable comprising:
  - a frame;
  - a cable feed mechanism disposed on said frame and operable to feed a predetermined length of cable along a predetermined path on said frame;
  - connector holding means disposed on said frame for holding

said connector parts spaced apart one part from the other, said connector holding means being operable to be moved between a first position for receiving said connector parts and a second position adjacent to said path so that said connector parts are disposed on opposite sides of said cable; and



means on said frame for engaging said connector parts in said second position of said connector holding means and moving said connector parts to apply said connector to said cable.

4,281,443

## POSITION MAINTAINING TOOL

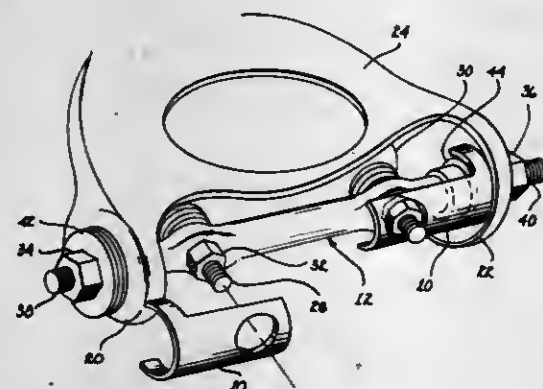
James Threlfall, 4817 W. Pinchot, Phoenix, Ariz. 85031

Filed Jul. 27, 1979, Ser. No. 61,377

Int. Cl.<sup>3</sup> B25B 27/14

U.S. Cl. 29—271

3 Claims



1. A tool for maintaining positional alignment intermediate a control arm and the arms of an A-frame in a front end suspension system of a vehicle during replacement of a control arm/A-frame interconnecting bushing, said tool comprising in combination:
  - (a) a body having a longitudinal axis;
  - (b) means for securing said body in fixed location upon the control arm to preclude movement of said body along its longitudinal axis;
  - (c) said body including a terminal end displaced from said securing means for bearing against and blocking movement of an arm of the A-frame toward the fixed location on the control arm along the longitudinal axis of said body, said terminal end being configured to contactingly mate with the corresponding surface of the arm of the A-frame; and
  - (d) said terminal end including first and second means extending in opposed directions in orthogonal axes within a plane lateral of the longitudinal axis to a point rotated 90° from said securing means for suspending said terminal end from the control arm and for inhibiting tilting movement of said body about said securing means; whereby, said tool

is supported upon the control arm and maintains the positional relationship of the control arm and arm of the A-frame during replacement of the bushing therebetween.

4,281,444

## WIRE STRIPPER

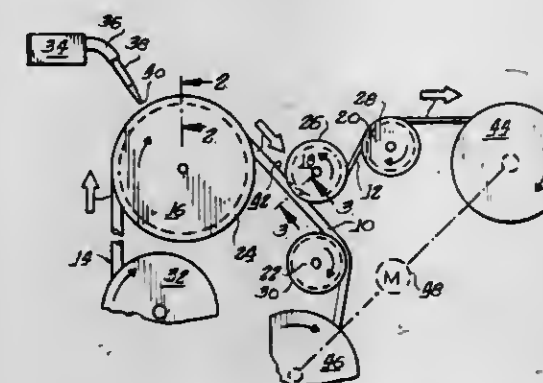
William G. Smith, St. Charles, Ill., assignor to Belden Corporation, Geneva, Ill.

Filed Aug. 6, 1979, Ser. No. 63,846

Int. Cl.<sup>3</sup> H02G 1/12

U.S. Cl. 29—426.5

21 Claims



1. A method for stripping the outer jacket from the inner core of a flexible cable comprising:
  - generating a jet of fluid of diameter narrow relative to the cable being stripped and under pressure great enough to cut the outer jacket of the cable without damage to the inner core;
  - directing the jet of fluid along a portion of the cable so as to cut at least part way through the outer jacket; and
  - separating the inner core and the outer jacket along the cut.

4,281,445

## APPARATUS AND METHOD FOR REPLACEMENT OF FILE FOLDERS HAVING FASTENERS

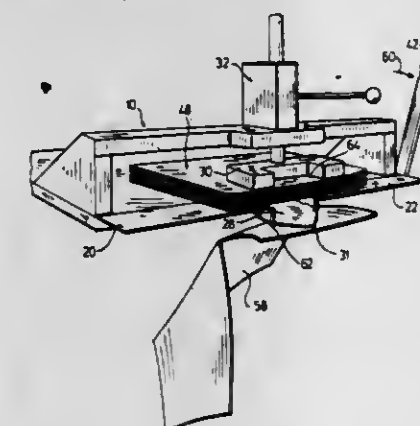
Donald T. Barber, Toronto, Canada; George B. Pfeffer, Minnetonka, and Esther E. Olson, Cottage Grove, both of Minn., assignors to Datafile Limited, Willowdale, Canada

Filed Jul. 5, 1979, Ser. No. 53,561

Int. Cl.<sup>3</sup> B42F 3/02; B25C 11/00

U.S. Cl. 29—426.5

33 Claims



1. Apparatus for withdrawing a releasable fastener from and out of fastened bulk paper sheet comprising means for supporting fastened bulk paper sheet next its fastener during and after fastener withdrawal and means for withdrawing a releasable fastener away from and out of such supported side of bulk paper sheet.

4,281,446

WAY OF JOINING A HARD AND A SOFT SHEET  
Yoshihumi Umeno, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

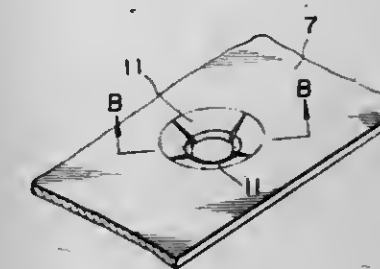
Filed Aug. 16, 1979, Ser. No. 67,168

Claims priority, application Japan, Aug. 23, 1978, 53-103198

Int. Cl.<sup>3</sup> B23P 11/00

U.S. Cl. 29—432.1

7 Claims



1. A method of joining together a harder plate and a softer plate, comprising the steps, in order, of:
  - forming a conical bore having tapered walls in the harder plate;
  - making a plurality of radial cuts along said tapered walls, each of said cuts extending to the periphery of an imaginary ring lying in the plane of the harder plate, said imaginary ring surrounding said bore thereby defining a plurality of portions formed from the harder plate;
  - pressing out said plurality of portions of the harder plate by punch and die means, each of said portions projecting from the harder plate and having a sharp end;
  - penetrating the projecting portions through the softer plate until the harder plate tightly contacts the softer plate; and
  - bending the sharp end of the projecting portions outwardly so that they engage with the softer plate.

4,281,447

## DETACHABLE TOOL INTERFACE SYSTEM FOR A ROBOT

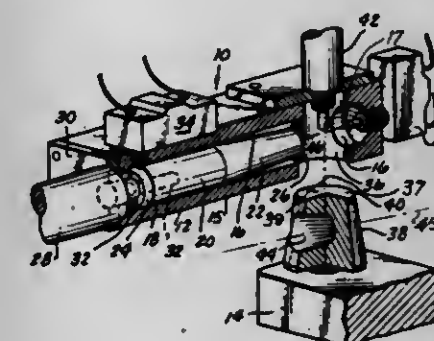
George J. Miller, and George W. Sutter, both of Florissant, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Mar. 1, 1979, Ser. No. 16,353

Int. Cl.<sup>3</sup> B23Q 3/155

U.S. Cl. 29—568

20 Claims



1. An interface to enable the removable attachment of at least one operator device to a machine, said interface including:
  - a body defining a frustro-conical surface therein having an axis and a cylindrical surface therein having an axis perpendicular to said frustro-conical surface axis;
  - an attachment member having an outer frustro-conical surface with an axis, said outer frustro-conical surface being shaped and sized to mate with said frustro-conical surface of said body, said attachment member also defining a second frustro-conical surface therein having an axis perpendicular to said outer frustro-conical surface axis;
  - a pin having a cylindrical portion and a frustro-conical portion, said cylindrical portion being positioned and



sized to slide along said cylindrical surface to said body and said frusto-conical portion being shaped and sized to mate with said second frusto-conical surface of said attachment member;

means to move said pin frusto-conical portion into and out of engagement with said second frusto-conical surface of said attachment member;

means to attach said body to the machine; and

means to attach said attachment member to the operator device.

4,281,448

# METHOD OF FABRICATING A DIODE BRIDGE RECTIFIER IN MONOLITHIC INTEGRATED CIRCUIT STRUCTURE UTILIZING ISOLATION DIFFUSIONS AND METAL SEMICONDUCTOR RECTIFYING BARRIER DIODE FORMATION

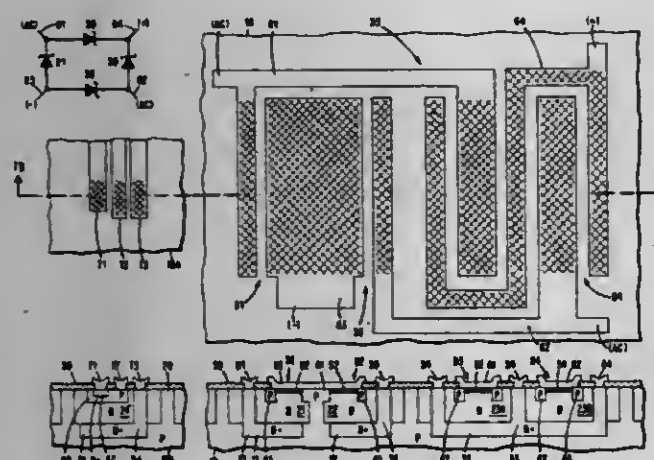
Vincent J. Barry, Hudson, and Jeremiah P. McCarthy, Framingham, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 14, 1980, Ser. No. 140,036

Int. Cl.<sup>3</sup> H01L 21/76, 27/10, 29/56

U.S. Cl. 29—577 C

18 Claims



1. The method of fabricating monolithic integrated circuit structure incorporating a metal-semiconductor rectifying barrier diode bridge comprising:

providing a substrate of semiconductor material of one conductivity type;

growing an epitaxial layer of semiconductor material of the opposite conductivity type on a surface of the substrate to produce a body of semiconductor material;

diffusing conductivity type imparting material of the one conductivity type into portions of said layer extending to said substrate to form isolating barriers delineating a first sector of the opposite conductivity type electrically isolated from the remainder of the body and having a first and a second zone of the opposite conductivity type separated from each other by an intervening barrier of semiconductor material of the one conductivity type and delineating a second sector of the opposite conductivity type electrically isolated from the remainder of the body and having a third and a fourth zone of the opposite conductivity type;

placing metal-semiconductor rectifying barrier forming metal on portions of said first zone and said second zone of said one sector, on a portion of said third zone, and on a portion of said fourth zone of said second sector and forming metal-semiconductor rectifying barriers between the metal and the semiconductor material; and

forming a first electrical connection in ohmic contact with the first zone of semiconductor material and connected to the metal on the third zone, a second electrical connection in ohmic contact with the second zone of semiconductor material and connected to the metal on the fourth zone, a third electrical connection connected to the metal on the first and second zones, and a fourth electrical connection

in ohmic contact with the third and fourth zones of semiconductor material.

4,281,449

# METHOD FOR QUALIFYING BIASED BURN-IN INTEGRATED CIRCUITS ON A WAFER LEVEL

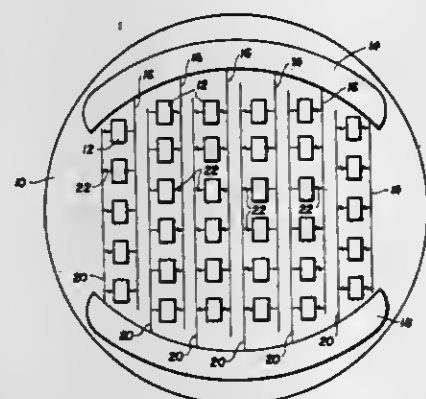
Kenneth A. Ports, Indialantic, and Thomas R. St. Clair, Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Dec. 21, 1979, Ser. No. 106,339

Int. Cl.<sup>3</sup> G01R 31/02

U.S. Cl. 29—593

10 Claims



1. A method for qualifying biased burn-in integrated circuits at a wafer level comprising:

forming a first and a second discrete conductor on said wafer, each connected to each die on said wafer and at least one of said conductors being connected to each die by a fusible element;

electrically biasing said conductors;

heating said wafer at a high, burn-in temperature while electrically biased;

testing the condition of the fusible elements and marking defectively connected dice;

removing said conductors; and

testing the circuitry on said dice and marking defective dice.

4,281,450

# METHODS AND APPARATUS FOR INSERTING COILS INTO DYNAMOELECTRIC MACHINE STATOR ASSEMBLIES

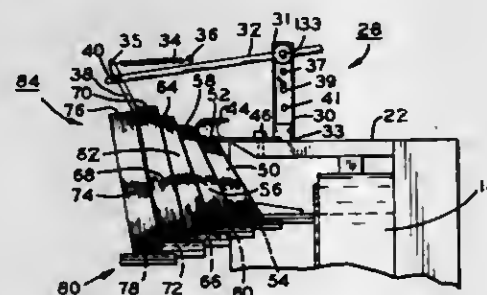
Richard W. Bale, Fennville, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Oct. 22, 1979, Ser. No. 86,794

Int. Cl.<sup>3</sup> H02K 15/06

U.S. Cl. 29—596

7 Claims



1. A method of transferring at least one winding, comprising a plurality of coils formed of a plurality of conductor turns, into axially extending slots of a stator assembly including a magnetic core having an axially extending bore and a pair of spaced apart end faces communicating with the axially extending slots and the bore, the method comprising:

a. winding the plurality of conductor turns about a coil form to provide wound turns for a plurality of coils for subse-

quent insertion in respective axially extending slots of a magnetic core;

b. releasing first portions of the plurality of wound turns while second portions of the plurality of wound turns remained engaged with the coil form and moving the wound turns toward the core for placement therein; and

c. intercepting with a yieldable means the released first portion of the wound turns of a first coil having a position laterally outside of the wound turns of a released first portion of a second coil as the first and second coils are moved toward the core, and laterally displacing the released first portion of the first coil so that the intercepted released first portion of the first coil is displaced to a position laterally inside of the released first portion of the second coil;

d. the displacing of the first portion of the first coil inside of the first portion of the second coil reducing an interengagement pressure between the first and second coils during placement of the first and second coils in the magnetic core.

4,281,451

# ELECTRIC HEATER - METHOD OF MAKING

Gandur S. Mann, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 876,693, Feb. 10, 1978, abandoned. This application Jul. 12, 1979, Ser. No. 56,999

Int. Cl.<sup>3</sup> H05B 3/00

U.S. Cl. 29—611

2 Claims



1. The method of making an electric heater of the type having an elongated electrically conductive tubular metal sheath closed at one end and containing an axially extending heating coil electrically grounded at one end to the sheath adjacent its closed end and insulated therefrom elsewhere by heat conductive insulation, said method comprising the steps of:

(a) forming the sheath with a width substantially larger than the desired finished size thereof,

(b) forming the heating coil with a width dimension smaller than the interior width of the sheath, the coil being attached at one end to an electrical conductor, the other end being free,

(c) centering the heating coil and conductor in the sheath with the free end adjacent to the sheath closed end, the adjacent surfaces of the sheath interior and the coil free end being free from foreign substances,

(d) filling the tip portion of the sheath interior with an amount of sinterable metal powder sufficient to cover the free end of the heating coil,

(e) filling the remaining open interior of the sheath with granular high temperature electrical insulating material tightly packed around and within the heating coil and

sealing the open end of the sheath to retain the insulating material in place,

(f) swaging the heater assembly to reduce the width and extend the length of the sheath and interior heating coil to finished dimensions, and

(g) passing an electric current between the heating element and sheath through the metal powder to heat and sinter the metal powder in the sheath tip, surrounding the coil free end, whereby a low resistance electrical connection is formed between the sheath and the heating coil through the sintered metal.

4,281,452

# METHOD OF ASSEMBLING BANKS OF BATTERY ELECTRODES

Ivan A. Kolosov, ulitsa Astrakhanskaya, 118, kv. 54; Jury E. Ivanyatov, ulitsa M. Zatonkaya, 21, and Valery N. Kosholkin, Novo-Astrakhanskoe shosse, 43, kv. 47, all of Saratov, U.S.S.R.

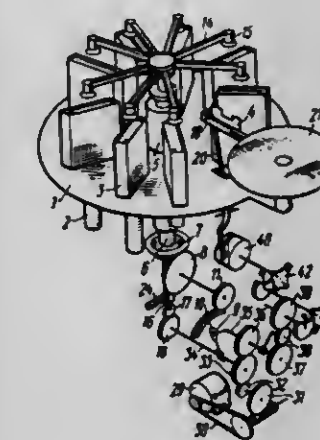
Division of Ser. No. 847,563, Nov. 1, 1977, Pat. No. 4,196,511.

This application Jul. 6, 1979, Ser. No. 55,318

Int. Cl.<sup>3</sup> H01M 10/04

U.S. Cl. 29—623.1

3 Claims



1. A method of selectively assembling a bank of battery electrodes of predetermined thickness for an electrical storage battery, comprising: sorting said electrodes according to thin, medium and thick thickness and by polarity into a plurality of stacks so that each of said stacks having electrodes of identical thickness and polarity; the thickness of any two electrodes of medium thickness being equal to the sum of thicknesses of a thin electrode and a thick electrode; providing separator means about each of the electrodes; arranging said stacks in a line and in an alternating sequence of polarity, the stacks of electrodes of medium thickness being of any desired number and the number of stacks of thin electrodes being equal to that of the stacks of thick electrodes; and simultaneously picking up one electrode from each stack; and subsequently successively delivering and positioning the electrodes one on top of the other to form a bank of battery electrodes of a desired mean arithmetic finished bank thickness.

4,281,453

# SHAVING APPARATUS

Eppe Bakker; Ebbe Boiten; Eildert Kingma; Gerard J. Lenting, and Willem S. Wijma, all of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,471

Claims priority, application Netherlands, Sep. 18, 1978, 7809461

Int. Cl.<sup>3</sup> B26B 19/14

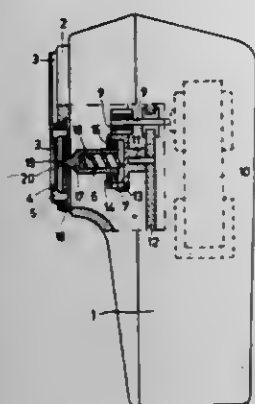
U.S. Cl. 30—43.6

9 Claims

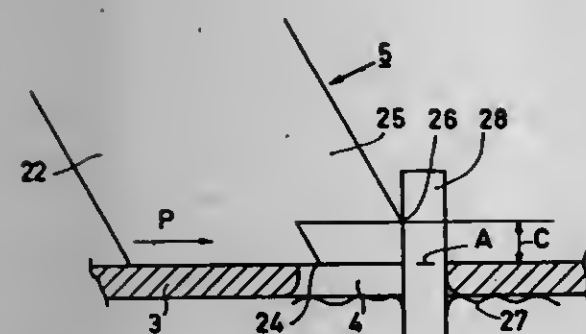
1. A shaving apparatus having a shear plate provided with hair entry apertures and a cutting unit associated with and drivable relative to the shear plate; said cutting unit comprising a cutting member, cutting elements extending from said cutting



member toward the shear plate, each cutting element being formed with a cutting edge, and hair-pulling elements respectively associated with the cutting elements and positioned in front of said cutting elements in the direction of driving, each



neck portion, the blade assembly comprising a body portion having blade means permanently fixed therein, a first blade assembly connecting means disposed on said body portion and engaged with said first handle connecting means to form a pivotal connection therebetween, and a second blade assembly connecting means disposed on said body portion and fixedly interconnected with said second handle connecting means, said second handle connecting means being reciprocally moveable in said handle.



hair-pulling element being immobile relative to the associated cutting element and being formed with a hair-contact edge, said hair-contact edge being located at a greater distance from the shear plate than said cutting edge.

4,281,454

## SHAVING SYSTEM

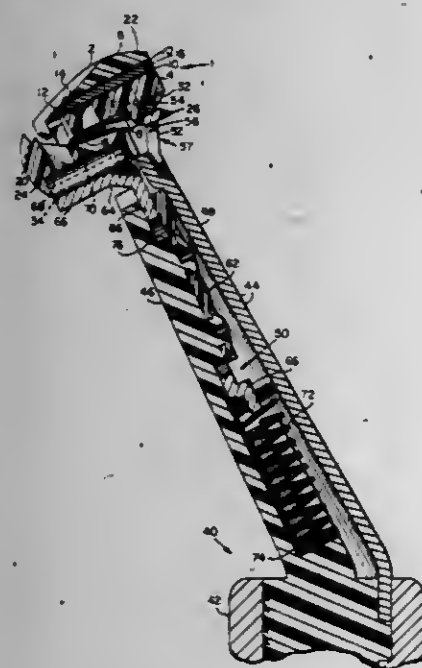
Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Aug. 31, 1979, Ser. No. 71,471

Int. Cl.<sup>3</sup> B26B 21/06

U.S. Cl. 30—47

7 Claims



1. A shaving system comprising a handle and a blade assembly, the handle comprising a grip portion, a neck portion extending from said grip portion, a first handle connecting means extending from a free end of said neck portion, and a second handle connecting means extending from said free end of said

1. A razor assembly comprising a shaving unit and a handle, said shaving unit having platform means, blade means, first pivotal mounting means for pivotally connecting said shaving unit to said handle, and means for receiving a biasing force from said handle, said handle including two flexible arms which at one end have second pivotal mounting means complementary to said first pivotal mounting means, said flexible arms being secured to said handle in a region spaced from said second pivotal mounting means, a movable button engaging said flexible arms and movable for flexing said arms to disengage said second pivotal mounting means from said first pivotal means and for reverse movement which free said flexible arms for engagement of said second pivotal mounting means with said first pivotal mounting means, means for exerting a biasing force on said means for receiving a biasing force, said button having ramp means which are movable relative to the surface of each flexible arm which engages said button, such relative movements of said ramp means flexing said arms, said ramp means joining a first uninclined portion to a second uninclined portion, both the first and second uninclined portions being parallel to one another and the spacing between the second uninclined portion being greater than the spacing between the first uninclined portion.

4,281,455

## RAZOR WITH REMOVABLY MOUNTED PIVOTAL CARTRIDGE

Richard B. Dixon, Woodley, and Peter Carr, Morpeth, both of England, assignors to Wilkinson Sword Limited, Buckinghamshire, England

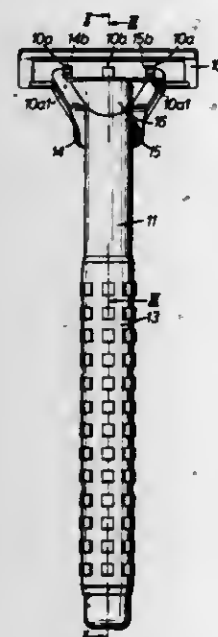
Filed Oct. 1, 1979, Ser. No. 80,280

Claims priority, application United Kingdom, Oct. 20, 1978, 41334/78

Int. Cl.<sup>3</sup> B26B 21/06, 21/22

U.S. Cl. 30—47

3 Claims



4,281,456

## RAZOR HANDLE WITH A PIVOTAL CONNECTION MEANS FOR AN ELEMENT OF A BLADE CARTRIDGE MOUNTED THEREON

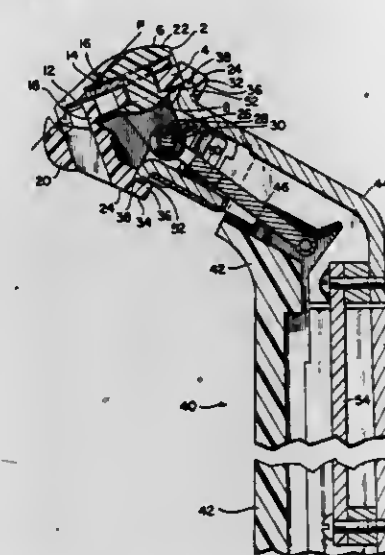
Paul W. Douglass, Winchester, and Robert A. Trotta, Winthrop, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Nov. 13, 1979, Ser. No. 93,847

Int. Cl.<sup>3</sup> B26B 21/06, 21/22

U.S. Cl. 30—89

7 Claims



1. A razor handle for use in conjunction with a replaceable blade assembly, the handle comprising a grip portion, a neck portion attached to said grip portion, a first connecting means extending from said grip portion and adapted to engage said blade assembly to form a pivotal connection therebetween, and a second connecting means extending from said neck portion and adapted to fixedly interconnect with mounting means on said blade assembly, said first connecting means being rigid and being pivotally anchored in said grip portion and said neck portion being moveably attached to said grip portion.

4,281,457

## VACUUM-OPERATED CUTTING TOOL AND SYSTEM THEREFOR

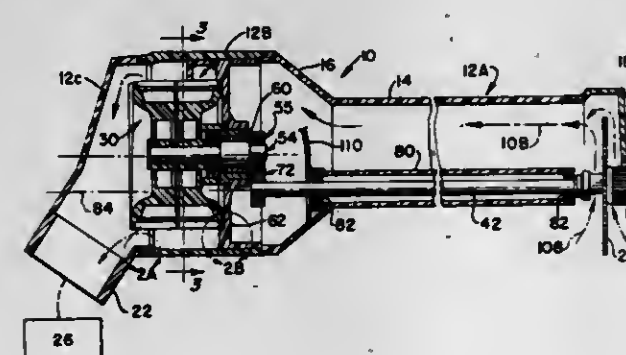
Richard E. Walton, II, Fallston, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Oct. 17, 1979, Ser. No. 86,025

Int. Cl.<sup>3</sup> B27B 9/00; B26B 25/00

U.S. Cl. 30—124

8 Claims



1. A cast cutting tool for cutting casts and the like using an oscillating saw blade, said tool comprising:

- a housing for supporting a flow of air therethrough from an inlet opening on an inlet side of said housing to an outlet side thereof,
- a turbine means rotatably mounted within said housing for rotation in response to a vacuum-induced air flow therethrough,
- a motion converting means connected to said turbine means for converting the rotary motion of said turbine

means to a rotary oscillating motion about an axis of rotation,

- a chuck means connected to said motion converting means through a drive shaft, said chuck means adapted to receive a saw blade thereon, the saw blade caused to oscillate about said axis of rotation in response to rotation of said turbine means,
- said housing having an elongated inlet portion having an external surface thereon for manual gripping, said drive shaft extending through said elongated inlet portion from said motion converting means to said chuck means, the inlet opening located proximate said chuck means, and
- said elongated inlet portion is divided into a drive shaft tunnel through which said drive shaft extends from said motion converting means to said chuck means and an air flow channel.

4,281,458

## COMPACT SAFETY KNIFE

Yoshio Okada, Osaka, Japan, assignor to Okada Kogyo Kabushiki Kaisha, Osaka, Japan

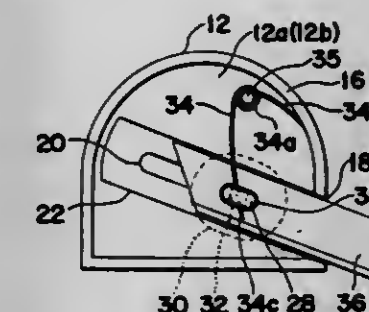
Filed Aug. 17, 1979, Ser. No. 67,762

Claims priority, application Japan, Dec. 27, 1978, 53-179111[U]; Feb. 22, 1979, 54-22721[U]

Int. Cl.<sup>3</sup> B26B 1/00

U.S. Cl. 30—162

6 Claims



1. A compact safety knife which comprises: a generally flat holder having a chamber therein and an opening therein opening out of said chamber; an elongated blade member in said chamber; said holder having a guide slot defined therein; a manipulatable member mounted on said holder and having a slider positioned externally of the holder and a stem having one end integrally formed with said slider and extending through said guide slot, and said stem having a slot therein, said manipulatable member being movable between projected and retracted positions for, when said manipulatable member is moved to the projected position, moving said blade member through said opening a distance such that only one end portion of the blade member projects out of the chamber through the opening, and when said manipulatable member is moved to the retracted position, said blade member is moved so that it is completely within said chamber; said guide slot extending in a direction parallel to the direction of movement of the blade member; means in said holder for guiding the blade member for straight movement in the longitudinal direction thereof during the movement of the manipulatable member between the projected and retracted positions; and a wire spring in said chamber having one end engaged with said holder, the other end of said wire spring loosely extending through said slot in said stem and biasing said manipulatable member to the retracted position and when the manipulatable member is in the projected position tending to move the blade member in a direction so that the cutting edge thereof is spaced from the edge of said opening in said holder.



4,281,459

## NIBBLING TOOL

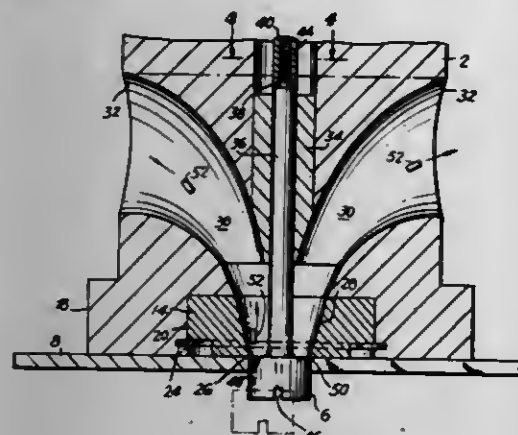
Adrian H. Krieg, Woodbridge, Conn., assignor to Widder Corporation, Naugatuck, Conn.

Filed May 24, 1979, Ser. No. 42,080

Int. Cl.<sup>3</sup> B26B 15/00

U.S. Cl. 30—228

12 Claims



1. In a nibbling tool of the type in which a reciprocating mechanism operates a reciprocating punch to force sheet material to be cut against a die, the improvement comprising a die holder attached at one end to the tool and its other end having a plane surface adapted to contact the surface of said material, said die holder having one or more external openings intermediate its ends, a die having a central opening forming a cutting edge, means mounting said die within said die holder with its cutting edge flush with the material-contacting surface of said die holder, a punch, and means within said die holder slidably supporting said punch in operable relationship with said reciprocating mechanism for reciprocal motion toward and away from said die and centrally of said die, so that the upper edge of said punch in its uppermost position is coincident with the cutting edge of said die and in its lowermost position is adapted to protrude beyond the thickness of the material to be nibbled, the means for slidably supporting said punch comprising a rod attached at one end to said punch and at the other to the reciprocating mechanism, the cutting surface of said punch extending laterally from said rod and completely surrounding the circumference of said rod to allow nibbling to occur regardless of the direction in which the tool is moved, said die holder being provided with one or more internal passageways communicating at their lower end with the central opening of said die and at their upper end communicating with the openings in the surface of said die holder.

4,281,460

## KITCHEN UTENSIL

David P. Harris, 16 Warrington Crescent, London W9, England  
Filed Nov. 5, 1979, Ser. No. 91,333

Claims priority, application United Kingdom, Nov. 7, 1978, 43569/78; Jan. 4, 1979, 193229/79

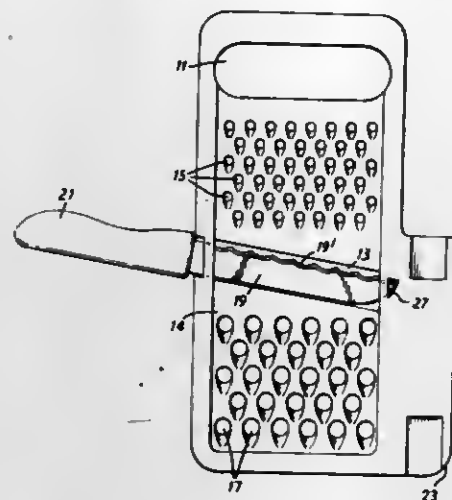
Int. Cl.<sup>3</sup> B26B 3/00

U.S. Cl. 30—278

1 Claim

1. A food slicer and grater comprising a generally rectangular plate having an integrally formed sheath along one edge thereof, said sheath adapted to receive and store a knife having a blade and a handle, said sheath covering both ends of said knife blade, intermediate the ends the knife blade being covered on one side, said plate further having along one edge perpendicular to said knife receiving edge a handle, said plate further being generally bisected into a top half and a bottom half by a slicer slot adapted to receive the knife from the storage position and expose a cutting edge on the knife at a preselected distance away from a flat side of the plate, said slot having a pair of integral superimposed ribs, transverse to the knife blade to support the knife blade at each end, said plate

having on the other side a plurality of holes having protruding portions to form a cutting edge to grate food, one plurality of



holes above the slicer slot, a second plurality of holes being of a different dimension at a position below the slicer opening.

4,281,461

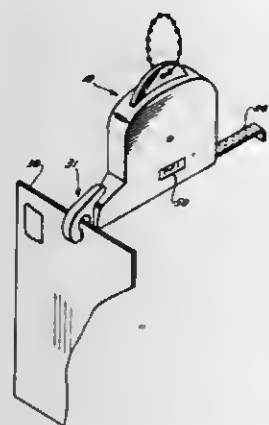
## LETTER SCALE

Nathaniel R. Roe, 20 S. Howells Point Rd., Bellport, N.Y. 11713  
Filed May 29, 1980, Ser. No. 154,228

Int. Cl.<sup>3</sup> G01G 1/18; G01B 3/08

U.S. Cl. 33—138

8 Claims



1. A combination tape measure and letter scale comprising a case, a coillable tape rule wound in said case and extending from one side thereof, said rule having both linear and weight gradations thereon, said case having means for supporting said case in a suspended condition in alignment with its center of gravity, and means on the side thereof opposite the side through which said rule extends for supporting an object to be weighed on the casing.

4,281,462

## CALLIPER SYSTEM FOR LAYING OUT STIRRUPS USED IN LOWER EXTREMITY ORTHOSIS

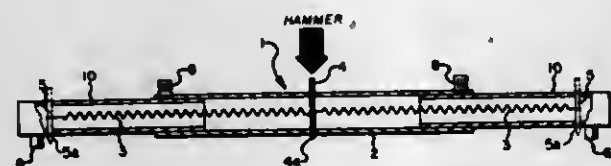
Daniel J. Herbold, 120 Destrehan St., Destrehan, La. 70047

Filed Sep. 28, 1979, Ser. No. 80,046

Int. Cl.<sup>3</sup> G01B 3/00; B25H 7/04

U.S. Cl. 33—191

14 Claims



1. A method of making an orthosis stirrup from a flat, piece

4,281,464

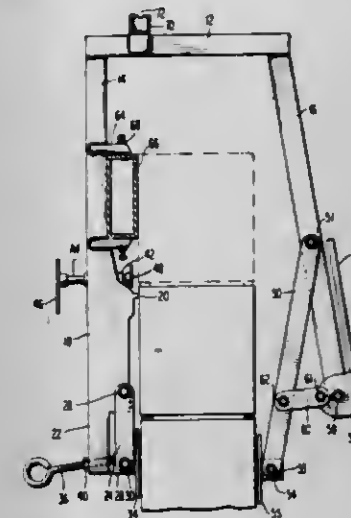
## DEVICE TO FACILITATE THE LAYING OF MASONRY UNITS

Rodney J. Hession, and Brent M. Hession, both of New Orleans, La., assignors to Hession Industries, Inc., New Orleans, La.  
Filed Jan. 18, 1980, Ser. No. 113,324

Int. Cl.<sup>3</sup> G01C 15/10

U.S. Cl. 33—408

9 Claims



of bendable stirrup material having joint holes at either end for use in a lower extremity orthosis, comprising the following steps:

- (a) providing a stirrup calliper having two end sections and a moveable central section carrying a marking device and being laterally moveably connected between said two end sections, said two end sections having protruding anchoring means protruding down from said end sections for anchoring said end sections to the stirrup joint holes;
- (b) placing said calliper on the flat stirrup material and inserting said protruding anchoring means into the joint holes and thereby anchoring said anchoring means to the stirrup joint holes;
- (c) centrally locating said marking device over the desired center position of the flat stirrup material off-set, if any, as desired;
- (d) using said marking means to mark the center position of the stirrup material off-set, if any, as desired;
- (e) using the marked position as a base for determining the bend lines for the arms of the stirrup; and
- (f) bending up the arms of the stirrup at the bend lines determined in step "e" to form the stirrup.

4,281,463

## ROTATABLE DISC SUPPORT ARRANGEMENT FOR ANGLE MEASURING APPARATUS

Yuzi Kobayashi, and Hiroshi Nishikatsu, both of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

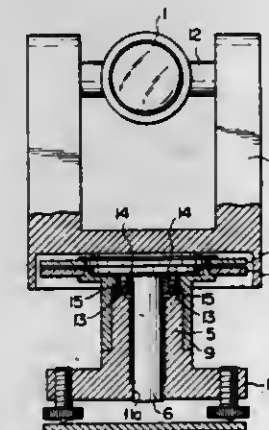
Filed Mar. 5, 1979, Ser. No. 17,321

Claims priority, application Japan, Mar. 16, 1978, 53-30334; Mar. 16, 1978, 53-33871[U]

Int. Cl.<sup>3</sup> G01C 1/00

U.S. Cl. 33—299

6 Claims



1. An angle measuring apparatus comprising a telescope support section adapted to carry a viewing telescope means and rotatable about a vertical axis, a first disc coaxial with the said vertical axis and rotatable together with the support section, a second disc opposed to said first disc and rotatable about said vertical axis, said first and second discs having cooperating angular scale means, said support section having a rotatable shaft which is coaxial with said vertical axis and rotatable with the support section, a stationary member, bearing means having an inner race means engaged with the rotatable shaft and an outer race means which is received in a recess formed in said stationary member and coaxial with the vertical axis, and disc support means supporting said second disc and being rotatable about said vertical axis relative to said stationary member and fitted to the outer race means.

4,281,465

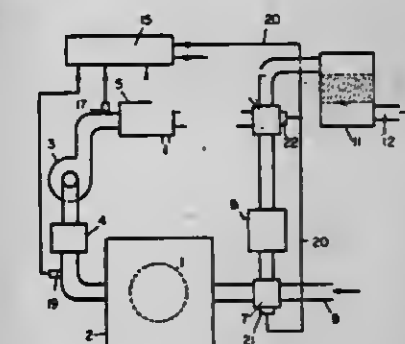
## METHOD AND APPARATUS FOR THE RECOVERING OF SOLVENTS IN DRY CLEANING UNITS

Martin R. Zimmermann, Bremen, Fed. Rep. of Germany, and Walter Oettli, Walchwil, Switzerland, assignors to AMEG Verfahrens-und Umweltschutz-Technik AG, Cham, Switzerland

Filed Jan. 17, 1978, Ser. No. 842,298  
Int. Cl.<sup>3</sup> F26B 3/04

U.S. Cl. 34—26

17 Claims



1. In a method for recovery of solvents from the circulating air and exhaust air of a dry cleaning machine (CRM) by drying



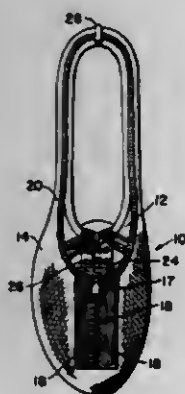
of circulating air and by fresh air drying by help of condensation and adsorption, the improvement of changing the air volume dependent on the condition values for condensation and adsorption of the solvents including establishing an initial air volume at the beginning of a circulating dry interval and diminishing the air volume during said circulating dry interval to about 1/10 of the initial volume and thereafter establishing a fresh air drying interval in which the air volume is established at substantially said initial volume.

4,281,466

**BOWLING SHOE PROTECTOR**

Blanche M. Malone, 2822 Dogwood Pl., Nashville, Tenn. 37204  
Filed Dec. 17, 1979, Ser. No. 104,078  
Int. Cl.<sup>3</sup> A43B 3/16, 1/02, 11/00, 5/00  
U.S. Cl. 36—7.1 R

6 Claims



1. A bowling shoe protector comprising a stretchable fabric body adapted to fit snugly around a bowling shoe, an elastic strip around the top of said fabric body, a zipper at one end of said fabric body adapted to be zipped into an open position for ease in fitting said protector over said shoe and flexible substantially non-absorbent sole joined to said fabric body.

4,281,467

**SPORTS SHOES**

Wolf Anderle, Strasbourg, France, assignor to Adidas Fabrique de Chaussures de Sport, Landersheim, France

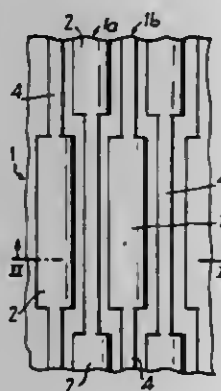
Filed Aug. 30, 1979, Ser. No. 71,383

Claims priority, application France, Sep. 4, 1978, 78 25409

Int. Cl.<sup>3</sup> A43B 13/04; 13/26; A43C 15/00

U.S. Cl. 36—32 R

4 Claims



1. A sole for shoes intended for indoor sports comprising on at least a major part of its floor engageable surface, ribs which are parallel to each other and extend generally transversely with respect to the length of the sole, each rib having in the direction of its length alternate zones of different types, one type having a downwardly rounded section and of which the width is substantially equal to the height and the other type having a narrow section in the form of lamellar of which the width is small with respect to the height, the heights of the ribs in the different zones being the same, each zone of each rib of

each type being bounded laterally respectively, by two zones of adjacent ribs of the other type.

4,281,468

**SKI BOOT HAVING A CORRUGATED FRONT PORTION**

Erik O. Giese, Key Biscayne, Fla.; Dixie L. Rinehart, and Alexander L. Gross, both of Aspen, Colo., assignors to Comfort Products, Inc., Aspen, Colo.

Filed Aug. 16, 1979, Ser. No. 67,178

Int. Cl.<sup>3</sup> A43B 5/04, 11/00

U.S. Cl. 36—121

9 Claims



1. A ski boot comprising a stiff outer shell having sides adapted to extend above the ankle of the wearer and having a heel portion adapted to overlap the heel of the wearer, a stiff corrugated front portion adapted to overlap the top of the foot and forward portion of the lower leg of the wearer and adapted to transmit control forces from the leg of the wearer to a ski, and a soft inner boot within said shell adapted to engage the foot and lower leg of the wearer whereby the wearer may bend the lower leg forward to flex said corrugated front portion while maintaining the heel in the heel portion of the shell.

4,281,469

**REMOVABLE IDENTIFICATION PANEL FOR EARRING CARDS**

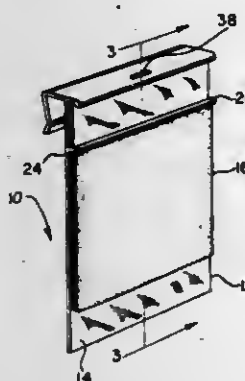
Jeffrey A. Feibelman, Cranston, R.I., assignor to A & H Mfg. Co., Johnston, R.I.

Filed Sep. 24, 1979, Ser. No. 78,395

Int. Cl.<sup>3</sup> G09F 3/18

U.S. Cl. 40—16.4

3 Claims



1. A device for the display of jewelry articles and the like comprising, a flexible first panel having means for suspending the device in a generally vertical plane, said first panel having a generally planar face including a display area having means adapted to receive at least a portion of a jewelry article displayed thereon, said first panel further including a pair of integral spaced flanges extending forwardly from said panel face, said spaced flanges being configured so as to define an elongated channel therebetween having a reduced entrance portion, said channel being adjacent to but displaced from said display area and having removably mounted therein a generally flat elongated second panel with said second panel dis-

posed in face to face contact with said first panel portion and adapted to receive indicia thereon so as to identify and/or advertise the jewelry displayed from said device, said second panel being dimensioned so as to fit snugly within said channel, the latter dimension of said second panel being greater than said reduced entry portion of said channel, and means resisting longitudinal movement of said second panel relative to said channel.

4,281,470

**HOOK HOLDER**

David W. Anderson, 7 Brentwick St., West Chermide, Queensland, 4032, Australia

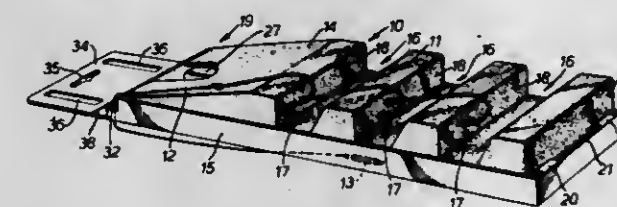
Filed Oct. 3, 1979, Ser. No. 81,527

Claims priority, application Australia, Oct. 4, 1978, PD6213

Int. Cl.<sup>3</sup> A01K 97/06

U.S. Cl. 43—57.5 R

8 Claims



1. A holder for supporting fishing rigs of the type comprising a trace having a hook at one end thereof and a swivel at the other end thereof, said holder including an open top flexible housing and an insert portion adapted to be supported in said housing, the base of said housing being provided with at least one elongated aperture and said insert portion having on its upper side an engagement face formed of penetrable material into which the free end of a said hook may be inserted and a recess on its underside arranged in operative alignment with said aperture or apertures, said recess and each said aperture comprising holding means co-operating to hold a respective said swivel remote from said engagement face, and guide means for locating said trace intermediate said engagement face and said holding means.

4,281,471

**RODENT CONTROL DEVICES**

David L. Jenkins, Charlbury, and James A. Gibson, Sanderstead, both of England, assignors to Check Fumigation and Pest Control Limited, Reading, England

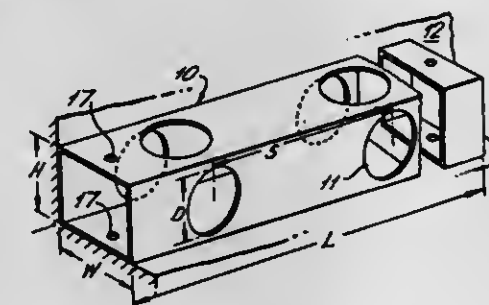
Filed Dec. 15, 1978, Ser. No. 971,013

Claims priority, application United Kingdom, Dec. 16, 1977, 52571/77; Jul. 14, 1978, 29959/78

Int. Cl.<sup>3</sup> A01M 25/00

U.S. Cl. 43—131

6 Claims



1. An apparatus for containing at least one quantity of a contact rodenticide, comprising:

- (a) an elongate tube having an interior cross-section which allows the tube to be traversed by rodents of a selected target species,
- (b) the tube having a uniform interior cross-section which includes at least one planar portion serving as a floor for the tube in use,
- (c) the length of the tube being at least 500 mm,
- (d) the tube having at least two access holes for target species

1009 O.G.—2

rodents, said access holes being disposed in the portion of the tube wall which is away from the planar portion serving as the tube floor in use, whereby target species rodents can pass into and out of the tube via any of the access holes when the tube is being supported via its planar portion.

- (e) at least one location for receiving and holding a cartridge comprising a quantity of a contact rodenticide each such location being removed from any access hole, and
- (f) a cartridge comprising a quantity of a contact rodenticide positioned at each location, such cartridge being of such a size and shape as not substantially to obstruct either the interior of the tube or any access hole and so allowing a target species rodent to reach or pass and thus make contact with the rodenticide, the cartridge comprising an open-ended tubular element having the rodenticide coated upon the interior thereof over an area excluding the end regions of the cartridge.

4,281,472

**FINGER TOY**

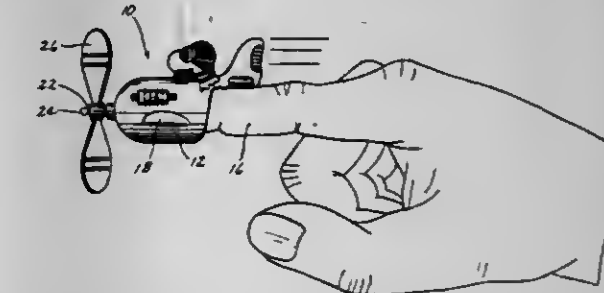
Dennis R. Hill, 5620 Washington Ave., Des Moines, Iowa 50310

Filed Aug. 18, 1980, Ser. No. 178,843

Int. Cl.<sup>3</sup> A63H 33/40

U.S. Cl. 46—53

4 Claims



1. A finger toy for mounting on a single digit, comprising: a body portion in the shape of an airplane having a front nose end and a rear end opening, said rear end opening providing access to an interior body cavity, sized for receiving a digit, and finger gripping means operatively associated with said interior body cavity for secure but releaseable gripping of a digit when it is thrust into said body cavity, and a propeller rotatably mounted on said front nose end for responsive rotary motion when air is rushed past the same.

4,281,473

**LANDSCAPING BED DIVIDER**

Mark A. Emalfarb, 760 Kingsbridge Way, Buffalo Grove, Ill. 60090; Sy Emalfarb, 1621 E. Mission Hills Rd., Apt. 302, Northbrook, Ill. 60062, and Donald J. Reum, 330 Sixth St., P.O. Box B, Albany, Minn. 56307

Filed Jan. 4, 1980, Ser. No. 109,541

Int. Cl.<sup>3</sup> A01G 1/08

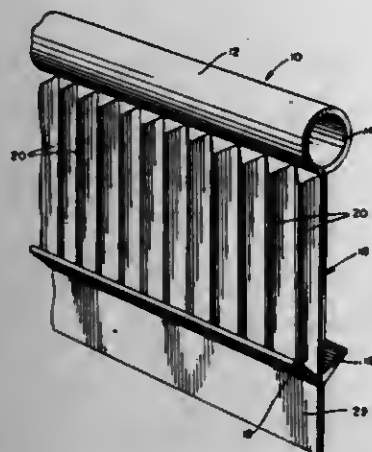
U.S. Cl. 47—33

26 Claims

1. A landscaping bed divider, or the like, for forming a boundary between adjacent landscaping areas and for preventing plant life such as grass or the like from rooting between adjacent areas, comprising: an elongated divider structure including an enlarged upper section, a flange section extending lengthwise along said upper section, and depending downwardly therefrom for insertion in the ground whereby the upper section is located above the top surface of the ground and the flange section forms a barrier between adjacent landscaping areas, means on said flange section to facilitate securing the flange section in the ground and maintaining the same



therein, and means on said flange section distinct from said securing means and between the securing means and said upper



section for reinforcing the flange section in a vertical direction to facilitate inserting the divider structure in the ground.

4,281,474

## FRESH FLOWER HOLDER

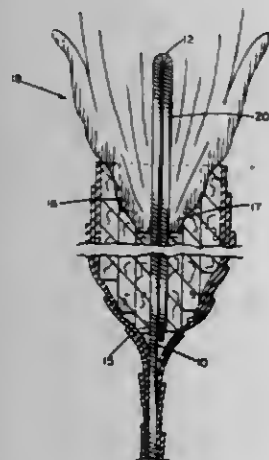
Joseph S. Gallo, 58 Peach St., Walpole, Mass. 02081

Filed Oct. 30, 1980, Ser. No. 202,194

Int. Cl.<sup>3</sup> A01G 5/00

U.S. Cl. 47-58

10 Claims



1. In the method of making a holder for a fresh flower or bud from which the stem has been severed, said holder including a covered wire, a portion of absorbent material formed around an intermediate portion of the covered wire to form a moisture reservoir, and a water-repellent covering formed around said absorbent material and extending down the length of said stem, the improvement comprising the steps of

bending double at one end a length of textile-covered wire, forming a moisture reservoir spaced from the bent double end of said wire by winding around said covered wire a strip of absorbent material while said material is oriented in a nonperpendicular orientation with respect to said wire, so as to thereby form a generally conical well having a stepped interior surface at the flower end of said reservoir and to thereby form a tapered transition having a stepped exterior surface at the other end of said reservoir, and

wrapping an adhesive, water-repellent tape around said absorbent material and wire, so that said tape extends to the edge of or just beyond said absorbent material at the flower end and continues beyond said tapered transition down the length of said wire,

whereby, when said holder is moistened and said flower is impaled on the bent-over end of the wire, the textile-covered wire enters the severed end of said flower without the textile material working off the wire, and the severed end of said flower is securely held within the well formed by the absorbent material.

4,281,475

## APPARATUS FOR OPENING AND CLOSING A DOOR

Vittorio Spadoni-Censi, Av. Los Mangos, Res. Nina (Sotano)

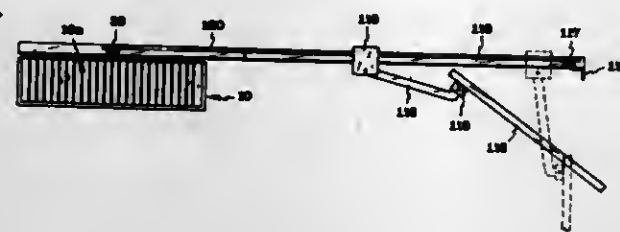
Sector Las Delicias, Sabana Grande, Caracas 105, Venezuela

Filed Jun. 8, 1979, Ser. No. 46,617

Int. Cl.<sup>3</sup> E05F 15/10

U.S. Cl. 49-28

11 Claims



1. A door-opening apparatus comprising:
  - a housing;
  - a reversible motor in said housing having a motor output;
  - a wormgear journaled in said housing;
  - first transmission means for linking said motor output to said wormgear for joint rotation;
  - a rotatable output member connectable to the door and rotatable in one sense to open said door and in the other sense to close said door;
  - second transmission means for linking said wormgear to said output member for joint rotation;
  - clutch means in said second transmission means for decoupling said wormgear from said output member when rotation of said output member is resisted with a torque exceeding a given limit torque;
  - a control disk in said housing;
  - third transmission means for positively mechanically linking said control disk to said output members for rotating said control disk jointly with but at a much slower angular speed than said output member.
- an opening stop and a closing stop mounted at angularly offset locations on said control disk;
- respective opening and closing switches engageable with said opening and closing stops in open and closed positions of said door;
- electrical control means connected to said switches and to said motor for allowing operation of said motor only in a sense to open said door when said closing stop engages said closing switch and for allowing operation of said motor only in a sense to close said door when said opening stop engages said opening switch; and
- safety means for reversing the operation of said motor when said stops are out of engagement with said switches and when displacement of said door is resisted with a force exceeding a given limit force.

4,281,476

## WINDOW ASSEMBLY HAVING A SINGLE BENDABLE GLASS PANEL

Eugene B. LeVan, 15858 El Paseo Dr., Whittier, Calif. 90603

Filed Oct. 26, 1979, Ser. No. 88,335

Int. Cl.<sup>3</sup> E05F 13/00

U.S. Cl. 49-34

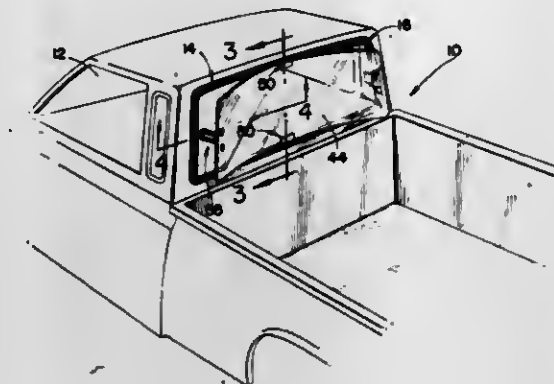
12 Claims

1. A window assembly adapted to be mounted in a vehicle wall, comprising:
  - an annular frame structure adapted to be fixedly mounted within an opening formed in said wall;
  - a single glass panel removably supported in said fixed-frame structure and having oppositely disposed free ends, said glass panel being bendable along the longitudinal length thereof, wherein the length thereof is substantially greater than its width;
  - means for removably mounting said glass panel to said fixed-frame structure, said means being positioned intermediate said free ends thereof, thus allowing said free ends of said

glass panel to be individually bent to an open-wing position;

a sealing means mounted to said fixed frame structure for sealing engagement with said glass panel; and

detachable latching means mounted between said fixed-frame structure and said glass panel, said detachable-latching means being secured to each free end of said glass panel and detachably connected to said fixed-frame struc-



ture, whereby said glass panel can be fully separated from said window assembly; and

wherein said fixed-frame structure comprises a pair of parallel continuous channel members defining an outer channel and an inner channel, said outer channel being adapted to receive said sealing means and said mounting means, and said detachable-latching means being adapted to be removably connected to said inner channel.

4,281,477

## ROLLER-SUPPORTED CLOSURE HAVING A CLOSURE RETAINER

Hiromitsu Kaminaga, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 39,120, May 15, 1979,

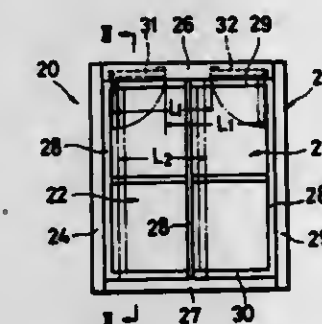
abandoned. This application Sep. 13, 1979, Ser. No. 75,025

Claims priority, application Japan, May 24, 1978, 53-69020

Int. Cl.<sup>3</sup> E05D 13/00

U.S. Cl. 49-453

16 Claims



1. A closure unit for a building wall opening comprising, in combination:

- (a) a frame adapted to be installed in the opening and including a header for being disposed at the upper part of the opening, said header having a horizontal base plate and at least one flange extending downwardly from said base plate;
- (b) a closure member within said frame and having a pair of rollers movably mounting said member on a horizontal rail surface on said frame in an axially trapped manner, said closure member being disposed adjacent to said flange and having a clearance between its upper edge and said base plate enabling the closure member to be raised sufficiently to enable said rollers to be placed on and to be removed from the rail surface;
- (c) a blocking member pivotally supported on said header and pivotable between a first horizontal position and a second vertical position, said blocking member when in

said first position being situated above and spaced from said upper edge of said closure member by a distance that is somewhat less than said clearance, said closure member being thereby confined to upward movement for said distance within said frame and being thereby prevented from being removed from said frame; and

(d) means on said header for releasably retaining said blocking member in said first position, said blocking member, when released from said retaining means, being angularly movable by gravity to said second position in which said blocking member permits said closure member to be lifted well into said clearance for removal from said frame.

4,281,478

## VEHICLE DOOR STRUCTURE

Sumio Inami, Yokohama, Japan, assignor to Nissan Motor Company Limited, Kanagawa, Japan

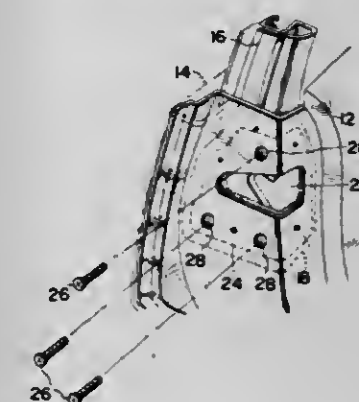
Filed Aug. 9, 1979, Ser. No. 64,982

Claims priority, application Japan, Aug. 29, 1978, 53-118880[U]

Int. Cl.<sup>3</sup> E06B 3/00

U.S. Cl. 49-503

8 Claims



1. A vehicle door structure adapted to be locked to vehicle body by a door lock mechanism, comprising a door inner panel and a sash component terminating at its lower end in a reinforcing section formed therein wherein said reinforcing section has a configuration conforming to a configuration of said inner panel in the area of attachment to the panel to provide a low waist line and thereby a wider field of vision while maintaining sufficient connecting strength between said sash component and said door inner panel when said reinforcing section is secured thereto, a door lock recess formed within said reinforcing section for reception of a door lock; and means for securing said reinforcing section and door lock mechanism to said inner panel with said door lock recess in registration with a corresponding opening in said inner panel.

4,281,479

## INTERNAL DOOR LOCK SECURITY REINFORCEMENT AND METHOD OF ASSEMBLY

Ronald R. Daus, McKeanie, Tenn., assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Mar. 17, 1980, Ser. No. 131,162

Int. Cl.<sup>3</sup> E06B 3/00

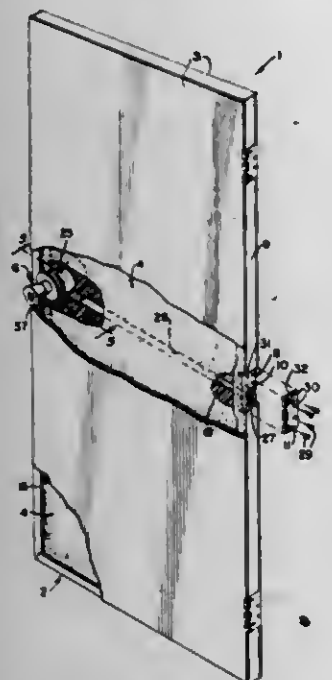
U.S. Cl. 49-503

11 Claims

1. In a hollow door having a core filler bounded by two panels and a peripheral edge channel including opposite lock and hinge channels, said panels and lock channel having a lock provision, a lock set within said lock provision and having a lock case between said two panels, said hinge channel having a hinge provision horizontally aligned with said lock provision, the improvement comprising, said hinge provision including a hinge mount having an opening, said core filler provided with a bore extending from adjacent said lock case to said hinge mount opening, an elongated spanner element within said bore having an inner end juxtaposed said lock case and an outer end flush with said hinge mount, a positioner element respectively



engaging said lock case and spanner element inner end and means overlying said spanner element outer end and fixed



relative said hinge mount to preclude axial displacement toward said hinge channel of said spanner element, positioner element and lock case.

4,281,480

## DOORFRAME CONSTRUCTION

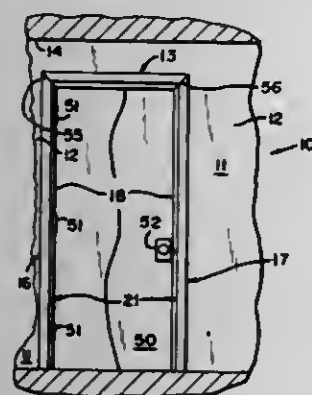
Alan C. Wendt, Barrington, Ill., assignor to U.S. Gypsum Company, Chicago, Ill.

Filed Jun. 21, 1979, Ser. No. 50,833

Int. Cl.<sup>3</sup> E06B 1/04

U.S. Cl. 49—504

16 Claims



## 1. A doorframe assembly comprising in combination:

metal backer jamb members adapted for attachment to opposite sides of a door opening, said members being of substantially the same structural shape having a web portion connecting free legs forming a generally U-shape, said free legs being adapted for fastening on opposite wall face surfaces adjacent a door opening in hollow-wall partition construction, the free legs terminating in lip portions wherein at least one metal backer jamb member has a cutout portion adapted for coaction with a lockset;

metal header member adapted for attachment to an upper horizontal side of a door opening, said member being of substantially the same structural shape as the metal backer jamb members;

vinyl jamb members snap-engaged to the metal backer jamb members, said vinyl jamb members being of substantially the same structural shape having a generally U-shape comprising a body portion covering the web portion of the metal backer jamb members, said body portion comprising a generally centrally located doorstop portion with adjacent walls extending in opposite directions from said doorstop, said body portion having flanges extending

from opposite edges of the walls, the flanges terminating in inturned nib portions snap-engaging said lip portions of the metal backer jamb members whereby said metal backer jamb members are enveloped by said vinyl jamb members;

vinyl header members snap-engaged with the metal header member, said vinyl header member being of substantially the same structural shape as said vinyl jamb members;

hinge plate means for supporting a door, said hinge plate means attached to a wall of said vinyl jamb member positioned within a recess along said wall at the hinge side of a door opening;

a strike plate means for coaction with a door lockset, said strike plate means attached to a wall of a vinyl jamb member at the lock side of a door opening within a recess of said wall, said strike plate means being attached in positional correspondence with a cutout portion of a metal backer jamb member at said lock side of a door opening;

wherein said snap-engaged vinyl jamb members provide a finished and mortised conformation at the hinge side and lock side, and said vinyl header member provides a finished and mortised conformation along said upper horizontal side, wherein said vinyl jamb members and vinyl header members are mitered at their intersection.

4,281,481

## FIRE RESISTANT ALUMINUM DOOR FRAME ASSEMBLY

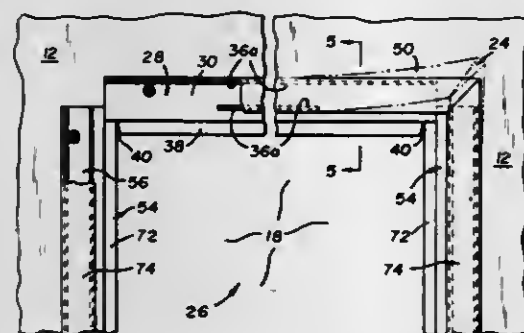
Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Jan. 18, 1980, Ser. No. 113,429

Int. Cl.<sup>3</sup> E06B 1/12

U.S. Cl. 49—504

23 Claims



## 1. A fire resistant aluminum door frame assembly comprising:

a partition wall having a door opening therethrough with stud means adjacent opposing vertical sides of the opening;

a header assembly having expansion cavity means at opposite upper portions of the door opening, a channel-shaped aluminum header member extending between the cavity means and screw attached to said partition wall along the upper horizontal side of the door opening, aluminum snap-engageable trim members concealing said screw attachment, said trim members having upper and lower snap-engageable legs engaging upper and lower snap-engageable portions of said header member, the lower snap-engageable portion terminating short of opposite ends of the header member, said header member including doorstop means projecting downward from, and extending for substantially the full width of, the header member;

opposing jamb assemblies disposed along opposing sides of said door opening and extending downwardly from said header assembly below the expansion cavity means said jamb assembly having channel-shaped aluminum jamb members screw attached to said partition wall, aluminum snap-engageable trim members concealing said screw attachment, said trim members having snap-engageable legs engaging snap-engageable portions of said jamb mem-

bers, said jamb members including doorstop means projecting outward from, and extending for substantially the full height of, the jamb members, and, an engageable longitudinal slot, adjacent said doorstop, having a mortising trim strip engaged therein;

a strike assembly disposed along one jamb assembly at said engageable slot for accommodation of lockset means of a door member, said strike assembly having an exterior aluminum strike plate members with an opening there-through permitting entrance of a bolt from a lockset, and further having an interior steel angle member separately screw attached to said jamb member, said steel angle providing retentative engagement for a bolt from a lockset;

at least one hinge assembly disposed along the opposite jamb assembly at said engageable slot, said hinge assembly having an exterior steel hinge plate screw attached to an interior steel back-up plate, the steel back-up plate being separately screw attached to said jamb member and,

a door member supported within said door opening by said hinge assembly and having a lockset engaging said strike assembly;

whereby upon exposure to extreme heat, the door frame assembly accommodates expansion of the header and jamb assembly without buckling, and said strike and hinge assemblies respectively maintain said door support and lockset engagement of the door member, wherein said door frame assembly attains a fire rating.

4,281,482

## SPINDLE NOSE FOR MACHINE TOOLS

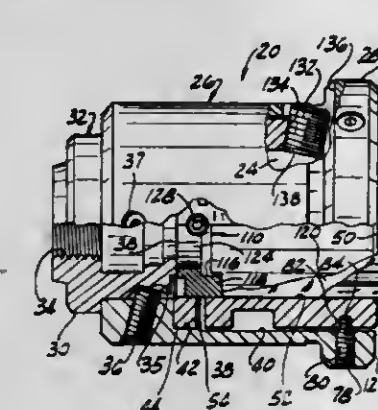
Harold T. Rutter, Kirkwood, Mo., assignor to Sunnen Products Company, St. Louis, Mo.

Filed Oct. 4, 1979, Ser. No. 81,625

Int. Cl.<sup>3</sup> B23B 5/22, 31/00; B24B 41/04

U.S. Cl. 51—168

16 Claims



1. Means to mount a rotatable member having an axis of rotation so that the axis of rotation of the rotatable member is fixed and aligned from end-to-end the rotatable member having a first portion for mounting it and a portion extending therefrom to a free end, said mounting means comprising a rotatable mounting assembly for receiving and supporting the rotatable member for rotation about a fixed and aligned axis, said mounting assembly including a first member having a cylindrical chamber defined by a cylindrical surface therein, a second member mounted in the cylindrical chamber and having a cylindrical outer surface, means including a portion of the cylindrical outer surface adjacent one end thereof engageable with one end of the cylindrical chamber surface locking said one end of said second member in the cylindrical chamber, said second member extending in said chamber from said locked end to a free opposite end adjacent to the opposite end of said chamber, means for mounting the first portion of the rotatable member in the second member, and means on the first member engageable with the second member adjacent to the free opposite end thereof, said means on the first member including means to change the position of said free opposite end thereof relative to the one end thereof, said means including at least two pairs of opposed members threadably positioned in the

first member and adjustable into engagement with the second member to predeterminedly move the free opposite end of the second member relative to the locked end thereof.

4,281,483

## METHOD OF CURVING SUPPORTING SURFACES OF DRIVING BELT ELEMENTS

Alexandre Horowitz, Eindhoven; Rudolf J. G. A. van der Hoorn, Nuenen, and Jozef W. M. Kammeling, Leende, all of Netherlands, assignors to Volvo Car B.V., Helmond, Netherlands

Filed Jan. 26, 1979, Ser. No. 7,470

Claims priority, application Netherlands, Jan. 31, 1978, 7801101

Int. Cl.<sup>3</sup> B24B 1/00, 21/16

U.S. Cl. 51—328

10 Claims



1. A method of making curved supporting surfaces on a consecutive range of transverse elements to be arranged on a driving belt, comprising the steps of curving by one operation both in the running direction of the belt and in a direction at right angles thereto; said curvings are made simultaneously on a ring of transverse elements arranged side by side as a circular row, guiding a grinding band across the joint supporting surfaces on the transverse elements to be curved, forming the radius of curvature of the curve in the running direction of the belt defined by the diameter of the circular row of elements, producing the curving at right angles thereto simultaneously for providing the grinding band with a higher material-removing capacity on the outer sides than in the middle portion and producing continuous curving which is the same for all plates.

4,281,484

## SYSTEM FOR PRECISELY AND ECONOMICALLY ADJUSTING THE RESONANCE FREQUENCY OF ELECTROACOUSTIC TRANSDUCERS

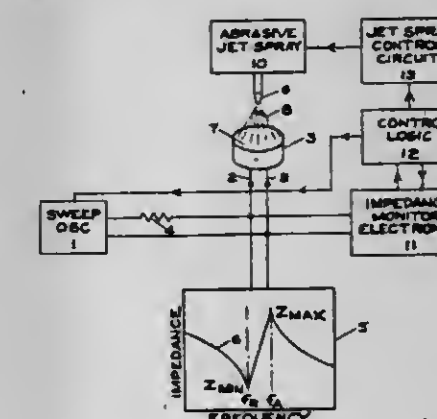
Frank Massa, Cobasset, Mass., assignor to The Stoneleigh Trust, Cobasset, Mass., Fred M. Dellorffano, Jr. & Donald P. Massa, Trustees

Filed Feb. 11, 1980, Ser. No. 120,712

Int. Cl.<sup>3</sup> B24B 49/00

U.S. Cl. 51—413

9 Claims



1. In combination in an apparatus for selectively adjusting the resonance or anti-resonance frequency of an electroacoustic transducer by the removal of material from a specified surface region of the vibatile element portion of said electro-



acoustic transducer, means for propelling a spray of abrasive particles, means for controlling the intensity of said spray, means for controlling the distribution pattern of said abrasive particles being propelled by said spray, means for supporting said transducer vibratile element and said abrasive particles spray propelling means, said support means characterized in that said specified surface portion of said vibratile element is exposed to the spray pattern of said abrasive particles, electronic circuit means for selectively monitoring the resonance or anti-resonance frequency of said electroacoustic vibratile element while said specified surface of said vibratile element is being exposed to said spray of abrasive particles, said electronic circuit means characterized in that it includes control means for terminating the exposure of said specified surface portion of said vibratile element to said spray of abrasive particles when the resonance or anti-resonance frequency of said vibratile element reaches a specified value.

4,281,485

# PORTABLE SUBSTRATE ETCHING APPARATUS AND PROCESS

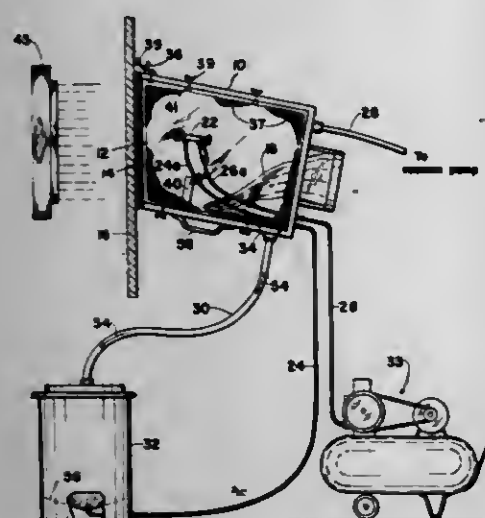
Herman T. Charity, III, 221 Rengstorff Ave., Mountain View, Calif. 94043

Filed Nov. 26, 1979, Ser. No. 97,513

Int. Cl.<sup>3</sup> B24C 3/06, 1/04

U.S. Cl. 51—425

13 Claims



1. Apparatus for etching designs in a substrate, which comprises:

- a transparent casing having an opening to be positioned against the substrate,
- a sealing means around the opening of said casing and which is pressed against the substrate when the opening is positioned against the substrate,
- a manually directable sandblasting nozzle positioned inside said casing,
- means for delivering a stream of compressed air containing sandblasting grit particles to said nozzle,
- a protective screen having openings which allow visual observation of the substrate through said screen and allow grit particles to pass through said screen, said screen preventing ricocheting grit particles from the substrate from contacting said casing directly, said screen being positioned between said sandblasting nozzle and said transparent casing, and
- means for withdrawing air from said transparent casing at a rate at least slightly in excess of the rate of delivery of the compressed air to said nozzle.

4,281,486  
**CANTILEVERED CROSS TRUSS CONSTRUCTION**  
Bertram Zusman, 4112 Montecello Blvd., Youngstown, Ohio 44505

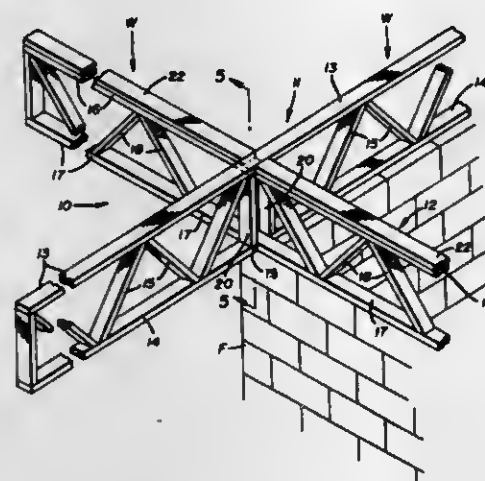
Filed Dec. 14, 1979, Ser. No. 103,613

The portion of the term of this patent subsequent to Mar. 25, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> E04B 1/34

U.S. Cl. 52—73

4 Claims



1. A cantilevered cross truss construction comprising several pairs of crossed horizontally disposed truss members, each truss member including vertically spaced top and bottom chord members and interconnecting web members, one of each pair of truss members being of a greater height than the other, a first one of each of said pairs of truss members having notches in its lower chord with said web members arranged to enable said first one of each of said pairs of truss members to be positioned over a second one of each of said pairs of truss members, the notches in the lower chord of said first one of each of said pairs of truss members being engaged over portions of the lower chord in the second one of each of said pairs of truss members and a spacer on said upper chord of the second one of each of said pairs of truss members whereby the top and bottom surfaces of each of said pairs of truss members lie on common vertically spaced horizontal planes.

4,281,487  
**ENERGY ABSORBING LOAD CARRYING STRUT AND METHOD OF PROVIDING SUCH A STRUT CAPABLE OF WITHSTANDING CYCLICAL LOADS EXCEEDING ITS YIELD STRENGTH**

Karl S. Koller, 2807 Estates Ave., Pinole, Calif. 94564

Filed Aug. 6, 1979, Ser. No. 64,103

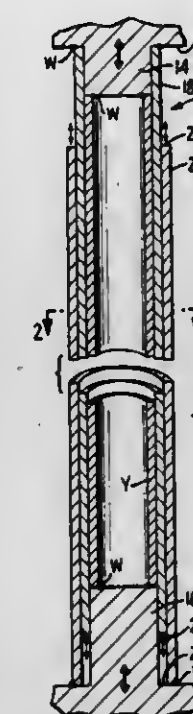
Int. Cl.<sup>3</sup> E04B 1/98; E04C 3/30

U.S. Cl. 52—167

13 Claims

1. An energy absorbing strut capable of withstanding cyclical tension and/or compression loads exceeding its yield strength, said strut comprising: a malleable column, a bolster at either end of the column, said bolsters having a yield strength greater than that of the column and being secured to the ends of the column for imparting tension and compression loads thereto; and bending moment resisting means extending over

the full length of the column and past the ends thereof and into engagement with said bolsters to resist bending moments im-



parted to the column due to eccentric loading thereof and transmit such moments to the bolsters.

4,281,488

# MULTIPANE WINDOW WITH ADJUSTABLE LIGHT ADMISSION

Raymond Resibois, Virton, Belgium, assignor to Para-Press S.A., Luxembourg

Continuation of Ser. No. 760,022, Jan. 17, 1977, abandoned. This application Feb. 7, 1980, Ser. No. 119,425

Claims priority, application Luxembourg, Jan. 20, 1976, 74212

Int. Cl.<sup>3</sup> E06B 3/66

U.S. Cl. 52—173 R

4 Claims



1. A window and shade combination comprising, a first transparent member having a planar portion, a peripheral side wall portion extending at an angle to said planar portion and around the periphery thereof defining a trough shaped space with said planar portion, and a peripheral flange portion extending from said peripheral side wall portion around the periphery thereof and substantially parallel to said planar portion, said peripheral flange portion having a peripheral recess, said planar portion, said peripheral side wall portion and said peripheral flange portion all being transparent, a planar second transparent member peripherally connected to said peripheral flange portion of said first transparent member and disposed within said peripheral recess to close said trough shaped space, and a shade member connected in said trough shaped space and

movable therein, said first transparent member made of a single sheet of transparent material, said peripheral flange portion having a thickness of said sheet of transparent material whereby said combination can be installed into windows adapted to receive a single thickness of transparent material.

4,281,489

# FLOOR SUPPORT FOR GRAIN DRYING AND STORAGE BIN

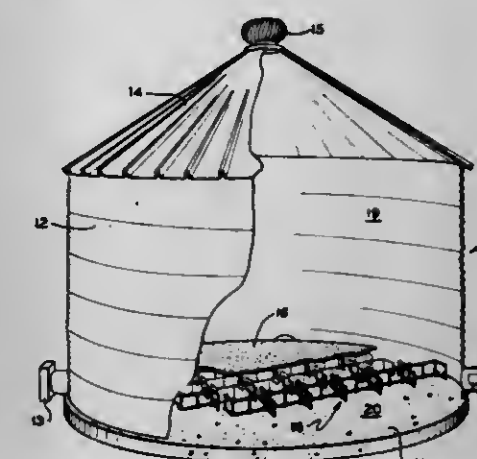
Daniel R. Kallestad, and David F. Barr, both of Blue Earth, Minn., assignors to Continental Agri-Services, Inc., Blue Earth, Minn.

Filed Sep. 24, 1979, Ser. No. 78,294

Int. Cl.<sup>3</sup> E04H 7/00

U.S. Cl. 52—192

12 Claims



1. A floor support for supporting a perforated floor in a grain drying and storage bin comprising a floor support unit having: at least three vertically disposed tubular members, said tubular members being parallel to each other and disposed in a non-linear pattern to enable said floor support unit to be free standing; and

first and second brace members for connecting said tubular members together to form said floor support unit, said first brace members being secured to each of said tubular members near the upper ends thereof in a load bearing position with respect to the perforated floor and said second brace members being secured to each of said tubular members near the lower ends thereof, said first brace member having a generally rectangular cross-section with opposing narrow side surfaces and opposing wide side surfaces, one of said narrow side surfaces being horizontally disposed along the upper ends of said tubular members for load bearing engagement with the perforated floor.

4,281,490  
SILO

Patrick Foody, 280 Main Rd., Hudson, Quebec, Canada

Continuation-in-part of Ser. No. 914,043, Jun. 9, 1978, abandoned. This application Jun. 12, 1979, Ser. No. 47,948

Int. Cl.<sup>3</sup> E04H 7/22

U.S. Cl. 52—236.1

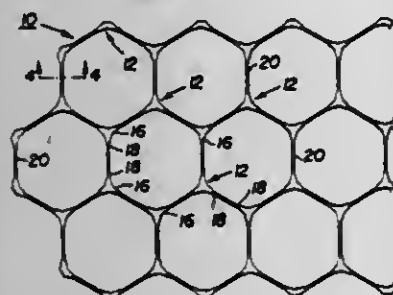
9 Claims

1. A silo having a plurality of vertically arranged cells for the storage of particulate materials, said silo comprising:

- a foundation;
- a plurality of spaced apart rigid vertical columns of reinforced cast-in-place concrete supported by said foundation;
- each column including a plurality of integral load bearing longitudinally extending webs radiating outwardly therefrom and being generally co-extensive therewith each web extending in a direction generally toward a respective one of the webs of the column next adjacent thereto, such that each of the webs of each column is disposed in opposed, horizontally spaced relationship with an associ-



- ated one of the webs of one of the next adjacent columns thereby defining a plurality of web pairs;
- (d) each such web terminating along a vertically disposed marginal edge;
- (e) a plurality of vertically disposed diaphragm panel structures, each of which extends between the vertically disposed marginal edges of a respectively associated one of the web pairs each diaphragm panel structure comprising a plurality of panel sections in superposed spaced relation to one another;
- (f) each diaphragm panel section having a pair of vertically directed marginal sides each of which is connected in abutting relation to an associated one of the vertically disposed marginal edges of the web pairs in such a manner that vertically directed thrust components applied to the diaphragm panel sections are transmitted laterally to the marginal edges of said load bearing webs so that the resulting vertical loadings are transmitted to the silo foundation via the vertical columns;
- (g) the webs of the columns and the associated diaphragm



- panel sections being constructed and arranged to withstand laterally directed forces applied thereto, in use, by the materials stored in the silo;
- (h) each diaphragm panel section including a plurality of laterally extending elements which project from its marginal sides into the associated webs of the reinforced concrete columns, said laterally extending elements being of a size and number such that substantially all of the vertically directed thrust components applied to the panel sections are taken up by the laterally extending elements and transmitted to the load bearing webs of the columns, said laterally extending elements being in load transmitting relation with one another to provide said connection and structural continuity between said webs and the panel sections and to assist in providing said webs with the necessary structural strength to withstand the stresses encountered during use; and
- (i) said columns being located in a pre-selected array such that said columns and the diaphragm panel sections associated therewith define an array of adjacent vertically arranged storage cells.

4,281,491

## MODULAR WALL FRAMING

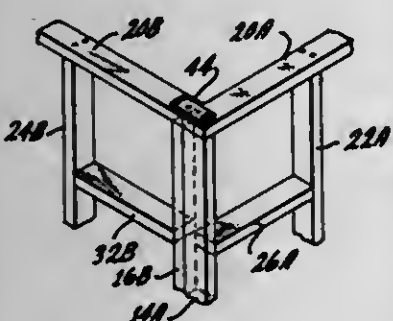
Ernest A. Schoert, 6536 Via Corral, Anaheim, Calif. 92807

Filed Feb. 2, 1979, Ser. No. 9,381

Int. Cl.<sup>3</sup> E04B 2/70

U.S. Cl. 52—281

8 Claims



1. In a wall construction of the type having horizontal sole

plates resting on a foundation or other supporting structure and a series of vertical studs extending from said sole plates, the improvement which comprises:

said wall construction being divided into individual modular sections, each individual modular section including a sole plate, said sole plate capable of being fastened to said foundation or other supporting structure, said sole plate having a first and a second end;

a top plate, said top plate having a first end and a second end; a first vertical end stud, said first vertical end stud having a top end and a bottom end;

a second vertical end stud, said second vertical end stud having a first end and a second end;

said bottom end of said first vertical end stud attaching to said first end of said sole plate such that said first vertical end stud rests on and is perpendicular to said sole plate;

said bottom end of said second vertical end stud attaching to said second end of said sole plate such that said second vertical end stud rests on and is perpendicular to said sole plate and parallel to said first end stud;

said first end of said top plate resting on and attaching to said top end of said first end stud, and said end of said top plate resting on and attaching to said top end of said second stud, said sole plate, said top plate, said first end stud and said second end stud all lying in the same plane and mutually forming a quadrilateral;

an intermediate vertical member,

said intermediate vertical member extending between said top plate and said sole plate and lying in the same plane as and parallel to said first and said second end studs,

a first plurality of horizontal cross braces, each of said first plurality of cross braces extending substantially perpendicular to said first end stud and attached to said first end stud and said intermediate vertical member,

a second plurality of horizontal cross braces, each of said second plurality of cross braces extending substantially perpendicular to said second end stud and attached to said second end stud and said intermediate vertical member, said intermediate vertical member comprising at least one interior vertical stud,

individual modular sections being joined together to form said wall construction and including at least one corner in said wall construction comprising two of said modular sections joined together such that one of said first or second vertical end studs of one of said modular sections forming said corner has one side abutted against the outer surface of one of said first or said second vertical end studs of the other of said modular sections forming said corner, and a portion of each of said plurality of horizontal cross braces which are attached to said abutting vertical end stud of said one of said modular sections forming said corner directly overlays the vertical end stud of said other modular section and (are coplanar with) is in an essentially horizontal alignment with one of the horizontal cross braces of the other modular section forming said corner such that said corner contains only two vertical end studs one from said one of said pair of modular sections and the other from said other of said modular sections forming said corner; and

attaching means for attaching said first end stud, said second end stud and said intermediate vertical member to said sole plate and said top plate, for attaching said cross braces to said first end stud, said second end stud and said intermediate vertical member, and said abutting studs at said corners to each other.

4,281,492

## SECTIONAL CONSTRUCTION STRIP, E.G. FOR THE PRODUCTION OF WINDOW FRAMES

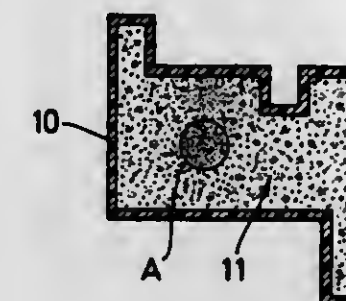
Karl Schock, Schorndorf, and Lothar Frank, Plüderhausen, both of Fed. Rep. of Germany, assignors to Schock &amp; Co., Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 50,129

Int. Cl.<sup>3</sup> E06B 1/20

U.S. Cl. 52—309.9

6 Claims



1. A sectional construction strip comprising a tubular section of thermosetting plastics material, preferably PVC and a fill which comprises a matrix of polymerized methylmethacrylate with hollow silicate spherules as a filler, said methylmethacrylate where in contact with said plastics material being cross linked to create the bond between the material of the fill and the material of the tubular section.

4,281,493

## ATMOSPHERIC RESISTANT DOORS

William V. Pitt, P.O. Box 7622, Waco, Tex. 76710

Continuation of Ser. No. 623,094, Oct. 16, 1975, Pat. No.

4,068,431. This application Apr. 27, 1977, Ser. No. 791,426

Int. Cl.<sup>3</sup> E04B 1/62; E04C 2/26

U.S. Cl. 52—309.11

18 Claims



1. A door comprising a pair of plates and a one-piece, integral, continuous, relatively thin walled stile and rail collar of a generally rectangular exterior outline, said collar being of an inwardly opening generally U-shaped cross-sectional configuration, said collar being defined by a bight and opposite spaced generally parallel faces, each face and bight having interior and exterior surfaces collectively imparting said generally thin walled and U-shaped cross-sectional configuration to said collar, said entire collar including said bight and faces between said interior and exterior surfaces thereof being constructed from an admixture of unfoamed polymeric resin and reinforcing material resistant to corrosive and/or high humidity environments, said exterior surfaces of said bight and faces being devoid of exteriorly exposed reinforcing material, said stile and rail collar being completely cured prior to the securing of said plates thereto whereby warping is prevented, each of said plates being of a generally rectangular outline defined by inner and outer surfaces and a peripheral surface therebetween corresponding in size and shape to the rectangular exterior outline of said collar, each of said plates being constructed from an

admixture of polymeric resin and reinforcing materials resistant to corrosive and/or high humidity environments, each plate outer surface being devoid of exteriorly exposed reinforcing material, polymeric resin material sandwiched between each plate inner surface and the exterior surface of an associated one of said collar faces for adhesively bonding said plates to said collar faces exterior surfaces, said polymeric resin bonding material being resistant to corrosive and/or high humidity environments, and each said plate peripheral surface being defined by terminal edges of each plate disposed generally flush with said collar bight exterior surface.

4,281,494

## CONCEALABLE WALLBOARD FASTENERS AND WALLS ASSEMBLED THEREWITH

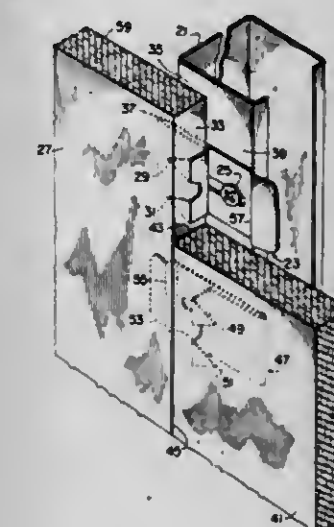
Roger N. Welner, 168 Woodside Ave., Buffalo, N.Y. 14220

Filed Sep. 29, 1978, Ser. No. 947,077

Int. Cl.<sup>3</sup> E04B 1/38

U.S. Cl. 52—483

21 Claims



1. A fastener for use with other such fasteners, to be held to abutting ends of wallboard panels for installation of such panels in abutting linear relationship with each other, with the major visible surfaces of such panels, when installed, being aligned, and for resiliently fastening such panels to framing members, which comprises a first part, suitable for fastening to and against the framing member, a second part, substantially parallel to and overlying a part of said first part and farther from the framing member, when installed, than the first part, an intermediate section, connecting the first and second parts so that they can move relatively, a web extending from the second part and away from the first part and the framing member, an impaling part, extending from the web and in a direction toward the intermediate section, for insertion into an end of a wallboard panel, and spacing means at the first part of the fastener for spacing said first part away from a wallboard panel abutting that panel into which the impaling part is inserted, so as to align major visible surfaces of the adjoining wallboard panels so that they are coplanar.

4,281,495

## INSULATED STRUCTURE

Yun S. Lee, 475 Atkinson Dr. #608, Honolulu, HI. 96814

Filed Nov. 14, 1979, Ser. No. 94,114

Int. Cl.<sup>3</sup> E04C 1/10, 1/30; E04B 1/40

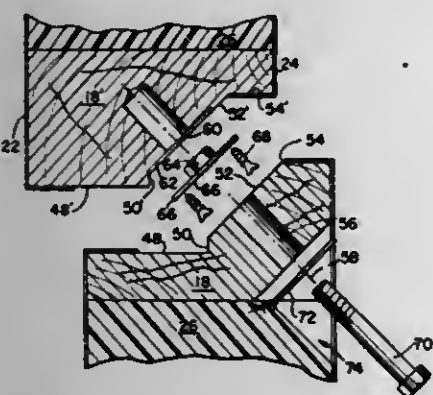
U.S. Cl. 52—584

6 Claims

1. A modular, air-tight insulated structure for enclosing a refrigerated area fabricated from a plurality of roof, floor, and wall modules, each of said wall modules comprising:
- a structurally rigid frame means that includes spaced apart top and bottom members connected to spaced apart side members;
- a first planar sheathing material on one side of said frame and



a second planar sheathing material on the opposite side of said frame to define an enclosed interior space;  
insulating media located within the interior space defined by said sheathing material and said frame;  
each of said wall modules connected to its adjacent wall module through a joint interface that includes:  
a first sealing surface joining the exterior side of said module and aligned substantially perpendicular to the plane of said module;  
a second sealing surface joining said first sealing surface and aligned substantially parallel to the plane of said module;  
a third sealing surface joining said second sealing surface and aligned at an oblique angle relative to the plane of said module;  
a fourth sealing surface joining said third sealing surface and aligned substantially perpendicular to the plane of said module and substantially parallel to said first sealing surface;



said first and second planar sheathing material each including marginal edge portions that are bent out of the plane of the module with said edge portions substantially perpendicular to the plane of the module, the edge portions of said first sheaths overlying said first sealing surfaces and the edge portions of said second sheaths overlying said fourth sealing surfaces; and

fastener means extending along an axis substantially normal to said third sealing surface to apply a direct sealing compression force to said third sealing surfaces to effect direct surface-to-surface contact therebetween, a portion of said direct sealing compression force resolved into sealing forces on the remaining parts of said first, second, and fourth sealing surfaces, the sealing forces on said first and fourth sealing surfaces placing said edges of said first and second sheaths under compression therebetween.

4,281,496

#### METHOD OF FORMING CONCRETE FLOORS AND PRODUCT OF THE METHOD

Jan O. Danielsson, 50 Almenar Dr., Greenbrae, Calif. 94904  
Filed Jul. 6, 1979, Ser. No. 55,174  
Int. Cl.<sup>3</sup> E04B 5/32

U.S. Cl. 52—612

13 Claims

1. In a method for forming a concrete floor, the steps comprising depositing wet concrete mix and roughly leveling the concrete and then floating the surface of the concrete to produce a more level surface, the step of depositing the concrete being performed according to a predetermined pattern selected to form the floor as substantially a monolithic unit, the combination of the steps of depositing, rough leveling and floating the concrete being selected in order to effectively densify the concrete and produce a thin upper layer formed substantially of water, sand and cement, allowing the concrete to stand for a period of at least approximately 24 hours and then removing a thin surface portion from the concrete with a grinder in order to produce a flat, porous surface having a sanded quality.

12. In a method for forming a concrete floor in a large unobstructed area, the steps comprising simultaneously depositing, rough leveling and densifying wet concrete mix with a

vibrating screed supported by forms extending along opposite sides of the floor area in order to produce an upper layer of wet concrete with a thin upper layer being formed substantially of water, sand and cement, the simultaneous step of depositing, rough leveling and densifying the concrete being continued across the entire expanse of the area in order to form the concrete floor as a monolithic unit, allowing the concrete to stand



until bleed water has risen to the surface and the concrete is sufficiently set up to support the weight of an operator, then floating the surface of the concrete by means of a power float in order to permit working of concrete having reduced plasticity, allowing the concrete to stand for an additional period of at least approximately 24 hours and then removing a thin surface portion from the concrete with a grinder in order to produce a flat, porous surface having a sanded quality.

4,281,497

#### COMPOUND BEAM

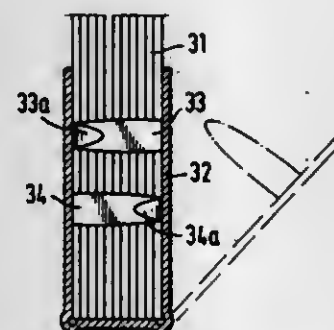
Pekka Luotonen, and Yrjö Tolonen, both of Espoo, Finland, assignors to Valtion Teknillinen Tutkimuskeskus, Finland  
Filed May 23, 1979, Ser. No. 41,736

Claims priority, application Finland, Jun. 5, 1978, 781775; Jan. 10, 1979, 790065; Feb. 7, 1979, 790396

Int. Cl.<sup>3</sup> E04C 3/30

U.S. Cl. 52—730

6 Claims



1. A compound beam comprising an elongated non-metallic web member having oppositely disposed side surfaces and an end surface, a substantially U-shaped metallic flange member having leg portions abutting against a part of said oppositely disposed side surfaces of said web member and an end portion connecting said leg portions abutting against said end surface of said web member, each of said leg portions having a tooth portion formed as an integral part thereof extending transversely of said leg portions and penetrating through a substantial portion of the thickness of said web member toward the oppositely disposed leg portion to fixedly attach said flange

member and said web member, each tooth portion having a length dimension greater than the distance between the opposite side surfaces of said web member and each of said tooth portions having a tip clinched back toward the respective leg portion to which it is attached.

4,281,498

#### SUSPENDED WOODBEAM CEILING

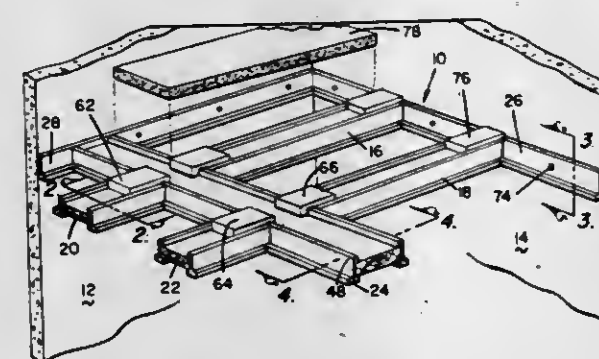
Gilbert G. Kern, 515 N. Victory Blvd., Burbank, Calif. 91502

Filed Apr. 10, 1979, Ser. No. 28,904

Int. Cl.<sup>3</sup> E04B 5/52

U.S. Cl. 52—780

10 Claims U.S. Cl. 53—211



1. A unitary beam for a suspended beam ceiling structure, said beam comprising:

first and second beam side members each of said beam side members being L-shaped, said beam side members each having an upwardly facing lip and having a downwardly directed face, and said faces lying in a plane;

a beam center between said beam side members and attached to said beam side members and maintaining said beam side members in a spaced relationship, said beam center having a downwardly directed beam center being spaced above said plane of said faces substantially the same distance as said upwardly facing lips of said beam side members are spaced above said plane;

said beam center being made of wood and said beam side members each being rabbeted with said beam center extending into said rabbets and being secured to both of said beam side members within said rabbets whereby said beam is a unitary structure so that said lips are maintained in the same plane.

4,281,499

#### BOX PACKING MACHINE AND PROCESS

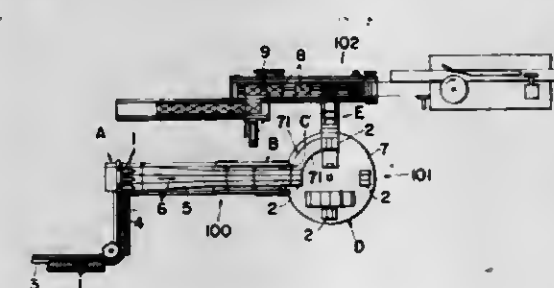
Solchi Koshishiba, Kanazawa, and Gosei Okazaki, Komatsu, both of Japan, assignors to Shibuya Kogyo Co., Ltd., Japan

Filed May 30, 1979, Ser. No. 43,723

Int. Cl.<sup>3</sup> B65B 35/50, 61/20

U.S. Cl. 53—445

26 Claims



1. A box packing process for packing a box with a group of containers and at least one separator sandwiched between at least two of said containers, comprising a step of inserting at least one separator into a separator holding means mounted in an intermediate box, a step of loading the intermediate box on opposing sides of the separator with containers which are transported in a predetermined number of lines, and a step of

transferring the containers and separators thus loaded from the intermediate box into a shipping box as a unit.

4,281,500

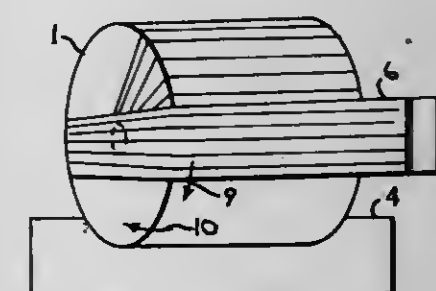
#### WRAPPING APPARATUS AND METHOD

George P. Mueller, Neenah; Urban A. Urban, Menasha; Kermit J. Muenster, Appleton, and Donald A. Ludwig, Hortonville, all of Wis., assignors to Wisconsin Tissue Mills Inc., Menasha, Wis.

Filed Jul. 13, 1979, Ser. No. 57,289

Int. Cl.<sup>3</sup> B65B 11/04

2 Claims



1. Apparatus for completely covering a cylindrical object having a longitudinal axis, a curved peripheral surface and spaced end surfaces with a web of wrapping material comprising, in combination:

turntable means adapted for rotation in a generally horizontal plane;

rotatable drive roll means on the turntable means and adapted to drivingly engage the curved peripheral surface of the cylindrical object;

idler roll means on the turntable and spaced from the drive roll means to form a cradle therebetween within which a cylindrical object to be wrapped is carried;

means pivotally supporting the idler roll for movement between a lowered first position and a raised second position;

means for supplying a web of wrapping material to an end surface of the cylindrical object;

means for simultaneously rotating the turntable means and the drive roll means to rotate the cylindrical object in a horizontal plane while simultaneously rotating it about its longitudinal axis and thereby cover the curved peripheral surface and the end surfaces of the cylindrical object with a series of spirally-wound overlapping rows of wrapping material;

means to pivot the idler roll to its raised second position to eject a wrapped cylindrical object from the apparatus

the means for simultaneously rotating the turntable and the drive roll means including a reversible motor arranged to rotate the turntable means and the drive roll means when rotating in a first direction and arranged to drive the means to pivot said idler roll to its raised second position when rotating in a second direction opposite to the first direction.

4,281,501

#### FINGER MOUNTING APPARATUS FOR LOADING GRID

Adam Z. Rydell, 3742 Tree Bark Trail, Decatur, Ga. 30034

Filed Sep. 17, 1979, Ser. No. 76,345

Int. Cl.<sup>3</sup> B65B 39/02, 5/08

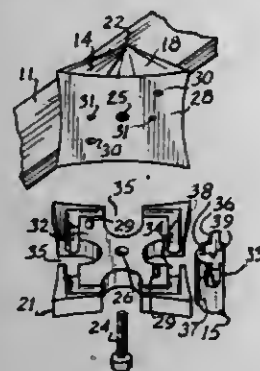
U.S. Cl. 53—248

12 Claims

1. In a case loading grid, including a plurality of bars parallel to the motion of containers to be loaded, and a plurality of fingers carried by said bars for directing said containers into discrete sections of a case to be loaded, the improvement comprising a block fixed to one of said bars and having a bottom face, a plate releasably carried by said block generally contiguously with said bottom face, said plate having a config-



uration generally like the configuration of said bottom face, said plate defining finger receiving means for selectively receiving at least one finger of said plurality of fingers and for holding said finger adjacent to said block, said block being generally pyramidal in shape and having four sides, said block defining a bar receiving slot diagonally thereof so that two sides of said block are disposed on each side of said bar, means

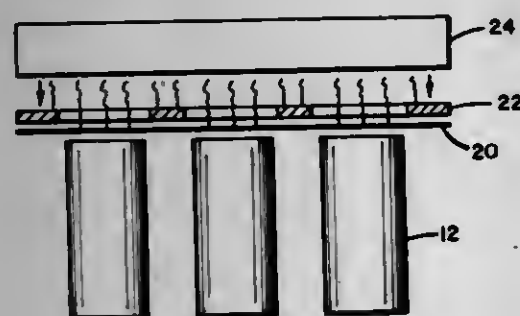


for retaining said bar within said bar receiving slot, the apex of said block merging into said bar, the arrangement being such that containers that engage said block will be directed to one face of said block for aligning such container with one of said discrete sections of said case, and said fingers are beneath said block within said plate for directing said container into said one of said discrete sections after said container is aligned with said one of said discrete sections.

#### 4,281,502 CLEAN PACK CARRIER

Lorne Bonkowski, 8302 Encino Ave., Stockton, Calif. 95209  
Filed Mar. 8, 1979, Ser. No. 18,505  
Int. Cl.<sup>3</sup> B65B 21/00, 27/04  
U.S. Cl. 53—398

5 Claims



1. A method of forming a carrier for at least one article, said at least one article having a top surface and a sidewall surface comprising the steps of:

- positioning a sheet of material which is stretchable when softened but otherwise relatively rigid adjacent the top surfaces of said at least one article;
- softening only the portion of said sheet corresponding to said top surface, leaving a non-softened portion of said sheet around said softened portion;
- forcing the non-softened portion of said sheet around said sidewall surface sufficiently to cause the softened portion of the sheet to stretch and conform about said top surface and a portion of said sidewall surface of said at least one article thereby forming a closely fitting carrier;
- said sheet being made of a thermosensitive plastic, said sheet being positioned adjacent said top surface;
- said softening step including a step of heating a portion of said sheet which is to be located adjacent said top surface;
- said softening step further including the step of positioning an insulating plate over said sheet prior to said heating step, said insulating plate including an opening corresponding to each said top surface that exposes said portion of said sheet that comprises an area slightly larger than said top surface; and heating each said portion of the sheet

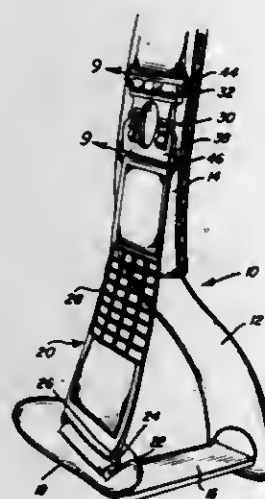
which is exposed through an opening in said insulating plate; and  
said forcing step including the step of moving said insulating plate towards and about each said top surface, thereby forcing the unheated portion of said sheet about said sidewall surface and drawing the heated and softened portion of the sheet about said top and sidewall surfaces to cover said top surface and grip said sidewall, the plate being moved sufficiently about said sidewall that the sheet firmly grips said sidewall to securely lock it to the sheet.

#### 4,281,503 SAFETY STIRRUP

Kenneth D. Teel, Rte. 2, Box 48, Melrose, N. Mex. 88124  
Filed Sep. 19, 1979, Ser. No. 76,928  
Int. Cl.<sup>3</sup> B68C 3/02

U.S. Cl. 54—49

6 Claims



6. A stirrup having a side piece including an upper end and a lower end, said upper end being connected to a stirrup strap, said lower end including a tread extending laterally from said side piece, the tread terminating outwardly in an unsupported free end, a retaining strap releasably connected at one end to said free end, a safety link releasably anchoring the other end of said retaining strap proximate to the upper end of said side piece, said safety link including a projecting member and an apertured receiving member for receiving said projecting member, said projecting member including a plurality of transverse ribs, said apertured receiving member containing a plurality of transverse recesses for cooperation with said ribs, one of said members being connected proximately to said upper end of said side piece and the other said members being connected to said other end of said retaining strap.

#### 4,281,504 AUTOMATIC SAFETY CLUTCH DEVICE FOR FLEXIBLE DRIVES

Brian Moore, Stony Stratford, England, assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jul. 9, 1979, Ser. No. 55,720

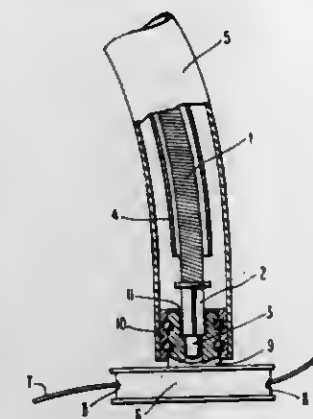
Int. Cl.<sup>3</sup> A01D 75/18; F16D 3/56

U.S. Cl. 56—10.3

7 Claims

1. A flexible drive and automatic safety clutch assembly, said assembly comprising a flexible drive shaft connected at one end to a rotary power source and at the other end to a driven member for the transmission thereto of rotational torque from said power source, and means for automatically disconnecting said power source from said driven member in the event of an overload, said disconnection means comprising a socket member mounted for rotation by said flexible drive shaft, a socket axially formed in said socket member, said socket having a non-circular cross-section and axially engaging therein a complementary male member driven by said shaft, the arrangement being such that upon said overload, reduction in the overall

length of said flexible shaft caused by tendency of said shaft to curl up on itself is effective to withdraw said male member axially from said socket thereby to effect said disconnection, and



other means for automatically guiding said male member back into said socket upon release of said overload thereby to re-establish the rotary drive connection therebetween.

#### 4,281,505 FILAMENT MOWER WITH FILAMENT ADVANCING MECHANISM

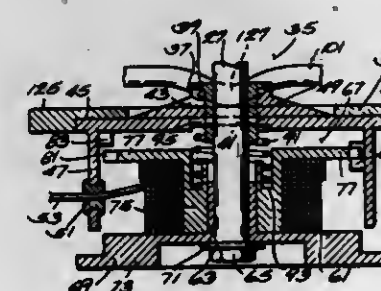
William Fuelling, Jr., Galesburg, and Carl E. Seyerle, Abingdon, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 9, 1980, Ser. No. 157,469

Int. Cl.<sup>3</sup> A01D 55/18; A01G 3/06

U.S. Cl. 56—12.7

17 Claims



1. A filament mower comprising a wheel supported housing having an upper deck, a prime mover mounted on said upper deck and including an output shaft extending through said upper deck into said housing, a string trimmer head fixed to said output shaft within said housing and including a spool carried on said output shaft for rotary movement relative thereto, a spool cover carried on said output shaft for common rotation therewith, one of said spool and said spool cover being movable axially of said output shaft between an upper position and a lower position, means for limiting movement outwardly of said output shaft of the other of said spool and said spool cover, means for biasing said spool and said spool cover away from each other and means on said spool and on said spool cover for interengaging said spool cover and said spool for common rotation when said one of said spool and said spool cover is in the upper position and in the lower position and for permitting limited relative rotation between said spool and said spool cover during movement of said one of said spool and said spool cover between said upper and lower positions, a lever having an end, means mounting said lever on said housing for pivotal movement between a depressed position engaged with said head so as to displace said one of said spool and said spool cover toward the other against the action of said biasing means, and a raised position out of contact with said head and permitting movement apart of said spool and said spool cover under the influence of said biasing means so as to locate said one of said spool and said spool cover in the upper position, said lever mounting means locating said end rearwardly of said

head and in position for engagement by the foot of an operator so as to locate said lever in the depressed position, and means biasing said lever to the raised position.

#### 4,281,506 CONVERTIBLE FORAGE-HANDLING MACHINE

Albert Watron, Schwenheim, France, assignor to Belrecolt S.A., Marmoutier, France

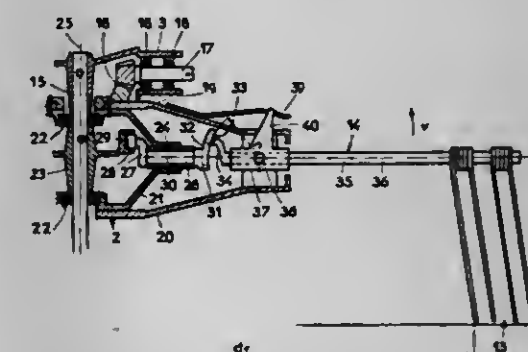
Filed Mar. 4, 1980, Ser. No. 127,231

Claims priority, application France, Mar. 9, 1979, 79 06913

Int. Cl.<sup>3</sup> A01D 79/00

U.S. Cl. 56—370

15 Claims



1. A convertible forage-handling machine of the type capable of operating in tedding or in windrowing position, comprising a support; at least one carrier mounted on said support for rotation about an axis; a plurality of arms mounted on said carrier for rotation therewith and extending outwardly of said axis, each of said arms including two elongated parts each mounted on said carrier at least for swivelling about its longitudinal axis; means for imparting swivelling motion to one of said parts about its longitudinal axis, including a cam member stationarily mounted on said support and having a cam track, and a cam follower rigidly connected to said one part of each of said arms and tracing said cam track as said carrier rotates about said axis thereof; a plurality of forage-engaging elements attached to the other of said parts of each of said arms; means for mounting said other part of each of said arms on said carrier for displacement between a retracted position corresponding to said windrowing position, in which said forage-engaging elements are spaced a first distance from said axis of said carrier, and an extended position corresponding to said tedding position, in which said forage-engaging elements are spaced a greater second distance from said axis of said carrier; such that said other part extends along a common plane parallel to said axis of said carrier with said one part both in said extended and said retracted position thereof; and cooperating motion-transmitting elements rigid with said parts of each of said arms and in constant contact with one another in and intermediate said retracted and extended positions of said other part of each of said arms and operative for transmitting the swivelling motion of said one part to said other part only in said retracted position of said other part to lift the forage-engaging elements thereof out of engagement with the previously gathered forage at one zone of the orbiting trajectory of said forage-engaging elements about said axis of said carrier and to substantially lower the forage-engaging elements in contact with additional forage at another zone of said trajectory.



4,281,507

**FRICTIONAL OPEN-END SPINNING METHOD AND APPARATUS**

Stanislav Didek; Ludvik Fajt; Jaroslav Štorek; Jiří Andres; František Čada, and Marie Marková, all of Ústí nad Orlicí, Czechoslovakia, assignors to Vyzkumový ústav bavlnářský, Ústí nad Orlicí, Czechoslovakia

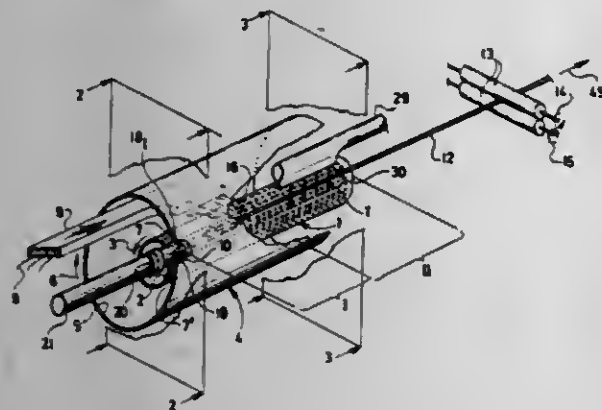
Filed May 17, 1979, Ser. No. 40,132

Claims priority, application Czechoslovakia, May 17, 1978, 3174-78

Int. Cl.<sup>3</sup> D01H 1/12, 7/882

U.S. Cl. 57—58.89

32 Claims



1. In a method of frictional spinning based upon the open-end principle, comprising depositing continuously supplied separated fibers onto a frictional carrying surface provided on a revolving carrier and designed for conveying the fibers to the mouth of a wedge-like gap defined by said frictional carrying surface and a second frictional surface provided on a second revolving carrier moving in said wedge-like gap in the opposite direction relative to the frictional carrying surface, twisting the fibers to yarn in the wedge-like gap due to the contact with said frictional surfaces, and withdrawing the yarn from said gap in a lateral direction while preventing twist propagation, the improvement wherein the wedge-like gap has a yarn preforming region followed by a yarn finishing region, the fibers supplied by the frictional carrying surface into the wedge-like gap are transferred, in the yarn preforming region, immediately downstream of the mouth of the wedge-like gap, by the action of a first force, onto said second frictional surface, from which the fibers after having left the wedge-like gap, are transferred again by the action of a second force to said frictional carrying surface upstream of the mouth of said wedge-like gap, whereby the fibers are positively caused to circulate in the yarn preforming region.

4,281,508

**YARN BRAKE MECHANISM**

Johannes Frentzel-Beyme, Moench-Gladbach, Fed. Rep. of Germany, assignor to Palltex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Apr. 2, 1980, Ser. No. 136,419

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914656

Int. Cl.<sup>3</sup> D01H 13/10, 7/86; B65H 59/22; D01H 15/00

U.S. Cl. 57—279

10 Claims

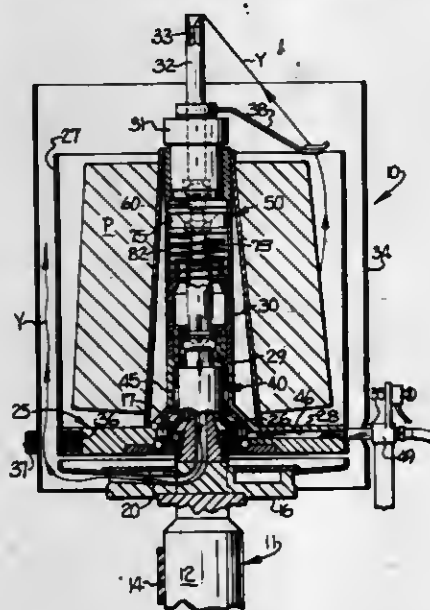
1. A yarn brake for applying tension to a moving yarn comprising:

- a brake housing having a vertically-extending passageway therethrough for receiving a yarn moving in a predetermined direction;
- a braking body movably positioned within said passageway of said brake housing and being of predetermined dimensions allowing the passage of the yarn through said passageway and having upper and lower braking surfaces thereon;
- a stationary member positioned in an upper portion of said passageway of said brake housing above said braking body and having a vertically-extending aperture therethrough and a downwardly-facing braking surface around said

aperture for passage of the yarn therethrough and for cooperating and being engageable with said upper braking surface of said braking body;

a movable member positioned for longitudinal axial movement in a lower portion of said passageway of said brake housing below said braking body and having a vertically-extending aperture therethrough and an upwardly-facing braking surface around said aperture for passage of the yarn therethrough and for cooperating and being engageable with said lower braking surface of said braking body; means operatively associated with said movable member for biasing said movable member upwardly toward said stationary member and into a position in which said braking surfaces of said braking body are in braking engagement with said braking surfaces of said stationary and movable members to apply tension to the yarn and for allowing downward movement of said movable member under the influence of a displacing force greater than the biasing force for separation of said braking body from said stationary and movable members for threading of yarn through said yarn brake; and

intercepting means mounted in said passageway of said brake housing and being constructed and positioned for receiving and holding said braking body, upon downward movement of said movable member during yarn threading, in a position in which said braking surfaces of said



braking body and said stationary and movable members are out of engagement, but remain substantially aligned, for proper return to braking engagement after the yarn threading and upon upward movement of said movable member.

2. In a spindle assembly of a textile yarn processing machine, especially a two-for-one twister, having a hollow spindle defining an axial yarn passageway extending therethrough and including pneumatic threading mechanisms for selectively creating a pneumatic flow in a predetermined direction through said yarn passageway to automatically thread a yarn therethrough during a thread-up operation; the combination therewith of an improved yarn brake for applying tension to a moving yarn passing through said yarn passageway during normal operation and to facilitate pneumatic threading of the yarn through said passageway during a threading-up operation, said yarn brake comprising

- a braking body movably positioned within said passageway of said spindle and being of predetermined dimensions allowing the passage of the yarn through said passageway and having upper and lower braking surfaces thereon;
- a stationary member positioned in said passageway of said spindle above said braking body and having a vertically-extending aperture therethrough and a downwardly-facing braking surface around said aperture for passage of the

4,281,510

**GAS TURBINE PLANT**

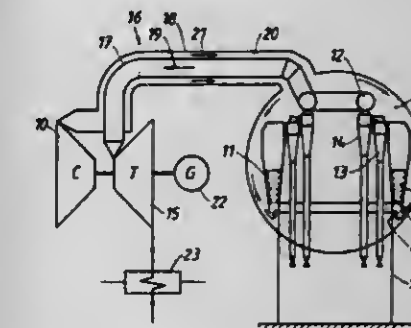
Pebr Börjesgard; Renzo Cetrelli, both of Finspong; Anders Kullendorff, Aby; Stur Schön, and Jan Wikner, both of Finspong, all of Sweden, assignors to Stal-Laval Turbin AB, Sweden

Filed Sep. 11, 1979, Ser. No. 74,462

Claims priority, application Sweden, Sep. 12, 1978, 7809557 Int. Cl.<sup>3</sup> F02C 7/20, 3/26

U.S. Cl. 60—39.32

11 Claims



1. A gas turbine plant, comprising:
  - a combustion chamber having an inlet and an outlet;
  - a gas turbine having an inlet spaced from said combustion chamber;
  - a compressor having an outlet for supplying compressed combustion air to said combustion chamber;
  - an inner conduit arranged between said outlet of said combustion chamber and said inlet of said turbine and provided with an internal thermal insulation;
  - a casing tube arranged inside and spaced from said inner conduit, thus forming an annular gap between said casing tube and said inner conduit; and
  - an outer conduit, coaxially arranged around said inner conduit between said outlet of said compressor and said inlet of said combustion chamber for conveying air through a gap defined between said inner and outer conduits.

4,281,511

**HYDRO-FLOW SUPRA-TURBINE ENGINE**

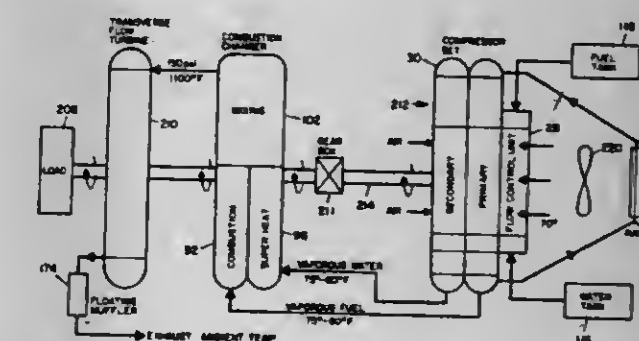
Abas B. Neale, 3172 Ellington Dr., Hollywood, Calif. 90068

Filed Feb. 27, 1980, Ser. No. 124,982

Int. Cl.<sup>3</sup> F02C 3/30

U.S. Cl. 60—39.53

52 Claims



1. A high pressure, low operating temperature, high efficiency turbine engine system comprising:
  - dual input flow control apparatus including means for controlling an input flow of fuel, and for separately and concurrently controlling a flow of input water;
  - dual compressor and vaporization apparatus including a primary air compressor, and means for feeding fuel from said flow control apparatus into said primary air compressor for complete vaporization as the air is compressed; and a secondary air compressor in heat transferring juxtaposition with said first air compressor, and means for feeding water from said flow control apparatus into said secondary compressor for complete vaporization of said water vapor as the air is compressed and heat is absorbed from said primary compressor; and means for separately pro-

4,281,509

**FUEL CONTROL SYSTEM**

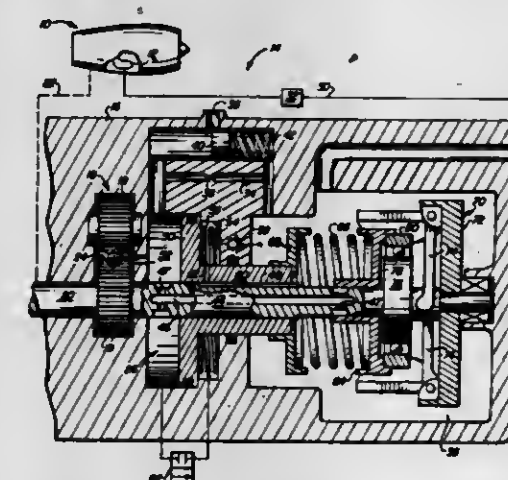
Charles H. La Grone, Phoenix, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 743,387, Nov. 19, 1976, abandoned. This application Jan. 31, 1979, Ser. No. 8,026

Int. Cl.<sup>3</sup> F02C 7/26, 9/32

U.S. Cl. 60—39.02

13 Claims



3. In a method for controlling fuel flow to a gas turbine engine during a start-up period encompassing acceleration of the engine to approximately its rated speed, wherein the improvement comprises the step of:

adjusting fuel flow to the engine in relation to the cumulative number of revolutions of the engine during said start-up period.



viding compressed air containing vaporized fuel, and compressed air containing water vapor from said dual compressor apparatus;

- a three chamber combustion assembly having a combustion chamber for burning said vaporized fuel and its associated compressed air, said combustion chamber having an associated superheating chamber in heat transferring relationship with said combustion chamber, and means for supplying the compressed air and water vapor from said dual compressor to said superheating chamber to superheat the water vapor, and means including a mixing chamber for receiving the output from the combustion chamber following initial burning, and the superheated steam and compressed air from said superheating chamber, and thoroughly commingling them;
- a low temperature, low speed turbine; and
- means for supplying the mixed output from said combustion assembly to drive said turbine.

4,281,512

# APPARATUS FOR REDUCING NON-GASEOUS POLLUTANTS

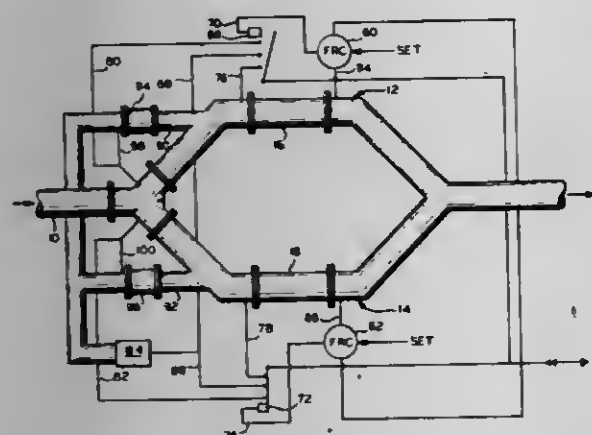
King L. Mills, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 30, 1979, Ser. No. 89,419

Int. Cl.<sup>3</sup> F01H 3/02

U.S. Cl. 60—311

8 Claims



1. Apparatus for removing combustible, non-gaseous pollutants from gaseous combustion products containing the same, comprising:

- (a) transmission line means adapted to receive said gaseous combustion products from a source of said gaseous combustion products and pass the same through said transmission line means;
- (b) first branch line means and second branch line means in communication with said transmission line means and adapted to receive said gaseous combustion products from said transmission line means and pass the same through said first and second branch line means, each of said first and second branch line means, including:
- (1) filter means adapted to filter at least a significant amount of said combustible, non-gaseous pollutants from said gaseous combustion products;
  - (2) normally-closed, combustion-supporting gas supply line means in communication with said branch line means and adapted to supply combustion supporting gas to said filter means;
  - (3) ignition means adjacent said filter means and adapted to ignite and burn combustible, non-gaseous pollutants collected in said filter means; and
  - (4) sensing means in said branch line means downstream of said filter means and adapted to sense one of the pressure or the flow rate of gaseous combustion products passing through said branch line means;
- (c) valve means adapted to simultaneously close one of said first and second branch line means and prevent the passage of said gaseous combustion products therethrough

and open the other of said first and second branch line means and pass said gaseous combustion products therethrough; and

- (d) control means operatively connecting said sensing means in said first and second branch line means to said combustion supporting gas supply line means in communication with said first and second branch line means, said ignition means in said first and second branch line means and said valve means and adapted to close one of said first and second branch line means, open said combustion supporting gas supply line means in communication with said closed branch line means to supply combustion supporting gas thereto, actuate said ignition means in said closed branch line means to ignite and burn combustible, non-gaseous pollutants collected in the filter means in said closed branch line means and open the other of said first and second branch line means and pass gaseous combustion products therethrough, when the pressure or flow rate, respectively, sensed by said sensing means in the one of said first and second branch line means through which gaseous combustion products reaches a predetermined value.

4,281,513

# FIELD EFFECT MEMORY ALLOY HEAT ENGINE

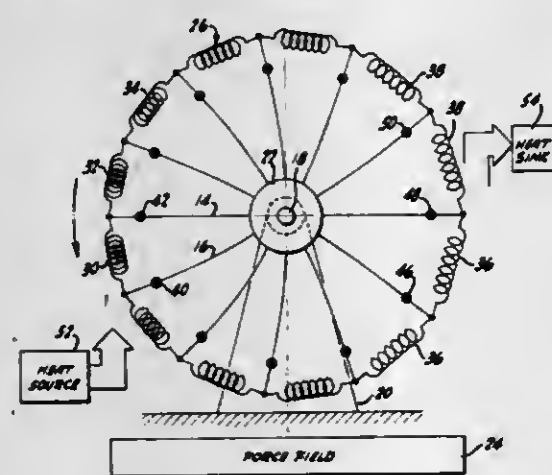
Alfred D. Johnson, and Paul F. Kirkpatrick, both of 5383 Bancroft Ave., Oakland, Calif. 94601

Filed Apr. 6, 1979, Ser. No. 27,737

Int. Cl.<sup>3</sup> F03G 7/06

U.S. Cl. 60—527

12 Claims



1. A memory alloy heat engine for converting a source of heat into mechanical work, comprising the combination of a wheel mounted for rotation about an axis, the wheel including a plurality of spokes mounted to extend radially from the axis to resiliently displace in the plane of rotation of the wheel, field effect elements carried on the distal ends of the spokes with the elements coating with a force field located remote from the wheel axis to create a force on each of the elements, shape memory alloy means connected to the distal ends of the spokes, said alloy means deforming between a memory shape and a trained shape when heated to or cooled from, respectively, the phase change transition temperature of the alloy means, said alloy means when heated above said transition temperature causing the spokes associated therewith to displace in one directional sense about the axis and when cooled below said transition temperature causing the spokes associated therewith to displace in an opposite rotational sense about the axis, said displacement of the spokes causing an increase of concentration of the field effect elements on one side of the wheel and a decrease of concentration of the field effect elements on an opposite side of the wheel to create asymmetry in the field force acting on the elements to produce a resultant force which is applied as a net torque on the wheel about the axis.

4,281,514

# APPARATUS FOR THE PRODUCTION OF ENERGY AND METHOD FOR UTILIZING THE PRESSURE AND/OR TEMPERATURE CONDITIONS IN DEEP WATERS

Paul K. Egerer, Schlüsselgasse 9, A 1040 Wien, Austria

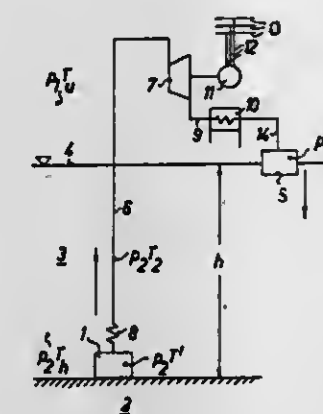
Filed Dec. 28, 1978, Ser. No. 974,073

Claims priority, application Austria, Dec. 28, 1977, 9376/77; Oct. 16, 1978, 7430/78

Int. Cl.<sup>3</sup> F03G 7/02, 7/04

U.S. Cl. 60—641 R

19 Claims



1. A method for the production of energy utilizing either the pressure condition or the temperature condition environment characteristics of deep water or both, particularly the sea, comprising:

- positioning a first tank outside the water for use as a collection tank;
- connecting a second tank to said first tank through a connecting pipe, said second tank containing a medium which varies its physical state, said physical state variation including a variation of its state of aggregation or its volume or both, variation of said physical state of said medium causes said medium to flow from said second tank into said first tank through said connecting pipe, said medium being responsive to and influenced by the pressure or temperature conditions or both of the deep water outside said tank;
- lowering said second tank as a starting tank with said medium therein into said deep water in which the pressure condition or temperature condition or both are substantially different from the atmospheric conditions outside the deep water, thereby causing the medium to flow through said connecting pipe and rise therein for entry into said first tank; and
- utilizing the energy of flow of the rising medium for the production of energy by applying the energy produced to an energy converter.

4,281,515

# SOLAR POWERED COOLING DEVICE

Cress R. Ferreira, Stockton, Calif., assignor to Energy Wise, Inc., Lodi, Calif.

Filed Nov. 14, 1978, Ser. No. 960,555

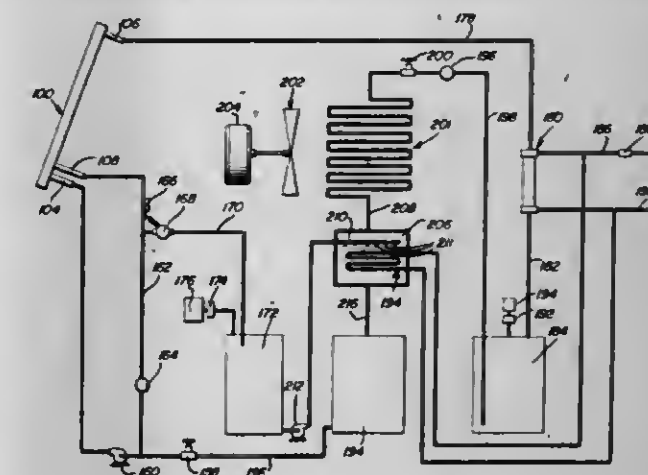
Int. Cl.<sup>3</sup> F25B 27/00, 15/00

U.S. Cl. 62—2

10 Claims

1. A solar cooling system comprising: an absorbent solution including a two-phase refrigerant and an absorber, said two-phase refrigerant comprising water; solar collector means for placing the absorbent solution in direction communication with solar radiation for separating refrigerant from the solution; cooling means connected to the solar collector means for utilizing the separated refrigerant to produce evaporative cooling of a working medium; and means for recombining the separated refrigerant and the remaining solution from which it was separated, said solar collector means comprising a first chamber having an inlet for allowing the entry of said absorbent solution, said first chamber having at least one perimetric

section composed of a transparent panel for allowing direct communication of solar radiation with said absorbent solution in said first chamber, a second chamber having an outlet therein for allowing said remaining absorbent solution to pass therethrough from said solar collecting means, said second chamber being separated from said first chamber by a partition,



and a third chamber in communication with said first and second chambers, said third chamber being disposed vertically above said first and second chambers and including a vapor outlet connected thereto for transferring said separated refrigerant in the vapor state to said cooling means, said solar collector means being maintained at a sub-atmospheric pressure.

4,281,516

# THERMOELECTRIC HEAT EXCHANGER INCLUDING A LIQUID FLOW CIRCUIT

Michel Berthet, Gif-sur-Yvette; Jean-Claude Kermarrec, Vélizy-Villacoublay, and Robert Ravelet, Palaiseau, all of France, assignors to Compagnie Européenne pour l'Équipement Menager "CEPEM", Paris, France

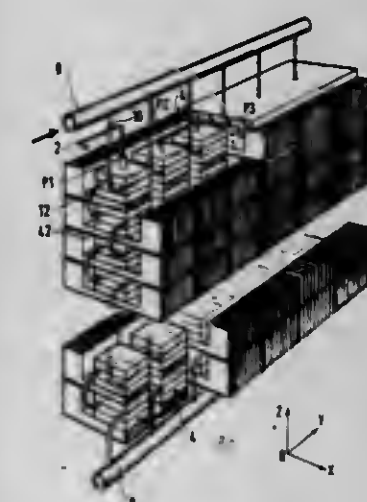
Filed Mar. 25, 1980, Ser. No. 133,697

Claims priority, application France, Mar. 26, 1979, 79 07518

Int. Cl.<sup>3</sup> F25B 21/02

U.S. Cl. 62—3

6 Claims



1. A thermoelectric heat exchanger assembly with a liquid flow circuit, said exchanger assembly including:

- firstly at least one thermopile of electrically non-insulative units which are in good electrical and thermal contact and are superposed in a stack direction OZ, the thermopile being formed by a plurality of stages each of which includes the following four components:
- a thermoelement of a first conductivity type;
  - a heat conductor of a first type;
  - a thermoelement of a second conductivity type, opposite to the first; and
  - a heat conductor of a second type;
- said thermoelectric heat exchanger also including electric



connections at both ends of the thermopile to effect electrical current passage through said components in series;

a first fluid flow circuit for the circulation of a first heat exchange fluid;

a second fluid flow circuit for the circulation of a second heat exchange fluid, said second fluid being a liquid, said circuit being constituted by a pipe which passes in series through the heat conductors of the second type in the successive stages of the thermopile, the lengths of said pipe which pass through said conductors being heat exchange lengths and being interconnected in series by connection lengths which extend between two successive stages of the thermopile; and

heat exchangers of a first type and heat exchangers of a second type to change heat between the thermopile and the fluids which circulate in said first circuit and in said second circuit respectively, the heat exchangers of the first type including the heat conductors of the first type, the heat exchangers of the second type being constituted by said heat exchange lengths and the heat conductors of the second type,

each heat exchange length being curved at each stage of the thermopile so that it enters the heat conductor and leaves it through the same face of a thermopile, and wherein the direction YO in which each heat exchange length leaves the thermopile being substantially opposite to the direction OY in which the heat exchange length enters the thermopile, thereby facilitating assembly of the thermopile.

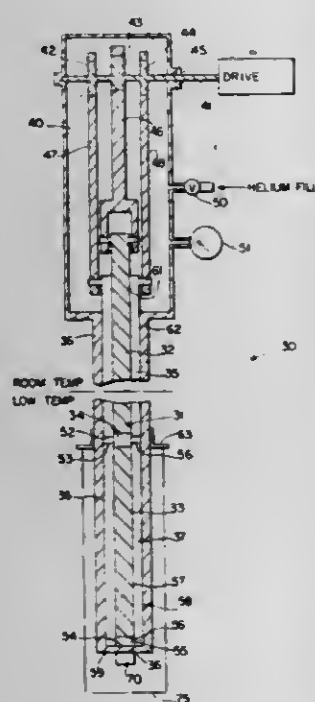
4,281,517

## SINGLE STAGE TWIN PISTON CRYOGENIC REFRIGERATOR

James E. Zimmerman, and Donald B. Sullivan, both of Boulder, Colo., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.  
Filed Feb. 27, 1980, Ser. No. 125,005  
Int. Cl.<sup>3</sup> F25B 9/00

U.S. Cl. 62—6

25 Claims



1. A regenerative cycle refrigerator with a working fluid comprising:

a cylinder;

means compressing the working fluid in the cylinder;

means expanding the working fluid in the cylinder;

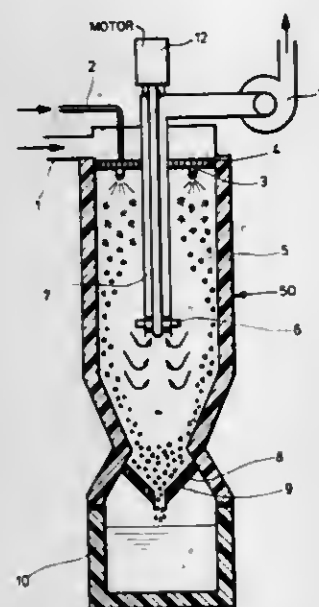
means driving the compressing means and expanding means; and

means forming a plurality of regenerative heat exchange paths between the compressing means and the expanding means.

4,281,518  
METHOD AND APPARATUS FOR SEPARATING PARTICULAR COMPONENTS OF A GAS MIXTURE  
Martin Müller; Albert Seidel, both of Siegersbrunn; Gunther Schmidt, Taufkirchen; Holm Schabert-Klempner, Kolbermoor; Werner Malburg, Neubiberg, and Rolf A. Brand, Otterbrunn, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany  
Filed Jan. 21, 1980, Ser. No. 113,743  
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1979, 2902391; Apr. 20, 1979, 2915953  
Int. Cl.<sup>3</sup> F25J 1/02

U.S. Cl. 62—12

11 Claims



1. A method of separating a component chosen from the group consisting of sulfur dioxide, ethylene oxide and hydrocarbons which are gaseous or liquid at normal temperature, from a gas mixture of the component plus air comprising:

directing the gas mixture at such normal temperatures downwardly into a separator tank;

supplying finely atomized liquid nitrogen into the tank to mix with the gas mixture and form flakes of the component due to a sudden drop in temperature of the gas mixture, to form a stream in the separator tank;

rotating the stream to accelerate the flakes outwardly toward walls of the separator tank and separate the flakes from the air in the tank;

removing the air from the tank;

melting the flakes after they are separated from the air to form liquid component; and

removing the liquid component from the separator tank.

4,281,519

## REFRIGERATION CIRCUIT HEAT RECLAIM METHOD AND APPARATUS

Herbert J. Spath, Clay, and Glendon A. Raymond, Fulton, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.  
Filed Oct. 25, 1979, Ser. No. 88,322  
Int. Cl.<sup>3</sup> F25B 7/00, 27/02

U.S. Cl. 62—79

11 Claims

7. A refrigeration system which comprises:

a refrigeration circuit having an evaporator, condenser, expansion device and a compressor;

a heat exchanger connected to receive refrigerant from the compressor of the refrigeration circuit and to discharge refrigerant to the condenser of the refrigeration circuit;

a tank containing a reservoir of water;

means for circulating a selected volume flow per unit time of water in the tank through a flow path having the primary flow in heat exchange relation with the refrigerant in the heat exchanger and a lesser secondary flow bypassing the heat exchanger under a first set of water temperature

conditions when the compressor of the refrigeration circuit is operating, and

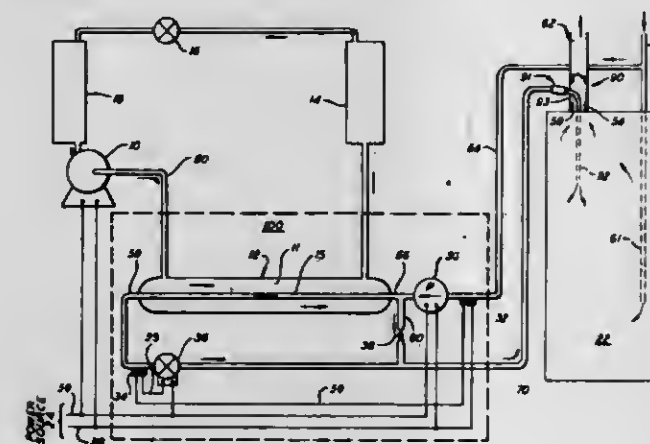
means for circulating a substantially reduced volume flow per unit of time of water in the tank through the flow path bypassing the heat exchanger when the compressor of the refrigeration circuit is operating and when there exists a second set of water temperature conditions.

10. A method of transferring heat energy from a refrigeration circuit used to heat or cool a space upon demand to a hot water system which comprises the steps of:

energizing the refrigeration circuit on demand to circulate the refrigerant flowing within the circuit through a heat exchanger;

energizing a pump simultaneously with the refrigeration circuit to circulate water between the hot water system and the heat exchanger;

sensing the temperature of the water from the hot water system;



sensing the temperature of the water being discharged from the heat exchanger;

routing water primarily through the heat exchanger when the water from the hot water system is below a first predetermined temperature and the water being discharged from the heat exchanger is above a second predetermined temperature, and

by-passing a restricted flow of water around the heat exchanger when either the temperature of the incoming water is above the first predetermined temperature or the temperature of the water being discharged from the heat exchanger is below the second predetermined temperature, said step of by-passing serving to allow continuous but reduced flow circulation of water between the tank and the heat exchanger to allow the water temperature of the tank to be continuously monitored.

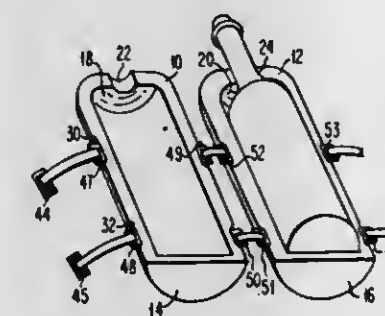
4,281,520

## PORTABLE COOLER FOR BOTTLED BEVERAGES

Donald D. Norwood, 1261 Crescent Ter., Sunnyvale, Calif. 94087  
Filed Jan. 15, 1980, Ser. No. 112,360  
Int. Cl.<sup>3</sup> F25D 3/08, 11/00

U.S. Cl. 62—372

6 Claims



1. A bottle cooling device comprising:

a pair of hollow modules, each module being hollow and

including refrigerant material therein, each module having an outer arcuate surface forming an outer wall describing the arc of a semicircle, and an inner arcuate surface for engagement with a bottle to be cooled, said inner arcuate surface describing less than the arc of a semicircle and having a curvature which fits the curvature of the largest diameter bottle to be accommodated, such that said modules substantially surround the surface of said bottle to be cooled,

each of said modules further having a projecting bottle support portion at the lower end thereof to support the bottom of a bottle, each module further including first and second restraining means on the outer surface thereof adapted to receive a strap; and

a strap having a first adjustable loop at one end thereof and a second adjustable loop at the other end thereof, said first loop being wrapped around said modules in engagement with said restraining means and said second loop wrapped around said modules in engagement with second restraining means,

thereby securing said pair of modules around said bottle and providing a carrying strap between said first and second loops.

4,281,521

## FLUIDIZED FREEZING

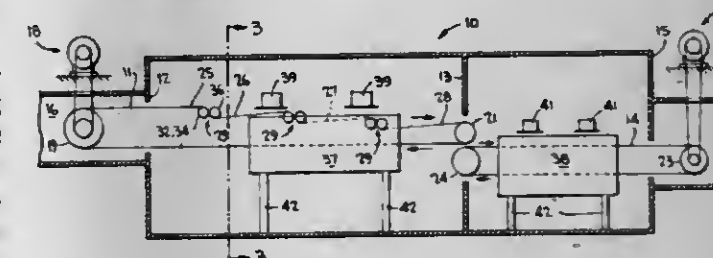
Walter H. Martin; George C. Briley, and Peter Y. Pao, all of San Antonio, Tex., assignors to Refrigeration Engineering Corporation, San Antonio, Tex.

Filed Dec. 5, 1979, Ser. No. 100,527

Int. Cl.<sup>3</sup> F25D 25/04

U.S. Cl. 62—380

9 Claims



1. In a I.Q.F. apparatus for processing articles of food, including a deep bed gas-fluidization freezing means for deep freezing the articles disposed in a deep-bed fluidized condition created by air at subfreezing temperature blown upwardly therethrough, a freezer conveyor for conveying the articles from a receiving to a discharge location during the deep freezing thereof, a separate article conditioning conveyor for delivering the articles from a loading station onto said freezer conveyor at said receiving station, and means for chilling the articles to near freezing temperature by blowing air at subfreezing temperature upwardly through the articles on said conditioning conveyor with said articles being in a fluidized condition, the improvement wherein said conditioning conveyor comprises an endless, foraminous conveyor belt having a horizontal lower run, means engaging the upper run of said belt providing at least two sections of said upper run with a stepped formation between said sections, an end of one of said sections lying at a higher elevation than an adjacent end of the other of said sections, said stepped formation effecting a thinning in the bed of articles passing therethrough whereby to rapidly increase the air velocity through the articles on said conditioning conveyor so as to cool and separate the articles preventing them from sticking and freezing to one another before being subjected to deep bed gas-fluidization.



4,281,522

**MAKEUP AIR PRECONDITIONER FOR USE WITH AN AIR CONDITIONING UNIT**

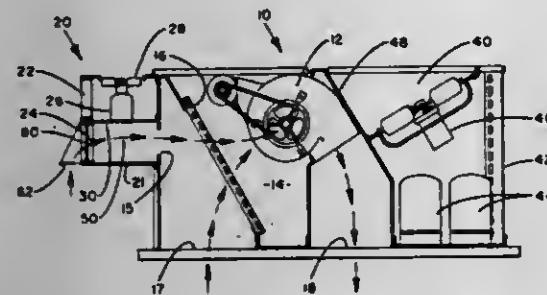
Rudy C. Bussjager, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 30, 1979, Ser. No. 89,658

Int. Cl.<sup>3</sup> F25D 17/04

U.S. Cl. 62-409

12 Claims



1. An air conditioning system which comprises: an enclosure defining an indoor air section; a first refrigeration circuit including an indoor heat exchanger mounted within the indoor air section in heat exchange relation with air flowing therethrough and a second heat exchanger located remotely from the indoor heat exchanger to transfer heat energy between the indoor heat exchanger and the second heat exchanger; an indoor fan for circulating air in heat exchange relationship with the indoor heat exchanger and for circulating air to a space to be conditioned; a return air flow path for supplying return air from the space to the indoor section; a makeup air flow path for allowing ambient air to enter the indoor section; damper means for regulating the volume of air flowing along the makeup air flow path; and a second vapor compression refrigeration circuit including a makeup air heat exchanger located in heat exchange relation with the air flowing along the makeup air flow path, an outdoor heat exchanger in heat exchange relationship with an ambient heat sink and a compressor for increasing the temperature and pressure of a refrigerant flowing within the second refrigeration circuit whereby heat energy is transferred between the makeup air heat exchanger and the outdoor heat exchanger.

4,281,523

**ELECTRICALLY CONTROLLED SELECTING DEVICE FOR THE NEEDLES OF A FLAT KNITTING MACHINE**

Reinhold Schimko, Aalen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH &amp; Co. KG, Westhausen, Fed. Rep. of Germany

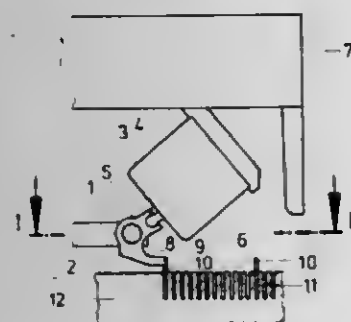
Filed Oct. 10, 1979, Ser. No. 83,732

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1978, 2844135

Int. Cl.<sup>3</sup> D04B 15/00

U.S. Cl. 66-232

1 Claim



1. An electrically controlled selection device for the needles of a flat knitting machine having a needle bed with a plurality of grooves and a carriage, a plurality of selection jacks for

controlling the needles being mounted in said needle grooves so as to be movable in the same direction as the needles, said selection jacks including staggered feet arranged to form foot rows in the longitudinal direction of the needle bed, a plurality of advancing cam elements, one for each foot row, being mounted on said carriage for advancing said selection jacks in the direction of said needles and being shiftable into and out of engagement with said feet between adjacent feet of a foot row by means of a control magnet, each cam element comprising a two arm lever pivotally mounted on an axle attached to said carriage and extending parallel to said needle grooves, one arm of said two arm lever being provided with inclined advancing surfaces for engagement with said feet to advance said selection jacks toward said needles and the other lever arm having a fork and a control magnet associated with each cam element having a pivoted armature disposed in engagement with said fork.

4,281,524

**KEY-CONTROLLED LOCK FOR A BARRIER CABLE**

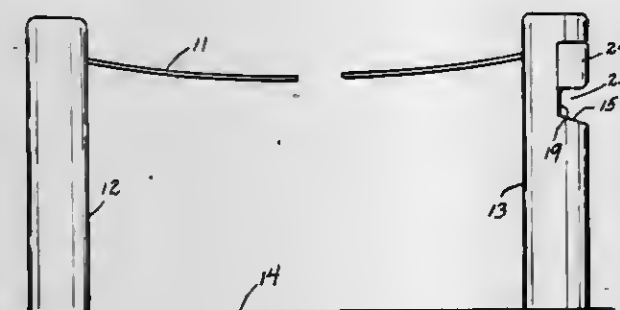
Peter J. Linder, 3109 Ramblewood Rd., Ellicott City, Md. 21043

Filed Feb. 5, 1980, Ser. No. 118,963

Int. Cl.<sup>3</sup> E05B 73/00

U.S. Cl. 70-18

15 Claims



1. In combination with a roadway, means defining a security barrier across said roadway, said barrier means comprising a first upstanding support at one side of the roadway, a second upstanding support at the opposite side of the roadway, a barrier cable extending across the roadway at barrier height, means permanently securing one end of said cable to the first upstanding support, said second upstanding support being formed at the side thereof remote from the first support to define a notch having a generally horizontal bottom wall and a generally vertical inner wall, a main lock body secured to said generally vertical inner wall and being located above said generally horizontal bottom wall to define an access space, said lock body being formed with a locking recess facing said inner wall, said second support being formed with a cable-receiving bore communicating with said locking recess, said other end of the cable having an enlarged end ferrule slidably fitting through said cable-receiving bore and being movable into said locking recess, the top wall of said recess being upwardly offset relative to said bore sufficiently to define an inside locking shoulder, a vertical clamping screw threadedly engaged in said lock body below the recess in a position to clamp the ferrule against said recess top wall, whereby to hold the ferrule in locking interengagement with said inside shoulder, and a cylinder lock assembly vertically mounted in the bottom of the lock body subjacent to and substantially in vertical alignment with said screw, said cylinder lock assembly including a central key-releasable cylinder plug normally blocking access to said clamping screw but being releasable responsive to actuation by a proper key to allow the plug to move downwardly into said access space to afford operating access from below to said clamping screw.

4,281,525

**HARDWARE FOR LUGGAGE AND THE LIKE**

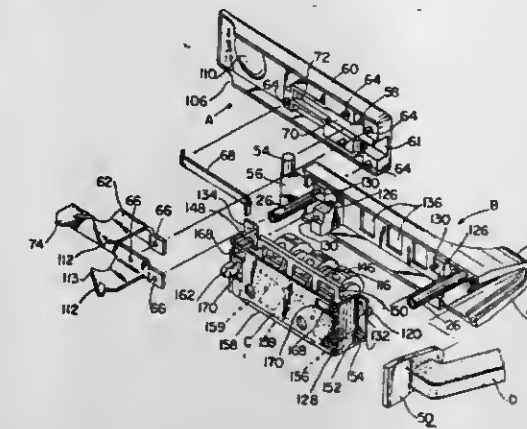
Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock Company, Division of Walter Kidde &amp; Co., Inc., Garfield, N.J.

Filed Oct. 10, 1978, Ser. No. 949,992

Int. Cl.<sup>3</sup> E05B 65/52

U.S. Cl. 70-71

22 Claims



1. Hardware for luggage cases and the like, comprising a valance member adapted to be attached to one part of a luggage case along an edge thereof, a latch means supporting the latch on the valance member for pivotal movement about an axis perpendicular to the edge near one end of the latch, the latch being pivotally movable away from the valance member to an open position and toward the valance member to a closed position, spring means for biasing the latch toward its open position, control means supported for movement along the valance member, the control means and the latch having cooperating catch elements that are engageable to hold the latch in its closed position, spring means for biasing the control means in a first direction to engage the catch elements, and manual actuator means near the opposite end of the latch and coupled to the control means for moving the control means in a second direction to disengage the catch elements and release the latch for movement to its open position, the latch having a latch element thereon adapted to engage a cooperable latch element on a second part of the case that moves toward the valance member when the parts of the case are brought together.

4,281,526

**ANTI-THEFT DEVICES FOR MOTOR VEHICLES**

Paul Lipschutz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

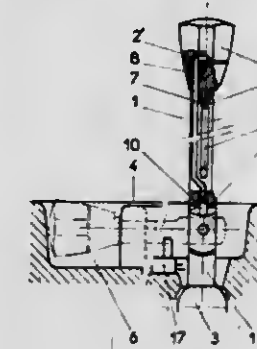
Filed May 21, 1979, Ser. No. 41,219

Claims priority, application France, Jun. 8, 1978, 78 17254

Int. Cl.<sup>3</sup> B60K 20/04; B60R 25/06

U.S. Cl. 70-202

3 Claims



1. In a vehicle having a housing disposed therein in substantially horizontal disposition, an engine, and an electric system thereof including an ignition circuit, the provision of a lever assembly comprising

(a) a lever, essential to the operation of the vehicle, having a first portion for connection to the vehicle mechanism to be operated, extending through an aperture in the housing

and a second portion pivotally mounted on the first portion about an axis disposed above the housing, said second portion of the lever being manually movable between an operative position at which the lever extends substantially vertically of said housing and a stowed position at which the lever extends along and substantially parallel to said housing,

(b) a catch member located at a position on said housing spaced from said first lever portions for effecting retention of the lever when the latter is in its stowed position, (c) a key-operated cylinder lock for actuating said catch member to effect release of said lever, (d) a locking rod movably disposed within said lever for locking said first and second lever portions together when in use, (e) spring means for urging said rod into a locking position, (f) a rotatable handle provided at the distal end of the second lever portion, (g) a push rod operable on rotation of said handle to effect release of said locking rod, (h) first electrical contact means mounted at said distal end of the second lever portion, and (i) second electrical contact means provided on said rotatable handle cooperable with said first contact means on rotation of said handle, said first and second contact means serving to control the electrical system wherein the rotatable handle in one region of rotation causes release of the locking rod and in another region of rotation causes engine starting.

4,281,527

**KEY HOLDER**

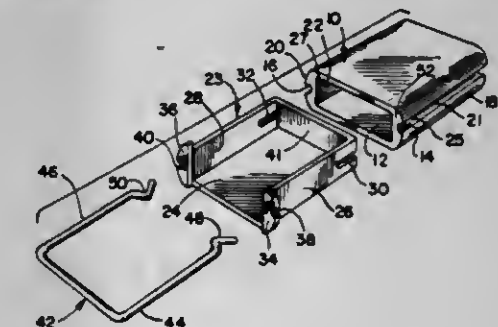
Norbert Leopoldi, 3601 W. Devon Ave., Chicago, Ill. 60659, and William P. Heinrich, 2709 W. Sterling Dr., McHenry, Ill. 60050

Continuation-in-part of Ser. No. 60,495, Jul. 25, 1979, abandoned. This application Nov. 30, 1979, Ser. No. 99,077

Int. Cl.<sup>3</sup> A47G 29/10

U.S. Cl. 70-456 R

3 Claims



1. An apparatus for holding keys comprising a housing, open at one end, a resilient, generally U-shaped bail, slidably disposed on said housing, wherein said housing is adapted to receive and retain the bits of a plurality of keys and a means for aligning said keys for insertion in the said housing comprising a tray, slidably disposed within said housing, mounted for movement in unison with said bail.

4,281,528

**PROCESS FOR ISOTHERMALLY SHAPING A TITANIUM-CONTAINING METAL WORKPIECE**

William D. Spiegelberg, Parma; Donald J. Moracz, Garfield Heights, and Frank N. Lake, Mentor, all of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Jul. 27, 1978, Ser. No. 928,395

Int. Cl.<sup>3</sup> B21B 45/00

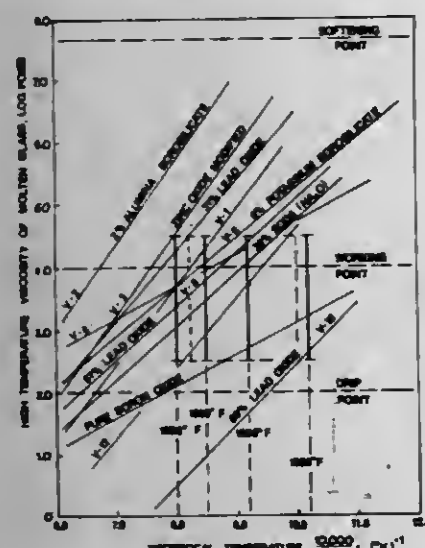
U.S. Cl. 72-46

11 Claims

1. A process for isothermally shaping a titanium-containing metal workpiece in a hot die including the steps of providing a precoat separation lubrication composition which is a liquid dispersion of a vitreous component and a finely divided solid



lubricant selected from graphite, boron nitride and mixtures of graphite and boron nitride in a solution of an organic solvent and a resin binder soluble in said solvent and wherein the particle size of the vitreous component and the solid lubricant is less than about 200 mesh, U.S. Standard sieve size, and the weight ratio of solid lubricant to vitreous component is at least 1:1, said vitreous component having a melting point above 800° F. and below the temperature of isothermal shaping, coating



said workpiece with said precoat composition, heating said workpiece to attain a temperature between 1000° F. and 1400° F. for from 1 to 30 minutes to volatilize the organic solvent and thermally decompose the resin binder to leave a residue of vitreous material and solid lubricant on said workpiece, transferring the workpiece in a preheated die system, attaining a temperature of from 1350° F. to 1750° F. and loading said die to alter the shape of said workpiece.

4,281,529

# METHOD OF MANUFACTURING A RESILIENT, SINGLE OR DOUBLE C-SHAPED RAIL CLAMP

Marius H. Lubbers, Wassenaar, Netherlands, assignor to Everts & van der Weyden Exploitatiemaatschappij Ewem N.V., The Hague, Netherlands

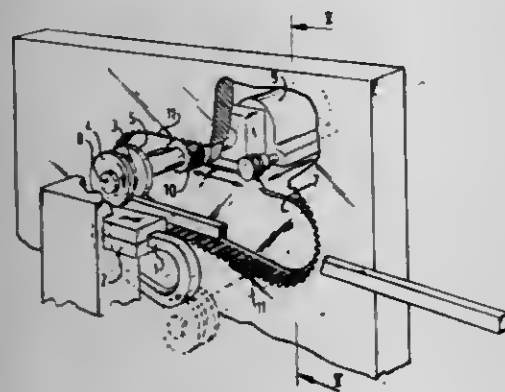
Filed May 21, 1979, Ser. No. 40,870

Claims priority, application Netherlands, Jul. 19, 1978, 7807737

Int. Cl.<sup>3</sup> B21D 7/00

U.S. Cl. 72-215

7 Claims



1. The method of making a resilient, C-shaped rail clamp, which comprises the steps of:
  - (a) fixing one end of an elongate bar to leave the remainder of the bar exposed; and
  - (b) deforming said bar into C-shape by engaging one side of the bar with a roller while leaving the opposite side wholly free and travelling the roller through a closed path which begins and ends adjacent said fixed end of the bar.

## 4,281,530 APPARATUS FOR CUTTING AND FORMING TUBING

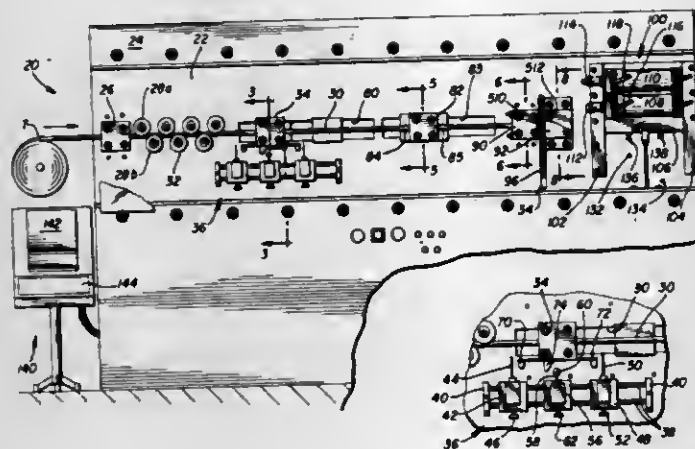
William G. McElhane, Jacksonville, Tex., assignor to Anvil Corporation, Jacksonville, Tex.

Filed May 29, 1979, Ser. No. 42,897

Int. Cl.<sup>3</sup> B21D 43/28

U.S. Cl. 72-294

21 Claims



1. An apparatus for forming tube components from a length of tube comprising:
  - a transport clamp mounted for controlled movement in a first and a second direction along a predetermined path;
  - actuation means for clamping the tube within said transport clamp when said transport clamp is moving in the first direction for drawing the tube along the predetermined path;
  - adjustable switch means cooperating with said transport clamp for controlling the movement of said transport clamp in the first and second directions;
  - forming clamp means on said predetermined path for selectively clamping said tube when said transport clamp is moving in the second direction;
  - cutoff means positioned along said predetermined path for cutting the tube into severed tube pieces;
  - control means for operating said cutoff means in relation to the movement of said transport clamp;
  - tube forming means selectively positionable within the predetermined path for forming the end of the tube; and
  - intermediate switch means adjustable relative to said adjustable switch means for controlling said tube forming means in relation to the movement of said transport clamp.

4,281,531

# BLIND RIVETER WITH PNEUMATIC RIVET-CORE DISPOSAL

Hans Ehmann, Frankfurt am Main; Walter Bieber, Dreieich, and Hans Baier, Gross-Gerau, all of Fed. Rep. of Germany, assignors to Gesipa Blodniettechnik GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 50,960

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827904; Jun. 24, 1978, 7819059

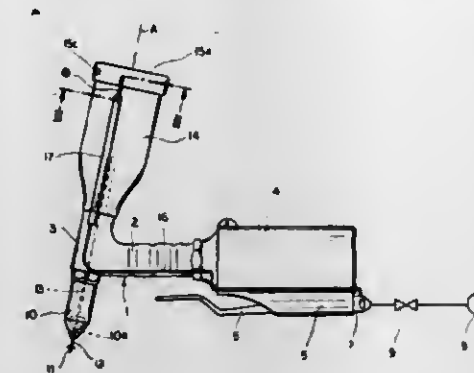
Int. Cl.<sup>3</sup> B21J 15/34

U.S. Cl. 72-391

14 Claims

1. A blind riveter for setting blind rivets having rivet bodies each having a pull-out mandrel, said riveter comprising:
  - a housing having a tip and forming a passage opening at one end at said tip and having another end;
  - a chuck displaceable in said housing adjacent said tip, whereby a rivet mandrel can be engaged in said chuck with the respective rivet body bearing against said tip so that displacement of said chuck pulls the mandrel through the rivet body to upset same;
  - a source of compressed gas;
  - pneumatically operable drive means connected between said source and said chuck to displace same in said housing;
  - a substantially closed compartment on said housing at the other end of said passage; and

means including a pump having a high-pressure input connected to said source and a low-pressure intake connected to said compartment for aspirating air from said compart-



ment and thereby for forming an air current through said passage to such a mandrel pulled from the respective rivet body into said compartment.

4,281,532

# PORTABLE APPARATUS FOR STRAIGHTENING AUTOMOBILE BODIES

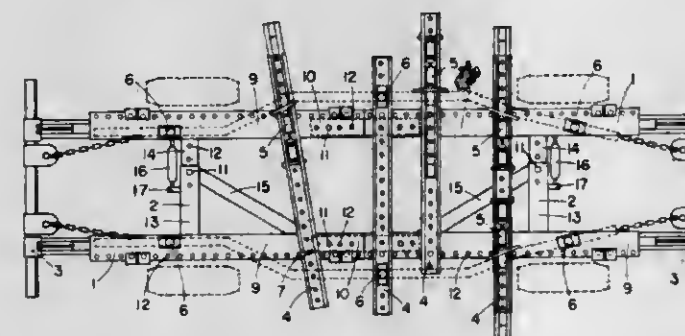
Fred D. Covington, Albuquerque, N. Mex., assignor to Portafame, Inc., Albuquerque, N. Mex.

Filed Mar. 19, 1980, Ser. No. 131,623

Int. Cl.<sup>3</sup> B21J 13/08

U.S. Cl. 72-457

2 Claims



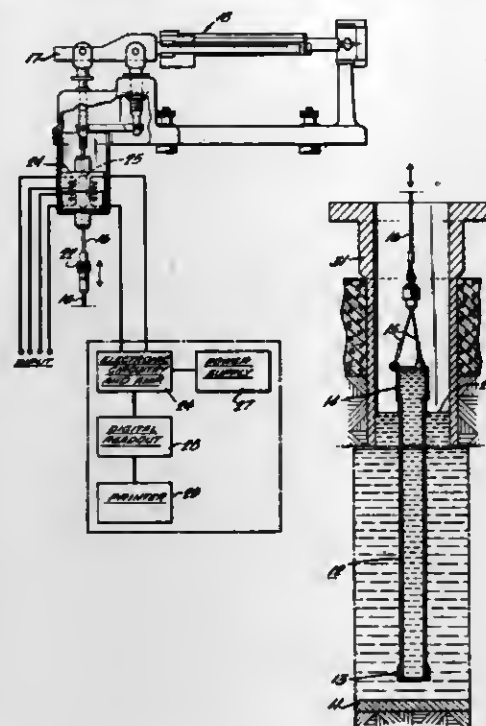
1. A portable and moveable apparatus for straightening automobile bodies comprising:
  - two longitudinal main beams telescopically connected to each other with two transverse beams,
  - two end bars,
  - a plurality of cross beams; and
  - a plurality of load pad units; and
  - a plurality of support jacks; and
  - a plurality of tie downs; and
  - a plurality of pins; and
  - four removeable wheel units; and
  - a plurality of clamps;
 wherein each main beam comprise of two half beams being box beams with two parallel flanges extending from adjacent corners of the main beam and said flanges running the length of the main beams, said flanges each having a plurality of pin holes along its length, said pin holes being aligned with the corresponding pin hole in the other flange so that one of the plurality of pins may pass through a hole in each flange when installed, and wherein said half beams are telescopically connected by a connecting box beam sized to slideably mate inside each half beam; and wherein each of the transverse beams comprises a large transverse half beam and a smaller transverse half beam; wherein the two large transverse half beam are rigidly affixed, each to a half beam of one main beam, and the two smaller transverse half beams are rigidly affixed to the half beams of the other main beam so that the smaller transverse half beams telescopically and slideably mate with the larger transverse half beam, and are pinned with pins

through pin holes in the mated larger and smaller transverse half beams; and wherein corner plates are rigidly affixed between the larger transverse half beams and the corresponding half beams of the main beam; and wherein there is provided a means for adjusting the distance between the main beams during assembly of the apparatus; and wherein each of the removeable wheel units comprises of a support beam, a hydraulic jack, a lever arm, a castor yoke, castor axle, and castor; each said support beam being a box beam sized to slideably insert into an end of a main beam and said support beam being rigidly pinned to the end of the main beam by pins inserted through pin holes provided in the main beam and the support beam; said support beam having pivot holes and pivot pins pass through the pivot holes through a rotary end of the hydraulic jack thereby pivotally attaching a hydraulic jack inside the support beam; the hydraulic jack has a piston rod which is pivotally attached to the lever arm by pivot pins passing through pivot holes provided in the lever arm; said lever arm also having a castor end to which the castor yoke is rotatably affixed; said castor yoke supporting the castor axle and castor attached thereto; and wherein the end bars, each comprise two channels a tie bar two slide clamps and two slideable chain clasps; each channel having a horizontal beam having a plurality of pin holes so that the horizontal beam may be rigidly pinned to the main beam, and said channel having a vertical post, T shaped in crosssection, and a web rigidly affixed between the vertical post and the horizontal beam; and each of the slide clamps being generally spring, wedge shaped, having T shaped slots enabling the spring clamps to slide vertically, when compressed, on the vertical posts; and the tie bar slideably inserts into one slide clamp on each vertical post which is mated by its respective horizontal beam to adjacent ends of the two main beams; slideably installed on the tie bar are two chain clasps which are metal bands which have a tongue through which a key hole slot is provided in order to secure chains from a vehicle; and wherein the cross beams are channel beams of sufficient length to extend substantially beyond the main beams, when the cross beams are placed upon and perpendicular to the assembled main beams, and the cross beams have a plurality of pin holes along the bottom of the channel and a long the vertical faces of the channel, the pin holes in the vertical faces of the channel being aligned so that a pin may pass through both faces; and the tie downs being an L shaped bolt which inserts through the pin holes and has thereon a nut on one end securing the bolt to a main beam, and the L shaped end hooking on to the cross beam when the cross beam is attached to the main beams at other than right angles, when the pin holes in the cross beam do not align with the pin holes in the main beam; and each of the plurality of load pad units comprising a load pad, jack ram and hydraulic jack, wherein the hydraulic jack is equipped with a jack base and a jack collar which slideably insert into the cross beam; and wherein a pin through pin holes, in the vertical faces of the channel provides the base support for the hydraulic jack; and the jack ram is a beam having two channel irons back to back rigidly affixed to two spacer blocks between and at the ends of the channel irons and having a pivot block rigidly affixed between the channel irons near one end of the jack ram, the pivot block being generally rectangular in shape with the side adjacent to the end of the jack ram having a step and the upper corner adjacent to the end of the jack ram being rounded; and the load pad being a vertical member having a top, a bottom, a working face, force pad, and back wherein the bottom is curved eliminating the corner between the bottom and the back, and the back having a vertical flat to engage the spacer block



of the jack ram, the working face having a step to engage the step on the pivot block of the jack ram, and the top being cylindrical in shape, and the force pad being a generally flat face member having a cylindrical hollow mounting on its back so that the force pad slideably and rotatably mates on to the top of the load pad; and the support jacks which are hydraulic jacks that may be installed in side cross beams, or set on top of the main beams thereby holding up the vehicle, and the clamps are members having a C shaped base which slides over the upper flange of the main beams and having a vertical lug on the top of the C shaped base, said vertical lug having a key hole slot through which a chain may be secured and the clamps each having a plurality of pin holes, aligned so that a pin may pass through both faces of the C shaped base and through pin holes in the flanges of the main beams.

being essentially equal to the cross-sectional area of the body portion in contact with the liquid in the tank, whereby changes



4,281,533

### APPARATUS FOR MEASURING SOOT CONCENTRATION IN ENGINE OIL

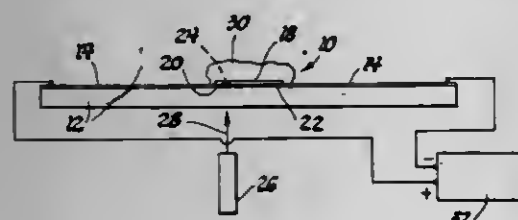
Gary L. Easley, Lake Orion; Gregory B. DeMaggio, St. Clair Shores, and Jeffrey C. Buchholz, Detroit, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 14, 1980, Ser. No. 112,131

Int. Cl.<sup>3</sup> G01N 25/00, 33/28

U.S. Cl. 73—15 R

3 Claims



1. Means for measuring soot concentration in engine oil comprising

a thin film thermocouple formed on one side of a transparent substrate and having first and second spaced junctions, the side of the substrate bearing the thermocouple being immersed in oil,

means for heating the oil adjacent the first junction by an amount dependent on the soot concentration, the heating means including a source of radiation to which the substrate as well as clean oil is substantially transparent and which is absorbed by soot, and means for passing the radiation therefrom through the substrate into the oil adjacent the first junction whereby the first junction is heated when soot is present in the oil,

and means for measuring the thermocouple net voltage which is a measure of the soot concentration in the oil.

4,281,534

### SENSOR FOR MEASURING LEAKAGE

William B. Hansel, Media, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Oct. 12, 1979, Ser. No. 84,242

Int. Cl.<sup>3</sup> G01M 3/32; G01F 23/20

U.S. Cl. 73—49.2

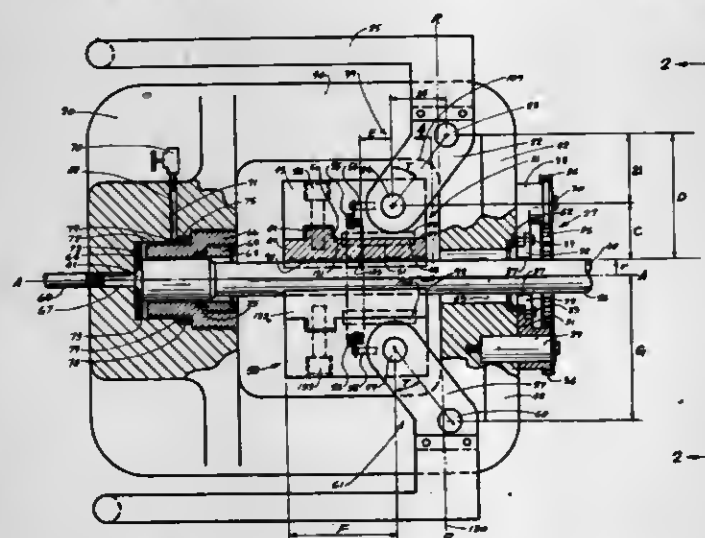
2 Claims

1. A sensor device useful for measuring mass displacement in a leaking tank comprising a main body portion having suspension means for attachment to a balance arm or other means for mass displacement detection and a liquid holding portion in said sensor body to hold liquid above the level of liquid in said tank, the cross-sectional area of said liquid holding portion

11. A hydrostatic testing apparatus for capping an open end of a pipe comprising:

a jaw, said jaw having a first bearing groove, said jaw having a friction surface adapted for gripping the pipe;  
a body, said body being adapted to axially receive a pipe, said body having a second bearing groove; and,  
a force translation lug, said lug being unconnected to said body and said jaw, said lug being disposable against said body and against said jaw, said lug being adapted to rotatively engage within said first and second bearing grooves, said lug being operable to urge said friction surface of said jaw against an outside surface of the pipe when said lug is rotated in a first sense with respect to said body.

4,281,535  
CYLINDER GRIPPING APPARATUS  
William E. Wesch, Jr., P.O. Box 94162, Houston, Tex. 77018  
Filed Jun. 11, 1979, Ser. No. 47,471  
Int. Cl.<sup>3</sup> G01M 3/28; B23B 31/16  
U.S. Cl. 73—49.8  
45 Claims



4,281,536

### APPARATUS FOR TESTING THE CONTAMINATION OF INDUSTRIAL LIQUIDS

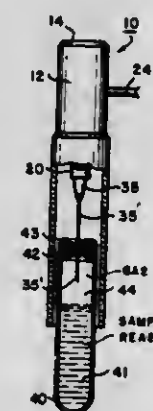
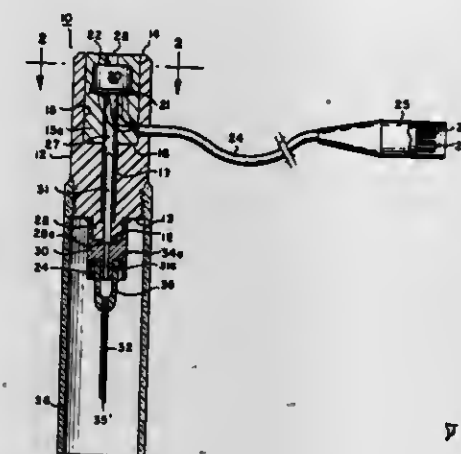
Thomas L. Kraft; Howard A. Vick, and James W. Meador, all of Houston, Tex., assignors to KVM Engineering, Inc., Houston, Tex.

Filed Sep. 12, 1979, Ser. No. 74,595

Int. Cl.<sup>3</sup> G01N 7/14

U.S. Cl. 73—53

3 Claims



1. A pressure measuring apparatus adapted to periodically measure the pressure in the headspace of a container which is partially filled with a liquid medium containing organisms, the pressure in said headspace depending on the density of said organisms, and said container having an inlet through which said liquid medium is filled into or removed from said container, said apparatus comprising in combination:

an elastic, compressible stopper for sealing said headspace in said container after said container is filled with said liquid medium to allow said organisms to generate oxygen which increases the gas pressure in said headspace;

a pressure probe, including a housing having a chamber and a bore defining a passageway, a pressure transducer mounted in said chamber, a hollow piercing element removably coupled to said housing, the interior of said element being in fluid communication with said transducer in said chamber through said passageway, said element having a pointed end portion adapted to pierce through said stopper into said headspace when said housing is pressed against said container, thereby communicating the gas pressure in said headspace to said transducer through the hollow interior of said element and said passageway, the elastic, compressible material of said stopper sealing off said headspace from the ambient before and while said element pierces said stopper, and after said element is withdrawn from said stopper.

4,281,537

### STRAIN METER

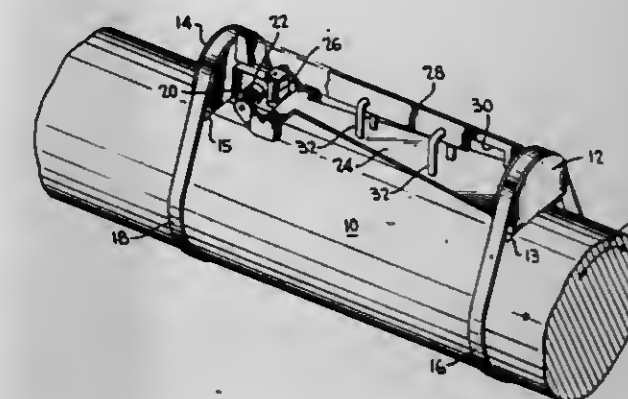
John E. Burbank, III, Ridgefield, Conn., assignor to McNab, Incorporated, Mt. Vernon, N.Y.

Filed Aug. 7, 1979, Ser. No. 64,566

Int. Cl.<sup>3</sup> G01L 3/10

U.S. Cl. 73—862.33

5 Claims



1. A system for measuring strain in a rotating shaft comprising:

(a) first and second space blocks clamped onto said shaft and rotatable therewith;

(b) a linear variable differential transformer (LVDT) rigidly affixed to said first block;

(c) a displacement arm rigidly affixed to said second block and extending toward said LVDT and substantially parallel to the axis of rotation of said shaft;

(d) a LVDT core mounted on said displacement arm and disposed to be movable through the center of said LVDT without contacting said LVDT, whereby strain occurring in said shaft between said blocks caused displacement of said LVDT core relative to said LVDT;

(e) and further comprising a flexible cable connected between said displacement arm and said LVDT, whereby said flexible cable maintains the radial position of said LVDT core relative to the axis of rotation of said shaft.

4,281,538

### TRANSDUCER FOR INDICATING TORQUE

Edmund C. Dudek, St. Charles, Ill., assignor to Thor Power Tool Company, Aurora, Ill.

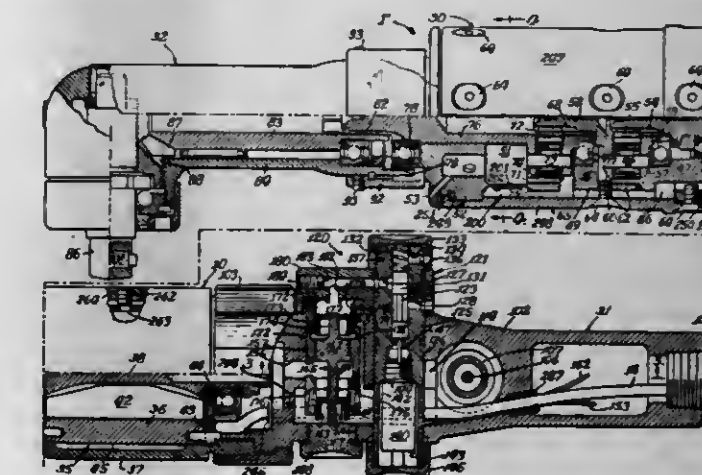
Division of Ser. No. 359,640, May 14, 1973, Pat. No. 3,920,082.

This application Oct. 6, 1975, Ser. No. 620,020

Int. Cl.<sup>3</sup> B25B 23/145

U.S. Cl. 73—862.21

17 Claims



1. A transducer construction adapted for use with a power tool or the like having a motor, a torque output member, drive means connecting said motor with said torque output member, said transducer construction comprising an annular member adapted to encircle at least a portion of and be connected to said drive means so as to be subjected to at least a portion of the torque being transmitted thereby, torsional strain responsive



means carried by said annular member and operable to provide a signal proportional to the torsional strain in said annular member and consequently to the torque output at said torque output member, said annular member including a torsionally resilient portion, said torsionally resilient portion including at least one thin-walled section of said annular member, the radially inner periphery of said thin-walled section being cylindrical, including eight symmetrically arranged flat surface portions on the outer periphery of said torsionally resilient portion providing a plurality of said thin-walled sections, and said torsional strain responsive means including a plurality of strain responsive elements mounted on said flat surface portions.

4,281,539

# MEASURING APPARATUS, ESPECIALLY FOR MEASURING FORCES ACTING UPON A BEARING OR THE LIKE

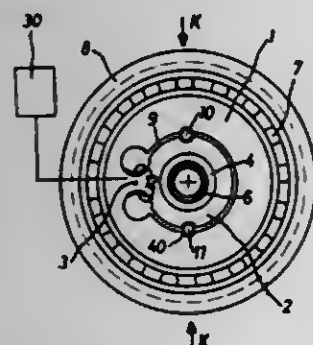
Rolf Keller, Pfaffhausen, Switzerland, assignor to SRO-Kugellagerwerke J. Schmid-Roost AG, Zürich, Switzerland  
Filed Sep. 10, 1979, Ser. No. 74,114

Claims priority, application Switzerland, Sep. 20, 1978, 9839/78

Int. Cl.<sup>3</sup> G01L 5/10, 1/22

U.S. Cl. 73—862.54

6 Claims



1. An apparatus for measuring the forces, particularly the radial forces acting upon a bearing, especially a roller bearing, comprising:

two concentric ring members interconnected by web means; said web means constituting an elastically deformable element which deforms in the presence of a force which is to be measured and is capable of influencing an electric signal transmitter;

the inner one of said ring members being equipped with attachment means, for the fixation thereof, and the outer one of said ring members being structured for receiving the bearing so that said outer ring member, in the presence of the force which is to be measured, is capable of carrying out a pivotal movement with respect to said inner ring member,

said attachment means comprising an attachment plug means which axially protrudes from at least one face of the inner ring member.

4,281,540

# LOW TURBULENCE WIND TUNNEL STILLING CHAMBER

Roland E. Lee, Beltsville; Alfred G. Berger, Colesville, both of Md.; Dennis A. Sowers, Hermosa Beach, Calif.; Richard J. Sergeant, Torrance, Calif., and Hermann W. Behrens, Rancho Palos Verdes, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 25, 1977, Ser. No. 844,689

Int. Cl.<sup>3</sup> G01M 9/00

U.S. Cl. 73—147

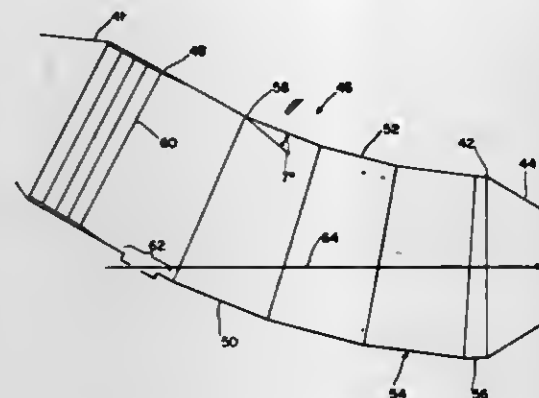
10 Claims

1. A wind tunnel for high energy laser applications comprising:

a test chamber for containing a model support, said model support being capable of fixing a test model to be subjected to illumination with a high energy laser beam, said

test chamber being in fluid communication on its downstream side with fluid exhaust means and with a primary flow nozzle on its upstream side, said nozzle being in fluid communication on its upstream side with a means for providing a controllable source of fluid at elevated pressures to be supplied to said test chamber, wherein the improvement comprises:

an improved curved elongated settling chamber interposed between said nozzle and said source of fluid at elevated pressure, said settling chamber having a gradual turning



radius to permit the fluid flow through the tunnel to follow the turning of the settling chamber and prevent turbulence;

a transverse aerodynamic window providing for the entrance of said laser beam, said window being located in the low velocity flow turning region of said settling chamber; and

a turbulent sonic free-jet coincident with said window wherein fluid flow through said settling chamber is uniform and smooth allowing said laser beam to impinge on said test model without beam distortion or degradation.

4,281,541

# GAS METER WITH COMPOSITE IRON CENTER CASTING

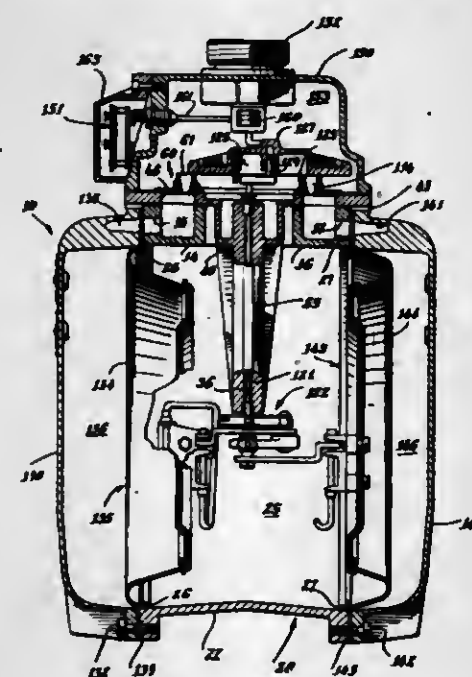
Stanley S. Strengowski, Monroe, Conn., assignor to Textron, Inc., Providence, R.I.

Filed Sep. 19, 1979, Ser. No. 76,996

Int. Cl.<sup>3</sup> G01F 3/20

U.S. Cl. 73—264

10 Claims



1. An improvement in positive displacement gas meters of the type comprising a center casting, front and rear diaphragms and front and rear covers together defining a front, a center and a rear chamber of variable volumes with the center

casting defining passages to the chambers and an outlet passage, a top casting mounted over the center casting and accepting inlet gas, a valve seat mounted to the center casting within the top casting and further defining the passages to the chambers and outlet, a valve cover slidably positioned on the valve seat for sequentially opening the passages to inlet gas and selectively connecting the passages to the outlet, a central shaft rotated by a linkage assembly connected to the diaphragms and revolving the valve cover, and a meter readout assembly, the improvement comprising providing the center casting as a two-piece composite center casting including:

(A) a center chamber casting having a cylindrical wall portion partially defining the center chamber of the gas meter, the cylindrical wall portion having outwardly facing annular surfaces receiving the peripheral edges of the front and rear diaphragms and the front and rear covers, and an upper manifold portion having a top surface and defining a passage from the top surface to the front chamber and also defining a passage from the top surface to the rear chamber; and

(B) a manifold casting including a plate mounted to the top surface of the center chamber casting and having the top casting mounted thereto, the plate defining an opening registering with the passages to the front and rear chambers and further defining an opening providing a passage to the center chamber, the manifold casting also at least partially defining an outlet passage to an outlet end from a collection end thereof positioned adjacent the openings to the chambers, the valve seat being mounted to the top of the plate of the manifold casting, the manifold casting further including a depending integral support bracket for the center shaft.

4,281,542

# SHIELDING SYSTEM FOR CAPACITANCE TYPE FUEL QUANTITY GAUGE

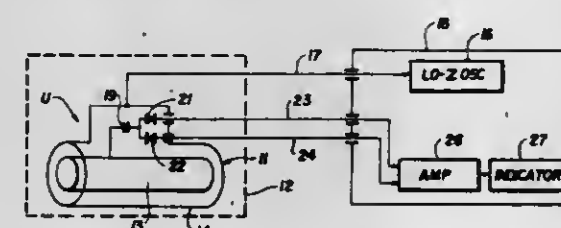
Irwin Wallman, Shelburne, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Dec. 27, 1979, Ser. No. 107,683

Int. Cl.<sup>3</sup> G01F 23/26

U.S. Cl. 73—304 C

11 Claims



1. A capacitance type fuel quantity gauge for a fuel tank comprising, in combination, a first capacitor arranged to be mounted within a fuel tank and having a capacitance corresponding to the level of fuel in the tank, an enclosure having a wall defining an interior associated with said first capacitor, remotely located indicating means, an oscillator having an output, means for connecting said oscillator output to one side of said first capacitor, a pair of oppositely poled diodes disposed within the said enclosure interior, means for connecting one side of both of said diodes to the other side of said first capacitor, a pair of conductors each connected at one end to the other side of one of said diodes, and extending through openings in said enclosure wall, a pair of feedthrough capacitors in said enclosure wall, each arranged to accommodate one of said conductors for bypassing interfering signals on said conductors to a level below the threshold of said diodes and means for connecting the other ends of said diodes to said indicating means for indicating the quantity of fuel in the fuel tank.

4,281,543

# HAND SHOWER AND TEMPERATURE INDICATING UNIT

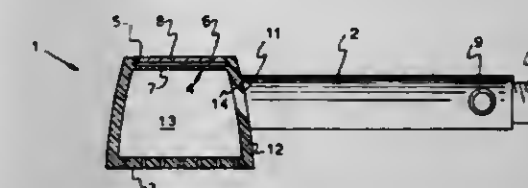
Zeev Raz, 17 Keren Hayesod St., Beersheva, Israel

Continuation-in-part of Ser. No. 823,558, Aug. 11, 1977, Pat. No. 4,161,881. This application Apr. 16, 1979, Ser. No. 30,247  
Claims priority, application Israel, Oct. 27, 1975, 48730

Int. Cl.<sup>3</sup> G01K 13/02

U.S. Cl. 73—343 R

14 Claims



1. A hand shower and temperature indicating unit comprising:

a shower head consisting of a water chamber having a perforated water outlet bottom surface and wall surfaces;

a rigid water conduit section made predominantly of rigid plastic, rubber or the like that insulating materials and serving as the handle for said unit and integrally attached at one end thereof to a side wall surface of said chamber and having at the free end thereof means for attachment to a water supply line; and

a liquid crystal temperature indicating means positioned within a compartment comprising a recess in and extending along a wall surface of said unit, said compartment comprising an interior heat transferring wall positioned along the flow path of the water passing through said unit to be directly contacted thereby.

4,281,544

# TEMPERATURE DETECTING DEVICE

Noboru Kaneko, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

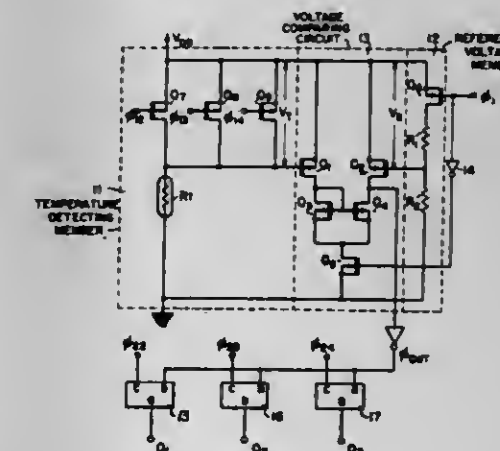
Filed Jun. 6, 1979, Ser. No. 46,053

Claims priority, application Japan, Jun. 9, 1978, 53/69507

Int. Cl.<sup>3</sup> G01K 7/20

U.S. Cl. 73—362 SC

6 Claims



1. A temperature detecting device comprising in combination: a temperature detecting element having a resistance characteristic which varies as a function of temperature for sensing the temperature; a MOS-transistor connected in series with the temperature detecting element; a constant voltage source for maintaining a constant voltage; means for applying a timing signal to said MOS-transistor to turn ON said MOS-transistor; and a voltage comparing circuit for comparing the voltage across said MOS-transistor or the voltage across said temperature detecting element with the constant voltage of the constant voltage source when the MOS-transistor is turned ON by the timing signal and for producing an output signal representative of the temperature.



4,281,545

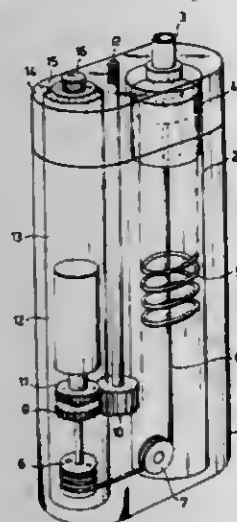
## ASPIRATOR FOR AIR SAMPLING

Ernst C. G. Linder, Linnegatan 102, S-11523 Stockholm, Sweden  
PCT No. PCT/SE79/00099, § 371 Date Dec. 24, 1979, § 102(e)  
Date Apr. 24, 1979, PCT Pub. No. WO79/00981, PCT Pub.  
Date Nov. 29, 1979

This PCT application filed Dec. 24, 1979, Ser. No. 177,751  
Claims priority, application Sweden, Apr. 24, 1978, 7804649  
Int. Cl.<sup>3</sup> G01N 1/24

U.S. Cl. 73-864.62

3 Claims



1. Aspirator for air sampling, there being arranged in a casing a removable pump cylinder (2) with accompanying plunger (4) and a motor (12) arranged to move the plunger for drawing in sample air through a sealable opening (3) in the pump cylinder, characterized in that the motor with an accompanying gearing device is arranged in the casing beside the pump cylinder and is coupled to a drum (8) arranged for winding up a string, the free end of the string being coupled to the plunger, which is biased by means of a spring (5) disposed in the casing, oppositely to the pulling direction of the string.

4,281,546

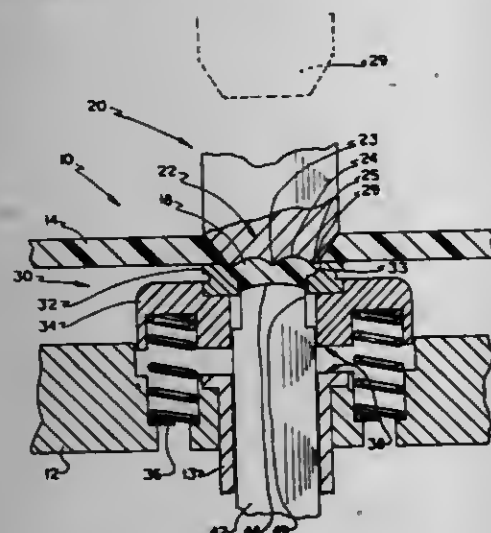
## VARIABLE VOLUME SAMPLE CUTTER AND METHOD OF USE

M. Foster Fraleigh, 112 Lakeshore Dr., North Palm Beach, Fla. 33408

Filed Jul. 13, 1979, Ser. No. 57,392  
Int. Cl.<sup>3</sup> G01N 1/04

U.S. Cl. 73-864.44

13 Claims



1. An apparatus for the variable cutting of volumetric samples from elastomeric material, comprising:  
(a) a fixed frame having a forming post housing;  
(b) a die cutting apparatus having a pressured downward stroke, an unpressured upward stroke, a periphery and a surface means for concentrically manipulating the elastomeric material towards said periphery;  
(c) a die receiving apparatus having tension-damping means for tensionally mounting said receiving apparatus on said

frame and for damping said downward stroke against the elastomeric material, and having a die with an internal hollow having a dimension; said die having an annular groove at the uppermost area of said internal hollow; and,  
(d) a volumetric sample adjustment apparatus having a movable forming post and adjustment means for moving said forming post, said forming post having a contact surface which resides in said internal hollow of said die, so that said movable forming post and said die dimension determine a volumetric cavity into which the elastomeric material may be manipulated, by said surface means during said downward stroke of said die cutting apparatus, thereby extruding excess elastomeric material between said periphery and said annular groove prior to cutting the material into the volumetric sample by said groove and said periphery during said upward stroke.

7. A method for cutting a volumetric sample for elastomeric material, comprising:

- placing a section of elastomeric material on a die receiving apparatus, said die receiving apparatus having tension-damping means for damping pressure against the elastomeric material and having a die with an internal hollow having a dimension; said die having an annular groove at the uppermost area of said internal hollow;
- adjusting a volumetric sample adjustment apparatus having a movable forming post within a fixed forming post housing and adjustment means for moving said forming post, said forming post having a contact surface which resides in said internal hollow of said die, so that said movable forming post and said die dimension determine a volumetric cavity;
- moving a die cutting apparatus into contact with the elastomeric material, said apparatus having a pressured downward stroke, an unpressured upward stroke, a periphery, and surface means for concentrically manipulating the elastomeric material toward said periphery, said surface means having an axis;
- manipulating and compressing during said pressured downward stroke a section of the elastomeric material into said volumetric cavity;
- extruding the elastomeric material from said volumetric cavity between said groove and said periphery during said pressured downward stroke; and,
- cutting the elastomeric material into a volumetric sample of homogeneous form by contacting the upper edge of said groove with said periphery during said unpressured upward stroke.

4,281,547

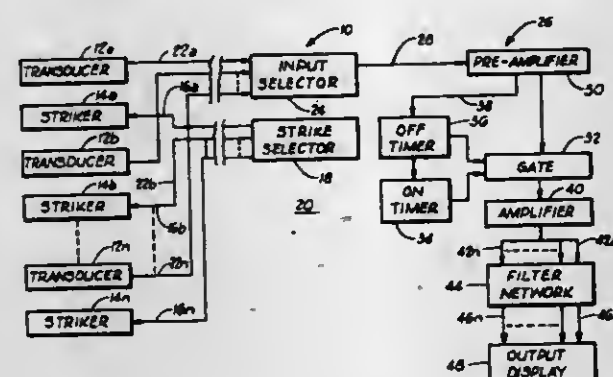
## ELECTRONIC MINE ROOF BOLT TESTER

Stanley E. Hinshaw, and Charles F. Cole, Jr., both of Ponca City, Okla., assignors to Conoco, Inc. (formerly Continental Oil Company), Ponca City, Okla.

Filed May 10, 1979, Ser. No. 37,691  
Int. Cl.<sup>3</sup> G01N 29/04

U.S. Cl. 73-579

9 Claims



1. A device for testing mine roof stability, comprising: means for exciting the mine roof to vibration at the natural occurring frequencies;

transducer means sensing mine roof vibration to generate characteristic electrical signal output;  
gate means receiving input of said generated electrical signal output and providing a gate output signal for a predetermined duration;  
timing means responsive to said characteristic electrical signal output to turn on said gate means after a first predetermined duration;  
second timing means to turn off said gate means after a second predetermined duration;  
means for amplifying said gate output signal and providing an amplified output;  
filter means receiving said amplified output at a plurality of parallel inputs each to a respective one of plural frequency band filtering channels successively allotted within a predetermined total frequency range, each channel providing a band pass signal output;  
plural amplifier and indicator means each connected to a respective one of said channel signal outputs with each responsive to display indication when signals are detected within the respective designated frequency band.

4,281,548

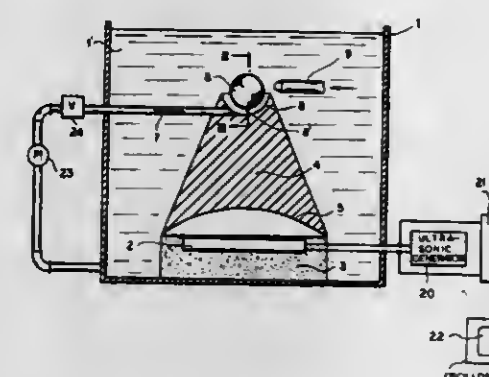
## METHOD OF TESTING ROTATIONALLY SYMMETRICAL BODIES, ESPECIALLY BALLS, FOR DEFECTS

Hans Küber, Schwabheim, Fed. Rep. of Germany, assignor to Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,755  
Int. Cl.<sup>3</sup> G01N 29/04

U.S. Cl. 73-593

7 Claims



1. In a method of testing a spheroidal workpiece body for surface and subsurface irregularities wherein a jet of a liquid is introduced tangentially into a clearance between said body and a surface spacedly juxtaposed therewith to rotate said body past a location at which the surface is subjected to scanning, the improvement which comprises intermittently varying the velocity of said jet to impart multiaxial rotation to said body during the monitoring.

4,281,549

## EQUIPMENT FOR DISPLAYING SECTION IMAGES OF OBJECTS SUBJECTED TO ULTRASONIC EXAMINATION

Carl Kretz, Zipf, Austria, assignor to Kretztechnik Gesellschaft m.b.H., Zipf, Austria

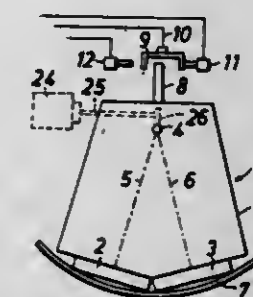
Filed Aug. 3, 1979, Ser. No. 63,241  
Claims priority, application Austria, Jan. 11, 1979, 199/79  
Int. Cl.<sup>3</sup> G01N 29/04

U.S. Cl. 73-626

11 Claims

1. Equipment for the ultrasonic examination of a specimen in a section plane and for tracing moving section plane displays in response to said examination, comprising transducer means including two ultrasonic transducers having axes which lie in a common plane and include a predetermined angle with each other, each of said sound transducers being operable to project an ultrasonic beam, to

receive echoes originated in response to said beam and to derive electric echo signals from such echoes received, a scanning mechanism for oscillating said transducer means in said plane through a predetermined angular range, which is at least as large as the angle included by said axes, and



display means comprising a fluorescent screen and operable to display said echo signals on said fluorescent screen at locations associated with the locations at which said echoes have originated.

4,281,550

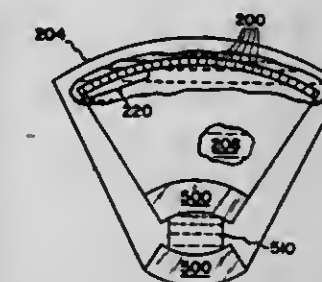
## CURVED ARRAY OF SEQUENCED ULTRASOUND TRANSDUCERS

Kenneth R. Erikson, South Laguna, Calif., assignor to North American Phillips Corporation, New York, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,528  
Int. Cl.<sup>3</sup> G01N 29/00

U.S. Cl. 73-626

21 Claims



1. Apparatus for producing and/or receiving a sector scanned, substantially parallel beam of ultrasound energy comprising:

an array, including a plurality of ultrasound transducer elements disposed along a curved line, each element being oriented to direct ultrasound energy toward and receive ultrasound energy from the center of the curve;  
means for transmitting electrical pulses to and receiving electrical pulses from the transducer elements;  
means for connecting a group of active transducer elements to the means for transmitting and receiving, the group of active elements comprising a preselected number of adjacent transducer elements in the array, said preselected number being greater than one and less than the total number of transducer elements in the array;  
means for sequentially changing the elements in the active group to incrementally shift the active group along the curve; and  
means for defocussing ultrasound energy produced and received by the transducer elements in the active group which means function to direct said energy between the active zone and a substantially parallel beam.



4,281,551

# APPARATUS FOR FARFIELD DIRECTIONAL PRESSURE EVALUATION

Lionel Gaudriot, Lozanne, and Michel Mercusot, Lyons, both of France, assignors to Societe pour la Mesure et le Traitement des Vibrations et du Bruit-Metravib, France

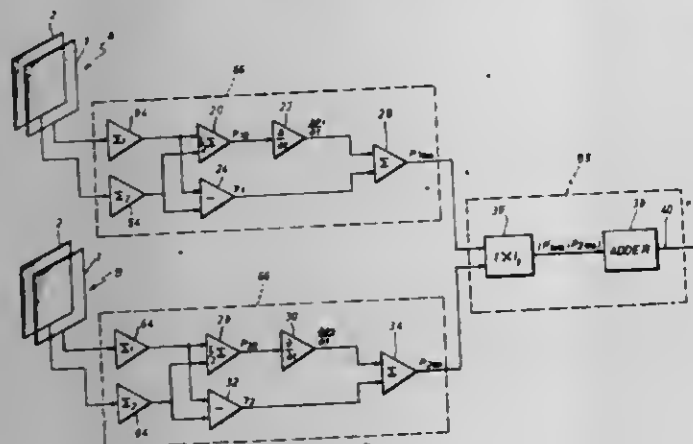
Filed Jan. 24, 1980, Ser. No. 114,972

Claims priority, application France, Jan. 29, 1979, 79 02813

Int. Cl.<sup>3</sup> G01H 3/12

U.S. Cl. 73-647

20 Claims



1. An apparatus for obtaining the farfield pressure intensity measurement in a given direction of a sonorous source placed in a fluid medium from pressure measurements taken in the nearfield of the source, the apparatus comprising:

- an acoustic antenna positioned close to the source and responsive to the acoustic pressure generated in the fluid by the source, for measuring the pressure generated by the source in its nearfield, said antenna having at least one receptor, each receptor of said antenna including two oppositely facing parallel planar arrays of acoustic detectors, each detector generating a detector signal, said planar arrays separated by a predetermined distance, and where said detectors in each said planar array of detection are positioned to form a predetermined matrix of detectors, said receptors positionable within said antenna to map the nearfield of the source; and
- a processing unit connected to said antenna and responsive to the detector signals for processing the detector signals, said processing unit including:
  - a plurality of signal conditioning means, each signal conditioning means connected to a receptor and responsive to the detector signals, for generating the farfield pressure intensity field contribution of the acoustic energy received by each receptor, and
  - a combining means responsive to the outputs from said plurality of signal conditioning means, for combining the farfield pressure intensity contribution signals from each receptor at each position used to map the nearfield of the source, the output from said combining means comprising the farfield pressure intensity in a given direction.

4,281,552

# ELECTROMAGNETIC FLOWMETER

Petes Nissen, Roodorf; Wilfried Kiene, Hans Mundun, and Eggert Appel, Dransfeld, all of Fed. Rep. of Germany, assignors to Fischer & Porter Company, Inc., Warminster, Pa.

Filed Jul. 5, 1979, Ser. No. 54,985

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1978, 2831570

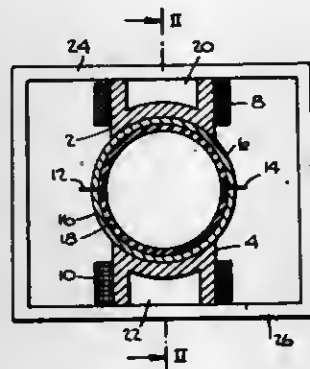
Int. Cl.<sup>3</sup> G01F 1/58

U.S. Cl. 73-861.12

7 Claims

1. An electromagnetic flowmeter comprising:
  - a cylindrical flow tube through which the fluid to be metered is conducted, said tube being formed of non-magnetizable metal whose interior is lined by an electrically-insulating material;

- B. a pair of electrodes disposed at diametrically-opposed positions on said tube; and
- C. means to establish a transverse magnetic field in said tube which is intercepted by the fluid conducted therethrough to induce a voltage therein which is transferred to said electrodes to yield a signal indicative of flow rate, said means including at least one core of solid ferromagnetic



material surrounded by a coil to which a low-frequency excitation current is applied, said core having a front face conforming to the periphery of the tube and having a cavity therein which lies in the central region thereof in which the intensity of the magnetic field is relatively weak due to skin effects, whereby the intensity of the field produced thereby is essentially unaffected by the cavity, whereas the mass of the core is substantially reduced.

4,281,553

# VORTEX SHEDDING FLOWMETER

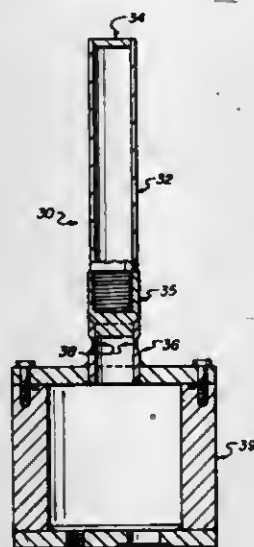
Lohit Datta-Barua, 5210 Straight Arrow, Humble, Tex. 77338

Filed May 4, 1978, Ser. No. 902,677

Int. Cl.<sup>3</sup> G01F 1/32

U.S. Cl. 73-861.24

18 Claims



3. A method for measuring the rate of flow of a fluid, comprising the steps of:
  - introducing a cylindrical element having a longitudinal axis into a moving fluid to produce vortices shedding from the surface of said cylindrical element whereby periodic forces act on said cylindrical element; and
  - detecting directly on the surface of said cylindrical element the strains produced at a plurality of locations on said surface from said periodic forces, said plurality of locations including a first and second said locations falling on a line intersecting said axis and at least a third said location on said surface different from said first and second locations.

4,281,554

# FLUID FLOW METER

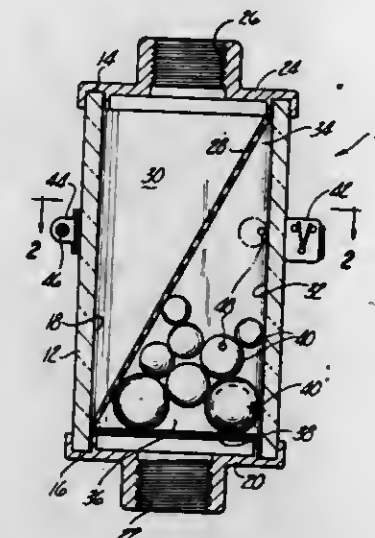
Borje O. Rosaen, 4031 Thornoaks Dr., Ann Arbor, Mich. 48104

Filed Oct. 9, 1979, Ser. No. 82,672

Int. Cl.<sup>3</sup> G01F 1/28

U.S. Cl. 73-861.71

12 Claims



1. A fluid flow meter comprising:
  - a housing having an interior chamber with an upper end and a lower end at least a portion of said housing being constructed of a transparent material;
  - fluid inlet means fluidly connected to the lower end of the chamber,
  - fluid outlet means fluidly connected to the upper end of the chamber,
  - at least two flow responsive members disposed and freely movable within at least a portion of said chamber, said members having a density greater than the density of the fluid passing through the flow meter but vertically displaceable within said chamber in an amount proportional to the fluid flow rate through the flow meter,
  - means for retaining said member in said chamber; and
  - wherein said two members have different densities so that the vertical displacement of one member as a function of the fluid flow rate through the flow meter is different from the other member.

4,281,555

# MOLDED INERTIAL SENSOR

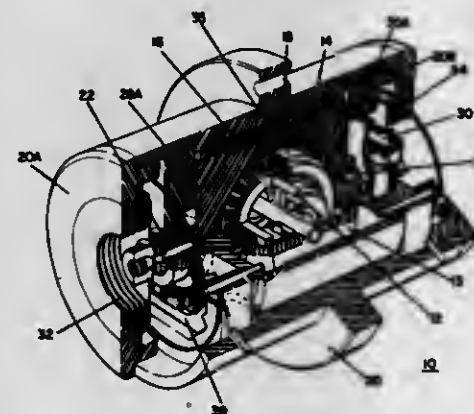
Roy A. Schluntz, Melrose, and John R. Stenniski, Swampscott, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 8, 1978, Ser. No. 932,139

Int. Cl.<sup>3</sup> G01C 19/02, 19/30, 19/06

U.S. Cl. 74-5 R

9 Claims



1. A single degree of freedom inertial sensor comprising:
  - a gimbal assembly including a molded plastic body member having circular end sections at opposite ends thereof, and being adapted for pivotal motion about an output axis and for supporting a wheel member and associated drive

means, said wheel member being adapted for rotary motion about a spin axis perpendicular to said output axis, and further including a molded plastic cylindrical sleeve member adapted to fit over said gimbal member including sections adapted to interfit with said end members to seal the region interior to said sleeve member.

4,281,556

# DUAL CARRIAGE RECIPROCATOR WITH CONTINUOUSLY MOVING CHAIN

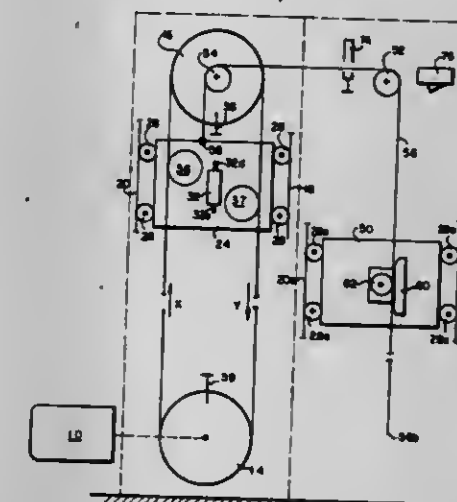
Joseph F. Weishe, 3934 Davisville Rd., Hatboro, Pa. 19040

Filed Jul. 2, 1979, Ser. No. 54,291

Int. Cl.<sup>3</sup> F16H 19/06, 37/00

U.S. Cl. 74-37

4 Claims



1. A dual vertical carriage reciprocator comprising:
  - a first housing;
  - a first carriage movably mounted in said first housing;
  - a first chain movably mounted in said housing and arranged to continuously present a first chain portion, moving in an upwardly direction, to one side of said first carriage and a second chain portion, moving in a downwardly direction, to an opposite side of said first carriage;
  - means, secured to the first housing, for moving said first chain;
  - a first chain sprocket rotatably mounted on said first carriage and arranged to operatively engage said upwardly moving chain portion and arranged to normally idly spin with chain motion;
  - a second chain sprocket rotatably mounted on said carriage, and arranged to operatively engage said downwardly moving chain portion and arranged to normally idly spin with chain motion;
  - first control means, secured to said first carriage, for permitting the spinning of said first chain sprocket when in a first state and for preventing the spinning of said first chain sprocket when in a second state;
  - second control means secured to said first carriage, for permitting the spinning of said second chain sprocket when in a first state and for preventing the spinning of said second chain sprocket when in a second state;
  - a control valve secured to said carriage, operatively connected to said first and second control means, and arranged to shift between first and second control states wherein said first control means is in its first state and said second control means is in its second state when said control valve is in said first control state and wherein said first control means is in its second state and said second control means is in its first state when said control valve is in said second control state;



means movably secured to said first housing for shifting said control valve between said first and second control states; a second housing; a second carriage movably mounted in said second housing; a second chain having one end fixed to said first carriage and the other end free; and means secured to said second carriage for adjustably grasping said second chain intermediate its ends.

4,281,557

## MEANS FOR DRIVING A MOVABLE BODY

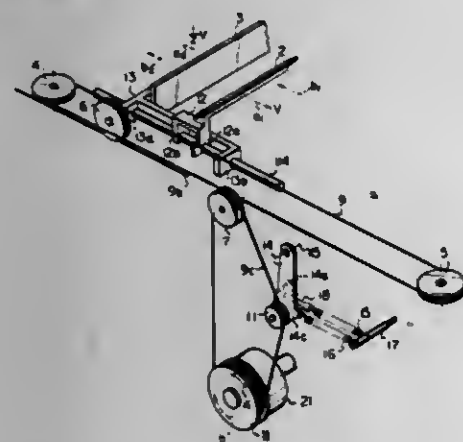
Sakae Ohta, and Tatsuo Tani, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Jul. 16, 1979, Ser. No. 57,900

Int. Cl.<sup>3</sup> F16H 27/02, 7/12

U.S. Cl. 74—89.22

7 Claims



- Means for driving a movable body comprising: a guide member; a movable body reciprocatingly mounted along said guide member; a member for driving said movable body so as to advance and return said movable body; a wire connecting said movable body with said driving member; a tension member arranged in a slack portion of the wire at the time of advancing movement of the movable body; and first and second separate and parallel elastic means for applying a strong or a weak tension force, respectively, to said tension member, said weak tension force being applied to said tension member during advancing movement to said movable body and said strong tension force being applied to said tension member during returning movement of said movable body.

4,281,558

## FUEL INJECTION PUMP CONTROL LEVER CONSTRUCTION

Hellmut Tomasch, Freiberg; Robert Bacher, Stuttgart; Karl Kourath, Ludwigsburg; Claus Köster, Ditzingen, and Heinz Nothdurft, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 3, 1979, Ser. No. 26,741

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823113

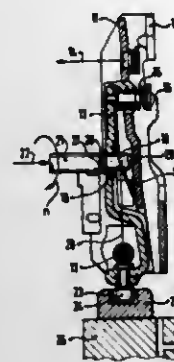
Int. Cl.<sup>3</sup> F02D 1/04; F02M 59/24

U.S. Cl. 74—99 R

8 Claims

- Fuel injection pump control lever construction having a rotatable and axially movable positioning element (21); a control lever assembly including a movable start lever (12) connected to and controlling the position of a fluid distribution element (25, 26) and formed as a plate or sheet-like element, means (13) movably positioning the start lever, and resilient means (15, 17, 22) engaging said start lever to

maintain resilient contact thereof with the positioning element (21) wherein, in accordance with the invention, the engagement surface on the control lever (12) engaged by the position-



ing element (21) comprises a bolt (18) of wear-resistant material punch-pressed into the plate-like element forming the start lever, an end portion (20) thereof forming a wear-resistant surface for engagement by said rotatable positioning element (21).

4,281,559

## VARIABLE SPEED TRANSMISSION SYSTEMS

Raymond Sharpe, Mirfield, England, assignor to Lucas Industries Limited, Birmingham, England

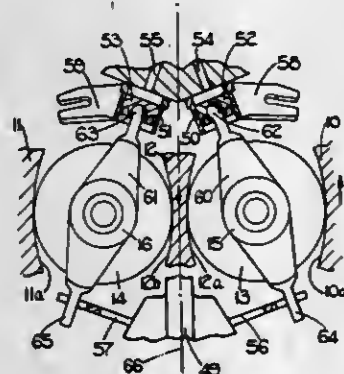
Continuation of Ser. No. 824,247, Aug. 12, 1977. This application Sep. 7, 1979, Ser. No. 73,230

Claims priority, application United Kingdom, Aug. 14, 1976, 33904/76

Int. Cl.<sup>3</sup> F16H 15/08

U.S. Cl. 74—200

6 Claims



- A variable ratio frictional drive gear comprising two axially spaced rotatable torus discs rotatable about a common axis, part toroidal surfaces on the respective axially presented faces of said discs respectively, an input connected to one of said discs, an output connected to the other of said discs, a set of circumferentially spaced drive rollers in frictional rolling contact with the part toroidal surfaces on said discs respectively, bearing structures on which said rollers are mounted respectively, each of the bearing structures being tiltable through a ratio angle with respect to the plane of the rollers when the rollers are parallel to said common axis to vary the distances from the common axis of the discs at which the rollers engage the two toroidal surfaces of the discs respectively, means for moving the roller bearing structures tangentially with respect to said axis of the discs by applying a force to said bearing structures, said force being in a direction which is non-parallel with respect to a plane perpendicular to the common axis of the discs and means for accommodating effective movement of the roller bearing structures relatively to said common axis of the discs, in a direction parallel to the common axis of the discs.

4,281,560

## SPEED REDUCER GEAR BOX WITH FLYWHEEL

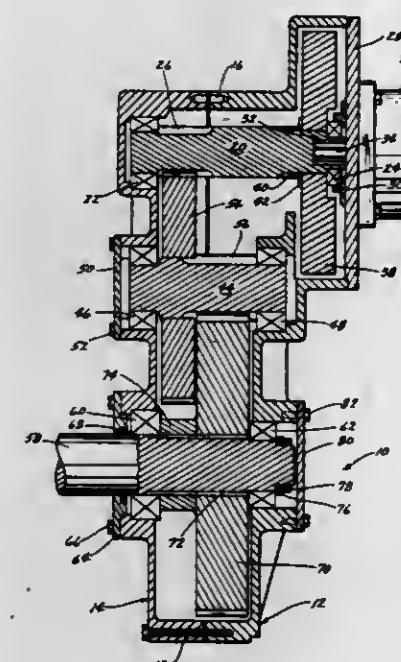
Saul Herscovici, Waterloo, Iowa, assignor to Power Engineering and Manufacturing, Ltd., Waterloo, Iowa

Continuation of Ser. No. 883,199, Mar. 3, 1980, abandoned. This application Jan. 30, 1980, Ser. No. 117,005

Int. Cl.<sup>3</sup> F16H 1/20

U.S. Cl. 74—414

3 Claims



- A speed reducer gear box comprising, a housing means having an input shaft rotatably mounted therein and adapted to be connected to a power source, said input shaft having a toothed gear means thereon, an output shaft rotatably mounted in said housing means and extending therefrom, said output shaft being adapted to be connected to a driven member, an intermediate shaft mounted in said housing means and having a first toothed gear means mounted thereon which is in mesh with said toothed gear means on said input shaft, said intermediate shaft having a second toothed gear means thereon, said output shaft having a toothed gear means mounted thereon which is in mesh with the said second toothed gear means of said intermediate shaft, said toothed gear means on said input, intermediate and output shafts being of relative sizes such that said input shaft is rotated at a higher rate of speed than said intermediate shaft and said intermediate shaft is rotated at a higher rate of speed than said output shaft, a flywheel, means for mounting said flywheel on said input shaft for rotation of said flywheel in unison with said input shaft, said input shaft being adapted for connection to a power source independently of said means for mounting said flywheel on said input shaft, and said housing means comprising an enclosure for said flywheel, said toothed gear means, said intermediate shaft and at least portions of said input and output shafts, said housing including first and second bearing means into which opposite ends of said input shaft are rotatably mounted, said flywheel being mounted on said input shaft at a position between said first and second bearing means, and said housing including third and fourth bearing means into which opposite ends of said intermediate shaft are rotatably mounted and means for supporting said third and fourth bearing means on the same side of said flywheel and in radially overlapping relation thereto.

4,281,561

## THREE AXES CONTROLLER

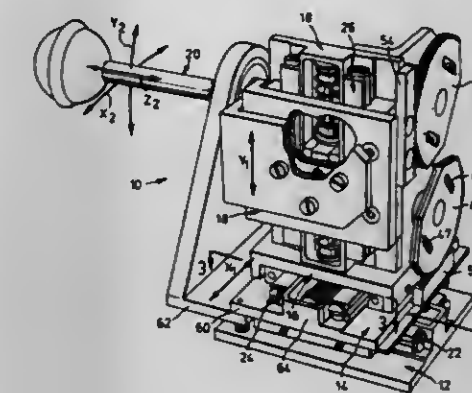
Ernest Groskopf, Caledon East, Canada, assignor to Spar Aerospace Limited, Weston, Canada

Filed Oct. 9, 1979, Ser. No. 82,864

Int. Cl.<sup>3</sup> G05G 9/04

U.S. Cl. 74—471 XY

1 Claim



- A three axes controller comprising: a support platform, a first carriage, a first linear bearing mounting said first carriage on said support platform for movement in the direction of a first axis fore and aft of a first neutral position, first centering means normally urging said first carriage to said first neutral position, a second carriage, a second linear bearing mounting said second carriage on said first carriage for movement in the direction of a second axis fore and aft of a second neutral position, second centering means normally urging said second carriage to said second neutral position, a third carriage, a third linear bearing mounting said third carriage on said second carriage for movement in the direction of a third axis fore and aft of a third neutral position, a third centering means normally urging said third carriage to said neutral position, said first, second and third axes being orthogonally arranged and having a common origin when said carriages are in said first, second and third neutral positions, a control lever having a proximal end and a distal end, gimbal means mounting said control lever on said first carriage at a point spaced from the proximal and distal ends of the control lever for gimbal movement relative to said first carriage while retaining said lever against longitudinal movement relative to said first carriage in the direction of said first axis, universal joint means at the distal end of said control lever mounting said distal end in said third carriage for universal movement with respect thereto in response to gimbal movement of the control lever, said universal joint having a center of gyration coincident with the common origin of the orthogonally arranged axes when the first, second and third carriages are located in their neutral position, said control lever having a longitudinal axis aligned with said first axis when said carriages are all in their neutral position whereby movement of the lever in a direction of its longitudinal axis effects movement of said first carriage in a direction of said first axis, first signal means having first and second components mounted on said support platform and said first carriage respectively, said first signal means being operative in response to movement of its first component with respect to its second component to generate an electrical signal proportional to the displacement of said first carriage with respect to said platform from said first neutral position,



second signal means having first and second components mounted on said first carriage and said second carriage respectively, said second signal means being operative in response to movement of one of its components relative to the other to generate an electrical signal proportional to the displacement of said second carriage with respect to said first carriage from said second neutral position, third signal means having first and second components mounted on said second and third carriages respectively, said third signal means being operative in response to movement of one of its components relative to the other to generate an electrical signal proportional to the displacement of said third carriage with respect to said second carriage from said third neutral position.

4,281,562

## UNIVERSAL ADAPTOR LINKAGE

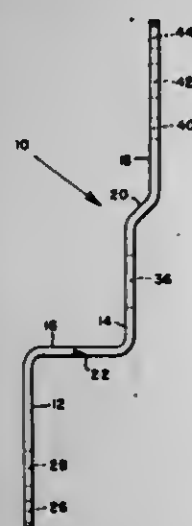
Ralph A. Vesuto, Blackwood, N.J., assignor to Mr. Transmission, Inc., Camden, N.J.

Filed Mar. 13, 1979, Ser. No. 20,213

Int. Cl.<sup>3</sup> G05G 9/18, 1/04

U.S. Cl. 74-473 R

10 Claims



1. A universal adaptor linkage for connection between the transmission and the shift or linkage rod associated with the gear selector lever of an automobile comprising a lower linkage portion having at least one hole therein for selective connection to the shift or linkage rod, a center linkage portion having a hole therein for connection to the gear shift control valve trunnion of the transmission, a transverse linkage portion for connecting the upper end of the lower linkage portion to the lower end of the center linkage portion, an upper linkage portion extending upwardly from the center linkage portion and having at least one hole therein for selective connection to the shift or linkage rod, and an upper transverse linkage portion extending between the upper end of the center linkage portion and the lower end of the upper linkage portion.

4,281,563

## DEVICE FOR ELIMINATING RESIDUAL UNBALANCE FROM A ROTATING ELEMENT

Paul Favrot, Gagny, France, assignor to Constructions de Cléchy, France

Filed Apr. 4, 1979, Ser. No. 27,051

Claims priority, application France, Jun. 8, 1978, 78 17117

Int. Cl.<sup>3</sup> F16F 15/22; B24B 5/00

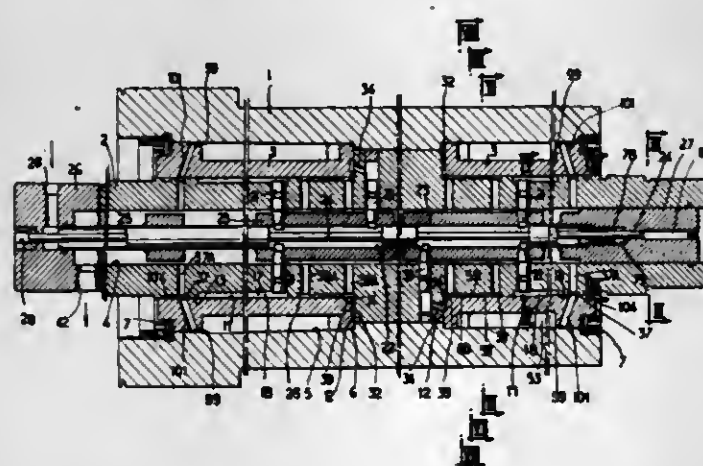
U.S. Cl. 74-573 F

2 Claims

1. In a device comprising a stationary central shaft, having a cylindrical outer bearing surface, and a rotary element rotatably mounted co-axially with said shaft by a bearing means on

said cylindrical outer bearing surface of said stationary central shaft, residual unbalance eliminating means comprising:

- a plurality of arcuate balancing chambers in said rotary element regularly coaxially distributed about the axis of rotation of said rotary element;
- a plurality of corresponding annular channels in said cylindrical outer bearing surface of said stationary central shaft;
- a plurality of radial holes in said rotary element each communicating respectively between one of said arcuate balancing chambers and one of said corresponding annular channels;
- a plurality of corresponding longitudinal ducts in said stationary central shaft each communicating respectively with one of said corresponding annular channels;
- a source of oil under pressure;
- an oil-supplying chamber in said stationary central shaft communicating with said source of oil;
- an oil chamber in said stationary central shaft communicating with said longitudinal ducts;



- a first calibrated constriction means in said stationary central shaft between said oil-supplying chamber and said oil chamber;
- a source of compressed air;
- a compressed air chamber in said stationary central shaft communicating with said source of compressed air;
- a plurality of regulating pintles with inlets and outlets in said stationary central shaft, said inlets of said pintles communicating with said compressed air chamber and each of said outlets of said pintles communicating respectively with one of said corresponding longitudinal ducts;
- a plurality of second constriction means in said rotary element each having inlet and outlet means, said inlet means of each of said second constriction means communicating respectively with one of said arcuate balancing chambers; and
- an oil and compressed air leakage escape means in said rotary element and said stationary central shaft communicating with said outlets of said second constriction means and having an outlet from said stationary central shaft.

4,281,564

## POWER TRAIN OR TRANSMISSION

John W. Hill, deceased, late of Grayslake, Ill. (by Gwendolyn K. Hill, administrator), assignor to Gwendolyn K. Hill, Grayslake, Ill.

Filed Mar. 8, 1979, Ser. No. 18,742

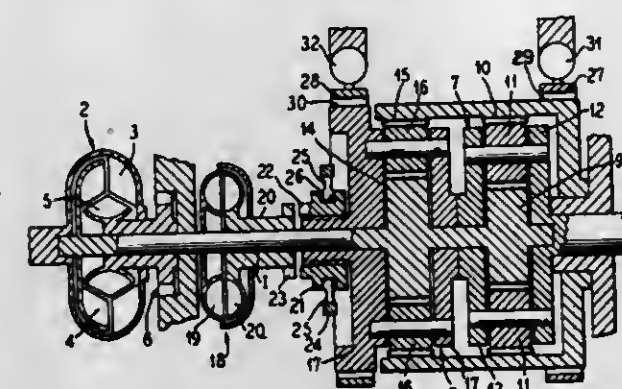
Int. Cl.<sup>3</sup> F16H 37/06

U.S. Cl. 74-665 D

12 Claims

1. A power train variable from substantially a 1:1 ratio to a higher ratio, comprising a driving member and a driven member, a pair of planetary gear assemblies, each including a sun gear, a ring gear and a planetary carrier having at least one planetary gear operatively connecting the associated ring and sun gears, said gear assemblies having different gear ratios,

both planetary assemblies having their sun gears rotatable by said driving member, said driven member being operatively connected to the planetary carrier of one of said assemblies, means connecting said ring gears for rotation as a unit, and means for selectively rotating the planetary carrier of the other



of said assemblies at desired speeds with respect to the driving member, whereby the overall ratio between the driving and driven members is variable in dependence upon the relative speeds of said driving member and said planetary carrier of said other of said assemblies.

4,281,565

## CONTROLLED START SPEED REDUCER

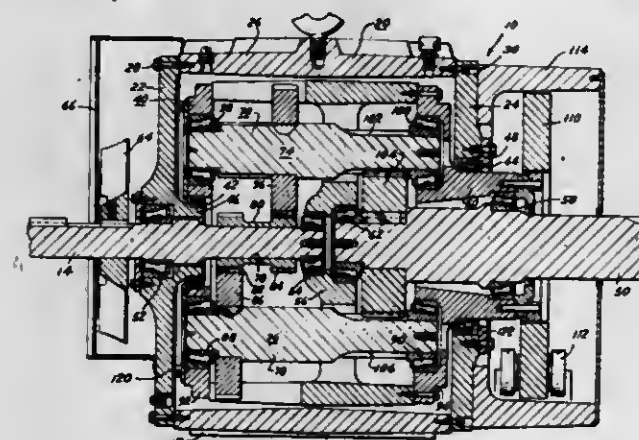
Jerry L. Lower, Mishawaka, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.

Filed Mar. 23, 1979, Ser. No. 23,098

Int. Cl.<sup>3</sup> F16H 3/44, 1/28

U.S. Cl. 74-789

10 Claims



1. A controlled start speed reducer comprising a fixed outer housing having opposite end walls, an inner housing mounted in said outer housing for rotation therein, one of said walls having an inner extending annular boss with a center hole and the other of said walls having a center opening of a diameter larger than said annular boss, an extension rigidly connecting said inner housing and projecting through said opening, a bearing means on said annular boss on which one end of said inner housing is journaled, bearing means between said extension and the respective end wall in said opening on which the other end of said inner housing is journaled, input and output shafts in axial alignment extending axially into said inner housing, a plurality of gear trains mounted for rotation in said inner housing interconnecting said input and output shafts, a disc connected to said extension for rotation therewith, and means connected to said outer housing for restraining the rotation of said disc such that said inner and outer housings function as torque reaction elements during normal acceleration and full operation of the reducer.

4,281,566

## SPEED REDUCTION UNIT

Enzo Brusasco, Turin, Italy, assignor to Roltra S.p.A., Turin, Italy

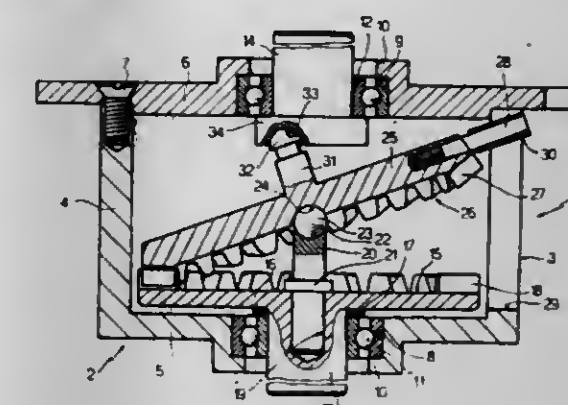
Filed Jan. 30, 1979, Ser. No. 7,743

Claims priority, application Italy, Feb. 2, 1978, 67198 A/78; Apr. 28, 1978, 67968 A/78

Int. Cl.<sup>3</sup> F16H 1/28

U.S. Cl. 74-800

9 Claims



1. A speed reduction unit comprising an outer casing, an input shaft and an output shaft coaxial with respect to one another and rotatably supported by said casing, a first gear integral with said output shaft, a second gear coupled with said first gear, and connection means between said second gear and said input shaft, the number of teeth of said two gears differing from one another by at least one tooth; and in which said first gear is a face gear and said second gear is a bevel gear sloping with respect to the first gear and positioned to face it, said second gear being centrally supported inside said casing by means of a ball joint support in order to oscillate relative to said casing and said first gear about a point of the common axis of said two shafts, said connection means comprising a central axial projection extending from said second gear, key means being provided for angularly locking said second gear relative to said casing, said ball joint support comprising an upright extending axially from said first gear towards said second gear and a ball interposed between the free end of said upright and said second gear, a first seating spherical in shape for said ball being formed on said upright, a second seating spherical in shape for said ball being formed centrally on said second gear.

4,281,567

## SYSTEM FOR OPTIMIZING THE FUEL CONSUMPTION OF AN INTERNAL COMBUSTION ENGINE

Franz Maurer, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

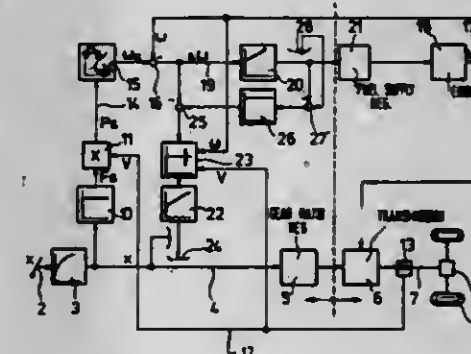
Filed Oct. 1, 1979, Ser. No. 80,662

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843256

Int. Cl.<sup>3</sup> B60K 41/04

U.S. Cl. 74-866

6 Claims



1. In a motor vehicle having an internal combustion engine



(18), first sensor means (17) connected to said internal combustion engine for furnishing an engine speed signal indicative of the speed thereof, hydrostatic transmission means connected to said internal combustion engine and having a continuously adjustable transmission ratio, second sensor means (13) coupled to said hydrostatic transmission means for furnishing an output speed signal indicative of the output speed thereof, means (21) connected to said internal combustion engine for adjusting the fuel supply of said internal combustion engine in accordance with a fuel control signal applied thereto, and means (2) for furnishing an input signal under external control, a system for minimizing fuel consumption of said internal combustion engine comprising means (4, 5) connected to said input signal furnishing means and said hydrostatic transmission means for adjusting said transmission ratio in response to said externally controlled input signal; means (11) connected to said input signal furnishing means and said second sensor means for multiplying said input signal by said output speed signal and furnishing a desired power signal corresponding to the so-multiplied values; storage means (15) connected to said multiplier means for furnishing a desired speed signal signifying the optimum engine speed for minimum fuel consumption in response to said desired power signal; means (16) connected to said storage means and said first sensor means for comparing said desired engine speed signal to said actual engine speed signal and furnishing a first error signal corresponding to the difference therebetween; and means (20) interconnected between said comparing means and said fuel supply adjusting means for furnishing said fuel control signal to said fuel supply adjusting means in response to said first error signal.

4,281,568

**QUICKLY ADJUSTABLE RATCHET WRENCH**

Werner W. Martimaas, 650 S. Rock Blvd.-Unit 3, Reno, Nev. 89502

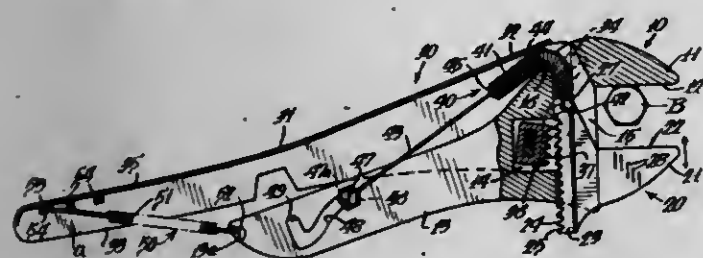
Filed Jun. 8, 1979, Ser. No. 46,801

The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> B25B 13/14

U.S. Cl. 81-134

10 Claims



1. In a quickly adjustable ratchet wrench for rotating objects which have angularly related flat surfaces surrounding an axis of rotation, said wrench being of the type which has a fixed jaw member having a jaw element and a rearward extension, a movable jaw member having a jaw element and an elongated engaging surface, and means mounting said movable jaw member for linear translatory movement of the fixed jaw member between closed and open positions of said jaw elements, the improvement comprising:

a jaw spring lightly biasing said movable jaw member toward closed position so that said fixed and movable jaw elements normally close lightly upon an object between them, said jaw spring being a tension spring which has one end secured to the top of the movable jaw member and the other end telescopically engaging a proximal end of an anchor member, a lug on the distal end of said anchor member, and means on the rearward extension of the fixed jaw member for locating said lug selectively in a first position with the spring tensioned by the anchor member or in a second position with the proximal end of the an-

chor member telescoped along the spring to eliminate the spring tension;

locking means including a locking face on the fixed jaw member which is selectively engageable with said engaging surface to lock the jaw elements closed upon an object between them;

and a lever pivoted on the fixed jaw member on a pivot axis substantially on the line of linear translatory movement of the movable jaw member, pivotal movement of said lever engaging and disengaging said engaging surface and said locking face, said lever having a transverse surface which bears on said rearward extension of the fixed jaw member when the engaging surface and the locking face are engaged so that manual force applied through the lever against said rearward extension rotates an object upon which the jaws are closed, and which pivots away from said rearward extension to disengage said engaging surface and locking face and thereby release the movable jaw member for free linear movement against the bias of the spring, said lever being so related to said rearward extension that user may manually grip the lever with one hand while leaving the rearward extension free to permit manual reciprocation of the wrench with the movable wrench jaw alternately locked to grip opposite flat surfaces of an object between the jaw elements to rotate said object and released for free rotation of the jaw elements around angles between adjacent flat surfaces of the object without rotating said object.

4,281,569

**CLAY CUTTING LATHE AND METHOD**

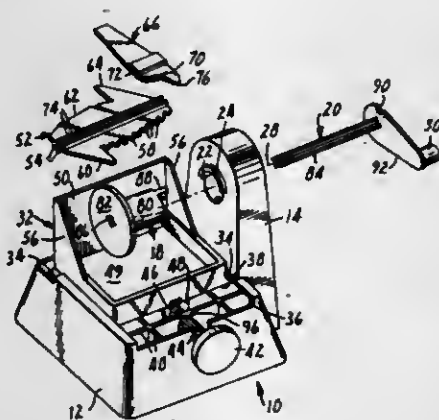
James F. Kubiawicz, Minneapolis, Minn., assignor to Custom Concepts, Incorporated, Minneapolis, Minn.

Filed Dec. 28, 1979, Ser. No. 107,866

Int. Cl.<sup>3</sup> B23B 3/00

U.S. Cl. 82-1 C

12 Claims



9. A method for cutting predetermined spindle-like objects from moist clay comprising the steps of: packing the clay around a rotor assembly into a somewhat cylindrical shaped clay mass; rotating the rotor assembly to rotate the clay mass; cutting grooves in the clay to a depth at which the surface of the object will be formed to form spaced annular clay ridges; cutting away the ridges and shaping the surface of the spindle-like object; wetting the clay with water during said cutting steps; and removing the finished spindle-like object from the rotor assembly.

4,281,570

**ROTARY BLADE POWER SAW ATTACHMENT**

Jay L. Hill, 2401 33rd Ave., North, Texas City, Tex. 77590

Filed Mar. 10, 1980, Ser. No. 129,023

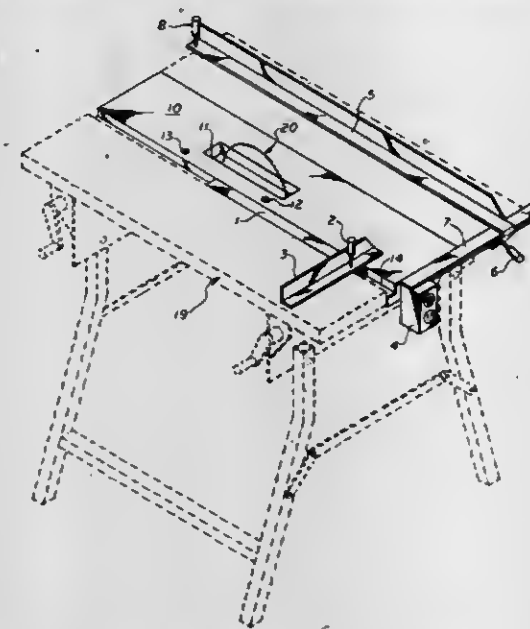
Int. Cl.<sup>3</sup> B27B 5/22

U.S. Cl. 83-477.2

5 Claims

1. An attachment to a rotary blade power saw, which attach-

ment comprises a platform having a planar upper surface an opening suitable for the protrusion of a circular saw blade through the platform, a fastener means suitable for fastening a rotary blade power saw to the underside of the platform, and support legs attached to the underside of the platform; wherein said support legs are of a length and shape adapted to rest on the underlying support structure of a workbench while maintaining the upper surface of the platform in a plane containing



the smooth upper surface of the workbench; wherein said workbench comprises a pair of elongated vise members mounted on a support structure and disposed in side-by-side relation to each other with at least one of said vise members defining a substantially smooth upper surface upon which a work-piece can be placed and at least one of said vise members being mounted on said support structure so as to be moveable relative to the other one of said vise members.

4,281,571

**PAPER CUTTER ASSEMBLY**

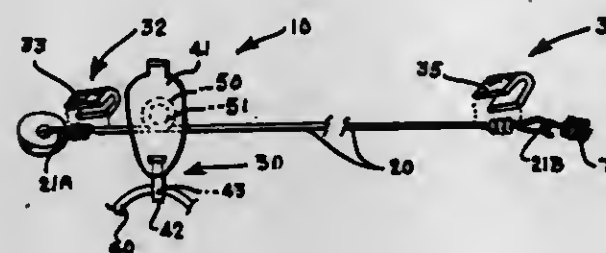
Rowland K. Yates, 3413 Woodvale Dr., Midwest City, Okla. 73110

Filed Aug. 22, 1979, Ser. No. 68,826

Int. Cl.<sup>3</sup> B26F 3/00

U.S. Cl. 83-542

3 Claims



1. A paper cutter assembly, in combination with a roll of paper having a width, and with a means for supporting and unrolling said paper from said roll, comprising:

a. a displaceable stationary single-strand cutter wire member disposed across said width of said roll of paper and simultaneously disposed so as to be adjacent to and under and along said paper when said paper is unrolled;

b. and, means, cooperatively useable with said displaceable stationary single-strand cutter wire member, for assisting in cutting paper unrolled from said roll and that is positioned adjacent to and on and along said displaceable stationary single-strand cutter wire member, wherein this paper-cutting assisting means is movable along said displaceable stationary single-strand cutter wire member, and wherein said movable paper-cutting assisting means further includes:

(1) a frame member comprising a first portion in the shape

of an inverted "U" and a second portion connected to said first portion in a transverse position, with said second portion having a hole therein;

(2) a pulley member connected to, and rotatable within, said first portion of said frame member, with said pulley member having a grooved rim;

(3) and, a handle member removably connected to said transverse second portion of said frame member by, and at, said hole therein;

whereby, when paper unrolled from said roll is positioned adjacent to, and is positioned on and along, said displaceable stationary single-strand cutter wire member, and when thereafter said single-strand wire member is pulled and is displaced with the use of said paper-cutting assisting means which is pulled and is moved along said cutter wire member and along said width of said unrolled paper, then said unrolled paper is cut straightly, cleanly, quickly, and safely from said roll by said movement of said displaced wire cutter member.

4,281,572

**SAW GUIDE FOR ANGLE CUTS**

Marvin S. Stovall, 2211 Hawkins La., Eugene, Oreg. 97405

Filed Nov. 19, 1979, Ser. No. 76,934

Int. Cl.<sup>3</sup> B27B 5/00

U.S. Cl. 83-745

3 Claims



1. A guide for use with a powered hand saw for making controlled cuts at an infinite number of angles in a workpiece, said guide comprising

elongate rail means defining a cutting path for such a saw, a pair of carriages mounted on said rail means for independent movement therealong to an infinite number of different spaced positions relative to one another, with each carriage including angular position markings related to preselected angular positions, and

means for each carriage for clamping the same onto a workpiece at an infinite number of angles relative thereto, each of said clamping means including an elongated arm mounted adjacent one of its ends on the associated carriage for swinging in a plane common with the arm in the other clamping means to accommodate adjustment of the rail means to different angles relative to a workpiece, and a clamp assembly attached to the other end of arm for clamping onto a workpiece, and further including pointer means movable as a unit with the arm for pointing toward the associated position markings.



4,281,573

## MANUAL VOLUME CONTROL DEVICE FOR GUITAR OR THE LIKE

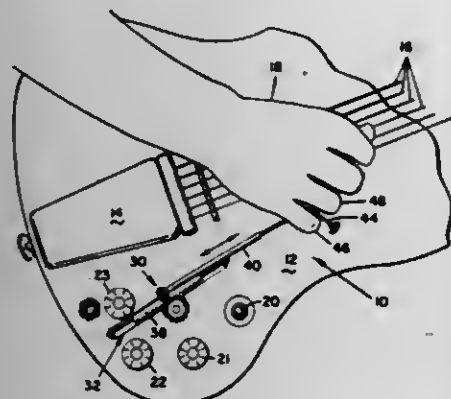
Dennis W. Yarema, 9271 Thistle Rd., Anaheim, Calif. 92804

Filed Oct. 5, 1979, Ser. No. 82,377

Int. Cl.<sup>3</sup> G10H 3/00

U.S. Cl. 84—1.16

6 Claims



1. In a device for use with an electric guitar having electrical controls with rotatable shafts extending through the face thereof, the combination comprising:

a first member configured for being received on the shaft of an electrical control;

a support member configured for securing to the face of the guitar in proximate relation to said shaft, said support member having a rod affixed thereto in generally parallel relation to the face of the guitar;

a second elongate member with an elongate aperture therein slidably mounted on said rod in abutting relation with said first member, the abutting surfaces of said first and second members matingly coacting to effect rotation of said first member in response to linear movement of said second member; and

handle means having one end thereof coupled to said second member and the other end thereof configured for being received between the fingers of the hand of the guitarist with the hand positioned at the strumming area of the guitar for enabling rotation of the shaft of the control by the guitarist with the hand in proximity to the strumming area whereby to produce varying type sounds from a picked guitar string in response to linear movement of said second member by the guitarist.

4,281,574

## SIGNAL DELAY TONE SYNTHESIZER

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co. Ltd., Hamamatsu, Japan

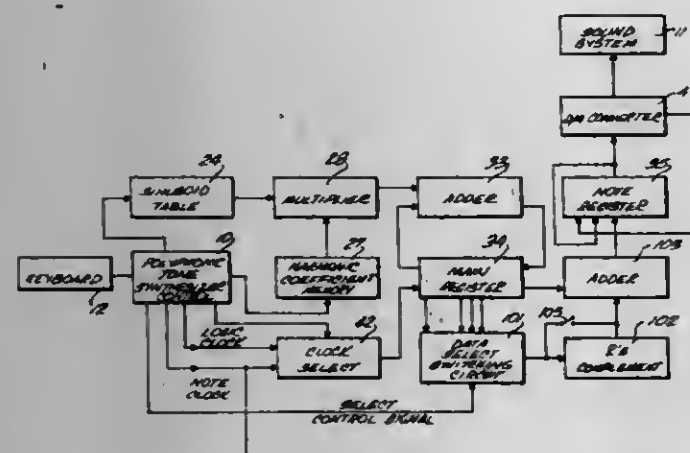
Continuation of Ser. No. 885,561, Mar. 13, 1978, abandoned.

This application Sep. 10, 1979, Ser. No. 73,665

Int. Cl.<sup>3</sup> G10H 1/12, 7/00

U.S. Cl. 84—1.19

8 Claims



1. A tone synthesizer comprising: means generating a plural-

ity of digital words in sequence at a predetermined rate at a first output, said words defining the amplitude of spaced points on the waveform of a periodic analog signal, means generating the same sequence of digital words at a second output at the same rate but delayed in time an integral multiple of the sequence time between successive words, means subtracting each word generated at the first output from the coincident word from the second output to generate a resultant word, and a digital-to-analog converter coupled to the output of the subtracting means for converting the resultant words to an analog voltage signal.

4,281,575

## TOY INCLUDING A MUSIC PLAYING DEVICE THEREIN

Yoshifumi Nakamura, Numazu, Japan, assignor to Nanbu Industrial Co., Ltd., Numazu, Japan

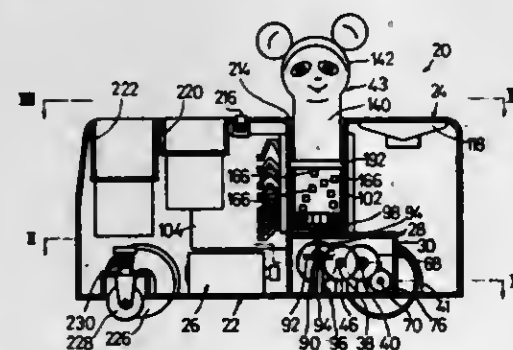
Filed Jun. 11, 1979, Ser. No. 47,327

Claims priority, application Japan, Jun. 14, 1978, 53/81561[U]; Mar. 2, 1979, 54/26371[U]; Mar. 5, 1979, 54/26704[U]

Int. Cl.<sup>3</sup> G10H 3/03

U.S. Cl. 84—1.28

3 Claims



1. A toy including a music playing device therein comprising: a toy body; electronic musical scale generating means mounted in said toy body and including sound selecting means corresponding to the sounds composing the musical scale so as to produce electrical signals of the sounds corresponding to said sound selecting means; a speaker mounted in said toy body of regenerating the output of said musical scale generating means; rotary means rotatably mounted in said toy body; a mechanism for rotating said rotary means by means of a motor; protrusions provided on the surface of said rotary means which act to operate selectively said sound selecting means to play a predetermined music piece through said musical scale generating means as said rotary means is rotated; said rotary means including a cylindrical rotator formed by securely stacking a plurality of circular members in the axial direction thereof which is adapted to be detachably mounted in said toy body; said protrusions being provided on the peripheral surface of each of said circular members integrally with the circular member.

4,281,576

## BRIDGE FOR STRINGED INSTRUMENTS

C. Leo Fender, 2851 Rolling Hills Dr., Sp. 33, Fullerton, Calif. 92635

Filed Oct. 29, 1979, Ser. No. 89,164

Int. Cl.<sup>3</sup> G10D 3/04

U.S. Cl. 84—298

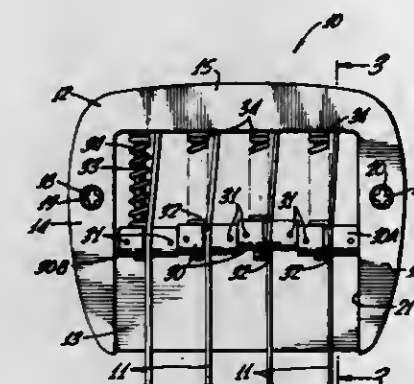
1 Claim

1. A bridge for a stringed instrument including a body and a neck comprising:

a base member rigidly connectable to said body of said instrument, said base member having a first section connectable to said body of said instrument and a second section connected to one end of said first section and extending perpendicular thereto;

a plurality of drums, each of said drums having an internally threaded hole extending laterally therethrough;

a plurality of bolts extending through said second section of said base member and through said holes in said drums for connecting said drums to said base member in end-to-end relationship for independent lateral movement in two orthogonal directions whereby rotation of said bolts relative to said drums moves said drums towards or away from said second section of said base member;



a fixed abutment associated with said base member, adjacent one end of the first one of said drums; and

a plurality of holes in said second section of said base member, one for each of said drums, said holes being positioned intermediate said bolts, said strings extending through said holes in said base member and over said drums at an acute angle relative to said bolts without engagement with said bolts so as to apply an axial force to each of said drums and to urge all of said drums axially into contact with each other and said first drum into contact with said abutment.

4,281,577

## ELECTRONIC TUNING DEVICE

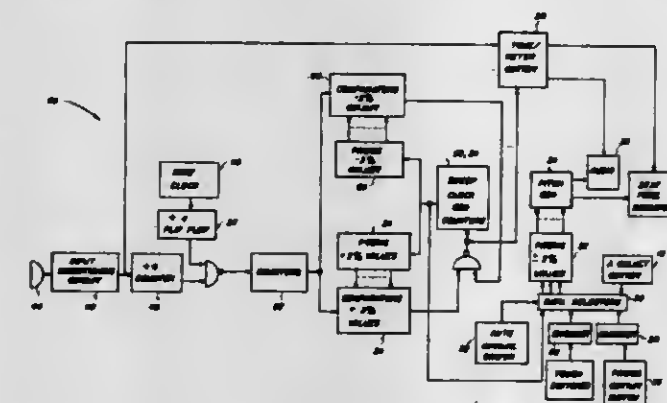
Peter Middleton, Box 255, DeKalb, Ill. 60115

Filed May 21, 1979, Ser. No. 40,558

Int. Cl.<sup>3</sup> G10G 7/02

U.S. Cl. 84—454

6 Claims



1. A tuning device for tuning musical instruments comprising:

(a) pitch generator means for providing a series of audio frequencies that approximate the notes of a plurality of tuning systems over a range of at least one octave;

(b) a utilization circuit coupled to said pitch generator means;

(c) first memory means having addressable storage locations for storing a plurality of data signals representative of the audio frequencies produced by said pitch generator means;

(d) data selection means for addressing the storage locations of said first memory means to retrieve and apply data signals to said pitch generator means representative of only one of said tuning systems and only one of said audio frequencies in the selected tuning system, said data selection means being capable of applying data signals repre-

sentative of the audio frequencies in the selected tuning system in any desired sequence;

(e) an acoustical pick-up microphone;

(f) an input conditioning circuit connected to said microphone for recovering the fundamental frequency of a note produced by a musical instrument and producing a data output signal representative thereof; and

(g) signal tracking means including (a) sweep means for simultaneously addressing the storage locations of said first, second and third memory means, (2) comparator means for comparing the addressed data signals from said second and third memory means with the data output signal from said output conditioning circuit, and (3) gate means coupled to said comparator means for turning off said sweep means when the data output signal from said input conditioning circuit falls within the frequency range established by said second and third memory means, for applying the data signal from the last addressed storage location of said first memory means to said pitch generator means and for enabling said utilization circuit.

4,281,578

## CLEF AND SCALE INDICATOR FOR MUSIC INSTRUMENTS

Akira Tanimoto, Kashiwara, and Tomohiro Inoue, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

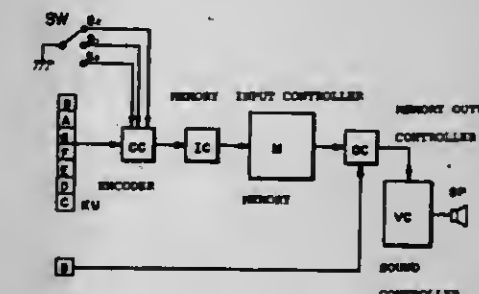
Filed Mar. 29, 1979, Ser. No. 24,952

Claims priority, application Japan, Mar. 31, 1978, 53-39064

Int. Cl.<sup>3</sup> G09B 15/04

U.S. Cl. 84—470 R

6 Claims



1. A system for providing musical note information to a musical instrument comprising:

input key means for providing information representative of any desired note within an octave;

an endless belt having musical staves and notes imprinted thereon, said endless belt being shiftable to produce a display of the musical notes of a desired octave;

octave shift switch means for providing desired octave information corresponding to the octave displayed by said endless belt; and

encoder means for combining said desired octave information with said information representative of any desired note within an octave to produce a desired note information signal;

said desired note information signals produced by said encoder being utilized by said musical instrument to create audible tones associated with said desired note information signals.

4,281,579

## TEACHING AID FOR KEYED MUSICAL INSTRUMENTS

Timothy J. Bennett, Sr., 309 Mary St., Westerville, Ohio 43081

Filed May 31, 1977, Ser. No. 801,729

Int. Cl.<sup>3</sup> G09B 15/02, 15/08

U.S. Cl. 84—478

8 Claims

1. An apparatus for use as an educational aid in learning to play a keyboard musical instrument, said apparatus comprising:

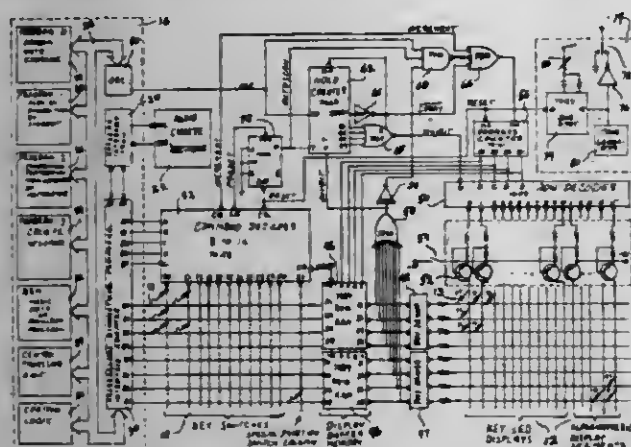
(a) a musical instrument keyboard;

(b) a plurality of illuminable, two-state displays, one display



in spatial correspondence with each key of said keyboard, said illuminable displays being electrically connected in a display matrix array;

- (c) a plurality of alphanumeric digit displays having their segments electrically connected in said display matrix array;
- (d) switch means mechanically connected to each key of said keyboard for detecting each key depression, said switch means being electrically connected in a switch matrix array;
- (e) a signalling means;
- (f) interfacing digital data circuit means connected to said displays, said switch means and said signalling means, for interfacing data transfer from said switch means to a microcomputer and from a microcomputer to said displays and said signalling means and for actuating said displays; and



(g) a digital data microcomputer connected to said switch means and said interfacing circuit means, said microcomputer including stored instructions and a stored sequence of musical steps for comparing each of said stored musical steps in sequence to key depressions and signalling whether each of said steps and said depressions are identical;

wherein said interfacing means includes a decoder circuit means and wherein said switch matrix array has a first set of lines connected to input ports of said microcomputer and its second set of lines connected to outputs of said decoder means, said decoder means having its inputs connected to output ports of said microcomputer, and wherein said switch means includes a series connected single pole, single throw switch and a diode connected to electrical intersections of the sets of lines of said switch matrix array.

#### 4,281,580 TENSIONING DEVICES

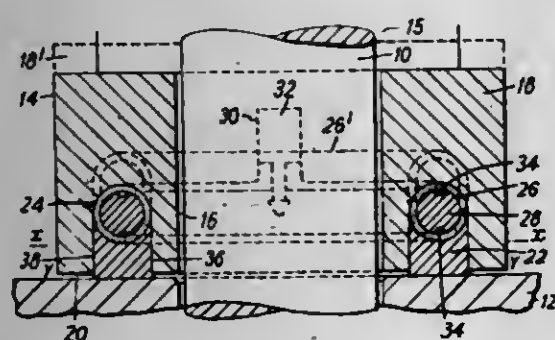
Thomas W. Bunyan, London, England, assignor to Pilgrim Engineering Development Ltd., London, England  
Continuation of Ser. No. 873,828, Jan. 31, 1978, abandoned. This application Nov. 5, 1979; Ser. No. 91,661

Claims priority, application United Kingdom, Feb. 2, 1977, 4284/77

Int. Cl.<sup>3</sup> F16B 35/06

U.S. Cl. 411-548

34 Claims



1. A tensioning device comprising a body having piston

means housed in a recessed end-face of the body and movable parallel to an axle extending through the body, and means for supplying hydraulic fluid behind the piston means to urge the piston means in an axial direction which leads out through said end-face, said piston means having two piston face areas, one on each of a transverse plane of the body containing said axis, said piston and face areas of said piston means having a concavely curved inner side-face with respect to said axis and an extended convexly curved outer side-face, the outer side-face being dimensioned such that the piston means has an overall transverse dimension less than the least possible overall diameter of an annular piston giving the same piston face area, and an overall longitudinal dimension less than the least possible for a pair of opposed circular pistons giving the same piston face area, said two piston face areas of said piston means having centroids collinear with said axis of the body, the centroids being spaced from said axis by respective distances which are inversely proportional to the areas of the respective piston face areas.

#### 4,281,581 HIGH-STRENGTH BLIND RIVET

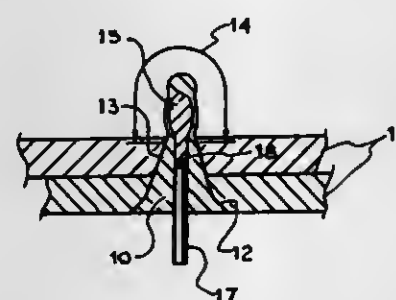
Liam R. Jackson, 183 Alpine St., and Allan H. Taylor, 30 Huxley Pl., both of Newport News, Va. 23606

Filed Sep. 24, 1979, Ser. No. 78,035

Int. Cl.<sup>3</sup> F16B 19/12

U.S. Cl. 411-19

4 Claims



1. A blind rivet for use as a means for joining two or more members comprising:

- a closed tubular end having selectively thinned walls defining a constant thickness from the outside, said closed tubular end being annealed and sized to fit through pre-drilled holes in the members to be joined,
- a soft essentially incompressible material being enclosed by said tubular end of said rivet,
- a snug fitting drive pin protruding from said rivet and being used to compress said soft material when driven flush with a preformed rivet head thereby creating internal pressure which in turn deforms said closed tubular end of said rivet or upsets the blind head to a predetermined size and shape,
- a hollow shank used to provide a snug fit into the predrilled holes which also encloses said soft material and that portion of said drive pin inside said rivet prior to forming,
- a preformed rivet head that is penetrated by said drive pin; and,
- a headed pin on the inner end of said drive pin having a head portion that is considerably smaller in diameter than said drive pin and having a shank portion connected to said drive pin of less diameter than said head portion, said headed pin being embedded in said soft material; to retain said drive pin in said soft material, said drive pin being pressed into said soft material during manufacture, which in turn enlarges said selectively thinned portion of said closed tubular end of said rivet to an outer diameter equal to or less than the said predrilled holes to retain the combination of said soft material and said drive pin, said selectively thinned portion thereby having a slightly bulged configuration.

#### 4,281,582 CONTROL PISTON FOR LIQUID PROPELLANT GUN INJECTOR

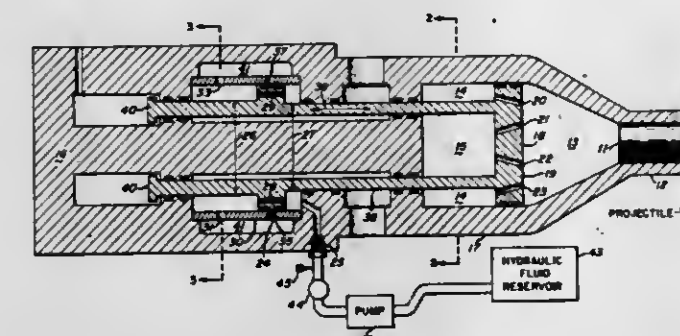
Vance W. Jaqua, Canoga Park, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 19, 1979, Ser. No. 50,274

Int. Cl.<sup>3</sup> F41F 1/04

U.S. Cl. 89-7

1 Claim



1. The improvement in a regenerative feed liquid propellant gun having a propellant injection piston and a charge chamber, said improvements for controlling the movement of the said injection piston, comprising:

- a. a control piston having a first face with a first effective pressure area and a second face with a second effective pressure area;
- b. means for rigidly attaching said control piston to said propellant injection piston;
- c. means for applying hydraulic fluid under pressure to the first face of the said control piston;
- d. means providing a fixed orifice through said control piston from said first face to said second face for providing a determined flow of hydraulic fluid therethrough;
- e. a cylindrical sleeve cooperating with said control piston, said cylindrical sleeve having spaced apart ports opening to the first and second faces of said control piston; and
- f. means cooperating with said ports to provide a by-pass passage for the flow of hydraulic fluid; and
- g. means moving said control piston relative to said ports for restricting the flow of hydraulic fluid through said by-pass passage to vary the resistance to the movement of said control piston.

#### 4,281,583

##### AMMUNITION SUPPLY SYSTEM

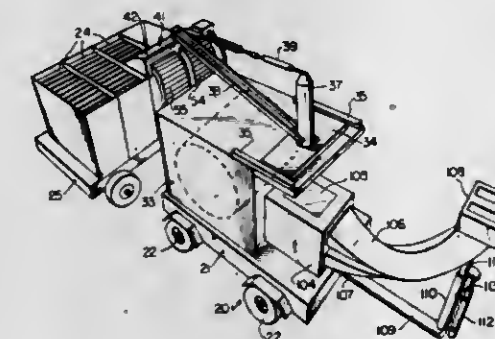
Stephen F. Pollock, and Charles E. Benedict, both of Tallahassee, Fla., assignors to Wayne H. Coloney Company, Inc., Tallahassee, Fla.

Filed Jan. 9, 1979, Ser. No. 2,122

Int. Cl.<sup>3</sup> F42B 39/12

U.S. Cl. 89-33 BB

3 Claims



1. An ammunition supply system for supplying ammunition to an armament system comprising a housing, drum means rotatably mounted within said housing, means for driving said drum means, said drum means having a plurality of flutes disposed generally parallel with the axis and arranged in side-

by-side relationship around the entire periphery thereof, said drum having at least two spaced annular grooves disposed around the periphery thereof, first and second interface units in spaced relationship with one another adjacent the sides of said drum means, each of said interface units having first and second spaced partition means, said first partition means having arm portions located within one of said grooves of said drum means and said second partition means having arm portions located within another of said grooves of said drum means, an ammunition belt including a plurality of tubular members, flexible means connecting said tubular members in spaced generally parallel relationship with each other, each of said tubular members normally receiving a round of ammunition with one end of the ammunition extending outwardly therefrom, said first interface unit having a first transfer means for placing said tubular members and said rounds of ammunition within the flutes adjacent to one end of said drum means, cam means positioned within said housing and in spaced relationship to said drum means, said cam means extending substantially entirely around said drum means, said cam means engaging said tubular members and moving said tubular members axially away from said rounds of ammunition so that said rounds of ammunition and said tubular members are in axially spaced relationship with each other on said drum means, said first and second partition means of said second interface unit removing said rounds of ammunition from said drum means while said tubular members remain on said drum means, second transfer means; said second transfer means including a pair of rotating guide means disposed on opposite sides of said first and second partition means adjacent to said arm portions and a central rotating drive means mounted therebetween, said rotating guide means cooperating with said partition means and said central rotating drive means for transferring said rounds of ammunition from said second interface unit to the armament system while simultaneously removing the empty shell casings from the armament system and placing said empty shell casings within said flutes of said drum means so as to be in substantial axial alignment with said tubular members, said cam means moving said tubular mean axially of said shell casings to that the tubular members receive said shell casings, said first transfer means of said first interface unit simultaneously removing said tubular members and shell casings from said drum means as said tubular members and said rounds of ammunition are placed within the flutes of said drum means, and means for discharging said tubular members from said housing.

#### 4,281,584

##### ELECTRO-HYDRAULIC REGULATING DRIVE AND A FAST-SWITCHING MAGNETIC VALVE FOR USE THEREIN

Reiner Onken, Brunswick; Günter Mansfeld, Grassel, and Johannes Tersteegen, Brunswick, all of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt für Luft- u. Raumfahrt, Cologne, Fed. Rep. of Germany

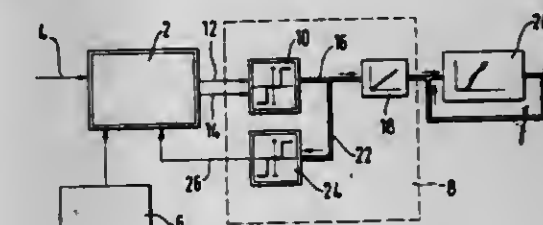
Filed May 30, 1979, Ser. No. 43,782

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2823960; Jan. 8, 1979, 2900473

Int. Cl.<sup>3</sup> F15B 21/08; B64C 13/24

U.S. Cl. 91-1

9 Claims



1. An electro-hydraulic actuator for use in the control of surfaces in aircraft, comprising a hydraulic regulating cylinder having a piston located intermediate therein to define separate chambers, said piston being bilaterally loaded and disposed in



a predetermined adjusted position and being operatively interconnected to a surface for the control thereof, two bistable controlled ball valves communicating with said cylinder and through which predetermined discrete amounts of hydraulic fluid of an hydraulic system are directed for flow into a preselected chamber of said cylinder for effecting the control of said piston, a process computer, valve control means operatively interconnected to said ball valves and electrically communicating with said process computer, and sensor means located between said ball valves and said cylinder and being electrically interconnected to said process computer, said valve control means being responsive to said process computer and receiving switching pulses therefrom for moving said ball valves to an open or closed position and said sensor means being responsive to a variation in the position of said piston to detect a differential condition between said ball valves and said cylinder and delivering electrical signals to said process computer to confirm that the ball valves have operated in accordance with the switching pulses received by said valve control means from said process computer.

4,281,585

**HYDRAULIC BRAKE BOOSTER AND VALVE MEMBER**  
Dean E. Runkle, LaPorte; Louis S. Tang, Mishawaka, both of Ind., and Gregory K. Harrison, Niles, Mich., assignors to The Bendix Corporation, Southfield, Mich.

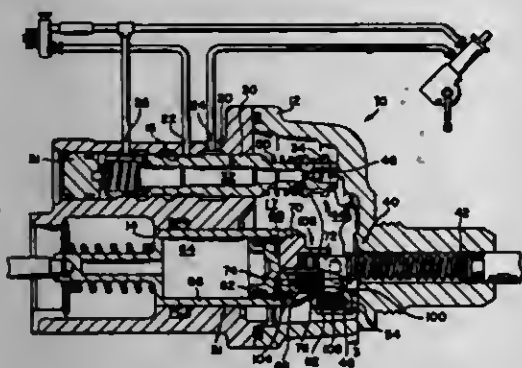
Continuation of Ser. No. 885,825, Mar. 13, 1978, abandoned.

This application Jan. 16, 1980, Ser. No. 112,508

Int. Cl.<sup>3</sup> F15B 13/10; F01B 25/02

U.S. Cl. 91—5

14 Claims



1. In a hydraulic brake booster having a housing defining a pressure chamber, a piston mounted in the housing and movable relative to the housing in response to the pressure in the pressure chamber, the piston defining and enclosing a storage chamber and a passage connecting said storage chamber with said pressure chamber, a control valve mounted in the housing, an operator actuator cooperating with the control valve to communicate pressurized fluid to the pressure chamber, and a valve member carried by the piston within said passage and communicating pressurized fluid from the pressure chamber to the storage chamber via said passage, the improvement wherein said valve member is movable relative to said piston to open fluid communication from said storage chamber to said pressure chamber, a finger member carried by the operator actuator and slidable movable on said piston and pivot piston, said finger member being engageable with said valve member to move the latter relative to said piston, said operator actuator cooperating with said finger member to urge said finger member into engagement with said valve member to control the communication of pressurized fluid from the storage chamber to the pressure chamber.

4,281,586  
**PNEUMATICALLY OPERATED ADJUSTING DEVICE**  
Ernst Kuhlen, Willich, and Gunther Froberg, Neuss, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

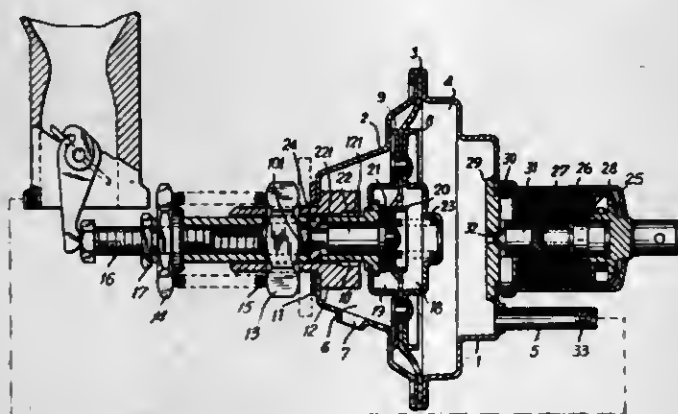
Filed Jul. 5, 1979, Ser. No. 55,293

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830738

Int. Cl.<sup>3</sup> F01B 7/20, 19/00; F16J 3/02; F15B 13/044

U.S. Cl. 91—52

7 Claims



1. A pneumatically actuated adjusting device, particularly for throttle flap adjustment on mixture compressing combustion engines, comprising: a housing upper portion and housing lower portion, a diaphragm held between said housing upper portion and said housing lower portion, said diaphragm forming with said housing upper portion a vacuum-charged working chamber, said diaphragm forming with said housing lower portion a chamber open to ambient atmosphere; a guide bushing projecting on an atmosphere-vented side of said diaphragm from said housing lower portion and connected rigidly thereto; two concentric spaced diaphragm plate pairs rigidly connected to said diaphragm, a pipe displaceable in said guide bushing, said pipe being rigidly connected to an outer one of said diaphragm plate pairs, said pipe having a guided portion with at least one recess, a ball arranged in each recess, said guide bushing having an indentation with a diameter corresponding to said ball, said indentation having a depth determining a stroke of a first adjustment stage, a control piston rigidly connected to an inner one of said diaphragm plate pairs and being displaceably arranged in said pipe, said control piston having a piston recess, said pipe performing a lengthened stroke after moving said ball into said piston recess.

4,281,587

**HYDRAULIC APPARATUS FOR PRODUCING IMPACTS**  
Jose T. Garcia-Crespo, Llansa, 45 - 10<sup>a</sup> 2<sup>a</sup>, Barcelona, Spain

Filed Apr. 2, 1979, Ser. No. 26,227

Claims priority, application Spain, Mar. 31, 1978, 469,097

Int. Cl.<sup>3</sup> F01L 25/04

U.S. Cl. 91—290

8 Claims

2. A hydraulic apparatus of the type known as a hydraulic hammer for generating impacts, said hydraulic apparatus comprising:

- a primary housing having a hydraulic cylinder and primary plunger means reciprocatingly and slidably received therein, said hydraulic cylinder having first and second end zones having sealing means, and having different diameters, and said primary plunger means having corresponding diameter first and second end portions slidably received in said first and second end zones, in contact with said sealing means for sealing said end portions, said hydraulic cylinder having an intermediate zone having a third diameter and said primary plunger means having an intermediate portion having a third diameter corresponding to said intermediate zone third diameter;
- a first driving chamber defined by a first end face of said intermediate portion and the walls of said intermediate zone and a second return chamber defined by a second

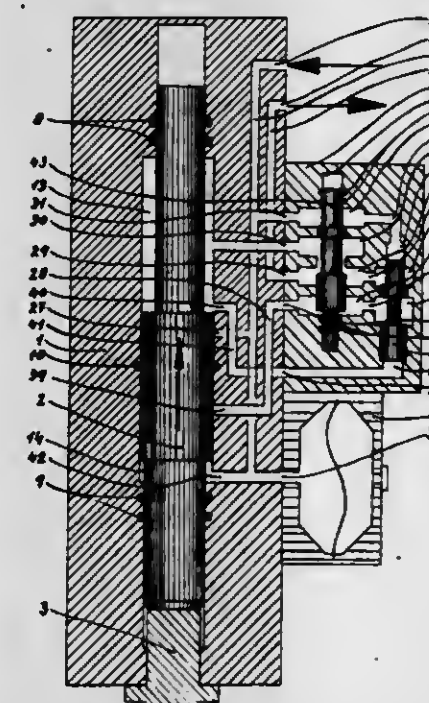
end face of said intermediate portion and the walls of said intermediate zone, said first end face having a greater surface area than said second end face;

secondary housing means having a pressurized fluid supply and fluid outlet connected thereto, and having secondary and tertiary pluralities of chambers and corresponding secondary and tertiary plunger means reciprocatingly slidably received therein for supplying pressurized fluid to said first and second chambers and for allowing pressurized fluid flow from said first chamber for controlling the reciprocating sliding movement of said primary plunger means;

a removable percussion tool positioned at one end of said second end zone for being struck by said second portion of said primary plunger means when said primary plunger means undergoes reciprocating sliding motion;

a hydraulic accumulator means attached to said primary housing for receiving pressurized fluid from said second chamber;

first signal control intake means connected to said pressurized fluid supply and to a first chamber of said secondary plurality of chambers, second signal control intake means



connected to said first chamber of said secondary plurality of chambers and to a first chamber of said tertiary plurality of chambers and a stop port means connected to said intermediate zone and to said pressurized fluid supply, for connecting said pressurized fluid supply, through said first driving chamber, to said fluid outlet for stopping reciprocating sliding movement of said primary plunger means when said removable percussion tool has been removed and said primary plunger means is at a position lower than the lowest position during normal operation;

connecting means for connecting said secondary return chamber with said hydraulic accumulator to said pressurized fluid supply and to a second chamber of said secondary plurality of chambers, said connecting means further connecting said first driving chamber to a third chamber of said secondary plurality of chambers; and

interconnecting means for connecting said primary housing hydraulic cylinder to said secondary plurality of chambers, said primary housing hydraulic cylinder to said tertiary plurality of chambers and said secondary plurality of chambers to said tertiary plurality of chambers for controlling and causing said primary plunger means to undergo reciprocating sliding motion.

4,281,588

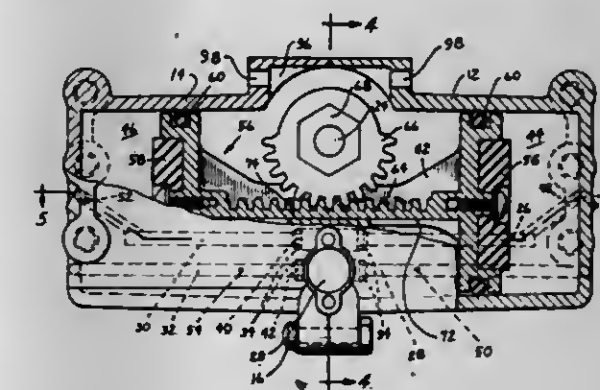
**RECIPROCATING PISTON FLUID POWERED MOTOR**  
Robert F. Jaske, Michigan City, Ind., assignor to Sprague Devices, Inc., Michigan City, Ind.

Filed Jun. 18, 1979, Ser. No. 49,083

Int. Cl.<sup>3</sup> F01L 25/04; F01B 9/00; F16J 11/02

U.S. Cl. 91—290

8 Claims



1. An oscillatory fluid powered motor comprising a motor housing formed of two similar cup-shaped parts secured together at their open ends to define an elongated bore therein, said housing parts having complementary passages therein and a fluid outlet, a piston unit having spaced piston heads slidably in said bore and an intermediate reduced dimension section connecting said piston heads, a motor shaft journaled for rotation in said housing between said housing parts, drive transmission means connecting said motor shaft and said piston unit for rotationally driving said motor shaft in response to linear motion of said piston unit, a valve unit having a housing secured to and transverse of said motor housing between said motor housing parts and having an elongated bore transverse of said motor housing bore communicating with a fluid inlet and a valve spool slidable in said valve bore, and valve housing having passages therein controlled by said valve spool and so arranged and communicating with said motor housing passages and with said fluid inlet and said fluid outlet that said piston unit and spool valve are caused to reciprocate in response to fluid pressure supplied at said inlet.

4,281,589

**WORKING CYLINDER FOR PNEUMATIC OR HYDRAULIC PRESSURE MEDIA**  
Kurt Stoll, Lenzhalde 72, 7300 Esslingen, Fed. Rep. of Germany

Continuation of Ser. No. 826,001, Aug. 19, 1977, abandoned.

This application Sep. 6, 1979, Ser. No. 72,864

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1976, 2637803

Int. Cl.<sup>3</sup> F16J 15/16

U.S. Cl. 92—109

1 Claim

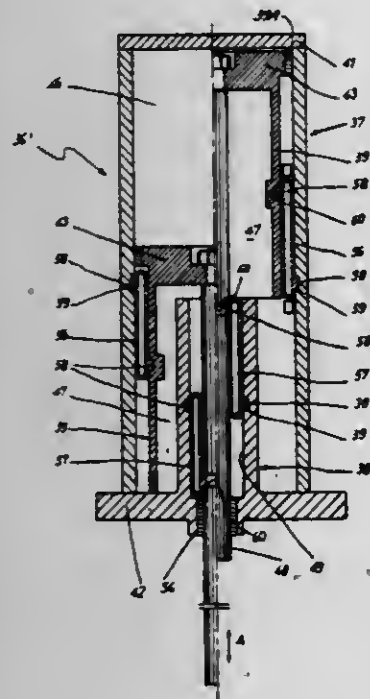
1. A power cylinder, comprising:  
elongated and hollow housing means having a pair of end walls and a uniform inner diameter between said end walls, one of said end walls having an opening there-through and an axially extending hollow inner part concentric and partially coextensive with said housing means and terminating intermediate said end walls, said hollow inner part being axially aligned with said opening, a substantial first annular space being provided between the inner wall of said housing means and the outer wall of said inner part;

a piston movably supported in said housing means between the other of said end walls and the terminal end of said inner part, said piston dividing the interior of said housing into a pair of operating chambers and having a hollow shell extending axially therefrom and in a spaced relation from said inner wall of said housing means, said hollow shell being movable with said piston into and out of said first annular space, said first annular space constituting one of said operating chambers, the spacing between said



piston and said other end wall constituting the other of said operating chambers;

- a piston rod fixedly secured to said piston and extending axially concentric with said shell out through said opening in said one end wall;
- a first annular rolling sealing member positioned between the outer wall of said shell on said piston and said inner wall of said housing means to effectively seal said two operating chambers from each other, said first annular rolling sealing member comprising a first endless hollow sleeve, one part thereof being secured to said inner wall of said housing means and another part thereof secured to said outer wall of said shell;
- a second annular rolling sealing member positioned between the inner wall of said inner part and the exterior of said piston rod to effectively seal said one operating chamber



to the exterior of said housing means, said second annular rolling sealing member comprising a second endless hollow sleeve, one part thereof being secured to said inner wall of said inner part and another part secured to said piston rod; and

- at least a pair of axially spaced low friction and nonpressure-tight bearing means operatively centering said piston in said housing means and said piston rod in said opening through said inner part said first and second annular rolling sealing members being located between said axially spaced bearing means, said pair of low friction bearing means comprising a first bearing member fixedly secured in said opening and slidably engaging said piston rod and a second bearing member fixedly secured to said piston and slidably engaging said inner wall of said housing means.

4,281,590

#### PISTON CONSTRUCTION FOR RECIPROCATING PUMPS

Joe T. Weaver, 1000 Country Place Dr., #319, Houston, Tex. 77079

Filed Jan. 2, 1979, Ser. No. 424  
Int. Cl.<sup>3</sup> F16J 9/08

U.S. Cl. 92-244

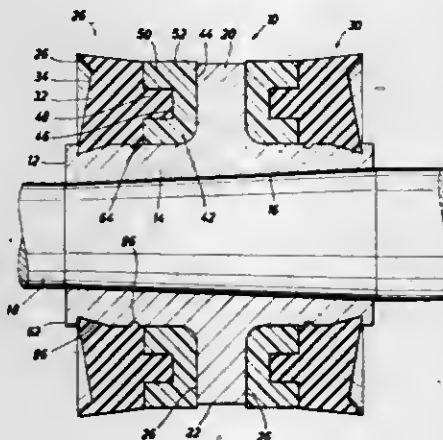
13 Claims

1. A pump piston construction for a reciprocating type pump having a pump cylinder, said pump piston comprising:
  - a piston hub adapted to be reciprocated within said pump cylinder by a cylinder rod, said hub defining a cylindrical abutment portion of slightly smaller diameter than an unworn cylinder of said pump and forming at least one annular abutment surface, said hub further defining a rim

portion of smaller diameter as compared to the diameter of said cylindrical abutment portion;

an annular piston seal ring composed of elastomeric material and being positioned about a portion of said hub, said piston seal ring defining an inner peripheral portion having mating relation with said rim portion and being in intimate assembly with said rim portion, said piston seal ring further defining a tapered outer portion defining an annular sealing lip that is yielded radially inwardly upon insertion into said pump cylinder, said piston seal ring also defining an annular axially projecting intermediate portion extending from a planar portion of said seal ring and defining a plurality of annular bonding surfaces having a combined surface area of greater dimension than the dimension of said abutment surface;

an annular anti-extrusion member being positioned about a portion of said hub and being interposed between and in intimate assembly with said piston seal ring and said abutment surface, said anti-extrusion member having an outer



generally cylindrical yieldable axially extending flange portion formed integrally therewith and being positionable in juxtaposed relation with said pump cylinder, said yieldable flange portion of said anti-extrusion member being located radially outwardly of said axially projecting portion of said piston seal ring and being yieldable radially outwardly into bearing contact with said pump cylinder responsive to pressure transmission through said axially projecting portion of said piston seal ring and preventing pressure induced extrusion of the elastomeric material of said piston seal ring in the annular space between said piston hub and cylinder, said anti-extrusion member having a multi-surface bonding portion having a configuration mating with said axially projecting portion of said piston seal ring; and

- a bonding agent structurally interconnecting said bonding surfaces of said piston seal ring and said multi-surfaced bonding portion of said anti-extrusion member in bonded assembly and structurally interconnecting said piston seal ring and said piston hub.

4,281,591

#### PRODUCTION OF CIGARETTE FILTER UNITS

Serge Boegli, Zürich, and Jean-Pierre Lebet, Montreux, both of Switzerland, assignors to F. J. Burrus & Cie., Boécourt and Baumgartner Papler SA, Crissier, both of, Switzerland

Filed Mar. 31, 1978, Ser. No. 892,086  
Claims priority, application Switzerland, Apr. 4, 1977, 4178/77

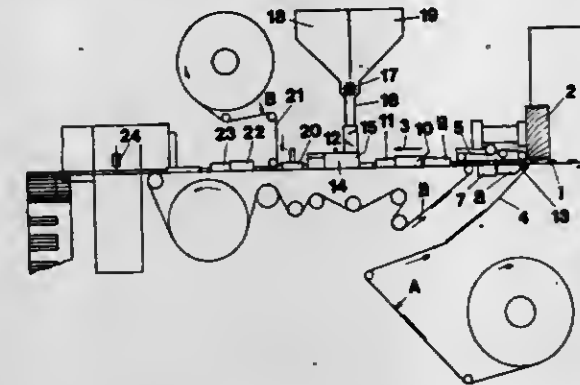
Int. Cl.<sup>3</sup> B31B 1/00, 27/08; A24D 1/04

U.S. Cl. 493-45

13 Claims

1. In a method of producing a multiplicity of cigarette filter units from a plurality of filter elements with the aid of a porous and continuously supplied covering strip transported in a moving direction, so as to produce a continuous filter strand having a plurality of chamber openings, and with the aid of a filling device and a closing strip, the steps comprising:

applying an adhesive substance to said covering strip along a plurality of approximately equispaced coating tracks, orienting said coating tracks so that each coating track forms a predetermined angle with said moving direction, and so that said adhesive substance will be applied on at least three locations separated from one another, along a line at right angles to the moving direction of said covering strip, at least partially wrapping said covering strip around said filter strand, introducing granular filter material into said openings to form filter chambers,



applying an adhesive substance to said closing strip along a plurality of approximately equispaced closing strip coating tracks, orienting said closing strip coating tracks so that each closing strip coating track forms a predetermined angle with said moving direction, adhesively covering said chamber openings with said closing strip, and thereafter subdividing said filter strand into said multiplicity of cigarette filter units.

4,281,592

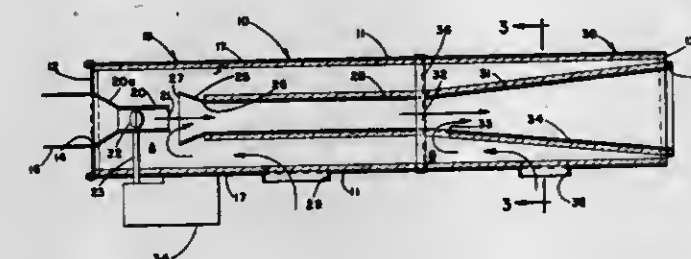
#### DOUBLE INDUCTION UNIT

Dale E. Maxson, Rockford, Ill., and David Ober, Warren, N.J., assignors to Barber-Colman Company

Filed Aug. 6, 1979, Ser. No. 64,215  
Int. Cl.<sup>3</sup> F24F 7/00

U.S. Cl. 98-38 R

4 Claims



1. An air induction unit comprising: a primary air inlet for receiving a supply of primary air from a supply duct; an outlet for delivering air toward a point of use; a first induction section associated with said primary air inlet, a second induction section, and an air duct connecting said first induction section to said second induction section; said first induction section comprising a first secondary air inlet for delivering secondary air into said unit and a first induction means responsive to the flow of primary air to induce a flow of secondary air into said unit through said first secondary air inlet to form a stream of mixed primary and secondary air for delivery to said second induction section through said connecting duct; said second induction section comprising an expansion unit having a throat connected to said connecting duct and diverging walls downstream from said throat, a second secondary air inlet for delivering secondary air into said unit, and a second induction means effective proximate said throat and responsive to the flow of said mixed air stream to induce a flow of additional

secondary air into said unit through said secondary air inlet for mixture with said mixed air stream; and a wall between said first induction section and said second induction section so as to prevent communication within said unit between the respective induced secondary air flows.

4,281,593

#### DEVICE FOR PREPARING FOOD PRODUCTS FROM COOKED AND EXPANDED CEREALS AND PRODUCTS OBTAINED

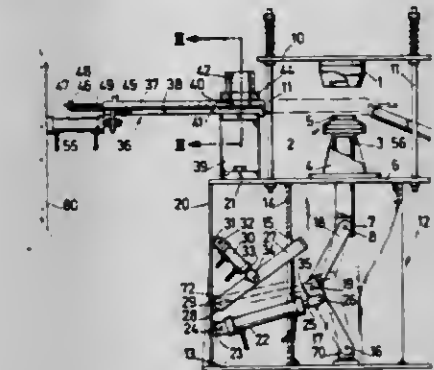
Stephan Gevaert, Sint-Martens-Latem, Belgium, assignor to Omer Gevaert, Geraardsbergen, Belgium

Filed Jun. 22, 1979, Ser. No. 51,232

Claims priority, application Belgium, Jan. 22, 1978, 188771  
Int. Cl.<sup>3</sup> A47J 27/08

U.S. Cl. 99-349

19 Claims



1. A device for preparing food products from cereals which are pressure cooked and thereafter expanded, comprising:
  - (a) a mould comprised of a hollow heated fixed die and having a cavity defined therein;
  - (b) a punch entering through an opening of the mould and cooperating with said mould;
  - (c) a jack connected to the punch to drive the punch alternately between a first position wherein the punch is in the hollow die of the mould, which is closed through the punch, and exerts on the mould a pressure transmitted through the jack during the cooking of the cereals, and a second position wherein the punch is out of the mould which is then open;
  - (d) stop means for temporarily stopping the movement of the punch, or of a driving member therefor, between the first and the second position, in a third position wherein the punch does not exert a pressure on the mould and the mould cavity is not yet open, to permit expansion of the cereal;
  - (e) means for automatically feeding cereals to be cooked through said opening of the mould; and
  - (f) means for automatically discharging the products from expanded cereals through said opening.

4,281,594

#### BUN SECTION TOASTER

Edward D. Baker, San Francisco, and Nils Lang-Ree, Los Altos, both of Calif., assignors to NPI Corporation, Burlingame, Calif.

Filed Jul. 26, 1979, Ser. No. 61,055  
Int. Cl.<sup>3</sup> A47J 37/08

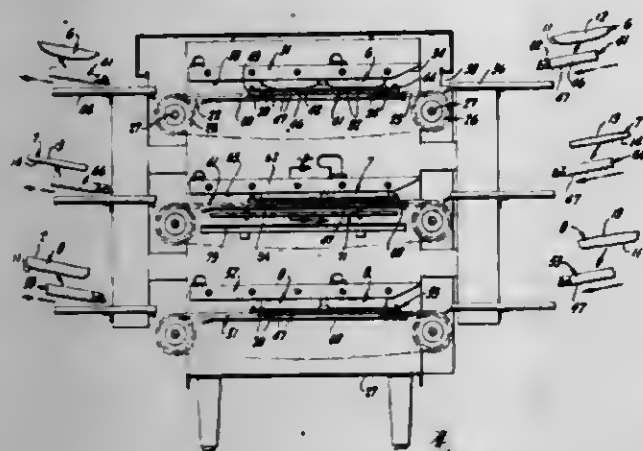
U.S. Cl. 99-386

4 Claims

1. A toaster for a bun center section having substantially planar and parallel upper and lower surfaces, said toaster comprising:
  - a. a frame;
  - b. a conveyor on said frame;
  - c. a tray having an aperture therein and adapted to receive the lower surface of a bun center section overlying said aperture;
  - d. means including said conveyor for advancing said tray across said frame substantially in a horizontal position;



- e. a contact heater mounted on said frame, said contact heater including a substantially horizontal planar lower surface vertically spaced above said tray to engage the entire upper surface of said bun center section in firm contact to impart heat to said upper surface of said bun center section as said tray advances across said frame;
- f. a radiant heater mounted on said frame in close proximity



below but out of physical contact with said tray to impart heat upwardly through said aperture to said lower surface of said bun center section as said tray advances across said frame; and,

- g. regulating means for energizing said contact heater and said radiant heater to toast said upper surface of said bun center section and said lower surface of said bun center section substantially equally.

4,281,595

# MULTIPLE-PURPOSE OFFSET ROTARY PRINTING PRESS

Yuji Fujishiro, Tokyo, Japan, assignor to Kabushiki Kaisha Tokyo Kikai Seisakusho, Tokyo, Japan

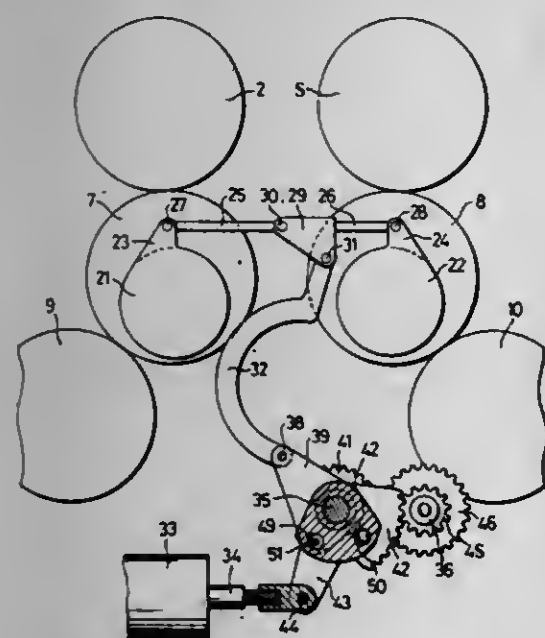
Filed Jul. 20, 1979, Ser. No. 59,222

Claims priority, application Japan, May 26, 1979, 54-065410

Int. Cl.<sup>3</sup> B41F 5/06, 7/12, 13/36

U.S. Cl. 101-177

4 Claims



1. A multiple-purpose offset rotary printing press comprising:

- a pair of three cylinder train units juxtaposed in symmetrical arrangement and each consisting of a plate cylinder and an impression cylinder with a blanket cylinder being between and contacting with both of them,
- a four cylinder train unit consisting of a pair of blanket cylinders contacting with each other at a position adjacent to both of the impression cylinders of the three cylinder train units and a pair of plate cylinders contacting with the

pair of blanket cylinders for cooperating therewith respectively, and

switching means for bodily moving each of the blanket cylinders of the four cylinder train unit through a short radius arc, comprising eccentric sleeves journaled the both axial ends of the blanket cylinders of the four cylinder train unit, a common operative link mechanism connected to the sleeves for rocking them simultaneously, an actuator, an angle increase shifting mechanism provided between said link mechanism and the actuator, said angle increase shifting mechanism comprising a main shaft and a sub shaft, both shafts being mounted on a frame, a driving gear rotatably mounted on the main shaft and adapted to follow the displacement of the actuator, a driven gear fixed on the main shaft and adapted to transmit a displacement to the link mechanism, and a pair of relay gears having different diameters fixed on the sub shaft, the relay gear of smaller diameter being in engagement with the driving gear and the relay gear of larger diameter being in engagement with the driven gear, whereby the blanket cylinders of the four cylinder train unit are moved between a first position and a second position by a single stroke of the actuator, the first position being that in which the blanket cylinders make contact with each other and with their respective plate cylinders and are isolated from their respective impression cylinders of the three cylinder train units, the second position being that in which the blanket cylinders are isolated from each other and make contact with their respective plate cylinders and with their respective impression cylinders of the three cylinder train units.

4,281,596

# IMPRINTER AND METHOD OF MAKING SAME

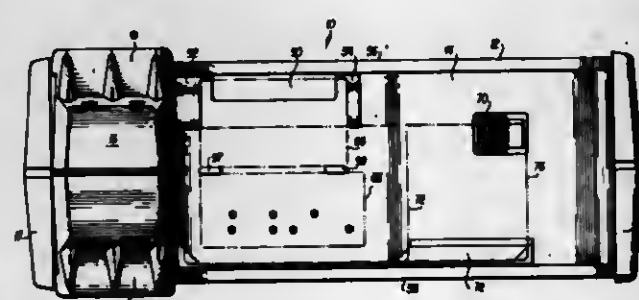
James H. Bowen, Plymouth, Mass., assignor to DBS, Inc., Randolph, Mass.

Filed Feb. 8, 1977, Ser. No. 766,573

Int. Cl.<sup>3</sup> B41F 3/04

U.S. Cl. 101-269

1 Claim



1. An imprinter comprising
- a unitary, extruded base having (a) a substantially rectangular upper surface, the lengthwise dimension of which is greater than the width thereof and (b) a pair of edge members extending along the respective, approximate edges of said lengthwise dimension of said upper surface where said edge members form an elongated receptacle extending along said lengthwise dimension of said upper surface;
  - a molded plastic print bed disposed within and at least partially held in place against vertical movement with respect to the base by said elongated receptacle, said molded plastic print bed integrally including a document holding means for holding a document in place on said print bed; printing plate holding means for holding a portable printing plate in place on said print bed; and
  - carriage means containing at least one print roller moveably mounted on said base to effect relative movement of said print roller with respect to said print bed and thereby imprint data from said portable printing plate to said document

where said extruded base has an elongated slot extending along said lengthwise dimension of said upper surface, said plastic print bed has openings therethrough, and said printing plate holding means including means disposed in said elongated slot and projecting through said openings in said plastic print bed.

4,281,597

# INKING MECHANISM

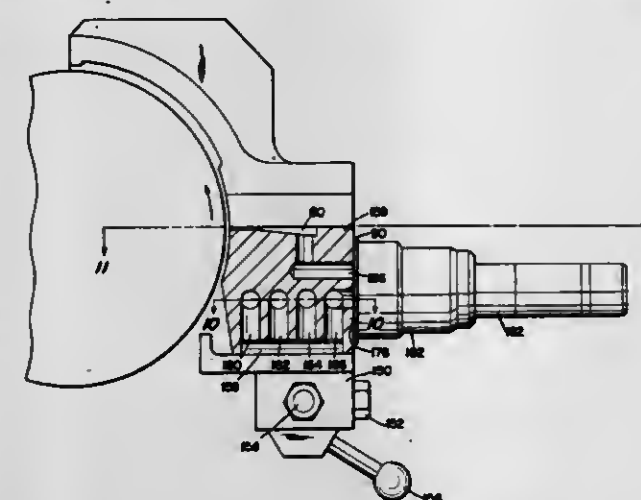
Friedrich K. Dressler, Pawcatuck, Conn., assignor to Harris Corporation, Melbourne, Fla.

Continuation-in-part of Ser. No. 860,868, Dec. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 788,581, Apr. 18, 1977, abandoned. This application Jan. 11, 1979, Ser. No. 2,535

Int. Cl.<sup>3</sup> B41F 31/08; B41L 27/10

U.S. Cl. 101-365

8 Claims



1. A mechanism for applying ink to a rotating roll in a printing press, said mechanism comprising an ink rail extending along a length of said roll, a support for said ink rail, said ink rail having a plurality of ink-applying sections spaced axially along the roll, each of said sections extending circumferentially around a part of the roll, a plurality of individual continuous delivery pumps secured to said ink rail, each of said pumps having a respective individual speed controllable drive motor drivingly connected thereto, respective individual pumps being associated with an ink-applying section for providing a controlled, continuous flow of ink to its associated ink-applying section, means defining a fluid passage for delivering ink from each of said pumps to its associated ink-supplying section including an orifice for receiving ink from each of said respective pumps and which is located adjacent the periphery of said roll, the roll ripping the ink out of said orifice as said roll rotates relative thereto, the surface of each of said circumferentially extending ink-applying sections confronting the roll including a longitudinally extending recess and at least two longitudinally extending margins of said recess defining first and second circumferentially spaced gaps with said roll, said recess having a circumferential wall at a slightly greater radial distance from the axis of said rotating roll than said gaps, and into which recess the ink moves after being ripped from said orifice by said roll, and which recess provides a reservoir enabling the ink to cool therein prior to reaching the end of said ink-applying section.

4,281,598

# WIDE WIDTH PRINTING PROCESS

Björn S. Rump, Vandoeuvres, Switzerland, assignor to Sublomatic Holding S.A., Glaris, Switzerland

Filed Sep. 29, 1978, Ser. No. 947,292

Claims priority, application Switzerland, Oct. 7, 1977, 12273/77

Int. Cl.<sup>3</sup> D06P 7/00; D06Q 1/00; B41F 13/02

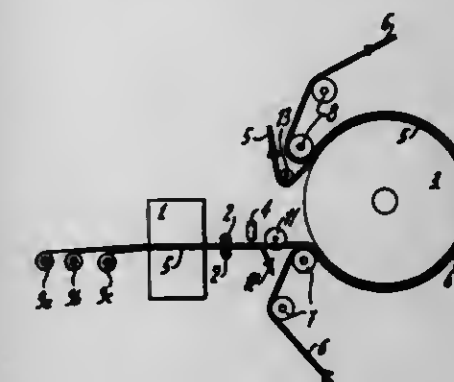
U.S. Cl. 101-470

8 Claims

1. A wide width transfer printing process for printing with

webs of material that undergo linear change upon thermal change wherein

- (a) at least two strips of transfer paper webs carrying transferable designs or patterns and register marks are preheated to 90°-150° C. and brought edge to edge,
- (b) adjusting the relative positions of these said transfer paper webs by means of the said register marks so that the



designs or patterns coincide on either side of the joint or joints parallel to the strip edges,

- (c) introducing the so assembled transfer paper webs into a transfer machine where they are, still in register, brought into contact with the substrate to be printed and
- (d) heating the whole to between 160° and 250° C. for a time sufficient to effect the transfer of the said designs or patterns.

4,281,599

# PROJECTILE

Adolf Weber, Neunkirchen, and Siegfried Rhau, Nuremberg, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

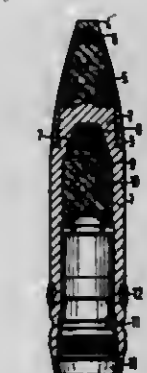
Filed May 29, 1979, Ser. No. 43,134

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824738

Int. Cl.<sup>3</sup> F42B 11/14

U.S. Cl. 102-364

5 Claims



1. An incendiary projectile including a penetrating member (1) formed as a hollow projectile having therein an explosive charge (10) ignitable through a base detonator (11), and a pyrotechnic incendiary composition (5) encompassed by a ballistic hood, (4), characterized in that the head portion (2) of the penetrating projectile is reinforced by a solid pyrometal insert (8), and the head portion (2) is separable from the rear portion of the penetrating projectile along a predetermined rupturing location (3) located intermediate the pyrometal insert (8) and the explosive charge (10).



4,281,600

## SUBPROJECTILE TO BE EXPELLED FROM A PROJECTILE

Claes G. Arnell, Torshälla, Sweden, assignor to Förenade Fabrikverken, Eskilstuna, Sweden

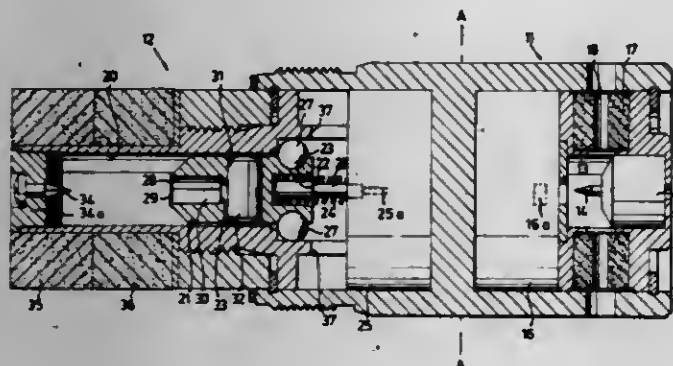
Filed Mar. 2, 1979, Ser. No. 17,071

Claims priority, application Sweden, Mar. 8, 1978, 7802634; Jan. 23, 1979, 7900597

Int. Cl.<sup>3</sup> F42B 13/50

U.S. Cl. 102—489

5 Claims



1. A subprojectile to be expelled from a projectile, including a bursting charge, ignition means for igniting the bursting charge, and arming means for preventing in a first and safe position, said igniting of the bursting charge, and allowing, in a second and armed position, said igniting of the bursting charge, wherein the ignition means includes a first ignition body connected to the subprojectile, and a second ignition body which is movable in relation to the first ignition body, the second ignition body being capable of sensing acceleration forces acting upon the subprojectile as a consequence of the expelling of the subprojectile from the projectile, the second ignition body also being capable of sensing deceleration forces acting upon the subprojectile after said expelling, the second ignition body being movable away from the first ignition body in response to said sensing of said acceleration forces, the arming means being shiftable from said safe position to said armed position in response to said moving of the second ignition body, and the second ignition body when subjected to said deceleration forces being capable of moving toward the first ignition body only when the arming means is in said armed position.

4,281,601

## NON-SLIP TURNING JOINT FOR FUZES

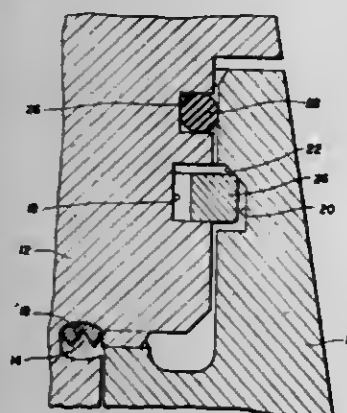
David L. Overman, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 16, 1979, Ser. No. 57,873

Int. Cl.<sup>3</sup> F42C 9/00

U.S. Cl. 102—276

7 Claims



1. In a fuze having a first and second member rotatably connected with adjacent annular engaging surfaces perpendicular to the axis of rotation, the improvement comprising: said engaging surfaces being sufficiently roughened to re-

quire relative axial movement of said members to effectuate relative rotation of said members; wherein said first member includes an annular recess on its outer surface, said second member includes an annular recess on its inner surface concentric to the annular recess of said first member, said annular recess of said second member has an inclined surface, biasing means including a split ring spring in both of said annular recesses, said spring and inclined surface cooperating to place said spring under sufficient compression to create an axial force requiring a minimum of forty inch-pounds of torque to rotate said members.

4,281,602

## MOLDED OBJECTS SUCH AS TABLES, CHAIRS AND THE LIKE

Gerd Lange, Kapsweyer, Fed. Rep. of Germany, assignor to Gebrüder Thonet AG, Frankenberg, Fed. Rep. of Germany

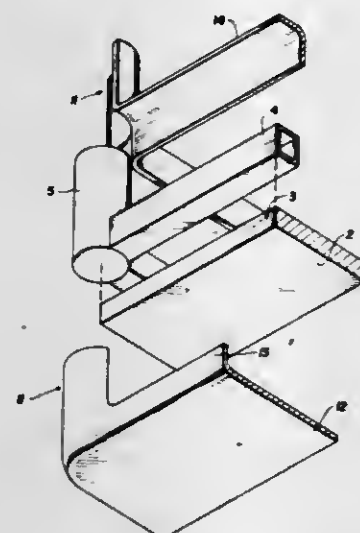
Filed Jun. 29, 1978, Ser. No. 920,201

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 2755336

Int. Cl.<sup>3</sup> A47B 13/08; B29C 5/00; B25G 3/34

U.S. Cl. 108—161

7 Claims



1. A molded article suitable for use as a table top or seat for a chair or stool, and the like comprising a support frame and a panel, said support frame being positioned adjacent to and fitting against said panel and having downwardly extending sockets which are to receive ends of legs, said support frame and panel being joined by a plastic material molded about at least edges of said panel and support frame to provide a desired shape and fix said support frame to said panel, said plastic material being polymerized in situ with no significant pressure being exerted and no significant external heat being applied during molding, said plastic material being cured in situ by chemical reaction.

4,281,603

## MEANS FOR FEEDING SOLID COMBUSTIBLE WASTE MATERIAL TO A FURNACE

Josef Probsteder, Bachanger 14, 8399 Ruhstorf, Fed. Rep. of Germany

Filed May 16, 1979, Ser. No. 39,453

Claims priority, application Fed. Rep. of Germany, May 18, 1978, 2821767

Int. Cl.<sup>3</sup> F23B 7/00

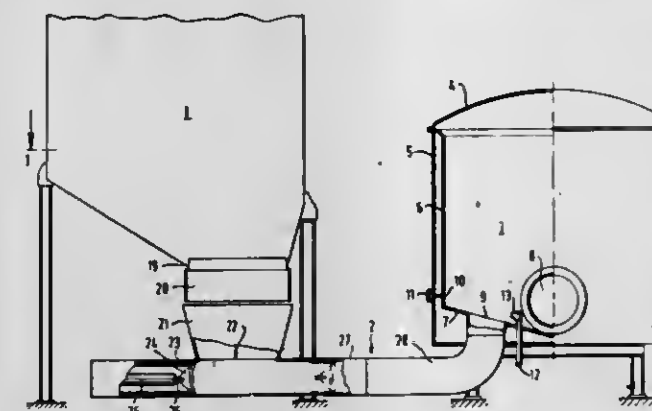
U.S. Cl. 110—196

5 Claims

1. An apparatus for burning combustible waste material comprising means for storing waste material to be burned comprising an upright elongated housing having a closed top and a bottom closure member which slopes downwardly from the housing, said housing, closed top and bottom closure member combining to substantially enclose a space for

storage of waste material, an opening in said bottom member disposed at the lowest point of said sloping bottom member, a discharge pipe communicating with said opening and extending downwardly therefrom for flow of waste material from the said storage space, a furnace for burning said waste material comprising an upright substantially cylindrical housing and top and bottom closure members fixed to the ends of said housing, an upright wall spaced radially inwardly from the housing substantially concentric therewith and extending across the space and integral with said cylindrical housing adjacent to the top closure member, a bottom wall integral with the upright wall, spaced above said bottom closure member and sloping downwardly from said wall towards a point adjacent to the bottom closure member, an opening in said sloping wall, conduit means extending up-

wardly through said bottom wall into said space for delivering primary air to the said space, a tubular member enclosing an after-burning chamber extending across said space and having a wall with a plurality of openings therein for flow of gases from the said space into the after-burning chamber which face away from the opening in the said bottom wall, means for supplying air to the said chamber, a conduit communicating with said discharge pipe and with said opening in said sloping bottom wall of the furnace, and means for moving waste material through the conduit from the discharge pipe through said opening into the space enclosed by said housing, top closure member and sloping bottom wall, said means for moving the waste material closing said conduit against flow of air from the conduit into said furnace.



4,281,605

## APPARATUS FOR REGENERATING FLUIDIZING MEDIUM

Toshio Uemura; Hiroshi Kagabu; Kenji Arisaki; Noboru Kajimoto; Shinshi Akatsuka, and Takuaki Fujimoto, all of Hiroshima, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

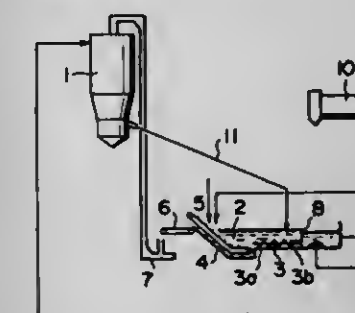
Filed Sep. 4, 1979, Ser. No. 72,243

Claims priority, application Japan, Sep. 11, 1978, 53-110710

Int. Cl.<sup>3</sup> F23J 1/00

U.S. Cl. 110—245

7 Claims



1. An apparatus for regenerating fluidizing medium by removing sticking matter attached thereto comprising a stirring device for giving mechanical blows to a medium to be regenerated and a device for feeding out the regenerated medium provided in a first liquid tank; a means for supplying a mixture of a liquid having the sticking matter dissolved therein and insoluble fine particles from the first liquid tank and for separating therefrom the insoluble fine particles as slurry provided in a second liquid tank adjoining said first liquid tank; and a device for supplying the regenerated medium fed out from said first liquid tank to a fluidized-bed furnace.

4,281,604

## DOMESTIC BOILER

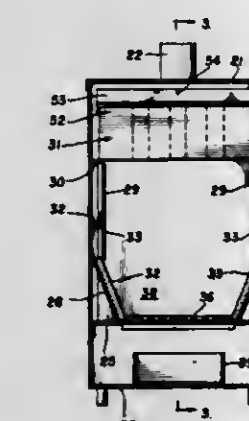
Arthur G. Wigdahl, West Salem, Wis.

Continuation-in-part of Ser. No. 964,432, Nov. 28, 1978. This application Feb. 5, 1980, Ser. No. 118,846

Int. Cl.<sup>3</sup> F23B 7/00

U.S. Cl. 110—234

9 Claims



1. A boiler comprising a shell having side walls and a rear opening, a grate support in the shell at an elevation below said

4,281,606

## SEWING MACHINE

Alfons Beisler, Goldbach, Fed. Rep. of Germany, assignor to Beisler GmbH, Fed. Rep. of Germany

Filed Dec. 7, 1977, Ser. No. 858,369

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656720

Int. Cl.<sup>2</sup> D05B 21/00

U.S. Cl. 112—121.15

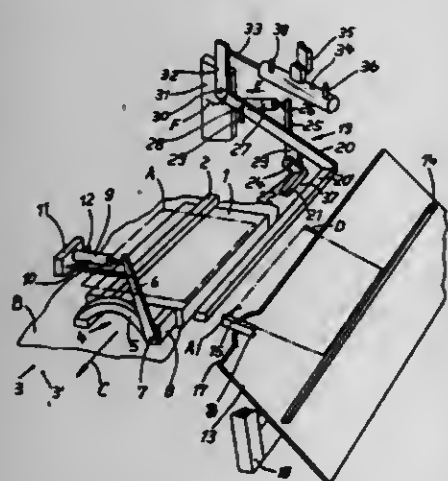
2 Claims

1. In the feeding and clamping of a flap in a sewing machine having receiving and sewing stations and a bank of sewing needles, a pivotal mechanism mounted on the machine for achieving, during the sewing-on of a first flap to a garment part, a correct preliminary aligning of a second flap at the receiving station and a control of the clamping of the second flap followed by the mechanical transferring of the second flap from the receiving station to the sewing station for the next following sewing-on procedure comprising in combination:

- a materials clamp 1,
- a flap clamp 2 cooperating with the material clamp,



the material and flap clamps being shiftable in unison toward and away from the sewing needles,  
 a guide block 8 secured to the material clamp 1,  
 an angle lever 4 having a pair of arms 5 and 6 and being mounted on the guide block 8,  
 the flap clamp 2 being hinged to the guide block 8 through the angle lever 4,  
 a retaining support 11,  
 a hydraulic cylinder 9 and cooperating piston mounted on the retaining support 11 for opening the flap clamp 2,  
 spring means 10 for closing the flap clamp 2,  
 an inclined plate 13 at the receiving station and fixedly mounted on the sewing machine for the aligning support of the flap in a hand-over position,  
 a stop ledge 14 mounted on the inclined plate for ensuring the free overlap of the flap,  
 a stop toggle 16 swingably mounted on the inclined plate 13, an openable jaw for transferring the flap from the inclined plate 13 onto the top of the material clamp 1 and under the flap clamp 2 and including:  
 (a) a carrier 31 fixed to the sewing machine,  
 (b) an arm 20 swingably mounted on the carrier,  
 (c) a beam 20' secured to the arm 20,



(d) an arm 22,  
 (e) a counter beam 21 secured to the arm 22,  
 (f) a beam-mounted arm 23 pivotally supporting the counter-beam 21,  
 (g) a one-armed actuatable lever 25,  
 (h) a hydraulic cylinder 27 connected to the beam-mounted arm 23 and having a piston rod 26 connected to the actuatable lever 25,  
 the beam-mounted arm 23 forming part of the angle lever 4 hinged to the carrier,  
 the angle lever 4 being arranged for the swinging of the clamps between the receiving and transfer positions,  
 with the beam and counter-beam being disposed above the upper edge of the inclined plate in the take-over position so that with the jaw opened a flap lying aligned on the inclined plate projects into the jaw and with the beam and counter-beam travelling on the way from the receiving to the transfer position,  
 through the space underneath the clamp in the open position thereof and, on the way back travelling with the flap closed, and passing through the space above the flap clamp.

4,281,607

## CUTTING APPARATUS FOR SEWING MACHINES

Giancarlo D. Torre, Biadono, Italy, assignor to Rockwell-Rimoldi S.p.A., Milan, Italy

Filed Aug. 6, 1980, Ser. No. 175,792

Claims priority, application Italy, Sep. 20, 1979, 25837 A/79  
 Int. Cl.<sup>3</sup> D05B 37/04, 65/00, 83/00

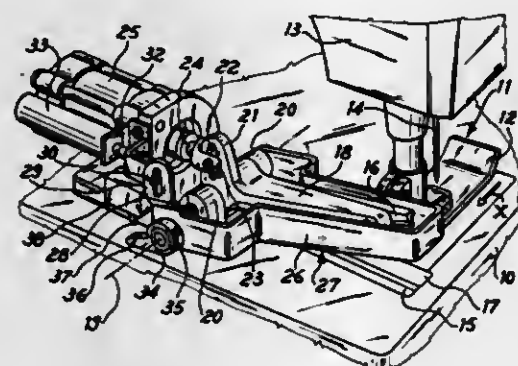
U.S. Cl. 112-130

11 Claims

1. A cutting apparatus for sewing machines having a sewing zone including a presser foot and cooperating needle and a

work surface on which workpieces are advanced to and beyond the sewing zone, said cutting apparatus comprising:

- a cutting member supported on the machine downstream of the sewing zone;
- a first actuating means for moving said cutting member between a raised position and one of operative association with the workpieces being advanced on the work surface;
- a protective guard mounted on the machine in a manner to substantially surround said cutting member;



- a second actuating means connected to said protective guard for moving the same between the positions travelled by said cutting member; and
- means interconnecting said first and second actuating means for initiating movement of said protective guard to its position of operative association with the workpieces prior to movement of said cutting member thereto.

4,281,608

## CANTILEVERED BRAKING GUIDE FOR ATTACHING SLIDE FASTENER CHAINS

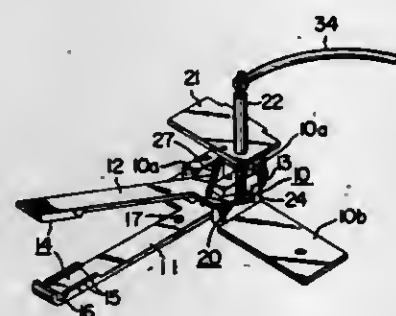
Hiroshi Mitani, Toulouse, France, and Kenichi Uozumi, Uozu, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Feb. 16, 1979, Ser. No. 12,792

Claims priority, application Japan, Feb. 20, 1978, 53/18216  
 Int. Cl.<sup>3</sup> D05B 29/00

U.S. Cl. 112-150

8 Claims



1. A braking guide device for controlling the traveling velocity of a slide fastener chain in a sewing machine for sewing the slide fastener chain to an article which comprises:

- a supporting member fixedly positioned on the table of the sewing machine,
- a presser foot on the sewing machine,
- a pair of cantilever members supported by the supporting member and extending before the presser foot of the sewing machine one above the other, the lower cantilever member being fixed on or above the table of the sewing machine and the upper cantilever member being movable in the direction coming into contact with or apart from the lower cantilever member and at least one of the cantilever members being provided with a chain guide on the surface facing the other cantilever member whereby frictional resistance is imparted to the slide fastener chain traveling between the upper and lower cantilever members when the upper cantilever member is at its lowermost position, and
- operating means for selectively moving the upper canti-

lever member toward or away from the lower cantilever member, wherein the operating means includes a reciprocating rod at the output end thereof which is connected to the upper cantilever member through a spring so that the upper cantilever member is resiliently pushed down toward the lower cantilever member.

4,281,609

## LOCKSTITCH SEWING BY NEEDLE LOOPER

Josef Zocher, Aachen, Fed. Rep. of Germany, assignor to The Singer Company, Stamford, Conn.

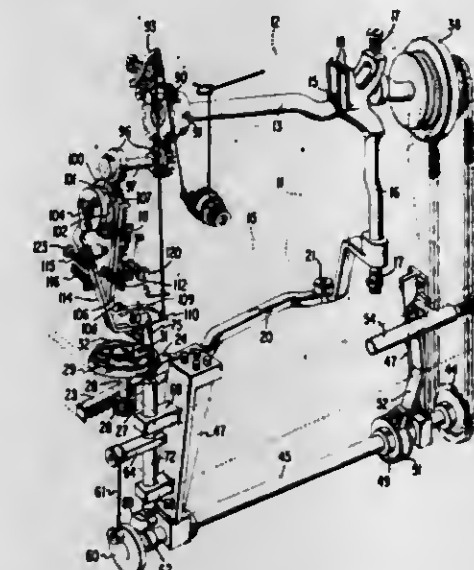
Division of Ser. No. 33,297, Apr. 15, 1979, Pat. No. 4,245,577.

This application May 2, 1980, Ser. No. 145,907

Int. Cl.<sup>3</sup> D05B 57/08, 85/10

U.S. Cl. 112-184

1 Claim



1. A lockstitch sewing machine comprising a frame, said frame including a work supporting surface for supporting a work material thereon, a needle looper assembly, said needle looper assembly including an outer needle having a sharpened tip and an inner needle supported within said outer needle and having a hook on the end thereof, said outer needle and said inner needle being capable of independent movement; an oscillating looptaker, said looptaker having a thread seizing beak thereon; a lower thread carrying bobbin; means for carrying said lower thread carrying bobbin in said looptaker; means for supporting said needle looper assembly for movement through said looptaker adjacent the thread seizing beak thereof from a position below said loop seizing beak to a position above and through a work material supported on said work supporting surface; means for grasping an upper thread when in said position extending through and above a work material supported on said work supporting surface with said needle looper assembly; means for transporting said upper thread through said work material to a position below said loop seizing beak; and, means for releasing said upper thread to said loop seizing beak for seizure thereby and concatenation with thread on said lower thread carrying bobbin.

4,281,610

## MARINE FENDER AND METHOD OF MAKING THE SAME

Melvin R. Young, 708 Solar Dr., Fort Lauderdale, Fla. 33301  
 Filed Aug. 8, 1978, Ser. No. 931,890

Int. Cl.<sup>3</sup> B63B 21/00

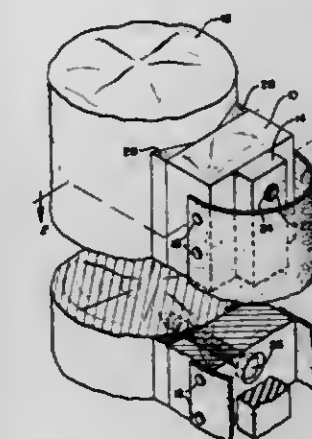
U.S. Cl. 114-219

23 Claims

11. A marine fender adapted to absorb impact loads, comprising a generally rectangular prestressed, resilient sheet of material, such as conveyor belting material, bent from a substantially flat state into a configuration that is smoothly curved in transverse cross section and that is thereby prestressed for absorbing impact loads, the sheet being attached to a support along longitudinal edges so as to define an unpressurized deflection space between the sheet and the support, the material

having a woven textile fabric carcass impregnated and coated with an elastomer.

17. A method of making a marine fender adapted to absorb impact loads, comprising providing a substantially flat resilient sheet having a woven textile fabric carcass impregnated with



an elastomer, prestressing the substantially flat resilient sheet by bending the sheet into a configuration that is smoothly curved in transverse cross section, and attaching the curved sheet along opposite longitudinal edges to a support so as to provide a deflection space between the prestressed sheet and the support.

4,281,611

## SYSTEM FOR MOORING A SHIP, PARTICULARLY AN OIL-TANKER, TO AN OFF-SHORE TOWER OR COLUMN

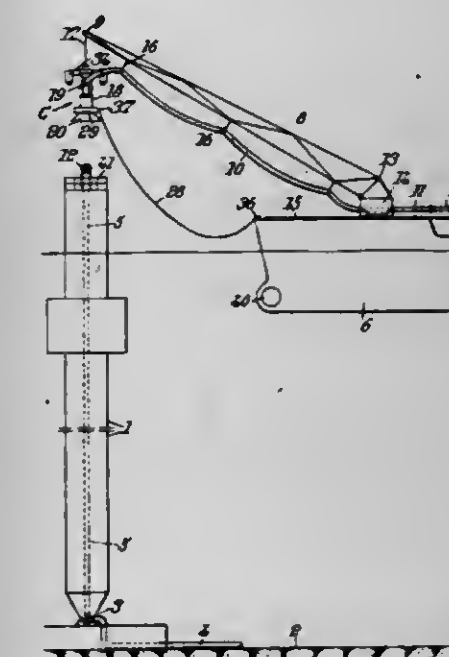
Robert Vilain, Maisons-Alfort, France, assignor to Entreprise d'Equipeur Mecaniques Hydrauliques E.M.H., France

Filed Oct. 11, 1977, Ser. No. 841,024

Claims priority, application France, Oct. 15, 1976, 76 31118  
 Int. Cl.<sup>3</sup> B63B 21/00

U.S. Cl. 114-230

7 Claims



1. A system for mooring a ship or like floating vessel, in particular, an oil tanker, to an off-shore column, and for transferring a fluid cargo such as gas, petroleum oil or the like, by means of at least one articulated arm carried by said vessel, said arm supporting at its upper end a connector device capable of being fixedly placed on a mouth-piece provided on the head of said column, and mooring means for allowing said vessel, once the connector device is fixedly placed, to be moored through said device and to move around the latter so as to be placed in the wind's eye, said connector device comprising a hollow body forming a centering and guiding cone, adapted to be fitted onto a mouth-piece head extending from a conduit pro-



vided on said column, a sliding connector element operable to be inserted into the inlet of said mouth-piece in connecting relationship in conjunction with sealing means, locking means for maintaining the connecting condition of said connector device and said mouth-piece, and means for ensuring, once the connection is completed, the free rotation of said mooring means connecting said connector device to said vessel.

4,281,612

**BOAT MOORING DEVICE**

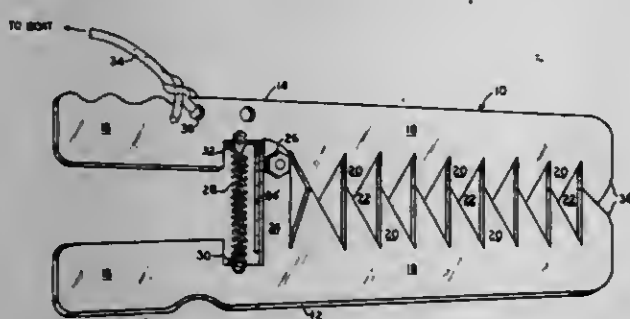
Homer A. Watts, Rte. 5, Box 712, Holly Grove Rd., Thomasville, N.C. 27360

Filed Jan. 19, 1979, Ser. No. 4,765

Int. Cl.<sup>3</sup> B63B 21/00

U.S. Cl. 114—230

1 Claim



1. A mooring device to be utilized for mooring boats and like objects to the undergrowth and underbrush in the environment of lakes and ponds, said mooring device comprising a pair of opposed arms extending in spaced parallel arrangement to each other, each of said arms including relatively short lower handle portions and relatively long gripping portions, the gripping portion of each arm comprising a plurality of jagged teeth formed by deep notches, said teeth and notches provided in the opposed edges of said arms substantially throughout the gripping portion, said notches extending into the surfaces of said arms a distance of at least one-half inch, connecting means for joining said pair of arms about a pivot point positioned intermediate the handle portion and the gripping portion, compression spring means extending between said handle portions adjacent said connecting means for normally biasing said gripping portion toward a closed position, when in said closed position said teeth being in overlapped relationship, the extreme upper end of each of said opposed arms being provided with a beveled surface extending inwardly and downwardly for guiding branches and the like into the area between the opposed arms and causing said arms to spread as the mooring device is urged onto said branch, and a tether means connecting said boat and one of said handle portions.

4,281,613

**METHOD OF AND APPARATUS FOR MOORING A FLOATING STRUCTURE**

Donald R. Ray, and Riddle E. Steddum, both of Houston, Tex., assignors to The Offshore Company, Houston, Tex.

Continuation of Ser. No. 827,145, Aug. 24, 1977, abandoned.

This application Nov. 20, 1979, Ser. No. 96,075

Int. Cl.<sup>3</sup> B63B 21/50

U.S. Cl. 114—230

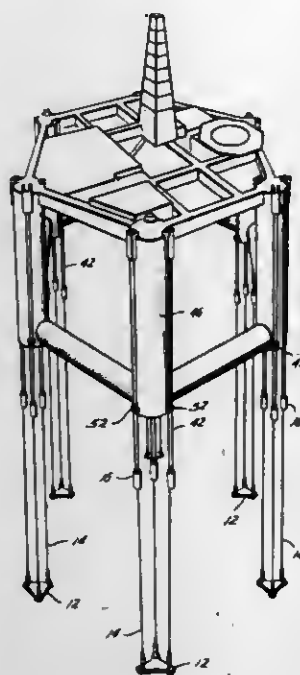
16 Claims

1. A tension mooring system for a floating platform comprising:

- a floating platform;
- anchor means positioned upon the bed of a body of water;
- mooring lines secured to said anchor means and extending upwardly therefrom;
- buoyant means connected to the upper ends of said mooring lines at a point below the lowest water surface; and
- means for connecting said mooring lines to said floating platform, said connecting means for each of said mooring lines including,

a length of sacrificial mooring line,

a sheave secured to said buoyant means, a first reel on said floating platform, a second reel on said floating platform, and means for tensioning said sacrificial mooring line, said sacrificial mooring line being wound on said first reel and



extending around said sheave and through said tensioning means to said second reel whereby tension in said mooring line may be maintained at a preselected level and said sacrificial mooring line may be replaced with the additional sacrificial mooring line wound on said first reel.

4,281,614

**CONNECTION OF THE UPPER END OF AN OCEAN UPWELLING PIPE TO A FLOATING STRUCTURE**

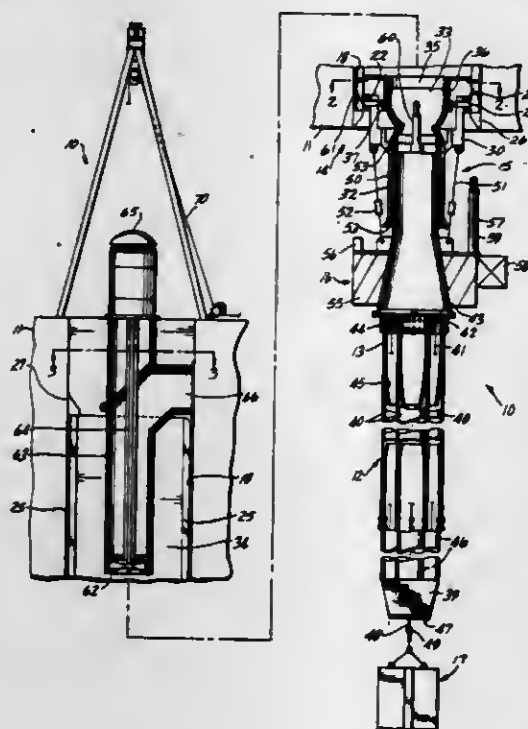
James F. McNary, Santa Ana, and Abraham Person, Los Alamitos, both of Calif., assignors to Global Marine, Inc., Los Angeles, Calif.

Filed Aug. 21, 1978, Ser. No. 935,591

Int. Cl.<sup>3</sup> B63B 21/52, 51/02; B63C 9/04

U.S. Cl. 114—264

12 Claims



1. Apparatus for connecting to a floating structure, for pendulous support thereby with its lower end disposed above an ocean floor, the upper end of a pipe assembly disposed substantially vertically in an ocean and the like, the apparatus comprising:

gimbal means coupled between the pipe assembly and the structure concentrically about the pipe assembly and defining two orthogonal gimbal axes about which the pipe assembly can move relative to the structure, the gimbal means carrying essentially all loads between the pipe assembly and the structure, and

ball joint means coupled between the upper end of the pipe and the structure defining the boundaries of a path of fluid flow between the pipe and the structure, the ball joint means including an element associated with the pipe assembly and a cooperating element associated with the gimbal means and secured from movement relative thereto in a direction aligned with the elongate extent of the pipe assembly, the ball joint means being centered on the intersection of the gimbal axes.

4,281,615

**SELF-PROPELLED SEMI-SUBMERSIBLE SERVICE VESSEL**

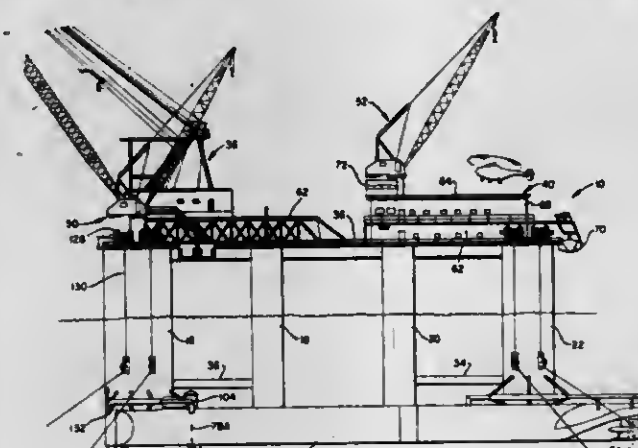
John H. Wilson, Richardson, and Dillard S. Hammett, Dallas, both of Tex., assignors to Sedco, Inc., Dallas, Tex.

Filed Oct. 31, 1977, Ser. No. 845,831

Int. Cl.<sup>3</sup> B63B 35/44

U.S. Cl. 114—265

14 Claims



1. A semi-submersible service vessel comprising, in combination:

a service platform having forward, aft, port and starboard sides from which marine service operations may be performed;

first and second elongate hull structures disposed subjacent the service platform, each hull having a ballast tank enclosed therein for controlling the buoyancy of each hull, respectively;

a plurality of buoyant stability columns vertically disposed intermediate each hull and the service deck at forward and aft locations;

a truss system mechanically interconnecting the hulls and service deck for supporting the hulls in spaced parallel relation and for supporting the service deck in a fixed elevated position with respect to the hulls;

means for selectively adding or removing ballast to the ballast tanks of each hull structure;

first propulsion means disposed in the aft region of each hull for producing a driving thrust in a direction parallel with the longitudinal axis of the hull;

second propulsion means disposed in the forward region of each hull for producing a steering thrust, the second propulsion means being mounted for controlled movement relative to an axis of revolution for producing a steering thrust in a direction which may be varied in azimuth;

a plurality of anchor lines reeved for deployment from each corner of the vessel;

a winch assembly connected to each anchor line for maintaining a predetermined level of tension in each line,

a sonar ranging system for measuring the underwater distance between a submerged portion of the service vessel and a submerged portion of an offshore platform; and

a laser ranging system for measuring the above water dis-

tance between the elevated portion of an offshore platform and an elevated portion of the service vessel.

4,281,616

**AUTOMATIC FINGERPRINT CARD HOLDER**

Allan D. LeVantine, 18225 Rancho St., Tarzana, Calif. 91356

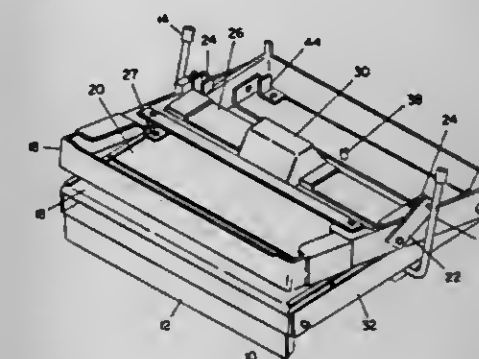
Continuation-in-part of Ser. No. 90,875, Nov. 2, 1979,

abandoned. This application Nov. 17, 1980, Ser. No. 207,655

Int. Cl.<sup>3</sup> B41K 1/00; A61B 5/10

U.S. Cl. 118—31.5

16 Claims



1. An apparatus for holding a fingerprint card that locates the fingerprint card in the proper positions for taking a full set of rolled and flat fingerprints, comprising:

a platen;

a means for locating and retaining a fingerprint card on the platen;

a frame for supporting the platen;

a slide means on the frame that permits the platen to be

advanced to carry the fingerprint card to the proper positions;

an actuator means for advancing the platen to the proper positions;

an indexing means for stopping the advance of the platen at the next proper position;

a hoop means for folding the fingerprint card down over the front of the apparatus;

a lever means for actuating the hoop;

a clamping means that frees the fingerprint card as it is

advanced to the next position and then folds the card

down and locks it at that position;

a restraining means that prevents the apparatus from moving

when the fingerprint card is being advanced.

4,281,617

**APPARATUS FOR COATING CONDUCTORS**

Robert C. Bevers, Doraville; Helmut E. Durr, Dunwoody, and George E. Mock, Duluth, all of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,465

Int. Cl.<sup>3</sup> B05C 3/172, 11/02

U.S. Cl. 118—68

8 Claims

1. An apparatus for providing a uniform thickness layer of a fluent coating material to a moving conductor, said apparatus comprising:

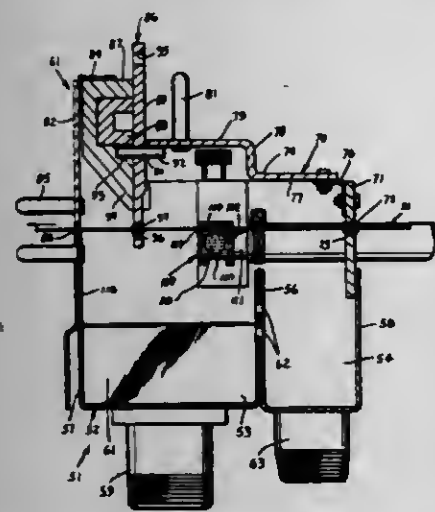
a housing having openings through which a conductor may be advanced along a path into and then out of said housing;

non-contacting means mounted in said housing and having openings aligned with the openings in said housing through which the conductor is moved along a portion of the path for holding the coating material and for maintaining the coating material at a level above the conductor along said portion of its path to cause the coating material to be applied to the conductor as it is moved therethrough, said non-contacting means including an applicator tube which comprises:

a container for the fluent coating material, said container



including a pair of spaced side walls, each side wall having a notch formed therein, said notches being aligned with a path of travel of a conductor through the notches such that the conductor is not contacted by the surfaces of the walls which form the notches; and  
a cover having a plurality of slots thereacross, each said slot connecting a pair of aligned notches in said side walls and being parallel to a conductor path, each said slot and aligned notches forming an applicator opening which is sized to accommodate a range of conductor sizes and to maintain the level of the coating material in said container



substantially at a predetermined level above the path of the conductor without substantially increasing the flow rate of the coating material into said container;  
die means aligned with an exit opening in said non-contacting means for removing excess coating material from the conductor to form a layer of substantially uniform thickness;  
means for partially treating the coating material; and  
means for advancing the conductor into said housing, through said non-contacting means and said die means and then out of said housing and through said treating means.

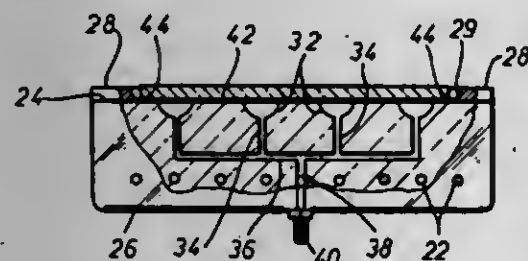
4,281,618

#### APPARATUS FOR TRANSFERRING SAMPLE ON FLEXIBLE SHEET TO CHROMATOGRAPHIC PLATE

David C. Penmore, 1300 Moursund, Houston, Tex. 77030  
Division of Ser. No. 39,960, May 21, 1979, which is a continuation-in-part of Ser. No. 909,207, May 25, 1978. This application Mar. 20, 1980, Ser. No. 131,896  
Int. Cl.<sup>3</sup> B05B 1/00

U.S. Cl. 118—202

18 Claims



1. An apparatus for application of samples to a thin-layer chromatographic plate comprising:  
an applicator sheet having a top surface defining a horizontal plane;  
means forming a plurality of depressions in said top surface, each of said depressions being adapted to receive a discrete sample to be transferred to said plate; means supporting said sheet and plate in operative association; and  
displacement means for moving bottom surfaces of each depression toward said plane to effect said application of samples to the plate.

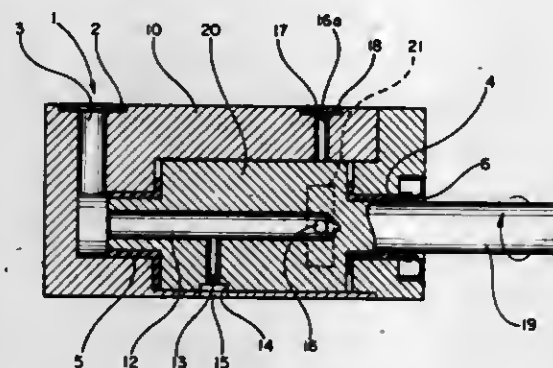
4,281,619

#### METHOD FOR APPLYING VISCOUS FLUID TO STOCK AND ROTARY VALVE FOR USE IN SAME

Richard H. Frick, and Kenneth M. Enloe, both of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.  
Filed Mar. 10, 1980, Ser. No. 128,483  
Int. Cl.<sup>3</sup> B05C 1/04; B05B 1/16

U.S. Cl. 118—325

9 Claims



1. An apparatus for applying measured amounts of fluid in registry, in a predetermined configuration to a continuously moving material sheet comprising:

I. a rotary valve having in combination:

(a) a rotor having:

- (1) first and second circular faces, said first face having a port substantially centrally located therein;
- (2) a longitudinal surface extending between said faces;
- (3) an intake bore extending from said first circular face inwardly longitudinally toward said second face but terminating prior thereto;
- (4) a first passage fluidly communicating and radially extending from said bore to said longitudinal surface;
- (5) a slot portion in fluid communication with said passage at the longitudinal surface, and circumferentially extending around said longitudinal surface in an arc greater than that defined by said passage;

(b) a valve seat for rotatably mounting said rotor; said valve seat having:

- (1) a fluid inlet fluidly communicating with said bore;
- (2) a discharge orifice corresponding to said slot on said valve rotor and in fluid communication therewith when said slot and orifice are aligned as a result of rotation of the valve rotor; and

II. a device for continuously advancing said sheet; and  
III. a means for mechanically coupling the advancing of said sheet with the rotation of the valve.

4,281,620

#### LIQUID DEVELOPER SPEAR HEAD ACCESS MECHANISM

John L. McChesney, Cupertino; Thomas A. Tackland, San Jose, and Ian Turner, Sunnyvale, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1979, Ser. No. 79,676

Int. Cl.<sup>3</sup> B05C 3/02; G03G 15/10

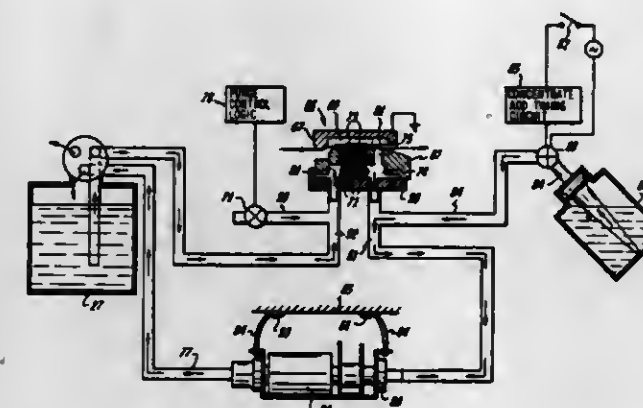
U.S. Cl. 118—410

12 Claims

1. A liquid development delivery system in a printing machine, including a removable container of liquid developer material; a development fountain, delivery fluid conduit for transporting developer between said container and said fountain, and suction means for withdrawing developer from said supply container and delivering it in said system, said system being characterized by

a developer access manifold, secured in said printing machine, comprising flow-through piercing means  
connection means in said container comprising sealing means through which said piercing means is penetrated and is encircled thereby in a substantially air-tight manner when said container is operatively coupled to said printing machine and wherein said sealing means forms a substan-

tially fluid-tight closure upon removal of said piercing means when said container is uncoupled from said printing machine, and  
means, located within said container, through which liquid



developer is withdrawn, said withdrawal means being in communication with said connection means and positioned such that said piercing means enters said withdrawal means when said container is coupled to said printing machine.

4,281,621

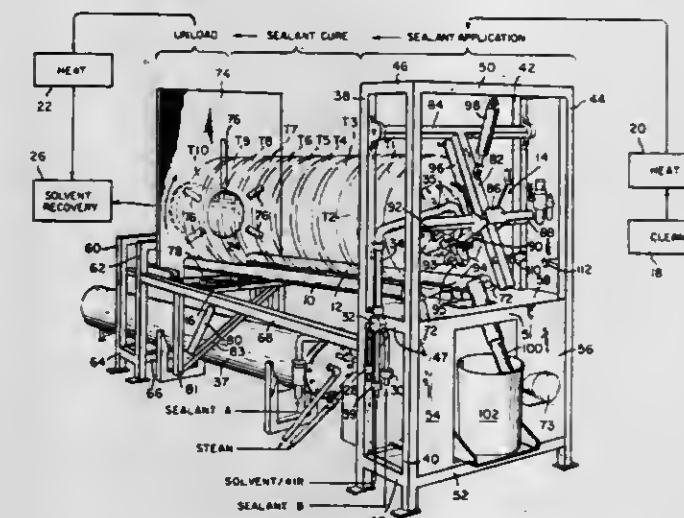
#### TIRE SEALANT APPLICATOR

Kenneth L. Tacke, Woodinville; Lyle D. Galbraith, and Hudson Stewart, both of Kirkland, all of Wash., assignors to Rockcor, Inc., Redmond, Wash.

Division of Ser. No. 933,579, Aug. 14, 1978, Pat. No. 4,206,008, which is a continuation of Ser. No. 745,194, Nov. 26, 1976, abandoned. This application Dec. 3, 1979, Ser. No. 99,570  
Int. Cl.<sup>3</sup> B05B 13/06

U.S. Cl. 118—500

8 Claims



1. An apparatus for transporting a plurality of toroidal articles from a loading station to an unloading station while continuously rotating said articles, comprising:

frame means;

at least two generally parallel inclined elongated rollers rotatably mounted to said frame means for supporting a plurality of such articles in generally coaxial side-to-side relation;

drive means for rotating at least one of said rollers;

support means located at said unloading station for supporting one such article located at said unloading station against further displacement along said rollers;

unloading means connected to said frame means and positioned at said unloading station for unloading one such article from said rollers while permitting continuous rotation of remaining articles supported by said rollers; whereby a plurality of said articles are rotated in place until such time as one such article is unloaded from the unloading station permitting the remaining articles to

undulate along the rollers to successively occupy the location vacated by the preceding article.

4,281,622

#### APPARATUS FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

Yoshio Kudo; Masakazu Iwasa, and Hisashi Kato, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Minamishigara, Japan

Continuation of Ser. No. 886,449, Mar. 14, 1978, abandoned.

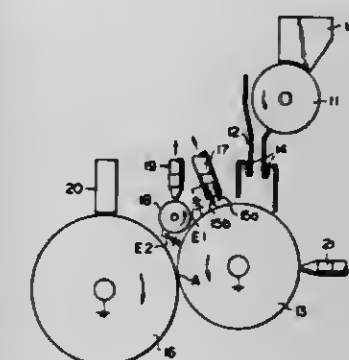
This application Mar. 24, 1980, Ser. No. 132,976

Claims priority, application Japan, Mar. 14, 1977, 52/27759

Int. Cl.<sup>3</sup> G03G 15/08

U.S. Cl. 118—653

3 Claims



1. An apparatus for developing an electrostatic latent image in an electrostatic apparatus comprising a latent image carrying medium carrying thereon an electrostatic latent image, a developing roller which carries thereon a toner layer for developing the latent image into a toner image, a rotatable squeeze roller provided in the vicinity of said developing roller with the periphery of said squeeze roller extending in parallel to the periphery of said developing roller, and means for applying a voltage to said squeeze roller with respect to the developing roller, said voltage applying means being arranged to change the level of the voltage applied to the squeeze roller whereby the thickness of the toner layer is controlled by the level of the voltage applied to said squeeze roller, and means for reducing the thickness of said toner layer on said developing roller before the toner layer faces said squeeze roller to such a thickness that the surface of the toner layer is spaced from the surface of the squeeze roller.

4,281,623

#### SHEET STRIPPING MEMBERS FOR FIXING DEVICE FOR FIXING IMAGES OF AN ORIGINAL DOCUMENT ON SHEETS OF COPY MATERIALS

Tutomu Kato, Yamatokoriyama, and Susumu Houjyo, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 30, 1978, Ser. No. 891,639

Claims priority, application Japan, Apr. 1, 1977, 52-41182[U]; Apr. 1, 1977, 52-41183[U]

Int. Cl.<sup>3</sup> B05C 11/00; B30B 3/04

U.S. Cl. 118—668

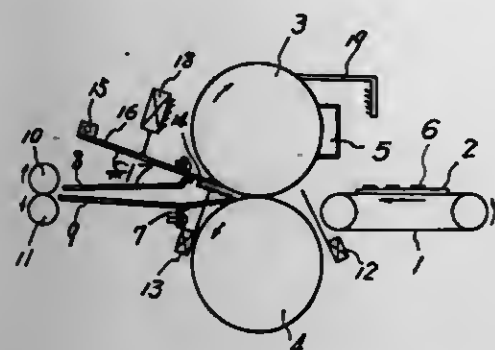
12 Claims

1. In a copy sheet stripping device within a copier, said copier including a pair of rollers for fixing images of an original document on a copy material by pressure engagement between said rollers, the improvement comprising:

means for moving the copy sheet stripping device into engagement with one of said pair of rollers to scrape away the copy material from that roller in synchronization with



the approach of the copy material toward the rollers, and nally and laterally, progressively in response to rearward movement of the supply container.



that roller in synchronization with the separation of the copy material from the rollers.

4,281,624

## ANIMAL FEEDER FOR FLOWABLE MATERIALS

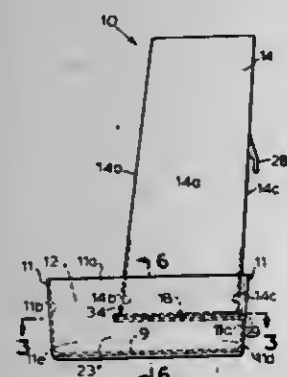
Raymond Raines, 1320 S. Denver, Russellville, Ark. 72801

Filed Nov. 26, 1979, Ser. No. 97,239

Int. Cl.<sup>3</sup> A01K 5/00

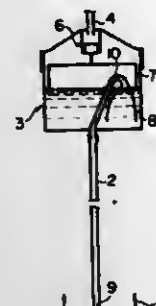
U.S. Cl. 119—52 R

4 Claims



1. In a pet feeder of flowable materials, a horizontally disposed serving container (11) provided with a bottom (9), front and rear walls (11b, 11c) and a pair of substantially vertical oppositely disposed sidewalls (11a, 11a), the upper margins of said walls defining an opening (12) in the upper end of the container, and an inverted supply container (14) provided with front and rear walls (14b, 14c) and a pair of substantially vertical oppositely disposed sidewalls (14a, 14a) relatively shorter than the sidewalls of said first opening, the lower margins of the inverted container defining an opening (15) in its lower end, said oppositely disposed sidewall margins of the inverted container being vertically overlapped respectively by and in laterally spaced relation to said oppositely disposed segments of the serving container sidewall margins to thereby provide a passageway between the container ends, in combination with a pair of tongue-and-groove joints (18, 18) respectively connecting said oppositely disposed sidewall margins of the inverted container (14) to said overlapping sidewall segments of the serving container (11), said joints slidably supporting the inverted container upon the serving container and for movement along a path extending forwardly and rearwardly of the feeder, the tongue component (22) of each of said joints (18, 18) being integral with and projecting laterally from one of said connected overlapping sidewall margins and the associated groove component (20) being integral with the other of said connected overlapping sidewall margins and laterally intermeshing with said tongue component (22), each of said joints (18, 18) converging rearwardly and laterally inwardly at an acute angle relative to said path to cause its tongue and groove components to unmesh longitudinally and laterally, progressively in response to forward movement of the supply container, and conversely, to cause the components to intermesh longitudi-

4,281,625  
AUTOMATIC WATER SUPPLY DEVICE  
Nobuharu Kasai, 32, Azaipponyanagi, Oozahinuma, Onoecho, Minamitsugaru-gun, Aomori-ken, Japan  
Filed Oct. 12, 1979, Ser. No. 84,432  
Claims priority, application Japan, Oct. 24, 1978, 53-130738  
Int. Cl.<sup>3</sup> A01K 7/00, 39/026  
U.S. Cl. 119—77 11 Claims



1. An automatic water supply device comprising:  
a tray adapted to receive water up to a predetermined first level;  
a first vessel having a float and valve assembly which controls supply of water into said first vessel so as to maintain a predetermined highest second level of water in said first vessel; and  
a siphon tube having a highest point, an inlet tube portion which extends downwardly from the highest point and has an open inlet end which has a substantially horizontally disposed annular edge which defines an inlet opening area and is located in said first vessel at a predetermined third level which is lower than said second level, and an outlet tube portion which extends downwardly from the highest point and has an open outlet end which has an outlet opening area and is located in said tray at a predetermined fourth level which is lower than said first level, said inlet opening area of said siphon tube being substantially larger than said outlet opening area;  
wherein the highest point of the siphon tube is positioned between said second level and a level which is lower than said second level by the difference between said first and fourth levels.

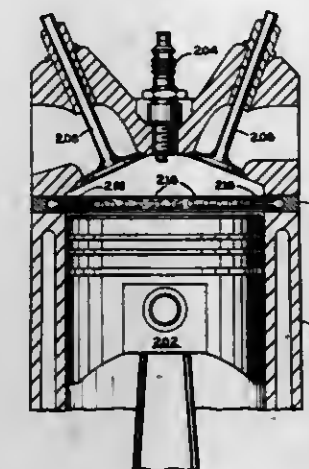
4,281,626  
VAPORIZABLE LIQUID INJECTION SYSTEM AND METHOD FOR INTERNAL COMBUSTION ENGINE  
Gerald R. A. Fische, 404 N. Andrews Ave., Fort Lauderdale, Fla. 33301  
Filed Apr. 30, 1979, Ser. No. 34,265  
Int. Cl.<sup>3</sup> F02M 25/02

U.S. Cl. 123—25.C

8 Claims

1. In a four or two cycle internal combustion engine having a piston and cylinder forming a combustion chamber with intake, compression, expansion and exhaust phases in its cycle, and means for introducing a combustible fuel-oxidizing agent mixture into said cylinder, means for igniting the fuel-oxidizing agent mixture in said cylinder and means for exhausting gases from said cylinder, the improvement comprising:  
means for introducing evaporable liquid into said cylinder in a stratified manner such that the liquid is contacted by a portion of the combusting fuel gases primarily after most of the combustion of the fuel gases has occurred for absorbing some of the heat of combustion in the liquid and vaporizing the same;  
said portion of the gases being located at the periphery of the combustion chamber at the time combustion is close to completion and the piston is commencing its power stroke, so as to provide a stratified liner, substantially in

cylindrical shape, against the cylinder walls of the cooler portion of combustion gasses and evaporable liquid to reduce the energy loss to the cylinder cooling system and recoup this energy as vapor to exert pressure on the piston;  
said evaporable liquid introduction means including a porous device means for said chamber including a porous portion exposed in said cylinder at a location spaced and

4,281,627  
VENTILATOR OF DISTRIBUTOR FOR IGNITION OF ENGINE

Toshiyuki Sakurai, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

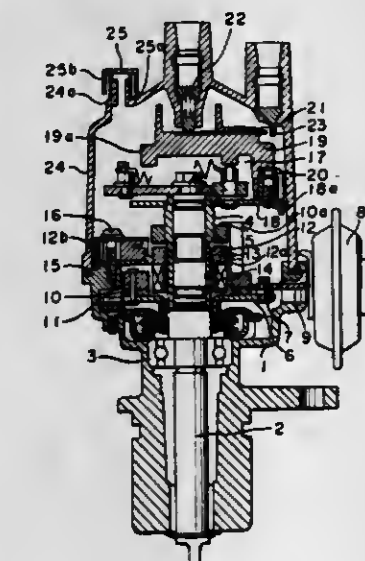
Filed Apr. 3, 1980, Ser. No. 136,825

Claims priority, application Japan, Apr. 3, 1979, 54/454411[U]

Int. Cl.<sup>3</sup> F02P 1/00

U.S. Cl. 123—146.5 A

4 Claims

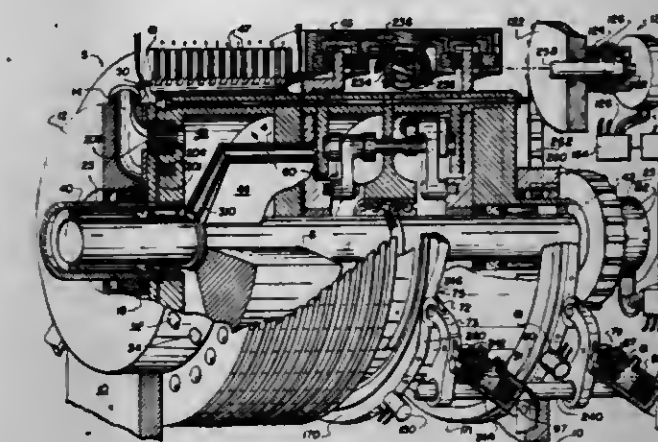


1. In a ventilator of a distributor for ignition of an engine which comprises a ventilation plug fitted to a cap of said distributor, an improvement characterized in that said ventilation plug and said cap are formed in one piece by an insert molding.

4,281,628  
HIGH EFFICIENCY TRI-ROTOR BALLISTIC ENGINE  
George J. Doondoulakis, 2498 Kayron La., North Bellmore, Long Island, N.Y. 11710  
Filed Oct. 15, 1979, Ser. No. 84,846  
Int. Cl.<sup>3</sup> F02B 53/00

U.S. Cl. 123—245

22 Claims



1. A tri-rotor ballistic engine comprising:  
a frame;  
a drum, rotatably mounted on said frame, having an output shaft, a power cavity defined therein;  
a power shaft rotatably mounted in said drum;  
a reaction shaft rotatably mounted in said drum;  
a differential interconnection means interconnecting said power shaft, reaction shaft and drum so that when said drum is rotated at a constant angular velocity and one of said power and reaction shafts is held at zero angular velocity, the other of said power and reaction shafts rotates at twice said constant angular velocity;  
at least one inner power piston connected to said power shaft extending radially outwardly thereof and into said power cavity of said drum;  
said drum including at least one outer power piston extending into said power cavity to define at least two power chambers with said at least one inner power piston;  
first hydraulically operated holding means connected to said power shaft for holding said power shaft at zero angular velocity;  
second hydraulically operated holding means connected to said reaction shaft for holding said reaction shaft at zero angular velocity;  
control means connected to said first and second holding means for selective activation thereof; and  
power fluid means connected to said at least two power chambers for selectively pressurizing said power chambers and rotating said drum.

4,281,629  
COMPRESSION IGNITION DIRECT INJECTION INTERNAL COMBUSTION ENGINE  
Hans List, 126, Heinrichstrasse, Graz, Austria  
Filed Nov. 14, 1979, Ser. No. 94,095  
Claims priority, application Austria, Nov. 16, 1978, 8194/78  
Int. Cl.<sup>3</sup> F02B 3/00

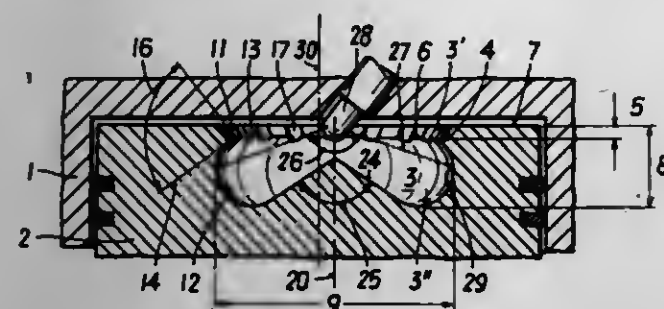
U.S. Cl. 123—279

8 Claims

1. A compression ignition, direct injection internal combustion engine, particularly comprising at least one cylinder, a piston and an injection nozzle, a combustion chamber or cavity in the form of a body of rotation disposed in the piston and receiving almost the entire quantity of combustion air at the end of the compression stroke, wherein said chamber having, below the crown of the piston, a constriction dividing the chamber into an upper and a lower part, said injection nozzle being mounted with the nozzle tip at least near the axis of the chamber and with the fuel jets being directed towards the wall of the chamber, the geometrical points of intersection of the axes of the nozzle holes lying below the narrowest cross-section of the constriction in the chamber throughout the entire



injection period, a connecting passage formed by the constriction between the upper part and the lower part of the combustion chamber including a number of connecting canals in the



region of the circumference of the chamber, and said connecting canals being constructed to be groove-like and open to the chamber.

4,281,630

# CENTRIFUGAL RPM GOVERNOR FOR INTERNAL COMBUSTION ENGINES

Werner Brühmann; Reinhard Schwartz, both of Stuttgart, and Darsten Hummel, Weodlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

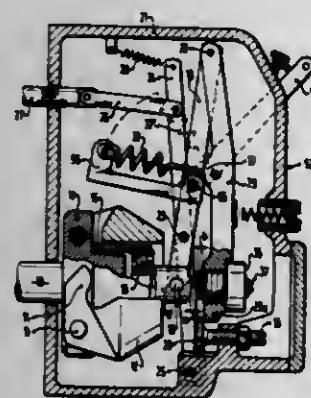
Filed Jul. 20, 1979, Ser. No. 59,356

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1978, 2838367

Int. Cl.<sup>3</sup> F02D 1/04

U.S. Cl. 123—373

7 Claims



1. A centrifugal rpm governor for internal combustion engines comprising, a control member which adjusts in accordance with rpm, at least one governor spring, a force transmitting member subject to the force of said at least one governor spring, an adaptation device disposed in the force transmitting path between said control member and said force transmitting member, said adaptation device having a longitudinal bore recessed to provide a step, a stop bolt having a head and a threaded portion disposed in said longitudinal bore, an adaptation spring in said longitudinal bore, said adaptation spring being supported at one end on said step in said longitudinal bore, an axially displaceable ring having a threaded interior secured to said stop bolt threaded portion adjacent said head and defining a shoulder for supporting the other end of said adaptation spring and means in said longitudinal bore for securing said ring against rotation.

## 4,281,631 EXHAUST GAS RECIRCULATION AND IDLE SPEED CONTROL DEVICE

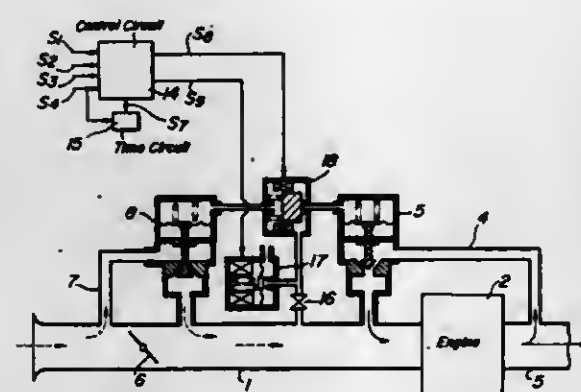
Hiroshi Yamaguchi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan  
Filed Dec. 5, 1979, Ser. No. 100,636

Claims priority, application Japan, Dec. 6, 1978, 53-149930; Dec. 8, 1978, 53-151010

Int. Cl.<sup>3</sup> F02M 25/06, 3/00

U.S. Cl. 123—571

7 Claims



1. An exhaust gas recirculation and idle speed control device for an internal combustion engine including an exhaust gas recirculation control valve responsive to negative pressure for controlling amounts of exhaust gas recirculation, an idle speed control valve responsive to negative pressure for controlling intake air flow rate when idling, a solenoid valve for regulating intake negative pressure, a change-over valve being changed to supply the negative pressure regulated by the solenoid valve to any one of said exhaust gas recirculation and idle speed control valves and a control circuit for generating signals depending upon engine operating parameters for controlling said solenoid valve and for changing said change-over valve to the idle speed control valve side when a throttle valve is closed and changing said change-over valve to the exhaust gas recirculation control valve side at the time other than when the throttle valve is closed, comprising signal generating means for generating signals for changing said change-over valve from the exhaust gas recirculation control valve side to the idle speed control valve side after a predetermined delay time has lapsed from a moment when the throttle valve was closed and signals for controlling said solenoid valve to fully open said exhaust gas recirculation control valve during said delay time.

4,281,632

## THROTTLE BODY AND MIXING TUBE

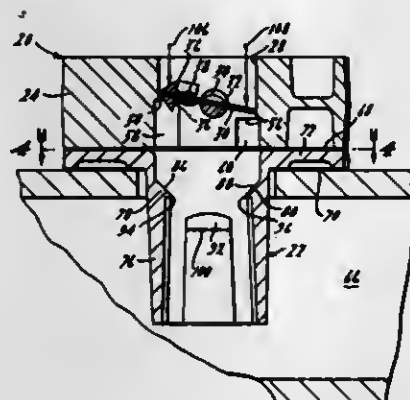
Gordon W. Fean, Rochester, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Feb. 21, 1979, Ser. No. 13,338

Int. Cl.<sup>3</sup> F02M 29/00

U.S. Cl. 123—590

4 Claims



1. In an internal combustion engine having a throttle body comprising an induction port of circular cross section forming

a segment of the induction passage, a throttle shaft extending centrally transversely across the induction port and mounted on the throttle body for rotation about its own axis, a throttle blade of generally circular shape disposed on the throttle shaft which selectively throttles the induction passage in accordance with rotation of the throttle shaft, and means for introducing fuel into the induction passage upstream of the throttle blade to form a combustible mixture with induction air, and a set of deflectors on the wall of the induction passage downstream of the throttle blade, an improved arrangement for the deflectors for imparting increased turbulence to the combustible mixture to improve atomization and distribution of the fuel comprising: each deflector comprising a deflection surface inclining from the induction passage wall radially inwardly in the downstream direction and terminating in a sharp edge which is generally transverse to the direction of flow through the induction passage, said deflectors being arranged in pairs, wherein the deflectors of each pair are diametrically opposite each other across the wall with a first pair of deflectors being disposed circumferentially in alignment with the longitudinal ends of the throttle shaft and with a second pair of deflectors being disposed upstream of the first pair and at an orientation which is circumferentially at 90° relative to the deflectors of the first pair, and wherein the entirety of both sharp edges of the second pair are disposed upstream of the entirety of both sharp edges of the first pair, further including a sharp shearing edge disposed on the induction port of the throttle body generally coextensive with a marginal circumferential segment of the throttle blade which swings upstream as the throttle blade is increasingly opened, said sharp shearing edge being disposed downstream of said throttle blade segment and upstream of the deflectors.

4,281,633

## BARBECUE GRILL WITH SNUFFING MEANS AND HEAT CONTROL

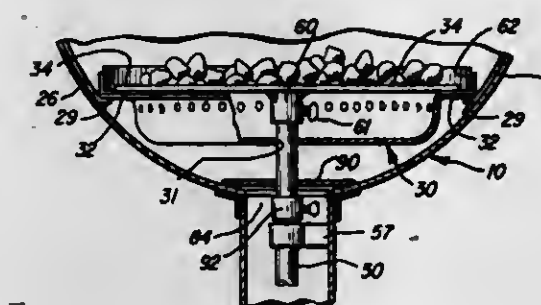
Gunther G. Wackerman, Paris, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Jul. 10, 1979, Ser. No. 56,297

Int. Cl.<sup>3</sup> A47J 37/00

U.S. Cl. 126—25 C

15 Claims



1. An outdoor barbecue grill for cooking meat or other foodstuffs over a bed of hot coals, which comprises: kettle means for containing the foodstuff to be cooked and the hot coals for cooking the same, said kettle means having draft vent means in its bottom wall, said draft vent means adapted to be selectively put in a closed condition, a partially open condition, and a fully open condition; cover means for said kettle means; grill means for holding the foodstuff to be cooked, said grill means being supported by said kettle in the upper interior portion thereof; generally vertical support means for supporting said kettle in an elevated position, said support means defining a slot, said slot including a generally vertically extending segment and at least one generally horizontally extending segment communicating with said vertical segment, said segments defining a first position at a lowermost predetermined height and a second position at an uppermost predetermined height; grate means adapted for positioning in the interior of said

kettle below said grill means for supporting said bed of hot coals; a generally vertical post member positioned adjacent said support means, said post member having an upper end that supports said coal grate means, and having lowermost and uppermost positions, respectively, that correspond to said first and second positions defined by said slot segments in said vertical support means; means slidably supporting said post member in a generally vertical position as aforesaid and permitting vertical movement of said post from its lowermost position to its uppermost position; generally horizontal handle means, said handle means having one end secured to said vertical post member, a mid-portion that extends through said slot, and an opposite end that extends away from said support means and is grippable by a user; and snuffing means actuated by vertical movement of said post member, said snuffing means being adapted to close said draft vent means in the bottom wall of said kettle when said post is in its said lowermost position and to open said draft vent means when said post is raised above said lowermost position; whereby (a) said coal grate means is vertically adjustable relative to said grill means by moving said handle means in said slot segments from said first position at a lowermost height to said second position at an uppermost height, (b) said snuffing means closes said draft vent means when said post member is in its said lowermost position, and (c) said snuffing means puts said draft vent means in its said fully open condition when said post member is in its said uppermost position.

4,281,634

## WOOD BURNING SPACE HEATING STOVE

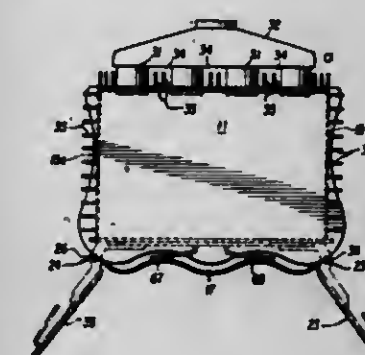
John H. Bane, 111, 403 N. Maple Ave., Brunswick, Md. 21716

Filed Oct. 30, 1978, Ser. No. 955,647

Int. Cl.<sup>3</sup> F24H 9/14; F24C 1/00, 15/00

U.S. Cl. 126—119

7 Claims



1. A space heating stove comprising a fire box having substantially vertical front and rear panels, a plurality of substantially horizontal flue ducts positioned across the top of the rear panel in spaced relationship to each other and extending outwardly from said rear panel, a manifold spaced outwardly from said rear panel and interconnecting said flue ducts, providing vertically oriented channels formed between adjacent ones of said flue ducts and said manifold and rear panel to generate a substantial convection current of ambient air therein from the space to be heated by said stove.



4,281,635

**KITCHEN VENTILATOR WITH INLET THROAT CHOKE ATTACHMENTS**

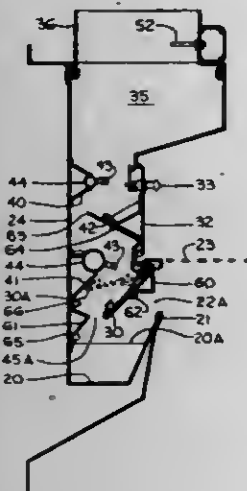
Edson C. Gaylord, Wilsonville, Oreg., assignor to Gaylord Industries, Inc., Wilsonville, Oreg.

Filed Oct. 29, 1979, Ser. No. 89,030

Int. Cl.<sup>3</sup> F24C 15/20

U.S. Cl. 126—299 D

4 Claims



1. In a kitchen ventilator having a baffle type grease extractor with an elongated inlet throat opening of uniform width extending above a row of cooking units wherein some of said cooking units produce less air pollution than other of said units and wherein said width of said throat opening is determined by the spacing of a damper baffle of uniform width above the front edge of a grease trough which forms the lower boundary of said throat opening, said ventilator having a back wall behind said damper baffle and grease trough and said damper baffle in open position being inclined downward and rearward from the upper boundary of said throat opening toward said back wall beneath a grease extracting baffle of uniform width projecting forward from said back wall, and said ventilator having an upper grease extracting baffle projecting rearward toward said back wall from said front wall above said damper baffle and back wall baffle; the improvement comprising a pair of supplemental and removable throat choke attachments for reducing the air flow over said less polluting cooking units, a first of said supplemental throat choke attachments comprising an elongated L-shaped angle plate extending along the front face of a portion of said damper baffle which is above said less polluting cooking units, said attachment protruding outward from said front face of the damper baffle toward said front edge of said grease trough to reduce the width of said throat opening along said portion of the damper baffle, and the second of said supplemental throat choke attachments comprising an elongated L-shaped angle plate protruding forward below said back wall baffle toward the lower edge of said portion of said damper baffle in said open position.

4,281,636

**STEAM PROCESSOR**

Elmer S. Vegh, 5290 Graham Dr., Lyndhurst, Ohio 44124; Donald F. Klier, 6511 Forest Ave., Parma, Ohio 44129; Davis S. Schwerzler, 8750 N. Spring Valley, Chagrin Falls, Ohio 44022, and William F. Castle, 1330 W. 67th St., Cleveland, Ohio 44102

Filed Jan. 7, 1979, Ser. No. 46,459

Int. Cl.<sup>3</sup> F24D 1/00; A21B 1/08; F24H 1/10; A01J 11/04

U.S. Cl. 126—349

8 Claims

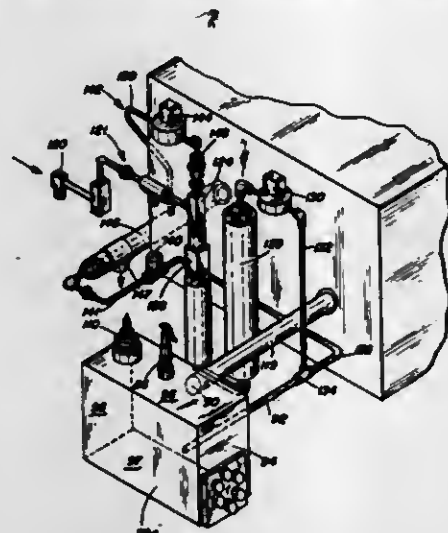
1. A steam processor for use in the preparation of food or the like, comprising:

- (a) an enclosed, insulated cooking chamber for heating food items placed in said chamber by contact with steam, having a steam inlet and an outlet for discharging excess steam and condensate;

(b) means for providing access to the interior of said cooking chamber;

(c) a source of steam including:

- (i) a steam generator including a fluid reservoir;
- (ii) conduit means communicating with the steam generator for supplying and draining fluid to and from the reservoir;
- (iii) control means including level sensing means and valve means for controlling the fluid communication between the reservoir and a source of fluid, said valve means further comprising means responsive to deactivation of



said steam processor, for draining the contents of said steam generator;

(iv) heating means for vaporizing the fluid in said steam generator;

(v) a steam supply conduit for conveying steam produced in the steam generator to the steam inlet in the cooking chamber;

(d) a steam control means for regulating the rate at which steam is produced in the steam generator comprising an operator variable cycling device for intermittently energizing the heating means.

4,281,637

**CONCENTRATING VACUUM ISOLATED SOLAR ENERGY COLLECTION APPARATUS EMPLOYING REFLECTOR**

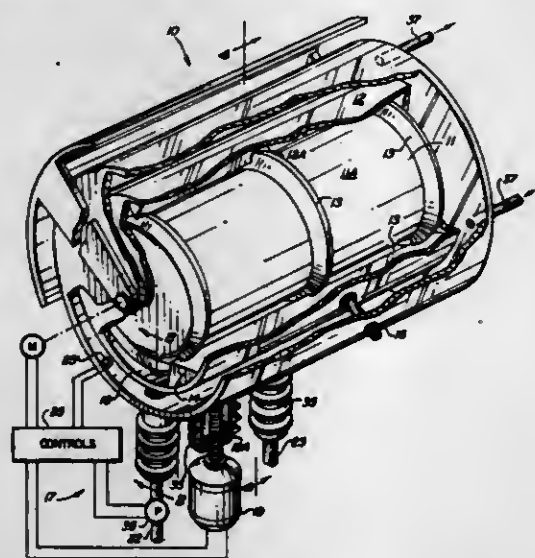
Pryce Wilson, 320 E. Sheridan, Phoenix, Ariz. 85004

Filed Nov. 9, 1979, Ser. No. 92,740

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—422

14 Claims



1. An improved heat exchange means comprising: a pair of concentrically arranged inner and outer spaced, closed objects,

4,281,638

**SOLAR HEATING SYSTEM**

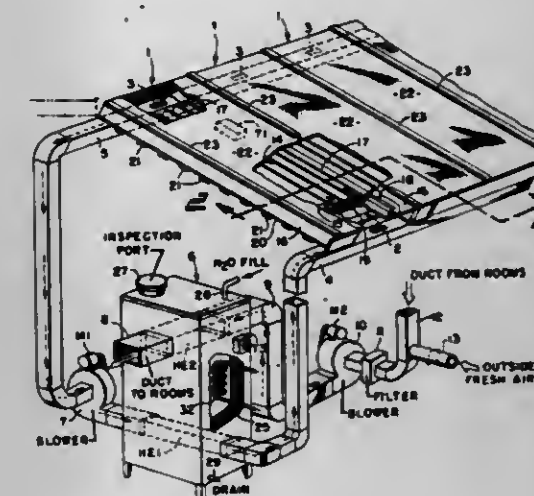
Seppo K. Kuronen, Ruuvikiya 2, 01650 Vantaa 65, Finland

Filed Jan. 31, 1980, Ser. No. 117,115

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—435

2 Claims



4,281,638

**DAMPER FOR SOLAR HEATING SYSTEMS AND THE LIKE**

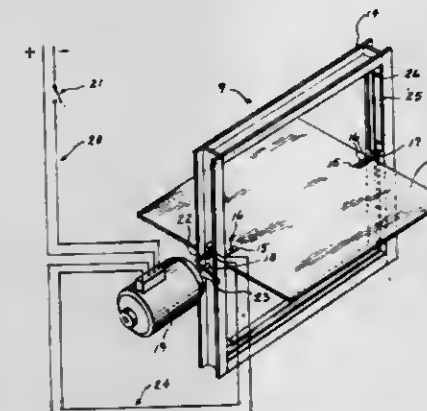
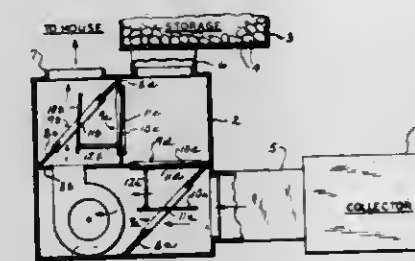
John J. Delany, Madison, Wis., assignor to Research Products Corporation, Madison, Wis.

Filed Jan. 17, 1979, Ser. No. 4,184

Int. Cl.<sup>3</sup> F24J 3/02; E06B 1/00

U.S. Cl. 126—428

17 Claims



1. In a solar heating system or the like, a damper assembly comprising, in combination:

- (a) a rectangular main frame,
- (b) a damper blade disposed within said frame,
- (c) means mounting said blade to said frame for blade rotation about a pivot axis between open and closed positions,
- (d) said blade having opposed side portions extending transverse to said pivot axis, and having opposed end portions extending parallel to said pivot axis,
- (e) a plurality of flexible sealing strips mounted on said frame and extending about the periphery of said blade,
- (f) said sealing strips being positioned for engagement with the peripheral blade face along the opposed side and end portions of said blade as the latter is rotatably closed,
- (g) said sealing strips being inclined toward their respective side and end blade portions and facing against the direction of closing damper blade movement,
- (h) a peripheral subframe disposed on the inner portion of said main frame,
- (i) means securing said sealing strips to said subframe,
- (j) and means mounting said subframe to said main frame for lateral adjustment of said subframe and sealing strips relative to said main frame.

4,281,640

**ELECTROMAGNETIC RADIATION COLLECTOR SYSTEM**

David N. Wells, 607 Valley Brook Dr., Silver Spring, Md. 20904

Filed Sep. 26, 1977, Ser. No. 836,538

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—438

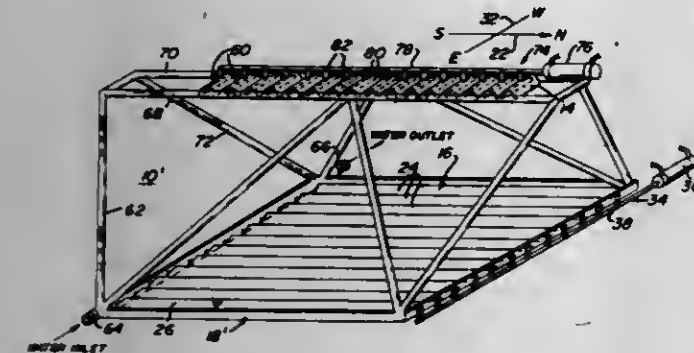
39 Claims

1. An electromagnetic radiation collector system for concentrating and absorbing radiation emitted by a radiation source, comprising:

- (a) a frame member;
- (b) a primary focusing concentrator having at least a pair of primary reflectors secured to said frame member and having at least a first axis of rotation extending in substantially longitudinal direction passing through an extended length of at least one of said primary reflectors for reflect-



- ing and concentrating said radiation emitted by said source;
- (c) at least one secondary reflector being positionally located substantially at a focal length of said primary reflectors, said secondary reflector having a focus line extending substantially normal said first axis of rotation of said primary reflectors; and,



- (d) electromagnetic radiation collector means mounted to said frame at said focus line of said secondary reflector, said first axis of rotation of said primary reflector extending in a direction substantially normal to an extended direction of said electromagnetic radiation collector means.

4,281,641

**SOLAR ENERGY COLLECTING SYSTEM**

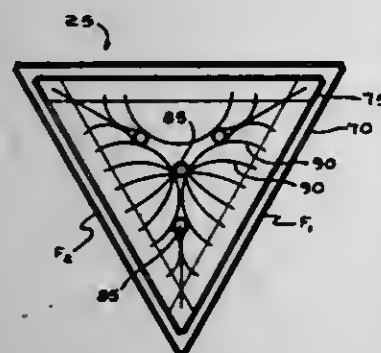
Clyde W. Devore, Northampton, Mass., assignor to Heliotropin Engineering Corp., Holyoke, Mass.

Filed Jan. 4, 1979, Ser. No. 902

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126-438

9 Claims



1. A solar energy collecting system comprising:
  - (a) a reflective collector having a pair of substantially parabolic sections that are adapted to gather solar radiation and focus said radiation generally along a pair of focal lines;
  - (b) a heat exchanger having a tube adapted for containment of a heat exchange fluid therein, said tube being triangular in cross section and substantially transmissive to said solar radiation and including a plurality of sidewalls, wherein each of said focal lines is coincident with one of said sidewalls;
  - (c) a plurality of spaced solar radiation absorbing and thermally conducting fins within the interior of said tube, said fins being adapted to be heated by said solar radiation to conduct heat to said heat exchanging fluid, said fins extending from locations adjacent said tube sidewalls generally normal thereto, pairs of adjacent fins defining gaps which converge to lines of intersection of adjacent fins, and said fins having opposed surfaces between which solar radiation is repeatedly reflected; and
  - (d) at least one tube within the interior of said heat exchanger, said tube being formed from a heat conducting material, said tube disposed in contact with said lines of fin

intersection and adapted to accommodate a flow of a liquid heat exchange fluid therewithin.

4,281,642

**SOLAR COLLECTOR CONSTRUCTION**

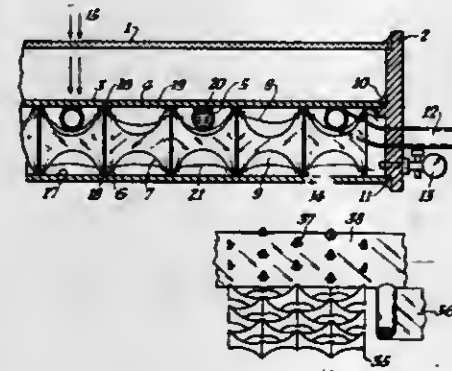
Hymian A. Steinberg, 7200 NW. 78th St., Tamarac, Fla. 33319

Filed Nov. 5, 1979, Ser. No. 91,156

Int. Cl.<sup>3</sup> F24J 3/02; F28F 13/00

U.S. Cl. 126-447

2 Claims



1. In a flat-plate solar collector, including an outer frame defining an opening in which an essentially rigid, flat, black collector plate is disposed within the frame, a conduit for collecting heat connected to the collector plate, and a rigid, non-transparent protective cover plate below the collector plate, the improvement for supporting said cover plate and collector plate and reducing heat losses, comprising:

a rigid, supportive cell structure having cell walls generally perpendicular to and positioned between and in contact with the central portion of said collector plate with conduit and said cover plate, said cell structure defining a plurality of cell volumes in the flat-plate collector, and said cell structure being disposed within at least a partially evacuated space between said collector plate with conduit and said cover plate, wherein the cell wall areas of said supportive cell structure are reduced between cell wall intersection points to accommodate surface irregularities of said collector plate with conduit, and wherein a heat-reflective film is disposed within said cell structure, said film being held in suspension by said cell structure and being isolated from said collector plate and said cover plate.

4,281,643

**PIPE COUPLINGS**

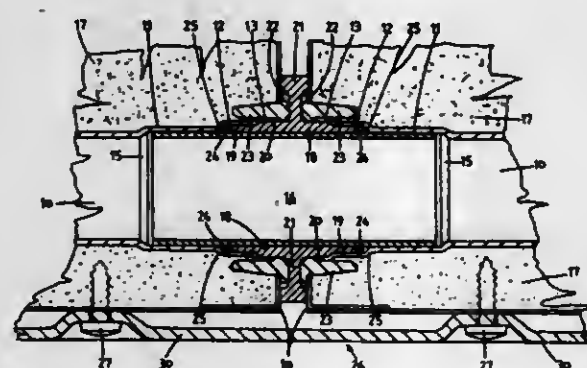
Kenneth H. Kibblewhite, 33 Folkstone Dr., Flaxmere, New Zealand

Filed Nov. 30, 1978, Ser. No. 965,199

Int. Cl.<sup>3</sup> F24J 3/02; F16L 21/06

U.S. Cl. 126-450

13 Claims



1. A coupling between pipes which have outwardly stepped ends and are each located in housings, said coupling comprising a tubular member extending axially between said pipes and located by each end in a stepped portion of each respective

pipe, a sleeve located over said tubular member and extending axially between said pipes, said sleeve having the ends thereof engaged in respective pipes between said tubular member and the or a further stepped portion of said pipes and fixing means for retaining the pipe housings in a spaced relationship.

10. A solar heater which includes at least two solar energy absorber panels mounted side by side with the adjacent end of the header or inlet and outlet pipes thereof coupled by a coupling of the type set forth in claim 1.

4,281,644

**SOLAR COOKER**

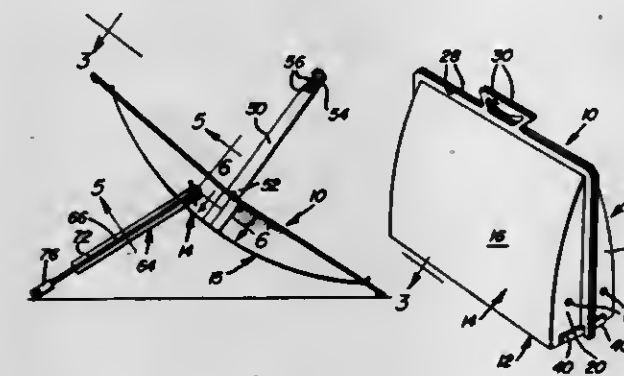
William B. Chiles, Marina del Rey, Calif., assignor to Solar Bar-B-Que Corporation, Los Angeles, Calif.

Filed Jun. 12, 1979, Ser. No. 47,903

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126-451

9 Claims



1. A collapsible solar cooker including a pair of open sided housing halves including corresponding closed and open sides as well as corresponding sets of peripheral sides extending about major portions of said closed sides and extending toward and bounding corresponding major portions of said open side, pivot means pivotally coupling corresponding peripheral sides of said halves for relative swinging of said halves between closed closely juxtaposed positions opening into each other and open positions opening in generally the same direction, the inner surfaces of said closed sides being contoured to reflect sunlight incident thereon from said direction in a concentrated manner into a zone centrally spaced, in said direction, outwardly of said open sides, a pair of support arms having base ends and free ends, said base ends and said halves adjacent said pivot means including coacting recess and projection means telescopically engaged with each other for removable support of said base ends from said halves at opposite sides of said cooker along a path closely paralleling the pivot axis of relative swinging of said halves and with said free ends of said arms projecting in said direction, said free ends being disposed in opposite ends of a zone substantially coinciding with the first mentioned zone, and an elongated spit removably supported from and extending between said free ends.

4,281,645

**METHOD AND APPARATUS FOR MONITORING METABOLISM IN BODY ORGANS**

Frans F. Jöbeis, Durham, N.C., assignor to Duke University, Inc., Durham, N.C.

Filed Jun. 28, 1977, Ser. No. 810,777

Int. Cl.<sup>3</sup> A61B 5/00

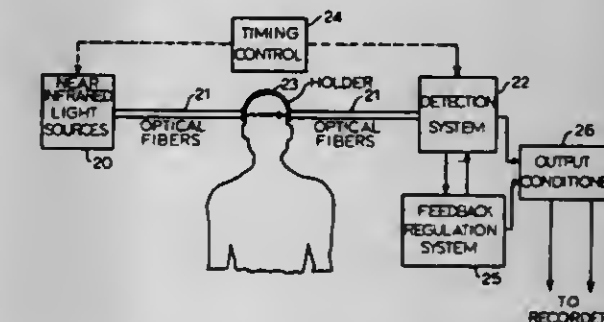
U.S. Cl. 128-633

67 Claims

1. A spectrophotometric method for measuring local metabolism of a body organ such as the brain in situ, in vivo, non-invasively, atraumatically, harmlessly, rapidly and continuously, said method comprising the steps:

- (a) with the organ positioned in the body in vivo, selecting an optical path intersecting said organ and extending for several centimeters between points of light entry and exit on the surface of the body;
- (b) establishing a plurality of near infrared light sources located external of the body and having light emissions of

different wavelength in the 700 to 1300 nanometer spectral range and of an intensity below the level damaging to the body and said organ as positioned in the body in vivo but sufficient to be detectable by a light sensor after transmission along said path, said emissions including at least one measuring wavelength and at least one reference wavelength within said spectral range, each said measuring wavelength being selected such that said organ in vivo exhibits a selective absorption therefor, the extent of which is dependent upon a specific state of metabolic activity of said organ in vivo;



- (c) directing said light emissions at said measuring and reference wavelengths sequentially along said path and through said organ and receiving the transmitted light emissions at a light sensor and circuit means to produce an electrical output signal representing the difference in absorption of said measuring and reference wavelengths by the organ as a function of the state of said metabolic activity in vivo; and
- (d) converting said electrical output signal to a signal providing a substantially continuous and rapid measure of said activity.

4,281,646

**CLEANING DEVICE FOR AN OBSERVATION WINDOW OF AN ENDOSCOPE**

Kunio Kinoshita, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

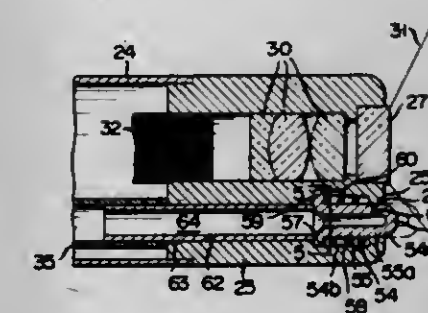
Filed Jun. 22, 1979, Ser. No. 51,244

Claims priority, application Japan, Jun. 30, 1978, 53/79460; Dec. 18, 1978, 53/156204

Int. Cl.<sup>3</sup> A61B 1/06

U.S. Cl. 128-6

16 Claims



1. An endoscope comprising an elongated sheath having two ends, an operation section having two ends, one end being connected to one end of the sheath, a distal end section having a proximal end connected to the other end of the sheath and a distal end and a nozzle chamber formed in the distal end section, and an observation window provided on the distal end of the distal end section and having an outer surface, a cleaning device comprising:

a hollow cylindrical nozzle reciprocally disposed in the nozzle chamber and having a distal end portion adapted to project from the distal end of the distal end section and recede into the distal end section according to reciprocation of the nozzle, said distal end portion having a blind end extending from the distal end of the distal end section;



a nozzle opening formed in the distal end portion of the nozzle directed to the outer surface of the observation window when the nozzle projects from the distal end of the distal end section;  
nozzle opening and closing means provided in the distal end section for closing the nozzle opening when the nozzle recedes into the distal end section;  
a fluid passage extending through the sheath and having two ends, one end communicating with the nozzle and the other end being disposed in the operation section and connected to fluid supplying means disposed outside the operation section;  
nozzle retracting means provided in the endoscope for retracting the nozzle into the distal end section; and  
nozzle projecting means provided in the endoscope for projecting the distal end portion of the nozzle from the distal end of the distal end section when the observation window is cleaned.

4,281,647

**INFLATABLE HAND SPLINT**

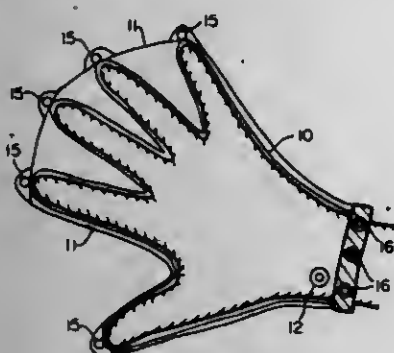
Philip G. Antypas, 300 Lebanon Ave., Pittsburgh, Pa. 15228

Filed Oct. 12, 1979, Ser. No. 84,372

Int. Cl.<sup>3</sup> A61F 5/10

U.S. Cl. 128—77

16 Claims



1. An inflatable bandage splint for immobilizing the human hand comprising:  
an inner glove shaped to generally conform to the human hand,  
an outer elastic envelope just larger than the said inner glove,  
means for sealing the glove and envelope together at the proximal ends thereof,  
means for securing the glove and enclosure together at selected distal locations, and  
a plurality of eyelets associated with the outer envelope at at least some of the selected distal locations, and a plurality of eyelets at the proximal end of the inflatable bandage splint whereby tensile members may be strung through the eyelets and tied to provide the desired neutral position of the hand when the bandage splint is inflated.

4,281,648

**INFLATABLE CONDOM**

M. Maurice Rogers, Rte. 1, Box 214, Downsville, La. 71234

Filed Sep. 24, 1979, Ser. No. 78,443

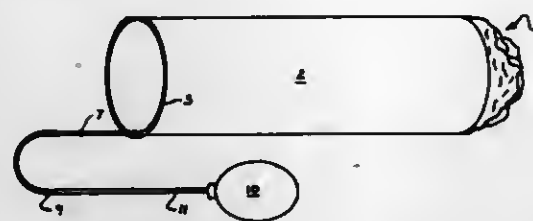
Int. Cl.<sup>3</sup> A61F 5/00, 13/00

U.S. Cl. 128—79

4 Claims

1. An inflatable condom comprising:  
(a) an anterior portion characterized by a generally tubular sheath open at one end and having a reinforcing rim adjacent said one end;  
(b) a secondary portion integrally formed in said anterior portion to close said anterior portion at the end opposite said one end and characterized by an expandible sheath having a relatively thin wall thickness, a sheath neck communicating between said anterior portion and said expandible sheath and an inner wall closing said sheath neck to seal said expandible sheath from said anterior

portion, said sheath neck and said inner wall are thicker than said expandible sheath to facilitate minimum expansion of said sheath neck and said inner wall when said sheath is inflated;



(c) duct means positioned inside said anterior portion and attached to said sheath neck and extending through said inner wall for inflating said expandible sheath; and pump means cooperating with said duct means for selectively inflating said expandible sheath from a point remotely located from said inflatable condom.

4,281,649

**OSTEOSYNTHESIS METHOD AND APPARATUS FOR REDUCING A BONE FRACTURE**

Joan Derweduwen, Krulsven 64, 2400 Mol, Belgium

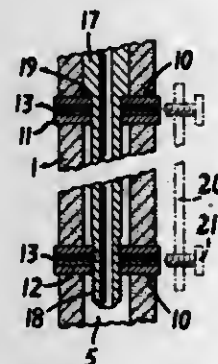
Filed Apr. 3, 1978, Ser. No. 892,987

Claims priority, application Netherlands, Apr. 1, 1977, 7703616

Int. Cl.<sup>3</sup> A61F 5/04; A61B 17/18

U.S. Cl. 128—92 BC

19 Claims



4. Apparatus for reducing a bone fracture which comprises first and second pegs intended to be placed in spaced transverse holes in respective bone fragments and compression means intended to be inserted into a passage drilled longitudinally into the broken bone so as to place the pegs under compression, wherein said compression means comprises a screw threaded mandrel adapted to be screwed into a tapped bore of one of the pegs while bearing against a second peg by means of a shoulder.

4,281,650

**HERMETICALLY SEALED COMPRESS MEDICAL DRESSING**

Hans Spiegelberg, Täby, Sweden, assignor to Cederröths AB, Upplands Vasby, Sweden

Filed May 10, 1978, Ser. No. 904,500

Claims priority, application Sweden, Jul. 11, 1977, 7708031

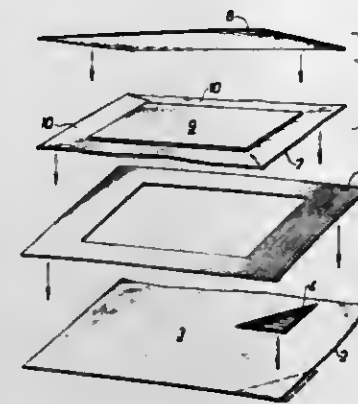
Int. Cl.<sup>3</sup> A61L 15/00; A61F 7/02

U.S. Cl. 128—156

7 Claims

1. A medical dressing comprising in combination a backing member coated on one side with an adhesive; and a separate substantially flat package comprising a front and a rear foil hermetically sealed about their peripheral edges defining an inner space, and a compress located in said inner space and secured at least to the inner surface of the rear foil, said package being coextensive with said backing member and having the exterior surface of the rear foil adhered directly to said

backing member, at least said rear foil being frangible along a line parallel at least in part to the peripheral edge of said package so as to enable simultaneous removal of a marginal strip of



said rear foil and said front foil to expose the coated surface of said backing member beneath the marginal strip and the compress without removal of said compress.

4,281,651

**LUNG VENTILATOR**

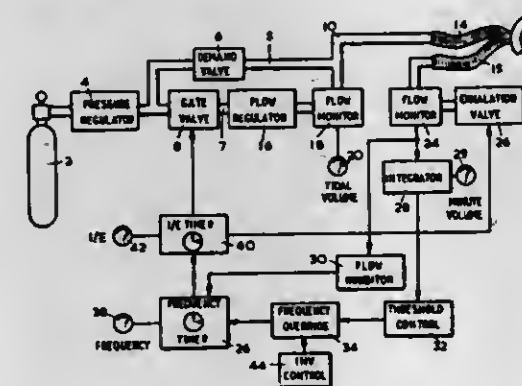
Lawrence A. Cox, Epping, England, assignor to Airco, Inc., Montvale, N.J.

Filed Jul. 30, 1979, Ser. No. 61,971

Int. Cl.<sup>3</sup> A61M 16/00

U.S. Cl. 128—204.23

4 Claims



1. An improved lung ventilator for use in weaning a patient from dependence thereupon comprising inlet means for connection to a source of respirable gas, outlet means for supplying respirable gas to a patient, said inlet means and outlet means forming part of an inspiratory flow path for the respiratory gas, valve means for controlling the flow of respiratory gas in the flow path for spontaneous breathing cycles, exhalation conduit means through which pass the gases exhaled by a patient during the exhalation phase of each respiratory cycle, means bypassing said valve means for providing an automatic ventilation cycle for assisted breathing; the improvement comprising means adapted to produce a first signal representing the rate of flow of gas passing through said conduit during each exhalation phase; means adapted to provide a second signal representing the minute volume of exhaled gases through said conduit; and means responsive to said signals for triggering the start of said automatic ventilation cycle when, in any given ventilation phase, the minute volume of exhaled gases is below a chosen threshold and the rate of flow of the exhaled gases has virtually decreased to zero.

1009 O.G.—4

4,281,652

**CONTROL MEMBER FOR ANAESTHESIA APPARATUS**

Donald M. Miller, Moroka Hospital, Private Bag X9, Thaba'n-chu, South Africa

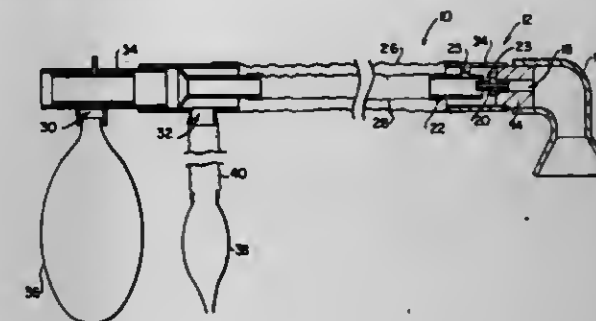
Filed Aug. 27, 1979, Ser. No. 69,998

Claims priority, application South Africa, Sep. 7, 1978, 78/5078

Int. Cl.<sup>3</sup> A61M 16/00

U.S. Cl. 128—204.25

6 Claims



1. A fluid flow control device for an anesthesia system, comprising:  
(a) tubular connecting means having a proximal end adapted for connection to a patient and a distal end,  
(b) a tubular supply member having a distal end adapted for connection to a supply of inhalation fluid and a proximal end, means for securing the proximal end of said tubular supply member in spaced relationship to the distal end of said tubular connecting member,  
(c) a tubular outlet member having a proximal end, means connecting the proximal end of said tubular outlet member about said distal end of said tubular connecting means and said proximal end of said tubular supply member such that the space between the proximal end of said tubular supply member and the distal end of the tubular connecting member is in direct free fluid communication with said tubular outlet member, said tubular outlet member having a distal end communicating to atmosphere,  
(d) flow ducting means interposed between the distal end of said tubular connecting member and the proximal end of said tubular supply member, permitting flow of inhalation fluid from said tubular supply member to said tubular connecting means, said flow ducting member acting to direct exhalation fluid from said tubular connecting member directly into said tubular supply member and depending upon a predetermined pressure or volume of inhalation fluid in said tubular supply member into the tubular outlet member for venting to atmosphere, and said flow ducting means comprises a jet secured in a fluid tight manner to said tubular connecting means and having an exit end projecting into the proximal end of said tubular supply member and being radially spaced therefrom.

4,281,653

**COMBINED AMPULE-ONEWAY INJECTION SYRINGE**

Helmut Barta, and Walter Simonich, both of Vienna, Austria, assignors to Immuno Aktiengesellschaft für Chemisch-Medizinische Produkte, Vienna, Austria

Filed Oct. 9, 1979, Ser. No. 82,856

Claims priority, application Austria, Oct. 16, 1978, 7409/78

Int. Cl.<sup>3</sup> A61M 5/00

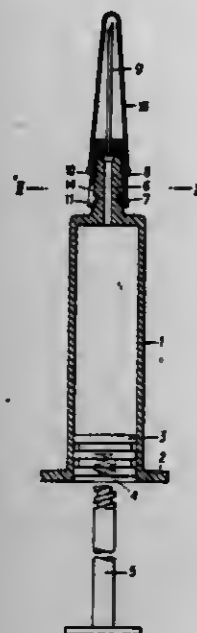
U.S. Cl. 128—218 D

4 Claims

1. A combined ampule-oneway injection syringe comprising in combination  
a syringe body made of glass and having a first end and a second end, said first end terminating in a syringe cone provided with a peripheral annular groove, the inner wall of said syringe body being treated with a lubricant,  
a needle-carrying connection piece including an inwardly directed nose-shaped part engaging in said peripheral annular groove of said syringe cone by clamping closure, such that said connection piece is undetachably connected



with said syringe cone prior to the filling of the syringe body with medicament,  
a piston for permanently closing said second end of said



syringe body after said body has been filled with medicament to be stored for administration, and  
a protecting cap located over said needle-carrying connection piece.

4,281,654

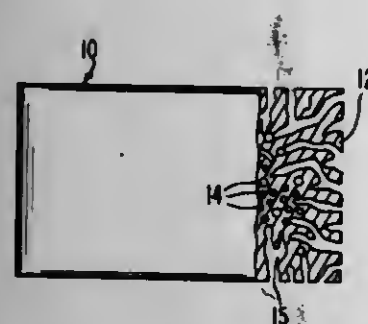
#### DRUG DELIVERY SYSTEM FOR CONTROLLED OCULAR THERAPY

John W. Shell, Hillsborough, and Robert M. Gale, Mountain View, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Apr. 7, 1980, Ser. No. 138,150  
Int. Cl.<sup>3</sup> A61M 7/00

U.S. Cl. 128—260

23 Claims



1. An ocular therapeutic system for dispensing medications to an eye, said system sized, shaped and adapted for easy insertion and comfortable retention in the eye and comprising depots of 1 to 40 weight percent of a therapeutically acceptable beta-adrenergic solute that lowers intraocular pressure by decreasing aqueous humor formation, and 1 to 40 weight percent of a therapeutically acceptable parasympathomimetic solute that lowers intraocular pressure by increasing the outflow of aqueous humor, said depots dispersed in and surrounded substantially individually by a polymer that is essentially impermeable to the passage of the solutes and is permeable to the passage of an exterior fluid.

4,281,655

#### AUTOMATIC URINE COLLECTING APPARATUS

Ryugo Terauchi, 4-29-18, Minamiogikubo, Suginami-ku, Tokyo-to, Japan

Filed Sep. 26, 1979, Ser. No. 79,012  
Int. Cl.<sup>3</sup> A61M 1/00

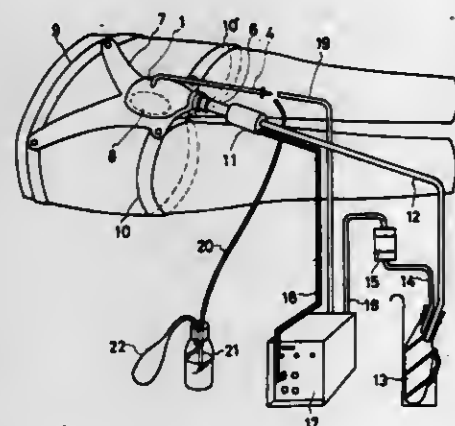
U.S. Cl. 128—278

2 Claims

1. An automatic urine collecting apparatus comprising a

tubular urine receiving unit having an inlet at its upper end and an outlet at its lower end;

an annular rubber tube connected to said inlet for contacting a patient's skin;  
an apertured fitting cloth receiving said unit and retainingly engaging said rubber tube;  
said urine receiving unit having at its intermediate outer top a plurality of apertures through which air enters;  
a first flexible tube at one end connected to said unit adjacent said apertures;  
an electronic sensor connected to the outlet of said unit for alternatively sensing the existence and non-existence of urine respectively;  
a urinal having an upper end; a urine suctioning second plastic tube connecting said sensor to said urinal;  
an electric power unit including a suction pump having an intake and an air pressure outlet;



a third plastic tube interconnecting said pump intake with said urinal at its upper end above the level of any liquid therein;  
said sensor being electrically connected to said power unit to energize and deenergize said pump in response respectively to the existence and nonexistence of urine in said urine receiving unit;  
a bottle filled with warm water; a warm water feeding pipe at one end projected into said bottle and at its other end adapted for connection to the other end of said first plastic tube;  
and a rubber bulb connected to said bottle for applying air pressure into said bottle for selectively directing warm water through said feeding pipe into said urine receiving unit.

4,281,656

#### HULKA-TYPE CLIP APPLICATOR

Colin A. Atkins, Englefield Green, England, assignor to Rocket of London Limited, Watford, England

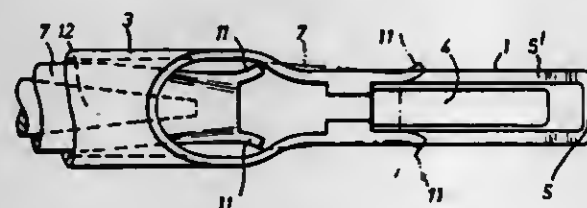
Filed Oct. 15, 1979, Ser. No. 85,046

Claims priority, application United Kingdom, Dec. 8, 1978, 47669/78

Int. Cl.<sup>3</sup> A61B 17/12

U.S. Cl. 128—325

10 Claims



1. In an applicator for inserting and locking a Hulka-type clip that comprises a pair of pivoted jaws, namely an upper jaw and a lower jaw, and a generally U-shaped spring which fits over the jaws and can be slid forwards from a first, "clip open"

position to a second "clip locked" position, wherein the applicator comprises:

a cradle for holding the lower jaw of the clip;  
a detent for preventing the clip falling out of the cradle;  
a first ram for riding along the top of the upper jaw of the clip and closing the clip, and  
a second ram for engaging the rear end of the spring of the clip and pushing it forward into its locking position once the clip have been closed by the first ram, the improvement wherein the forward end of said first ram is provided with transversely-spaced jaw-engaging surfaces that engage spaced lateral portions of the top of the upper jaw, said first ram being free from engagement with the spring of the clip during the closing and locking of the clip.

4,281,657

#### TOOL FOR ATTACHING IDENTIFICATION DEVICE

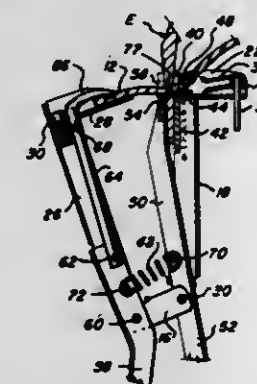
Eugene B. Ritchey, Rte. 2, Box 58, Brighton, Colo. 80601

Filed Jan. 7, 1980, Ser. No. 109,871

Int. Cl.<sup>3</sup> A61B 17/00

U.S. Cl. 128—330

15 Claims



1. A hand tool for attaching a tag to an element to be tagged, wherein the tag is of the type which is made of resilient elastomeric material and includes a laterally extensive base for receiving indicia, an anchoring head in the general plan form of an arrowhead with a narrow leading end or tip and rearwardly diverging locking flanges joined to the base by a narrow neck, said tool comprising:

means for releasably holding the anchoring head of the tag on one side of an element to be tagged;  
element piercing means positionable on the opposite side of the element to be tagged;  
means for moving said element piercing means through the element to be tagged;  
means forming part of said element piercing means for grippingly engaging the tip of the anchoring head after said element piercing means has moved through the element to be tagged;  
means moving said element piercing means back to the opposite side of the element to be tagged to pull the anchoring head through the element so that it is tagged; and  
means releasing said tip engaging means after movement of said element piercing means back to said other side of the tagged element.

4,281,658

#### DILATOR

Francis W. Child, Eagle Bend, Minn., assignor to Child Laboratories, Inc., Eagle Bend, Minn.

Filed Jul. 9, 1979, Ser. No. 55,994

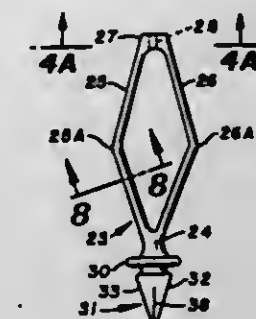
Int. Cl.<sup>3</sup> A61M 29/00

U.S. Cl. 128—341

59 Claims

1. A dilator for a teat of a female mammal, said teat having a longitudinal duct in communication with a duct outlet in the end of the teat comprising: body means having a passage adapted to be positioned in the duct outlet to allow fluid to flow through the end of the teat, means secured to said body means adapted to be inserted into the duct through the duct outlet in the end of the teat to facilitate flow of fluid in the duct

to the passage of the body means, and one-way valve means mounted on said body means for allowing fluid to flow out of the duct through said passage of the body means and discharge the fluid externally of the teat, said valve means having at least a pair of flexible side walls, each side wall surrounding a valve



chamber open to said passage of the body means, said side walls projecting from the body means and extended toward each other, said lips of the side walls having cooperating edges surrounding a normally closed slit mouth to restrict entrance of external foreign substances into the passage of the body means and the duct of said teat.

4,281,659

#### APPLYING AND SECURING PERCUTANEOUS OR TRANSCUTANEOUS PROBES TO THE SKIN ESPECIALLY FOR FETAL MONITORING

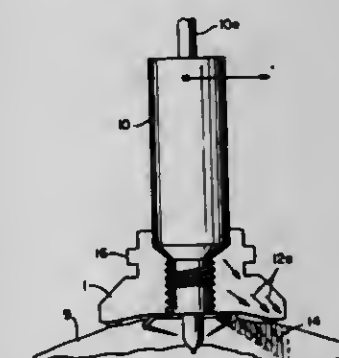
Alfred O. Farrar, Cranbury, and Howard M. Hochberg, East Windsor, both of N.J., assignors to Roche Medical Electronics Inc., Cranbury, N.J.

Filed Mar. 12, 1979, Ser. No. 19,550

Int. Cl.<sup>3</sup> A61B 5/00, 5/04

U.S. Cl. 128—635

16 Claims



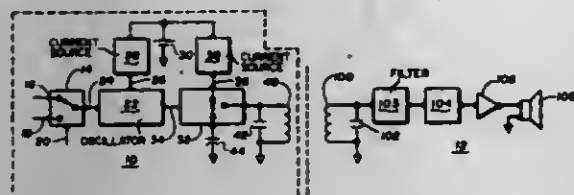
1. A device for detachably securing a bio-medical monitoring means which means comprises an elongated probe, into or through the surface tissue of an organ of an organism, such as the skin, the device comprising a surface base for attachment to the organ, having substantially cylindrically shaped rear and front body portions, with the latter having an operative end from which the operative part of the probe protrudes when in place, said operative end having a front surface, the area of which is substantially greater than the cross-sectional area of the protruding operative part of the probe, said front surface having means shaped for application to organ surfaces which are irregular, curved or deformable and for enabling the organ's surface tissue to be drawn away from the body of the organ when said base is being attached to the organ, said base defining a substantially centrally located passageway through said rear and front body portions and a corresponding aperture in said front surface for receiving the probe, at least the operative end of said front portion of the base having means for minimizing movement of the operative part of the probe due to tilting, torquing or other forces experienced by the probe remotely from the operative part thereof and for distributing such forces over a surface area of the organ which extends beyond the organ surface underlying said front surface, said base having means for securing the probe fixedly yet detach-







differs from a predetermined nominal frequency by an amount determined by some characteristic of said electrical signal;  
antenna means;  
current source means;  
capacitance means; and



switching means controlled by the alternating signal from said modulator means to connect said capacitance means to said current source means during half of the period of said alternating signal from said modulator means, and to connect said capacitance means to said antenna means during the other half of said alternating signal.

4,281,665

### THERMODILUTION INJECTION SYSTEM INCLUDING AN INJECTATE COOLING SYSTEM

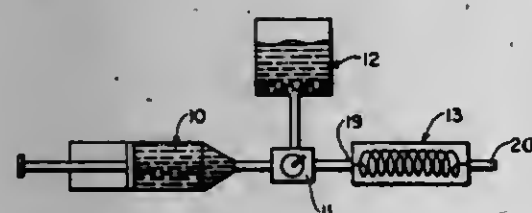
Walter A. Gezari, Killingworth, Conn., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Apr. 2, 1979, Ser. No. 25,923

Int. Cl.<sup>3</sup> A61B 5/02

U.S. Cl. 128-713

9 Claims



1. In a thermomodulation injection system of the type including means for delivering a measured volume of cooled injectate into a patient's circulatory system through a catheter at predetermined time intervals, the improvement comprising:

housing means, said housing means being tubular in shape, said housing means have first and second ends, said first and said second ends being open, said housing means defining a cavity;

non-disposable conduit means, said conduit means being received by and partially filling said housing means cavity, said conduit means having first and second ends, said conduit means defining at least one injectate fluid passageway from said housing means first end to said housing means second end, said conduit means absorbing heat from the injectate, said conduit means having a volume commensurate with the measured volume of injectate supplied by the delivering means, said conduit means being sterilizable;

first cap means, said first cap means being received by and sealing said housing means first end, said first cap means being provided with a fluid port, said first cap means fluid port having first and second ends, said first cap means fluid port defining a fluid passageway for the injectate, said first cap means fluid port first end being in fluid communication with and sealed to said conduit means first end, said first cap means fluid port second end being in fluid communication with the delivering means;

second cap means, said second cap means being received by and sealing said housing means second end, said second cap means being provided with a fluid port, said second cap means fluid port having first and second ends, said second cap means fluid port defining a fluid passageway for the injectate, said second cap means fluid port first end being in fluid communication with and sealed to said

conduit means second end, said second cap means fluid port second end being in direct fluid communication with and sealed to the catheter; and

a liquid filling the remainder of said housing means cavity, the temperature of said liquid being capable of being reduced below the desired temperature of the injectate whereby said liquid will absorb heat from said conduit means and thereby cool the injectate to the desired temperature.

4,281,666

### SINGLE DIAPHRAGM PRESSURE-BALANCED TELEMETRIC PRESSURE SENSING SYSTEM

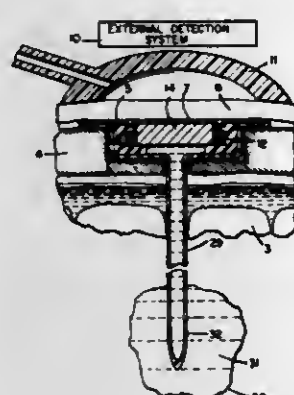
Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178  
Division of Ser. No. 697,951, Jun. 21, 1976, abandoned. This

application Apr. 13, 1978, Ser. No. 895,953

Int. Cl.<sup>3</sup> A61B 5/00

U.S. Cl. 128-748

40 Claims



1. An in vivo differential pressure sensor adapted for implantation beneath the skin in the living body for in vivo calibration after implantation, said sensor comprising:

(a) a housing having means defining an opening therein;

(b) a single flexible diaphragm means which extends across the housing opening and is secured with respect to said housing, said single flexible diaphragm means having a first and a second side, at least a portion of said first side comprising at least a portion of the exterior surface of said sensor, said housing and said single flexible diaphragm means being adapted so that, when said sensor is implanted beneath the skin, the exterior surface of said single flexible diaphragm means is positioned to be adjacent to and facing an interior portion of skin whereby said exterior surface portion of said single flexible diaphragm means is in mechanical pressure communication with the skin and whereby pressures external to the body can be communicated mechanically across the skin to said single flexible diaphragm means;

(c) means allowing the second side of said single flexible diaphragm means to be in contact with and in mechanical pressure communication with a bodily medium, the pressure of which is to be sensed when said sensor is implanted in the living body, so that changes in the difference of pressures on said two sides of said single flexible diaphragm means cause a motion of at least a portion of said single flexible diaphragm means

(d) means connected to said housing for contacting the single flexible diaphragm means for a predetermined relationship between the pressures on said single flexible diaphragm means thereby defining a mechanical contact reference position of said single flexible diaphragm means with respect to said housing for a predetermined relationship between the pressures on said single flexible diaphragm means; and,

(e) means having a preselected parameter that is detectable by detection apparatus located outside the living body, said means having a preselected parameter being at least in part cooperatively connected to and movable with said

single flexible diaphragm means so that preselected parameter will change with movement of said single flexible diaphragm means, said parameter being detectable at least when said single flexible diaphragm means is substantially at said mechanical contact reference position and said parameter changing upon at least a displacement of at least: (i) a portion of said single flexible diaphragm means from said mechanical contact reference position or (ii) displacements of at least a portion of said single flexible diaphragm means with respect to said housing; whereby when said sensor is implanted beneath the skin said single flexible diaphragm means can be driven to said mechanical contact reference position by a pressure external to the living body applied to the skin adjacent to said sensor and said preselected parameter can be determined at said mechanical contact reference position after implantation and whereby the magnitude of the external pressure applied to the skin that is required to drive said single flexible diaphragm means to said mechanical contact reference position is a function of the pressure in said bodily medium.

4,281,667

### SINGLE DIAPHRAGM TELEMETRIC DIFFERENTIAL PRESSURE SENSING SYSTEM

Eric R. Cosman, 872 Concord Ave., Belmont, Mass.

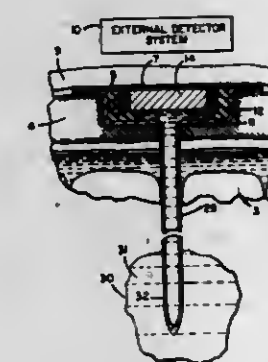
Division of Ser. No. 697,948, Jun. 21, 1976, abandoned. This

application Apr. 13, 1978, Ser. No. 895,954

Int. Cl.<sup>3</sup> A61B 5/00

U.S. Cl. 128-748

44 Claims



1. An in vivo differential pressure sensor adapted for implantation in the living body and for in vivo calibration after implantation, said sensor comprising:

(a) a housing having a means defining an opening therein

(b) a single flexible diaphragm means which extends across the housing opening and is secured with respect to said housing, said single flexible diaphragm means having a first and a second side;

(c) means allowing the first side of the single flexible diaphragm means to be in contact with and in mechanical pressure communication with a first bodily medium and allowing the second side of said single flexible diaphragm means to be in contact with and in mechanical pressure communication with a second bodily medium whereby a change in the difference of said pressures in the two bodily media will cause motion of at least a portion of said single flexible diaphragm means with respect to said housing;

(d) means connected to said housing for contacting the single flexible diaphragm means for a predetermined relationship between the pressures on said two sides of said single flexible diaphragm means thereby defining a mechanical contact reference position of said single flexible diaphragm means with respect to said housing for a predetermined relationship between said pressures on said single flexible diaphragm means;

(e) means having a preselected, detectable, variable parameter, the preselected, detectable variable parameter being detectable by detection apparatus located outside the

living body, said means having a preselected, detectable variable parameter being at least in part cooperatively connected to and movable with said single flexible diaphragm means so that said preselected, detectable variable parameter will change with movement of said single flexible diaphragm means, such that the value of said preselected, detectable parameter can be detected at said mechanical contact reference position, said single flexible diaphragm means and said means having a preselected, detectable variable parameter being so constructed and cooperatively connected that said parameter value changes as a known function of the displacement with respect to said mechanical contact reference position of said single flexible diaphragm means and said displacement is a known function of the difference in pressures on the opposite sides of said single flexible diaphragm means; whereby when said sensor is implanted in the living body, the single flexible diaphragm means assumes said mechanical contact reference position when the pressure in said second bodily medium exceeds the pressure in said first bodily medium by said predetermined relationship thereby enabling the value of said preselected, detectable, variable parameter to be determined in vivo at said mechanical contact reference position, and whereby the value of said preselected, detectable, variable parameter is a measure of the difference in pressures in said two bodily media.

4,281,668

### IMPLANTABLE CARBON ELECTRODE

Gerhard Richter, Erlangen, and Erhard Weldlich, Spardorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 21, 1979, Ser. No. 77,622

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842318

Int. Cl.<sup>3</sup> A61N 1/04

U.S. Cl. 128-784

4 Claims

1. An implantable carbon electrode comprised of an electrically conductive electrode body and an electrode head, said electrode adapted for contact with an insulated lead-in cable, wherein at least the surface of said electrode head comprises a material selected from the group consisting of glass carbon and pyrolytic carbon which has been superficially activated to present a microporous surface, and wherein the surface of said electrode is provided with a smooth coating consisting of a hydrophilic, ion-conducting plastic having at least a surface thereof comprised of a body and/or blood compatible material.

4,281,669

### PACEMAKER ELECTRODE WITH POROUS SYSTEM

David C. MacGregor, 81 Wilmington Rd., Islington, Ontario, Canada

Continuation-in-part of Ser. No. 683,382, May 5, 1976, Pat. No. 4,101,984. This application Aug. 15, 1977, Ser. No. 824,296

Claims priority, application Canada, May 9, 1975, 226993; United Kingdom, Dec. 22, 1975, 52474/75; Oct. 19, 1976, 43407/76

Int. Cl.<sup>2</sup> A61N 1/04

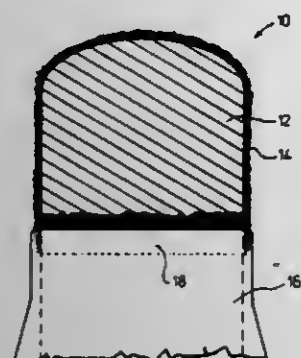
U.S. Cl. 128-784

4 Claims

1. A pacemaker electrode constructed of a metal inert to blood and consisting of a dense rigid coherent metal substrate and a rigid porous coating adhered to at least a major portion of said substrate, said porous coating including a plurality of metal particles bonded together at their points of contact with each other and with said substrate to form a network of interconnected pores substantially uniformly distributed throughout the coating, said porous coating having a porosity of about 10 to about 50% by volume and a thickness less than about 500 microns, said porous coating and said coating substrate interface having a shear strength greater than about 1000 psi, the composite of said metal coating and substrate having a high



fatigue tolerance, said metal particles having a particle size of about -100 mesh, said electrode having a current-carrying wire connected thereto and a flexible polymeric insulating



sleeve surrounding said wire, said sleeve being connected to a minor portion of said electrode by interlock of the polymeric material of the sleeve in the interconnected pore network of the porous metal coating.

4,281,670

# APPARATUS FOR INCREASING THE PERMEABILITY OF WRAPPING MATERIAL FOR ROD-SHAPED SMOKERS PRODUCTS

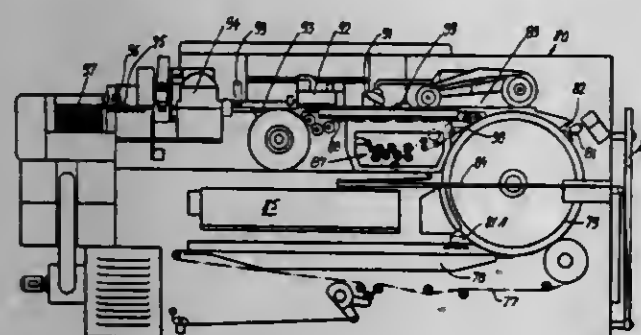
Uwe Heitmann, Schwarzenbek, Fed. Rep. of Germany; Joachim Buchegger, Richmond, Va., and Werner Hinz, Hamburg, Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 805,712, Jun. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 766,927, Feb. 9, 1977, Pat. No. 4,121,595. This application Sep. 19, 1977, Ser. No. 834,645

Int. Cl.<sup>3</sup> A24C 5/60

U.S. Cl. 131-281

27 Claims



1. In a machine for the production and/or processing of rod-shaped articles which constitute or form part of smokers' products and wherein a wrapper surrounds a rod-like filler, a combination comprising drive means for moving a succession of wrappers along a predetermined path; at least one source of coherent radiation operable to emit at least one beam of coherent radiation; means for directing said beam against successive wrappers in said path whereby the wrappers are perforated at the points of impingement of said beam, said drive means including conveyor means for moving a succession of articles sideways past said beam directing means; and means for temporarily interrupting the sideways movement of articles along said path while the articles are in register with said beam directing means and for simultaneously rotating the arrested articles about their respective axes.

4,281,671

# PRODUCTION OF TOBACCO SMOKE FILTERS

Stanley W. Bynre, North Crawley; Barry J. Tompkins, Stony Stratford, and Ernest B. Hayes, Newcastle-upon-Tyne, all of England, assignors to American Filtrona Corporation, Richmond, Va.

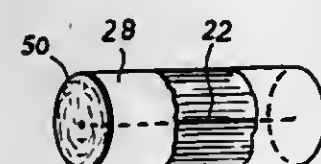
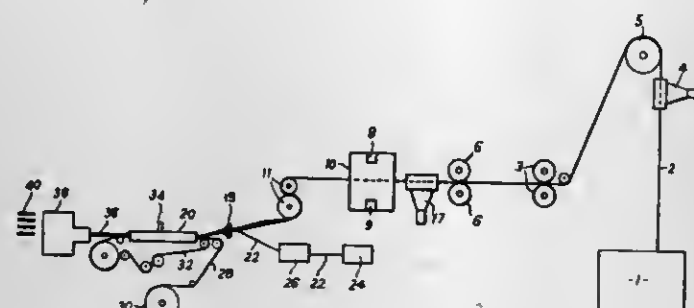
Filed Apr. 19, 1979, Ser. No. 31,475

Claims priority, application United Kingdom, Apr. 21, 1978, 15957/78

Int. Cl.<sup>3</sup> A24D 1/04

U.S. Cl. 131-335

7 Claims



1. A tobacco smoke filter comprising a rod of tobacco smoke filtering material, at least one continuous element selected from thread and tape extending continuously longitudinally of said rod, and a smoke modifying agent carried by said element which in use becomes entrained in smoke passing through the filter whereby said smoke-modifying agent is connected in the area of said elongated element.

4,281,672

# SMOKING DEVICE

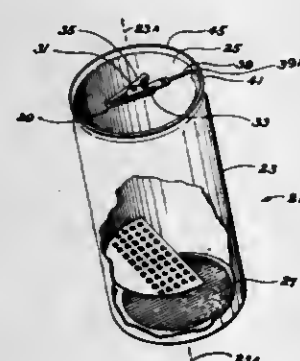
Ricky E. Caraway, 325 Robin Ct., Burleson, Tex. 76028

Filed Dec. 10, 1979, Ser. No. 101,579

Int. Cl.<sup>3</sup> A24F 13/16

U.S. Cl. 131-174

2 Claims



1. A smoking device, comprising: a container having an open end and a closed bottom, holding means coupled to said container at said open end for holding a cigarette or the like, said holding means being movable between a first position where a portion of the cigarette held by said holding means is within said container and a second position where the cigarette is outside of said container, and baffle means located in said container between said open end and said bottom and in contact with a portion of the side wall of said container for allowing ashes to fall to the bottom of said container but preventing ashes between

said bottom and said baffle means from falling out of said container when said container is positioned with its open end downward and with said portion of said side wall in a lower position relative to the opposite side wall portion.

4,281,673

# HAIR CURLER

Alvin W. Miller, 323 S. McPherrin, Monterey Park, Calif. 91754

Continuation of Ser. No. 766,840, Dec. 2, 1976, abandoned. This application Dec. 22, 1978, Ser. No. 972,288

Int. Cl.<sup>3</sup> A45D 2/02

U.S. Cl. 132-39

7 Claims



1. A hair curler for use with a bobby pin in forming a tress of hair into a curl, said curler comprising an elongated body member defining a convex arcuate support surface, and a clip member having a forwardly extending arcuate end portion defining an inner concave gripping surface and an outer convex roller surface and being slidably mounted over and along said arcuate support surface of said body member, the end of said body member and said extending end portion of said clip cooperating to receive the entry of a portion of a tress of hair therebetween and between said convex arcuate surface of said body member and said inner gripping surface of said clip such that said tress can be held therebetween and said curler can be moved along said tress to bring said tress to even alignment for rolling into a uniform curl, said body member further defining at least one longitudinally extending flute in the exterior surface thereof adapted to receive the leg of a bobby pin such that upon rolling said tress about said outer rolling surface of said clip, said pin can be disposed about said tress with one leg thereof disposed within said flute and said clip can be slidably moved along said body member rearwardly of said tress releasing said tress from said curler and leaving said tress in a curled disposition secured by said bobby pin.

4,281,674

# APPARATUS FOR CLEANING ENDOSCOPE

Masahiro Tanaka, Tokyo, and Katunaga Konoshima, Hachioji, both of Japan, assignors to Olympus Optical Company, Ltd., Japan

Filed Aug. 29, 1979, Ser. No. 70,622

Claims priority, application Japan, Nov. 27, 1978, 53/146301

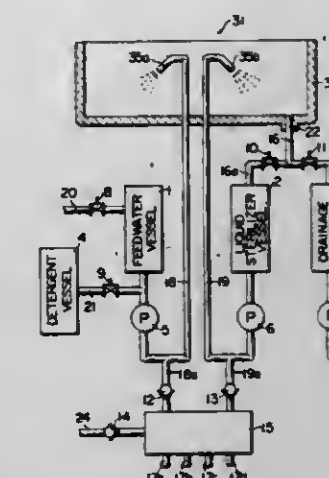
Int. Cl.<sup>3</sup> B08B 3/02

U.S. Cl. 134-95

7 Claims

1. An apparatus for cleaning an endoscope, comprising: rinse basin means adapted to receive a portion of an endoscope to be cleaned, said rinse basin means including a first spray head means for spraying a cleaning liquid and a second spray head means for spraying a liquid sterilizer; drain means formed in said rinse basin means; a first feed pump for supplying said cleaning liquid to said first spray head means; a second feed pump for supplying said liquid sterilizer to said second spray head means from a vessel containing a quantity of said liquid sterilizer; a drain tube means connected with said drain means and having first and second branches; a return tube means connected with said first branch and communicating with said vessel via a first electromagnetic valve which is operable when a return of said liquid sterilizer to said vessel is desired; second drain tube means connected with said second branch

and including a second electromagnetic valve which is operable when drainage of a liquid from said rinse basin means is desired; and header means cooperating with said first and second feed pumps to feed at least one of the group of water, liquid



4,281,675

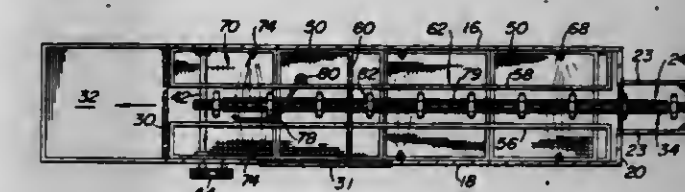
APPARATUS FOR WASHING INSULATED TRAYS  
Albert Pure, Philadelphia, Pa., assignor to Insinger Machine Company, Philadelphia, Pa.

Filed Sep. 13, 1979, Ser. No. 75,379

Int. Cl.<sup>3</sup> B08B 3/02

U.S. Cl. 134-125

9 Claims



1. Apparatus for washing insulated trays having pockets on a major face thereof comprising a housing having an inlet and an outlet, the width of the inlet being substantially narrower than the height thereof so that the trays to be washed will be vertically disposed and supported by a side face, first and second guide rails in said housing for guiding upright trays as they are being washed in said housing, said rails being spaced apart slightly greater than the thickness of the trays so that the trays will tilt slightly from the vertical while being washed, an endless conveyor below the elevation of said guide rails for moving trays from said inlet through said housing to said outlet, motor means for driving said conveyor, said conveyor having trays supports at spaced points there along so that each trays side face is supported by two adjacent tray supports, said tray supports being generally V-shaped when viewed in the direction of travel, and nozzle means on opposite sides of vertical planes containing the longitudinal axes of the rails for spraying water generally horizontally at the opposite major faces of the trays.



4,281,676

## PRESSURE MODULATING SELECTOR VALVE

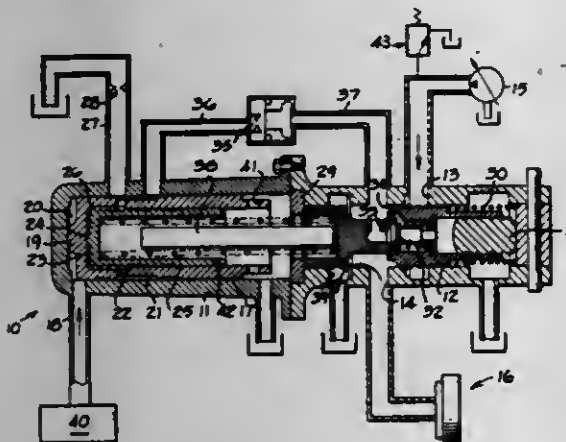
Hugh C. Morris, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 8, 1978, Ser. No. 884,675

Int. Cl.<sup>3</sup> F16K 31/143

U.S. Cl. 137-102

16 Claims



1. A pressure modulating selector valve having an inlet, an outlet and a drain and comprising first means within said valve for movement in a first direction between a closed position blocking communication of fluid from said inlet to said outlet to an open position communicating fluid from said inlet to said outlet, said first means providing communication between said outlet and drain in the closed position and preventing communication between said outlet and drain in an open position, second means responsive to a fluid pressure pilot control signal for movement in said first direction towards said first means to a limit stop position, third means responsive to movement of said second means in said first direction for moving said first means to its open position through an interposed means to communicate said inlet with said outlet and closing said drain, and modulating means interconnected between said outlet and said third means for controlling gradual further movement of said first means through its open position in response to movement of said third means to modulate the increase of fluid pressure in said outlet to a predetermined level.

4,281,677

## SUPPLY VALVE FOR DUAL CIRCUIT SYSTEMS

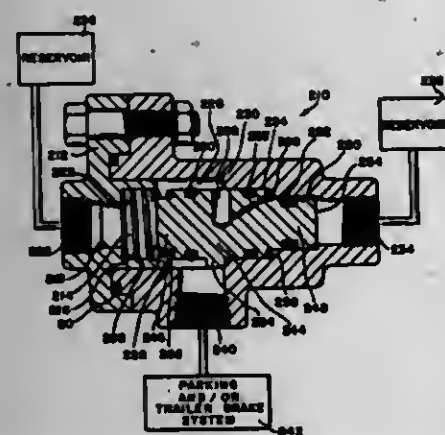
David A. Hoffman, Olmsted Falls, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 16, 1979, Ser. No. 94,847

Int. Cl.<sup>3</sup> F16K 11/02

U.S. Cl. 137-113

10 Claims



1. In a supply valve, a housing defining a bore therewithin, said housing having an outlet and a pair of inlets communicating with said bore, a shuttle slidable in said bore in response to a pressure differential between said inlets to communicate one of said inlets to said outlet and close the other inlet when the

pressure level at said one inlet is greater than the pressure level at the other inlet and sliding to close said one inlet and communicate said other inlet to said outlet when the pressure differential between said inlets reaches a predetermined level, said shuttle including a pair of fluid pressure responsive areas corresponding to each of said inlets, at least one of said pair of areas including one portion communicated to its corresponding inlet and an other portion communicated to the outlet when the corresponding inlet is closed, said other portion being communicated to said corresponding inlet when said corresponding inlet is communicated to said outlet, and orifice means for providing uninterrupted communication between said outlet and said other portion of said areas, said pressure differential operating on said one portion of one of said areas to initiate movement of said shuttle away from said one inlet, said pressure differential operating on both of said portions of said one area to complete the movement of said shuttle, to open said one inlet and to close said other inlet, said valve including resilient means biased to move said shuttle away from said other inlet, to open said other inlet and to close said one inlet when said pressure differential reaches a predetermined level, said bore being stepped to define a larger diameter portion and a pair of smaller diameter portions, one of said smaller portions corresponding to said one inlet and the other smaller portion corresponding to said other inlet, said larger diameter portion cooperating with said smaller diameter portions to define a pair of shoulders corresponding to each of said inlets, said shuttle including a pair of stems projecting from opposite ends of said shuttle, one of said stems defining said one portion of said one area, said shuttle and said stems cooperating to define a pair of annular end faces extending radially outward from said stems, one of said end faces defining said other portion of said one area, said shuttle also including an abutment engaging a corresponding abutment on said bore when said other inlet is closed.

4,281,678

## THROTTLING MUD CHOKE APPARATUS

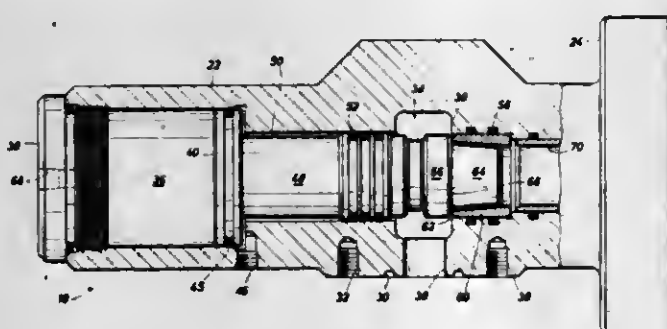
Jack R. Claycomb, 8226 Waynemer, Houston, Tex. 77040

Continuation-in-part of Ser. No. 727,031, Sep. 27, 1976, Pat. No. 4,190,073. This application Apr. 16, 1979, Ser. No. 30,473

Int. Cl.<sup>3</sup> F16K 51/00

U.S. Cl. 137-238

7 Claims



1. A choke for controlling the flow of mud which comprises; a hollow valve body having a passage therethrough; a valve seat having an encircling, tapered face surrounding an axial passage for directing mud flow past said tapered face within said valve body; an encircling valve seat shoulder lying in a plane perpendicular to the flow through said axial passage defining an upstream located closure face cooperatively positioned relative to said valve seat; a valve element having an external tapered face conforming to said valve seat tapered face which said valve element, on movement, moves into a concentric, centrally positioned first throttling location within said valve seat opposite said valve seat tapered face and which said valve element and said valve seat tapered faces define a gap therebetween for throttling mud flow passing through the gap, and wherein said valve element controllably blocks

the axial passage flow of mud past said valve seat on further movement of said valve element within said valve seat defining a second throttling location having reduced flow compared to said first throttling location; said valve element and said valve seat cooperating as a flushing means for the gap therebetween during closure to the second throttling location; a surrounding shoulder on said valve element which shoulder is adapted to conform to and seat against said valve seat shoulder to plug and close the flow of mud through the gap between said valve element and said valve seat; means for moving said valve element into a fully closed position relative to said valve seat; inlet and outlet means communicating with said passage through said valve body; mounting means connected to said moving means and also connected to said valve element, said mounting means including a lock means which lock means secures said valve element to said moving means; wherein said mounting means threads to and unthreads from said moving means and wherein said lock means secures said mounting means against unthreading; and wherein said lock means comprises a ring around said mounting means which is secured thereto by cooperative key and key slot means and which further include wrench connective means to enable a tool to be engaged therewith for rotating said ring and said mounting means as a unit to thread said moving means.

4,281,679

## FLOW CONTROL MEANS FOR USE IN AN ADAPTOR ASSEMBLY

Stanley D. Stearns, P.O. Box 55603, Houston, Tex. 77055

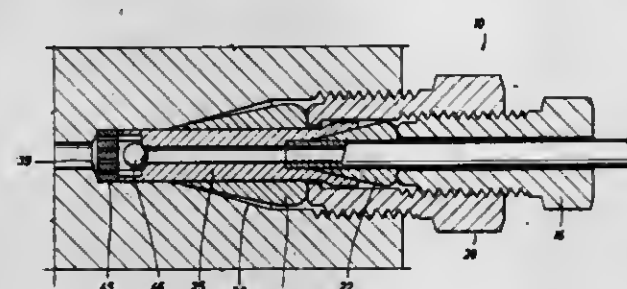
Filed Aug. 27, 1979, Ser. No. 69,789

The portion of the term of this patent subsequent to Nov. 6, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> F16K 15/04

U.S. Cl. 137-515.5

5 Claims



1. An adaptor for connecting a tubing to a fitting to accommodate interconnection, therebetween which comprises: (a) a hollow nut adapted to be positioned about a tubing; (b) an elongate, hollow, tubular sleeve having an internal passage and first shoulder therein facing the end of the tubing; (c) a first tapered spool adapted to be forced into the end of said sleeve by said nut and surrounding said tubing to wedge against the tubing and thereby grip around the tubing; (d) an elongate coupling having: (1) an axial passage therethrough; (2) a first set of threads at one end of said passage for engaging said hollow nut; (3) a second set of threads for connection to a male or female fitting; (4) a second shoulder facing away from the end at which said hollow nut is threaded to said coupling; (5) a radial thickness in said coupling defined between the radii of said first and second sets of threads which is at least in part related to the relative diameters of the tubing and the fitting; (6) means defining a receptacle for receiving that portion of said tubular sleeve that is remote from said tubing and

defining a tapered internal seat surface surrounding said tubular sleeve, said means also defining an internal passage and a third shoulder therein facing the ends of said tubing and tubular sleeve;

(e) a second tapered spool adapted to be abutted against said second shoulder and inserted into said tapered internal seat surface in said fitting surrounding said hollow sleeve and wedging thereagainst to grip said sleeve in axial communication with a passage through the fitting; (f) force transmission means disposed within said receptacle and being in force transmitting engagement with said third shoulder and the end of said tubular sleeve; and (g) flow control means located within said receptacle and being serially in communication with the passage in the fitting and the tubing and clamped between said hollow nut and the fitting on threaded assembly with said elongate coupling.

4,281,680

## SWING CHECK VALVE CONSTRUCTION

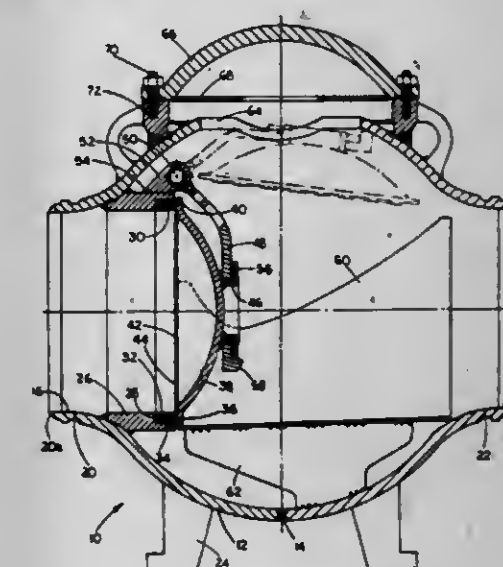
Roger L. Rlpert, Concord, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Aug. 17, 1979, Ser. No. 67,325

Int. Cl.<sup>3</sup> F16K 15/03, 15/18

U.S. Cl. 137-527.4

4 Claims



1. A swing check valve for a large diameter oil and gas transmission pipeline comprising: a generally spherical valve body fabricated from rolled steel; outer generally cylindrical hub members integral with said body and formed therefrom with flow passages there-through, the inner diameters of said outer hub members reducing gradually to the inner diameter of the pipeline at their outer ends; a separate cylindrical seat hub member of said inner pipeline diameter welded in said body to extend inward thereof around one of said flow passages and generally axially aligned therewith; a seat ring recess cut in the inner end of said seat hub member; a valve clapper; a seal ring positioned by said seat hub member for engagement by said clapper in the closed position; a fixed hinge member having a rotary bearing therethrough mounted on the top portion of said seat hub member without valve body engagement; an arm secured at one end to the back of said valve clapper and having a transverse bore through the other end coaxial with said bearing; a shaft rotatable in said bearing and secured in said bore; and internal access means; whereby the clapper may be mounted and adjusted for proper seating with the seat hub member prior to installation of the seat hub member within the valve body.



4,281,681

**DIVERTER ATTACHMENT FOR WATER-POWERED APPLIANCE**

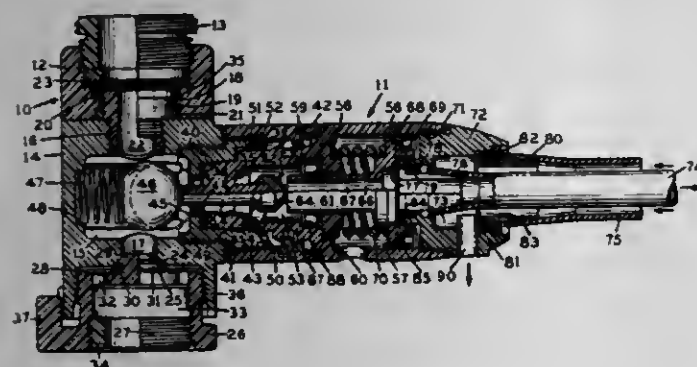
Walter D. Teague, Jr., Tweed Blvd., Nyack, N.Y. 10960, and Arthur T. Sempliner, 37-04 Van Nostrand Pl., Douglaston, N.Y. 11363

Filed Oct. 29, 1979, Ser. No. 88,771

Int. Cl.<sup>3</sup> F16L 37/28; F16K 47/08

U.S. Cl. 137—562

10 Claims



6. A diverter assembly for a water-powered appliance or the like, comprising

- (a) a body member attachable to a faucet or the like and including an internal fluid passage-forming means in fluid communication with said faucet,
- (b) flexible fluid conduit means in flow communication with said internal fluid passage-forming means,
- (c) a throttling member associated with said internal fluid passage-forming means,
- (d) said internal fluid-flow passage-forming means and said throttling member being co-operable upon an increase of fluid pressure within the passage-forming means above a predetermined value to restrict fluid flow into said flexible fluid conduit means thereby regulating fluid pressure therein.

10. A diverter assembly for a water powered appliance or the like, comprising

- (a) a generally fixed part for attachment to a faucet or the like,
- (b) a removable part attachable to said generally fixed part,
- (c) said generally fixed part having a downwardly opening recess therein for the downward passage of water from a faucet, and a laterally opening recess communicating with said downwardly opening recess,
- (d) said generally fixed part having a collar for attachment to a faucet and a body portion connected to said collar for swiveling movement about a vertical axis coaxial with said collar,
- (e) said body portion having a vertical through passage for the direct downward flow of water from said faucet and a laterally opening passage communicating with said vertical through passage,
- (f) a removable part having a connecting member insertable in and removable from said laterally opening recess,
- (g) said connecting member having a lateral fluid passage therethrough adapted for communication with said faucet when said connecting member is received in said laterally opening passage.

4,281,682

**PROPORTIONAL CONTROL TYPE REMOTE-CONTROL DIRECTION SWITCHING CONTROL VALVE DEVICE**

Yuji Satoh, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

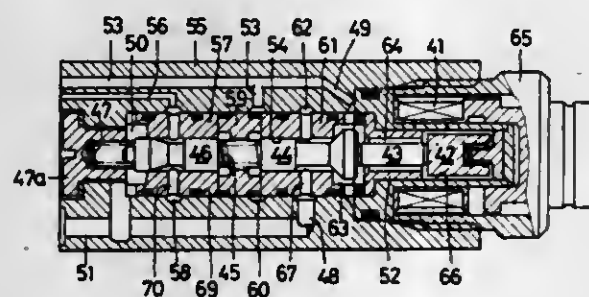
Division of Ser. No. 57,410, Jul. 13, 1979. This application Jun. 30, 1980, Ser. No. 164,309

Claims priority, application Japan, Jul. 18, 1978, 53-86790; Jul. 18, 1978, 53-86791

Int. Cl.<sup>3</sup> F15B 13/044

U.S. Cl. 137—596.17

1 Claim



1. A proportional control type remote-control direction switching control valve device comprising:
  - a first valve disposed between a liquid feed passage and an output passage to be opened and closed;
  - a second valve disposed between said output passage and a liquid returning passage to be opened and closed;
  - a first spring in abutment with said first valve to urge said valve toward a closed position;
  - a second spring interposed between said first valve and said second valve, said second spring having a biasing force greater than that of said first spring; and
  - an electromagnetic means in abutment with said second valve and energizable to move said second valve in a closing direction and to move said first valve in an opening direction, and wherein said first and second valves and said first and second springs are disposed in a linear array and said first valve is subjected to the pressure of said output passage so as to be moved thereby in a closing direction.

4,281,683

**MODULAR MULTIPLE-FLUID COMPONENT SELECTION AND DELIVERY SYSTEM**

Robert D. Hetherington, Sunland, and David W. Goetz, Burbank, both of Calif., assignors to Poly-Glas Systems, Sun Valley, Calif.

Continuation of Ser. No. 968,609, Dec. 11, 1978, Pat. No.

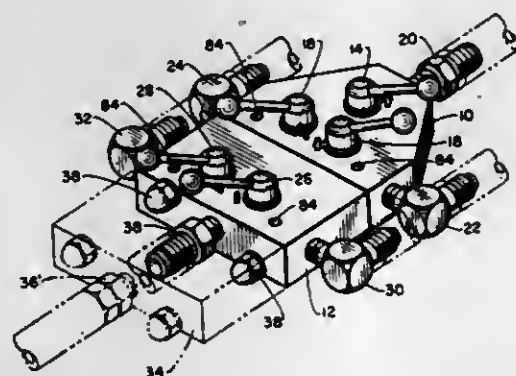
4,215,721. This application Jun. 2, 1980, Ser. No. 155,412

The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> F16K 11/22

U.S. Cl. 137—606

10 Claims



1. A modular multiple-fluid component selection and delivery system comprising:
  - a first block;
  - a main passageway passing through said first block;

- valve means intersecting said main passageway at one end of said first block;
- a plurality of secondary passageways intersecting said main passageway;
- second valve means intersecting each of said secondary passageways for controlling the flow of a fluid component through each of said secondary passageways to said main passageway;
- at least one auxiliary block attached to said first block having a planar face abutting a planar face on the other end of said first block;
- a main passageway in said auxiliary block in alignment with the main passageway in said first block;
- said at least one auxiliary block having a plurality of secondary passageways intersecting with said main passageway;
- third valve means intersecting said secondary passageways for controlling the flow of a fluid component through each of said secondary passageways in said at least one auxiliary block to said main passageways;
- aligning means automatically aligning the main passageway in said first block with the main passageway in said auxiliary block;
- sealing means sealing the transition of the main passageway from block to block; and
- a hose fitting attached to the end of the main passageway in the last of said blocks.

4,281,684

**BALANCED ROTARY-FACED VALVE**

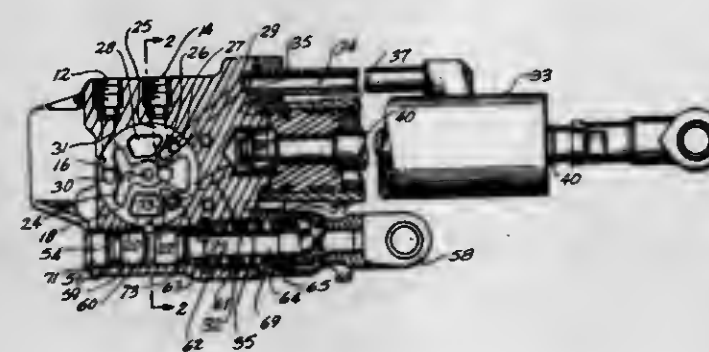
Helmut Broeg, Redondo Beach, Calif., assignor to Dubro, Inc., Gardena, Calif.

Filed Sep. 24, 1979, Ser. No. 78,241

Int. Cl.<sup>3</sup> F16K 11/06

U.S. Cl. 137—625.21

15 Claims



1. A balanced rotary-faced valve for controlling the flow of pressurized fluid to hydraulic apparatus having extend and retract ports, the valve comprising:
  - means for inletting and draining pressurized hydraulic fluid from the valve;
  - a valve body portion having a flat land portion and a plurality of recesses adjacent to and opening at the plane of the land portion, the recesses including two opposed pressurized fluid receiving recesses, a retract recess in fluid communication with the retract port, an extend recess in fluid communication with the extend port, and a drain recess in fluid communication with the pressurized fluid drain means;
  - pressure port means in fluid communication with the pressurized hydraulic fluid inlet means for providing pressurized hydraulic fluid to a station at the land portion of the body;
  - a disk having first and second faces and an axis about which said disk is rotatable, the first face in surface contact with the flat land portion of the body and having pressure-drain coupling recesses and extend and retract recesses capable of registration with corresponding retract and extend recesses in the body portion;
  - means defining an annular groove in the second face of the disk;
  - means defining a first pair of diametrically opposed passage-

- ways between the groove and the first face of the disk, each passageway in fluid communication with a corresponding body portion pressurized fluid receiving recess so that any reaction forces created thereby act in a direction coaxially with the axis of the disk;
- means defining a second passageway through the disk for guiding pressurized fluid from the body portion station to the groove;
- sealing means for preventing the pressurized fluid from flowing out of the groove except through the first pair of passageways, the sealing means having an area in contact with the pressurized fluid thereby creating a predetermined counter force upon the second face of the disk to urge said disk toward the flat land portion, in opposition to any pressurized fluid created force on the first face of the disk;
- means for rotating the disk to neutral, first and second positions so that in the neutral position the pressure-drain coupling recesses in the disk overlays corresponding pressure and drain recesses of the body providing fluid communication therebetween and, thus, the inletted pressurized fluid flows from the pressure recess to the drain recess and so that in a first position the extend recess in the disk overlays the pressure and extend recesses of the body and the retract recess in the disk overlays the drain and retract recesses of the body providing fluid communication therebetween so that an equal amount of fluid entering the extend port exits from the retract port, and so that in a second position the retract recess in the disk overlays the pressure and retract recesses of the body and the extend recess in the disk overlays the drain and extend recesses of the body providing fluid communication therebetween so that an equal amount of fluid entering the retract ports exits from the extend port.

4,281,685

**ELECTROMAGNETIC LOCKING TYPE ACTUATOR**

Tamio Uemura, Kawasaki, Japan, assignor to Tokico Ltd., Kawasaki, Japan

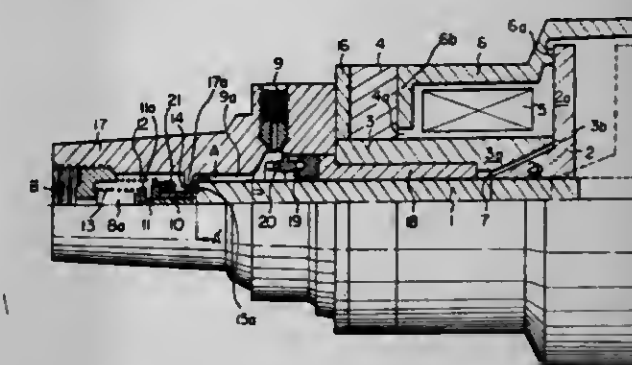
Filed Mar. 26, 1979, Ser. No. 24,039

Claims priority, application Japan, Mar. 24, 1978, 53-33704

Int. Cl.<sup>3</sup> F16K 31/08

U.S. Cl. 137—628

7 Claims



1. An electromagnetic locking type actuator, comprising:
  - a body having a fluid passage therethrough;
  - a control member reciprocable in said body for controlling the fluid pressure in said passage;
  - an electromagnetic means positioned on said body for applying a first magnetomotive force to said control member, said electromagnetic means having an inner yoke, an outer yoke including a flange portion around said inner yoke, an electromagnetic coil between said inner and outer yokes, and means for directing an energizing current through said coil in one direction and in a second direction which is the opposite of said one direction; and
  - a permanent magnet means positioned adjacent to and separated from said electromagnetic coil by said flange portion of the outer yoke for directing flux to said yokes for apply-



ing a second magnetomotive force in one direction to said control member at all times, said electromagnetic means, when an electric current in one direction is applied thereto, generating a first magnetomotive force in the said one direction for moving said control member toward said permanent magnet means and said electromagnetic means to a movement terminating position, and said permanent magnet means holding said control member at said movement terminating position after said first magnetomotive force no longer acts after the electric current is discontinued, and when an electric current in a direction opposite said one direction is applied thereto, generating a first magnetomotive force cancelling out said second magnetomotive force, whereby said control member is released from the effect of magnetomotive forces; said electromagnetic means having a magnetic gap between said inner yoke and said flange portion of the outer yoke for preventing the flux of said permanent magnet means from leaking directly to said inner yoke from said flange portion of the outer yoke.

4,281,686

## THREE WAY BUTTERFLY VALVE

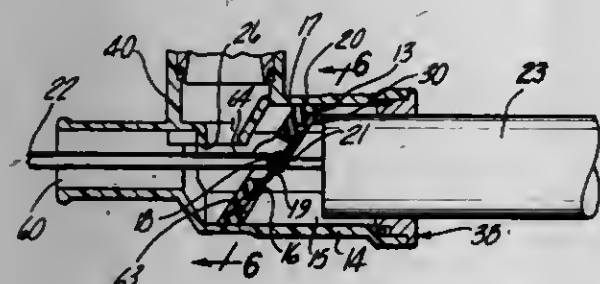
Gordon R. Gerlitz, 3901 Hammersberg Rd., Flint, Mich. 48507

Filed Nov. 23, 1979, Ser. No. 96,672

Int. Cl.<sup>3</sup> F16K 5/00

U.S. Cl. 137-887

25 Claims



8. A vacuum control valve assembly for regulating liquid flow in an automotive heating system comprising:

- a housing having an opening therethrough, at least a portion of said opening defining a cylindrical passage, said cylindrical passage having first and second flat parallel surfaces thereon;
- a bypass passageway mounted to the side of said housing, one end of said passageway projecting into said opening in said housing;
- a pivot pin mounted diametrically through said housing across said cylindrical passage in spaced relationship to said bypass passageway;
- a valve plate engaged to said pivot pin, said valve plate having first and second flat parallel surfaces on the periphery of said valve plate, said valve plate further having a diametrically extending central flat planar portion which extends through said first and second flat parallel surfaces in said valve plate and extends radially of said cylindrical passage when said valve plate is in inclined position with respect to the axis of said cylindrical passage and the periphery of said valve plate is in sealing engagement with the interior surface of said cylindrical passage whereby said valve plate stops the flow of fluid through said cylindrical passage and permits flow through said bypass passageway when said valve plate is in a first predetermined position and said valve plate restricts the flow of fluid through said bypass passageway and permits the flow of fluid through said cylindrical passage when said valve plate is in a second predetermined position;
- means for restricting the flow of fluid through said bypass passageway when said valve plate is in parallel position with respect to the axis of said cylindrical passage and in proximate contact with said bypass passageway;

means for piloting said valve plate in said cylindrical passage of said housing.

4,281,687

## FLUID STORAGE DEVICE

Burleigh M. Hatchins, North Attleboro, and Louis Abrahams, Worcester, both of Mass., assignors to Waters Associates, Inc., Milford, Mass.

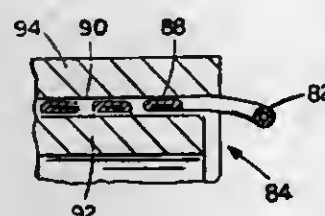
Continuation of Ser. No. 10,686, Feb. 9, 1979, Pat. No.

4,245,963. This application Feb. 25, 1980, Ser. No. 124,309

Int. Cl.<sup>3</sup> E03B 7/10

U.S. Cl. 138-28

2 Claims



2. A fluid storage device for smoothing fluid delivery, said device comprising

- a length of flattened tubing coiled in a helix, said tubing having generally flat, radially inward and outward wall portions adapted to bow radially inward and outward, respectively, when internal pressure increases, to thereby increase the internal volume per unit length of said tubing,
- an inner cylindrical restraining wall positioned adjacent to said radially inward wall portion, and
- an outer cylindrical restraining wall positioned adjacent to said radially outward wall portion,
- the radial separation between said walls being selected relative to the outside thickness of said tubing to restrain radially inward and outward bowing of said wall portions beyond their elastic strain limits,
- whereby an increase in the pressure of fluid inside said tubing allows said walls to expand until they are restrained by said restraining walls, and a decrease in said pressure allows said tubing to relax back to its original shape, thereby keeping the internal volume of said tubing small to reduce mixing between serial flow segments entering said fluid storage device.

4,281,688

## REVERSIBLE FORMING FABRIC HAVING DOMINATING FLOATS ON EACH FACE

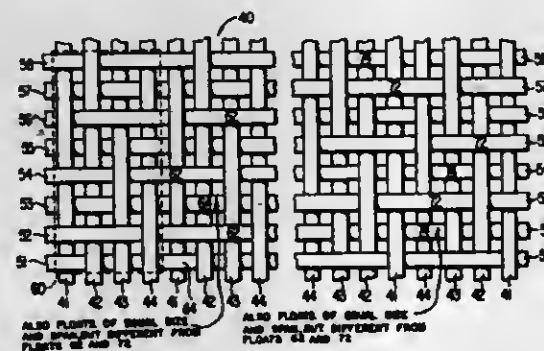
Brendan W. Kelly, Beaconsfield, and Robert L. Bolly, Joliette, both of Canada, assignors to Scapa Dryers (Canada) Ltd., Joliette, Canada

Filed May 1, 1979, Ser. No. 35,064

Int. Cl.<sup>3</sup> D03D 25/00

U.S. Cl. 139-383 A

13 Claims



1. A forming fabric having a paper stock receiving surface and a roll-contacting surface, said forming fabric comprising a

plurality of interwoven machine direction yarns and a plurality of cross-machine direction yarns, every other of said cross-machine direction yarns spanning a first number of adjacent machine direction yarns in defining one of said surfaces and spanning a second number of machine direction yarns in defining the other of said surfaces, said second number being different from said first number, said machine direction yarns of said second number being adjacent when said second number is greater than one; and

the remainder of said cross-machine direction yarns spanning a third number of adjacent machine direction yarns in defining said other surface and spanning a fourth number of machine direction yarns in defining said one surface, said machine direction yarns of said fourth number being adjacent when said fourth number is greater than one, and said third and fourth numbers being equal to said first and second numbers, respectively.

4,281,689

## WOVEN FABRIC MADE OF LOW MODULUS, LARGE DIAMETER FIBERS

Joseph C. Benedyk, Highland Park, Ill., assignor to Brunswick Corporation, Skokie, Ill.

Filed Apr. 26, 1979, Ser. No. 33,461

The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> D02G 3/00; D04H 11/00

U.S. Cl. 139-420 A

30 Claims

1. A woven fabric, comprising: yarn made of a polymeric fiber having an elastic modulus of from about 2,000 to about 80,000 p.s.i., an area moment of inertia of from about  $400 \times 10^{-14}$  to about  $7.8 \times 10^{-9} \text{ in.}^4$ , and a stiffness parameter of from about  $8.0 \times 10^{-9}$  to about  $62.4 \times 10^{-5} \text{ p.s.i.}$ , said fiber providing said woven fabric with a high shrink rate when exposed to intense heat.

4,281,690

## METHOD AND APPARATUS FOR MAKING WIRE BINDERS FOR PADS OR THE LIKE

Jörn-Uwe Lemburg, Richmond, Va., assignor to E. C. H. Will (GmbH &amp; Co.), Hamburg, Fed. Rep. of Germany

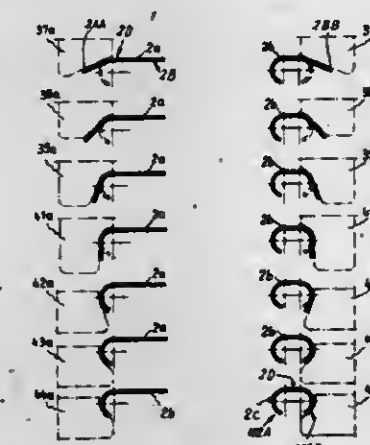
Filed Nov. 5, 1979, Ser. No. 91,411

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2847700

Int. Cl.<sup>3</sup> B21F 45/00

U.S. Cl. 140-71 R

20 Claims



1. A method of converting a web of undulate wire which includes two longitudinally extending marginal portions into a series of interconnected substantially C-shaped binders, comprising the steps of moving the web lengthwise: gradually imparting to successive increments of one marginal portion of the web a concavo-convex configuration which, in cross-section, resembles substantially one-half of the letter C; and thereafter gradually imparting to successive increments of the other marginal portion a concavo-convex configuration which is

substantially a mirror image of concavo-convex configuration of the one marginal portion.

4,281,691

## DEVICE FOR TRANSFERRING AND PACKAGING CONTAMINANTS SUCH AS RADIOACTIVE PRODUCTS WITHIN A LEAK-TIGHT SHEATH

Rene Gontard, Verrieres le Buisson, and Raymond Levardon, Paris, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

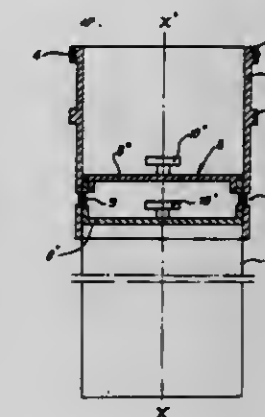
Filed Aug. 15, 1979, Ser. No. 66,522

Claims priority, application France, Aug. 25, 1978, 78 24625

Int. Cl.<sup>3</sup> G21F 7/00

U.S. Cl. 141-1

11 Claims



1. A device for transferring a noxious product through a lock-chamber which is rigidly fixed to a leak-tight partition-wall and for packaging said product within a leak-tight sheath, wherein said device comprises a sleeve having a central cavity for establishing a communication between said lock-chamber and said sheath while ensuring tightness against outleakage to the environment, and a seal plug having a double wall, said seal plug being adapted to be slidably introduced within said cavity and means being provided to lock and seal said seal plug within said cavity for preventing said communication, simultaneous cutting of the seal plug and the sleeve operating to separately seal-off said lock-chamber and said sheath by means of each wall of said seal plug.

4,281,692

## APPARATUS FOR FILLING LAMPS

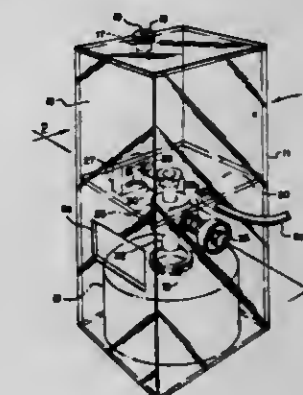
Michael V. Caccamisi, Rte. 2, Box 698, Garland, Tex. 75040

Filed Jul. 26, 1979, Ser. No. 60,923

Int. Cl.<sup>3</sup> B65B 3/06

U.S. Cl. 141-370

7 Claims



1. Apparatus for filling oil lamps of the kind having an oil supply container with a centrally positioned fill opening in the top thereof comprising: an open-bottomed housing proportioned to be removably fitted over the oil supply container of an oil lamp and to substantially center said container within the confines of said housing;



an oil supply reservoir in said housing above the portion thereof removably confining the oil supply container of said lamp;  
 an oil delivery line extending from the bottom of said reservoir to the fill opening of the oil supply container of said lamp, said delivery line being in fluid communication with said reservoir, open at its lower end, and further being substantially aligned with the fill opening of said oil supply container at least at lower end of said line;  
 valve means in said line;  
 bias means normally urging said valve to a closed position; and  
 valve operating means operable from the exterior of said housing for opening said valve to admit oil from said reservoir to said container.

4,281,693

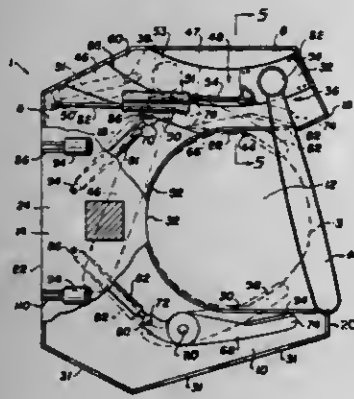
## FELLER DIRECTOR

Donald C. Moulson, Burnaby, Canada, assignor to Forest Engineering Research Institute of Canada, Vancouver, Canada  
 Filed Jul. 18, 1979, Ser. No. 58,493

Int. Cl.<sup>3</sup> A01G 23/08

U.S. Cl. 144—34 R

17 Claims



1. A feller head for a tree felling apparatus, comprising: a first forward projection adjacent a tree trunk receiving recess; a chain saw having opposing ends mounted within the first projection, one of said ends extending away from the first projection in the direction of the recess, and having a motor for powering the chain saw mounted within the first projection; and means for moving the chain saw opposing ends along curved substantially parallel paths within the projection, the path being convex in the direction of the recess.

4,281,694

## CUTTING GUIDE FOR A ROUTER OR SIMILAR TOOL

Thomas E. Gorman, 19 Eamea St., North Reading, Mass. 01864  
 Filed Nov. 5, 1979, Ser. No. 91,151

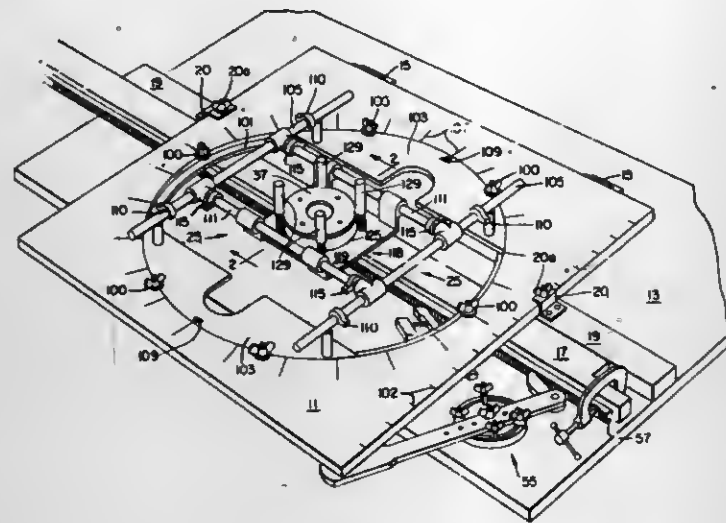
Int. Cl.<sup>3</sup> B27C 5/10

U.S. Cl. 144—134 D

12 Claims

1. A cutting tool guide apparatus for placement on a work surface and for moving a cutting tool between:  
 a first position elevated above the work surface and disengaged from a workpiece to be cut; and  
 a second position below said first position for engaging the tool with the workpiece, said apparatus comprising:  
 a frame comprising a circular track;  
 a rotatable member mounted for rotation on said track;  
 a guide assembly mounted on said rotatable member, said guide assembly comprising:  
 a rectilinear guide member joined to and rotatable in conjunction with the rotatable member;  
 tool support means slidable engaging said guide member; and  
 stops for defining the limits of sliding movement of said

tool support means along said rectilinear guide member; and



means for moving said tool support between said first and second positions.

4,281,695

## METHOD AND SYSTEM OF ALIGNING LUMBER, ESPECIALLY BLOCKS FROM WHICH THE FIRST PAIR OF CANTS HAS BEEN REMOVED

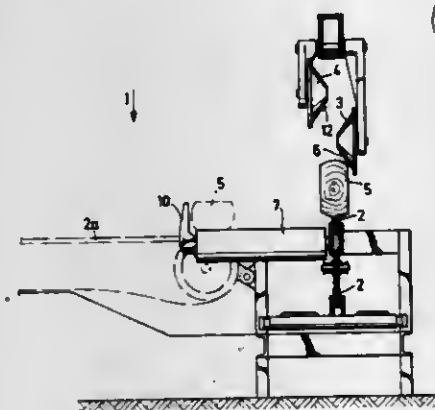
Olli Heikinheimo, Helsinki, Finland, assignor to Plan-Shell Oy, Helsinki, Finland

Filed Nov. 13, 1978, Ser. No. 960,180

Int. Cl.<sup>3</sup> B27B 1/00

U.S. Cl. 144—312

5 Claims



1. A method of aligning lumber from which a first pair of cants has been removed to provide blocks for feeding along a sawing line, said blocks having a base, sides and a top, comprising:

using a control device having information to define a side profile of a block to examine the blocks which traverse thereby to calculate and to determine the optimal direction and position of the blocks with respect to the sawing line;

moving each of the individual blocks on its base in a longitudinal direction to pass by the control device to permit the control device to produce an output characteristic for defining each of the individual block's side profile and outlining the even sawed surface;

causing one of the individual blocks to fall on its side;

providing at least two adjustable stops and adjusting the stops relative to the individual blocks side profile in response to the output characteristics of the block provided by the control device; and,

transversely moving the block after it has fallen on its side against the at least two adjustable stops, the adjustable stops being positioned in a desired manner in response to information contained in the output characteristic so as to ascertain an optimum amount of wood products at a next

processing stage in accordance with information obtained by the control device from the block.

transporting the cut log into a splitting mechanism whereby a cut log requiring splitting can be split;

4,281,696

## AUTOMATIC SAWMILL METHOD AND APPARATUS

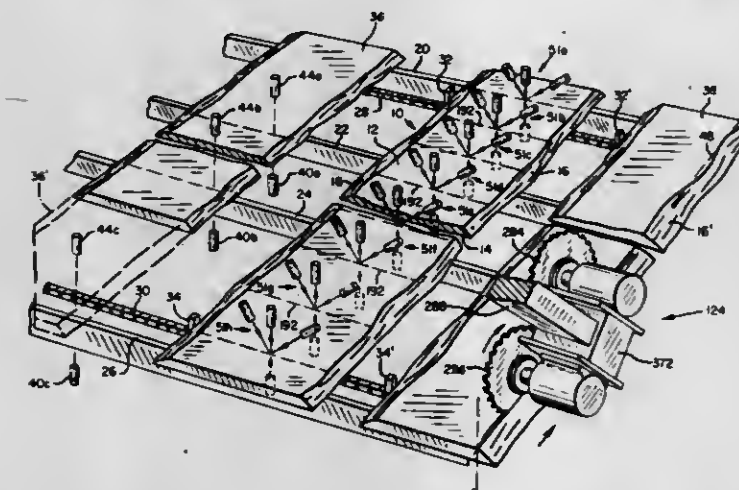
Vincent M. Howard, Eugene; Carl W. Maxey, Corvallis, and John P. Dellett, Lake Oswego, all of Oreg., assignors to Aaron U. Jones, Eugene, Oreg.

Division of Ser. No. 931,722, Aug. 7, 1978. This application Aug. 27, 1979, Ser. No. 69,934

Int. Cl.<sup>3</sup> B27B 1/00, 31/06

U.S. Cl. 144—312

5 Claims



1. The method of processing cants sawn from logs and characterized by a longitudinal dimension acquired lengthways from a said log and a width dimension acquired crossways of said log and having at least one irregular lateral edge, said method comprising:

detecting the irregular lateral edge of said cant to ascertain irregular indentations in said lateral edge,  
 automatically selecting indentations on said lateral edge for determining a straight saw line,  
 detecting if other indentations on said lateral edge fall within said saw line,  
 redetermining said saw line to extend in substantially tangential relation through at least one such other indentation until no other indentations fall within said line,  
 and sawing said cant along said saw line for substantially removing the irregularities of said lateral edge.

4,281,697

## FIREWOOD SYSTEMS

Leo L. Heikkinen, and Charles L. Lundborg, both of Prentice, Wis., assignors to LaFont Corporation, Prentice, Wis.

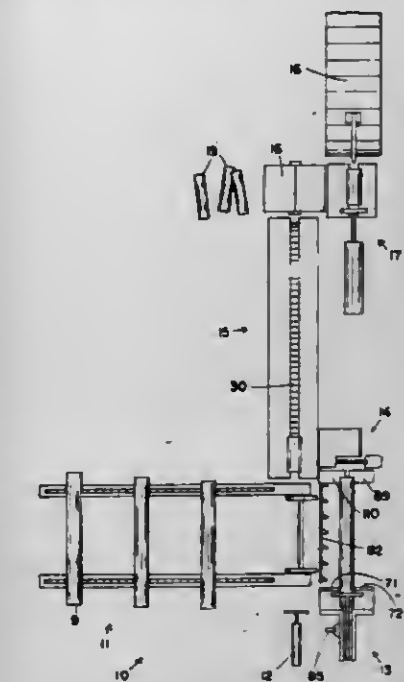
Division of Ser. No. 821,793, Aug. 4, 1977, Pat. No. 4,173,237. This application Apr. 25, 1979, Ser. No. 33,289

Int. Cl.<sup>3</sup> B27L 7/00

U.S. Cl. 144—326 R

3 Claims

1. A method of converting a log into firewood comprising the steps of:  
 placing a plurality of logs on a log support;  
 selecting a log from the plurality of logs on the log support; grasping and holding the log at one end with a log feeder while cutting the opposite end of the log to produce a cut log;



4,281,698

## PENCIL SHARPENER

Werner Mobius, Hindenburgstrasse 77, 8520 Erlangen, Fed. Rep. of Germany

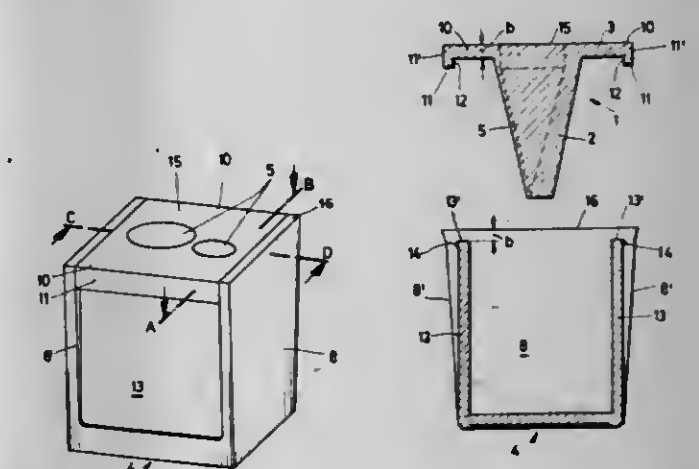
Filed Apr. 16, 1979, Ser. No. 30,653

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1978, 7812337[U]

Int. Cl.<sup>3</sup> B43L 23/00

U.S. Cl. 145—3.31

4 Claims



1. A pencil sharpener having a collector housing and an integral cover/sharpener unit releasably attachable to the collector housing with the sharpener extending into the collector housing, the collector housing having side walls comprising

the cover/sharpener-unit being defined on two opposite sides by two continuous outer guiding surfaces;  
 the collector housing having two inner guiding surfaces on two opposite facing walls, the dimensions of the sharpener elements being selected so that said outer guiding surfaces are parallel to and slidably engage said inner guiding surfaces to guide said cover/sharpener-unit during its insertion into and removal from said housing;  
 said cover at the sides of the sharpener other than the sides having said outer guiding surfaces is provided with portions which laterally project over the side walls of said housing having said inner guiding surfaces, said side walls



serving as support walls for said laterally projecting portions; and  
the cover/sharpener-unit being releasably attachable to the collector housing by a snap means which comprises cooperating engageable protrusions and recesses integral with said support walls and said laterally extending portions.

4,281,699

# LOCKING FASTENER WITH RESILIENT AND RIGID FLANGE SEGMENTS

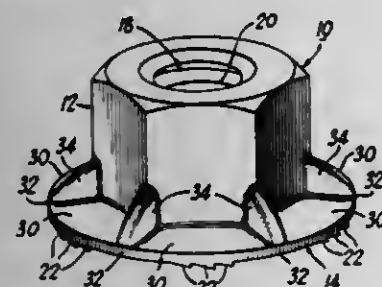
William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Company, Mundelein, Ill.

Filed Apr. 20, 1979, Ser. No. 31,759

Int. Cl.<sup>3</sup> F16B 39/282

U.S. Cl. 411-176

4 Claims



1. A locking fastener adapted to be tightened against a workpiece in a threaded joint and comprising:
  - a solid body portion having a wrenching structure with a plurality of corners;
  - a continuous, generally circular flange formed integrally at a workpiece engaging end of said body portion and extending radially outward from said body portion;
  - said flange defining an annular, generally planar bearing surface adapted to face the workpiece in the threaded joint;
  - a plurality of discrete and spaced apart reinforcements formed integrally with said body portion and flange, each reinforcement extending both radially and axially between said flange and a corner of said wrenching structure for rendering first circumferentially spaced apart workpiece engaging segments of said flange substantially rigid as the fastener is tightened against the workpiece;
  - a plurality of second circumferentially spaced apart flange segments interspersed between said first rigid segments, said second flange segments being flexible in the axial direction upon tightening of the fastener against a workpiece; and
  - a plurality of workpiece engaging locking teeth on said bearing surface and disposed only at said second flange segments, at least one locking tooth projecting axially from each second flange segment, each tooth having a crest comprising a line defined at the junction of opposite tooth sides, said line having a substantial component in the radial direction.

4,281,700

# RUN-FLAT VEHICLE TIRE

William C. Ross, Winchester, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 33,679, Apr. 26, 1979, which is a continuation-in-part of Ser. No. 7,068, Jan. 29, 1979, abandoned.

This application Dec. 31, 1979, Ser. No. 108,891

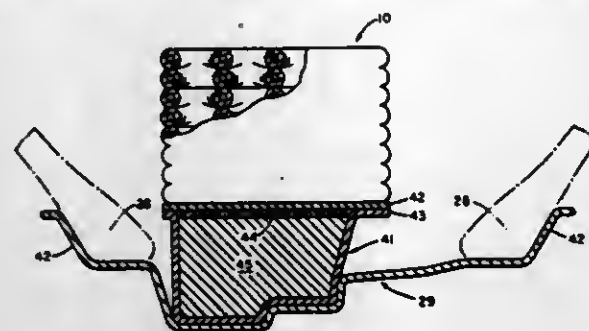
Int. Cl.<sup>3</sup> B60C 17/04

U.S. Cl. 152-158

35 Claims

1. A run-flat tire assembly comprising (a) a pneumatic vehicle tire; (b) a supporting rim for said tire; (c) a flexible compressible ring located within said tire comprised of a plurality of successively wound circumferential layers of elastomer coated filamentary material, said filamentary material having void spaces therebetween and being bonded together at point of contact thereof; and (d) a spacer-support member compris-

ing a tube located between said rim and said ring and acting to space said ring from said rim and to support it when said tire is operating in a run-flat conditions, said tube having been ex-



4,281,701

# VEHICLE TIRE HAVING RUN FLAT INSERT

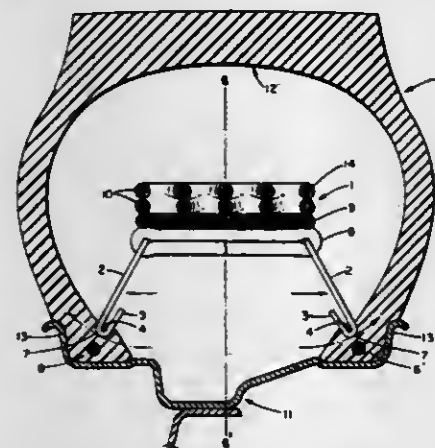
William C. Ross, Winchester, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Feb. 15, 1980, Ser. No. 121,842

Int. Cl.<sup>3</sup> B60C 17/04

U.S. Cl. 152-158

23 Claims



1. In combination, a pneumatic vehicle tire having non-extensible bead portions, a rim having flanges containing said bead portions, and an insert assembly to impart a run-flat capability to the tire positioned within said tire, said assembly comprising
  - (a) a ring member for providing rotational support to said vehicle during run-flat operation, said ring member being spaced from said rim and said tire during non-runflat operation, said ring further having opposed lateral edges; and
  - (b) positioned between said ring and said rim, support means for said ring comprising first array of circumferentially-arranged, spaced, bracing elements depending from one said lateral edge of said ring, a second array of said bracing elements depending from the opposed lateral edge of said ring, each said bracing element having an upper end adjacent said ring and a lower end remote therefrom, each said bracing element extending outwardly from said lateral edge at an angle thereto;
2. said bead portions of said tire having means engaging said lower ends of said bracing elements to thereby lock said insert assembly in position within said tire, said bracing elements being movably joined to said lateral edges of said ring in order that said bracing elements may be moved outwardly into said engagement position with said beads portions after insertion of said assembly into said tire, whereby in the event of collapse of said tire upon said ring, said ring is supported by said bracing elements in contact with said bead portions contained by said flanges.

4,281,702

# PNEUMATIC TIRE

Karl A. Grosch, Roetgen; Paul H. Moitzheim; Gert Schioesser, both of Aachen, all of Fed. Rep. of Germany, and Daniel J. M. Hensgens, Ubach-Overworms, Netherlands, assignors to Uniroyal Engelbert Reifen GmbH, Aachen, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 922,911

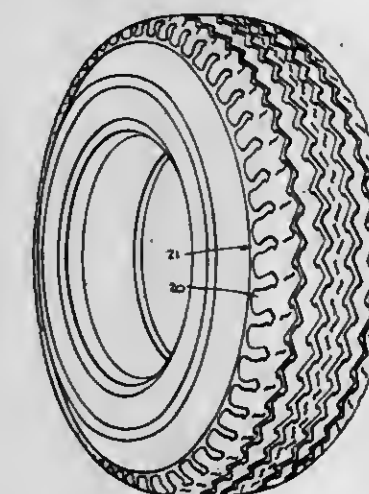
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1977, 7725496[U]

The portion of the term of this patent subsequent to Apr. 24, 1993, has been disclaimed.

Int. Cl.<sup>3</sup> B60C 11/00

U.S. Cl. 152-209 R

1 Claim



1. A pneumatic radial tire comprising a tread defined by shoulder edges and having circumferentially continuous profile ribs of zig-zag contour defined by circumferential grooves of zig-zag contour, the axial width of the tread between the shoulder edges comprising only five ribs including marginal ribs and one central rib of respectively large axial width and comparatively narrower respectively intermediately situated ribs and each intermediate rib being defined with respect to said central rib by an axially wide continuous circumferential groove and, with respect to said marginal ribs, by a comparatively narrower continuous circumferential groove, said marginal ribs having substantially the same axial width as the width of said central rib, the axial width of said marginal ribs and of said central rib constituting in each case respectively substantially one-sixth of the axial tread width between said shoulder edges, said marginal ribs being provided with profile sections oriented substantially radially inwardly toward the tire sidewall and defined by circumferentially spatially arranged marginal grooves and in which said marginal grooves terminate at the level of the free extremities of the profile sections in each case in a circumferentially continuous groove.

4,281,703

# ENERGY SAVING TIRE WITH LARGE PARTICLE SIZE, HIGH STRUCTURE CARBON BLACK IN TREAD

Shamim Ahmad, Canal Fulton, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 19, 1979, Ser. No. 95,265

Int. Cl.<sup>3</sup> B60C 11/00, 1/00

U.S. Cl. 152-209 R

6 Claims

1. In a tubeless pneumatic radial tire comprising two spaced inextensible beads, a ground contacting tread portion, a pair of individual sidewalls extending radially inward from the axial outer edges of said tread portion to join the respective beads, a carcass portion having at least one ply of rubberized cords lying essentially in radial planes wherein said cords are wrapped around said blades, an integral air impervious innerliner disposed inwardly of said carcass portion, a circumferential belt comprising at least two plies of low-extensible cords with the cords in each ply parallel to each other and at an angle to the circumferential central plane of the tire and with the cords in one ply extending in a direction opposite to the cords

in the other ply, the improvement consisting in the tread being formed of a composition comprising:

- (a) 100 parts by weight of rubber hydrocarbon wherein at least 90 parts of the rubber hydrocarbon is selected from at least one of the group consisting of cis-polyisoprene and cis-polybutadiene,
- (b) less than 10 parts by weight of processing oil per 100 parts by weight of rubber,
- (c) from about 30 to about 60 parts by weight of carbon black per 100 parts by weight of rubber, wherein the carbon black has a particle size greater than about 50 millimicrons and a dibutyl phthalate absorption value greater than 120, and
- (d) sufficient curing agents to effect vulcanization.

4,281,704

# DOOR

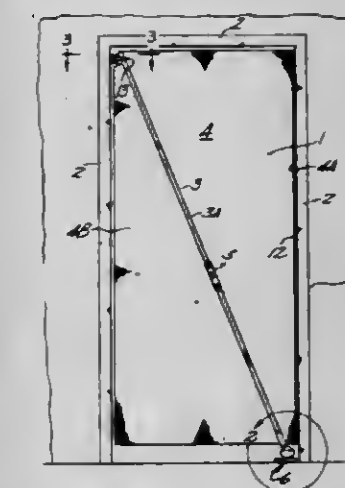
Ralph T. Sorensen, 230 Cedar, Junction City, Oreg. 97448

Filed Sep. 13, 1979, Ser. No. 75,522

Int. Cl.<sup>3</sup> A47H 5/00

U.S. Cl. 160-340

4 Claims



1. A door for use within an interior door frame of a building structure, said door comprising,
  - an elongate rigid member inclined so as to have its ends positionable adjacent diagonally opposite corners of a doorway;
  - a pliable closure panel for normally occupying the door frame opening to substantially close same and affixed to said rigid member, one side of said closure panel adapted for attachment to an upright member of the door frame, a portion of said pliable closure panel is normally tensioned by said elongate rigid member with a remaining portion of said panel being suspended from said rigid member, and pivot means supporting one end of said rigid member to permit opening and closing movement thereof when said rigid member is manually displaced during door opening.

4,281,705

# PROCESS FOR CASTING OBJECTS HAVING COMPLICATED SHAPES

Tibor Jeney, Budapest, Hungary, assignor to NOVEX Talai-mányfejlesztő és Ertekesítő Kft., Budapest, Hungary

Filed Feb. 26, 1979, Ser. No. 15,319

Claims priority, application Hungary, Mar. 14, 1978, 831

Int. Cl.<sup>3</sup> B22D 19/00; B22C 9/04

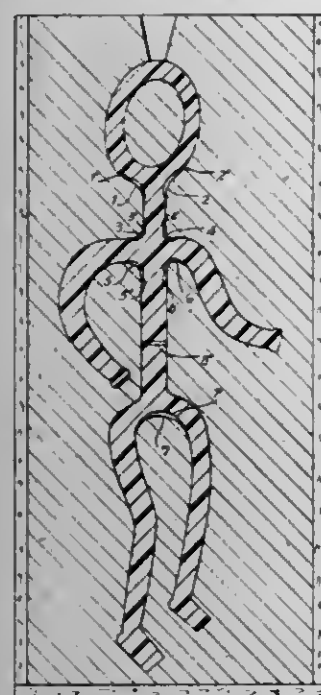
U.S. Cl. 164-10

8 Claims

1. A method for casting objects having complicated shapes from aluminum, zinc, and non-ferrous metals, for use in the industrial arts, comprising the steps of: using a completely combustible and gasified foam material to constitute a form in which the objects are cast; removing a thin surface layer of the foam from those surface areas where a wall thereof could be damaged by flowing melted metal, where ornamental elements or profiles are to be included in the objects prior to casting, or



where the rate of flow of melted metal is to be decreased; substituting the removed foam layer by a protective layer of a material with a stonger structure, lower thermal conductivity, lower burning and gasifying rates than those of the material of the foam casting form; reconnecting the separated foam and



protective layers by gluing; embedding the casting form into sand; pouring melted metal into a recess defined by the foam form while in the sand; and delaying and regulating the burning of the foam during the pouring of the metal as well as the gasification of the foam.

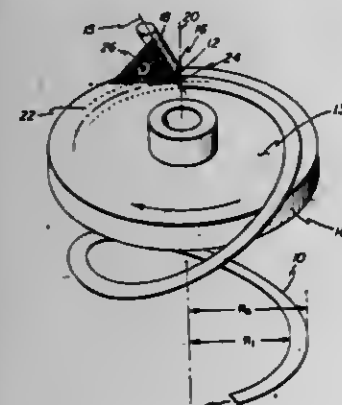
4,281,706

**METHOD OF MAKING HELICAL METALLIC RIBBON FOR CONTINUOUS EDGE WINDING APPLICATIONS**  
Howard H. Liebermann, Schenectady; Peter G. Frischmann, Scotia, both of N.Y., and George M. Rosenberry, Jr., Hendersonville, Tenn., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,240  
Int. Cl.<sup>3</sup> B22D 11/06

U.S. Cl. 164—463

15 Claims



1. A method of casting metallic ribbons in helical form by chill block melt-spinning including the process steps of:
  - a. rotating a substrate wheel at a predetermined speed to impart to a casting surface thereon a predetermined surface velocity, said wheel having two major opposed top and bottom surfaces and a peripheral edge surface area interconnecting said major surfaces, said top surface lying substantially normal to the axis of rotation of said wheel and being said casting surface;
  - b. positioning a crucible with respect to the moving casting surface with the orientation of the longitudinal axis of said crucible with respect to said casting surface being defined by the inclination angle  $\alpha$  and the azimuthal angle  $\gamma$ ;

- c. forming molten alloy of a predetermined composition in said crucible;
- d. ejecting said molten alloy through an orifice in said crucible to form a melt stream having a preferred velocity, said orifice and said melt stream having axes substantially colinear with the axis of said crucible;
- e. impinging said melt stream onto said moving casting surface; and
- f. rapidly chilling said molten alloy impinging on said moving casting surface to form a continuous length of an edge-wound metallic ribbon having a helical shape, said ribbon having a substantially uniform cross section, a pair of substantially parallel major surfaces, and inner and outer peripheral edges of constant radii, defined by the motion of said casting surface at the locus of impingement of said melt stream thereon.

4,281,707

**CENTRIFUGAL CASTING MACHINE, EQUIPPED WITH MEANS FOR STRIPPING AND AUTOMATIC RELEASE OF THE RESULTING CASTINGS**

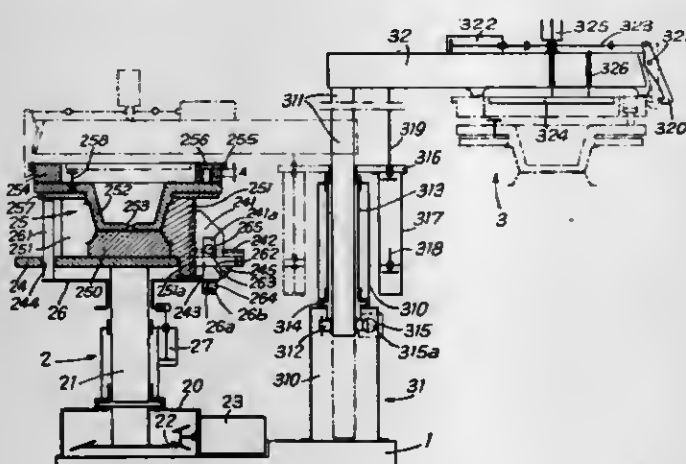
Jean Lelou, Acheres, France, assignor to Etablissements A. Voisin, Puteaux, France

Filed May 6, 1980, Ser. No. 147,160

Claims priority, application France, Dec. 20, 1979, 79 31325  
Int. Cl.<sup>3</sup> B22D 13/04

U.S. Cl. 164—292

10 Claims



1. Centrifugal casting machine for producing castings in light alloy, and in particular vehicle wheels, comprising a mold made up of several parts integral with a support pivoting about a vertical axis, means for closing and opening the mold and means for stripping the casting, wherein the said mold is composed of a base plate integral with the said support, of lateral parts and of an upper part provided, in the vertical axis of the support, with a mold supplying orifice, the said opening and closing means are constituted by a plate, which is movable vertically along the pivoting support, and comprising pins for lifting the said upper part, being supported under a lower face of the latter, and a connecting rod assembly connecting the said lateral parts to the said plate so as to drive the latter radially when the plate moves axially, whereas the said stripping means are constituted by a bracket formed by a vertical post and by a horizontal arm rotatably and vertically movable with respect to the post, said arm being equipped with means for gripping the upper part of the mold and for stripping the casting.

4,281,708

**AUTOMATIC THERMAL SWITCH**

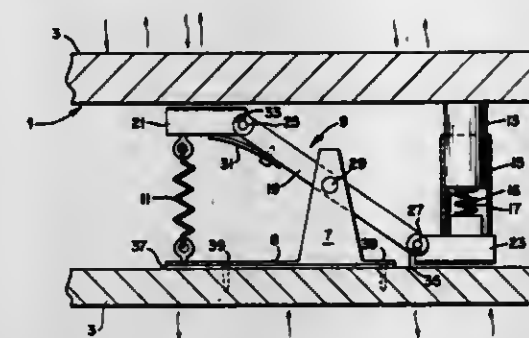
Lawrence D. Wing, Bowle, and Joseph W. Cunningham, Rockville, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 30, 1979, Ser. No. 43,943

Int. Cl.<sup>3</sup> F28F 27/00

U.S. Cl. 165—32

18 Claims



1. A thermal switch for selectively varying the heat transferred between an uncontrolled variable temperature environment and a controlled temperature environment comprising: first and second spaced members, respectively having surfaces exposed to said uncontrolled and controlled environments, said members having high thermal conductivities relative to said uncontrolled and controlled environments; a heat motor being in heat exchange relationship with said first spaced member; and pivotal armature means between said first and second spaced members, said armature means having a relatively high thermal conductivity and having one end thereof coupled to said heat motor, said armature means being responsive to said heat motor so that said armature means is pivoted between first and second positions in response to the amount of heat absorbed by said heat motor from said first spaced member, said armature means being in contact with said first and second spaced members in said first position to provide a high thermal conductivity path between said first and second spaced members, and said armature means being spaced from said first and second spaced members in said second position to provide a substantially low thermal conductivity path between said first and second spaced members.

4,281,709

**THERMAL HEAT PUMP**

Claus A. O. Busse, Arolo di Leggiano, Italy, assignor to European Atomic Energy Community-EURATOM, Plateau du Kirchberg, Luxembourg

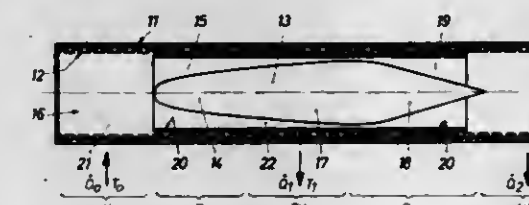
Filed Aug. 28, 1978, Ser. No. 937,373

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739689

Int. Cl.<sup>3</sup> F28D 15/00

U.S. Cl. 165—104.22

9 Claims



1. Thermal heat pump, characterized by a heat pipe in which the vapor passage located between the heat transfer zone to the heat supply and the heat transfer zone to the heat removal has a cross section which varies across its length and which increases the velocity of the vapor flow to begin with and then

decreases it and that a further heat transfer zone with heat removal is located in the area of the increased vapor velocity.

4,281,710

**HEAT EXCHANGER**

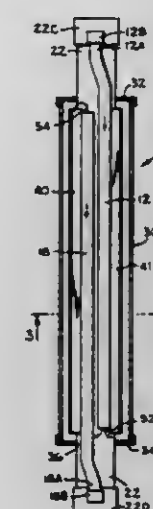
Fred Hadlock, Glendale, Ore., assignor to FRAC, Inc., Glendale, Ore.

Filed Oct. 25, 1978, Ser. No. 954,554

Int. Cl.<sup>3</sup> F28D 7/12; F28F 9/22

U.S. Cl. 165—142

4 Claims



1. In a heat exchanger having an elongate central conduit for a first heat-exchange fluid and an elongate annular conduit surrounding said central conduit and arranged to receive a second heat-exchange fluid, a plurality of heat-transfer fins extending radially of said central conduit and into said annular conduit, means for delivering heat-exchange fluid to said central conduit, a first tube extending into said annular conduit at one end thereof and having a discharge outlet near the opposite end of said annular conduit, and a second tube extending into said annular conduit at said opposite end and having an intake opening adjacent said one end whereby fluid entering said annular conduit through said first tube will move rearwardly over said fins as it moves toward the intake opening of said second tube.

4,281,711

**APPARATUS FOR POSITIONING A LINER ON A TUBULAR MEMBER IN A WELL BORE WITH A RETRIEVABLE PACK OFF BUSHING THEREBETWEEN**  
Britt O. Braddick, Houston, and Hiram E. Liodsey, Midland, both of Tex., assignors to Texas Iron Works, Inc., Houston, Tex.

Division of Ser. No. 440,714, Feb. 8, 1974, Pat. No. 3,920,075.  
This application Mar. 5, 1975, Ser. No. 555,691

Int. Cl.<sup>3</sup> E21B 33/14

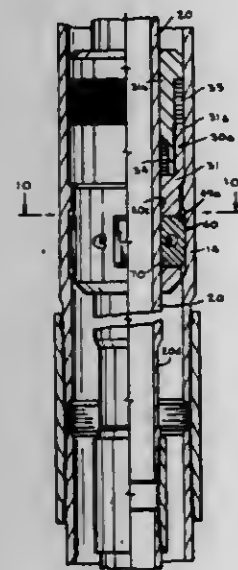
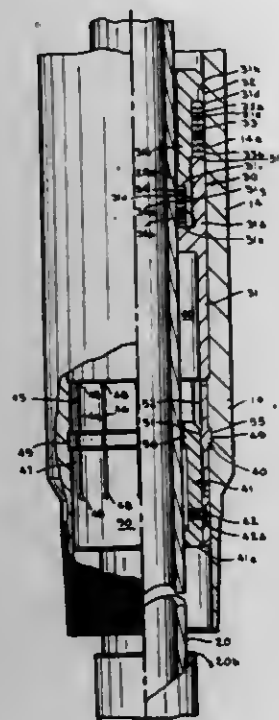
U.S. Cl. 166—118

25 Claims

14. Apparatus for cementing a liner in a well bore including: (a) a setting string which extends longitudinally in the liner; (b) seal means releasably locked to the liner and sealingly engaging between said setting string and liner permitting at least limited axial movement of said setting string without movement of said seal means; and (c) cooperating means on said seal means, setting string and the liner to releasably lock said seal means against axial displacement while accommodating limited axial move-



ment of said setting string, said cooperating means operable upon predetermined longitudinal movement of the



setting string to unlock said seal means from the liner for removal with said setting string from the well bore.

4,281,712

#### MINIMIZING CLAY AND SHALE DAMAGE IN A LOG-INJECT-LOG PROCEDURE

Robert P. Murphy, Bixby, and Frank O. Jones, Jr., Tulsa, both of Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jan. 13, 1980, Ser. No. 159,254  
Int. Cl.<sup>3</sup> E21B 47/00, 49/00

U.S. Cl. 166—250

9 Claims

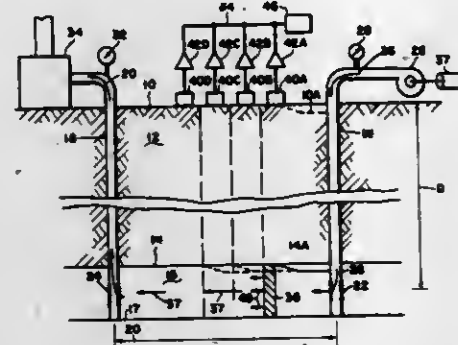
2. A method for minimizing shale and clay damage to a subsurface zone during a log-inject-log procedure of said zone, said zone containing oil and water and being penetrated by a wellbore, comprising:

- running a pulsed neutron log,
- injecting an aqueous salt solution into said zone from said wellbore, said salt comprising at least 1000 ppm of said solution, whose cation is selected from a group consisting of potassium and ammonium and whose anion has no constituents having a thermal neutron capture cross section more than about  $0.6 \times 10^{-24}$  cm<sup>2</sup>, and
- running a pulsed neutron log.

4,281,713  
**METHOD AND APPARATUS FOR MONITORING THE POSITION AND MOVEMENT PROGRESS OF THE FLAME FRONT IN AN UNDERGROUND COMBUSTION**  
Milton D. Wood, Portola Valley, Calif., and Daniel Silverman, Tulsa, Okla., assignors to M. D. Wood, Inc., Palo Alto, Calif.  
Filed Jul. 9, 1979, Ser. No. 56,064  
Int. Cl.<sup>3</sup> E21B 43/243, 47/00

U.S. Cl. 166—251

15 Claims



1. In a system for monitoring the progress of the flame front in an underground combustion operation, wherein the combustion takes place in a selected subsurface geological formation F, in which the overburden above said formation F is supported in part by the combustible material within said formation F, the method of monitoring the position and progress of said flame front, comprising:

- providing at least a first well drilled to the depth of said formation F, in which said combustion is to be initiated;
- providing at least a second well, spaced from said first well, to said formation F, through which products of said combustion can be brought to the surface;
- providing a source of combustion air to said first well at a selected super atmospheric pressure;
- positioning a plurality of tilt meters, at or near the surface of the earth, in at least one selected spaced array, between said first and second wells;
- igniting said combustible material in said formation F, at said first well, to provide a flame front; whereby, as said combustible material is burned, under the pressure of said combustion air, said flame will progress outwardly from said first to said second well; and a portion of the overburden will slump inside of the flame front;
- recording the output of said tilt meters as a function of time during the progress of said flame front past the position of at least one of said tilt meters; and
- determining the angle of tilt of the surface of the earth in the direction of down toward said first well, in the vicinity of at least one of said tilt meters.

4,281,714

#### LITHIUM SALTS AS ADDITIVES IN PETROLEUM RECOVERY PROCESSES

Lawrence E. Whittington, Katy, and Warren C. Haltmar, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.  
Filed Oct. 26, 1979, Ser. No. 88,682  
Int. Cl.<sup>3</sup> E21B 43/22

U.S. Cl. 166—274

5 Claims

1. In a surfactant flooding process for recovering petroleum from a subterranean petroleum reservoir wherein the reservoir is penetrated by at least one injection well and at least one production well, said wells being in fluid communication with said formation, wherein the process comprises the steps of injecting an aqueous surfactant solution through the injection well into the reservoir, forcing the surfactant solution through the reservoir and recovering petroleum from the production well, the improvement for reducing the amount of surfactant retained by the formation comprising:

- injecting into the reservoir, prior to the injection of the aqueous surfactant solution, an aqueous solution contain-

ing an amount of lithium chloride effective for reducing surfactant retention by the formation.

4,281,715

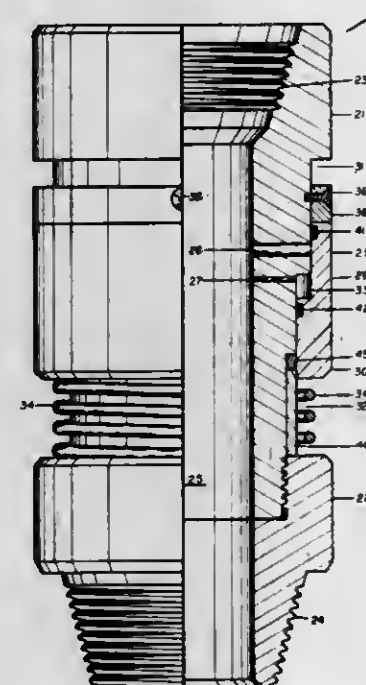
#### BYPASS VALVE

David L. Farley, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed May 16, 1979, Ser. No. 39,488  
Int. Cl.<sup>3</sup> E21B 47/00

U.S. Cl. 166—317

2 Claims



1. An apparatus for use in a well testing string extending from the surface to a formation to be tested, said apparatus comprising:

- a tubular housing having an interior bore therethrough and a port through the walls thereof;
- a sliding sleeve member disposed in a first normally closed position for blocking said port and operable to a second open position for opening said port for allowing fluid to flow from the interior bore to the exterior of said apparatus, said sliding sleeve member having a differential piston exposed on one side to the pressure in the interior bore and on the other side to pressure exterior of the apparatus for moving said sliding sleeve member to the second open position when the interior bore pressure exceeds the exterior pressure and for moving said sliding sleeve member to the first normally closed position when the exterior pressure is higher than the interior pressure;
- spring means for urging said sliding sleeve member to the first normally closed position;
- a frangible stop means impinged upon by said sliding sleeve member in the first normally closed position arranged for stopping said sliding sleeve member between a first normally closed position and a third locked closed position and for allowing said sliding sleeve member to move to the second open position; and
- a locking means for locking said sliding sleeve member in the third locked closed position after said sliding sleeve member shears said frangible stop means and moves to said third locked closed position.

4,281,716

#### FLEXIBLE WORKOVER RISER SYSTEM

Johnce E. Hall, Kingwood, Tex., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 13, 1979, Ser. No. 65,793  
Int. Cl.<sup>3</sup> E21B 34/04

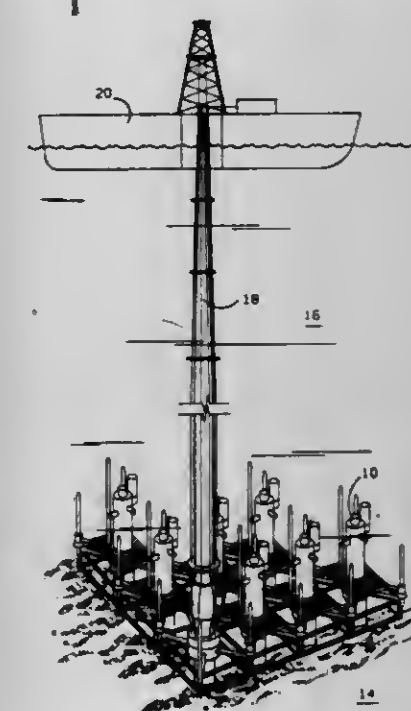
U.S. Cl. 166—339

7 Claims

1. A method of performing operations in a selected subsea well from a platform floating on a body of water over a group of subsea wells which are produced through a production riser

means to a production facility on said platform which comprises:

- providing a flexible workover riser on said platform,
- establishing a vertical, flexible workover riser channel through said platform at a location remote from the passage through which said production riser means extends, said riser channel being free of contact with the bottom of said body of water,
- providing vertical access to a selected tubing of said selected subsea well,



- running said flexible workover riser through said vertical flexible workover riser channel and into open water below said platform and connecting the lower end of said workover riser to said subsea well to provide access through said flexible workover riser into the production tubing of said well, and
- conducting operations through said connected flexible workover riser.

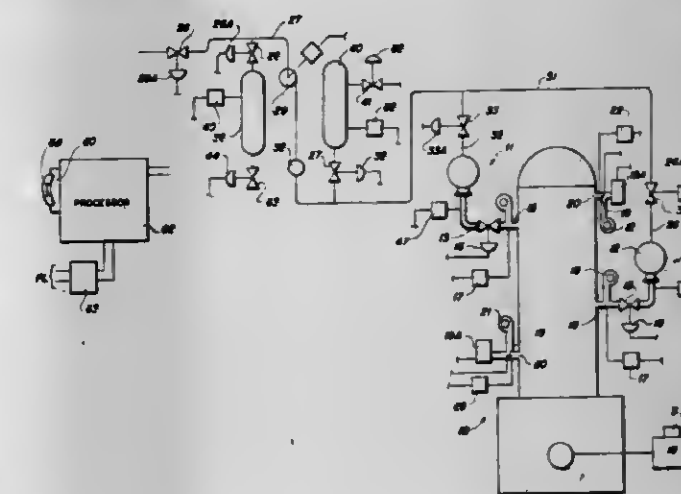
4,281,717

#### EXPLOSION SUPPRESSION SYSTEM FOR FIRE OR EXPLOSION SUSCEPTIBLE ENCLOSURES

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124  
Filed Oct. 25, 1979, Ser. No. 87,828  
Int. Cl.<sup>3</sup> A62C 37/06

U.S. Cl. 169—20

10 Claims



1. In a safety system for apparatus operating to reduce waste material and having a chamber in which waste material is reduced, the combination therewith of: a container for a pressurized protective agent connected to said chamber by a conduit; a normally closed valve in said conduit withholding said



pressurized protective agent from the chamber; pressure responsive means connected to said conduit between said closed valve and said container for monitoring the pressure existing in said container; a source of pressurizing medium; a source of protective agent; conduit means connecting said pressurizing medium source and said protective agent source to said container; flow control valve means in said conduit means operable for permitting the transfer of said pressurizing medium and protective agent to said container; and central control means operably connected to each of said normally closed valve, pressure responsive means and said flow control valve means for admitting pressurizing medium to said container, said normally closed valve retaining the pressurizing medium in said container at a predetermined pressure, subsequently admitting protective agent to said container to be subjected to pressurization by said medium, and monitoring the response of said pressure responsive means upon admitting of said agent for operating said flow control valve means to closed position upon attaining a rise in pressure in said container of a predetermined amount.

4,281,718

# METHOD OF RELEASING A SPRINKLER, AND A SPRINKLER HEAD ADAPTED TO THE METHOD

Lennart Claussen, and Tore Boberg, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

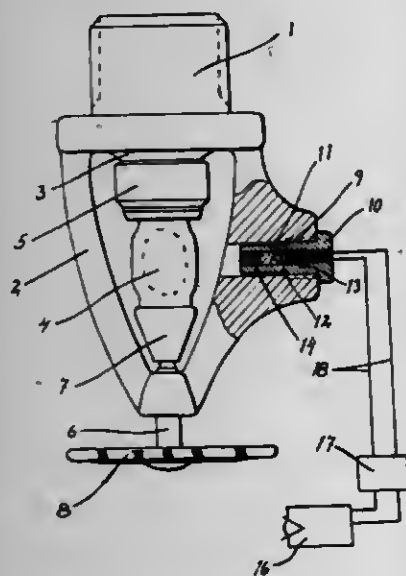
Filed May 16, 1979, Ser. No. 39,525

Claims priority, application Sweden, Nov. 23, 1977, 7713209

Int. Cl.<sup>3</sup> A62C 37/08

U.S. Cl. 169-41

6 Claims



1. A method for releasing a fire-protection sprinkler of the type comprising a sprinkler head in which a frangible element normally prevents escape of the extinguishing medium through the sprinkler head, comprising the steps of:  
providing a compacted body of fine, non-explosive particles by compressing separate particles to form a coherent body in which the separate particles retain their identity; and  
impelling said compacted body into contact with said frangible element upon detection of conditions indicating the presence of a fire, whereby said frangible element is shattered sufficiently to release said extinguishing medium and said compacted body is substantially entirely disintegrated into particles of such a size that danger due to flying particles is reduced at short distances from the sprinkler head.

## 4,281,719 SPRING LOADED FIELD CULTIVATOR TOOL SUPPORT

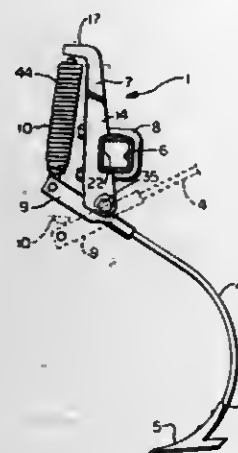
Kenneth A. Hake, and Nelson J. Palen, both of Tipton, Kans., assignors to Kent Manufacturing Co., Inc., Tipton, Kans.

Continuation-in-part of Ser. No. 87,016, Oct. 22, 1979. This application Nov. 13, 1979, Ser. No. 93,399

Int. Cl.<sup>3</sup> A01B 61/04

U.S. Cl. 172-710

7 Claims



1. A shank holder for pivotally connecting the shank of a spring cultivator tool to bracket means on an agricultural tool bar and for operative connection of said shank to tool biasing means for urging the tool toward ground engagement; said shank holder comprising in combination:

- (a) an elongated one-piece sheet metal channel-shaped shank holder member having a central web and downwardly depending side flanges;
- (b) first pivot means positioned medially along and connecting said holder member to said bracket means; said first pivot means allowing rotation of said holder member with respect to said bracket means about a first transverse horizontal axis of said holder member;
- (c) second pivot means connecting said biasing means to said holder member at a location spaced apart from said first pivot means; said second pivot means allowing relative rotation between said biasing means and said holder member about a second transverse horizontal axis of said holder member;
- (d) fastening means on a medial portion of said web for fastening said tool shank to said shank holder member such that movement of said shank longitudinally along said holder member is prevented; and
- (e) rearward lip portions of said side flanges being folded under said web to define a shank receiving socket; said lip portions being spaced apart from and generally parallel to each other and spaced rearwardly from said fastening means so as to allow access to said fastening means; said socket receiving said shank snugly therein and preventing transverse movement of said received shank relative to said holder member; and
- (f) wherein said second pivot means includes:
  - (a) a pivot pin member;
  - (b) a pivotal connector member adapted for attaching to said biasing means; said connector member including:
    - (1) a pair of coaxial trunnions each having an external cylindrical bearing surface thereon and being rotatable about said second axis; and wherein:
    - (2) said pivot pin member is coaxial with said trunnions and extends outwardly on each side of said pair of trunnions; and wherein:
- (g) said holder member includes:
  - (1) a cutout in the web of said holder member;
  - (2) said cutout defining a pair of transversely extending side shoulders projecting inwardly from said side flanges and providing clearance for pivoting said connector member with respect to said holder member;
  - (3) a pair of flange apertures; one of said aperture being

positioned in each of said side flanges respectively and receiving said pivot pin member; said apertures being coaxially aligned; and

- (4) said connector member pivoting on said pivot pin member relative to said shank holder member, each of said trunnion bearing surfaces engaging one of said transversely extending side shoulders respectively, thereby providing a bearing surface between said trunnions and said holder member, whereby additional strength is provided for the pivotal connection between said biasing means and said holder member and whereby said pivot pin member is less likely to wear on said flange apertures thus increasing the life expectancy of said shank holder.

4,281,720

## LIFT MECHANISM MOUNTED WITHIN HOLLOW MAIN TOOL BAR AND AUXILIARY TOOL BAR MOVED THEREBY

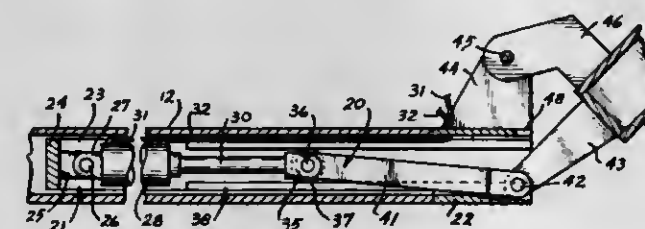
Arthur Tusing, P.O. Box 64, Dell, Ark. 72426

Filed Aug. 14, 1979, Ser. No. 66,588

Int. Cl.<sup>3</sup> A01B 73/00

U.S. Cl. 172-776

4 Claims



1. A lift mechanism mounted within a hollow main tool bar, an auxiliary tool bar, said lift mechanism being used to move said auxiliary tool bar out of axial alignment with said main tool bar, comprising a frame, said frame including a first portion of a size to be received within said main tool bar and a second portion having a cross-sectional configuration generally similar to the configuration of said main tool bar, means for removably attaching said frame to said main tool bar, fluid cylinder means mounted on said first portion of said frame, said fluid cylinder means having piston rod means with a free end extending toward said second portion of said frame, means on said frame for guiding said piston rod means along a path generally axially of said frame, support means carried by said second portion of said frame, means for pivotally mounting said auxiliary tool bar on said support means, said auxiliary tool bar having a tongue with a free end extending into said second portion of said frame when said main and auxiliary tool bars are generally axially aligned, and link means connected at one end to the free end of said piston rod means and connected at the other end to the free end of said tongue, whereby operation of said fluid cylinder means in one direction causes said piston rod means to be extended axially of said main tool bar and said link means causes said auxiliary tool bar to be moved out of axial alignment with said main tool bar.

4,281,721

## BULLDOZER BLADE MOUNTING ASSEMBLY

John H. Beales, Langley, Canada, assignor to Beales Steel Products Ltd., Langley, Canada

Filed Dec. 12, 1978, Ser. No. 968,685

Int. Cl.<sup>3</sup> E02F 3/76

U.S. Cl. 172-821

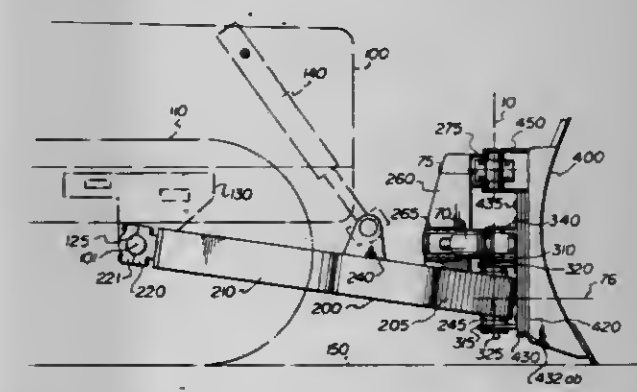
17 Claims

1. A mounting assembly for supporting a scraping tool forward of a vehicle, said assembly comprising:

- (a) a generally U-shaped mainframe comprising a forward end extending transversely between two substantially parallel spaced side arm members;
- (b) a swingframe;
- (c) first pivotal connection means interconnecting said swingframe to the forward end of said mainframe in a

location generally forward on said mainframe for enabling limited pivotal rotation on said swingframe in relation to an angling axis of rotation extending upwardly through said forward end substantially equidistant from said side arm members, said first pivotal connection means including a pivot pin extending through said forward end longitudinally along said angling axis;

- (d) second pivotal connection means interconnecting said scraping tool to said swingframe in a location forward of said swingframe for enabling limited pivotal rotation of said scraping tool in relation to a tilting axis of rotation extending in a plane substantially transverse to said angling axis of rotation, said second pivotal connection means including a pivot pin extending longitudinally along said tilting axis between said swingframe and said scraping tool, said tilting axis intersecting said scraping tool at a location centrally disposed widthwise of the tool;



- (e) tilt actuator means interconnecting said mainframe and said scraping tool for rotating said scraping tool in relation to said swingframe about said tilting axis, said tilt actuator means having a line of action between first and second ends of said tilt actuator means, said first end being pivotally supported at a location fixed in relation to said mainframe away from said tilting axis and substantially on said angling axis, said second end being pivotally supported at a location fixed in relation to said scraping tool disposed towards one side of said scraping tool;
- (f) angle actuator means interconnecting said mainframe and said swingframe for rotating said swingframe and said scraping tool in relation to said mainframe about said angling axis; and
- (g) support means for supporting said scraping tool in spaced relation with said swingframe while permitting limited rotation of said scraping tool in relation to said swingframe about said tilting axis.

4,281,722

## RETRACTABLE BIT SYSTEM

John D. Tucker, Cedar Falls; Ronald E. Cozad, Waterloo, and Robert A. Kaiser, Palmer, all of Iowa, assignors to Long Year Company, Minneapolis, Minn.

Filed May 15, 1979, Ser. No. 39,283

Int. Cl.<sup>3</sup> E21B 10/66, 10/02

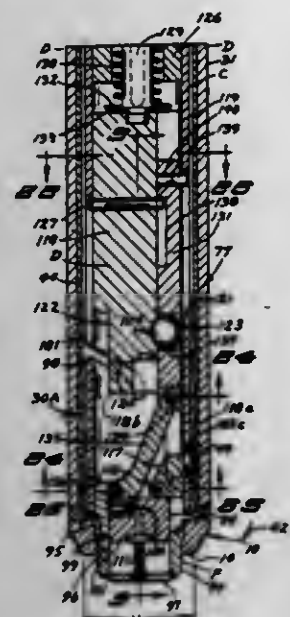
U.S. Cl. 175-57

113 Claims

4. A drill stem transverse outer barrel assembly comprising an outer barrel having a central axis, an axial outer end, an axial inner end, and an inner peripheral wall, a drill bit drive lug mounted on the outer barrel inner end to extend axially inwardly thereof, a locking sleeve rotatably mounted in the outer barrel and having an axial outer end portion and an axial inner end portion adjacent the outer barrel inner end, said locking sleeve inner end portion having a drill bit engageable locking portion, said outer barrel and locking sleeve having cooperat-



ing means for selectively retaining the locking sleeve in a drill bit engagable locking portion locked position relative the outer



barrel and a drill bit engagable locking portion unlocked position angularly spaced from the locked position.

4,281,723

## CONTROL SYSTEM FOR A DRILLING APPARATUS

Tibor O. Edmond, and Henry A. Bourne, Jr., both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Feb. 22, 1980, Ser. No. 123,540

Int. Cl.<sup>3</sup> E21B 7/08

U.S. Cl. 175-76

32 Claims

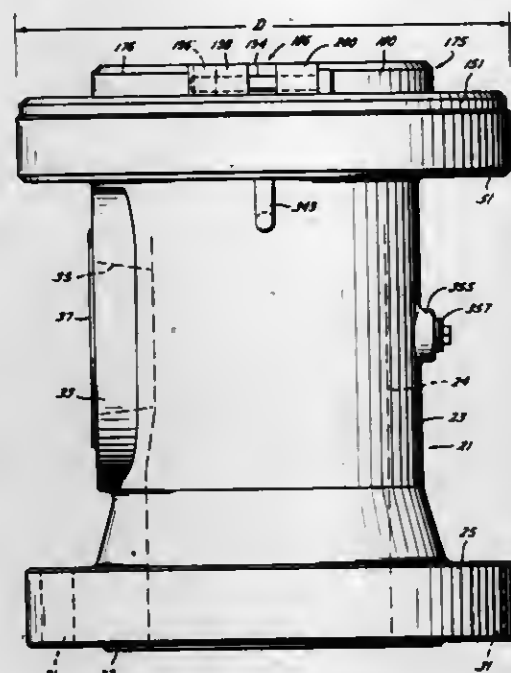


1. A deflection and guidance device for a drilling apparatus having a rotatable drill shaft extending from a power source through said device to a drill bit, comprising:

- an outer housing affixed to said power source and extending axially therefrom;
- an inner ring within said housing, said ring encompassing a portion of said drill shaft;
- an intermediate ring disposed between said outer housing and said inner ring and having an inner configuration such that said inner ring is immovable relative to said intermediate ring in a first direction and is prevented from rotating relative to said intermediate ring about an axis parallel to a second direction perpendicular to said first direction, and such that said inner ring is movable relative to said intermediate ring in said second direction, said intermediate ring being movable in said first direction relative to said outer housing and being prevented from rotating relative to said outer housing about an axis parallel to said first direction;

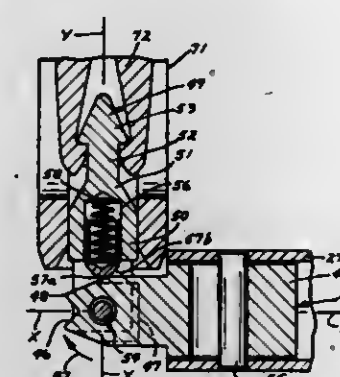
first positioning means adapted to position said intermediate ring relative to said outer housing in said first direction; and  
second positioning means adapted to position said inner ring relative to said intermediate ring in said second direction.

4,281,724  
DRILLING HEAD  
William R. Garrett, Conroe, Tex., assignor to Smith International, Inc., Newport Beach, Calif.  
Filed Aug. 24, 1979, Ser. No. 69,323  
Int. Cl.<sup>3</sup> E21B 3/04  
U.S. Cl. 175-195 50 Claims



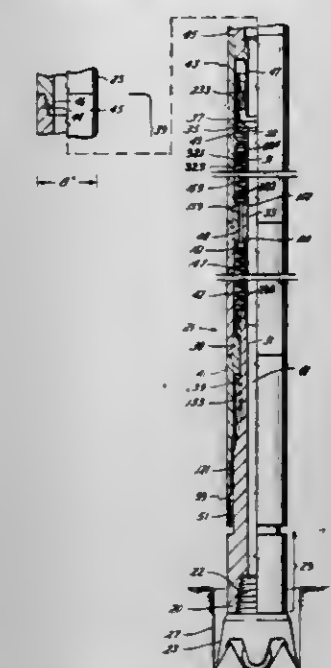
1. Drilling apparatus comprising:  
a stator including a tubular body with a radial flange at the lower end of the body adapted for connection to other drilling apparatus such as a blowout preventer, said stator having above said flange first bearing support means, said body having above said flange and below said first bearing support means a side flow port through the side wall of said tubular body with pipe connection means about said side flow port for connecting a flow pipe to said stator in communication with said side flow port;  
a rotor including a seal tube rotatably disposed in said stator, said tube having a non-circular socket, said rotor further including drive bushing means having a non-circular outer portion non-rotatably received in said socket and axially upwardly supported by said seal tube, said drive bushing means having an opening adapted to receive a drive tube such as a Kelly rotated by a rotary table or the top joint of a drill string rotated by a power swivel,  
said rotor further including second bearing support means; bearing means, carried by said first and second bearing support means, rotatably supporting said rotor by said stator,  
head seal means rotatably sealing between an outwardly facing surface of said rotor and an inwardly facing surface of the stator,  
said head seal means being below said drive bushing means and below said bearing means and above said side flow port, and  
string seal means carried by said seal tube adapted to seal between said seal tube and such drive tube below said head seal,  
said string seal means being below such drive bushing means and below said bearing means and extending downwardly into said tubular body to a level adjacent said side flow port,  
said bearing means comprising double acting anti-friction axial thrust bearing means concentrated adjacent a single plane transverse to the axis of said tubular body of the stator above said head seal means and string seal means, said pipe connection means and the rest of said apparatus lying within the cylindrical geometrical envelope centered on the axis of said bearing means which envelope lies just outside of the outer periphery of said flange.

4,281,725  
KNUCKLE JOINT SPEARHEAD CORE DRILLING APPARATUS  
Terry M. Runk, Stillwater, Minn., assignor to Longyear Company, Minneapolis, Minn.  
Filed Sep. 20, 1979, Ser. No. 77,350  
Int. Cl.<sup>3</sup> E21B 25/02  
U.S. Cl. 175-246 14 Claims



1. For core drilling apparatus, that includes a drill stem having a hollow bit end and a latch seat spaced from the bit end, an elongated core barrel inner tube assembly that includes means for collecting a core sample, a latch body connected to the core sample collecting means, detent means mounted by the latch body for movement between a latch seat engaging position and a retracted latch seat release position, release means for operating the detent means between the detent means latch seat engaging position and the latch seat release position, said release means being mounted on the latch body for axial movement relative thereto between an axial inner position that the detent means is extendable into the latch seat to latchingly engage the latch seat and an axial outer position that the detent means is retracted from the latch seat, and overshot coupling means attached to the release means for moving the release means between its positions, said coupling means including a base member, means for joining the base member to the release means, an overshot coupling member and means mounting the coupling member on the base member for movement about an axis transverse to the direction of axial movement of release means between its positions.

position over a range of such departures and like gradually and then sharply higher modulus upon increasing equal departures beyond said range upon further extension and contraction of the damper.



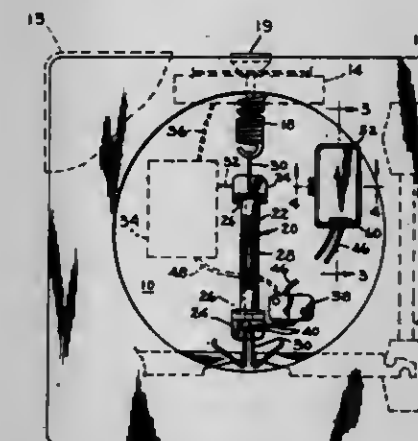
4,281,727  
ELECTRONIC SCALE AND BATTERY SUPPORT  
Fredrick T. Meeks, Asheboro, N.C., assignor to General Electric Company, New York, N.Y.

Filed Dec. 12, 1979, Ser. No. 102,874

Int. Cl.<sup>3</sup> G01G 19/44

U.S. Cl. 177-128

3 Claims



1. In a DC electronic digital platform scale having a base and movable cover thereover, a weight-responsive system in the base with electronic means connected to convert cover movement to a digital weight readout, a switch closed by cover movement activating said means and readout, and a battery supported in the base connectively wired to supply power through said switch and said means to indicate weight, an improvement in the battery support comprising,  
an opening through the base to its interior,  
a battery receptacle comprising a walled box peripherally supported by and extending totally within said base, said opening extending through a wall of said box for said wire connection,  
matching box cover means coplanar with the plane of said base and latchably securing thereto in said coplanar plane, said receptacle comprising a single integral molded plastic with said cover being attached thereto with a living hinge, whereby a battery is removably supported and connected in the receptacle within the base and accessible outside the scale through said cover.

4,281,726  
DRILL STRING SPLINED RESILIENT TUBULAR TELESCOPIC JOINT FOR BALANCED LOAD DRILLING OF DEEP HOLES

William R. Garrett, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed May 14, 1979, Ser. No. 38,674

Int. Cl.<sup>3</sup> E21B 17/07

U.S. Cl. 175-321

36 Claims

1. Rotary drill string damper comprising a splined, sealed, tubular, telescopic joint including resilient means increasingly strained upon both extension and contraction of the joint from a neutral position and having a like variable spring modulus upon both extension and contraction with a lowest modulus at the neutral position and nearly as low like modulus at equal departures from neutral position to both sides of the neutral



4,281,728

## VEHICLE PLATFORM SCALE

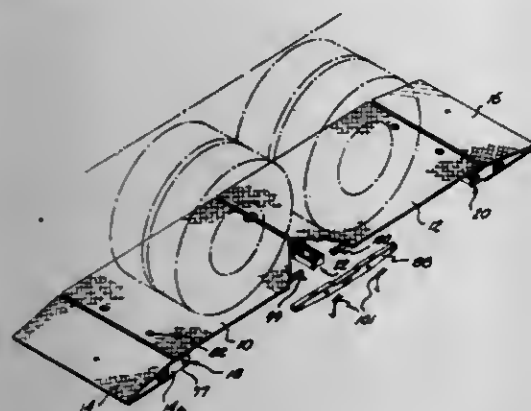
Allen D. Dickason, Seattle, and R. Laing Hildebrandt, Issaquah, both of Wash., assignors to Lodec, Inc., Lynnwood, Wash.

Filed Mar. 19, 1980, Ser. No. 131,665

Int. Cl.<sup>3</sup> G01G 19/02, 3/14

U.S. Cl. 177-134

10 Claims



1. A platform scale comprising a platform mounted on a load cell assembly, said load cell assembly including a deflectable load cell, a load cell tray and a pair of bearing rods, said load cell tray including substantially planar, spaced apart bearing rod support means, said load cell including a pair of transverse grooves spaced apart such that said load cell may be mounted in said load cell tray with said bearing rods engaged in said transverse grooves and bearing upon said planar support means for free rotational deflective motion upon downward deflection of said load cell between said bearing rods, said platform being mounted on said load cell assembly such that downward weight loads on said platform are transmitted to said load cell at points intermediate between said transverse grooves, said load cell further including strain transducer means affixed thereto for measuring downward deflection of said load cell upon a weight load being applied to said platform.

4,281,729

## MATERIAL WEIGHING AND BUCKET CHARGING APPARATUS

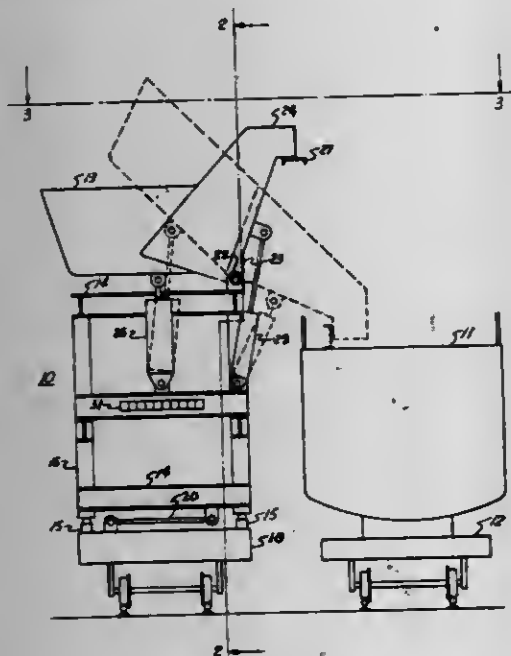
James E. Farley, 8832 Cupid Cir., North Canton, Ohio 44720, and Irvin R. Scarborough, Rte. 3, Box 88A, Andrews, S.C. 29510

Filed Aug. 23, 1979, Ser. No. 68,913

Int. Cl.<sup>3</sup> G01G 19/08, 23/00; B67D 5/64

U.S. Cl. 177-139

5 Claims



5. In combination: A tiltable hopper supported on a plurality of force transducers for measuring the weight of the hopper

and any material charged thereto; a chute designed to close the end of the tiltable hopper in the raised position and to bridge the horizontal space between the hopper and a material receiving bucket laterally disposed thereto in the lowered position; means of supporting the outboard end of the chute and simultaneously restraining the receiving bucket from movement; electromotive means of raising and lowering the chute; electromotive means of tilting the hopper; weight computing, recording and displaying means coupled to the force transducers.

4,281,730  
SCALE

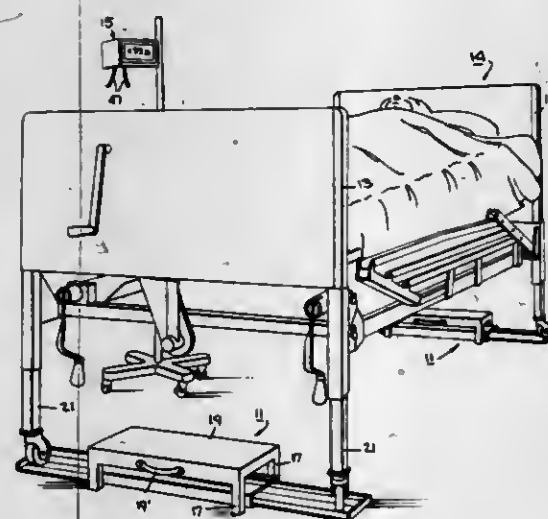
Burt L. Swerney, 152 Edgemont Rd., and Peter Fried, 17 Hearthstone Cir., both of Scarsdale, N.Y. 10583

Filed Jan. 15, 1980, Ser. No. 112,224

Int. Cl.<sup>3</sup> G01G 19/52

U.S. Cl. 177-144

13 Claims



1. A scale comprising a support frame; a load frame to receive a load thereon; a pair of displacement transmitting members disposed at opposite ends of said support frame; a plurality of load flexures, each flexure connecting said load frame to a respective member to transfer the weight of a load on said load frame to said member; a plurality of support flexures connecting each member to said support frame to permit each member to pivot under an applied weight of a load on said load frame; a pair of beams arms, each arm being secured to a respective member to pivot about a horizontal axis in response to movement of said load frame; a pair of springs, each spring being mounted on said support frame and secured to each beam arm to proportionally restrain movement of each respective beam arm relative to said support frame; and a pair of means mounted on said support frame for emitting a signal corresponding to the displacement of a respective beam arm relative to said support frame.

4,281,731

## ELECTROMAGNETIC FORCE-COMPENSATING PRECISION WEIGHER WITH DITHER

Walter Södler; Dieter Blawert, both of Göttingen, and Jürgen Ober, Hardegsen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Göttingen, Fed. Rep. of Germany

Filed May 8, 1980, Ser. No. 148,013

Claims priority, application Fed. Rep. of Germany, May 12, 1979, 2919227

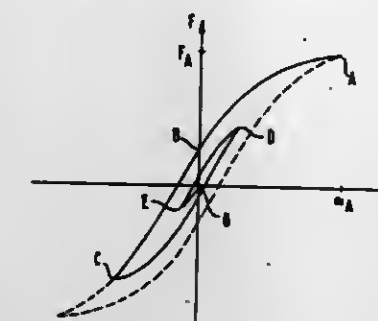
Int. Cl.<sup>3</sup> G01G 7/00, 3/08

U.S. Cl. 177-212

10 Claims

1. An electromagnetic force-compensating precision weigher, comprising:

a load picking-up device supported by means of metallic resilient joints and vertically movable between stops; and



electric means connected with the load picking-up device imposing a slowly dying-out mechanical oscillation upon the load picking-up device and reducing the spring hysteresis of the resilient joints.

4,281,733  
MOTOR TRUCK HOOD OPENING DAMPER RESTRAINT

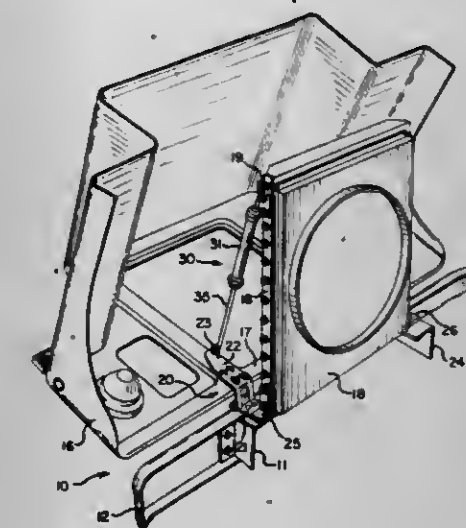
James Miller, Walter E. Elfried, and Jay P. Hacker, all of Fort Wayne, Ind., assignors to International Harvester Company, Chicago, Ill.

Filed Sep. 17, 1979, Ser. No. 76,109

Int. Cl.<sup>3</sup> B62D 25/10

U.S. Cl. 180-69 C

4 Claims



1. A motor truck hood opening damper restraint, comprising:

a motor truck frame;  
a motor truck hood;  
a hood hinge means having a stationary part mounted on the frame and a swingable part swingable about a hinge axis mounted to a lower forward inside portion of the hood for tilting the hood forwardly and downwardly from a closed position to an open position;  
an upright beam means having a lower end fixed to the frame; and  
a hydraulic dampening means having a cylinder pivotally mounted at one end to an upper end of the upright beams means and a piston slidably mounted in the cylinder and having a piston rod extending axially outwardly from a second end of the cylinder and pivotally connected to the swingable part of the hinge means and swingable therewith, the cylinder and piston rod extending substantially vertically in the closed position of the hood, the cylinder partially filled to a predetermined level with a hydraulic fluid and the piston rod holding the piston above the predetermined level of hydraulic fluid in the closed position of the hood, the partially filled cylinder permitting unrestricted speed of travel of the hood up to an overcenter balance point of the hood with respect to the hinge axis at which point the piston rod swinging with the swingable part of the hinge means pulling the piston downwardly into the hydraulic fluid at the predetermined level and restricting the speed of travel of the hood forwardly past the overcenter balance point to the fully opened position.

4,281,734

## MULTI-FUNCTION CONTROL SYSTEM

Gary D. Johnston, 1801 Arcioeiga, Clovis, N. Mex. 88101

Filed Oct. 29, 1979, Ser. No. 89,194

Int. Cl.<sup>3</sup> B62D 1/24, 11/04

U.S. Cl. 180-167

2 Claims

1. An apparatus for controlling the direction and speed of a vehicle in response to head movements of an operator, comprising in combination;  
a mirror for mounting on the head of the operator;  
a housing;  
means for attaching the housing to the vehicle, the housing forming an opening facing toward the mirror when the head of the operator is in the normal forward position;

4,281,732  
TWO-STAGE DEADMAN CONTROL FOR WALK-BEHIND MOWER

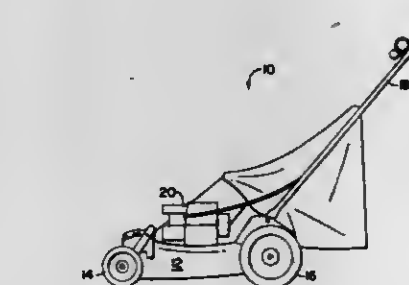
John J. Hoch, Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.

Filed Jan. 22, 1979, Ser. No. 5,133

Int. Cl.<sup>3</sup> B62D 15/04

U.S. Cl. 180-19 H

4 Claims



1. In combination with a self-propelled, walk-behind implement having a main frame and an upwardly and rearwardly extending guide handle fixed to the frame, a two-stage control mechanism adapted for operating a normally spring-disengaged traction drive clutch, comprising: a clutch control lever, in the form of a flat bar, adapted for connection to the clutch and pivotally mounted on the handle for movement along a predetermined path between clutch-release and clutch-engagement positions; a deadman control lever including a cantilevered spring metal strap bent to form a detent having a ramp at its free end, the deadman control lever being pivotally mounted on the handle for movement between a lever-release position, wherein the spring metal strap is clear of said path, and a lever-holding position wherein the ramp of the spring metal strap is disposed in the path and blocks movement of the clutch control lever from its clutch-engagement position, whereby the clutch control lever may be moved to its clutch-engagement position after the deadman control lever is moved to its lever-holding position by engaging the ramp and deflecting the spring metal strap; and biasing means connected between the handle and the deadman control lever and urging the latter towards its lever-release position.



a light source within the housing for shining substantially perpendicular to the mirror when the head of the operator is in the normal forward position;  
means within the housing for sensing the light reflected by the mirror, for responding to the different components of movement of the mirror, and providing command signals operatively related to the particular directional components of movement of the mirror; and



a control circuit including an input responsive to the output signals of the light sensing means, means responsive to the input for processing signals, and an output responsive to the means for processing signals;  
wherein the control circuit output signals provide the signals for controlling the direction and speed of the vehicle.

4,281,735

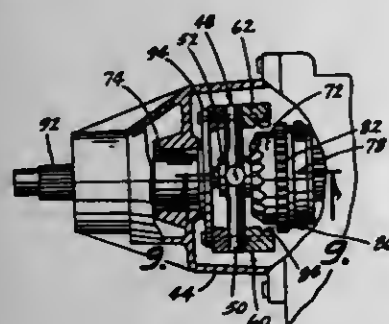
# APPARATUS AND METHOD FOR CONVERTING A FULL-TIME FOUR-WHEEL DRIVE TRANSFER CASE FOR PART-TIME OPERATION

Greg T. Sloma, 1206 S. 116th Ave., Omaha, Nebr. 68144  
Filed Sep. 26, 1979, Ser. No. 79,071

Int. Cl.<sup>3</sup> B60K 17/34

U.S. Cl. 180-247

5 Claims



1. A method of converting a full-time four-wheel drive transfer case for part-time four-wheel drive operation wherein said transfer case includes a housing, forward input shaft rotatably supported within said housing and having a front wheel drive gear rotatably supported thereon, a rearward output shaft rotatably supported in said housing and having a rear wheel drive gear secured thereon, a differential assembly interconnecting said input and output shafts and including a cross mounted on a rearward portion of said input shaft for rotation therewith, a plurality of spider gears rotatably carried on said cross and disposed in engagement with said front and rear wheel drive gears, and an annular spider housing surrounding said cross and secured thereto for rotation therewith, a sliding lock clutch slidable on said input shaft and connected to said front wheel drive gear for rotation therewith, said spider housing and sliding lock clutch including coacting gear means which are selectively engageable and disengageable in response to sliding movement of said lock clutch to respectively couple and uncouple said front wheel drive gear and spider housing,  
said method comprising the steps of  
removing said rearward output shaft and spider gears, con-

necting a substitute rearward output shaft means to said annular spider housing for full-time rotation in unison, whereby said coacting gear means of said spider housing and sliding lock clutch are engageable and disengageable in response to sliding movement of said lock clutch to selectively connect said front wheel drive gear to said spider housing for part-time four-wheel drive operation.

4,281,736

# METHOD AND APPARATUS FOR AUTOMATICALLY APPLYING AND RELEASING AUTOMOTIVE TYPE PARKING BRAKES

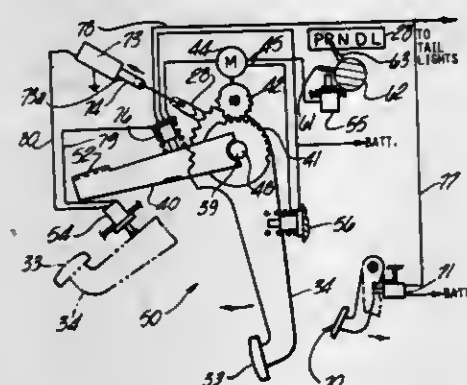
Vincent P. Lizzio, 45 Moorland Dr., Grosse Pointe Shores, Mich. 48236

Filed Apr. 16, 1979, Ser. No. 30,695

Int. Cl.<sup>3</sup> B60K 41/26

U.S. Cl. 180-271

12 Claims



5. In combination in a vehicle equipped with a transmission and a selector lever for said transmission, a parking brake having a brake pedal arm and a service brake, an apparatus for automatically applying the parking brake on said vehicle when the transmission thereof is placed in a first predetermined position, said apparatus including means activated by said selector lever to cause said parking brake to be automatically applied when said selector lever is placed in a first predetermined position, means to cause said parking brake to remain applied when said selector lever is removed from said first predetermined position to a second predetermined position, and means to automatically release said parking brake of said vehicle when said service brake is applied simultaneously or subsequently to placing said lever in said second predetermined position, but prior to said vehicle resuming motion.

4,281,737

# BRAKING AND SPEED CONTROL SYSTEM

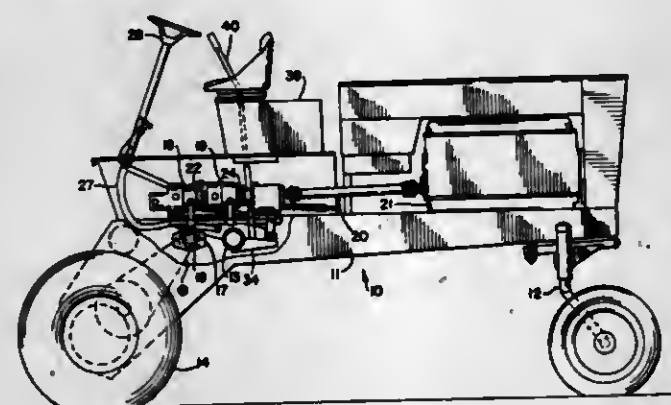
Herbert W. Molzahn, Hamilton, Canada, assignor to International Harvester Company, Chicago, Ill.

Filed Dec. 26, 1979, Ser. No. 106,982

Int. Cl.<sup>3</sup> B60K 41/26

U.S. Cl. 180-307

2 Claims



1. A vehicle comprising:  
a frame;

a pair of drive wheels supporting said frame;  
a pair of hydrostatic drive units respectively for each of said drive wheels including a variable displacement pump and a hydraulic motor driven thereby and a control arm pivoted on each pump for varying the output thereof to its respective motor;  
pump speed control means operatively associated with both of said control arms for effecting simultaneous movement thereof in the same direction between neutral and forward positions;  
a manually operated speed control lever pivoted on said frame and having forward and neutral positions;  
means associated with said frame for fixing said speed control lever in a selected forward position;  
first spring-biased lost motion connecting means interconnecting said pump speed control means and said speed control lever in such a manner that said pump speed control means is normally biased to a forward speed position upon said speed control lever being in a forward position;  
brake means associated with said drive wheels for effecting simultaneous braking thereof, said brake means including a manually operated brake control linkage operatively associated therewith;  
an override link interconnecting said brake control linkage and said pump speed control means, said override link having a second lost motion connection with said pump speed control means so disposed that upon said brake control linkage being in a normal unbraked position, said second lost motion connection permits said pump speed control means to operate unhindered throughout its entire range of positions in response to operator movement of said speed control lever and upon said brake control linkage being actuated to brake said drive wheels with said speed control lever fixed in a forward position, said pump speed control means is returned to its neutral position overcoming said first spring-biased lost motion connection.

4,281,738

# SPHERICAL LOUDSPEAKER ENCLOSURE

Michael Jackson, 4524 N. 35th Pl., Phoenix, Ariz. 85018

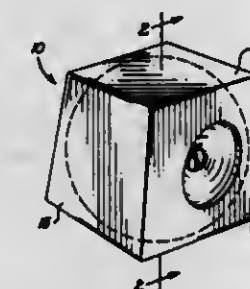
Continuation of Ser. No. 896,695, Apr. 17, 1978, abandoned.

This application Dec. 26, 1979, Ser. No. 107,153

Int. Cl.<sup>3</sup> H05K 5/00

U.S. Cl. 181-151

8 Claims



1. An enclosure and loudspeaker combination comprising a molded foamed plastic shell having a hollow interior, the inner surface of which is porous and each cross section of which is a continuous curve, and having an aperture therethrough for mounting a loudspeaker of complementary dimensions to the dimensions of such aperture; and means for attaching said loudspeaker in said aperture to seal said aperture; the diameter of said loudspeaker and its limits of mechanical excursion being matched to the volume V of the interior of said shell according to the formula:

$$V = [MD]^3$$

where M is the distance between the limits of the mechanical excursion of the diaphragm of said loudspeaker and D is the diameter of the loudspeaker; so that pressure changes caused

by excursions of the diaphragm of said loudspeaker are equalized on the interior of said shell.

4,281,739

# DAMPING BODY FOR MACHINE SUPPORT ARRANGEMENTS

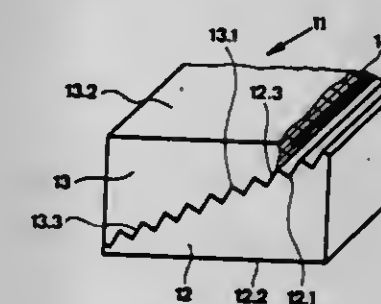
Emil Keiser, Ebikon, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Apr. 7, 1980, Ser. No. 138,154

Claims priority, application Switzerland, May 18, 1979, 4654/79

U.S. Cl. 181-207

3 Claims



1. A damping body for machine support arrangements comprising:

at least two superimposed substantially wedge-shaped partial bodies formed of elastic damping material and defining two substantially parallel and mutually oppositely situated support surfaces respectively serving for supporting a machine mount base and bearing upon a machine pedestal; said wedge-shaped partial bodies containing separation surfaces, disposed in nonparallel relationship with respect to said support surfaces;  
said wedge-shaped partial bodies being shiftable relative to one another along said separation surfaces in the unloaded condition of said damping body; and  
at least one of said partial bodies being provided with a metallic plate member embedded in said elastic damping material in a position substantially parallel to said support surfaces defined by said wedge-shaped partial bodies of the damping body, to dampen or reflect sonic energy.

4,281,740

# MUFFLER

William R. Weiss, Walnut Creek, Calif., and Lee E. Remy, Colonial Heights, Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jul. 9, 1979, Ser. No. 55,729

Int. Cl.<sup>3</sup> F01N 1/04

U.S. Cl. 181-250

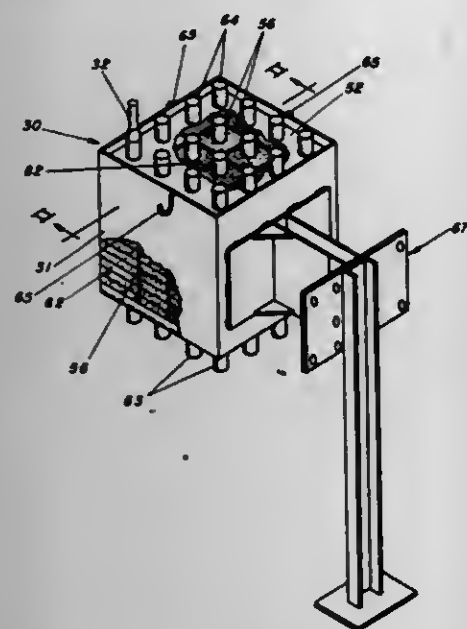
13 Claims

1. A muffler for use in conjunction with a plurality of aspirator exhaust tubes during the production of multifilament synthetic yarn, said muffler comprising:

- a housing;
- a partition located within and subdividing said housing into a plurality of discrete chambers;
- a plurality of perforated tubes through which the yarn travels, one per said chamber, which passes through said chamber to communicate with the exterior or said hous-



ing, each of said tubes forming in conjunction with said partition and said housing a resonant cavity; and



d. sound absorbing material disposed throughout each of said resonant cavities.

4,281,741

### COMPACT EXHAUST SILENCER FOR DIESEL LOCOMOTIVES

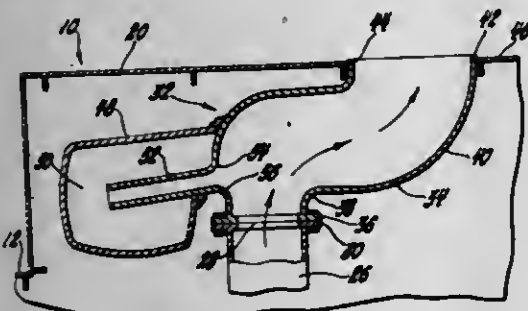
Dwight A. Blaser, Sterling Heights, Mich., and David J. Goding, Willow Springs, Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 1, 1979, Ser. No. 80,475

Int. Cl.<sup>3</sup> F01N 1/02

U.S. Cl. 181-250

5 Claims



1. A compact exhaust silencer for use with diesel locomotives of the type having a single elongated exhaust outlet with limited clearance space from the outlet to the locomotive body wall, said silencer comprising:

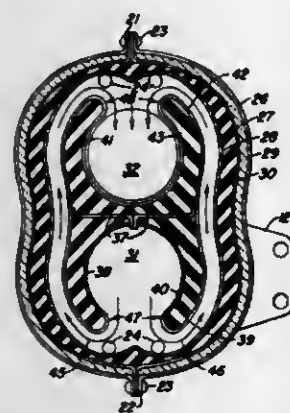
- a mounting base connectable to the exhaust outlet and defining an opening of greater length than width,
- a close coupled duct member with two oppositely curving sharply angled bends extending from said base to an outlet opening spaced axially from the base and to one side thereof in the direction of the narrow sides of the base, said duct bends providing broadband reduction of high frequency exhaust noise by forming an indirect path for sound propagation to the outlet,
- a compact Helmholtz resonator chamber disposed along the side of said duct opposite to said one side toward which the outlet is offset, and
- a connector pipe opening through said opposite duct side near the base and extending into said chamber in a direction generally opposite the direction of offset of the main duct to encompass a mass of gas tuned to the volume of said chamber to dampen exhaust noise at a desired frequency for maximum silencing effect under predetermined operating conditions.

4,281,742  
SILENCER FOR EXHAUST GASES  
Albert Scheuermann, Bad Mergetheim, and Henning Adickes, Heidelberg, both of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.  
Filed Mar. 10, 1980, Ser. No. 128,823  
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930775

Int. Cl.<sup>3</sup> F01N 1/10

U.S. Cl. 181-257

10 Claims



1. A silencer for handling the flow of exhaust gases from an engine which comprises:

- (a) a tubular housing having an absorption section with an inlet and an outlet opening communicating therewith, said absorption section comprising an outside wall, a middle wall and a perforated inside wall with a layer of heat insulating material positioned between said outside wall and said middle wall and a layer of sound absorption material positioned between said perforated inside wall and said middle wall;
- (b) two symmetrical members aligned parallel to each other within said absorption section, each of said members having an inner wall and an outer wall with a layer of sound absorption material positioned therebetween;
- (c) attachment means for joining said two symmetrical members together approximately at their midpoints thereby forming a hollow tubular inlet connector and a hollow tubular outlet connector, said hollow tubular inlet connector having an axis aligned parallel to both the axis of said hollow tubular outlet connector and to the axis of said absorption section, said inlet connector communicating with said inlet opening and having a longitudinally extending slot provided therein, said outlet connector communicating with said outlet opening and having a longitudinally extending slot provided therein aligned opposite said longitudinal slot in said inlet connector; and
- (d) two separate flow passages formed by the inside wall of said absorption section and the outer walls of said inlet and outlet connectors, said flow passages connecting said longitudinally extending slot of said inlet connector to said longitudinally extending slot of said outlet connector for directing the flow of said exhaust gases therebetween.

4,281,743

### INSULATING ENCLOSURE FOR DISAPPEARING STAIRWAY

George C. Fuller, 905 Brookfield Pkwy., Roswell, Ga. 30075  
Filed Nov. 23, 1979, Ser. No. 97,035

Int. Cl.<sup>3</sup> E06C 9/08

U.S. Cl. 182-46

10 Claims

1. A knockdown enclosure for insulating a pull-down stairway of the type set in a ceiling, comprising:
- a generally rectangular box having a closed top, an open bottom, and closed sides and ends and dimensions of length and width sufficient to fit over and enclose an air space over the pull-down stairway from above the ceiling; said box comprising a number of box segments that fit to-

gether with overlapping joints so as to reduce heat transfer through the joints; and



said box segments being made of material that is a good thermal insulator so as to minimize heat transfer through the box between the air space and the surrounding space above the ceiling.

4,281,744

### ROTARY WHEELCHAIR LIFT APPARATUS

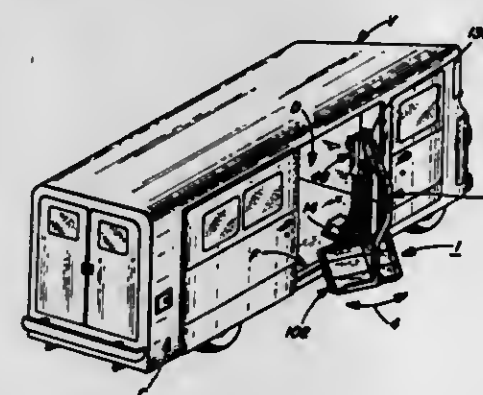
Charles F. Koerber, 8905 Mentor Ave., Mentor, Ohio 44060

Filed Mar. 8, 1979, Ser. No. 18,640

Int. Cl.<sup>3</sup> B66B 9/20

U.S. Cl. 187-9 R

4 Claims



1. A rotary wheel chair lifting apparatus for lifting a user into and out of a vehicle of the type having a side door opening, such as a van, recreational vehicle, or the like, the lifting apparatus including:

- a support column adapted to be mounted adjacent said door opening;
- said support column constructed to have a polygonal cross-sectional configuration;
- a drive means for rotating said support column about a vertical axis, including a drive motor with drive gear means driving a gear means attached adjacent the lower end of said support column;
- a carriage assembly mounted for rolling engagement on said support column,
- the carriage assembly including a carriage member having at least two oppositely disposed generally V-shaped rollers, each roller engaging two adjacent surfaces of said support column;
- the V-shaped rollers being of a configuration and location within said carriage member as to control;
- a frame structure including a support platform mounted on said carriage assembly for receiving a wheelchair;
- a drive screw means for raising and lowering said support platform in a vertical direction including an elongated screw member disposed in driven relationship with a screw drive motor attached to the upper end of said screw member, and a threaded engaging portion attached to said support column and said carriage assembly for

raising and lowering said support platform upon actuation of said screw drive motor;

said support platform having a forward stop means including a resiliently biased support member adapted for reciprocal movement upon engagement with wheels of said wheelchair;

said support platform having a rear stop means including a hinged stop operably associated with a cable and pulley means for the automatic raising and lowering of said stop means upon raising and lowering of said frame structure, a control means on the frame for actuating the vertical and pivotal motion of said apparatus;

the V-shaped roller include a means by which engagement between the rollers and said support column may be adjusted thereby establishing play between said support column and said carriage member, and an adjustment screw threadably connected to one axle of the V-shaped roller, the axle protruding through slots in opposing roller mounting block surfaces and having bearing surfaces engaging the slots, the adjustment screw protruding through an aperture in a further carriage member face threadably engaging a tightening means such as a nut whereby the adjusting means is caused to move.

4,281,745

### BRAKE DISK FOR DISK BRAKES ON A RAIL VEHICLE

Xaver Wirth, Ismaning, Fed. Rep. of Germany, assignor to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

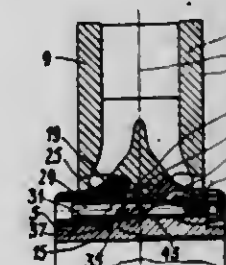
Filed Apr. 6, 1979, Ser. No. 27,883

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1978, 2828101

Int. Cl.<sup>3</sup> F16D 65/12

U.S. Cl. 188-218 XL

16 Claims



1. A brake disk for a disk brake on a rail vehicle comprising a hub having a first conical annular surface inclined at an angle of substantially 45° to a radial plane of said hub, a retainer ring positioned upon said hub and having a fourth conical annular surface inclined at said angle and said fourth conical annular surface spaced from said first conical annular surface, and annular braking element having at its inner peripheral portion a flange ring having second and third axially spaced parallel conical annular surfaces each inclined at said angle, and fastener means interconnecting said retainer ring and a portion of said hub to clamp said flange ring therebetween such that said first and third conical annular surfaces engage each other and said second and fourth conical annular surfaces engage each other but said flange ring is free of engagement with said hub, said flange ring being clamped against axial movement but capable of radially outward movement along the engaging conical surfaces because of any thermal expansion of the annular braking element while maintaining the centering of the annular braking element with respect to the hub.



4,281,746

## INCHING DEVICE

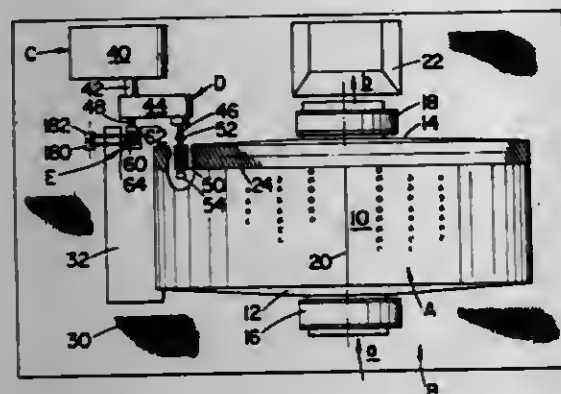
Wallace N. Thomas, Bay Village, Ohio, assignor to Pickands Mather & Co., Cleveland, Ohio

Filed Apr. 9, 1979, Ser. No. 28,069

Int. Cl.<sup>3</sup> B60K 67/00

U.S. Cl. 192—3 R

16 Claims



1. A hydraulic inching device for a grinding mill of the type having a grinding drum journaled for rotation about its longitudinal axis and drive means operably connected to said drum through a drive train for obtaining the desired rotation, said inching device comprising:

a hydraulic motor having a rotatably driven output shaft including means for allowing selective coaxial coupling thereof to a shaft in said drive train for selectively rotatably driving said drum in place of said drive means at a reduced rate of speed; a brake assembly operably associated with said hydraulic motor output shaft and which may be selectively placed in braking and non-braking conditions therewith for maintaining said drum in a predetermined rotated position; and, said brake assembly being controlled in a manner such that it may only be moved to said non-braking condition in response to hydraulic fluid charge pressure being supplied to said motor.

4,281,747

OVERRIDE LOCK ASSEMBLY FOR A DRIVING MEANS  
Fritz Knobel, Eanenda, and Gerhard Kuhn, Glarus, both of Switzerland, assignors to Ortopedia GmbH, Kiel, Fed. Rep. of Germany

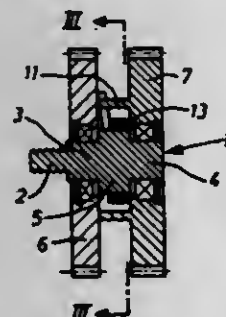
Filed Oct. 31, 1978, Ser. No. 956,991

Claims priority, application Switzerland, Nov. 4, 1977, 13472/77

Int. Cl.<sup>3</sup> B60T 7/12

U.S. Cl. 192—8 C

2 Claims



1. In an override lock assembly for a driving means, comprising a driving element means and a driven element means each including an unmovably arranged entraining means and being rotatably arranged side by side on a common fixed shaft means, an improvement comprising: a coiled coupling spring means wound around said shaft means being arranged between said driving element means comprises bent end sections extending laterally of said coiled spring and forming integral leg means, whereby said entrainment means of said driven element means, extends between said leg means and said entrainment

means of said driving element means overlaps said leg means such that, upon a synchronous relative movement of said driving element means and said driver element means, said coiled spring means moves freely together with such movement and said coiled spring means is positively positioned towards said fixed shaft means to thereby brake and decelerate said driving element means in response to unsynchronous movement between said driven element means and said driving element means.

4,281,748

## INDEXING AND SYNCHRONIZING CLUTCH MECHANISM

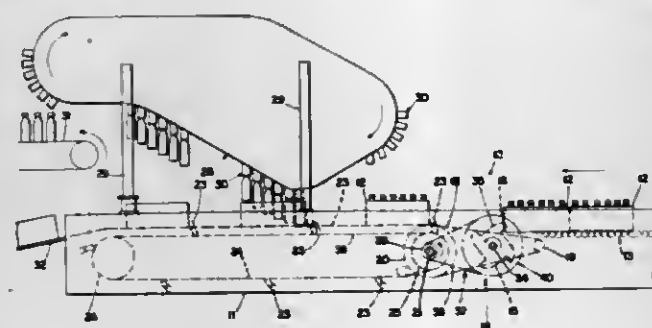
Michael E. Winiasz, 4009 Washington Ave., Lorain, Ohio 44052

Filed Jul. 20, 1979, Ser. No. 59,489

Int. Cl.<sup>3</sup> F16D 11/00

U.S. Cl. 192—28

15 Claims



1. An indexing and synchronizing clutch mechanism which comprises:

a rotatable drive wheel having an engagement means;  
a rotatable driven shaft;  
a pawl means mounted on the driven shaft for rotation therewith, the pawl means also being movable into and out of engagement with the engagement means on the drive wheel whereby the driven shaft is rotated in synchronization with the drive wheel, the pawl means having a pair of projecting portions;  
actuatable means capable of engaging one of the projecting portions for moving the pawl means into and out of engagement with the drive wheel; and  
a fixed stop mounted adjacent to the drive wheel and adapted to engage the other of the projecting portions and to prevent rotation of the pawl means and hold the position of the pawl means when it is moved out of engagement with the drive wheel by the actuatable means whereby the driven shaft is securely held in an indexing position and is incapable of rotation.

4,281,749

## AUTOMATIC LOCKING CLUTCH

Mark J. Fogelberg, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 868,587, Jan. 11, 1978, abandoned. This application Apr. 5, 1979, Ser. No. 27,347

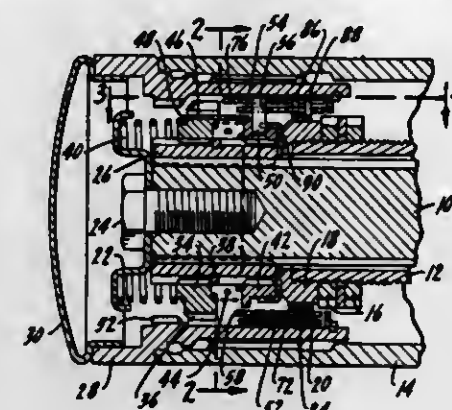
Int. Cl.<sup>3</sup> F16D 11/00; B60K 17/34

U.S. Cl. 192—36

51 Claims

1. In a clutch for effecting engagement between rotatable driving and driven members in response to rotation of the driving member, said clutch incorporating first and second clutching means respectively rotatable with said driving and driven members, said first clutching means being movable relative to said driving member into and out of engagement with said second clutching means, means yieldably biasing said first clutching means away from engagement with said second clutching means, and actuating means for said clutch; the improvement wherein said actuating means comprises rotatable cam means, means responsive to rotation of said driving member for developing a relatively high force tending to retard rotation of said cam means when said clutching means

are out of engagement and a relatively low force tending to retard rotation of said cam means when said clutching means are in engagement, means for rotating said cam means in oppo-



sition to said relatively high force and moving said first clutching means toward engagement with said second clutching means in response thereto, and means for rotating said cam means in opposition to said relatively low force.

4,281,750

## FLUID COUPLING DEVICE HAVING IMPROVED RESPONSE TIME

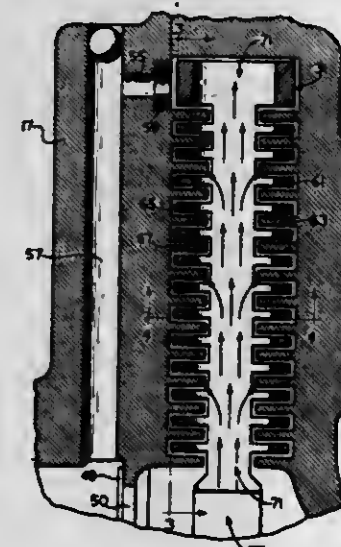
Stephen M. Clancey, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 21, 1979, Ser. No. 13,578

Int. Cl.<sup>3</sup> F16D 35/00, 43/25

U.S. Cl. 192—58 B

13 Claims



1. A fluid coupling device comprising a first rotatable coupling assembly defining an axis of rotation, enclosure means associated with said first rotatable coupling assembly to define a fluid chamber therebetween, valve means associated with said first rotatable coupling assembly and disposed to separate said fluid chamber into a fluid operating chamber and a fluid reservoir chamber, a second rotatable coupling member disposed in said fluid operating chamber and being rotatable relative to said first rotatable coupling assembly, said valve means being operable to control the flow of fluid between said reservoir and said operating chamber, and including means associated with said valve means to effect the operation thereof in response to variations in a predetermined condition, said second coupling member including a hub portion and a disc-like portion, said disc-like portion having first and second axially-spaced surfaces, said first surface cooperating with the adjacent surface of said first coupling assembly to define a first viscous shear space, said second surface cooperating with the adjacent surface of said first coupling assembly to define a second viscous shear space, said disc-like portion defining at least one fluid passage communicating between the inner radial periphery of said disc-like portion and the outer radial periphery thereof, said fluid passage communicating at least intermittently with each of said first and second viscous shear spaces

over at least a major portion of the radial extent of said shear spaces, said first viscous shear space and said second viscous shear space being substantially uninterrupted by said fluid passage.

4,281,751

## AUTOMATIC GEAR SHIFTING METHOD

Masaaki Suga, Yokohama; Chiaki Kobayashi, Yokosuka, and Hisaaki Tohizima, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

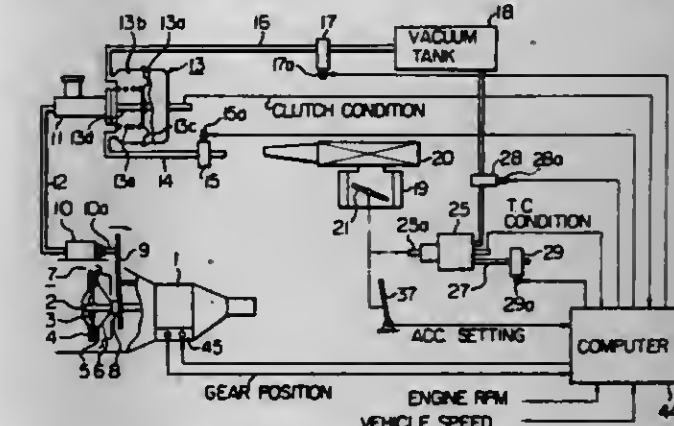
Filed Mar. 26, 1979, Ser. No. 23,557

Claims priority, application Japan, Apr. 17, 1978, 53-44134

Int. Cl.<sup>3</sup> B60K 41/28

U.S. Cl. 192—0.092

4 Claims



1. An automatic gear shifting method in a motor vehicle including an engine with a throttle valve operatively connected to an accelerator pedal, a manual gear box and a clutch operatively disposed between the engine and the gear box, said method being carried out with the accelerator pedal kept depressed to a depression degree and comprising the following steps when the setting of the throttle valve is wider than a predetermined opening degree:

a step of initiating closing movement of the throttle valve independently of the accelerator pedal from an initial opening degree which corresponds to said depression degree of the accelerator pedal to a closed position;  
a second step of disengaging the clutch when a predetermined time has passed after the occurrence of said first step;  
a third step of shifting into a gear in the manual gear box after the initiation of said second step;  
a fourth step of initiating return movement of the throttle valve to said initial opening degree which corresponds to said depression degree of the accelerator pedal;  
a fifth step of reengaging the clutch.

4,281,752

## MECHANICAL CLUTCH RELEASE SYSTEM

Hiroshi Kato, and Yasuhiro Morita, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 3, 1979, Ser. No. 54,651

Claims priority, application Japan, Mar. 22, 1979, 54-37017[U]

Int. Cl.<sup>3</sup> F16D 23/12

U.S. Cl. 192—99 R

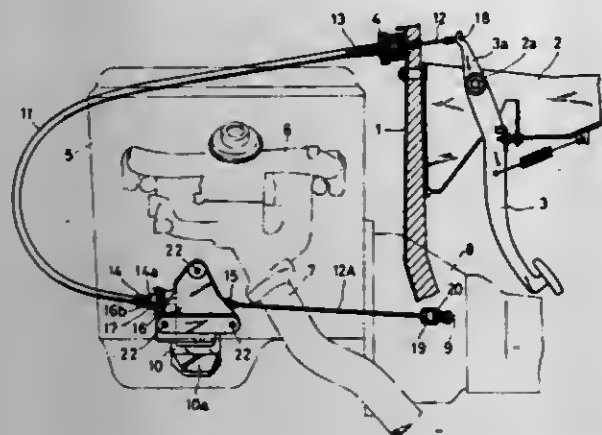
4 Claims

1. In an automobile having an engine rearwardly connected to a clutch housing containing a clutch release fork therein and a clutch pedal, a system for releasing a clutch through clutch cables, said clutch cables comprising an outer cable comprised of a thermofusible material and being located forwardly of an exhaust pipe of said engine and an inner cable extending longitudinally through said outer cable, said outer cable being secured to the body of said automobile at one end and at the other end to a portion of said engine located forwardly of said exhaust pipe, and said inner cable being connected to said



clutch pedal and to said clutch release fork at one end rearwardly extending from said one end of said outer cable and at thereto providing access to the doors (16), the silo unloading chute comprising:

- a plurality of vertically spaced and aligned hoops (34) positioned in the access chute (22), each of the hoops (34) being associated with a one of the doors (16) in the silo (10);
- a transfer funnel (40) shaped so as to fit within a one of the doors (16) in the silo (10) at one end thereof and so as to extend into the hoop (34) associated with said door (16) at the other end thereof; and



the other end rearwardly extending from said other end of said outer cable and said exhaust pipe, respectively.

4,281,753

**VIBRATION DAMPING DEVICE FOR A MECHANICAL CLUTCH RELEASE SYSTEM FOR A MOTOR VEHICLE**  
Kazuhiko Takemoto, Toyota; Toshiyuki Ninomiya, Kariya; Shigemichi Yamada, Hoi, and Minoru Yukiyasu, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

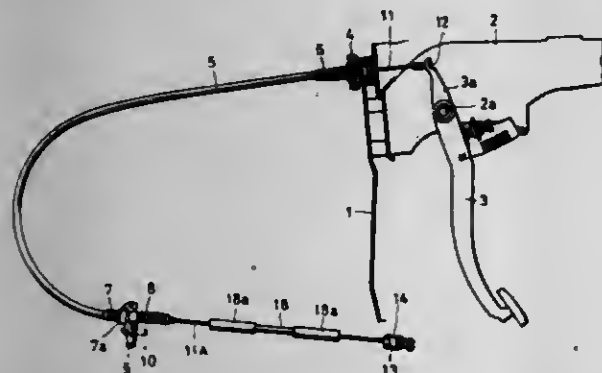
Filed Jul. 12, 1979, Ser. No. 57,074

Claims priority, application Japan, Mar. 22, 1979, 54-37016[U]

Int. Cl.<sup>3</sup> F16D 19/00

U.S. Cl. 192-99 S

6 Claims



1. Apparatus for damping vibrations in a motor vehicle having a body, an engine, an exhaust pipe, a clutch pedal, and a clutch release fork comprising:

- an outer clutch cable mounted at one end to the body of said motor vehicle, and mounted at the other end to the engine, forward of the exhaust pipe;
- an inner clutch cable, partially enclosed within said outer cable, mounted at one end to said clutch pedal and mounted at the other end to said clutch release fork, and having an exposed portion extending from said clutch release fork to said other end of said outer cable;
- a vibration damping device comprising a cylindrical damper of high flexural rigidity, enclosing at least a portion of, and being secured to, said exposed portion of said inner cable.

4,281,754

**SILLO UNLOADING CHUTE**

Nicholas J. Seay, Madison, Wis., assignor to Midwest Silo Company, Boscobel, Wis.

Filed Feb. 8, 1980, Ser. No. 119,802

Int. Cl.<sup>3</sup> B65G 11/02

U.S. Cl. 193-34

9 Claims

1. In a silo (10) having provided therein a vertically aligned series of doors (16) and having an access chute (22) secured

a tube member (38) suspended from each of the hoops (34), each of the tube members (38) being of sufficient length so as to extend through the hoop (34) next below the hoop (34) from which the tube member (38) is suspended, of sufficient flexibility to permit the lower portion thereof to be pushed aside against one side of the hoop (34) next below when the transfer funnel (40) is inserted into the hoop (34) next below, and of sufficient resiliency to below outwardly to fill said hoop (34) next below to inhibit dust leakage therethrough when the transfer funnel (40) is removed therefrom.

4,281,755

**REPEATING COIN-OPERATED MECHANISM**

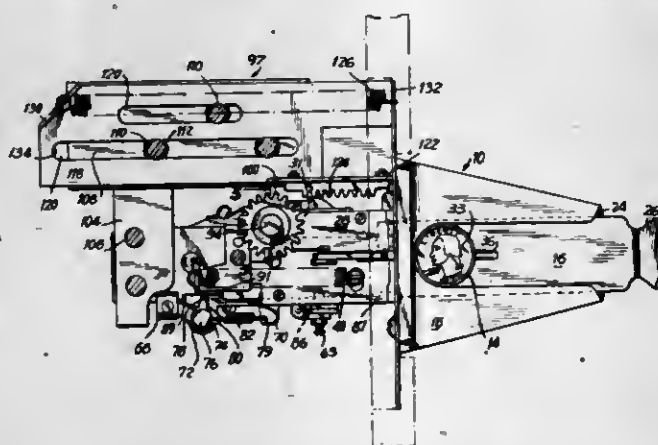
Stanley D. Levine, Melville, N.Y., assignor to U.S. Billiards, Inc., Amityville, N.Y.

Filed Sep. 24, 1979, Ser. No. 77,796

Int. Cl.<sup>3</sup> G07F 5/02

U.S. Cl. 194-1 J

14 Claims



1. A coin-operated mechanism for use in association with a device to enable said device to be activated a predetermined number of times, at least twice, in response to a deposit of a predetermined amount of coinage, said coin-operated mecha-

nism comprising a housing, a coin slide mounted for reciprocal inward and outward movement relative to said housing and arranged to activate said device upon reaching a predetermined, internally extended position with respect to said housing, a latching mechanism mounted in said housing to engage said coin slide and prevent said coin slide from reaching said predetermined, internally extended position unless proper coinage is deposited into said coin slide and latch inhibiting means arranged in said housing for preventing said latching mechanism from engaging said coin slide after the initial deposit of coinage and inward movement of said coin slide to said predetermined, internally extended position, said latching mechanism being prevented from engaging the coin slide until said coin slide has been reciprocated said predetermined number of times.

4,281,756

**DISTRIBUTING CONVEYOR INSTALLATION AND CONTROL METHOD THEREFOR**

Carlo L. Bruno, Oundle, England, assignor to Alisynco S.a.s. di Bruno & C., Leini, Italy

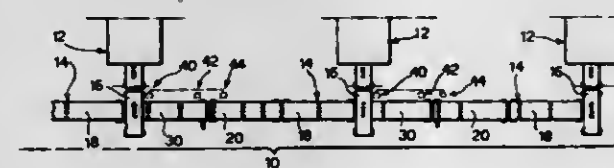
Filed Jan. 29, 1980, Ser. No. 116,380

Claims priority, application Italy, Feb. 12, 1979, 67291 A/79

Int. Cl.<sup>3</sup> B65G 48/03, 43/10

U.S. Cl. 198-356

5 Claims



5. A method of controlling a distributing conveyor installation provided with a principal line of conveyance from which products being transported therealong can be removed at a plurality of spaced locations, said principal line of conveyance comprising, between each said removal location, a halttable two-speed accumulation conveyor followed by an associated step-advance conveyor advanceable at two different frequencies, said control method comprising the operations of:

monitoring the said principal line of conveyance in correspondence with the loading and discharge ends of each accumulation conveyor, and the loading end of each step-advance conveyor in order to detect the presence of products thereon,

unless otherwise controlled, causing each accumulation conveyor to move at its fast speed and its associated step-advance conveyor to advance intermittently at its high frequency,

causing a said accumulation conveyor to move at its slow speed and its associated step-advance conveyor to advance at its low frequency when the presence of a product is detected at the loading end of that step-advance conveyor in the stop period comprised between two successive step movements of the step-advance conveyor,

causing a said accumulation conveyor to stop when, during the operation of its associated step-advance conveyor at its low frequency, the presence of products is detected both at the discharge end of the accumulation conveyor and at the loading end of the step-advance conveyor in the stop period comprised between two successive step movements of the step-advance conveyor, and

causing the accumulation conveyor associated with the transverse conveyor next upstream to change from its fast to its slow speed and the corresponding step-advance conveyor to change from its high to its low frequency of advance when, during operation of a said step-advance conveyor at its low frequency the presence of products is detected at the loading end of that step-advance conveyor and at the loading and discharge ends of the associated accumulation conveyor in the stop period comprised

between two successive step movements of the step-advance conveyor.

4,281,757

**APPARATUS FOR FEEDING ARTICLES TO PACKAGING MACHINES**

David C. Morton, Harrogate, England, assignor to Baker Perkins Holdings Limited, Peterborough, England

Filed Aug. 9, 1979, Ser. No. 65,152

Claims priority, application United Kingdom, Sep. 6, 1978, 35836/78

Int. Cl.<sup>3</sup> B65G 47/51

U.S. Cl. 198-358

6 Claims



1. Apparatus for feeding a plurality of packaging machines with a procession of articles disposed in end-on orientation in rows on an output conveyor from a producing machine, comprising:

- a continuously moving conveyor providing a feed path for said articles and aligned with said output conveyor;
- a plurality of feed modules spaced in succession along the feed path and including intakes offset laterally with respect to one another to enable each of the feed modules to accept a different row of articles of a cross conveyor associated with each feed module and operative to feed the articles in the associated row to an individual packaging machine in a direction transverse to the feed path;
- each feed module including a continuously moving inclined pick-up conveyor for lifting articles in the associated row from the feed path, a continuously moving transfer conveyor including at its delivery end a nose portion extending over the associated cross conveyor, means operative only when the associated packaging machine is in operation for periodically retracting said nose portion to allow articles to fall from said transfer conveyor onto said cross conveyor, and a continuously moving inclined by-pass conveyor for returning articles from the delivery end of said transfer conveyor to the feed path in the event of non-retraction of said nose portion.

4,281,758

**HIGH-SPEED CLOSURE ORIENTING APPARATUS**

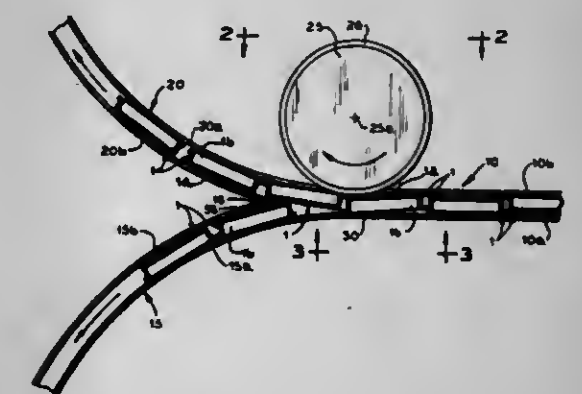
Richard T. Adamski, Lambertville, Mich., and Samuel J. Kowal, Maumee, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 30, 1979, Ser. No. 89,698

Int. Cl.<sup>3</sup> B65G 11/20, 47/24

U.S. Cl. 198-398

2 Claims



1. Apparatus for orienting cup shaped caps moving at high



speed in side by side rolling relationship so that all caps have their recessed sides facing the same direction, each said cap having a disc-shaped panel portion and a peripheral wall defining a recess, comprising a first chute guiding the moving caps in non-oriented relationship, said first chute having a pair of spaced walls respectively guiding the panel portion and the peripheral wall of the inserted caps, a second and a third chute respectively connecting in a Y-shaped juncture with the end of said first chute, the outer wall of said second chute constituting a continuation of one wall of said first chute and the outer wall of the third chute constituting a continuation of the other wall of said first chute, the inner walls of said second and third chutes joining in a sharp vertex disposed in alignment with the lateral center of said first chute, the juncture area of said one wall having an elongated slot therein, a rotating discriminator wheel having a cylindrical rim portion entering said slot, said cylindrical rim portion having an elastomeric surface and being proportioned to impart a compressive force on each successive cap entering the chute juncture area from said first chute, the chute wall opposite said wheel periphery having an aperture therein to permit only a trailing segment of a cap rim to be depressed therein, said aperture being circular and having its axis passing through the axis of rotation of said discriminator wheel, and said vertex is spaced from said axis by the diameter of the caps whereby caps having their recessed sides facing toward the wheel are shifted toward the wheel axis, hence into said second chute, while caps having their recessed sides facing away from the wheel are moved by the wheel into said third chute.

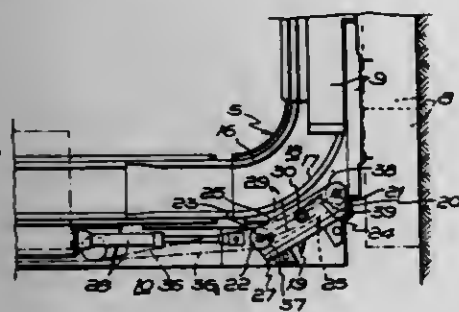
#### 4,281,759 CONVEYORS

Gerald R. O. Pentith, Hoyland Nether nr. Barnsley, England, assignor to Pitercraft Summit Limited, Hoyland Nether nr. Barnsley, England

Filed Feb. 1, 1980, Ser. No. 117,517  
Int. Cl.<sup>3</sup> B65G 19/04; E21C 35/20

U.S. Cl. 198-725

13 Claims



1. A scraper chain conveyor comprising conveyor pans defining a bend round which flight bars attached to at least one chain of said conveyor are guided in the general plane of said conveyor, an auxiliary conveying unit provided at the outside of said bend, said auxiliary conveying unit comprising two spaced apart sprockets rotatable about upstanding axes, a line joining said axes being parallel to a tangent to said bend at least when said auxiliary conveying unit is in use, at least one endless auxiliary chain trained round said sprockets, and means for driving said auxiliary chain in a direction such that its chain run adjacent said scraper chain conveyor moves in the direction of feed of said scraper chain conveyor.

#### 4,281,760 SLAT CONVEYOR BELT FOR SLAT CONVEYORS

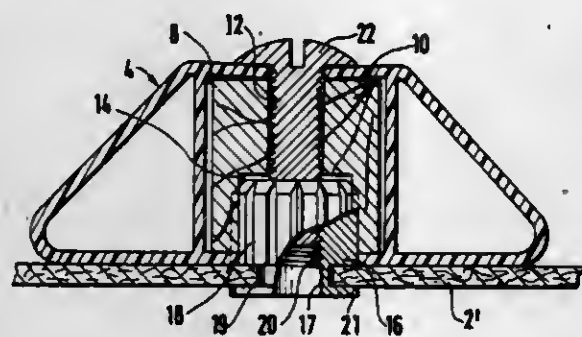
Hugo S. Müller, Oettinger Str. 9, 8860 Nördlingen, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,735  
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742428

Int. Cl.<sup>3</sup> B65G 15/30

U.S. Cl. 198-846

1 Claim



1. A slat conveyor belt for slat conveyors, comprising a plurality of carrying straps arranged to circulate in the conveying direction and slats extending transversely across the conveying direction and resting upon one surface of the carrying straps, said slats having bores therethrough and said bores having widened-out portions and said slats being fixed to the carrying straps by means of a plurality of screw connections passing through the bores in the slats, wherein a nut for each screw connection is formed as a threaded nipple having an expanded portion engaging the other surface of the corresponding carrying strap, said nipple having a substantially cylindrical outer surface formed by an envelope of longitudinal and radially outwardly directed ribs seated upon the nipple, said nipple outer surface having a diameter slightly larger than that of the widened-out bore portion in the slat, said slat positioned with said widened-out bore portion engaging said nipple outer surface to fix said nipple within said slat and prevent rotation when a fixing screw is inserted into the threaded nipple from above through the bore in the slat.

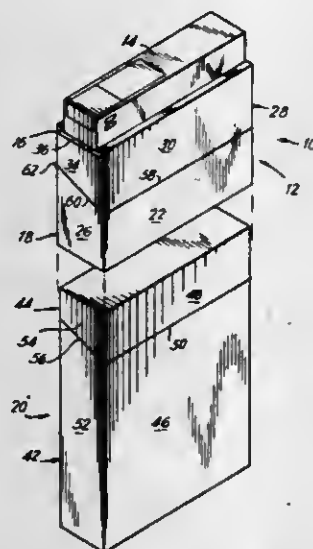
#### 4,281,761 LIGHTER APPARATUS FOR USE WITH CIGARETTE PACKAGES OR CASES THEREFOR

Romualdo Olazabal, Box 2926, Bayamon, P.R. 00619

Filed Jan. 11, 1979, Ser. No. 2,810  
Int. Cl.<sup>3</sup> A24F 15/10; B65D 85/10

U.S. Cl. 206-87

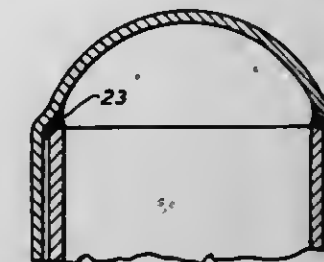
4 Claims



1. New and improved cigarette lighter apparatus adapted for removable affixation to conventional cigarette packages of the "flip-top" type, said cigarette package having a lower package portion and an upper cover portion hinged thereto by means of

a hinge portion extending transversely across one side wall of the package, comprising:

means for supporting a lighter device adapted to be removably affixed to the exterior of said cigarette package in a manner such that no modification of the package or the contents is required and such that the cover portion of said cigarette package may be opened and closed in a conventional manner as desired, said supporting means including a sleeve portion adapted to fit over and snugly receive a portion of the conventional "flip-top" cigarette package, a lighter device supporting cover portion, and hinge means for pivotally connecting said lighter device supporting cover portion to said sleeve portion, wherein said hinge means pivotally connecting said lighter device supporting cover portion to said sleeve portion comprises a hinge portion extending transversely and rectilinearly along said sleeve and supporting portions, said lighter device supporting cover portion being formed to receive said upper cover portion of said cigarette package in a manner such that said rectilinearly extending hinge portion is substantially aligned with and overlies said rectilinearly extending hinge portion of said cigarette package; and a lighter device mounted on said supporting means.



a substantially continuous and substantially liquid impervious interior ultrasonic weld means for attaching said upper edge of said U-shaped body member to said interior rim thereby forming an interior ultrasonic weld which extends continuously 360° around said upper edge of said U-shaped body member.

#### 4,281,762 IN-STORE COUPON AND METHODS

James C. Hatterer, Cincinnati, Ohio, assignor to Graphic Resources, Incorporated, Cincinnati, Ohio

Filed Mar. 17, 1980, Ser. No. 130,629

Int. Cl.<sup>3</sup> B65D 85/48

U.S. Cl. 206-390

10 Claims



1. A coupon supply in elongated form comprising: a carrier web of predetermined width and indeterminate length; a plurality of separate base sheets on said web, and adhesive means on said base sheets for releasably holding said sheets on said web and for attaching said sheets to articles; a plurality of separate top sheets, one top sheet disposed on each of said base sheets and said top sheets and said respective base sheets thereunder being co-extensive with each other, each top sheet having side portions adhered to respective side portions of the respective base sheets, and each top sheet further including a central coupon portion between said side portions free of adherence to its respective base sheet and removably attached to said side portions.

#### 4,281,763 TWO-PIECE HARDSHELL, SOLUBLE AND DIGESTIBLE LIQUID CONTAINING GELATIN CAPSULE

Joseph A. Pace, 3645 Villanova Ct., Bethlehem, Pa. 18017

Filed Oct. 31, 1979, Ser. No. 89,772

Int. Cl.<sup>3</sup> B65D 83/04

U.S. Cl. 206-530

2 Claims

1. A two-piece hardshell, soluble and digestible liquid containing gelatin capsule comprising:

a U-shaped body member having a closed lower end and an open free end terminating in an upper edge; a cap member for receiving the upper end of said U-shaped body member, said cap member including a continuous

#### 4,281,764 SORTING APPARATUS FOR POTATOES AND THE LIKE

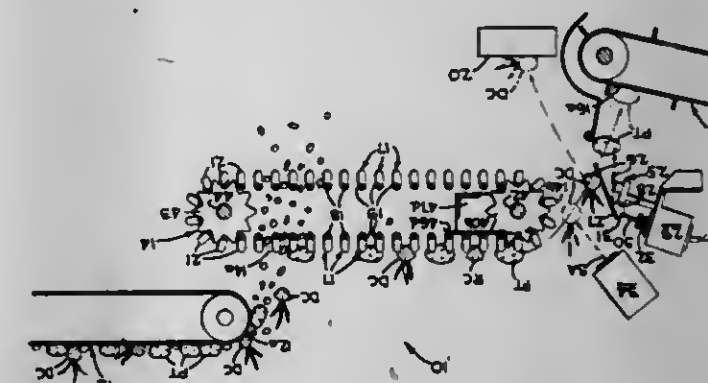
William E. Fowler, Jr., Albany, Ga., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 1, 1980, Ser. No. 117,429

Int. Cl.<sup>3</sup> B07C 5/00

U.S. Cl. 209-557

4 Claims



1. An improved sorting apparatus for separating matter such as rocks, dirt clods and small debris from root crops including a supply conveyor, a channelizing conveyor having an upper reach positioned to receive crops, rocks, dirt clods and small debris from the supply conveyor and having a discharge end whereat the crops, rocks and clods are ejected through transversely spaced trajectories toward a receiving area, and a plurality of means mounted in transversely spaced relationships between the discharge end of the channelizing conveyor and the receiving area for selectively extending into said trajectories to deflect rocks and clods from falling toward said receiving area to thereby separate the same from the root crops, the improvement comprising: said channelizing conveyor including an endless series of interconnected bars, each of said bars including a generally straight portion that extends transversely of its path of travel and hook portions formed at the ends thereof which extend generally parallel to its path of travel, each of said bars having a molding formed thereon, each molding having uniformly spaced projections that extend uprightly at a selected orientation in the upper reach of said channelizing conveyor with the molding projections of adjacent bars being aligned in the direction of travel to thereby form means for channelizing the rocks, dirt clods and crops, said bars being interconnected such that the hook portions of each bar engage the transversely extending straight portion of the adjacent trailing bar, said channelizing conveyor further



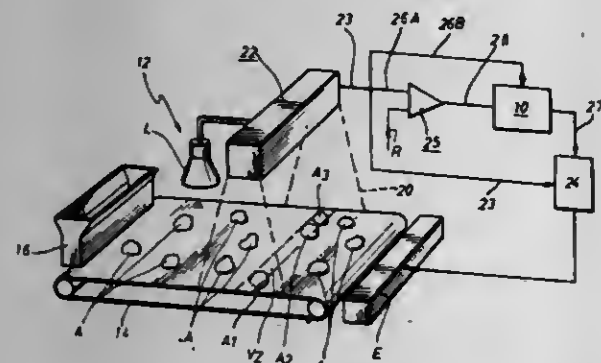
including sprockets at said discharge end upon which said bars are engaged, said interconnection of said bars causing the molding projections of each bar to remain in said upright orientations until they traverse past the top-dead-center position of said sprockets.

4,281,765

**ARTICLE-DETECT SIGNAL SEPARATING NETWORK**  
Charles R. Brazell, and Joseph A. Villanueva, both of Houston, Tex., assignors to Geosource Inc., Houston, Tex.  
Division of Ser. No. 43,694, May 30, 1979. This application Aug. 9, 1979, Ser. No. 65,371  
Int. Cl.<sup>3</sup> B07C 5/342

U.S. Cl. 209-576

15 Claims



1. In a sorting apparatus having:
  - (a) means for generating an electrical characteristic signal representative of light reflected from articles randomly disposed across a viewing zone; and
  - (b) a comparator for comparing the characteristic signal with a predetermined reference level and for generating an article-detect signal representative of the presence of an article within the viewing zone so long as the magnitude of the characteristic signal exceeds the magnitude of the reference level;

the improvement comprising:

- means for separating article-detect signals when two articles are next-abutting one with the other such that a comparison of the magnitude of each characteristic signal of each article exceeds the magnitude of the reference level, said separating means comprising:
- a network for sampling and holding a predetermined percentage of the peak magnitude of the characteristic signal for each of the abutting articles;
  - a comparator for comparing the magnitude of the instantaneous characteristic signal for each article with the predetermined percentage of the peak magnitude thereof and for generating an enabling signal when the magnitude of the instantaneous signal falls below the predetermined percentage of the peak magnitude; and,
  - a timing arrangement responsive to the enabling signal for interrupting the article-detect signal for a predetermined time interval after a predetermined time delay.

4,281,766

**METHOD AND APPARATUS FOR SORTING BODIES OF DIFFERENT DENSITIES**

Alan Constantine, 573 Bolton Rd., Bury, Greater Manchester, England

Filed Dec. 3, 1979, Ser. No. 99,816

Claims priority, application United Kingdom, Dec. 6, 1978, 47380/78

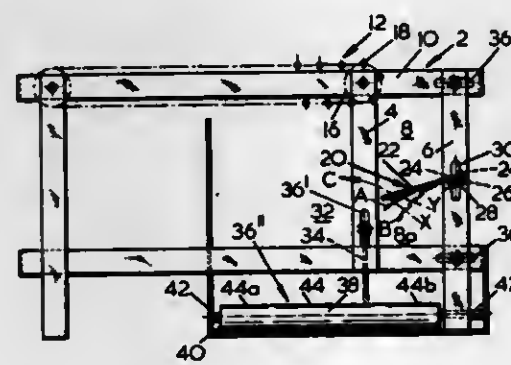
Int. Cl.<sup>3</sup> B07C 5/00

U.S. Cl. 209-637

10 Claims

1. A method of sorting first bodies from second bodies in a mixture comprising both in which all the first bodies have substantially the same density which is lower than the density of each of the second bodies, said method comprising: delivering first and second bodies in said mixture substantially horizontally at substantially the same velocity to a dropping point

at which the continuously moving bodies then fall freely under gravity down a vertical pathway obstructed a distance below the dropping point by an energy absorber comprising a plurality of elongate resilient elements extending side by side, each said element being held at a position along its length substantially stationary relative to the bodies traveling the pathway, and each said element extending in a downwardly inclined attitude from said position to a free end of the element, and when considering a geometric projection of each said element on an imaginary substantially horizontal plane in which said mixture is delivered to said dropping point, the geometric



projection of said position on said plane being further along the substantially horizontal direction in which said mixture is delivered to the dropping point than the geometric projection of said free end on said plane, said freely falling bodies making impact on the elements intermediate the free end of an impacted said element and said position so that the energy absorber is deformed by second bodies to an extent permitting them to pass the energy absorber and continue along the pathway but said energy absorber stopping travel of first bodies along the pathway past the energy absorber, and propelling such stopped first bodies from the pathway under the effect of resilient action.

4,281,767

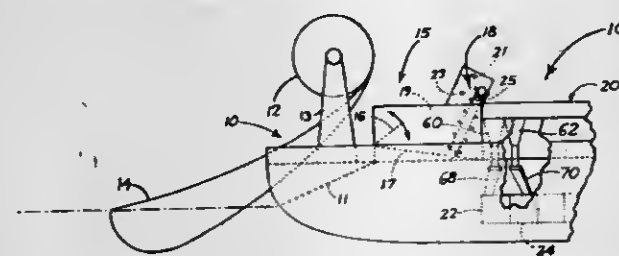
**TRAWLER FISH-SORTING SYSTEM**

Robert C. Carpenter, 628 SE. 3rd St., Newport, Oreg. 97365  
Filed Aug. 27, 1979, Ser. No. 70,153

Int. Cl.<sup>3</sup> B07C 7/04

U.S. Cl. 209-703

4 Claims



1. Fish-sorting apparatus for use on board a fishing vessel of the type including a plurality of fish-sorting bins, said apparatus in operative condition comprising fish-receiving deck means disposed above said bins including a pair of side-by-side adjacent deck portions which are hinged together along their adjacent sides for adjustment to different angular orientations, and passage means including, for each deck portion, at least a pair of passage sections, with one operatively communicating between said portion and at least one of said bins, and the other operatively communicating between said portion and a region outboard of the vessel, said deck portions, in one set of relative angular orientations, sloping downwardly away from the hinged connection therebetween toward said passage means, and in another angular orientation occupying a substantially common inclined plane.

4,281,768

**ASSAY TUBE RACK**

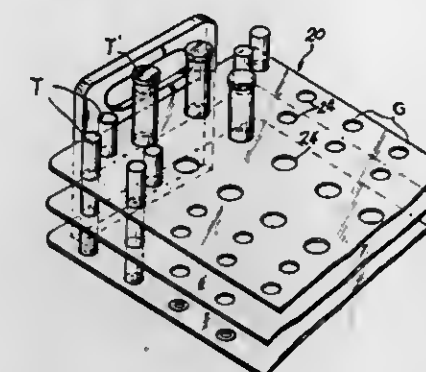
Philip B. Sommers, 923 Garden Rd., Orange, Conn. 06477

Filed Aug. 10, 1979, Ser. No. 65,465

Int. Cl.<sup>3</sup> A47F 7/00

U.S. Cl. 211-74

2 Claims



1. In an assay tube rack of the type having supporting means for holding a plurality of assay tubes and having opposed open sides, the improvement comprising: means forming associations of holes in said rack, there being one association of said holes traversing each of said opposed open sides of said rack; each of said associations of holes comprising distinctly separated groups of holes consisting of three holes in each group, wherein a first hole in each group is disposed closely adjacent to a respective side of said rack, a second hole in each group is disposed more remote from said respective side of said rack than said first hole with the axis of said second hole being laterally offset from the axis of said first hole, and a third hole in said group is disposed more remote from said respective side wall than said second hole with the axis of said third hole being disposed between parallel line projections of the axes of said first and second holes, and wherein a side of said first hole in one group is laterally offset from an adjacent side of said second hole in an adjacent group thereby providing a distinct grouping of assay tubes when the groups of holes in said rack are filled with assay tubes.

4,281,769

**PACKING CONTAINER**

Rolf L. Ignell, Grilly, France, assignor to Tetra Pak Development SA, Pully-Lausanne, Switzerland

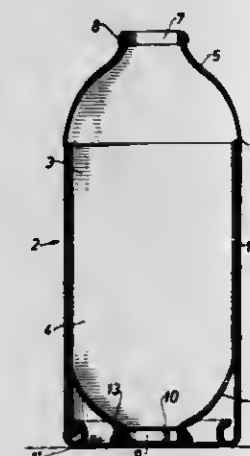
Filed Aug. 8, 1979, Ser. No. 64,920

Claims priority, application Sweden, Aug. 11, 1978, 7808571

Int. Cl.<sup>3</sup> B65D 6/30

U.S. Cl. 215-12 R

10 Claims



1. A packing container comprising: an expanded tubular member having a central cylindrical portion and dished first and second end portions on respective ends of said cylindrical portion, wherein said tubular member is comprised of a laminate which includes a gas barrier layer and at least one additional layer; an end plate, said end plate having an edge groove, which

edge groove receives said first end portion of said tubular member such that said end plate closes said tubular member at said first end thereof; and an edge ferrule which receives said second end portion of said tubular member.

4,281,770

**BLOW MOLDED CONTAINER WITH SEPARATE HANDLE**

Dewey Rainville, Westfield, N.J., assignor to Rainville Company Inc., Middlesex, N.J.

Filed Sep. 10, 1979, Ser. No. 74,137

Int. Cl.<sup>3</sup> B65D 25/28

U.S. Cl. 215-100 A

7 Claims



1. A plastic blow molded container made of stretchable material having side walls bottom, and an opening through which the contents of the container can be removed therefrom, a boss comprising an integral construction with the side walls of the blow molded container, a hollow chamber within the boss and with an entrance passage into the hollow chamber at the end of the hollow chamber which is remote from an outside surface of the container, the entrance passage being of less transverse cross section than the interior of the chamber normal to the longitudinal axis of said entrance passage, a handle that is a different piece from the container, a projection on the handle for insertion into the hollow chamber in the boss, the portion of the projection that first enters the hollow chamber being larger than the cross section of said entrance passage, and the walls of the chamber that terminate at the sides of said entrance passage being flexible and elastic enough to yield and stretch to pass the end of the projection into a portion of the chamber that is larger than the cross section of the passage.

4,281,771

**CHILD-RESISTANT/NON-CHILD-RESISTANT CLOSURE**

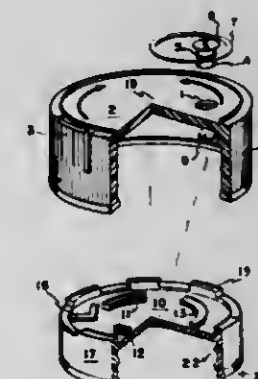
Craig S. Siegel, 88 Bear Mountain Rd., Ringwood, N.J. 07456

Filed Jun. 9, 1980, Ser. No. 157,534

Int. Cl.<sup>3</sup> B65D 55/02, 85/56; A61J 1/00

U.S. Cl. 215-220

8 Claims



1. A child-resistant/non-child-resistant closure for containers having an exterior male threaded portion comprising, in combination: An inner cap member having the interior of its depending sidewalls formed with female threads adapted to be



threaded onto said container portion, with an integrally formed circular top panel having a plurality of spaced-apart stop lugs projecting vertically upward; an outer cap member with depending sidewalls and an integrally formed top panel embodying a formed hole superimposed in the same radial arc as said plurality of spaced-apart stop lugs, said outer cap loosely encompassing said inner cap; an integrally formed plug for insertion into said hole of the outer cap member to place the base of said plug in space between said stop lugs of the inner cap member, to engage said stop lugs to drive said inner and outer cap members as a unit when torque is applied in either direction of rotation to the other cap member rendering the closure non-child-resistant; said plug for removal from said hole in the outer cap member disengaging the inner and outer cap members to allow the outer cap member free and separate rotation rendering the closure child-resistant.

4,281,772

Patent Not Issued For This Number

4,281,773

## ELECTRICAL WIRING BOX

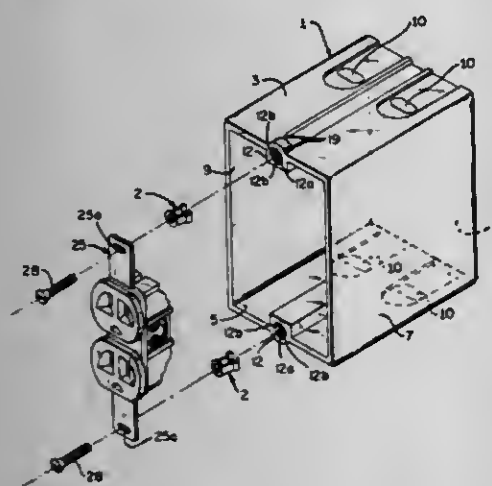
Gary L. Mengu, Parkersburg, W. Va., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jul. 25, 1977, Ser. No. 818,308

Int. Cl.<sup>3</sup> H02G 3/08

U.S. Cl. 220—3.2

9 Claims



1. A box arrangement comprising
  - a box including a plurality of walls arranged to define a space for receiving a device, said box having a longitudinal opening therein in which a mounting element is disposed and further having a pair of abutment portions on opposite sides of the opening;
  - said mounting element comprising
    - a central portion adjacent to the front of the opening in the box and having a portion in abutment with a portion of the box adjacent to the opening, said central portion having an opening therethrough by which a threaded screw may be inserted and pushed longitudinally into the mounting element, said opening being of a size to permit the threaded portion of a screw to be freely and readily inserted into the mounting element without the central portion interfering with the forward movement of the screw or gripping onto the threaded portion of the screw;
    - first and second spaced-apart side portions connected with the central portion on opposite sides of the opening in the central portion and extending along the opening in the box; and
    - first and second deflective sections connected with the first and second side portions, respectively, and adjacent to the abutment portions of the box, each deflective section including a thread-engaging portion extending in a direction toward the other thread-engaging portion, each of said thread-engaging portions having a single thread-engaging surface, the two thread-engaging surfaces being

spaced apart and defining a screw receiving region therebetween, said two thread-engaging surfaces being substantially parallel and each being at an angle with respect to a reference line lying perpendicular to the directions the thread-engaging portions extend, said thread-engaging portions being in the path of a screw pushed into the mounting element whereby the screw contacts the single thread-engaging surface of each thread-engaging portion; said deflective sections being operative when a screw is inserted and pushed into the mounting element and into the screw-receiving region between the two thread-engaging surfaces and forced against the thread-engaging surfaces to be deflected outwardly in opposite directions away from the central axis of the opening in the box and to be positioned closely with respect to the abutment portions of the box, thereby to fix the mounting element in position in the opening in the box and to prevent removal of the mounting element from the opening in the box, and the two thread-engaging surfaces being operative as a screw is pushed into the screw-receiving region to ride along the threads of the screw without impeding the forward movement of the screw, and to engage the threads of the screw so as to prevent withdrawal of the screw from the mounting element except by unthreading the screw from engagement with the thread-engaging surfaces.

4,281,774

## TAMPER PROOF SNAP CAP

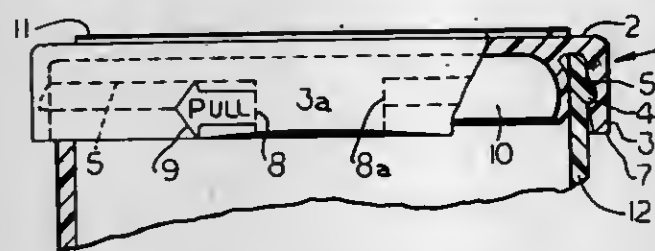
George V. Mumford, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 17, 1980, Ser. No. 130,925

Int. Cl.<sup>3</sup> B65D 41/16, 41/18

U.S. Cl. 220—306

5 Claims



1. A cap for sealing a container having a circumferential outwardly projecting bead formed on its outside surface, near the container rim, said cap comprising a top panel section, a skirt section depending from the periphery of said panel, a discontinuous circumferential groove formed on the inside surface of said skirt and constructed and arranged to cooperate with said container bead, the ends of said groove being a short distance apart, whereby a segment of said skirt is bulged slightly outward by the engagement of said container bead and said skirt segment, a lower skirt section below said groove extending under said container bead to prevent removal of said cap, means for forming a seal between said cap and container, and score means adjacent said segment to permit removal of said lower skirt section.

4,281,775

## CAN TAPPING VALVE APPARATUS

Frank J. Turner, 1539 Roundtable Dr., Dallas, Tex. 75247

Filed Jan. 15, 1979, Ser. No. 3,309

Int. Cl.<sup>3</sup> B67B 7/24; B65D 83/14

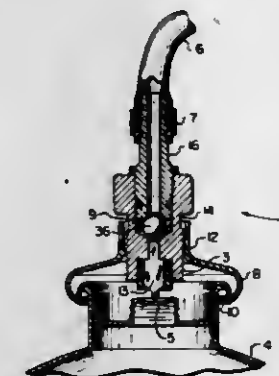
U.S. Cl. 222—82

2 Claims

1. Can tapping valve apparatus for transferring pressurized fluid from a container to an outlet comprising:
  - a generally cylindrical body member having at least a portion of its outer surface threaded for engagement with said container, a fluid flow passageway extending longitudinally along its axis, a valve seat disposed in said flow passageway and a threaded inner surface at a first end of said body member;

means connected to said body member for piercing said container, including fluid sealing means carried within a second end of said body member for forming a seal between said second end and the container;

a generally cylindrical stem member attached to said first end of said body member having a fluid flow passageway extending along its axis, means on a first end of said stem member for coupling to said outlet, a threaded portion on a second end of said stem member engaged with the threaded inner surface of said body member whereby spacing between the second end of said stem member and



the valve seat in said body member is adjustable by rotation of said stem member relative to said body member;

an elastomeric ball disposed between said valve seat in said body member and the second end of said stem member; and

sealing means carried on the second end of said stem member for providing a fluid tight seal at a predetermined pressure level between said stem and body members, whereby excessive pressure levels are indicated by fluid leakage.

4,281,776

## PROPORTIONAL FEEDER FOR PARTICULATE SOLIDS

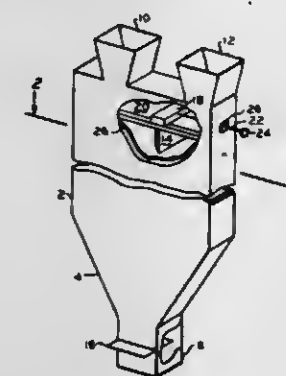
Robert R. Goins, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Continuation of Ser. No. 811,358, Jun. 29, 1977, abandoned, which is a continuation-in-part of Ser. No. 658,569, Feb. 17, 1976, abandoned, which is a continuation of Ser. No. 525,862, Nov. 21, 1974, abandoned, which is a continuation-in-part of Ser. No. 452,922, Mar. 20, 1974, abandoned. This application May 15, 1979, Ser. No. 39,404

Int. Cl.<sup>3</sup> B67D 5/60

U.S. Cl. 222—132

18 Claims



1. A proportional feeder for particulate solids comprising in combination:
  - a housing having a vertically disposed upper portion and an inwardly converging lower portion with an unobstructed chamber extending therethrough;
  - at least two inlet means vertically disposed in said vertically disposed upper portion, each inlet means having a first end and a second end with each of said second ends being in communication with the upper end of said unobstructed chamber;
  - at least one separating means vertically disposed in the upper

end of said unobstructed chamber and so positioned as to divide the cross-sectional area of said upper portion of said unobstructed chamber adjacent the second ends of said inlet means into at least two zones, at least one of said vertical means being laterally adjustable between said inlet means, thereby varying the relative areas of said zones as measured at the lower end of said separating means;

an outlet means disposed in the lower portion of said inwardly converging portion of said housing and in communication with said unobstructed chamber and so adapted as to provide a flow of particulate solids therethrough at a rate not greater than the combined rates of flow through said inlet means;

wherein said separating means is of such a vertical length that it extends at least a minimum distance below the valley which would otherwise be created in the absence of said separating means by the intersection of the upper solids surface of adjacent particulate solids introduced through said inlet means when said feeder is filled with particulate solids such that the solids avoid turbulence at the trailing edge of said separating means as the solids progress downwardly through the remaining section of said upper portion of said vertically disposed housing extending below said separating means; and

wherein the section of said upper vertically disposed portion of said housing which extends downwardly below the point of termination of said separating means is of a length which is sufficient to establish flow uniformly downward of solids from each of said zones in the upper section of said unobstructed chamber as defined by said separating means.

4,281,777

## DUAL LIQUID PROPORTIONING APPARATUS

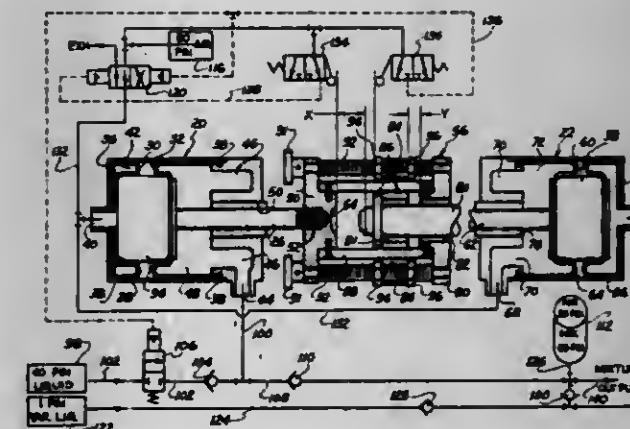
Robert L. Akens, 3201 Boggs Rd., Zanesville, Ohio 43701

Filed Apr. 6, 1978, Ser. No. 894,039

Int. Cl.<sup>3</sup> B67D 5/60

U.S. Cl. 222—134

6 Claims



1. In a dual liquid proportioning and dispensing apparatus the combination of a first liquid source communicated to a first variable volume chamber means provided with flexible walls and port means; a second liquid source communicated to a second variable volume chamber means provided with flexible walls and port means; a piston and cylinder means operatively connected to each of said chamber means to collapse a respective one of said chamber means upon a respective power stroke to deliver liquid from a respective one of said chamber port means; a source of driving pressure operatively connected to each one of said piston and cylinder means to drive said pistons; piston stroke adjustment means mounted on at least one of said piston and cylinder means and operative to vary the effective stroke of said piston relative to the force applied to the associated variable volume chamber means and the volume of liquid dispensed therefrom upon a power stroke, said piston stroke adjustment means includes a frame means mounted in sliding relationship with the piston rod of said piston and cylinder means and including sleeve means slidably mounted in releasably locked relationship along a given length of said



frame for contact with said piston rod to vary the effective stroke length of said rod relative to the fixed position of said sleeve means on said frame; a common liquid collecting tank communicated to the output liquid delivered from each of said chambers; and fluid control means operatively communicating with each of said piston and cylinder means, to each of said variable volume chambers and to said collecting tank to provide automatic operation of said apparatus for actuating said piston and cylinders to charge said collecting tank upon predetermined pressure signals.

4,281,778

## LOCKING CLOSURE CAP

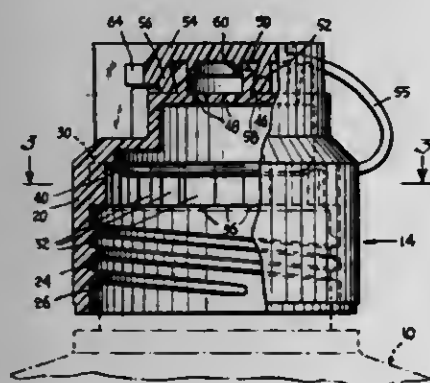
Morton Stull, Split Rock Rd., Boonton Township, Morris County, N.J. 07005

Filed Jan. 18, 1980, Ser. No. 113,433

Int. Cl.<sup>3</sup> B65D 25/42, 55/02

U.S. Cl. 222-153

18 Claims



1. A closure cap construction for a dispensing container, said construction being of the type adapted to be held permanently captive on the container and having a closeable dispensing orifice for enabling discharge of liquid from the container when desired, comprising in combination:

(a) a molded, resilient plastic, locking-type screw cap having a cap body provided with an internal, downwardly facing shoulder, and having an annular sidewall provided with an internal screw thread disposed below said shoulder for engagement with corresponding screw threads on the neck of the container;

(b) said cap body further having a top wall spaced above the level of said shoulder and containing an aperture, said aperture constituting the dispensing orifice of the said construction;

(c) said cap body being provided with a set of multiple internal, circularly disposed ratchet teeth disposed below said shoulder and above said internal thread, said ratchet teeth being joined to said annular sidewall and extending radially inward therefrom for engagement with cooperable outwardly facing ratchet teeth on said container neck, so as to positively prevent unscrewing movement of the cap body with respect to the container;

(d) the upper ends of said ratchet teeth of the cap body being joined to said internal shoulder and being integral therewith, said shoulder thereby effecting a stiffening of said teeth and minimizing the tendency for excessive deformation thereof;

(e) the lower ends of said teeth being exposed and unconnected, to enable them to readily engage the container neck teeth as the cap construction is screwed onto the neck;

(f) said cap body further including a yieldable annular seal disposed radially inward of the set of ratchet teeth;

(g) the root diameter of the set of ratchet teeth being substantially the same as the root diameter of the internal thread of the cap body.

4,281,779

## DISPENSING VALVE

John S. Shepard, 1304 S. Shields St., Ft. Collins, Colo. 80521

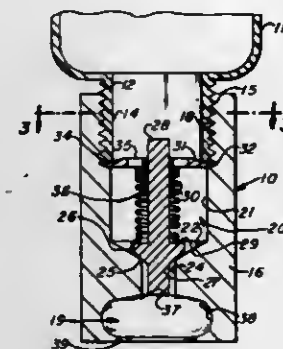
Continuation-in-part of Ser. No. 939,126, Sep. 5, 1978,

abandoned. This application Jan. 18, 1979, Ser. No. 4,359

Int. Cl.<sup>3</sup> B65D 25/38

U.S. Cl. 222-501

5 Claims



1. A dispenser valve assembly for dispensing a viscous, sticky material from a container having a neck defining a discharge opening, said assembly comprising:

a dispenser valve body;

means on said body for engaging said neck;

normally closed valve means disposed within said body and exclusive of said container for preventing discharge of said material from said container;

a dispensing cavity located rigidly in said body, having an access opening through one end thereof to the exterior of said valve body and remote from said engaging means, for accessibly retaining for subsequent use an increment of material discharged from said container through said valve means;

means in said body defining an elongated passage for said material and coupled at one end to said valve means and opening at its other end into said cavity;

said access opening facing outwardly away from said one end of said passage means and said cavity being generally spheroidal in shape with a generally annular concave interior wall extending outwardly from said other end of said passage to said access opening;

and said valve means including a stem portion, disposed in said passage and exposed from within said cavity, for enabling valve opening by manipulation of a tool inserted through said access opening into engagement with a facing end of said stem portion.

4,281,780

## HERBICIDE SPRAY SYSTEM

Anthony Lagani, Jr., 78 Springbrook Rd., Morristown, N.J. 07960

Filed May 21, 1979, Ser. No. 40,751

Int. Cl.<sup>3</sup> A01C 15/04

U.S. Cl. 222-610

5 Claims

1. A liquid pumping device comprising a rotary spreader including

(a) a load carrier;

(b) means for supporting said load carrier on rotatable means for moving said load carrier;

(c) a drive shaft terminating in a stirrer bar being located within said load carrier; and

(d) means cooperable with said rotatable means for rotating said drive shaft and stirrer bar;

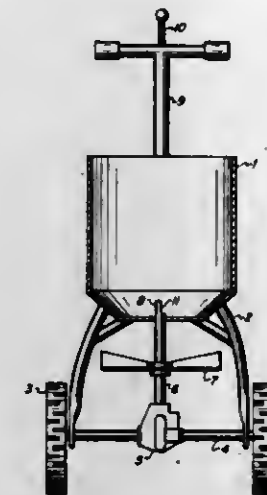
in combination with a pumping system comprising

(e) a liquid reservoir cannister removably deposited into said load carrier;

(f) a spray nozzle assembly comprising at least one outlet nozzle and a fluid delivery tube extending into said cannister;

(g) pumping means on said cannister for pumping the liquid in said cannister into said delivery tube;

(h) means for engaging the stirrer bar of said spreader with the pumping means when the cannister is deposited in the load carrier whereby movement of said rotatable means



causes rotation of said drive shaft and stirrer bar thereby driving the pumping means and enabling the liquid contained in the cannister to move through the delivery tube for dispensation from the outlet nozzle.

4,281,781

## HOSE EVERTING METHOD AND APPARATUS THEREFOR

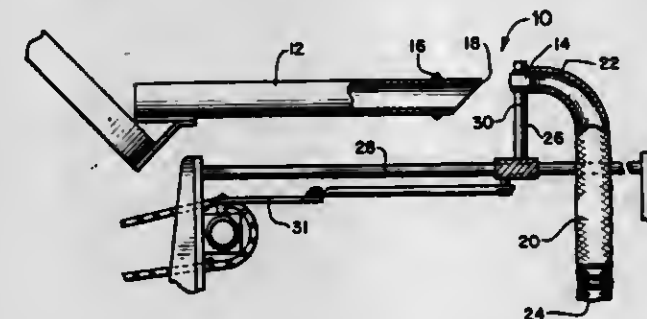
William H. Pope, 146 Chestnut, Winnetka, Ill. 60093

Filed Jan. 15, 1979, Ser. No. 3,220

Int. Cl.<sup>3</sup> A41H 43/02; A41B 11/00

U.S. Cl. 223-39

10 Claims



1. An improved method of processing a knitted sleeve-like item formed as an elongated sleeve with open longitudinal extremities, which comprises:

first drawing an elongated sleeve over a cylindrical mounting tube having a free end whereby the leading end of said sleeve receives said free end;

then continuing drawing said sleeve until the following end of said sleeve passes a means for resisting sliding on said mounting member;

then drawing said sleeve from said leading end in the reverse direction so that said sleeve is drawn back over itself, whereby movement of said sleeve about its following end towards said free end of said mounting member is retarded by said sliding resisting means, until said leading end is drawn beyond said free end of said mounting tube;

then stitching said leading end closed; and

then providing a suction through said mounting tube and allowing said sleeve to be drawn into said mounting tube, closed leading end first.

4,281,782

## BUTTON SEWING DEVICE

Walter H. W. Marsh, Scotch Plains, and Michael J. Brienza, Ridgewood, both of N.J., assignors to The Singer Company, Stamford, Conn.

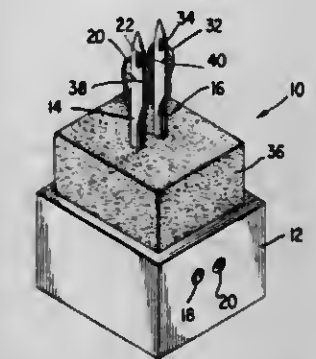
Filed Sep. 29, 1980, Ser. No. 191,962

Int. Cl.<sup>3</sup> D05B 85/00, 3/14

U.S. Cl. 223-102

11 Claims

1. A button sewing device comprising a base; a pair of needles projecting from the base for use in penetrating a layer of material and extending through the holes of a button to be attached to the material, a loose loop of thread extending through the eye of each needle and having ends fixed with respect to the needle, the thread being movable by the material into positions against the needles to close the loops as the



4,281,783

## DETACHABLE LUGGAGE CARRIER FOR AUTOMOBILES

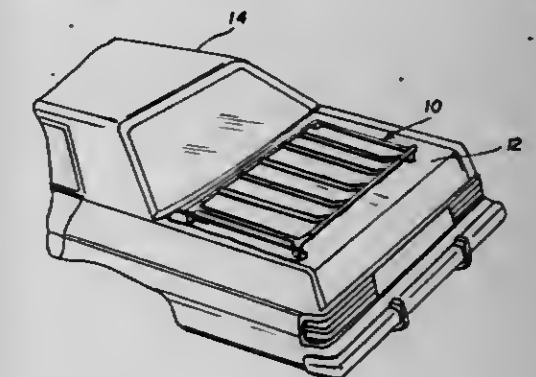
Charles E. Ingram, Warren, Mich., assignor to Four Star Corporation, Troy, Mich.

Filed Oct. 2, 1978, Ser. No. 947,396

Int. Cl.<sup>3</sup> B60R 9/04

U.S. Cl. 224-325

5 Claims



1. A luggage carrier for a vehicle, said luggage carrier being the type adapted to be mounted to the trunk lid of said vehicle, said luggage carrier comprising:

a frame section carried on the outside surface of said trunk lid, said frame section having a plurality of upstanding legs adapted to extend through apertures in said trunk lid; and a plurality of fastening means carried on the inside surface of said trunk lid and each of said plurality of fastening means aligned with a respective one of the apertures, said fastening means releasably engaging said frame legs to releasably secure said frame to the outside surface of said trunk lid,

wherein one of said fastening means comprises a housing having a bore, said housing being carried by said trunk lid such that said bore is longitudinally aligned with one of said trunk apertures, the frame leg received by said housing having a detent slot, said fastening means housing having a manually operable detent mechanism engagable with said detent slot to secure said leg within said housing, said detent mechanism being biased toward said bore to automatically engage said detent slot upon the insertion of said leg within said aperture into said bore, wherein another of the frame legs has a detent slot and another of said plurality of said fastening means has a flange element



pivotal receiving said detent slot of the said another of said frame legs to permit said legs and, thus, said frame to pivot around the flange element of said another fastening means, whereby the fastening means cooperate to attach the carrier to the vehicle.

4,281,784

**MAGNETIC STRIP SEPARATOR**

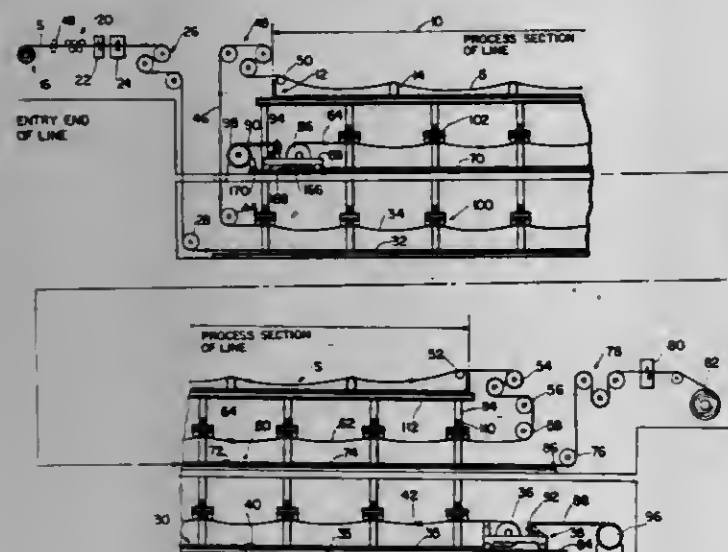
James W. McMullen, 696 Youngstown-Kingsville Rd., Vienna, Ohio 44473

Filed Apr. 24, 1979, Ser. No. 32,936

Int. Cl.<sup>3</sup> B65H 17/42

U.S. Cl. 226—118

12 Claims



1. In a moving metal strip material processing line including a looper section with at least one looper car mounted for travel along a track structure in both a first direction to accumulate and store the moving metal strip material in a horizontal loop having upper and lower strands and a second direction to refeed the moving metal strip material from the horizontal loop into the remainder of the processing line, an upper support means for supporting the upper strand of the horizontal loop in a horizontal fashion without obstructing the travel of the looper car along the track structure, said upper support means comprising:

(a) a frame structure which surrounds the horizontal loop, said frame structure including a plurality of vertical frame members positioned at predetermined distances from the track structure such that said vertical frame members do not contact the looper car as the looper car travels along the track structure; and

(b) a plurality of magnetic strip support and separator units respectively secured to said plurality of vertical frame members and positioned at a predetermined height above the track structure such that none of said plurality of magnetic strip support and separator units contacts the looper car as the looper car travels along the track structure, each of said plurality of magnetic strip support and separator units including a plurality of elongated, non-magnetic rollers mounted thereon in transverse relationship relative to the upper strand of the horizontal loop, each of said plurality of magnetic strip support and separator units also including magnetic means mounted thereon for lifting the upper strand into contact with said plurality of elongated, non-magnetic rollers and for supporting the upper strand in essentially horizontal fashion while the looper car travels along the track structure, said magnetic means having at least one elongated magnetic element located between adjacent elongated, non-magnetic rollers and positioned in spaced, transverse relationship relative to the upper strand such that an air gap is formed between said elongated magnetic element and the upper strand when said magnetic means lifts the upper strand into

contact with said plurality of elongated, non-magnetic rollers.

4,281,785

**STAPLING APPARATUS AND METHOD AND THERMOPLASTIC STAPLES USED THEREWITH**

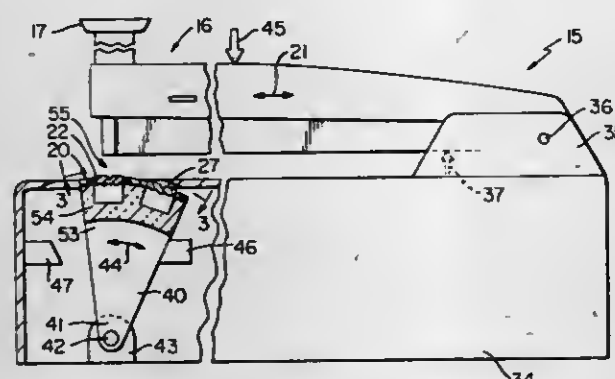
Alden W. Brooks, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Dec. 21, 1979, Ser. No. 106,411

Int. Cl.<sup>3</sup> B25C 5/02; F16B 15/00

U.S. Cl. 227—120

4 Claims



1. In a stapling apparatus for stapling an assembly of components, said apparatus having a stapling head for carrying and serially dispensing a plurality of staples made entirely of thermoplastic material, each of said staples comprising a bight and a pair of legs extending in substantially parallel relation from opposite ends of said bight, staple driving means in said head for driving each of said staples through said assembly once each staple is dispensed into a driving position, and a clinching anvil for clinching outer portions of said legs of each staple, the improvement wherein said anvil has a heated portion comprising an integral heater for heat shaping said outer portions of said legs in clinched relation after disposal of said legs through said assembly and a cooled portion comprising an integral cooling device for cooling said outer portions of said legs after shaping thereof, and said apparatus comprising a single support for said anvil and its heated and cooled portions, said support being mounted for pivoting movements about a single pivot to enable movement of said heated portion into position to provide said heat shaping of said outer portions and then movement of said cooled portion into position to provide said cooling of said outer portions.

4,281,786

**METHOD OF PRESSURE FUSING A NUT TO A SUPPORT SHEET AND PRODUCT THEREOF, AND MACHINERY FOR PRACTICING THE METHOD**

Guenther Krueger, 16 Bristol Ct., Berkeley Heights, N.J. 07922

Filed Aug. 25, 1980, Ser. No. 180,666

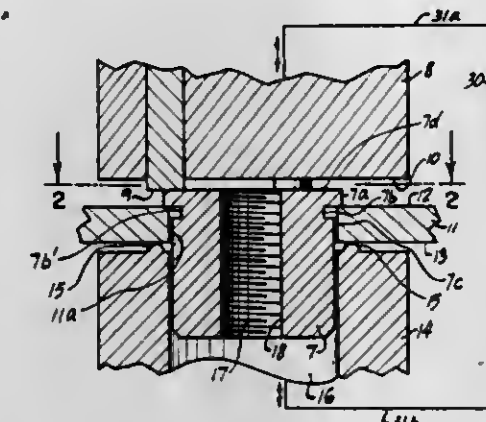
Int. Cl.<sup>3</sup> B23K 20/02; B23P 11/00

U.S. Cl. 228—116

8 Claims

1. A method of securing a nut to a support plate comprising in combination: (1) inserting a cylindrically-shaped nut into through-space of an aperture of a sheet of malleable material, said sheet having opposite first and second surfaces and said aperture including said through-space extending through said sheet and said first and second surfaces, said aperture being substantially circular, and said nut being undercut, the nut having top and bottom ends with a circumscribing outer-wall surface extending between said top and bottom ends, said aperture having a first predetermined diameter at said first surface, and said nut having a second predetermined maximum diameter at a point in juxtaposition to said top end and the nut having a female-threaded channel extending between said top and bottom ends, said second predetermined maximum diameter being of a greater dimension than said first predetermined

diameter of said aperture, and said nut at the undercut thereof having a third predetermined diameter of said circumscribing outer-wall surface at a smaller diameter than each of said first and second diameters, (2) substantially aligning first and second press-surfaces at each of opposite ends of said aperture, at least one of said first and second press-surfaces being movable toward the other of the first and second press-surfaces sufficiently to compact said top end and said sheet therebetween, the first press-surface including a first raised portion positioned above and to concurrently press upon each of (a) a portion of said first surface in juxtaposition to said aperture and (b) an



edge-portion of said top end of the nut, said edge-portion overhanging said first surface when the nut is in the inserted state, the second press-surface mounting a second raised portion positioned to come into contact with and become pressed into a portion of said second surface at a location spaced-away from and in juxtaposition to said aperture, and (3) pressing at least one of said first and second press-surfaces toward the other one thereof a distance sufficiently to compact said edge-portion into said first surface and sufficiently to compact said sheet adjacent said second surface against said circumscribing outer-wall with sufficient force to weld the sheet to the circumscribing wall of the nut.

4,281,787

**CONTAINER AND BLANK FOR CONSTRUCTING SAME**

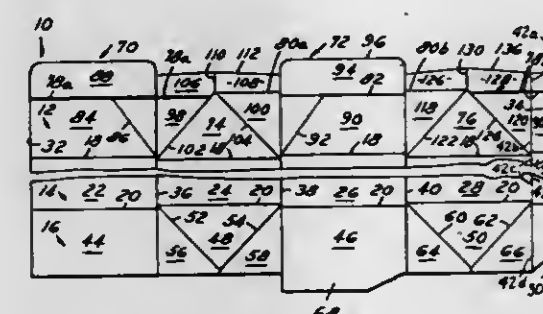
Warren R. Hensey, Highland, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 17, 1979, Ser. No. 86,120

Int. Cl.<sup>3</sup> B65D 5/74

U.S. Cl. 229—17 G

3 Claims



1. In a thermoplastic coated paperboard container adaptable to being folded into leakproof "slant top" or "flat top" container from a gable top configuration, and including a tubular body formed from a blank having four side panels and a side seam panel formed on one end thereof intermediate first and second vertical cut edges, and having a bottom closure thereon, a pair of opposed roof panels overlying said body, a pair of opposed triangular end panels in-folded between said roof panels from the opposite ends thereof, two pairs of triangular fold-back panels, each pair of which is integral with a respective one of said in-folded triangular end panels along fold lines which underlie said roof panels, said fold-back panels being folded adjacent the undersides of said roof panels, an upper closure panel surmounting each of said roof panels, two

pairs of in-fold lips joined by fold lines and surmounting respective pairs of triangular fold-back panels and adjoining triangular end panels, an extensible pouring spout housed in collapsed condition within said container and defined in part by one of said triangular end panels and an adjacent pair of said fold-back panels, said spout also being defined by adjacent portions of said roof panels and upper closure panels, said side seam panel being secured along the edge portion of the side panel and roof panel and upper closure panel located at the opposite end of said blank, the improvement characterized by having a first wide score line portion formed between said one roof panel and the adjacent upper closure panel and extending laterally from said first vertical cut edge, a second wide score line portion formed across each of the fold-back panels and adjacent in-fold lips positioned adjacent opposite ends of said one roof panel and the adjacent upper closure panel, and a third wide score line portion extending laterally from said second vertical cut edge and formed across said side seam panel to communicate with one of said second wide score line portions to enhance the folding of said upper closure panels in the direction of the first, second and third wide score line portions, to thereby place the juncture of the side seam panel and adjacent roof panel and upper closure panel in the vicinity of the adjacent wide score line portions in compression and thus eliminate the possibility of leakage therebetween.

4,281,788

**FOLDING PACKAGE**

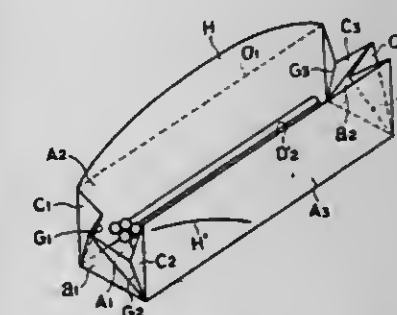
Takako Aeba, No. 401 Shuwa Naito-machi Residence, 1-26, Naito-machi, Shinjuku-ku, Tokyo 160, Japan

Filed Aug. 7, 1980, Ser. No. 176,541

Int. Cl.<sup>3</sup> B65D 5/10

U.S. Cl. 229—22

3 Claims



1. A folding package comprising a sheet of paper having several sections defined by creases formed thereon, said sections including three rectangular sections arranged side by side, two triangular sections, each of which has a side common to the end line of the central rectangular section, and four web sections, each of which bridges between one of said triangular section and one of said rectangular sections; and holding means for holding an intended shape when folded.

4,281,789

**CLIMATE CONTROL FOR AN ANIMAL BARN**

Warren Quinlisk, La Crosse, Wis., assignor to L. B. White Company, Inc., Onalaska, Wis.

Filed Aug. 10, 1979, Ser. No. 65,418

Int. Cl.<sup>3</sup> F24F 7/00; F24D 11/00

U.S. Cl. 236—44 C

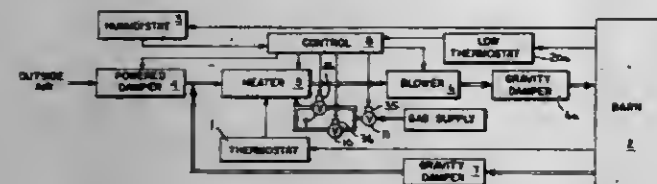
2 Claims

1. A climate control to regulate the temperature and humidity of the air in a barn comprising:

- (a) temperature sensing means for detecting the temperature of the air in said barn and for comparing it to a preselected temperature;
- (b) relative humidity sensing means connected with said temperature sensing means for detecting the relative humidity of the air in said barn and for comparing it to a preselected relative humidity;
- (c) air circulating means operable by at least one of said

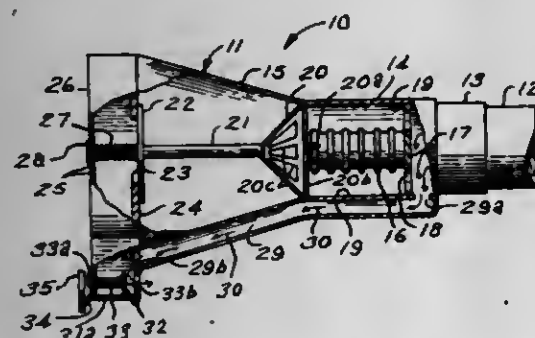


temperature sensing means and said relative humidity sensing means for circulating the air in said barn;  
(d) heating means operable by at least one of said temperature sensing means and said relative humidity sensing means for heating the air circulated by said circulating means;



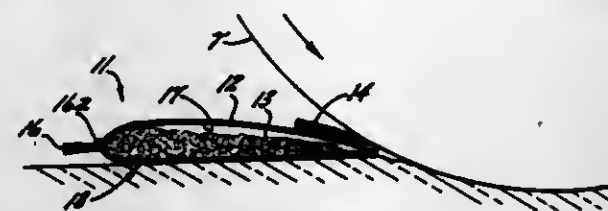
(e) ventilating means operable by said relative humidity sensing means and connected to said heating means for introducing outside hot air into said barn;  
(f) and a minimum temperature sensing means for detecting the entrance of cold air into said barn and for discontinuing the operation of said air circulating means upon detection of said cold air.

**4,281,790**  
**SAFETY SHOWER HEAD**  
Merrill F. McGinnis, 12723 Carmo Dr., Surprise, Ariz. 85345  
Filed May 2, 1980, Ser. No. 145,781  
Int. Cl.<sup>3</sup> G05D 23/12  
U.S. Cl. 236-93 B 2 Claims U.S. Cl. 239-5 40 Claims



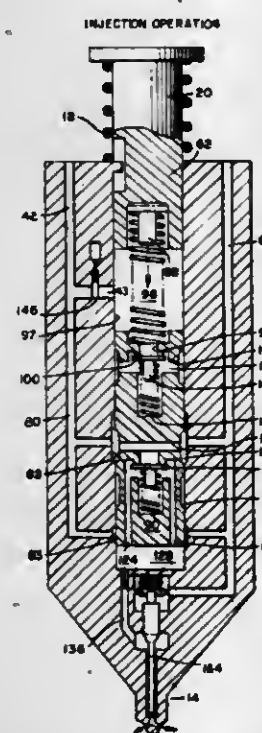
1. A safety shower head, comprising, in combination, a hollow main body, a thermostat secured in said hollow main body, for expanding when the water temperature is too high, to close an orifice in a piston of a shut-off valve, to prevent hot water flow on a bather immediately, and a relief valve secured in an off-set portion of said main body, for releasing the hot water away from the thermostat, after the inlet source of hot water is shut off, so as to enable normal use of said safety shower head again; the outer periphery of an end of said thermostat being fixedly secured to the inner periphery of said hollow main body, and a plurality of radially spaced-apart openings in a skirt of said piston normally receive water when said safety shower head is in use, the water normally passing through a central opening in an inner wall fixedly secured, at its outer periphery, to the inner periphery of said hollow main body, and said skirt of said piston is fixedly secured to a piston rod, and the opposite end of said piston rod threadingly receives an adjustment screw for adjusting the tension of a coil spring received on said piston rod, and one end of said coil spring urges against a disc fixedly secured to said piston rod, and the opposite end of said coil spring urges against the rear of the face of said hollow main body, and said adjustment screw is freely received in an opening in said face of said hollow main body.

**4,281,791**  
**TRACTION AID DEVICE**  
Cecil F. Schaaf, and Craig R. Schaaf, both of 3015 Palmer Rd., Standish, Mich. 48658  
Filed Dec. 10, 1979, Ser. No. 101,729  
Int. Cl.<sup>3</sup> E01B 23/00  
U.S. Cl. 238-14 7 Claims



1. A traction aid device for improving the traction of a drive wheel of a motor vehicle on a low traction driving surface such as ice comprising: a bag, coarse granular material only partially filling the bag, and a compressible tab attached along one side of the bag whereby, upon the insertion of the bag between the wheel and the driving surface with the tab engaging the wheel, rotation of the wheel toward the driving surface engages the tab and draws the bag and granular material under the wheel in a rolling action, bursting the bag and dispensing the granular material beneath the wheel.

**4,281,792**  
**SINGLE SOLENOID UNIT INJECTOR**  
Albert E. Sisson, Farmington Hills, and Donald J. Lewis, Troy, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.  
Filed Jan. 25, 1979, Ser. No. 6,948  
Int. Cl.<sup>3</sup> F02M 47/02  
U.S. Cl. 239-5 40 Claims

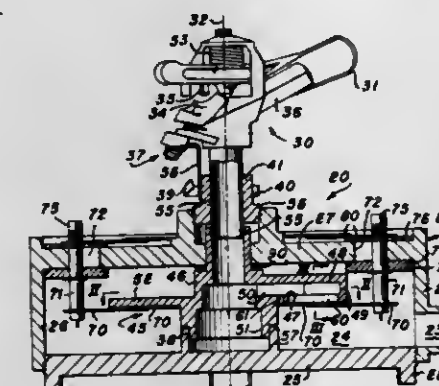


12. A method of electronically operating a fuel injector disposed in operative relationship to a combustion chamber of an internal combustion engine, said injector including a body having an axially extending bore, a primary pumping plunger and a secondary plunger positioned therewithin for axial movement, a nozzle situated at one end of the body remote from the primary pumping plunger, a timing chamber defined in said body between said plungers, a metering chamber defined in said body between said secondary plunger and said nozzle, passages in said body for introducing fuel into said chambers, and electronically operated control valve means situated proximate said passages and said timing chamber, said method comprising the steps of:

introducing fuel at supply pressure into said passages and said chambers;  
applying force to the primary pumping plunger to move same axially;  
supplying an electrical signal to the control valve means to seal the timing chamber and form a hydraulic link between the primary and secondary plungers and moving said plungers in concert;  
discharging the fuel in the metering chamber through the nozzle while maintaining the electrical signal; and  
terminating the electrical signal to the control valve means to open the timing chamber and break the hydraulic link between the plungers and moving said primary pumping plunger independently of said second plunger.

**4,281,793**  
**WATER SPRINKLER WITH FLAT PLATE PATTERN CONTROL**

Robert E. DeWitt, 49 Sherwick Rd., Oswego, Ill. 60543  
Continuation-in-part of Ser. No. 51,861, Jun. 25, 1979, which is a continuation-in-part of Ser. No. 893,268, Apr. 5, 1978, Pat. No. 4,180,210. This application Jan. 25, 1980, Ser. No. 115,263  
Int. Cl.<sup>3</sup> B05B 3/06  
U.S. Cl. 239-11 19 Claims

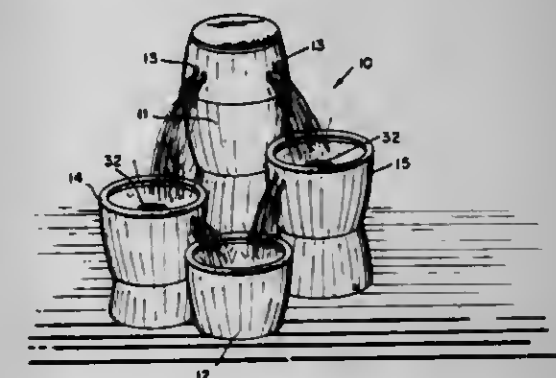


17. A method of spraying water in a desired pattern of ground coverage using a vertical-axis sprinkler with a rotating spray head, comprising the steps:  
aligning, with a radial direction of a spray of water from said spray head to said pattern, a radially-extending sampling aperture formed in a horizontal disk rotating with said spray head, the sampling aperture having a circumferentially enlarged width at radially outward portions;  
passing a flow of water through said sampling aperture from a source of water to said spray head; and  
blocking said flow of water through a selected, radially outward portion of said aperture in at least a part of an arc of rotation of said spray head, the unblocked portion at each circumferential position of the spray head and sampling aperture being in direct relation to the corresponding radius of the pattern of ground coverage desired in said part of said arc, such that the shape of the unblocked portion is geometrically substantially identical in shape to the pattern of ground coverage desired in said part of said arc.

**4,281,794**  
**FOUNTAIN SYSTEM INCLUDING A PLURALITY OF WOODEN BARRELS**  
William Dimino, 12226 1/2 Mootana Ave., Los Angeles, Calif. 90049  
Filed Sep. 12, 1980, Ser. No. 186,459  
Int. Cl.<sup>3</sup> B05B 17/08  
U.S. Cl. 239-20 2 Claims

1. A fountain system comprising:  
a. a first wooden barrel which is disposed at a first level, said first wooden barrel having an outlet for water;  
b. one half of a second wooden barrel which is disposed at a second level which is below the first level of said first

wooden barrel so that water from said outlet of said first wooden barrel may flow into said second wooden barrel;  
c. pumping means for pumping water from said second wooden barrel to said first wooden barrel;  
d. a tubular conduit which is fluidly coupled to said pumping means;  
e. a dispersal nozzle including a flat plate and a hollow truncated-conical member which is fluidly coupled to said tubular conduit and which is also fluidly coupled to said outlet, which is formed by a plurality of bores in the sidewall of said first wooden barrel; where said pumping means recirculate water from said second wooden barrel to said first wooden barrel;  
f. one half of a third wooden barrel which is disposed at a third level which is intermediate the first level of said first wooden barrel and the second level of said second wooden barrel and which is also disposed so that water



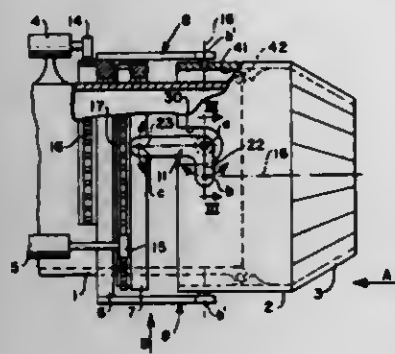
from said output of said first wooden barrel flows into said third wooden barrel, said third wooden barrel having an outlet for water; and  
g. out-flowing means for allowing water to out-flow from said third wooden barrel into said second wooden barrel, said out-flowing means fluidly coupled to said output of said third wooden barrel, said flow guide including a pair of parallel trapezoidal plates, a top plate which is coupled to the peripheral edge of each of said pair of parallel trapezoidal plates and a flange which is coupled to the bottom edge of each of said pair of parallel trapezoidal plates, said flow guide is fluidly coupled to said outlet, which is formed by a plurality of bores in the sidewall of said third wooden barrel, and overflow controlling means for controlling the water level in said third wooden barrel so that the water does not overflow therefrom, said overflow controlling means being fluidly coupled to said second wooden barrel.

**4,281,795**  
**JET PIPE ARRANGEMENT FOR AIRCRAFT PROPULSION AND CONTROL**  
Ludwig Schweikl, Moosburg, Fed. Rep. of Germany, assignor to MTU Motoren-und-Turbinen-Union München GmbH, Munich, Fed. Rep. of Germany  
Filed Mar. 5, 1979, Ser. No. 17,275  
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2809169  
Int. Cl.<sup>3</sup> B64C 15/02  
U.S. Cl. 239-265.35 38 Claims

1. Jet pipe arrangement for propulsion and control of an aircraft or the like, comprising:  
a relatively stationary first pipe section,  
a second pipe section fitted with a thrust nozzle and disposed downstream of said first pipe section for multi-directional rotation to control the direction of expulsion of thrust gases through said thrust nozzle,  
and actuation element means attached to the first pipe section and including means for imparting relative movement to said second pipe section with respect to said first pipe section, said actuation element means including angle lever means interconnecting said first and second pipe



sections in such a way that said second pipe section is pivotable selectively about either one or both of respective horizontal and vertical pivot axes through said second pipe section, wherein said angle lever means includes a



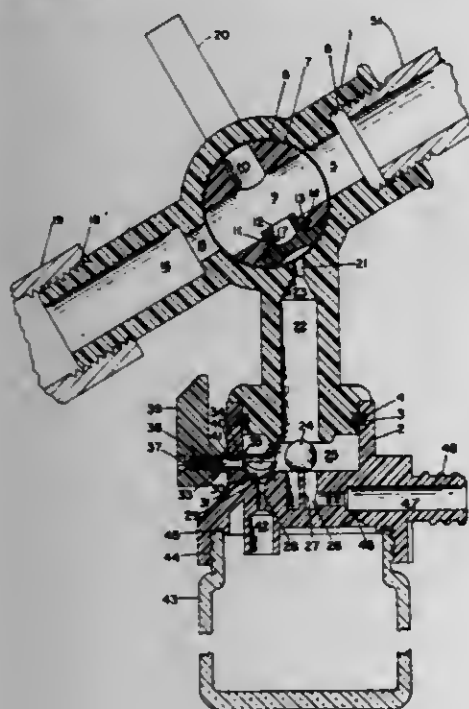
plurality of angle levers which are rotatably located on the first pipe section at their respective fulcrums, all fulcrums being preferably in a plane which perpendicularly intersects the extended engine or jet pipe longitudinal axis.

#### 4,281,796 BATHROOM MIXING DEVICE

Elmer G. Fugent; Ruby M. Fugent, both of 10716 Ave Compadres; Shirley Kraus, and Wolfgang Kraus, both of 17346 Flame Tree, all of Fountain Valley, Calif. 92708  
Filed Mar. 15, 1979, Ser. No. 20,938  
Int. Cl.<sup>3</sup> B05B 7/26

U.S. Cl. 239—310

4 Claims



1. In a device of the class herein described, a main structural body containing provisions at one end for attachment to a standard plumbing outlet, and provisions at the opposite end for attachment of a common shower head, or the like, and having internal passages through both ends communicating with a cylindrical chamber near the center, a revolvable cylinder located within the cylindrical chamber having a main passage, and a double acting seal that, when fluid pressure is applied to the seal from either one of two directions, shall efficiently stop the flow of liquids at that point, a small vertical passage communicating with the cylindrical chamber at one end and a larger vertical passage at the other end, a ball, free to move vertically through the larger vertical passage to a cone formed at, and by, the juncture of the larger and smaller vertical passages, a secondary structural member attached to the main structural body and containing a chamber and having a well within the chamber, wherein a vertical post is located at the center of the well, and directly beneath the larger vertical

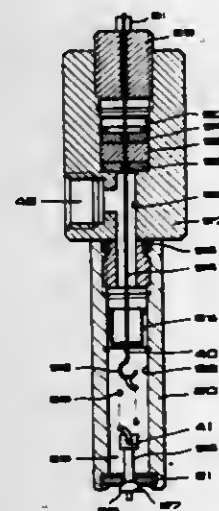
passage of the main body, a small vertical passage communicating with the chamber and a mixing container, a small lateral passage communicating with the well at one end and opening into a larger lateral outlet passage at its opposite end, a small vertical passage communicating with the container at one end and entering into, but perpendicular to the larger lateral outlet passage.

#### 4,281,797 FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

Kei Kimata, Aichi; Masatoshi Kaneko, Iwata; Sholehi Fukunaga, Iwata; Toshiharu Kato, Iwata; Takeshi Ikeda, Iwata, and Atsuo Suzuki, Kakegawa, all of Japan, assignors to NTN Toyo Bearing Company, Limited, Osaka, Japan  
Filed Jul. 26, 1978, Ser. No. 928,152  
Int. Cl.<sup>3</sup> F02M 61/08

U.S. Cl. 239—533.12

3 Claims



1. An automatic valve-type fuel injector comprising: an elongated body having a longitudinally extending bore formed therein and a fuel inlet port communicating with the bore;
- a valve element having a hemispherically-shaped head portion and a stem portion to the leading end of which the head portion is joined;
- a valve seat fixed to the leading end of the bore and having a central aperture through which the stem portion of the valve element extends with an ample clearance therebetween for the passage of fuel and which is provided with an annular edge for the fuel-tight contact during non-injection period with the cooperating hemispherical surface of the head portion of the valve element;
- an adjusting rod extending through the bore to project beyond the rear thereof;
- a tension spring provided at its opposite ends with hooks which engage with the rearward end of the stem portion of the valve element and leading end of the adjusting rod, respectively;
- a seal member housed in a rearward end of the bore and receiving the adjusting rod in a fuel-tight fashion;
- a locking member disposed outside the body for locking the adjusting rod at its desired longitudinal position so as to set the force of the tension spring that determines the valve opening pressure; and
- an adjusting screw having a screw thread on its outer periphery engaging a complementary screw thread formed at the rearward end of the bore in the body, said adjusting screw having a central aperture through which the adjusting rod extends and bearing on its outer end surface said locking member.

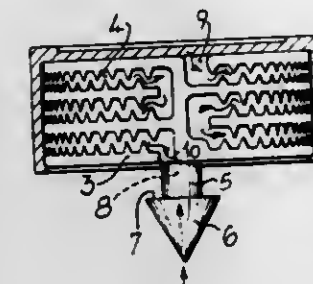
4,281,798

#### DRIP OR TRICKLE EMITTER

Noam Lemelstrich, Industrial Zone, Netanya, Israel  
Filed Sep. 7, 1979, Ser. No. 73,313  
Claims priority, application Israel, Sep. 7, 1978, 55533  
Int. Cl.<sup>3</sup> B05B 15/00

U.S. Cl. 239—542

8 Claims



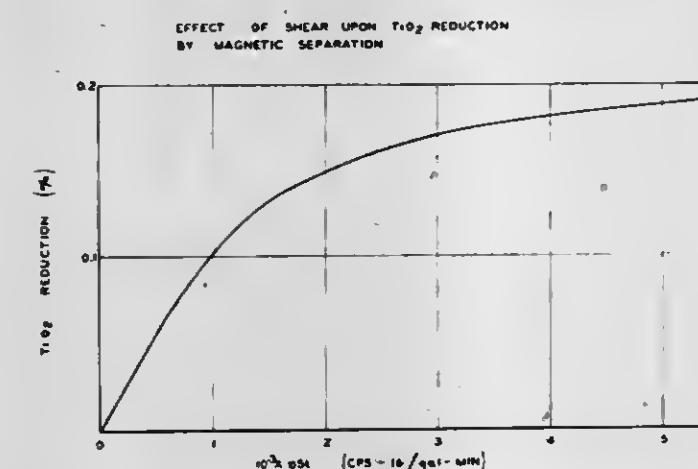
1. A drip or trickle emitter device of outwardly pill-box like appearance, the said device consisting of a first and outer cylindrical cup shaped body and a second inner equally cup shaped body, with both cup shaped bodies having one open side, the inner wall of the first cup shaped body forming a truncated conical space of slight conicity, the second cup shaped body being designed, shaped and dimensioned to be force-fittable into the first cup shaped body, and the open sides of the two cup shaped bodies facing opposite directions, one of the bodies having in its wall a tortuous, continuous groove ascribing multiple bows and bends and forming with the wall of the other body a flow path, a circular groove being provided in the top wall of the said outer cup shaped body into which circular groove the edge of the inner cup shaped body fittingly enters, the assembled device being provided with an inlet into the device and an outlet therefrom.

#### 4,281,799 PROCESS FOR IMPROVED MAGNETIC BENEFICIATION OF CLAYS

Robin R. Oder, San Francisco, Calif., assignor to J. M. Huber Corporation, Locust, N.J.  
Continuation of Ser. No. 727,277, Sep. 27, 1976, abandoned, which is a continuation of Ser. No. 580,396, May 23, 1975, abandoned, which is a continuation of Ser. No. 405,487, Aug. 8, 1974, abandoned. This application Apr. 6, 1979, Ser. No. 27,641  
Int. Cl.<sup>3</sup> B02C 23/18; B03B 1/04

U.S. Cl. 241—24

1 Claim



1. The method for removing discolorants from a crude clay by a process including a step of separating weakly magnetically susceptible minute contaminant particles including titanium dioxide from an aqueous clay-water slurry containing said particles in minor concentration with substantially non-magnetic minute mineral particles by subjecting said slurry to magnetic separation in a magnetic field; the improvement

comprising reducing the titanium dioxide content of the said clay by:

- (a) mechanically working said clay-water slurry by application of means to produce a force selected from the group consisting of shear forces, impact forces, kneading forces and combinations of two or more of said forces, at a viscosity  $\eta$  in centipoises (cps), a solids content  $s$  in pounds per gallon (lg./gal.), and for a time  $t$  in minutes (min.) such that the factor  $nst$  has a value in the range of  $0.335 \times 10^{-3}$  to  $5.33 \times 10^{-3}$  (cps-lb./gal.-min.) to release the contaminant particles including said titanium dioxide to be removed from said slurry;
- (b) dispersing said clay-water slurry to disperse said contaminant particles to facilitate said magnetic separation; and
- (c) thereafter, magnetically separating said clay-water slurry in a manner to reduce the titanium dioxide content of said clay.

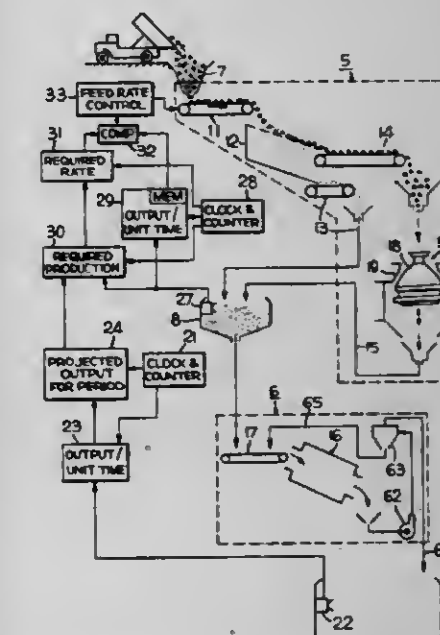
4,281,800

#### OPERATION OF ASSOCIATED CRUSHING PLANT AND MILL

Malcolm D. Flavel, Appleton, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.  
Filed Nov. 2, 1979, Ser. No. 90,657  
Int. Cl.<sup>3</sup> B02C 21/00, 25/00

U.S. Cl. 241—24

11 Claims



1. A method of operating a comminuting facility including a crushing plant (5) to which unprocessed material is fed and by which the material is delivered to a delivery zone (8) as crushed product, and a grinding mill (6) to which said crushed product is fed and which reduces the same to final product (at 9), said method providing for optimum utilization of the capacities of the facility and of the power available to it and comprising the steps of:

- A. controlling the grinding mill (6) to produce final product at the maximum rate that is within its existing capabilities while constantly consuming the maximum amount of power available to it;
- B. controlling the crushing plant (5) to cause it
  - (1) to deliver crushed product to the delivery zone (8) at substantially the rate at which unprocessed material is fed to it, and
  - (2) to constantly consume the maximum amount of power available to it;
- C. ascertaining at timed intervals (as by 21, 22, 23) the then prevailing rate at which the grinding mill (6) is producing final product; and
- D. feeding unprocessed material (as by 11) to the crushing plant (5) at a rate such that the projected quantity of crushed product that would be delivered to the delivery zone (8) at the end of an extended period if said rate were



maintained to the end of that period would equal the projected quantity of final product that would be produced by the grinding mill (6) by the end of the same extended period if the grinding mill (6) were to maintain its then prevailing rate of production of finished product to the end of said period.

4,281,801

# GRANULATOR WITH FALSE BOTTOM COLLECTION CHAMBER

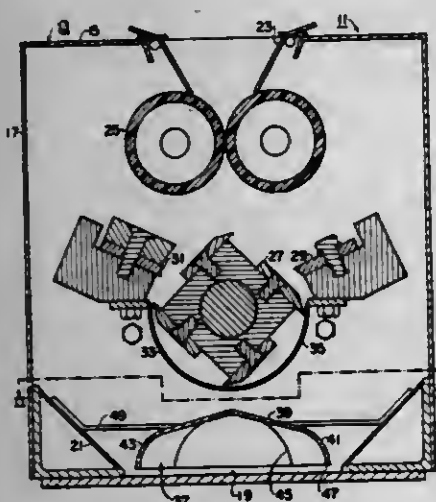
Frank Parker, and Leslie M. Parker, both of Old Brandon Rd., Hillsboro, Tex. 76645

Filed Nov. 5, 1979, Ser. No. 91,358

Int. Cl.<sup>3</sup> B02C 18/22

U.S. Cl. 241-222

8 Claims



1. In a granulator of the type having a housing, a cutter assembly located in the housing for granulating objects into particles, and a blower for removing the particles from the bottom of the housing, the improvement comprising: a false bottom carried between the cutter assembly and the bottom of the housing, with spaces being between the bottom of the housing and the edges of the false bottom for the admission of particles to the space below the false bottom, the blower being positioned at one end of the false bottom to cause air movement along the length of the housing bottom between the housing bottom and the false bottom.

4,281,802

# THERMAL ICE CAP

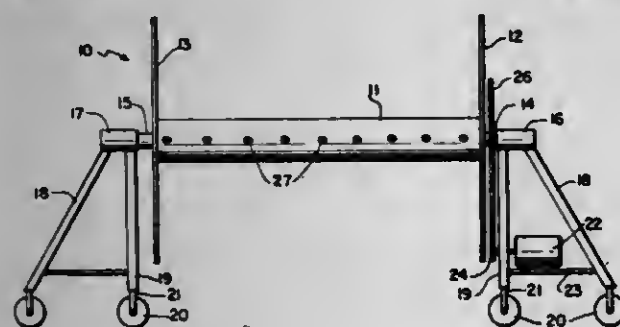
William G. Burley, Johnstown, Pa., assignor to T.I.C. Enterprises, Limited, Johnstown, Pa.

Filed Apr. 15, 1980, Ser. No. 140,500

Int. Cl.<sup>3</sup> B65H 75/02, 17/48

U.S. Cl. 242-55

28 Claims



1. A thermal cover for the exposed ice surface of a rink or the like comprising:

a generally rectangular sheet of flexible material having a length substantially equal to the length of said ice surface; attachment means disposed on a surface of said sheet along

a portion of a line perpendicular to the long dimension of said sheet at substantially the mid-point thereof, and orifice means disposed along the remaining portion of said line, said orifice means spaced so as to correspond to the spacing of said attachment means whereby said attachment means project through said orifice means when said sheet is folded lengthwise.

4,281,803

# SPLICER CONTROL

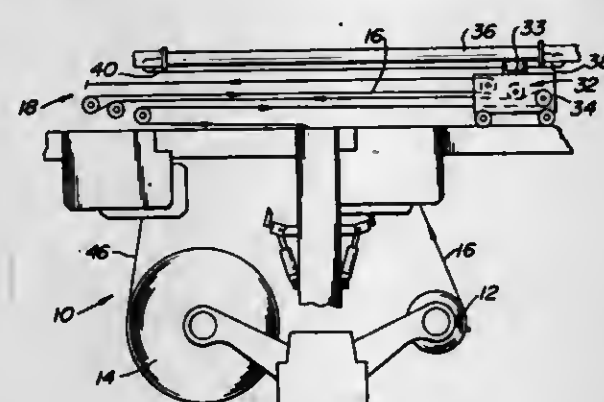
William A. Massey, Mt. Holly, N.J., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Nov. 19, 1979, Ser. No. 95,846

Int. Cl.<sup>3</sup> B65H 19/18

U.S. Cl. 242-58.1

22 Claims



1. Apparatus for controlling a splicer machine which splices a web from a running roll to a web from a reserve roll, said splicer machine including a festoon for storing an amount of web from the running roll, comprising: means for reducing the speed at which web is drawn from the running roll at a rate R1 from an initial speed V in response to a splice command signal, said rate R1 being proportional to the square of said initial speed V; means for generating a web speed signal indicative of whether the speed at which web is drawn from said running roll has reached substantially zero speed; means for generating a splice initiate signal in response to said web speed signal, actuating thereby the splicer machine to splice the web from the running roll to the web from the reserve roll; and means for increasing the speed at which web is drawn from the reserve roll at a rate R2 up to the initial speed V.

4,281,804

# TENSIONING DEVICE FOR MATERIALS OF TAPE FORM

Bernard Badet, Belfort, and Yves Dekeyser, Salbert Valdoie, both of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull, Paris, France

Filed Apr. 9, 1980, Ser. No. 138,723

Claims priority, application France, Oct. 5, 1979, 79 26531

Int. Cl.<sup>3</sup> B65H 23/10; G03B 1/24

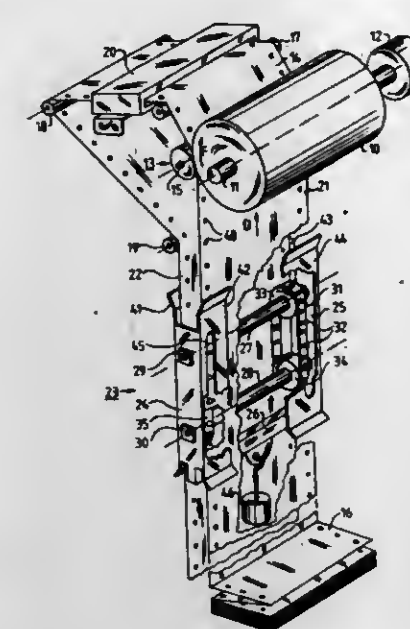
U.S. Cl. 242-75.2

6 Claims

1. In a tape tensioning device for maintaining tension on a tape installed in a loop return fashion within a tape driving mechanism, said tape including a first free section arranged to enter the driving mechanism and a second free section arranged to leave the driving mechanism, the improvement comprising:

a floating displacement transmission element for transmission of displacement disposed between the two free sections of said tape to enable the section emerging from the driving mechanism to be driven via this floating element

by the section which enters into the driving mechanism; and



tensioning means for said element arranged to cause said floating element to exert a pull on the sections entering and leaving the driving mechanism.

4,281,805

# APPARATUS AND METHOD FOR COILING A MOVING WEB

Leo N. Vackler, 's-Gravenwezel, and Lucien P. van der Vilet, Hoboken, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

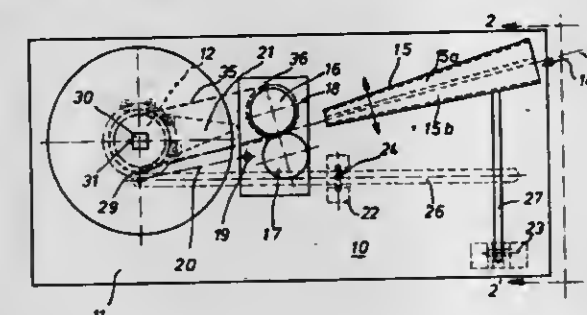
Filed Nov. 14, 1979, Ser. No. 94,353

Claims priority, application United Kingdom, Nov. 17, 1978, 44937/78

Int. Cl.<sup>3</sup> B65H 27/00

U.S. Cl. 242-76

13 Claims



1. A device for coiling a moving web or strip onto a rotating core, which device comprises a frame, core support means carried by said frame upon which said core may be positioned for rotation about a horizontal axis, means for imparting rotation to said supported core, freely flexible means anchored at one end to said frame, said flexible means extending from said anchored end generally tangentially to the underside of the core periphery and then up and over said periphery to be held by gravity in partially encircling contact therewith or with the web being wound, thereby defining with the periphery of said core a nip into which the leading edge of a web travelling between said core and said flexible means is directed for winding engagement with said core.

4,281,806

# FISHING LEADER STORAGE REEL

Edward D. McMullea, El Sobrante, Calif. 94803

Continuation-in-part of Ser. No. 924,156, Jul. 13, 1978,

abandoned. This application Sep. 28, 1979, Ser. No. 79,714

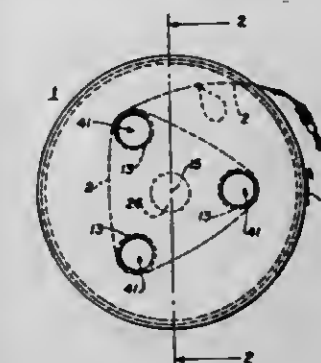
Int. Cl.<sup>3</sup> B65H 75/28

U.S. Cl. 242-125.1

8 Claims

6. A reel assembly on which to wind pretied fishing leaders comprising a reel and a housing, said reel including means to

ing when installed therein for providing rotatable support for said reel at such point of rotatable fit, said peripheral housing wall including a slot for exposing said reel within, and a barbless hook having a stem with means for anchoring said hook at its stem to said peripheral wall of said housing with said hook in proximity to said peripheral slot, whereby, pretied leader may be fed through said slot for winding upon said posts and a free end of said leader anchored to said barbless hook.



ing when installed therein for providing rotatable support for said reel at such point of rotatable fit, said peripheral housing wall including a slot for exposing said reel within, and a barbless hook having a stem with means for anchoring said hook at its stem to said peripheral wall of said housing with said hook in proximity to said peripheral slot, whereby, pretied leader may be fed through said slot for winding upon said posts and a free end of said leader anchored to said barbless hook.

4,281,807

# WEB TRANSPORT APPARATUS

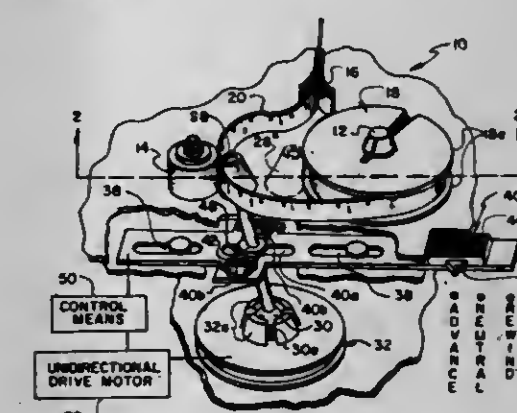
Donald O. Easterly, Rush, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,733

Int. Cl.<sup>3</sup> G03B 1/04; G11B 15/32

U.S. Cl. 242-206

9 Claims



7. Web transport apparatus for advancing a web and for winding the web onto a reel having a flange, said apparatus comprising:

- a rotatable pressure roller;
- a spindle for receiving the reel;
- a driving member supported for rotational movement and movement to (1) a first position for driving the web between itself and said pressure roller, (2) a second position for rotatively driving the reel to wind the web onto the reel, and (3) a third position removed from said first and second positions;
- a unidirectional drive motor conditionable for rotatively driving said driving member;
- means for coupling said drive motor to said driving member for permitting said driving member to be rotatively driven by said drive motor and for permitting said driving member to be displaced to said first, second and third positions, said coupling means including a generally ball-shaped portion with at least one protrusion and a



receptacle portion adapted to receive said ball-shaped portion with said protrusion;

- (f) selector means for selectively moving said driving member to said first, second and third positions; and  
(g) control means coupled to said selector means and said drive motor for conditioning said drive motor to rotatively drive said driving member when said driving member is positioned by said selector means in either of said first and second positions.

4,281,808

## FISHING REEL

Hideo Noda, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

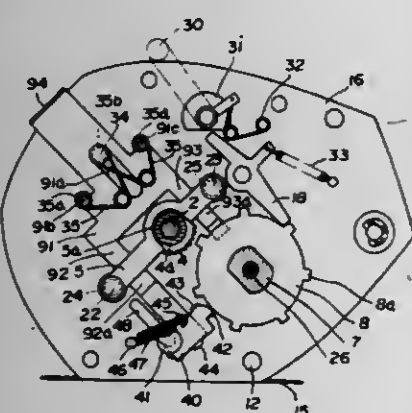
Filed Dec. 17, 1979, Ser. No. 104,434

Claims priority, application Japan, Dec. 30, 1978, 53-183727[U]

Int. Cl.<sup>3</sup> A01K 89/02

U.S. Cl. 242-218

4 Claims



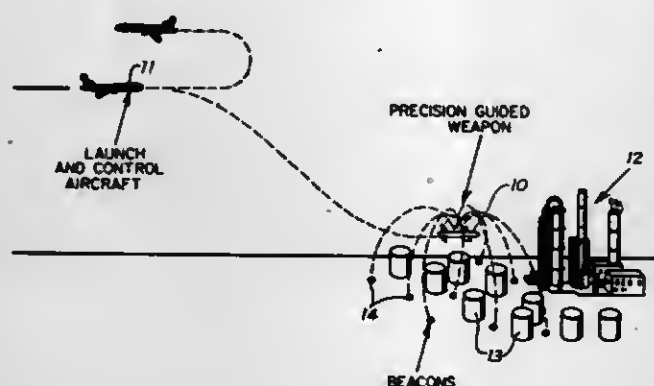
1. In a fishing reel including a stationary member fixed to a fishing rod, a spool shaft supported rotatably to said stationary member, a spool rotating together with said spool shaft, a pinion being positioned on said spool shaft and slidably movable between a position where said pinion engages with said spool shaft and a position where said pinion disengages from said spool shaft, a pinion holder carrying said pinion and biasing said pinion toward said engaging position, a driving gear always in mesh with said pinion, an input shaft supporting said driving gear, a return plate having a plurality of projections and being rotatable together with said driving gear integrally with said input shaft, and a clutch lever supported to said stationary member slidably movably between a first position and a second position in the direction perpendicular to the axis of said spool shaft, the improvements wherein are provided; an arm disposed at the fore end of said clutch lever; a pivot pin extending substantially parallel to the axis of said spool shaft and supporting said arm swingably; engaging means provided at said arm and engageable with one of said projections at said return plate; and a first stopper means and a second stopper means for restricting said arm in its swinging range, both said stopper means being provided at said arm, extending toward said clutch lever, and engaging therewith; and a spring member being disposed between said arm and said stationary member at an intermediate position between two positions of said pin movable together with said clutch lever, the two positions corresponding to the first and second positions of said clutch lever, so that until said clutch lever moves forward from the first position beyond an intermediate position between the first and second positions, said spring member biases said arm in the direction of allowing said first stopper means to engage with said clutch lever to thereby keep said engaging means away from a circular locus of rotation of said projections at said return plate, and after said clutch lever moves beyond said intermediate position, said spring member is switched in its working direction to swing said arm and engage said second stopper means with said clutch lever, thereby allowing said engaging means to enter in said circular locus of rotation of said projections.

4,281,809  
**METHOD OF PRECISION BOMBING**  
Frank P. Oglesby, Indianapolis, and Walter L. Wuster, Greenwood, both of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 13, 1979, Ser. No. 102,721  
Int. Cl.<sup>3</sup> F41G 7/00

U.S. Cl. 244-3.16

7 Claims



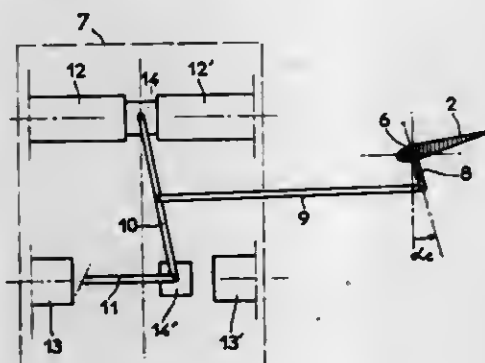
1. A method of attacking a plurality of targets comprising, first launching at a primary target a precision guided explosive weapon carrying at least one signal beacon, then separating said at least one signal beacon to land in a position near said primary target, then detonating said explosive weapon, and then launching at least one weapon having a guidance system which will home on said at least one signal beacon.

4,281,810  
**PROCESS AND AN INSTALLATION FOR THE CONTROL OF THE EFFICIENCY OF THE AERODYNAMIC SURFACES OF AN AIRCRAFT**  
Philippe Poisson-Quinton, Paris; Amedee P. Bevert, Nice, and Hung Le Thuy, Le Plessis-Robinson, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, France

Filed Apr. 19, 1979, Ser. No. 31,598  
Int. Cl.<sup>3</sup> B64C 5/00, 13/00

U.S. Cl. 244-75 R

12 Claims



1. Apparatus for controlling the operation of an aerodynamic surface on an aircraft, comprising:  
means for mounting an aerodynamic surface on an aircraft to assume variable orientation with respect thereto;  
means for controlling the orientation of said surface with respect to the aircraft;  
means for connecting said controlling means to said surface comprising a first pivot member and linkage means pivotally connected to said first pivot member for permanently linking said controlling means to said surface;  
means for selectively blocking said first pivot member with respect to the aircraft to establish, in a blocking condition, a steerable connection between said controlling means and said surface to operate the same in a controlled mode, and

to disable such connection, in a nonblocked condition thereof, to let said surface operate in a freely floating mode; and said selective blocking means includes a pair of oppositely movable jacks on either side of said first pivot member to block said first pivot member with respect to the aircraft by moving said jacks into engagement with said first pivot member, in the blocked condition thereof.

4,281,811

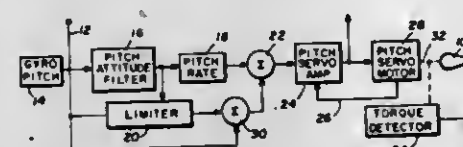
## PITCH TRIM SYSTEM FOR AIRCRAFT

John M. Nixon, Mineral Wells, Tex., assignor to Edo-Alre Mitchell, Mineral Wells, Tex.

Filed Jun. 15, 1979, Ser. No. 48,788  
Int. Cl.<sup>3</sup> G05D 1/10

U.S. Cl. 244-178

19 Claims



1. An automatic trim system for aircraft having a control surface and a trim surface associated with the control surface for changing the effect of the control surface to maintain a desired flight attitude, comprising:

limiter means responsive to an input signal and generating a limited authority trim control signal having a preselected maximum amplitude,  
gating means responsive to the input signal and having a control input, said gating means generating a primary trim control signal varying with the input signal in accordance with a control signal applied thereto,  
control means responsive to the input signal and generating the control signal, and  
means for combining the limited trim control signal and the primary trim control signal into a trim servo motor drive voltage.

4,281,812  
**TRANSVERSE DRIVING BODIES, PARTICULARLY AIRPLANE WINGS**

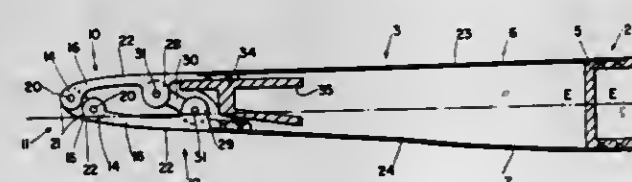
Herbert Zimmer, Friedrichshafen, Fed. Rep. of Germany, assignor to Dornier GmbH, Fed. Rep. of Germany

Filed Sep. 21, 1979, Ser. No. 77,713

Int. Cl.<sup>3</sup> B64C 3/48

U.S. Cl. 244-219

8 Claims



1. In a transverse driving body, particularly an airplane wing having a variable profile form and a displacing mechanism, the improvement comprising a plurality of link band means forming the front wing part, each of said link band means including bearing segment means and link band segment means,  
said link band means including at least three link band parts

which are portions of the upper wing profile, lower wing profile and wing nose,  
said segments of said link band means having different curvatures with said bearing segment having a smaller radius of curvature than said band segment,  
and means adapted to act in conjunction with said displacing mechanism whereby said link band means can be selectively adjusted into different positions with respect to incident flow to provide at least one position where said wing has a low profile and small camber and at least one displaced position where said wing profile is increased and said wing camber is increased;  
said bearing segment of said upper wing profile forming the leading edge in said one position and said band segment of said wing nose forming the leading edge in said displaced position.

4,281,813

## BAG HOLDER

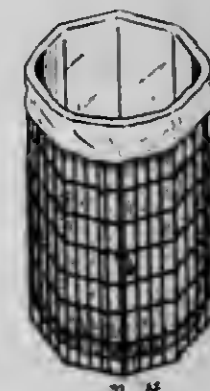
Joho J. Garrity, 425 San Mateo Dr., Palm Springs, Fla. 33461

Filed Oct. 16, 1979, Ser. No. 85,249

Int. Cl.<sup>3</sup> A63B 55/04

U.S. Cl. 248-97

6 Claims



1. A bag holder for holding a bag with the mouth open and the bottom of the bag on the ground, comprising:  
a body including at least five sections,  
each said section having a general flat shape, said sections movably connected to one another to form a cylindrical shaped body;  
said body in said cylindrical shape having an upper bag holding edge;  
said body having a first vertical edge and a second vertical edge, said body shaped and constructed for movement of said first vertical edge to and away from said second vertical edge to provide for transverse movement of a full bag;  
said body being positioned in a cylindrical form to form a first mouth a said upper bag holding edge for receiving and holding a bag fully opened by contact along said bag holding edge of said body whereby the bag can be filled from the top without supporting the bag, and a second mouth at the bottom of said body which allows the bottom of the bag to be supported by the ground;  
a releasable connecting means attached to said first vertical edge and attachable to said second vertical edge of said body, said releasable connecting means for forming and closing a transverse mouth that may be opened and closed for lateral removal of the bag without lifting the bag.

4,281,814

## COVER ASSEMBLY

Richard H. Verwey, Pontiac, Mich., assignor to Con-Trol Ltd. Inc., Pontiac, Mich.

Filed Feb. 7, 1980, Ser. No. 119,306

Int. Cl.<sup>3</sup> A63B 55/04

U.S. Cl. 248-97

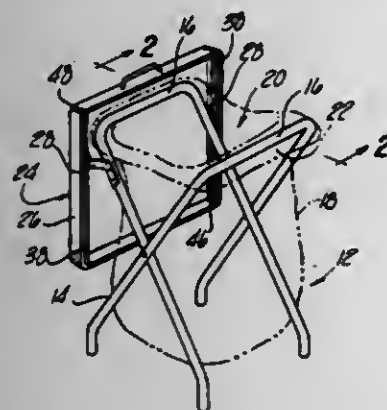
6 Claims

1. A cover assembly for a hamper, said open at one end, said



liner being insertable over said frame rim, said cover assembly further comprising:

- a pair of elongated mounting brackets,
- means for securing one end of each bracket to the frame at a position spaced downwardly from the frame rim,
- a substantially planar lid,
- a pair of elongated spaced and parallel tracks secured to said lid,
- a block rotatably secured to the other end of each bracket, each block being slidably mounted to one of said tracks and movable between a first position and a second position, wherein in said first position said lid extends over and



covers the open end of the liner and wherein in said second position said lid is spaced from and exposing the open end of the liner, and

wherein each bracket further comprises a pair of substantially parallel and spaced apart legs and a flared portion extending between and connecting said legs, one leg of each bracket being rigidly secured to said frame so that said flared portion is spaced downwardly from the top of the frame rim and so that the other bracket leg extends above said flared portion whereby a lip of the liner can be positioned around the outer periphery of said frame rim between said rim and said other bracket legs.

4,281,815

## MIRROR MOUNTING BRACKET

Lawrence E. O'Connell, Doylestown, and Raymond L. Hanisco, Lansdale, both of Pa., assignors to Delbar Products, Inc., Perkasie, Pa.

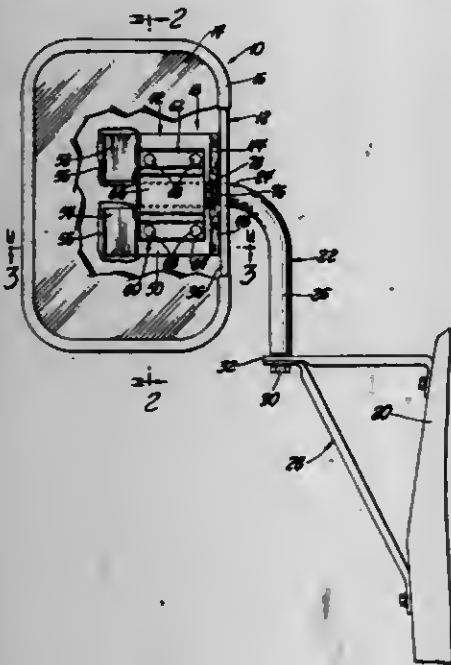
Continuation of Ser. No. 963,878, Nov. 27, 1978, abandoned.

This application Feb. 20, 1980, Ser. No. 122,978

Int. Cl.<sup>3</sup> B65D 63/00

U.S. Cl. 248-479

9 Claims



1. A mirror head assembly including a hollow shell having

an open face, a peripheral rim formed about the open face of said shell, a mirror element mounted in the open face of said shell and retained therein by said rim, said shell including a first wall extending rearwardly from said rim and being generally perpendicular to said mirror element, said shell including a second wall projecting from the rearmost end of said first wall and terminating at said peripheral rim, an opening formed in said first shell wall, a cylindrical support arm extending through said shell opening, a bracket structure mounted within said shell for adjustably supporting said shell upon said support arm, said bracket structure comprising a first member having a base portion fixed to the first wall of said shell, an elongated planar portion extending normally to said base portion, means bonding the elongated portion of said first member to said second shell wall, the elongated portion of said first bracket member including an offset cylindrical section concentrically disposed to said support arm, said bracket structure including a second member having a pair of transversely spaced planar portions and an intermediate cylindrical section concentrically disposed to said support arm, and means for securing the planar portions of said second member in abutting relationship to the elongated planar portion of said first bracket member to clampingly engage the support arm between the cylindrical sections of said first and second bracket members whereby said shell may be rotatably adjusted about said support arm.

4,281,816

## AUTOMATIC APPARATUS FOR MOLDING A PREFORM

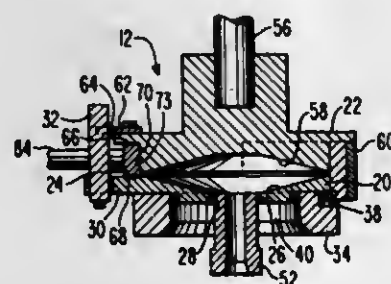
Charles B. Carroll, Trenton; Frederick C. Schaller, Lincroft, and Ernest A. Beres, Robbinsville, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 11, 1979, Ser. No. 102,620

Int. Cl.<sup>3</sup> B29D 17/00; B29F 1/022

U.S. Cl. 249-82

13 Claims



1. A preform molding apparatus including a mold cup which comprises:

- a pair of mold members mounted with a surface of each opposing a surface of the other, each of said mold members having a concave mold recess in its said opposing surface,
- a carrier arm between said mold members, said carrier arm having an opening therethrough which mates with and complements the mold recesses in the mold members to form a mold cavity, one of said mold members having at least a portion of a size to fit within the opening in the carrier arm to provide with the other mold member a mold cavity smaller in volume than the volume of the preform to be molded,
- a molding material inlet opening in one of said mold members opening into the bottom of the recess in the said one mold member, and
- means for moving said mold members toward and away from each other and the carrier arm transversely across and away from the mold members.

4,281,817

## DISC VALVE

Horst Adams, Bochum-Stiepel, and Rudolf Koenen, Herne, both of Fed. Rep. of Germany, assignors to Gebrüder Adams Armaturen u. Apparate GmbH & Co. K.G., Bochum, Fed. Rep. of Germany

Continuation of Ser. No. 954,052, Oct. 23, 1978, abandoned.

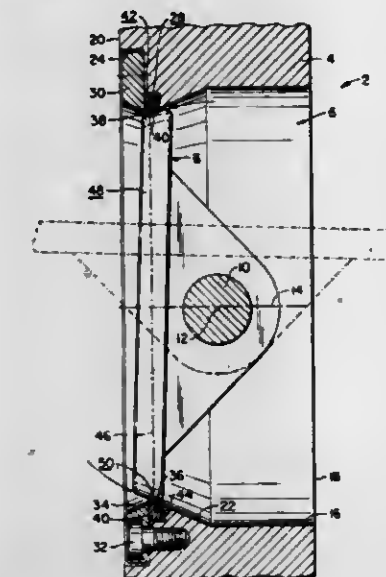
This application Sep. 22, 1980, Ser. No. 189,270

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810373

Int. Cl.<sup>3</sup> F16K 1/226

U.S. Cl. 251-305

33 Claims



1. In a disc valve of the type having a housing including a valve conduit defining a main axis of the valve, a seal ring carried by the housing and having a sealing surface, a valve disc defined by opposing, spaced apart end faces and a seating surface interconnecting the end faces and arranged for sealingly engaging the sealing surface of the seal ring when the disc is in its closed position, and means for pivotally moving the disc about a pivot axis which is offset from and perpendicular to the main valve axis between a closed position in which the seating surface engages the sealing surface and an open position in which the disc is generally parallel to the main valve axis, the improvement to the sealing surface and the disc comprising in combination: a sealing surface at least a portion of which defines a conical surface which is coaxial with respect to the main valve axis; the seating surface of the disc having a conical shape which includes the conical shape of said portion of the sealing surface and which is arranged so as to be co-axial with the main axis when the disc is in the closed position in which the seating surface and the seating surface are in mutual contact in a plane perpendicular to the main valve axis; the disc including generally parallel faces which are slanted relative to the axis of the conically shaped seating surface by an angle which lies in a plane that is substantially perpendicular to the pivot axis and includes the main valve axis, the angle being further arranged so that it trails the closing motion of the disc to prevent a premature contact between the disc and the ring as the disc moves from its open into its closed position.

4,281,818

## REPLACEABLE ADJUSTABLE BUTTERFLY VALVE SEAT

John P. Cunningham, Narragansett, and Dezso Szilagyi, Cranston, both of R.I., assignors to General Signal Corporation, Stamford, Conn.

Filed May 29, 1980, Ser. No. 154,545

Int. Cl.<sup>3</sup> F16K 1/22

U.S. Cl. 251-307

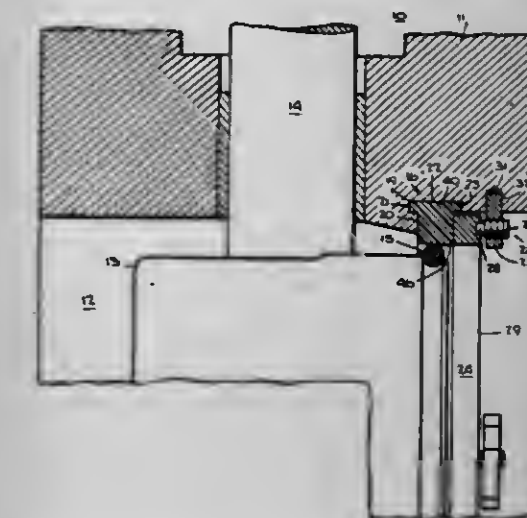
5 Claims

1. In a butterfly valve including a body containing a through flow passage, and a pivoting disc which cooperates with a seat to control flow through the passage, an improved seat arrangement which comprises

- a. a continuous annular groove formed in the wall of said

passage and encircling the axis of the passage, said continuous annular groove including an end wall, a first and second transverse walls, said first transverse wall extending into said passage, and an annular recess in said first transverse wall;

b. an elastomeric seat ring including a first axially extending portion on one side of said seat ring, a second axially extending portion on the other side of said seat ring, and a radially inwardly extending portion, said seat ring mounted in and filling the groove, said radially inwardly extending portion having an inner peripheral surface which serves as a seating surface for the disc and first and second transverse end faces at opposite sides of the seating surface, the first end face conforming to and bearing against said first transverse wall of the groove, said first axially extending portion extending into said annular recess, and said second axially extending portion extending in said groove and engaging said second transverse wall;



- c. an endless clamping ring having a smaller outer diameter than the inner diameter of said passage and formed with a first clamping face which is concentric to said second axially extending portion of said seat ring and a second clamping face which conforms to and engages said second end face of said radially inwardly extending portion of said seat ring;
- d. a plurality of individual actuators spaced from one another in the direction of the circumference of the clamping ring and serving to force the clamping ring axially and thereby compress selected portions of the seat ring between the first transverse groove wall and the second clamping face and produce selective bulging of the seating surface;
- e. each actuator including a screw threaded element which reacts between a portion of the clamping ring and a removable transverse member which extends outward from the wall of said passage into said passage.

4,281,819

## BALANCED STEM GATE VALVE

Morris B. Linder, 1403 W. Brooklake Dr., Houston, Tex. 77077

Continuation-in-part of Ser. No. 889,271, Mar. 23, 1978,

abandoned. This application Oct. 22, 1979, Ser. No. 86,609

Int. Cl.<sup>3</sup> F16K 3/02

U.S. Cl. 251-328

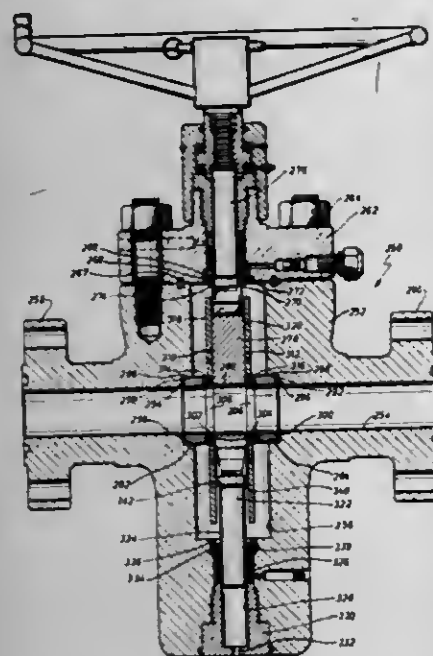
1 Claim

1. A gate valve mechanism comprising:

- a valve body having a valve chamber and inlet and outlet flow passages in communication with said valve chamber, annular seat carrier recess means being defined within said valve body about said flow passage means and forming a first annular abutment surface of generally planar configuration;
- gate means being movably disposed within said valve chamber and being movable between open and closed positions



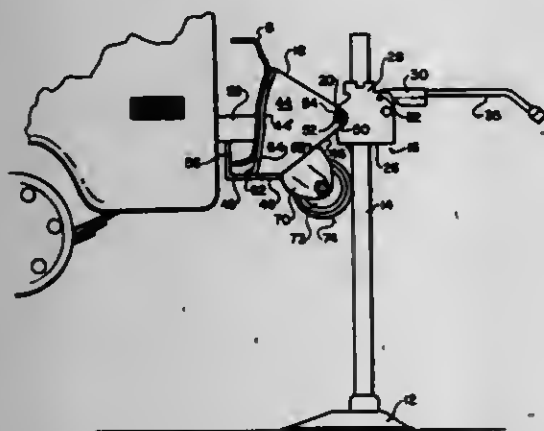
for controlling the flow of fluid through said flow passages;  
means for imparting opening and closing movement to said gate means;  
annular hard metal seat carrier means being disposed in interference-fitted relation within said seat recess means and defining a second annular abutment surface of generally planar configuration and an annular seat recess, said first and second abutment surfaces being oriented in substantially parallel relation;  
a substantially dead soft metal sealing ring being positioned within said seat carrier recess means and being in engagement with said first and second abutment surfaces, said



dead soft metal sealing ring being of flat washer-like form and defining opposed annular flat surfaces being deformed by compressive engagement against said first and second abutment surfaces and establishing a seal between said valve body and said seat carrier means;  
a hard, wear resistant seat element being positioned within said seat recess and having sealing engagement with said gate means, said seat element cooperating with said seat carrier means to define an annular seal pocket therebetween; and  
annular resistant sealing means being disposed within said seal pocket and establishing a seal between said seat carrier means and said seat means.

**4,281,820**  
**LIFTING JACK FOR VEHICLES OR THE LIKE**  
Coy J. Martin, P.O. Box 1811, Hickory, N.C. 28601  
Filed Dec. 26, 1979, Ser. No. 107,444  
Int. Cl.<sup>3</sup> B66F 3/00  
U.S. Cl. 254—133 R

8 Claims



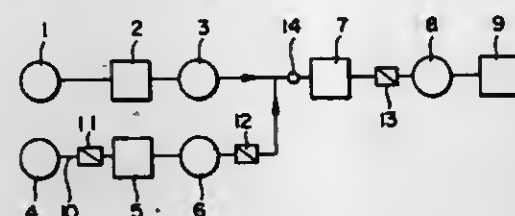
1. In a lifting jack of the type having an upright jack shaft and load lifting means supported on, and operably associated

with said shaft for vertical movement therealong, the improvement comprising a load engaging member pivotably affixed to said load lifting means generally vertically centrally thereof for movement therewith along said shaft and engagable with a load to be moved vertically to effect vertical movement of such load, said load engaging member having affixed thereto and extending therefrom a stabilizing torque arm having a bearing portion thereon for bearing engagement of said upright jack shaft and moveable along said shaft in such bearing engagement therewith upon vertical movement of said load lifting means therealong to substantially isolate the effect of the torque created during loading to said load engaging member and direct such torque to said shaft through said stabilizing arm thereby substantially preventing rotational movement of said load lifting means with respect to said shaft and reducing the friction therebetween.

**4,281,821**  
**METHOD OF CONTROLLING THE SUCTION GAS PRESSURE OF A SULFURIC ACID PLANT FOR TREATMENT OF SMELTER EXHAUST GAS**  
Masayuki Kawazoe; Yasuro Tomoda, both of Niihama; Atsuo Sasaki, Yokohama, and Isao Kaneko, Sagamihara, all of Japan, assignors to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1979, Ser. No. 80,507  
Claims priority, application Japan, Oct. 7, 1978, 53/123796  
Int. Cl.<sup>3</sup> B01D 49/00; C01B 17/72; C22B 1/06  
U.S. Cl. 266—44

2 Claims



1. In a system which includes an intermittently operating converter furnace, a constantly operating smelting furnace, a sulfuric acid-producing stage, a converter furnace exhaust gas flue for leading exhaust gases from the converter furnace away therefrom via a converter furnace exhaust gas fan, a smelting furnace exhaust gas flue for leading exhaust gases from the smelting furnace away therefrom via a smelting furnace exhaust gas fan, wherein said exhaust gas flues join together and a further gas flue leads to generated exhaust gases, sequentially through a gas-cleaning stage, a sulfuric acid plant main blower, and onto said sulfuric acid-producing stage, wherein a first damper is provided in the converter furnace exhaust gas flue between the converter furnace exhaust gas fan and the location where said exhaust gas flues join together, wherein a second damper is provided in the further gas flue between the gas-cleaning stage and the sulfuric acid plant main blower, and wherein a gas pressure transmitter is located on the further gas flue between the location where said exhaust gas flues join together and said gas-cleaning stage, the method of controlling the suction gas pressure in said further gas flue such that the rotation speed of the sulfuric acid plant main blower and the degree of the opening of the second damper are controlled automatically so as to maintain a predetermined value by signals from the gas pressure control unit wherein:

(A) When the converter furnace operation is commenced, in sequence: the first damper is opened, the rotational speed of the sulfuric acid plant main blower is increased, the degree of the opening in the second damper is reduced such that the gas pressure in the further gas flue between the location where the exhaust gas flues join together and the gas-cleaning stage will maintain a constant value, the blowing of air through the converter furnace is started, the degree of the opening in the second damper is made larger such that an increase in the gas pressure in said

further gas flue will be compensated for and be maintained at a predetermined value, and the degree of the opening in the second damper and the rotation speed of the sulfuric acid plant main blower are controlled so as to maintain a predetermined gas pressure in the further gas flue when both the converter furnace and the smelting furnace are in normal operation,

(B) When the converter furnace operation is stopped, in sequence: the degree of the opening in the second damper is reduced such that the gas pressure in said further gas flue will maintain a constant value, when the amount of exhaust gas entering from said converter furnace exhaust gas flue is decreased, the first damper is closed, the rotation speed of the sulfuric acid plant main blower is reduced, the degree of the opening in the second damper is made larger such that an increase in the gas pressure in said further gas flue will be compensated for and be maintained at a predetermined value, and the degree of the opening in the second damper and the rotation speed of the sulfuric acid plant main blower are controlled so as to maintain a predetermined gas pressure in the further gas flue when only the smelting furnace is in normal operation.

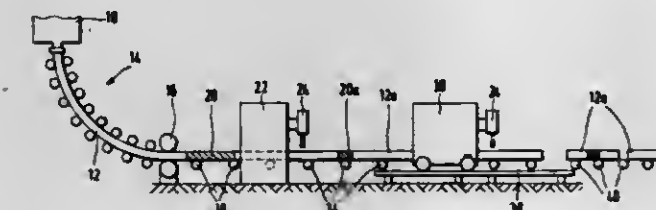
**4,281,822**  
**DEVICE FOR CUTTING A WORK PIECE MANUFACTURED IN A CONTINUOUS CASTING PLANT**  
Karlheinz Möller, Obertshausen, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 14, 1979, Ser. No. 66,509  
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842503

Int. Cl.<sup>3</sup> B23K 7/00

U.S. Cl. 266—50

4 Claims



1. In a device for cutting a work piece such as a slab or block manufactured continuously in a continuous casting plant wherein said device has both a flame cutting device for cross cutting and another flame cutting device for longitudinal cutting, the improvement being that said longitudinal cutting device being downstream from said continuous casting plant as seen in the direction of the work piece discharge from said plant, said traversal cutting device for the cross cutting of the work pieces into bands being installed immediately downstream from said longitudinal cutting device, laterally mounted preheating torches being installed on said longitudinal flame cutting device, and the cutting torches of said longitudinal flame cutting device being connected with a lateral guide roller which is in contact with the lateral surface of the continuously moving work piece.

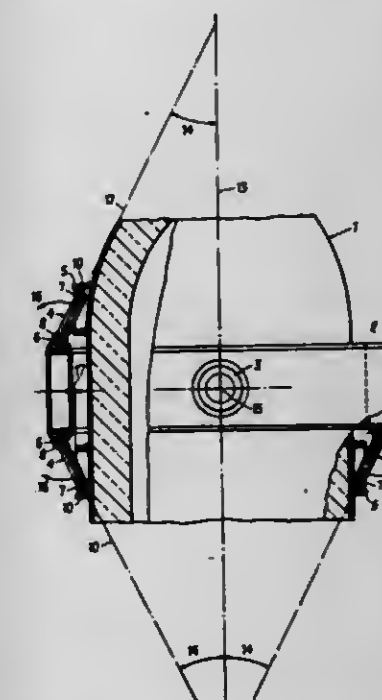
**4,281,823**  
**TILTABLE CONVERTER ARRANGEMENT**  
Bernhard Enkner; Rupert Berger; Manfred Eysn, all of Linz; Hermann Haslehner, Alkoven; Helmut Smejkal, Linz, and Michael Sattler, Ansfelden, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria  
Filed Nov. 5, 1979, Ser. No. 91,268  
Claims priority, application Austria, Nov. 27, 1978, 8440/78  
Int. Cl.<sup>3</sup> C21C 5/50

U.S. Cl. 266—246

10 Claims

1. In a tiltable converter arrangement of the type including a converter vessel, a carrying ring surrounding said converter

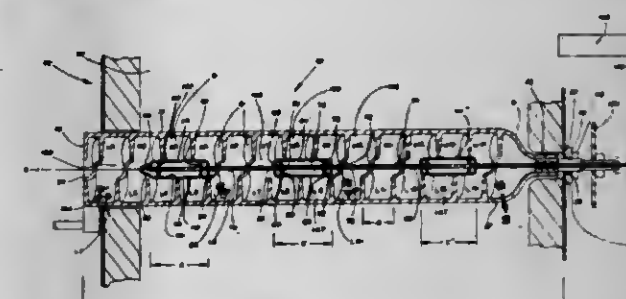
vessel at a distance and having two diametrically oppositely arranged carrying trunnions, and a plurality of brackets articulately mounted on both said converter vessel and said carrying ring, the improvement which comprises three brackets for articulately mounting said converter vessel in said carrying ring, each of said three brackets being inclined towards the longitudinal axis of said converter vessel and having joints



mounted on said converter vessel and further joints mounted on said carrying ring, and wherein the longitudinal axes of said three brackets lie in a plane laid through the longitudinal axis of said converter vessel and at a right angle relative to the axis of said carrying trunnions, and said three brackets are pivotable in a plane formed by the longitudinal or central axes of said three brackets and the longitudinal axis of said converter vessel.

**4,281,824**  
**HEAT TREATING APPARATUS**  
Beresford N. Clarke, and Wilfred G. Shedd, both of Fort Wayne, Ind., assignors to Metals, Inc., Fort Wayne, Ind.  
Filed Oct. 27, 1978, Ser. No. 955,344  
Int. Cl.<sup>3</sup> C21D 1/06  
U.S. Cl. 266—251

21 Claims



1. An apparatus for metallurgically heat treating workpieces comprising a rotatable retort having an elongated treating chamber with an entrance and an exit, a workpiece conveyor secured within said treating chamber whereby said workpieces are moved along said treating chamber from said entrance to said exit upon the rotation of said retort, a plurality of partitions within said treating chamber, said partitions cooperating with said conveyor and said treating chamber to divide said treating chamber into a plurality of distinct atmospherically isolated chambers and to allow for the movement of said workpieces into and out of said chambers, and a reactive gas distributor within said treating chamber, said gas distributor being



operatively adapted to be connected to a reactive gas source and having gas outlets in selected ones of said chambers.

4,281,825

## MANUAL HYDRAULIC VISE

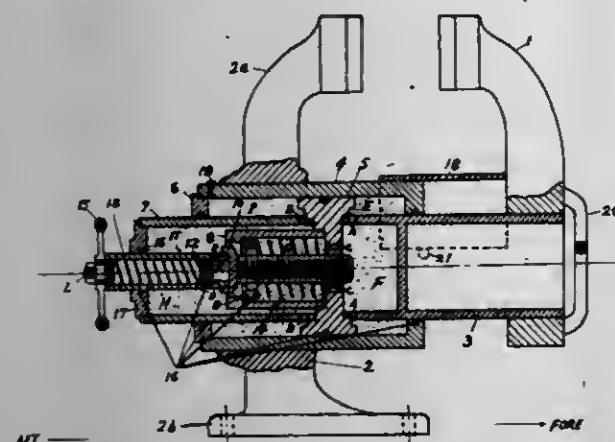
Nel-Ho Chiang, Kaohsiung, Taiwan, assignor to Yin-Lung Yang, Kaohsiung, Taiwan, a part interest

Filed Nov. 27, 1978, Ser. No. 965,398

Int. Cl.<sup>3</sup> B23Q 3/08

U.S. Cl. 269—29

3 Claims



1. In combination, a vise having hydraulically transacting mechanisms for clamping work-piece, said vise comprises particularly a center assembly which is filled with an oil medium and within the body of the vise, said center assembly consists of essentially a working piston, a cylinder fixedly mounted in the body of the stationary jaw of the vise, a movable rod integrally connected to the movable jaw of the vise, a running cylinder including an inner liner with a boost piston and a control valve with a compensating piston, said running cylinder together with its components being threaded to the back face of said working piston while said movable rod is fastened to the front face of the working piston, several holes are drilled in (drilled at proper location of) each said parts in the assembly which serves as passages for cyclic flow of the oil medium.

4,281,826

## STILE AND RAIL CLAMP

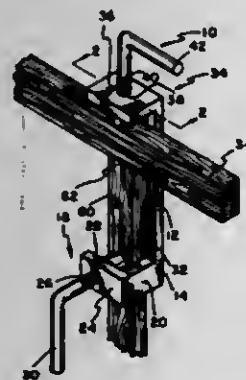
Royce M. Calvert, 1207 Alturas, Wichita, Kans. 67216

Filed Dec. 14, 1979, Ser. No. 103,704

Int. Cl.<sup>3</sup> B25B 1/20

U.S. Cl. 269—41

6 Claims



1. A stile clamp comprising a base having a horizontal and planar surface adapted to receive thereagainst workpieces to be joined, a manually operable holding means carried by the base for releasably holding a workpiece against said planar surface, said holding means including a holding foot spaced above and mounted for vertical movement perpendicular to the planar surface, said holding foot having a planar lower surface adapted to bear against a workpiece, and a clamp means carried by the base for urging a workpiece along the

planar surface of the base toward a position on the latter directly below said holding foot, said clamp means including a clamping foot disposed above and mounted for movement parallel to the planar surface of the base along a linear path directed toward a position directly below the holding foot, with said clamping foot having a vertical planar surface normal to said path and facing toward the holding foot, whereby the clamping foot is adapted, with respect to a pair of workpieces that may be received against the planar surface of the base, to clamp one of such workpieces against the other which the holding foot is adapted to hold against the base, said holding means including an upstanding member having a vertical planar surface that extends above and faces toward the planar surface of the base in an arrangement such that such surfaces are mutually perpendicular, said planar surface facing and being parallel to the linear path of the clamping foot, whereby a workpiece of rectangular parallelepiped configuration can be oriented prior to the holding thereof by use of the mutually perpendicular surfaces so that a dimension thereof is normal to said linear path of the clamping foot.

4,281,827

## MITER BOXES

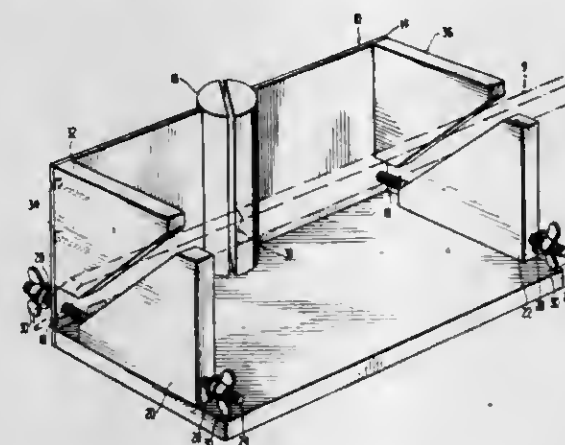
Gary W. Horwath, 9900 Georgia Ave., Apt. #702, Silver Spring, Md. 20902

Filed Oct. 29, 1979, Ser. No. 88,912

Int. Cl.<sup>3</sup> B25B 1/02, 5/10

U.S. Cl. 269—189

8 Claims



8. A miter box for holding a longitudinal workpiece to be cut by a cutting means at a first non-right angle measured in a plane parallel to the longitudinal axis of said workpiece and at a second non-right angle measured in plane perpendicular to said longitudinal axis of said workpiece comprising

- a base,
- a cutting means guide mounted on said base for guiding said cutting means to cut said workpiece at said first angle,
- a first wedge means mounted on said base having a standard perpendicular to said base and a lower surface hinged to said standard, a first plate extending from said standard toward said hinged lower surface having an arcuate slot having an arc of radius equal to the distance between said slot and said hinge, a second plate extending from said lower surface toward said standard having an arcuate slot having an arc of radius equal to the distance between said slot and said hinge of said first wedge means, so that said slots of said first and second plates substantially overlap, a bolt passing through said slot and a nut means on said bolt for tightening said first and second plate together, whereby said hinged lower surface may be secured at said second angle to said standard,
- a second wedge means mounted on said base and having a first surface parallel to said base, a second surface hinged to said first surface, a first plate extending from said first surface toward said second surface having an arcuate slot having an arc of radius equal to the distance between said slot and said hinge of said second wedge means, a second

plate extending from said second surface toward said first surface having an arcuate slot having an arc of radius equal to the distance between said slot and said hinge, so that said slots of said first and second plates substantially overlap, a bolt passing through said slots and a nut means on said bolt for tightening said first and second plates together, whereby said hinged second surface may be secured at 90 degrees minus said second angle to said first surface, so that said workpiece may be clamped between said lower surface of said first wedge means and said second surface of said second wedge means when said workpiece is cut.

4,281,828

## PLASTIC BAG HANDLING SYSTEM

James A. McDonald, Palos Heights, and Earl F. Stachel, Westmont, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

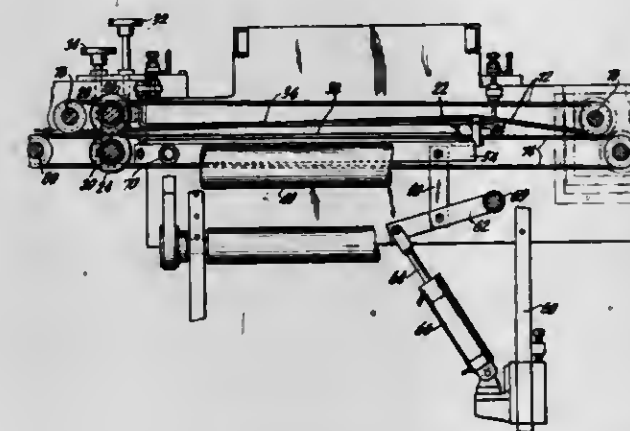
Continuation of Ser. No. 891,829, Mar. 30, 1978, abandoned.

This application Nov. 15, 1979, Ser. No. 94,422

Int. Cl.<sup>3</sup> B65H 45/18

U.S. Cl. 493—12

6 Claims



1. A system for handling the transfer of plastic bags from a first folding station, where each plastic bag is folded at least once about a fixed axis, to a second folding station where each bag is folded about a second axis transverse to said first axis; comprising:

- means for feeding in succession each bag discharged from said first folding station along a predetermined path in the direction of said second folding station;
- means for forming predetermined corrugations in each bag being discharged from said first folding station;
- guide means for maintaining said predetermined corrugations during movement of each bag;
- means disposed along said path for blocking each bag comprising a substantially upright fence aligned in a direction transverse to said path;
- an adjustable frame for supporting said fence;
- control means for monitoring the registration of each bag with respect to said path at a location upstream of said second folding station and means connected to said frame for raising and lowering said frame in response to said control means; said control means and said frame raising and lowering means comprising a plurality of photoelectric cells disposed relative to said path in a predetermined arrangement and circuit means responsive to a first predetermined state of energization of said photoelectric cells for maintaining said adjustable frame activated in a raised position when each bag is properly registered and for lowering said frame in response to a second predetermined state of energization of said photoelectric cells when a bag is improperly registered; and
- means responsive to said control means for diverting each improperly registered bag from said path, comprising: a multiplicity of flexible string belts arranged in substantially parallel rows on opposite sides of said path for engaging a bag in response to said control means, with each belt forming a closed loop for endless rotation; means for continuously driving each string belt; and pulley means

connected to said frame for deflecting said flexible string belts from the bag engaged position when said frame is in the raised position and for releasing said belts when said frame is lowered.

4,281,829

## METHOD AND APPARATUS FOR EJECTING SINGLE SHEETS FROM A STACK OF SHEETS IN A TRAY

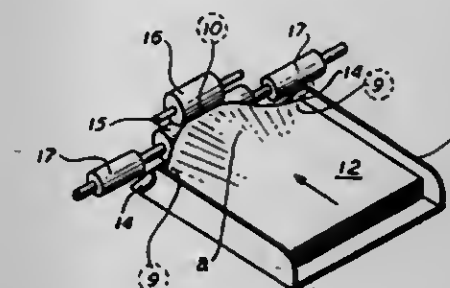
Wilbur E. Thomas, 165 Hillcrest Dr., Wayne, N.J. 07470

Filed Dec. 27, 1979, Ser. No. 107,549

Int. Cl.<sup>3</sup> B65H 3/30

U.S. Cl. 271—10

4 Claims



1. A method for ejecting single sheets from a stack of sheets in a tray comprising,

- (a) stacking sheets in a tray,
- (b) providing front barriers on the opposite sides of the tray,
- (c) disposing the barriers over the tray acutely to the plane defined by the tray,
- (d) pushing an ejector foot over the top sheet of the stack of sheets in the tray to move the sheet toward the acute barrier,
- (e) blocking the leading edge of the top sheet at the side thereof with the acute barrier,
- (f) buckling the portion of the sheet behind the leading edge to billow upwardly, to break the vacuum interface between the top sheet and the underlying sheet, releasing the one from the other,
- (g) continuing to push on the top sheet, while the edges are engaged with the barrier, to extend the central portion of the top sheet at its leading edge, so that it advances beyond the corners of the sheet blocked by the acute barrier,
- (h) driving a pair of rollers positioned to seize the middle of the leading edge of the sheet in their nip,
- (i) pulling the middle of the leading edge of the sheet by the rotating rollers, to draw the corners of the leading edge of the sheet from entrapment behind the barriers,
- (j) continuing to push the sheet from the tray, and pull it by the rollers, from out of the tray to eject it singly from the tray.

4,281,830

## LOG ROLL ARTICLE

Erwin G. Rehbein, Waupaca, Wis., assignor to Mill-Craft Housing Corp., Waupaca, Wis.

Filed May 12, 1980, Ser. No. 149,279

Int. Cl.<sup>3</sup> A63B 23/06

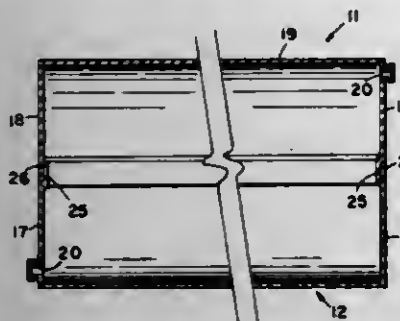
U.S. Cl. 272—1 E

8 Claims

1. A log roll article of manufacture comprising; two substantially identical longitudinal cylindrical half sections having an outside half cylinder hollow shell and semicircular bulkheads at the ends of the shell and one of the bulkheads has a closable port passing therethrough at a location near the line of meeting between the bulkhead and the shell and one longitudinal edge of the shell has an offset lip and one bulkhead has a similar offset lip and the offset lips are configured so that when two such cylindrical half sections are placed together so that there is a bulkhead having a port at each end of the assembled cylindrical half sections the offset lips fit closely inside their oppo-



site member which is not offset and the offset members are fixedly joined to their opposite members so as to form a sub-



stantially water tight hollow cylinder having diametrically opposed closable ports at each end.

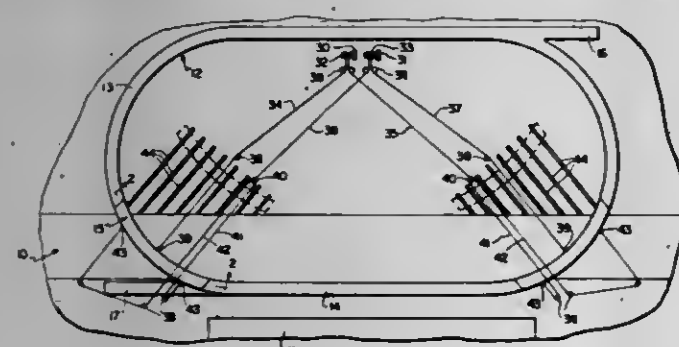
4,281,831

**PORTABLE SECTIONS FOR DOG RACE TRACK**  
James W. Bird, 3230 - Fifth Ave., Suite C, San Diego, Calif. 92103

Filed Apr. 9, 1979, Ser. No. 28,282  
Int. Cl.<sup>3</sup> A63K 1/02

U.S. Cl. 272-5

4 Claims



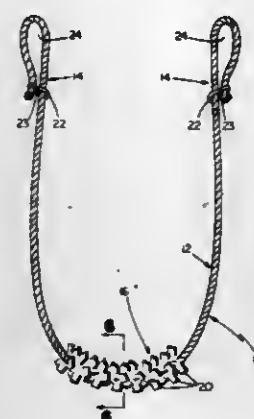
1. Apparatus for use as a race track comprising at least one fixed section having a pair of ends in spaced relationship with one another, said fixed section including a first racing surface thereon, at least one portable section having opposite ends and top and bottom surfaces, said top surface of said portable section including a second racing surface which is normally substantially aligned with said first racing surface when said fixed and portable sections are in an aligned position in end-to-end relationship, power means for moving said portable section selectively between said aligned position and a second position remote from said fixed section, a reinforced ledge means at each end of said fixed section, positioning and stop means located adjacent each end of said fixed section and extending outwardly substantially toward one another, said positioning and stop means having a generally planar bearing plate and an angularly disposed abutment means which is disposed generally diagonally across said bearing plate and at an angle to the path of movement of said portable section, skid means carried by each end of said portable section in a position to slidably engage said abutment means as said portable section is moved toward said aligned position with said ends of said fixed section so that said portable section will be longitudinally aligned relative to said fixed section and a portion of said bottom surface of said portable section will be in engagement with each of said ledge means when each of said skid means of said portable section is in engagement with the adjacent abutment means, and means to lock each of said skid means to said abutment means when said skid means initially engages said abutment means so that when only one of said skid means initially engages one of said abutment means said portable section is moved lengthwise as said one skid means is slidably guided along said abutment means until the other skid means engages the other abutment means at which time the ends of the portable section are in alignment with the ends of said fixed section and locked thereto.

4,281,832  
JUMP ROPE

Ripley Quinby, Jr., Box 176, Burlington, Vt. 05401  
Continuation of Ser. No. 973,460, Dec. 26, 1978, abandoned.  
This application Mar. 18, 1980, Ser. No. 131,509  
Int. Cl.<sup>3</sup> A63B 5/20

U.S. Cl. 272-75

3 Claims



1. A jump rope comprising:  
a cord having a longitudinal axis,  
grips at the ends of said cord, and  
cushion element means attached to said cord intermediate said grips,  
said cushion element means comprising a multiplicity of soft finger means longitudinally and angularly positioned about said axis and each extending outwardly therefrom with the base thereof attached to said cord, whereby the operative diameter of said rope is increased by the length of said outwardly extending finger means, and  
said cushion element means extending sufficiently along said axis, so that when said cord is turned by said grips, said cushion element means prevents said cord from striking the ground, thereby decreasing the noise that would otherwise occur,  
wherein said cord comprises at least three strands, and said cushion element means comprises at least two elongated serrated pads with the direction of elongation extending along the axis of the cord and with each pad positioned in a respective interstice between said strands and entwined therewith and with said soft finger means being formed by the serrations of said serrated pads.

4,281,833  
AUDIO RACQUET BALL

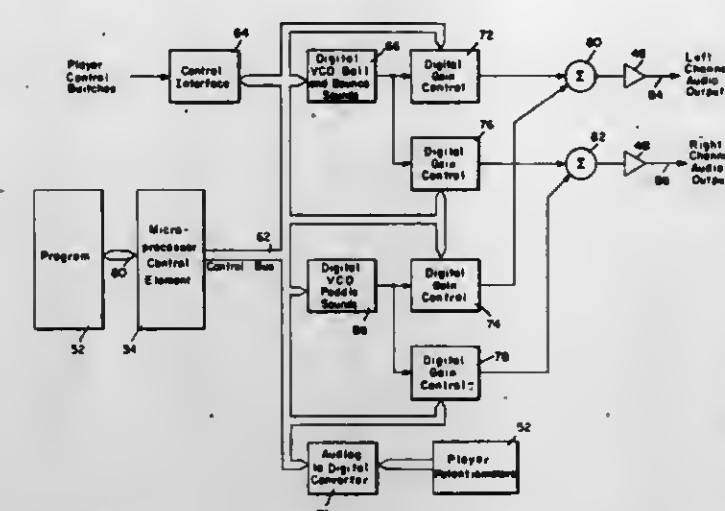
Michael E. Sandler, and Richard L. Aiani, both of Canoga Park, Calif., assignors to Sound Games, Inc., Canoga Park, Calif.  
Filed Mar. 20, 1978, Ser. No. 890,659  
Int. Cl.<sup>3</sup> A63F 9/00

U.S. Cl. 273-85 G

19 Claims

14. An aural paddle ball game operated under the control of a microprocessor, wherein said microprocessor comprises:  
means for defining physical boundaries in terms of sound analogs;  
means for defining game elements in terms of sound analogs;  
and  
means for defining motion of said game elements in terms of sound analogs;  
means to select game modes in terms of sound analogs; and  
wherein said means for defining game elements comprises:

means for defining a game ball to be manipulated within said physical boundaries; and



means defining at least one game paddle with which to effect manipulation of said game ball.

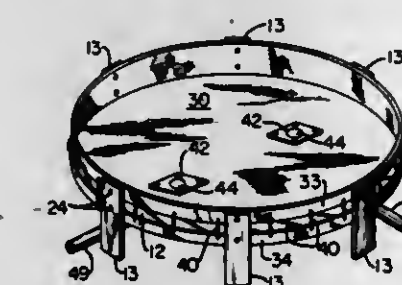
4,281,834

**GOLF CHIPPING AND PITCHING DEVICE**  
Reuben Chavez, 1721 Huger, Cheyenne, Wyo. 82001

Filed Aug. 3, 1979, Ser. No. 63,386  
Int. Cl.<sup>3</sup> A63B 69/36

U.S. Cl. 273-182 R

9 Claims



6. A golf practice device comprising:  
an open frame member having an outer peripheral, generally circular support rim provided with upper and lower edges, and means to support said rim in an elevated, substantially horizontal position above the ground, and  
a target member defined by a panel composed of a fabric or fabric-like material dimensioned to have an outer peripheral edge which will fit within said rim, and outer peripheral connecting means having a pair of generally circular flap members connected together along said outer peripheral edge of said panel and extending away from said panel around opposite upper and lower edges of said rim, said connecting means being adjustably secured together outwardly of said rim to stretch said panel across said rim under predetermined tension.

4,281,835

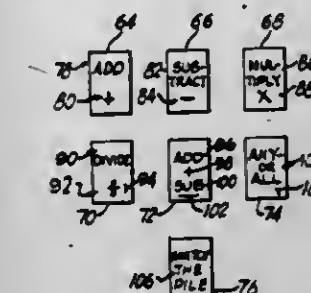
**ARITHMETIC CARD GAME METHOD**  
Nat Seiden, 15-5 Civic Center, E. Brunswick, N.J. 08816  
Filed Aug. 3, 1979, Ser. No. 63,604  
Int. Cl.<sup>3</sup> A63F 1/00

U.S. Cl. 273-299

9 Claims

1. A method of playing an educational card game comprising the step of concealing from the view of at least two players the numerical indicia carried by a first plurality of playing cards, the step of stacking said first plurality of cards, into a pile, the step of dispensing from said pile four cards of said first plurality of cards to each of said at least two players wherein said indicia of said first plurality of cards so dispensed is in view of each of said at least two players, the step of dispensing eight of cards of said first plurality of cards onto a playing

surface wherein said indicia carried by said first plurality of cards are in view of said at least two players, the step of randomly selecting one of the cards of a second plurality of playing cards wherein at least some of said second plurality of cards carry indicia, said indicia carried by said second plurality of cards indicating an arithmetical process, the step of one of said at least two players removing at least one card from said eight cards and removing at least one card from said four cards



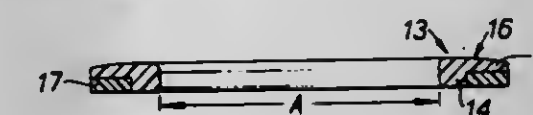
and arithmetically utilizing only said arithmetical process denoted by said indicia carried by said second plurality of cards with said numerical indicia disposed on said at least one of said eight cards and placing said at least one card from said eight cards and said at least one card from said four cards into another pile adjacent said player, said arithmetical process comprises the steps of addition, subtraction, multiplication, and division.

4,281,836

**DARTBOARD SAFETY SURROUND**  
Ronald M. F. Black, 63 Grassendale Ave., North Prospect, Plymouth, Devon, England  
Filed Feb. 5, 1980, Ser. No. 118,777  
Int. Cl.<sup>3</sup> F41J 3/00

U.S. Cl. 273-408

11 Claims



1. A dartboard safety surround comprising: an annular element of solid resilient material having a radial front face with a radial dimension greater than the thickness of said element and a radial rear face defining an annular recess, and a filler which occupies said recess.

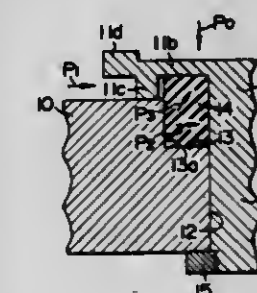
4,281,837

**WATER TIGHT SEAL STRUCTURE FOR CAMERA**  
Akihiko Hashimoto, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1979, Ser. No. 56,300  
Claims priority, application Japan, Oct. 24, 1978, 53/129986  
Int. Cl.<sup>3</sup> F16J 15/34, 15/46; G03B 17/08

U.S. Cl. 277-12

23 Claims



1. A water tight seal structure comprising:



a frame of a device to be sealed, said frame having an opening in it for tightly accommodating a movable operating member of said device, said opening having an upper end; a step formed in said upper end of said opening; a sleeve made of a flexible water-impermeable material disposed on said step, said sleeve having at least one surface abutting and adhesively coupled to said step in a water tight manner such that water cannot pass between said sleeve and said step into said frame; said sleeve having an inner peripheral surface tightly but movably abutting said movable operating member accommodated in said opening; and means for directing the passage of water under pressure from outside said frame to said sleeve, said means directing said water against said sleeve in such a manner that said sleeve is biased against said movable member by the pressure of said water so as to form a greater seal between said sleeve and said movable member.

#### 4,281,838 SEAL

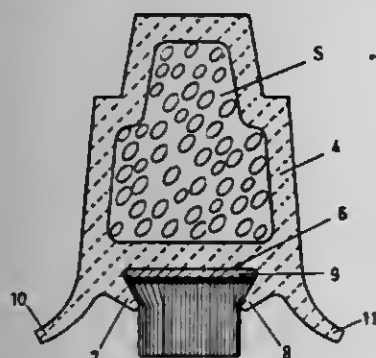
Stig Persson, Katrineholm, Sweden, assignor to Aktiebolaget SKF, Gothenburg, Sweden

Filed Sep. 4, 1979, Ser. No. 72,184

Claims priority, application Sweden, Oct. 5, 1978, 7810426  
Int. Cl.<sup>3</sup> F16J 15/44

U.S. Cl. 277—53

2 Claims



1. A seal for a space between two surfaces which are movable relative to each other comprising a seal body made of an integrated foamed plastic having a homogeneous surface layer and a porous central portion material adapted to be secured to one of the surfaces, means defining a groove in the seal body confronting the other surface and formed by a pair of spaced wall portions which converge inwardly toward said other surface so that the base of the groove is wider than the groove at the outer terminal edges of the wall portions, a sealing lip projecting angularly outwardly to one side of said groove, said sealing lip forming an integral part of said seal body and engageable with said other surface a flexible strip seated in said groove and having a face confronting the other surface coated with a fiber flock projecting beyond the terminal edges of said wall portions, said strip being of a transverse dimension greater than the spacing between the terminal ends of the wall portions so that the strip and fiber flock are self-supporting in said groove and may be easily assembled therein.

#### 4,281,839

#### ROTARY FACE SEALING APPARATUS

Ivar L. Schoenmeyr, Laguna Niguel, Calif., assignor to Purex Corporation, Lakewood, Calif.

Filed Apr. 16, 1979, Ser. No. 30,292

Int. Cl.<sup>3</sup> F16N 17/04; F16J 15/34

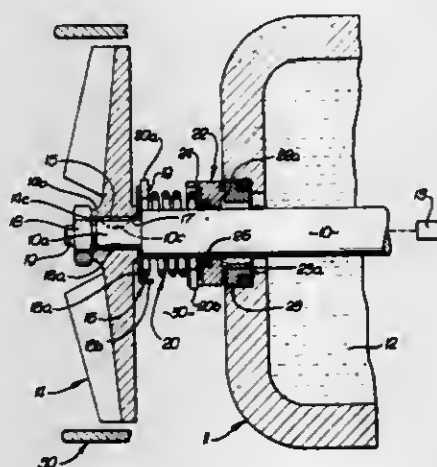
U.S. Cl. 277—93 SD

9 Claims

1. In rotary sealing apparatus for sealing off between a relatively rotating shaft having an axis of rotation and mounting an impeller, and a relatively non-rotating wall through which the shaft extends, there being an annular seat on the wall, the combination comprising

(a) a non-metallic seal ring extending about the shaft and

engaging the seat to seal off between the seat and ring, the ring having a skirt portion,  
(b) means located between the impeller and the seal ring to rotate the ring with the shaft, said means including  
(x<sub>1</sub>) a cupwasher clamped onto the shaft by the impeller to rotate therewith, the cupwasher having a skirt,  
(x<sub>2</sub>) a compression spring endwise confined between the cupwasher and the seal ring, and  
(x<sub>3</sub>) the spring operatively connected with the cupwasher and the seal ring to positively transmit driving torque from the cupwasher to the seal ring, the spring having a first tang received in a slot in said cupwasher skirt, and a second tang received in a slot in said skirt portion of the seal ring,  
(c) and a non-metallic annular seal member located between the seal ring and the shaft to seal off therebetween,  
(d) the seal ring being everywhere spaced from the shaft to allow the shaft to pivot relative to the seal ring while the annular seal member remains sealing off therebetween,  
(e) and a seat ring defining said seat, the seat ring carried by said wall, the seat ring defining an annular notch, and an



O-ring in said notch and sealing off between the seat ring and said wall,

(f) the cupwasher extending between the impeller and a shoulder defined by the shaft to be clamped therebetween whereby positive drive is always transmitted from the impeller to the seal ring while the impeller holds the spring axially compressed to urge the seal ring against the seat,  
(g) the wall having a bore through which the shaft extends, and the seat ring having a bore, the diameter of the wall bore being smaller than the bore diameter of the seat ring, the wall bore being at the side of the seat ring opposite the seal ring,  
(h) and two radially extending slots defined by said wall and intersecting said wall bore which defines said diameter smaller than the diameter of said seat ring bore, whereby two elongated tools are receivable through said slots to push the seat ring free of said wall,  
(i) the wall defined by a housing containing fluid lubricant which communicates with said seat ring bore and said slots.

#### 4,281,840

#### HIGH TEMPERATURE PACKER ELEMENT FOR WELL BORES

Allen E. Harris, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 28, 1980, Ser. No. 144,791

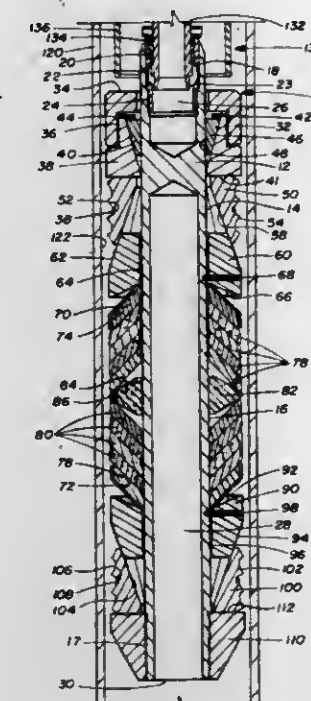
Int. Cl.<sup>3</sup> E21B 33/129

U.S. Cl. 277—117

20 Claims

1. In a pack-off device of the type having a mandrel and means to longitudinally compress a packer element disposed about said mandrel, a packer element comprising:  
a center packer ring having two oblique side faces;

a first plurality of frusto-conical packer rings having substantially parallel oblique side faces and arranged adjacent said center packer ring;  
a second plurality of frusto-conical packer rings having substantially parallel oblique side faces and arranged adjacent said center packer ring;



said oblique side faces of said first and second plurality of frusto-conical packer rings having an angle of radial inclination greater than the angle of radial inclination of said center packer ring side faces.

#### 4,281,841

#### O-RING SEALING ARRANGEMENTS FOR ULTRA-HIGH VACUUM SYSTEMS

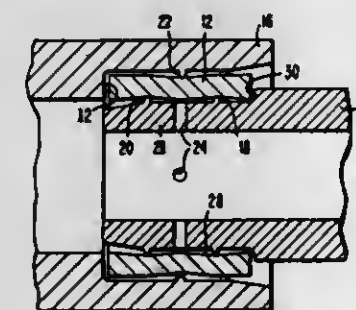
Chang-Kyo Kim, Knoxville, Tenn., and Robert Flaherty, Mt. Lebanon, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 30, 1978, Ser. No. 891,797

Int. Cl.<sup>2</sup> F16J 15/08; F16L 25/00

U.S. Cl. 277—236

7 Claims



1. An O-ring sealing arrangement for an ultra-high vacuum system comprising:

a. a first metallic tube having an internally protruding sealing ring;  
b. a second metallic tube concentrically disposed within and spaced from said first tube, said second tube having two externally protruding sealing rings positioned laterally on opposite sides of the wall of said internal sealing ring and an opening disposed through the wall of said second tube positioned laterally between said external sealing rings; and  
c. an O-ring concentrically disposed between said first and second tubes extending longitudinally beyond each of said external sealing rings, said O-ring being made of a heat-recoverable metal.

1009 O.G.—6

#### 4,281,842

#### INNER DIAMETER CHUCK

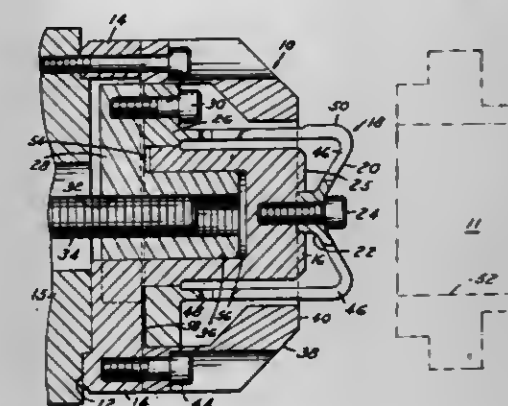
Daniel P. Martin, 24068 Meadowbridge, Mount Clemens, Mich. 48043

Filed Mar. 21, 1980, Ser. No. 132,399

Int. Cl.<sup>3</sup> B23B 31/40

U.S. Cl. 279—2 R

6 Claims



1. A chuck for holding a workpiece with an interior recess having an interior diameter comprising a body on which is mounted a radially flexible cup shaped workpiece holder having a concave face interconnected by a side portion to a lip, the interior of the face rigidly joined to the body; means for connecting the lip to actuator means, the actuator means movable axially with respect to the holder whereby the lip is moved relative to said face interior causing a radial movement of said side portion; an exterior of said side portion of the cup engageable in the recess of the workpiece so to rigidly join the holder to the workpiece, the holder at said side portion having an outer diameter greater than the inner diameter of the workpiece recess when in an unstressed condition with no workpiece present and where movement of the actuator means axially towards said face causes the outer diameter at said side portion to decrease until less than the inner diameter of the workpiece recess.

#### 4,281,843

#### TOOL CARRIER

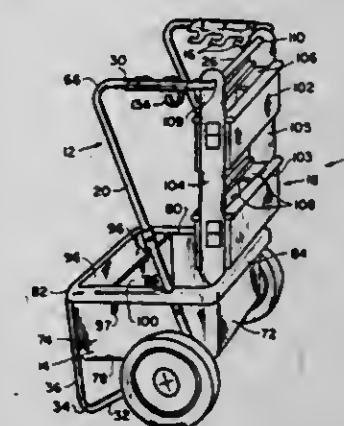
Frank Johnson, Cambridge; Donald Gordon, Rockwood, both of Canada, and George Schick, Easton, Conn., assignors to Slater Steel Industries, Limited, Ontario, Canada

Filed Jan. 9, 1980, Ser. No. 110,768

Int. Cl.<sup>3</sup> B62B 1/02

U.S. Cl. 280—47.26

4 Claims



1. A tool carrier comprising an essentially unitary tubular frame, a first tool receptacle, tool handle gripping means, and a second tool receptacle; said frame comprising a pair of identical opposed substantially reverse Z-shaped side members, each side member comprising an upper horizontal portion, an elongated intermediate portion extending downwardly and rearwardly, a lower portion extending downwardly and forwardly, and a vertical upwardly extending front leg, a front



transverse member joining the upper ends of said front legs, and a transverse handle joining the rear ends of said upper horizontal portions; a transverse axle extending through the rear end portion of said lower portions; a wheel at each end of said axle, said wheels, lower portions, and legs being so dimensioned that the portion of said frame joining said lower portions and said legs forms a ground engaging member; said first tool receptacle comprising an upwardly open container having a bottom, four side walls, an overhanging upper lip about the upper periphery thereof, and a partition in the forward portion of said receptacle, said front transverse member engaging the forward portion of said overhanging lip of said first tool receptacle to support the front portion of said receptacle, the rearward portion of said receptacle bottom resting on said axle; said tool handle gripping means being affixed to said upper portions; and said second tool receptacle comprising support means substantially vertically disposed between said handle and said container and having a plurality of tool-receiving pockets thereon.

4,281,844

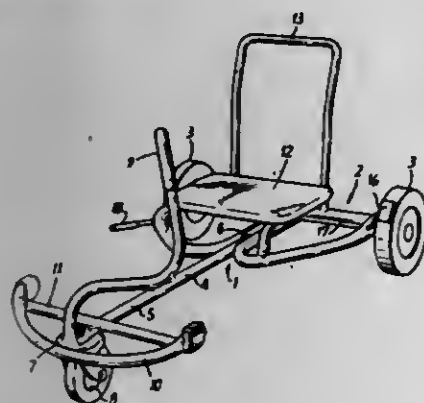
**STEERABLE CASTORED VEHICLE**

Thomas R. Jackman, London, and Trevor J. Stonebanks, Dartford, both of England, assignors to Shendale Ltd.  
Filed Nov. 9, 1978, Ser. No. 958,995

Int. Cl.<sup>3</sup> B62D 1/18

U.S. Cl. 280—87.01

19 Claims



1. A vehicle comprising a support surface, a plurality of carriers on which said support surface is mounted, a castor like structure including a castoring axis and a castor element freely pivotable about said castoring axis for at least one of said carriers, steering pivot means for enabling tilting of said castoring axis relative to said support surface and steering means operable for tilting said castoring axis of said castor like structure about said steering pivot means to steer the vehicle.

4,281,845

**DRIVE SYSTEM FOR BICYCLES AND OTHER APPARATUS**

Lawrence G. Brown, 1629 Kihilani St., Honolulu, HI. 96821  
Filed Jul. 5, 1979, Ser. No. 55,017

Int. Cl.<sup>3</sup> F16H 29/04

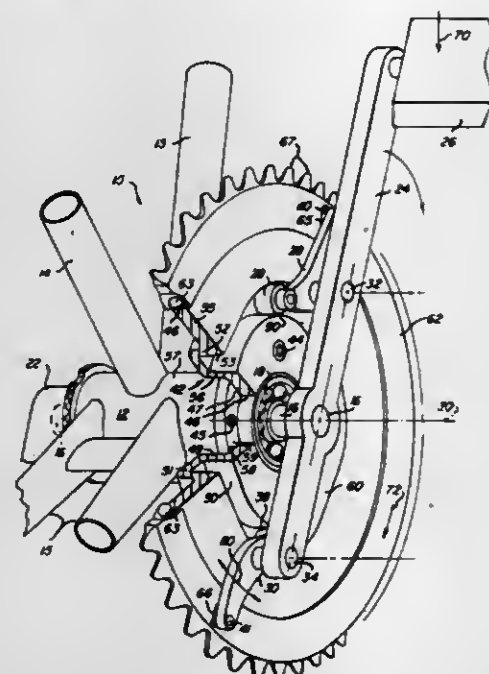
U.S. Cl. 280—236

34 Claims

13. An input-output force correlated drive system for driving a driven device such as the rear wheel of a bicycle or the like comprising:

input force applying means for transmitting input force to and causing operation of the drive system;  
rotatable output force transfer means operable by said input force applying means for transferring output force to the driven device; and  
input-output force correlation means being continuously operatively connected to and operable by said input force applying means and being continuously operatively connected to and operating said output force transfer means for variably changing the rotational speed and circumferential location of said output force transfer means relative to said input force applying means during each revolution

in accordance with predetermined input-output force correlation characteristics to be provided by the drive system, which comprises cam means mounted in juxtaposition to and operative relationship with said rotatable output force transfer means and said input force applying means for controlling the amount and location of the relative rotative displacement therebetween during each revolution of the drive system; and wherein said cam means comprises: cam track means having a continuous



cam surface extending 360° about the axis of rotation of said rotatable output force means for variably changing the rotational speed and circumferential location of said output, force transfer means relative to said input force applying means; and  
cam follower means movably mounted on said cam surface in said cam track for causing relative movement between said cam track means and said follower means during each revolution of the drive system.

4,281,846

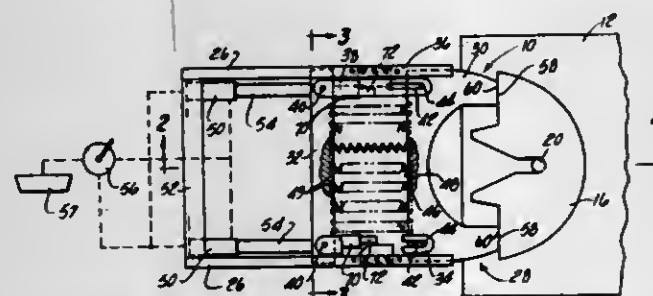
**ANTI-JACKKNIFE MECHANISM**

Kenneth A. Hall, 7710 Goodall Rd., Durand, Mich. 48429  
Filed Oct. 24, 1979, Ser. No. 87,871

Int. Cl.<sup>3</sup> B62D 53/08

U.S. Cl. 280—432

4 Claims



1. An anti-jackknife mechanism for a tractor-trailer combination comprising: means coupling a tractor and trailer together for articulation relative to each other about a vertical axis, a stop member fixed on said tractor having a pair of stop portions radially and symmetrically spaced relative to said axis, a base member supported on said trailer, a buffer member supported on said trailer for movement relative to said base member, means limiting movement of said buffer member in one direction relative to said base member, means resiliently resisting movement of said buffer member relative to said base member in the other direction, and means to move said base member and buffer member relative to said trailer from a first

position wherein said tractor and trailer are free to pivot relative to each other about said vertical axis and a second position wherein said buffer member is engagable with said stop portions to resiliently resist articulation of said tractor and trailer relative to each other.

4,281,847

**TRAILER HITCH**

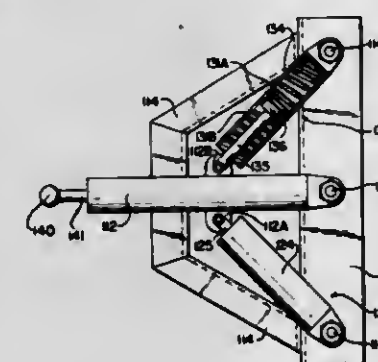
T. Richard Robe, Lexington, Ky., assignor to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Aug. 22, 1979, Ser. No. 68,699

Int. Cl.<sup>3</sup> B62D 53/00

U.S. Cl. 280—446 B

13 Claims



1. A trailer hitch for a vehicle which permits two degrees of movement for a hitchpoint in addition to the normal rotational freedoms provided by a ball joint comprising:  
a frame adapted to be attached to a vehicle;  
a hitchpoint being mounted for limited lateral movement on said frame to soften the lateral motion transmitted from a towed vehicle to a towing vehicle;  
dampener means operatively connected to said hitchpoint and said frame for stabilizing said lateral movement of said hitchpoint thereby reducing sway of the towed vehicle;  
spring means operatively connected to said hitchpoint and said frame to bias said hitchpoint to a first predetermined position; and  
said hitchpoint being mounted for rotary motion relative to said frame to rotate about a longitudinal axis of the towing vehicle thereby permitting the towing vehicle to remain upright in the event the towed vehicle is turned over.

4,281,848

**JOINT FOR ARTICULATED VEHICLES**

Stephen A. Youngers, Clearwater, Kans., assignor to J. I. Case Company, Racine, Wis.

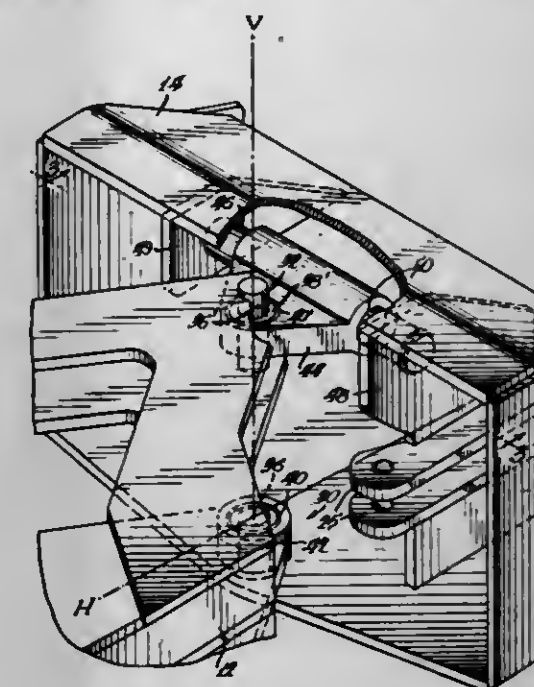
Filed Oct. 11, 1979, Ser. No. 83,687

Int. Cl.<sup>3</sup> B60D 1/00

U.S. Cl. 280—494

4 Claims

1. An articulated joint for an articulated vehicle having a front section and a rear section, comprising: two vertically spaced ball and socket connections interconnecting said sections for pivotal movement about a horizontal axis and a vertical axis, each ball and socket connection having a ball fixed to a pin which is carried by one of the front and rear sections, and a socket complementary to said ball which is carried by the other of said front and rear sections; and guide means, on said one section and disposed transversely relative to the longitudinal axis of said vehicle, for supporting the pin and ball of one of said ball and socket connections slidingly and rotationally about a horizontal axis, whereby relative pivotal movement of said sections in a horizontal plane about a vertical axis and in a



ball and socket connection shifts transversely parallel to a horizontal axis and rotates through a vertical plane.

4,281,849

**PORTABLE LUGGAGE CARRIER AND METHOD OF COLLAPSING SAME**

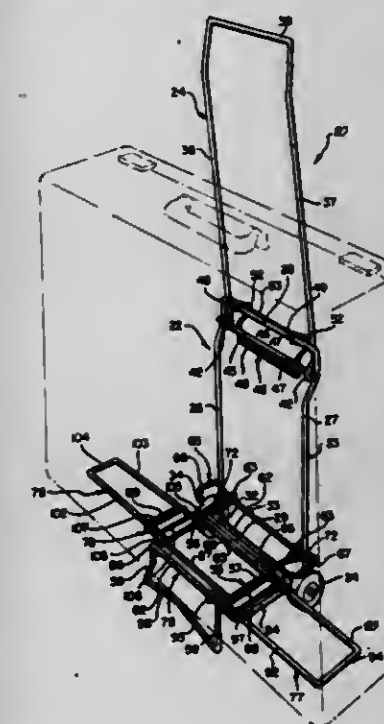
Michael D. Chandick; Robert M. Chandick, both of Orland Park, and Pasquale Ricchio, Blue Island, all of Ill., assignors to Miro Manufacturing Company, Blue Island, Ill.

Filed Aug. 8, 1979, Ser. No. 64,816

Int. Cl.<sup>3</sup> B62B 1/20

U.S. Cl. 280—655

16 Claims



1. A luggage carrier comprising an elongated, generally upright frame means having a laterally spaced, generally vertically extending side portions and laterally extending portions connecting the upper and lower ends of said side portions, a generally U-shaped base frame member having a pair of laterally spaced leg portions and a connecting portion, the ends of said leg portions being pivotally connected to the lower end of said upright frame means so that said base frame member is swingable between a generally vertical inoperative position adjacent to said upright frame means and an operative, generally horizontal position extending generally perpendicular to



said upright frame means, and at least one auxiliary support frame pivotally connected to one of the laterally spaced leg portions of said base frame member, said auxiliary support frame having an operative position wherein a portion thereof extends laterally over and rests upon the opposite leg portion of said base frame member to which it is connected, whereby said auxiliary support frame provides additional lateral support to an article of luggage resting on the base frame member of said carrier when said base frame member and said auxiliary support frame are in their operative positions.

4,281,850

## ANTI-SWAY APPARATUS

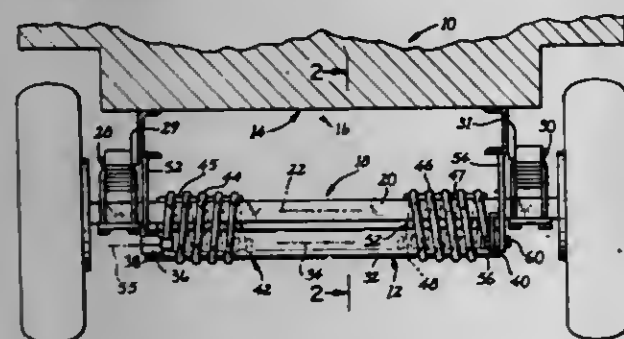
Frank G. Studer, Rte. 3, Box 186, Estacada, Oreg. 97023

Filed Feb. 11, 1980, Ser. No. 120,706

Int. Cl.<sup>3</sup> B60G 19/02

U.S. Cl. 280—689

6 Claims



1. Anti-sway apparatus in a vehicle which includes an elongate frame structure and a ground-traveling support structure having an axle which extends transversely of the longitudinal axis of the frame structure, where the frame structure is mounted on the support structure axle for substantially vertical movement toward and away therefrom, and for angular movement about its longitudinal axis with respect to the support structure axle, said apparatus comprising

a rigid beam positioned below said frame structure and extending transversely of the longitudinal axis thereof, elongate arm means joined at one of its ends to said beam and connected at its other end to one of said structures for pivoting with respect thereto about an axis paralleling said beam, and

tensioning means yieldably tensioning said beam against the other of said structures to resist angular movement of said beam, with respect to said other structure, about the longitudinal axis of the frame structure.

4,281,851

## SPRING SUSPENSION

Vernon Brandt, Reedley, Calif., assignor to Brandt Manufacturing, Inc., Reedley, Calif.

Continuation of Ser. No. 591,715, Jun. 30, 1975, Pat. No. 4,077,654. This application Nov. 17, 1977, Ser. No. 852,457

The portion of the term of this patent subsequent to Mar. 7, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> B60G 11/00

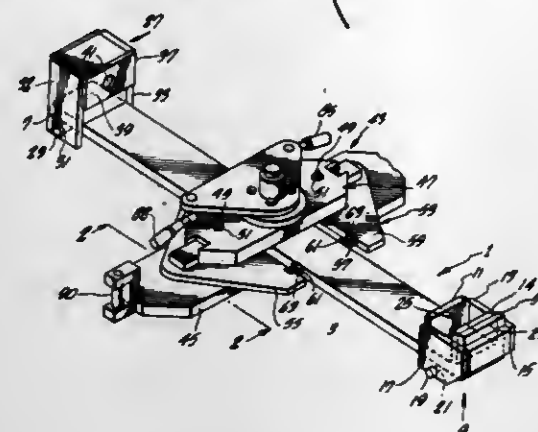
U.S. Cl. 280—718

1 Claim

1. A spring suspension system for mounting to an axle assembly and a vehicle body comprising:

a king pin;  
a spring member;  
a first bracket member adapted to receive and secure a first end portion of said spring member, a second bracket member adapted to receive and secure a second and opposite end portion of said spring, said first bracket being pivotally mounted to said vehicle body, both said first and second bracket members being mounted on a longitudinal axis with respect to said vehicle body, said first bracket member being further defined as being positioned to secure said first end portion of said spring member at an elevation which differs from the elevation of said axle assembly, thereby inclining said axle assembly and said

king pin housed therein to an angle between 0.5° and 4° from the vertical; and



clamping means for securing said spring to said axle assembly such that said spring extends in a direction substantially perpendicular to said axle assembly.

4,281,852

## MOTION CONVERTING SYSTEM

Raymond L. Konkle, 409 N. Tenth St., Clinton, Iowa 52732

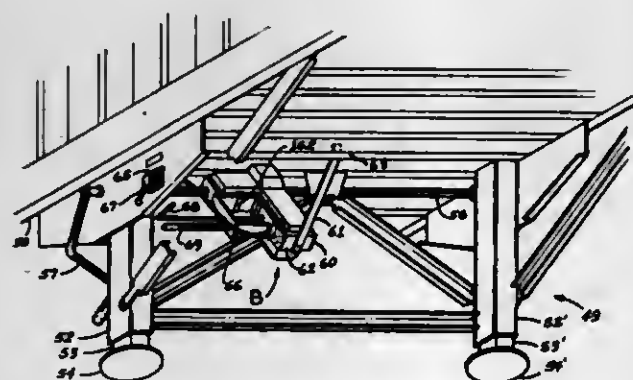
Continuation-in-part of Ser. No. 883,434, Sep. 15, 1977,

abandoned. This application Apr. 25, 1979, Ser. No. 33,327

Int. Cl.<sup>3</sup> B60S 9/12

U.S. Cl. 280—766

9 Claims



2. A motion transmission system for operating a landing gear system of a truck trailer, said landing gear system having separate landing gear legs interconnected by a single shaft and each landing gear leg being retractable and extensible in response to rotation of said shaft in one direction or the other, said system comprising sleeve means for receiving said shaft, means for coupling said sleeve means to said shaft, a pneumatic cylinder, an actuator rod extending from said cylinder axially normal to said sleeve means and reciprocal toward and away from said sleeve means, first and second lever arms having proximal ends swingable about said sleeve means, first and second links respectively interconnecting distal ends of said first and second lever arms with said rod, a toothed wheel carried by said sleeve means, and selectively reversible pawl means carried by each of said lever arms for engaging teeth of said toothed wheel to cause rotation of said sleeve means for rotating said shaft in a selected continuous direction with each movement of said rod, an elongated housing for enclosing said sleeve means, said pneumatic cylinder, actuator rod, lever arms, links, pawl means and toothed wheel, said housing being apertured proximate one end thereof for receiving said shaft intact for supporting said system at one end of said housing with said shaft extending transversely from opposite sides of said housing, and a brace at the other end of said housing for securing to floor structure of said trailer for suspending the other end of said housing from said floor structure, said means for coupling said sleeve means to said shaft comprising transmission gears for selectively causing said shaft to rotate at greater angular velocity than said sleeve means.

4,281,853

## SEAT BELT RESTRAINING APPARATUS

Bernard LeVeux, Vauhallan, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

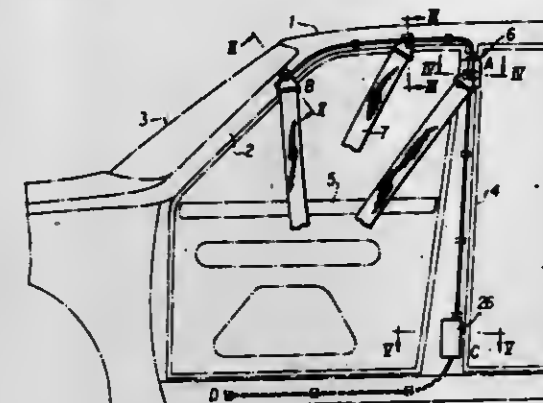
Filed Oct. 2, 1979, Ser. No. 81,162

Claims priority, application France, Oct. 25, 1978, 78 30294

Int. Cl.<sup>3</sup> B60R 21/40

U.S. Cl. 280—804

5 Claims



1. A seat belt restraining apparatus for an automotive vehicle having a door, said apparatus comprising:  
a door frame constituted by a reinforcing bar which defines a windshield post, a longitudinal roof reinforcing post and a lateral roof post, said reinforcing bar including inner and outer sheet means connected by longitudinal lips;  
at least one upper lateral anchorage for one end of said belt and movably fixed in said door frame;  
a lower anchorage for the other end of said belt, said belt extending laterally with respect to said door;  
a guide support for said upper lateral anchorage, said guide support supported by said inner sheet means of said reinforcing bar;  
an anchorage block element affixed to said at least one upper lateral anchorage and movable in said guide support;  
a flexible, motor driven, rack in said guide support, said anchorage block element being fixed to said rack, said guide support including a tube within which said rack slides, said guide support having longitudinally spaced fastening elements, said fastening elements being engaged in openings in said guide support;  
whereby access to a seat is automatically freed when said door is opened and said belt automatically closes over the body of the seat occupant when said door is closed.

4,281,854

## INTEGRATED BOOK LINING

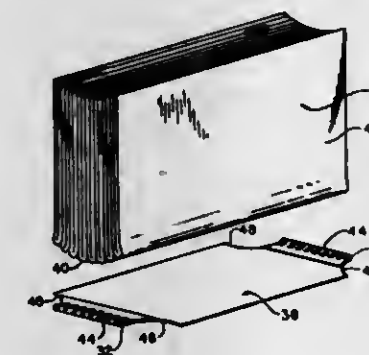
Peter P. Savich, Longmeadow, Mass., assignor to The Smyth Manufacturing Company, Bloomfield, Conn.

Continuation of Ser. No. 882,912, Mar. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 785,965, Apr. 8, 1977, abandoned. This application Dec. 14, 1979, Ser. No. 103,863

Int. Cl.<sup>3</sup> B42D 3/00; B42C 11/00

U.S. Cl. 281—21 R

11 Claims



1. An integrated book lining to be applied to a spine and end sheets of a book for securing book pages prior to casing-in the

book with a cover, the book lining being an integral one-piece unit formed from a single sheet of substantially flat strip stock and comprising a generally rectangular sheet having opposite longitudinal ends folded toward one another with inner surfaces at each respective longitudinal end of the sheet being in confronting bonded relation to one another, the sheet having a folded length between its opposite longitudinal ends substantially equal to a length of a book spine to which the lining is to be applied, the sheet having a width between opposed side edges thereof which width is less than its folded length, the sheet having a longitudinally extending intermediate portion of a predetermined uninterrupted width substantially equal to the width of a book spine to which the lining is to be applied, and opposed side flaps respectively extending in opposite directions laterally beyond said intermediate portion and the opposed side edges of the sheet to be applied to end sheets of a book, and the corners of each of the side flaps of the sheet being relieved with corner cutouts defining each longitudinal end of said intermediate portion of the sheet of said predetermined uninterrupted width between the corner cutouts, said longitudinal ends of said intermediate portion of the sheet respectively having an outer surface printed with a simulated headband.

4,281,855

## PRESSURE-SENSITIVE OR HEAT-SENSITIVE RECORDING MATERIAL AND NOVEL 2,2-DIARYLCHROMENO COMPOUNDS USED THEREIN

Jean C. Petitpierre, Kaiseraugst, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 873,582, Jan. 30, 1978, Pat. No. 4,187,233.

This application Jun. 25, 1979, Ser. No. 51,556

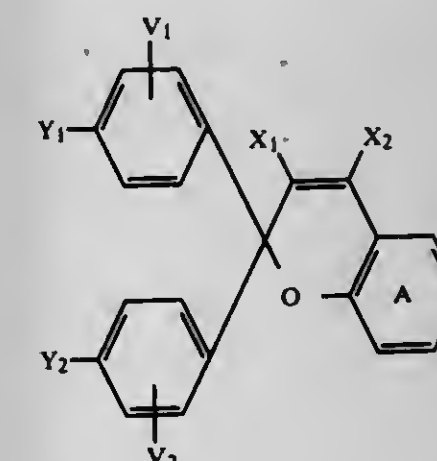
Claims priority, application Switzerland, Feb. 4, 1977, 1379/77

Int. Cl.<sup>3</sup> B41M 5/16, 5/18, 5/22

U.S. Cl. 282—27.5

19 Claims

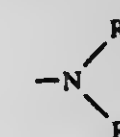
1. A pressure- or heat-sensitive recording material comprising a support containing or coated with at least one color-forming agent which is a 2,2-diarylchromeno compound of the formula



wherein

V<sub>1</sub> and V<sub>2</sub> each represent hydrogen, chlorine, lower alkyl or lower alkoxy,

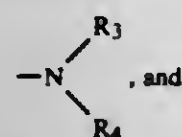
Y<sub>1</sub> and Y<sub>2</sub> each represent hydrogen, —O—R<sub>1</sub> or



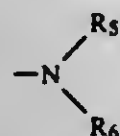
X<sub>1</sub> and X<sub>2</sub>, each independently of the other, represent hydrogen, alkyl of up to 12 carbon atoms which is unsubstituted or represent benzyl, phenyl, or benzyl or phenyl



which is substituted by chlorine, nitro, lower alkyl, lower alkoxy or the amino group



the ring A is unsubstituted or substituted by halogen, nitro, lower alkyl, —O—R<sub>5</sub> or



or contains a fused benzene ring, and R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub> and R<sub>6</sub>, each independently of the other, represent alkyl of not more than 12 carbon atoms which is unsubstituted or substituted by cyano or lower alkoxy, or represents cycloalkyl, phenyl, benzyl, or phenyl or benzyl which is substituted by chlorine, nitro, lower alkyl or lower alkoxy, or each of the pairs of substituents R<sub>1</sub> and R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub>, R<sub>5</sub> and R<sub>6</sub>, together with the nitrogen atom to which said pair is attached, forms a 5- or 6- membered heterocyclic radical.

4,281,856

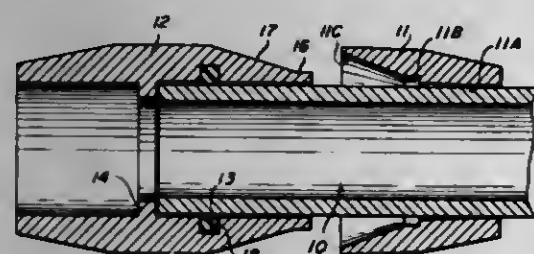
# WET-DRY CEMENTABLE COUPLING FOR PLASTIC PIPE

Alan L. Litman, 114 Hartwood Dr., Pittsburgh, Pa. 15208, and James P. Strode, 16 Andros Rd., Ocean Reef, Key Largo, Fla. 33037

Filed Jul. 28, 1978, Ser. No. 928,826  
Int. Cl.<sup>3</sup> F16L 55/00

U.S. Cl. 285—15

8 Claims



1. A wet-dry cementable coupling for plastic pipe, for repair or replacement to a preexisting pipe section regardless of its wet-dry condition comprising:

a plastic sleeve member axially slidable over a preexisting pipe section and having an extended surface area closely adapted to encircle and be cementable to the outside surface of the pipe.

a plastic fitting having an inlet for receiving the end of the preexisting pipe and containing an inner dry seal means engageable with the outer surface of the pipe to form a fluid tight seal, thereby enabling the outer surface of the preexisting pipe to be dried upstream of the dry seal, said plastic sleeve member and plastic fitting being formed to provide closely interengageable mating surfaces when in the driest area the sleeve member is axially positioned on the pipe abutting the fitting member,

one of said sleeve member and fitting member having an annular recess that is cylindrical in longitudinal cross-section for encircling the pipe and in communication with both the space between the abutting surfaces of the sleeve and fitting, and in communication with the space between said extended surface area of the sleeve and the outer surface of the pipe,

and the other of said sleeve member and fitting member

having a projection portion corresponding in shape to the annular recess in the other member and adapted to enter and closely interfit with the recess when the two members are abutted together on the pipe,

said projection and recess effectively providing a piston and cylinder action to force cement under pressure between the confronting surface areas of the sleeve member and pipe, and additionally between the closely mating surfaces of the sleeve member and fitting member when cement is applied onto the pipe surfaces between these two members prior to assembly and thereafter the two members are abutted together.

4,281,857

# FAUCET CONNECTOR

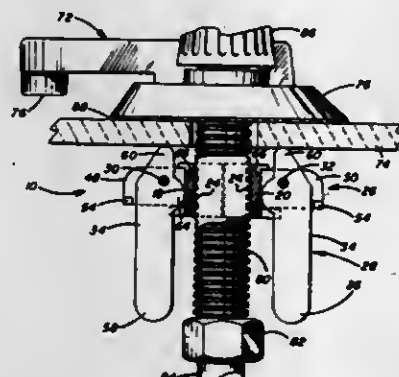
Bruce Randall, 3554 Marion Ave., Finleyville, Pa. 15332

Filed Apr. 12, 1979, Ser. No. 29,566

Int. Cl.<sup>3</sup> F16L 35/00, 37/00, 55/00

U.S. Cl. 285—34

10 Claims



1. A quick release connector comprising, a nut assembly having a cylindrical body portion with an axial bore therethrough,

said body portion including a plurality of individual sections each having an external surface and an internal surface, said internal surfaces of said individual sections forming said axial bore,

said individual sections being adapted to receive a pipe-like member extending through said axial bore,

retaining means positioned in surrounding relation with said external surface of each of said body portion sections for maintaining said body portion sections in assembled relation,

lever means pivotally connected to said retaining means for exerting a clamping force upon said body portion sections to move said body portion sections into clamping engagement with the pipe-like member,

said lever means being adapted to move between a first position for maintaining said body portion sections in locked engagement with the pipe-like member and a second position for quickly releasing said body portion sections from engagement with the pipe-like member to permit longitudinal movement of said nut assembly on the pipe-like member,

said lever means having an end portion movable between said first and second positions, and

said lever means end portion being adaptable in said first position to move into wedging engagement with the surface of a structure supporting the pipe-like member so that continued movement of said lever means is resisted and said nut assembly is urged downwardly on the pipe-like member to firmly engage said nut assembly to the pipe-like member.

4,281,858

# SELECTIVELY BRIDGED EXPANSION JOINT

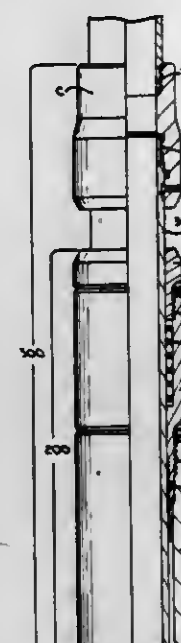
Michael L. Bowyer, Aberdeen, Scotland, assignor to Baker International Corporation, Orange, Calif.

Filed Oct. 10, 1979, Ser. No. 83,728

Int. Cl.<sup>3</sup> F16L 35/00

U.S. Cl. 285—39

7 Claims



1. A selectively telescopic joint carryable on a tubular conduit having upper and lower conduit members extendable within a subterranean well, said joint comprising: an outer cylindrical housing; an inner cylindrical body carried interior of said outer cylindrical housing, one of said housing and said body connectable to said upper member and the other of said housing and said body being connectable to said lower member; seal means on one of said housing and said body and slidable along the other of said housing and body to prevent fluid communication therebetween during telescoping movement; engagement profiles defined on each of said housing and said body; a bridging member extendable within said joint and between said housing and said body; engaging means on said bridging member extendably and selectively secured within said profiles, whereby said housing and said body are in relative locked position; and means for urging and removing said engaging means out of said engagement profiles whereby said housing and said body may be selectively telescoped in expanding and contracting directions.

4,281,859

# PIPE JOINTS

Pamela M. Davies, East Preston, England, assignor to Le Carbone (Great Britain) Limited, England

Division of Ser. No. 695,761, Jun. 14, 1976, Pat. No. 4,127,287.

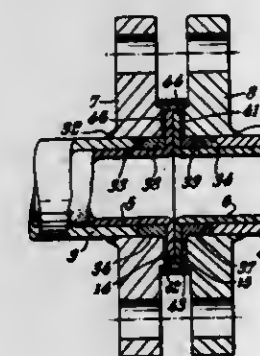
This application Jul. 20, 1978, Ser. No. 926,296

Claims priority, application United Kingdom, Jan. 9, 1976, 00773/76

Int. Cl.<sup>3</sup> F16L 9/14

U.S. Cl. 285—55

3 Claims



1. In a joint between two pipe sections, each pipe section

being of the type including an outer metal pipe and an inner liner of rubber or synthetic resin material, wherein metal jointing flanges are provided on the adjacent ends of the pipe section, and wherein each liner extends from the interior of its associated pipe section radially outwardly to form a liner extension between portions of the respective flanges and terminating in generally annular surfaces, the joint including means for urging the flanges towards one another so that a seal is formed between the mating faces of the two liner extensions lying between the flange portions, the improvement comprising an annular metal ring between substantially planar, parallel faces of the jointing flanges and radially outwardly of the liner extensions, and first and second generally annular metal inserts, each of said inserts having a portion lying between one of said flanges and one of said liner extensions, each of said inserts further including an axially protruding peripheral lip forming sliding sealing contact with an inner surface of said annular ring such that the combination of said metal inserts and metal ring reduces leakage from the pipe joint in the event of failure of the seal between said liner extensions as a result of external fire.

4,281,860

# KEY COUPLED PLASTIC CONDUITS

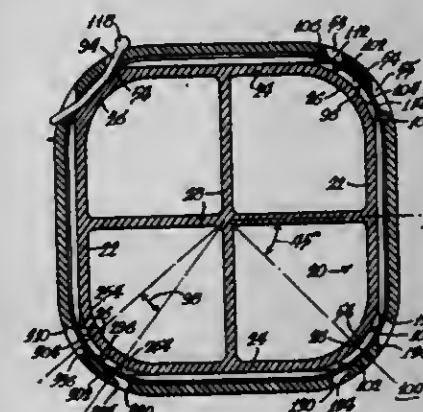
Kenneth F. Strelt, Mt. Prospect, Ill., assignor to Techplastics, Inc., West Chicago, Ill.

Filed Jul. 27, 1979, Ser. No. 61,355

Int. Cl.<sup>3</sup> F16L 39/00

U.S. Cl. 285—137 R

10 Claims



1. A connection for two conduit sections each of which is formed from a plurality of integrally formed plastic enclosing walls defining an elongated, open ended passageway therein, comprising: an integral bell portion at one end of one of said two conduit sections and an integral spigot portion at one end of the second conduit section with the outer transverse dimensions of the free end of said spigot portion corresponding to the inner transverse dimensions of said bell portion whereby said two conduit sections mate together; a peripheral, outward extending lip at the free end of said spigot portion, said lip having outer transverse dimensions generally equal to the inner transverse dimensions of the bell portion to support the free end of said bell portion and to index said spigot portion to the bell portion; a first peripheral flange at the spigot portion and adjacent to—but spaced apart from—said lip, said first flange having outer transverse dimensions generally corresponding to the inner transverse dimensions of the corresponding location in said bell portion; a second peripheral flange at the spigot portion adjacent to—but spaced apart from—said first flange, second second flange having outer transverse dimensions generally corresponding to the inner transverse dimensions of the corresponding location in said bell portion of, said first flange lying between said lip and said second flange, whereby said first flange, said second flange and said lip on said first conduit section cooperate with the bell portion on said second conduit section to align both conduit sections together;

a gasket seated within the annulus defined by the adjacent



sides of said first flange and said lip, said gasket being of a dimension relative to the outer transverse dimensions of said lip and said first flange to engage the inner surface of the bell portion thereby sealing the joint between the bell portion and the spigot portion of said two conduit sections; and

means for interlocking said one conduit section relative to said second conduit section including: retention means on the exterior surfaces of said spigot portion between said first and second flanges; a plurality of paired apertures in the bell portion adapted in position to be aligned with said retention means, said paired apertures and said retention means cooperating together to define a plurality of openings with ends defined by the paired apertures in said bell portion and with a mid-section defined by the exterior surfaces of said spigot portion; and a plurality of keys snugly extending through each of said paired apertures and into said retention means thereby mechanically joining said two conduit sections, said keys being formed from a generally straight length of resilient plastic material, the longitudinal axis of said keys—when inserted into the opening defined by said paired apertures and said retention means—being deformed so as to define a curved line segment, whereby said keys present a convex aspect relative to the longitudinal axis of said conduit sections in holding said conduit sections together.

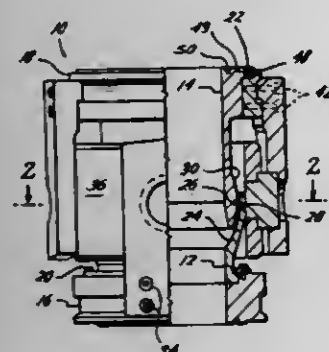
#### 4,281,861 BALL JOINT

Frank P. Czerewaty, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Aug. 17, 1979, Ser. No. 67,414  
Int. Cl.<sup>3</sup> F16L 27/04

U.S. Cl. 285—265

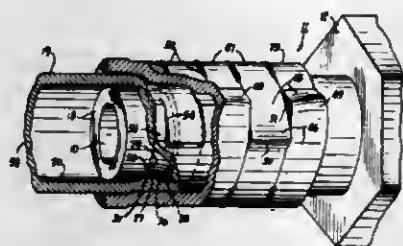
7 Claims



1. A ball joint comprising a first tubular member having an enlarged inner diameter at one end thereof with an internal groove, a seal ring in said internal groove, a second tubular member having a partial external spherical surface on one end thereof, the spherical surface of said second tubular member being positioned within said one end of said first tubular member in sealing engagement with said seal ring, a first flange having an inner diameter sufficiently large to allow installation and removal of said second tubular member therethrough, means connecting said first flange to the other end of said second tubular member from said spherical surface, and means interconnecting said first tubular member and said first flange whereby relative pivoting between said tubular members is maintained about the center of said spherical surface, said second tubular member being removable and replaceable through said first flange without disconnecting said interconnecting means when said first flange is free of connections other than said interconnecting means.

4,281,862  
TUBING JOINT ASSEMBLY  
Ralph G. Ridenour, 626 Lexington-Ontario Rd., Mansfield, Ohio 44903  
Continuation-in-part of Ser. No. 887,491, Mar. 17, 1978, abandoned. This application Oct. 5, 1978, Ser. No. 948,905  
Int. Cl.<sup>3</sup> F16L 13/14  
U.S. Cl. 285—382.2

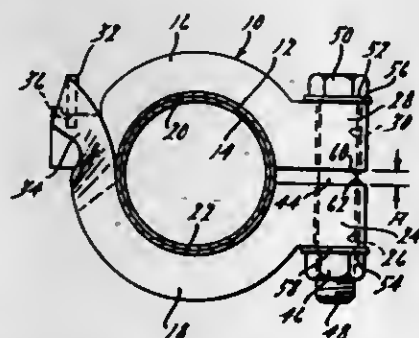
5 Claims



1. A tubing joint assembly, comprising in combination, a first metal tubular part having an inner wall and an outer facing wall, a metal tube telescoped over said first tubular part and having inner and outer facing walls, a metal sleeve telescoped over said tube and having an inner facing wall, a plurality of sharp annular shoulders on one of said facing walls, and a herringbone inward compression path on two longitudinally opposite sides of the outer surface of said sleeve establishing a zig-zag compression path of a length longer than that of said sleeve and compressing inwardly said sleeve against said tube and establishing a corresponding zig-zag compression path compressing said tube against said first tubular part to establish a fluid tight seal especially at said sharp annular shoulders to physically lock together said tubular part, tube and sleeve.

4,281,863  
EXHAUST TUBE CLAMP  
John F. Hall, Bloomfield Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.  
Filed Oct. 1, 1979, Ser. No. 80,913  
Int. Cl.<sup>3</sup> F16L 13/14  
U.S. Cl. 285—382.2

2 Claims



1. In an exhaust system utilizing thin-walled tubing subject to extreme radial collapse when constrictive forces above a given force range are applied thereto, a self-limiting clamp for joining and sealing telescoped ends of an inner and outer tube comprising: an elongated upper and lower member each having curved mid-portion for engaging the outer tube about substantially its entire periphery; each member also having a tubular portion formed along one end edge portion and with each tubular portion being in axial alignment with one another when the members are assembled loosely about the tubing; means including the second opposite end edge portions to form a hinging action between the members; the hinging means including portions of the lower member which is formed of a continuous single strip of metal, one end of which is formed in the tubular portion at the one end edge, the second end edge portion being formed by turning the strip back upon itself so

that the mid-portion of the member has a double thickness, a portion of the turned back strip extending normal to the plane of the mid-portion to form a bridge of substantial depth as compared to the thickness dimension of the metal strip, the bridge portion being formed by bending distortion of the strip so that an opening is produced beneath the bridge portion and between it and the remainder of the strip, the second end portion of the upper member being extended for projection through the opening and beneath the bridge portion for subsequent bearing engagement with the bridge portion; fastener means extending through the aligned portions for selectively drawing the member and particularly the tubular portions toward one another, the tubular portions defining facing end surfaces between the members and being configured so that a gap therebetween is formed when the members are loosely assembled about the tubing whereas operation of the fastener means draws the facing end surfaces together to cause the curved mid-portions to engage and radially distort the outer telescoped tube in a controlled manner.

4,281,864  
LOCKING DEVICE FOR A TRANSPORT CONTAINER OF AN ELECTRICALLY DRIVEN, RAIL-BOUND TRANSPORT CAR WITH A CONTACT DEVICE ACTUATABLE BY A TRANSPORT CONTAINER COVER FOR MONITORING THE LOCKING STATE  
Edelbert Wiechert, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany  
Filed Apr. 12, 1979, Ser. No. 29,393  
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978; 2817151  
Int. Cl.<sup>3</sup> E05C 3/12

U.S. Cl. 292—229

12 Claims



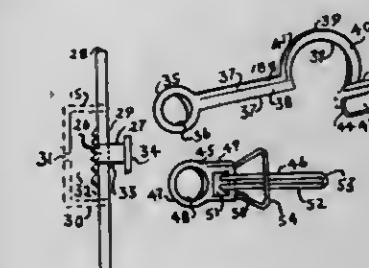
1. A locking device for a transport container of an electrically driven rail-bound transport car, comprising support means for operative association with a transport container which is to receive a cover in closing relation thereto, a catch carried by said support means and movable from a disengaged position to a fully engaged position, the catch is said fully engaged position being operative for securely retaining the cover in said closing relation to the transport container, a contact device secured to said support means in the vicinity of said catch for monitoring the locking state of the catch with respect to the cover and being actuable in response to fastening of the cover in said closing relation by means of said catch, an actuation element mounted by said support means so as to be engageable with the cover as the cover is moved into said closing relation to the transport container, and being resiliently urged by a spring force toward a non-actuating condition relative to said contact device, a bearing controlling movement of the actuation element to an actuating relationship to said contact device, said bearing being movably mounted by said support means and being movable by a portion of the catch as the catch is moved toward said engaged position, toward an enabling position, said bearing when in said enabling position being disposed to enable actuation of the contact device by the actuation element, said bearing when not completely moved to said enabling position by the catch because of the catch not being fully moved to its fully engaged position, preventing actuation of the contact device even when the actuation element is deflected against the spring force by means of the

cover being disposed in its closing relation to the transport container, and said actuation element being movable to actuate said contact device only when the cover is in said closing relation to the transport container and the catch has been fully moved to its fully engaged position relative to the cover.

4,281,865  
INTERIOR DOOR SECURITY  
James A. Nicholson, 10600 Van Stralen Way, Rancho Cordova, Calif. 95670  
Filed Nov. 16, 1979, Ser. No. 94,973  
Int. Cl.<sup>3</sup> E05C 19/18

U.S. Cl. 292—258

3 Claims



1. A door knob security cinch loop comprising an elongated member which forms a loop shaped to extend over a knob and being secured at a point spaced therefrom to a connection and pivot means; an elongated hook pivotally secured to said pivot means and shaped to fit about a shank of said knob; an opposite end of said security cinch loop comprising anchor means; including a part of said elongated member, and including means shaped for securing said opposite end to a structure adjacent said door.

4,281,866  
WEED PULLER AND EJECTOR  
James E. Atcheson, 3203 - 26th, Lubbock, Tex. 79412  
Filed Aug. 27, 1979, Ser. No. 69,836  
Int. Cl.<sup>3</sup> B66F 3/00  
U.S. Cl. 294—50.5

6 Claims



1. In a weed puller including a. an elongated handle having (i) an axis, (ii) an upper end, and (iii) a lower end, b. an earth trowel on the handle extending downward from the lower end, c. said trowel being bifurcated forming a pair of tines with a slot between them, d. the ends of the tines angled inward toward the slot to form a notch so that when the trowel is forced into the earth, a weed root is guided into the slot; wherein the improvement comprises: e. a blade in the slot, and



- f. ejecting means attached to the blade for moving the blade down the slot so as to remove a weed root in the slot,  
 g. the ejector means includes  
 h. a rod attached to the blade,  
 j. said rod extending upward to a hand actuator  
 (i) on the top thereof and  
 (ii) adjacent the upper end of the handle,  
 k. a spring between the rod and handle biasing the rod upward, and  
 l. a metal strap extending normal to the handle at the upper part of the strap to form a pedal,  
 m. the strap curving downward from the outer end of the pedal and back to the axis of the handle to form a fulcrum, and  
 n. the bottom of the strap forming said trowel.

4,281,867

## DISENGAGING APPARATUS

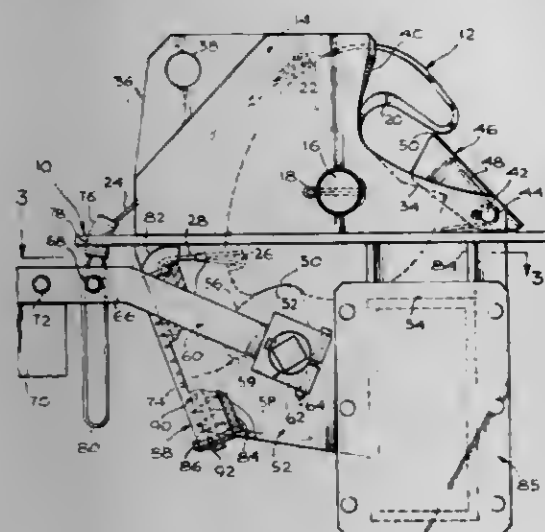
Nikolai Kariagin, Chatsworth, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Oct. 10, 1979, Ser. No. 83,420

Int. Cl.<sup>3</sup> B66C 1/34

U.S. Cl. 294—83 R

17 Claims



## 1. Disengaging apparatus comprising:

- a releasable hook including a contact surface, a pivot axis, and a cam surface;  
 a housing containing means for positioning said hook for rotation about the pivot axis;  
 a cam mounted on a shaft pivotable about a second pivot axis between first and second positions respectively blocking and permitting rotation of the hook;  
 means coupled to the cam for rotating the cam about the second pivot axis upon release thereof, said means comprising counterbalance means mounted to rotate the cam toward the second position; and  
 hook rotating means operatively interconnected with the cam coupled means for positively pivoting the hook after rotation of the cam out of the blocking position.

4,281,868

## RAIL THREADING DEVICE

Estel L. Lovitt, Toledo, Ohio, assignor to Mitchell Equipment Corp., Toledo, Ohio

Filed Mar. 16, 1979, Ser. No. 21,183

Int. Cl.<sup>3</sup> B66C 1/64

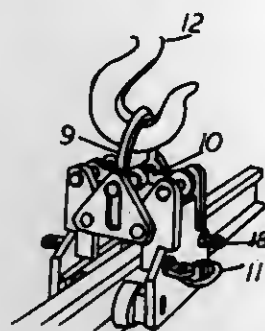
U.S. Cl. 294—106

3 Claims

1. An improved rail threading device for use with a crane comprising two framing members both attached by pivot pins to each of two triangular connecting means, the triangular connecting means having a vertical slot and extending through both slots a main connecting rod, at least one positioning arm attached to each framing member and the main connecting rod, the attachment of the

positioning arms to each framing member by means of a framing member frame rod,  
 a "U" shaped attachment ring attached to the main connecting rod,

further, on each framing member a rectangular plate mounted about a mounting stud,  
 each rectangular plate having thereon mounted at least two wheel means, the axis of said wheel means parallel to the



mounting stud and perpendicular to the major plane of the rectangular plate and framing member.

wherein movement of said main connecting rod within said slots results in movement of said framing members so that lifting of said main connecting rod by said "U" shaped attachment ring results in a gripping action about a rail when the rail is positioned between said rectangular plates.

4,281,869

## AIR SPOILER

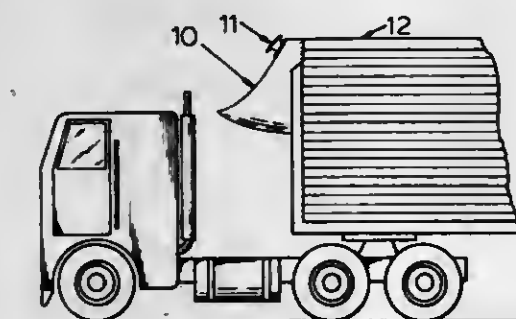
Joseph D. Saint, 4844 Fir St., San Diego, Calif. 92101

Filed Dec. 31, 1979, Ser. No. 108,462

Int. Cl.<sup>3</sup> B60J 1/04

U.S. Cl. 296—1 S

17 Claims



1. In combination for trailers and bob tail trucks, an air spoiler and an air foil mounted in assembly together, the air spoiler having a generally conical shape and being hollow at its annular open end, means secured with the air spoiler adjacent to its annular open end for attaching the air spoiler to a truck trailer and the like, the generally conical shape including a gently curving upper surface defined by an outer generally arcuately curved continuous lead edge and an under curved surface continuously joining the continuous curved lead edge with the open end of the air spoiler, the air foil having mounting means supporting it on said gently curving upper surface generally at its rear most upper end, the air foil having a generally arched shape which shape is arched in a direction away from said gently curving upper surface, and a gap being located between the air foil and said upper surface and with said air foil positioned for control of the air flow rearward of the combination along a top surface of a trailer body.

4,281,870

## VEHICLE CONVERTIBLE DOUBLE DECK SYSTEM

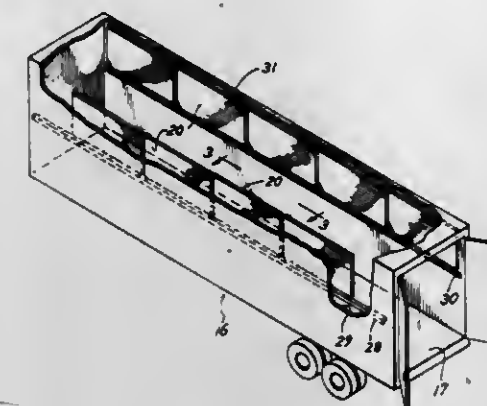
Donald J. Ehrlich, Monon, Ind., and Bennett O. Blout, Berwyn, Ill., assignors to Evans Products Company, Rolling Meadows, Ill.

Filed Aug. 6, 1979, Ser. No. 63,922

Int. Cl.<sup>3</sup> B61D 3/02, 3/04; B65D 25/06

U.S. Cl. 296—24 R

6 Claims



1. In a vehicle freight container having a main floor and a pair of opposed vertical side walls, a deck assembly comprising a series of movable panels for providing a second floor spaced above said main floor, said panels being mounted for storage flat against said side walls, the improvement in mounting means for each panel comprising:

a universal pivot connecting one lower corner of the panel to a container side wall,  
 a second pivot detachably connecting the upper corner of said panel opposite said one lower corner to said container side wall, thereby providing a vertical hinge to permit rotating a free end of the panel across the container adjacent the opposite side wall thereof,  
 said second pivot including means for holding said upper corner in vertical alignment with said lower corner when the panel is disposed against said container side wall and to release said upper corner when the panel is disposed across the container with its free end adjacent said opposite side wall,  
 a pair of horizontally disposed rails secured to said opposed side walls of the container for supporting said panel in operative position at both its free and hinged ends, in parallel spaced relation to the container floor, and means for locking said free end of the panel to said side wall when the panel is in storage position.

6. In a vehicle freight container having a floor, a pair of opposed vertical side walls and a pair of side rails secured to said side walls above the floor, a series of rectangular panels mounted longitudinally on both said side walls above said rails, and hinge means having cooperative members on each panel and on the side wall on which the panel is mounted, which hinge means permit the panels to be rotated about their horizontal and vertical axes, thereby permitting the panels to be moved from a stored position against said side wall on which the panel is mounted to an operative position spanning said side rails to provide a second floor parallel to said container floor.

4,281,871

## MOTOR VEHICLE SEAT MOUNTED WITH LONGITUDINAL SLIDING MOBILITY

Helmut Gritner, Kärnten, and Ralf Giese, Frechen, both of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 31, 1980, Ser. No. 117,168

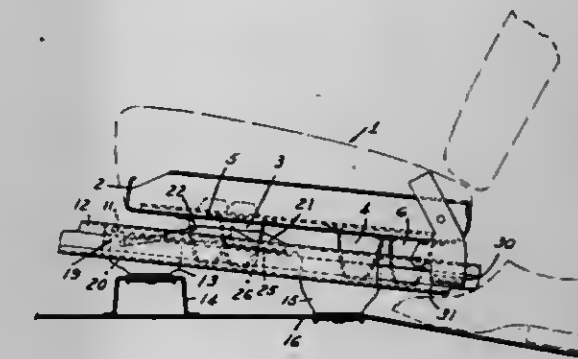
Int. Cl.<sup>3</sup> B60N 1/08

U.S. Cl. 296—65 R

3 Claims

1. A motor vehicle seat mounted for longitudinal sliding mobility over a predetermined seat position adjustment range, the seat having a frame supported on a plurality of slide blocks slidable on two longitudinally extending, spaced,

parallel, upright, C-shaped guide rails anchored to a vehicle floor,  
 each of the slide blocks being carried on a depending bracket secured to inner and outer longitudinally extending side frame members of the seat frame,  
 one of the C-shaped guide rails being fixed to a substantially vertical web surface of a centrally located vehicle floor assembly tunnel and the other adjacent an outer vehicle body wall,  
 and the seat frame being provided with a latch device engageable with latch device engageable means for the determination of the seat position,  
 wherein the improvement comprises:



at least two longitudinally spaced depending brackets on each seat side frame member,  
 the distance between the forwardmost and rearwardmost brackets secured to the outer side of the seat frame being approximately half the mutual interval between the forwardmost and rearwardmost brackets on the inner side frame member of the seat frame,  
 the arrangement of the depending brackets on the seat frame is, in plan, an equiangular or oblique parallelogram with its short side adjacent the other wall of the vehicle,  
 and the respective lengths of the outer and inner guide rails correspond to the distance between the forwardmost and rearwardmost slide blocks on each side frame of the seat plus the length of the seat position adjustment range.

4,281,872

## TARPAULIN COVER SYSTEM FOR USE WITH A TRUCK BOX

Vito Biancale, R.R.#2, Dundas, Ontario, Canada

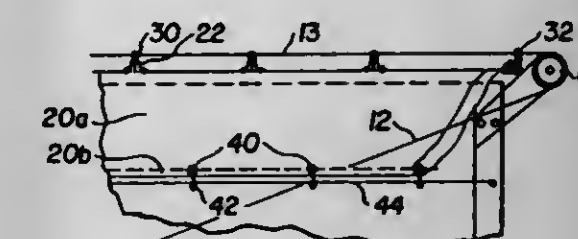
Filed Jan. 26, 1979, Ser. No. 6,762

Claims priority, application Canada, Jun. 28, 1978, 306406

Int. Cl.<sup>3</sup> B60P 7/04

U.S. Cl. 296—100

14 Claims



1. A tarpaulin cover system for use with a truck box of the type including a floor, a front wall and a pair of upright side walls each defining a generally horizontal upper edge, the cover system including a tarpaulin, and a series of support rods attached to a longitudinal medial section thereof in spaced parallel relation and arranged to extend transversely of the box in the installed condition, and a cable system adapted to be installed such that each one of a pair of horizontal reaches of the cable extends along parallel to and above a respective one of the upper edges of the box, the support rods adapted to be connected at their opposing ends to the respective horizontal reaches of the cable for support thereby, said rods save for a



final one of the rods, adapted to be connected to said reaches of the cable for relative movement therealong, the final rod adapted to be connected to the tarpaulin and being fixed to said reaches of the cable so that movement of said reaches of cable can move the tarpaulin along the upper edges of the box, said tarpaulin having longitudinal marginal sections flanking the medial section and adapted to extend downwardly alongside the side walls of the box, a pair of tensioning wires each adapted to extend alongside an associated one of the side walls of the box, and means for connecting said marginal sections of the tarpaulin to respective ones of the tensioning wires at spaced apart intervals for movement therealong when the tarpaulin is moved along the upper edges of the box, and wherein the means for connecting said marginal edge portions to the tensioning wires are longitudinally staggered with respect to the longitudinal locations of the support rods on the tarpaulin.

4,281,873

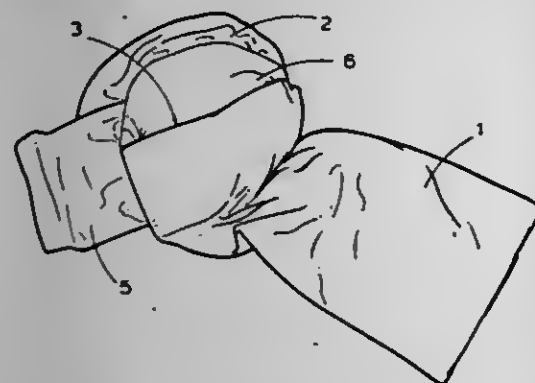
## FURNITURE UNIT

Judith J. Holland, Brampton, England, assignor to Tarn Textiles Limited, Preston, England

Filed Nov. 1, 1979, Ser. No. 90,324  
Int. Cl.<sup>3</sup> A47C 13/00

U.S. Cl. 297-118

9 Claims



1. A furniture unit comprising an outer inflatable fillable cover, said cover comprising a portion shaped to form a seat and backrest when filled and a separate and distinct portion shaped to form a bed when filled connected to one end of said seat portion, a passage communicating with the interior of said bed and seat portions, deformable filling material in said cover movable between said seat and bed portions, and selectively operable closure means in said passage for closing said passage to prevent movement of said filling material from one portion to the other portion.

4,281,874

## AIRCRAFT SEAT WITH CANTILEVERED TRAY TABLE

Robert C. Iwans, Simsbury; Edward J. Brennan, and Kirby B. Welk, both of Litchfield, all of Conn., assignors to Koehler-Dayton, Inc., New Britain, Conn.

Filed May 25, 1979, Ser. No. 42,982  
Int. Cl.<sup>3</sup> A47B 83/02; A46C 7/62

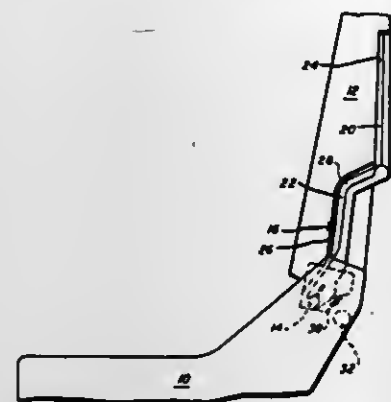
U.S. Cl. 297-163

4 Claims

1. A vehicular seat comprising a seat bottom, a seat back mounted for pivotal movement about a selected pivot axis having a selected upright position, a tray assembly including a pair of legs mounted on either side of said seat back for pivotal movement about said seat back pivot axis from a storage position to an in-use position, said legs each including a first portion extending upwardly from said seat back pivot axis and a second portion joined at one end via a bend to the top of said first portion, a tray, means for mounting said tray on the other end of said

second portions for selected pivotal displacement relative thereto from a first position wherein the bottom surface of said tray defines a portion of the back surface of said seat back when said legs are in the storage position to a second horizontal position when said legs are in the in-use position,

said bends having an angle selected so that said second portion of each of said legs will be substantially horizontal when said legs are in the in-use position and said



legs being selectively configured so that when said seat back is in said upright position pivotal displacement of said legs about said seat back pivot axis from the storage position to the in-use position will displace said bends from a location substantially forwardly spaced from the back surface of the seat back to a location proximate the back surface and will displace the other end of said second portions from a location proximate the back surface of said seat back to a location substantially rearwardly spaced from the back surface.

4,281,875

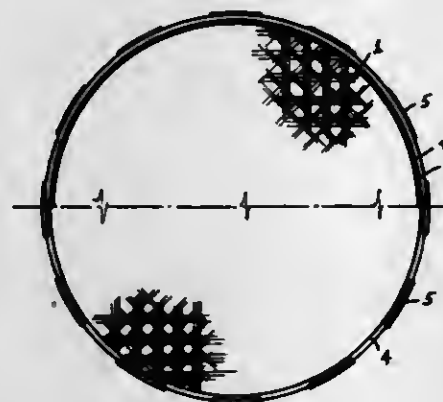
## PLASTICS MATERIAL SUPPORTING ELEMENT, MOLDED IN THE FORM OF INTERLACED STRAW, EFFECTIVE TO BE FIXED TO A CHAIR BODY

Mario Manzoni, Via Gramsci, 29/B, 20032 Cormanico (Milano), Italy

Filed Feb. 26, 1979, Ser. No. 14,910  
Claims priority, application Italy, Mar. 17, 1978, 21199/78[U]  
Int. Cl.<sup>3</sup> A47C 7/16

U.S. Cl. 297-452

1 Claim



1. The combination of a supporting element (1) acting as a chair seat or back, and a chair frame wherein said chair frame consists of two vertically extending parallel elements (4, 5) and an annular element (6) connecting said two parallel elements, said annular connecting element being provided with slots, and wherein the outer one of said two vertically extending parallel elements is provided with an inner upper ridge (9), and wherein the supporting element consists of a substantially flat structure, said structure having a suitable thickness and being made of a suitable plastics material, said structure having the appearance of interlaced straw stems, or the like, defining a

plurality of openings (2), said structure being provided with an upper peripheral edge (3) and downwardly projecting lugs (4), said lugs being provided with spaced tabs (5), said tabs being engageable with said slots formed in said annular connecting elements.

4,281,876

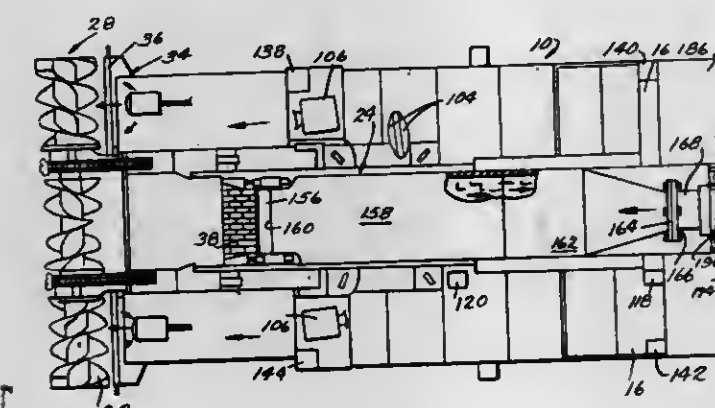
## TELEVISED REMOTE CONTROL SYSTEM OF A CONTINUOUS MINING MACHINE

John B. Lansberry, Woodland, Pa., assignor to Conlex, Inc., Woodland, Pa.

Filed Sep. 7, 1979, Ser. No. 73,560  
Int. Cl.<sup>3</sup> E21C 35/08

U.S. Cl. 299-1

2 Claims



1. A remote controlled mining system for recovering particulate material from a seam of such material within the earth bounded above and below by different material comprising:

a continuous mining machine having power driven means thereon for moving said machine through successive seam material cutting cycles which include an advancing movement along a mined entry within the seam in a direction toward the working face of the seam;

light means carried by said continuous mining machine for illuminating portions of the space surrounding said continuous mining machine including portions of the working face disposed forwardly thereof and adjacent portions of the roof, floor and side walls of the mined entry rearwardly of the working face, said light means comprising full spectrum compact gaseous light source means and reflector and lens means for gathering, concentrating and projecting the light source onto the aforesaid portions of the working face;

television camera means carried by said continuous mining machine for establishing electromagnetic signals indicative of the appearance of the illuminated portions of the working face of the seam and the adjacent portions of the roof, floor and side walls, said television camera means comprising a broadcast quality color television camera with zoom lens and automatic focus;

means for transmitting the electromagnetic signals established by said television camera means to a remote control station;

television receiver means at said remote control station operatively connected with said transmitting means for converting said signals to a continuous picture of the appearance of at least a selected portion of the illuminated portions of the working face of the seam and the adjacent portions of the roof, floor, and side walls, said television receiver means being a high resolution color television monitor; and

means for enabling an operator at said remote control station to control the cutting cycle of said continuous mining machine so that the material cut during a cycle is cut from the seam up to the different material defining the roof and down to the different material defining the floor based upon the operator distinguishing between the material of the seam and the different material which forms the roof

and floor by viewing the continuous picture provided by said television receiver means.

4,281,877

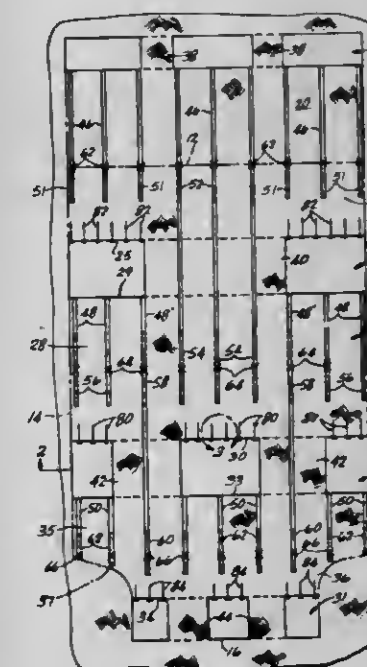
## ROCK BOLTING TECHNIQUES FOR FORMING AN IN SITU OIL SHALE RETORT

Allan Sass, Los Angeles, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Nov. 2, 1979, Ser. No. 90,634  
Int. Cl.<sup>3</sup> E21C 41/10

U.S. Cl. 299-2

22 Claims



1. A method for recovering liquid and gaseous products from an in situ oil shale retort formed in a retort site in a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, the method comprising the steps of:

excavating formation from within the retort site for forming at least one void extending generally horizontally across the retort site, leaving at least one zone of unfragmented formation within the retort site below such a void, such a zone of unfragmented formation having a generally horizontal free face of formation forming a floor of such a void;

placing a plurality of rock bolts in at least a portion of the unfragmented formation having said horizontal free face of formation forming the floor of such a void;

placing explosive in such a zone of unfragmented formation; detonating such explosive for explosively expanding formation within such a zone of unfragmented formation upwardly toward said horizontal free face of formation, including toward the rock bolted portion of the free face, for forming a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort;

establishing a retorting zone in the fragmented mass; introducing a retorting gas to the fragmented mass for sustaining the retorting zone and for advancing the retorting zone through the fragmented mass; and

withdrawing liquid and gaseous products of retorting from the fragmented mass on the advancing side of the retorting zone.



4,281,878

**METHOD FOR LOADING EXPLOSIVE Laterally FROM A BOREHOLE**

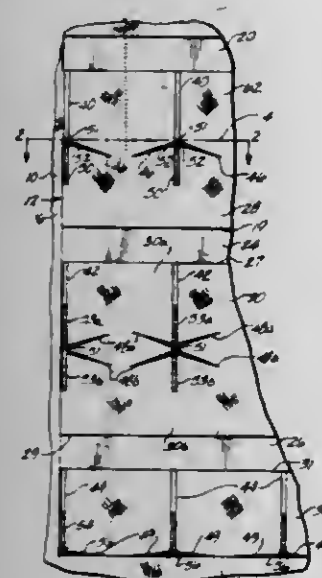
Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Dec. 3, 1979, Ser. No. 99,553

Int. Cl.<sup>3</sup> E21C 41/10

U.S. Cl. 299—2

42 Claims



1. A method of explosively expanding a zone of unfragmented rock formation toward a free face adjacent such formation comprising the steps of:

- (a) forming at least one main blasthole in such a zone of unfragmented rock formation;
- (b) placing at least one explosive charge shaped for forming a high velocity gas jet into such main blasthole with the axis of the high velocity gas jet extending transverse to the blasthole;
- (c) detonating such a shaped charge to form at least one auxiliary blasthole in such a zone of unfragmented formation adjacent a side wall of the main blasthole, wherein such an auxiliary blasthole is in communication with the main blasthole and extends away from the main blasthole;
- (d) placing explosive into the main blasthole and the auxiliary blasthole; and
- (e) detonating the explosive for explosively expanding the zone of unfragmented rock formation toward the free face.

4,281,879

**STABILIZING ASSEMBLY FOR A MINING MACHINE**

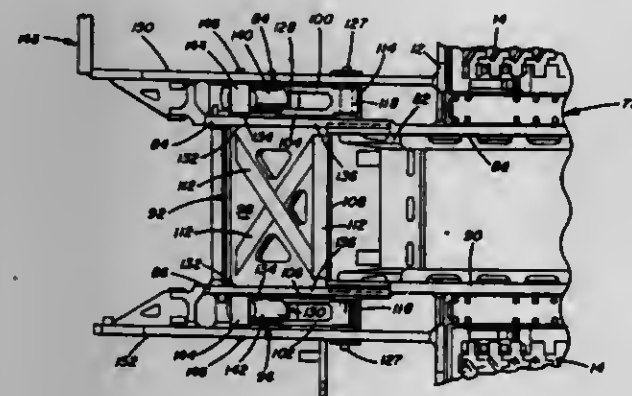
Maurice K. LeBeque, Argillite, Ky.; Ronald W. Keen, Mount Vernon, and Donald E. Keller, Nashville, both of Ill., assignors to National Mine Service Company, Pittsburgh, Pa.

Filed Sep. 24, 1979, Ser. No. 78,072

Int. Cl.<sup>3</sup> E21C 33/00

U.S. Cl. 299—64

6 Claims



1. A stabilizing assembly for a mining machine comprising,

a mining machine body portion mounted on means for propelling said body portion,  
 said mining machine body portion including a pair of longitudinally extending side walls,  
 said side walls being spaced apart substantially the width of said mining machine body portion, said side walls each having vertically extending inner and outer surfaces,  
 stabilizing means pivotally connected to said side walls for moving into engagement with the mine floor to maintain said mining machine body portion in a stabilized position,  
 a conveyor support frame extending longitudinally on said mining machine body portion between said side walls,  
 said stabilizing means being positioned in underlying relation with said conveyor support frame,  
 said stabilizing means including a unitary body portion having a transverse dimension extending between said side walls and beyond the width of said conveyor support frame,  
 said unitary body portion having lateral edge portions, a first end portion pivotally connected to said side walls, and a second end portion movable into and out of contact with the mine floor,  
 said unitary body portion including reinforcing members extending across said body portion and substantially the width of said mining machine body portion to rigidify said unitary body portion,  
 actuator means for moving said stabilizing means into and out of engagement with the mine floor,  
 said actuator means being pivotally connected at one end to said side walls in a position laterally spaced from said conveyor support frame,  
 said actuator means being connected to the lateral edge portions of said unitary body portion such that the distance between the pivotal connections of said actuator means and said unitary body portion to said side walls provides for an increased force to be exerted on said unitary body portion to maintain said unitary body portion in contact with the mine floor.

4,281,880

**BACK-TO-BACK PROPORTIONING VALVE**

Robert F. Gaiser, Stevensville, and Samuel E. Stone, Berrien Springs, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 1, 1979, Ser. No. 80,892

Int. Cl.<sup>3</sup> B60T 8/26

U.S. Cl. 303—6 C

9 Claims



1. A back-to-back proportioning valve assembly for a cross-split hydraulic braking system having separate first and second hydraulic brake system paths, said first brake system path including a first master cylinder chamber, a left front brake actuator and a right rear brake actuator, said second brake system path including a second master cylinder chamber, a right front brake actuator and a left rear brake actuator, wherein said proportioning valve assembly comprises:

- a first housing defining first and second inlet openings for fluid communication with corresponding first and second master cylinder chambers, left and right front outlet open-

ings for communication with corresponding left and right front brake actuators, and left and right rear outlet openings for fluid communication with corresponding left and right rear brake actuators;

first fluid path means within said first housing for direct fluid communication between said first inlet opening and said left front outlet opening such that the inlet fluid pressure at the first inlet opening is substantially equal to the outlet fluid pressure at the left front outlet opening;

second fluid path means within said first housing for direct fluid communication between said second inlet opening and said right front outlet opening such that the inlet fluid pressure at the second inlet opening is substantially equal to the outlet fluid pressure at the right front outlet opening;

a first proportioning valve means disposed in said first housing in fluid communication between said first inlet opening and said right rear outlet opening for proportioning the inlet fluid pressure at said first inlet opening with the outlet fluid pressure at said right rear outlet opening such that the outlet fluid pressure increases at a lower rate than the inlet fluid pressure, said first proportioning valve means having a second housing with a substantially cylindrical first chamber therein, said cylindrical first chamber having a first inlet port connected to said first inlet opening, said cylindrical first chamber having a first outlet port connected to said right outlet openings, said first proportioning valve having a first poppet located in said cylindrical first chamber to define a first orifice between the first poppet and said first outlet opening;

a second proportioning valve means disposed in said first housing in fluid communication between said second inlet opening and said left rear outlet opening for proportioning the inlet fluid pressure at said second inlet opening with the outlet fluid pressure at said left rear outlet opening such that the outlet fluid pressure increases at a lower rate than the inlet fluid pressure, said second proportioning valve means having a third housing with a substantially cylindrical second chamber therein, said cylindrical second chamber having a second inlet port connected to said second inlet opening, said cylindrical second chamber having a second outlet port connected to said left outlet opening, said second proportioning valve having a second poppet located in said cylindrical second chamber to define a second orifice between the second poppet and said second outlet opening;

a first disc located between said first outlet opening and said first proportioning valve means, said first disc having a first projection that extends into said first outlet opening;

a second disc located between said second outlet opening and said second proportioning valve means, said second disc having a second projection that extends into said second outlet opening;

first resilient means for urging said first poppet into continual engagement with said first projection;

second resilient means for urging said second poppet into continual engagement with said second projection;

means for moving said second and third housing of said first and second proportioning valve means with respect to said first and second poppets to adjust the size of the first and second orifices to compensate for changes in the inlet fluid pressure received from the first and second master cylinder chambers;

a first bypass means in said housing for bypassing said first proportioning valve means to provide direct fluid communication between said first inlet opening and said right rear outlet opening when a predetermined first pressure differential develops between the fluid in the first and second master cylinder chambers as presented to the first and second inlet openings, said bypass means allowing the respective pressures at said first inlet and right rear outlet opening to be substantially equal; and

a second bypass means in said housing for bypassing said second proportioning valve means to provide direct fluid communication between said second inlet opening and

said left rear outlet opening when a predetermined fluid pressure differential develops between the fluid in the first and second master cylinder chamber as presented to the first and second inlet openings, wherein respective pressures at said second inlet and left rear outlet openings are substantially equal.

4,281,881

**ANTI-LOCKING MECHANISM**

George Mekosb, Jr., Warrington, and David O. Hulse, Lionville, both of Pa., assignors to The Budd Company, Troy, Mich.

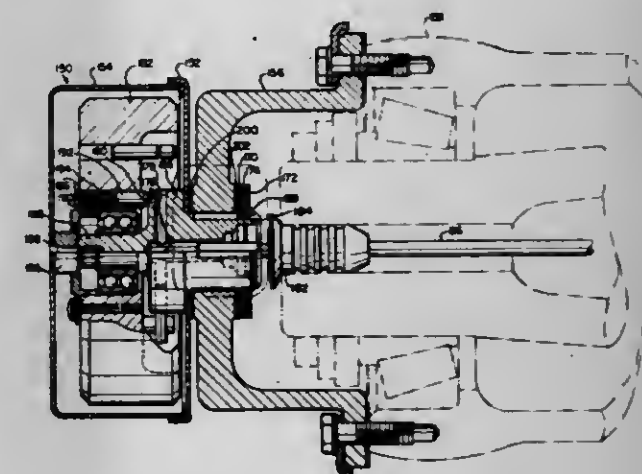
Continuation-in-part of Ser. No. 939,178, Sep. 5, 1978,

abandoned. This application Apr. 3, 1979, Ser. No. 26,795

Int. Cl.<sup>3</sup> B60T 8/093

U.S. Cl. 303—99

22 Claims



4. In combination with a source of pressure for actuating a brake for decelerating a wheel on a vehicle,

control means for permitting or preventing the application of said pressure to said brake of said wheel, comprising:

- (a) a rotatable manifold member attached to be rotated with said wheel and including an aperture between a chamber leading to a second source of pressure and atmosphere,
- (b) an inertia wheel movably mounted to said manifold member to rotate within predetermined limits thereon during acceleration and deceleration of said wheel,
- (c) valve means included in said inertia wheel to close or open said aperture leading from said chamber to atmosphere,
- (d) stop means connected between said inertia wheel and said manifold member to normally rotate said inertia wheel at the same rate of speed as said manifold member and to normally maintain said valve means in a closed condition,
- (e) said stop means being disposed to permit continued movement of said inertia wheel with respect to said manifold member when said wheel is decelerated beyond said predetermined limit to open said valve means thereby to permit the pressure from said second source of pressure to be relieved through the aperture in said manifold member to atmosphere to prevent said braking pressure from actuating said brake.

4,281,882

**VEHICLE TRACK WITH I-SHAPED GROUND ENGAGING PROFILES**

Coroelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Apr. 10, 1978, Ser. No. 895,025

Claims priority, application Netherlands, Apr. 15, 1977, 7704129; Jun. 24, 1977, 7707007

Int. Cl.<sup>3</sup> B62D 55/28

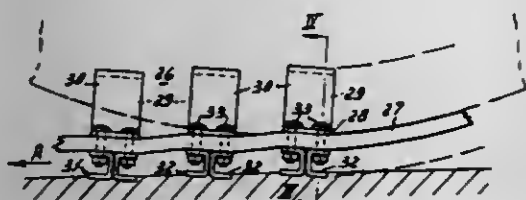
U.S. Cl. 305—35 EB

1 Claim

1. A vehicle included in the group which comprises tractors, motorcars, soil cultivating machines, trucks, wagons and the like, wherein the vehicle comprises a frame and ground engag-



ing wheels mounted on said frame, a track arranged around at least two of said ground engaging wheels, said track comprising a continuous belt of flexible material, said belt being provided with profiles which include parts extending substantially parallel to the belt at the circumference of said belt and further



parts spaced at a distance therefrom, said parts and further parts connected by other parts extending substantially normally to said belt whereby said profiles have a cross-section which comprises two U-shaped cross-sections on their sides back-to-back whereby said cross-sections appear to have an I-shaped configuration.

4,281,883

## PANEL MOLDING SUPPORT STRUCTURE

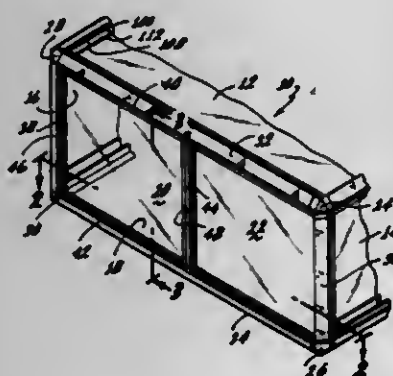
Ralf G. Zacky, 4491 Deanwood Dr., Woodland Hills, Calif. 91364

Filed Nov. 19, 1979, Ser. No. 95,416

Int. Cl.<sup>3</sup> A47F 3/00; F16B 12/00

U.S. Cl. 312-140

20 Claims



1. A panel molding support structure for use with a display case, including  
an outer frame located within a particular plane including at least four tubular members, each having substantially the same cross-section and interconnected at end portions by joints to form the outer frame and with the four tubular members located within the particular plane and with the tubular members having a square cross-section and turned angularly to have an angular orientation and with each of the four tubular members including an angular outer surface located adjacent to each other and forming an inner frame surface to receive an inner frame,  
an inner frame located within the particular plane including at least four moldings each extending along and complementary only to the angular outer surface of each of the tubular members to form the inner frame and with the inner frame located within inner frame surface of the outer frame and within the particular plane,  
the moldings each including only a single angular inner surface extending along the length of the molding and with the angular inner surfaces matching the angular orientation of the inner frame surface of the tubular members to have the moldings forming the inner frame matching and conforming only to the inner frame surface of the outer frame, and  
the moldings each including a channel extending along the length of the molding and with the channels receiving and supporting a panel member within the inner frame and within the particular plane.

4,281,884

ELECTRICALLY CONDUCTIVE PNEUMATIC SPRING  
Herbert Freitag, Koblenz-Metternich; Klaus Schoitzius, Rheinbrohl; Martin Müller, and Willi Schäfer, both of Kesselheim, all of Fed. Rep. of Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Continuation of Ser. No. 782,012, Mar. 28, 1977, abandoned.

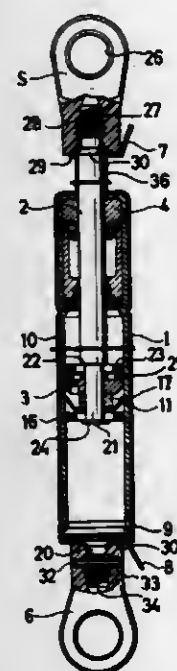
This application Jan. 21, 1979, Ser. No. 50,690

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2614927

Int. Cl.<sup>3</sup> H01R 41/00; H01H 3/00; T16F 9/02; B60Q 18/04

U.S. Cl. 339-9 R

34 Claims



1. In a pneumatic spring-type electrical connector including a cylinder member having an axis and bounding a sealed cavity therein, a piston rod member secured to said cylinder member for axial movement inward and outward of said cavity, respective fastening elements on said members outside said cavity, respective terminals on said members outside said cavity, said cylinder member having an axially elongated face portion of electrically conductive material in said cavity, said face portion carrying a film of non-conductive lubricant, a compressed gas in said cavity biasing said piston rod member outward of said cavity, and current carrier means permitting flow of electric current between said terminals, the improvement in said current carrier means which comprises:

- a conductive contact element fixed on said piston rod member and having at least one contact face;
- resilient means biasing said at least one contact face into sliding engagement with said axially elongated face portion during said movement of the piston rod member with a force sufficient for breaking said lubricant film; and
- conductive means connecting said face portion and said contact face to said terminals respectively.

4,281,885

## LINE TELECOMMUNICATIONS CABLE END SYSTEM

Horst Forberg, and Wolfgang Radelow, both of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 18,896

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811812

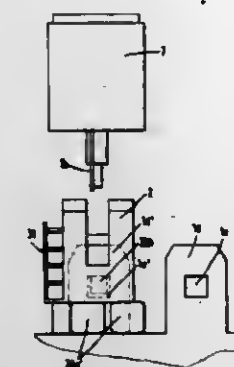
Int. Cl.<sup>3</sup> H01R 15/14

U.S. Cl. 339-14 R

13 Claims

1. A line telecommunications cable end system adapted for supporting and fixing a lead-in cable end and also adapted for connecting terminal and/or isolating strips thereto, said cable end system comprising at least one pair of parallel earthing strips spaced a distance equal to the distance between end faces of said terminal and/or isolating strips, each earthing strip

having a row of elongated tags formed integrally on the top surface, each said tag being adapted to extend through one of the end faces of a corresponding number of terminal and/or



isolating strips with LSA, contacts, the length of each said tag being such that it is also adapted to contact any fitted extra equipment such as a surge diverter.

4,281,886

## ELECTRIC WIRE TERMINAL CONNECTING STRUCTURE

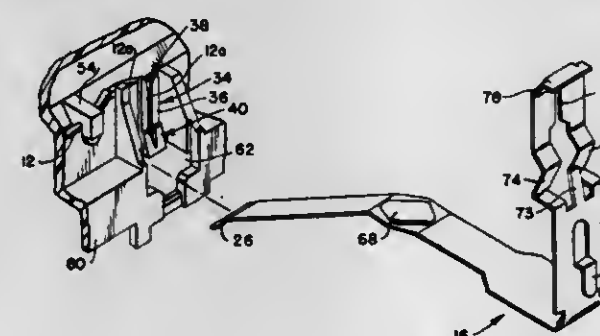
Jonathan I. Kaplan, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 16, 1979, Ser. No. 67,029

Int. Cl.<sup>3</sup> H01R 4/24

U.S. Cl. 339-97 R

13 Claims



1. An electric wire terminal connection comprising:  
a non-conductive mounting structure for supporting and positioning an end portion of a conductive wire, said mounting structure defining a bracket formation having a front face extending between longitudinally spaced head and foot portions, said foot portion having a wire end receiving pocket coextensive with said front face, said head portion having a projecting post also generally coextensive with said front face and extending from the end of said bracket formation opposite from said foot portion;  
means for engaging and holding the conductive wire at a point spaced from said end portion thereof after said end portion is received in said pocket, positioned along said face and bent about said projecting post; and  
a conductive contact terminal having a leaf-like mounting portion adapted to be secured to said bracket formation, said terminal mounting portion having a slot to receive and electrically contact said end portion of said conductive wire bent about said projecting post.

4,281,887

## ELECTRICAL CONNECTOR

Vincent A. Luca, Jr., Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 28, 1979, Ser. No. 16,708

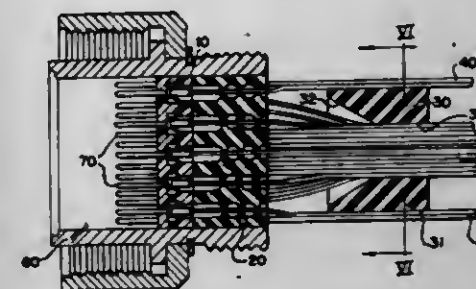
Int. Cl.<sup>3</sup> H01R 13/58

U.S. Cl. 339-103 M

16 Claims

1. In combination with an electrical connector of the type having a housing, a plurality of electrical contacts, means for mounting said contact within a said housing, and a moisture sealing grommet comprised of a resilient material having a plurality of longitudinal bores adapted to receive wires termi-

nating at respective contacts, said grommet located adjacent said contact mounting means, the improvement comprising:  
a second grommet spaced apart from the moisture sealing grommet and the contact mounting means and having a plurality of grooves for receiving some of said wires arranged about the outer periphery and a central passage having a diameter large enough for passing other of said wires extending from a first surface to a second surface,



one of said surfaces extending radially inwardly to said central passage, said wires passing through said central passage and said grooves for connection to different ones of said electrical contacts; and  
means for mounting said second grommet adjacent said moisture sealing grommet, said second grommet preventing radial forces applied to the wires from being transmitted to the moisture sealing grommet.

4,281,888

## APPARATUS FOR TESTING LEADS OF FUSE HOLDERS

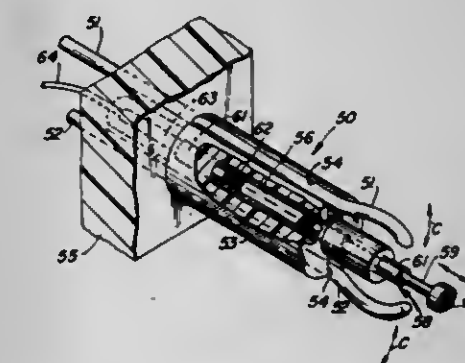
Gary G. Seaman, Broomfield, Colo., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 7, 1979, Ser. No. 73,347

Int. Cl.<sup>3</sup> H01R 9/00

U.S. Cl. 339-151 B

6 Claims



1. Apparatus for providing electrical contact with a plurality of leads individually located in the walls and at the base of a fuse holder socket shaped to accept a tubular fuse, the apparatus comprising:

- a tubular body arranged to fit into the socket;
- a base attached to one end of the body;
- a plurality of free ended spring fingers of conductive material extending from the base along the length of the tubular body, the free ends of the spring fingers projecting outward from the body and capable of moving toward and away from the body;
- an electrical lead extending through the center of the body to the base; and
- a spring-loaded probe extending from the end of the body opposite the base and connected to the central electrical lead;

the parts being so constructed and arranged that, when the body is inserted into the socket, the plurality of spring fingers are initially cammed inwardly by the walls of the socket, following which the plurality of fingers spring outwardly to physically and electrically contact associated ones of the plurality of leads located in the walls of



the socket and, as the probe comes into contact with the lead at the base of the socket, it is forced rearward with respect to the body so as to assure good electrical contact.

4,281,889

## LIGHT BEAM SCANNING SYSTEM

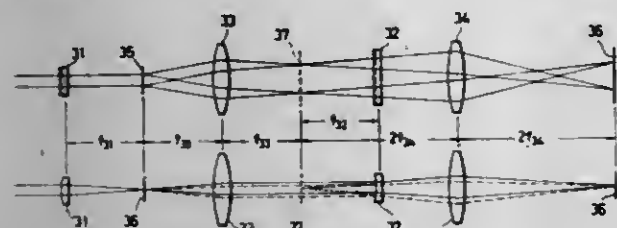
Masaru Noguchi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 12, 1979, Ser. No. 84,342

Claims priority, application Japan, Oct. 19, 1978, 53-128884  
Int. Cl.<sup>3</sup> G02B 21/00

U.S. Cl. 350—6.8

3 Claims



1. A light beam scanning system having a rotary multi-surfaced mirror comprising in order relative to a light source:

- a uni-directional convergent optical element for converging an incident light beam to form on a reflection surface of said rotary multi-surfaced mirror a first linear image parallel to its scanning direction;
- first convergent optical means for converging the light beam reflected by said multi-surfaced mirror to form a second linear image perpendicular to the scanning direction;
- a uni-directional divergent optical element disposed at a position opposite to said first convergent optical means with respect to the second linear image, said divergent optical element being adapted to diverge the light beam in a direction perpendicular to the scanning direction; and
- second convergent optical means for converging the light beam to form a point image on a scanning surface; whereby said second linear image and said point image are positioned at conjugate planes having a first object and image relationship in the direction parallel to the scanning direction while said first linear image and said point image are positioned at conjugate planes having a second object and image relationship in direction perpendicular to the scanning direction.

4,281,890

## OPTICAL ADJUSTMENT KNOB FOR BINOCULAR

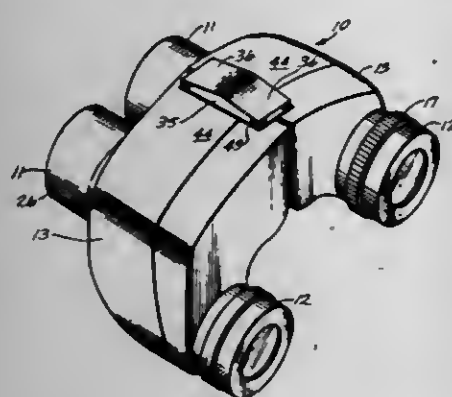
Gerrit A. Van Exel, Fullerton, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Mar. 23, 1979, Ser. No. 23,316

Int. Cl.<sup>3</sup> G02B 7/06

U.S. Cl. 350—77

6 Claims



1. In a binocular assembly having a housing supporting a pair of telescopes having moveable optical elements to effect an optical adjustment, the telescopes having generally parallel optical axes along which images of an object are viewed, the

housing having an upper surface when the binocular is held in a normal viewing position; an improved adjustment mechanism comprising:

- an adjustment knob movably mounted on the housing to be rotatable about an axis which is generally parallel to an imaginary line connecting and perpendicular to the optical axes, the knob having an exposed upper portion defining a pair of finger-contacting platforms which are radially spaced from and angularly spaced apart with respect to the adjustment axis, the knob platforms being positioned adjacent the housing upper surface so the knob can be rotated bidirectionally in seesaw fashion by a pair of fingers positioned over the upper surface and in contact with the knob platforms, the knob apart from the exposed upper portion being enclosed in the housing; and
- a coupling means connecting the knob to the moveable optical elements for shifting the elements along the respective optical axes in response to rotation of the knob.

4,281,891

## DEVICE FOR EXCELLENTLY COUPLING A LASER BEAM TO A TRANSMISSION MEDIUM THROUGH A LENS

Tsunao Shinohara, and Hiroo Yonezu, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1979, Ser. No. 23,917

Claims priority, application Japan, Mar. 27, 1978, 53/39540[U]; Jul. 19, 1978, 53/88757

Int. Cl.<sup>3</sup> G02B 5/14

U.S. Cl. 350—96.18

19 Claims



1. A device for coupling a laser beam emitted by a laser element to an optical fiber having an end surface, comprising:
  - a beam converging lens responsive to said laser beam for producing a reshaped laser beam;
  - a fiber holder for holding said optical fiber with said end surface;
  - a block of a solid material transparent to said reshaped laser beam and having a first and a second surface;
  - a mass of a binder transparent to said reshaped laser beam between said second and said end surfaces and between said second surface and said fiber holder; and
  - fixing means for fixing said lens and said fiber holder to each other with said first surface made to receive said reshaped laser beam and with said reshaped laser beam made to focus substantially on said end surface through said block and said binder mass, wherein said solid material and said binder have refractive indexes that are approximately equal to that of said optical fiber.

4,281,892

## FIBER OPTIC CONNECTOR

Mansur N. Sitabkhan, Brecksville, Ohio, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 26, 1979, Ser. No. 61,057

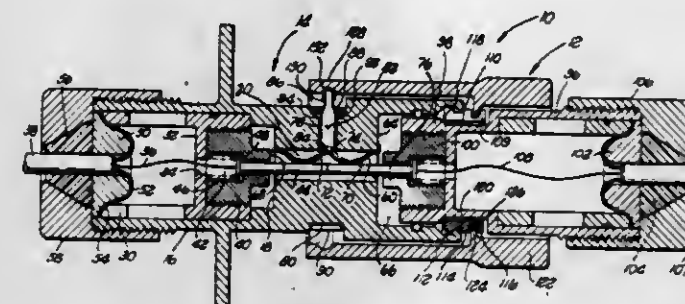
Int. Cl.<sup>3</sup> G02B 5/14

U.S. Cl. 350—96.21

5 Claims

1. A fiber optic connector comprising:
  - first and second axially mating connector members each adapted to carry an optical fiber ferrule;
  - said first connector member having a passage therethrough adapted to receive the ferrules in its opposite ends;
  - said passage including a pair of longitudinally extending flat sides disposed at an angle relative to each other defining a generally V-shaped channel;

spring means carried by said first connector member and mounted in said passage adapted to be urged toward said channel for biasing the ferrules into said channel to align the optical fibers in the ferrules; and



actuating means carried by said second connector member axially slidable relative to said first connector member and said spring means, said actuating means being operatively with said spring means for automatically urging said spring means toward said channel upon axial mating of said connector members.

4,281,893

SUPER WIDE BAND LIGHT TRANSMITTING SYSTEM  
Ryozo Yamada, Hamamatsu; Naomichi Okamoto, Kami, and Toshimi Meiri, Hamamatsu, all of Japan, assignors to President Shizuoka University, Shizuoka Pref., Japan

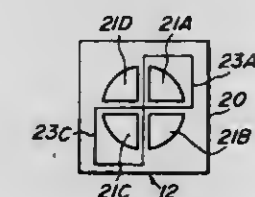
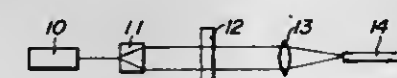
Filed Sep. 13, 1979, Ser. No. 75,185

Claims priority, application Japan, Sep. 29, 1978, 53-120979

Int. Cl.<sup>3</sup> G02B 5/14

U.S. Cl. 350—96.31

5 Claims



1. A super wide bandwidth light transmitting system, comprising:

- a laser for producing TEM<sub>00</sub> waves;
- at least one graded index optical fiber including a core having a dielectric constant which continuously decreases from its center along its radius, and a cladding having a uniform dielectric constant larger than that of the core at the interface between the core and the cladding;
- an optical input to said graded index optical fiber, and
- a mode filter disposed between said laser and said optical input for increasing the bandwidth of the system by eliminating waves of the modes with lower azimuthal numbers which produce a large amount of dispersion-type signal distortion at frequencies close to a cutoff frequency of the system.

4,281,894

## VERY LOW ABSORPTION, LOW EFFICIENCY LASER BEAMSAMPLER

Jayanta K. Guha, Canoga Park, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 21, 1980, Ser. No. 113,443

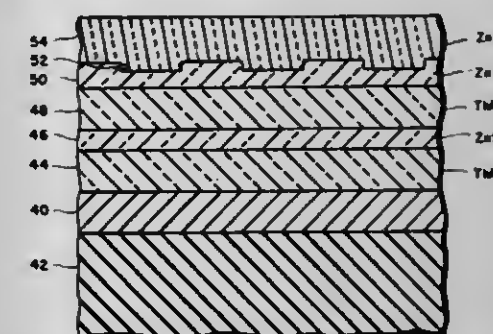
Int. Cl.<sup>3</sup> G02B 5/18, 5/08

U.S. Cl. 350—162 R

6 Claims

1. A very low absorption, low efficiency, laser beamsampler comprising:

a plane reflective surface;  
a plurality of dielectric pairs overlying said reflective surface, each of said pairs comprised of a first layer of dielectric material having a high refractive index and a second layer of dielectric material having a low refractive index, said first and second layers being deposited in one-quarter wavelength optical thicknesses;



a shallow groove diffraction grating formed in the top surface of the top layer of the top dielectric pair; and  
a protective layer of a third dielectric material applied over said diffraction grating, said third material applied to an optical thickness of substantially one-half wavelength, said third material having an index of refraction similar to, but different than, that of the dielectric material of said top layer of said top dielectric pair.

4,281,895

## QUICK CHANGE LENS MOUNT

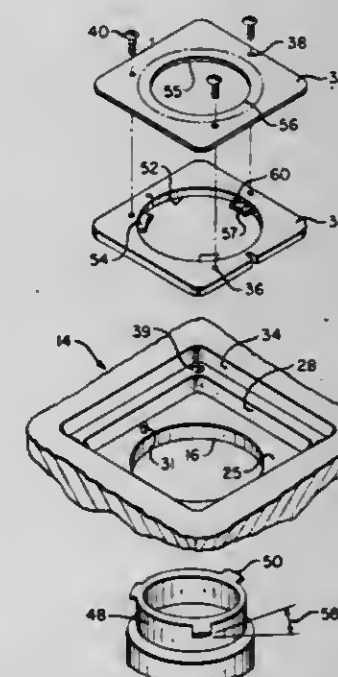
Siegfried H. Mohr, Santa Clara, Calif., assignor to Quantor Corporation, Mountain View, Calif.

Filed Apr. 12, 1979, Ser. No. 29,506

Int. Cl.<sup>3</sup> G02B 7/02, 7/14; F16L 37/24; F16B 7/20

U.S. Cl. 350—257

4 Claims



1. A lens mounting for enabling rapid changing of lenses comprising a

- support plate, a
- female plate member carried by said support plate, said female plate member having a plurality of equally spaced lugs positioned to provide a recess from one surface of said plate member and extending inwardly from an interior aperture thereof, a
- single piece planar clamping member abutting said female plate member and having an annular resilient interior portion thereof extending from an interior aperture outwardly at least to the diameter of the aperture of said plate member and substantially overlapping and spaced from said lugs,



means securing said clamping member and said female plate member to said support plate, and a lens carrying member comprising a lens holder and a male barrel member carrying said lens holder and having a plurality of outwardly extending lugs thereon engageable in said recess with said lugs of said female plate member and with said resilient portion of said clamping member for securing said lens carrying member in axial position upon rotation of said lens carrying member a predetermined angular distance.

4,281,896

# SHARED APERTURE SEPARATOR FOR RECIPROCAL PATH OPTICAL BEAMS

Joseph D. Coccoli, Sudbury, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

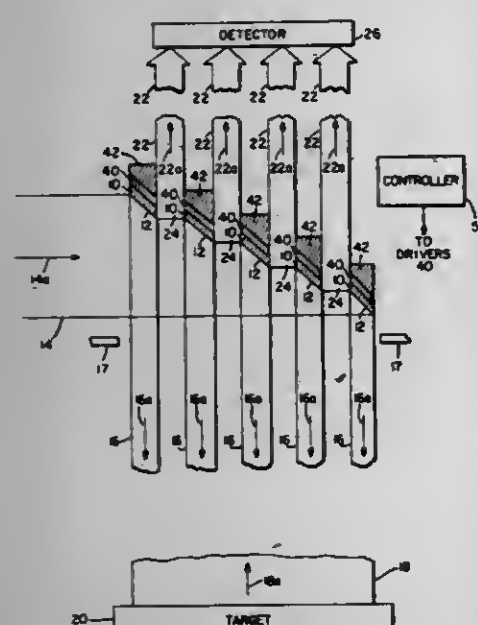
Filed Aug. 2, 1978, Ser. No. 930,140

Claims priority, application Japan, Jun. 22, 1979, 54-78945

Int. Cl.<sup>3</sup> G02B 27/14

U.S. Cl. 350—171

13 Claims



1. A method for monitoring conditions along the propagation path of reciprocal path optical signals, comprising the steps of:

directing an incident laser beam toward a target by way of a stepped array of parallel reflecting surfaces arranged on spaced apart elements, in which said reflecting surfaces overlap as seen by the incident beam and the elements are spaced apart in a direction perpendicular to said path, whereby said incident laser beam is split into a plurality of coherent laminar beams propagating toward said target, and said laminar beams have controlled relative phase displacements, and

detecting an optical signal returning on said path from said target which passes between said spaced apart elements.

4,281,897

# PHOTOMETRIC SYSTEM INCLUDING A TIME-DIVISION OPTICAL ATTENUATOR

Taylor C. Fletcher, 1534 Sonny Crest Dr., Fullerton, Calif. 92635

Filed Jan. 10, 1979, Ser. No. 2,398

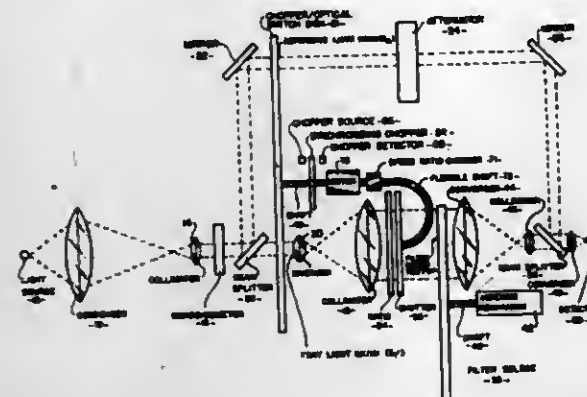
Int. Cl.<sup>3</sup> G05D 25/00

U.S. Cl. 350—274

27 Claims

1. A photometric system comprising: first means for producing a pulsating light beam; time-division optical attenuator means positioned in the path of the pulsating light beam, and including second means for producing a plurality of like pulsating light beams in response to the pulsating light beam from the first means, and third means adjustable to pass selected ones of the light pulses of the pulsating light beams from the second means to vary the average amount of light passed thereby; a

photoelectric detector positioned in the path of the pulsating light beam from the time-division optical attenuator means;



and further optical attenuator means positioned in the path of the pulsating light beam between the first means and the photoelectric detector.

4,281,898

# AUTOMATIC ANTIGLARE REARVIEW MIRROR

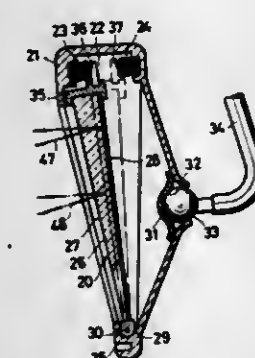
Akio Ochiai, Shizuoka; Noriyuki Iida, Fujioka, and Yasumasa Yoshimura, Shizuoka, all of Japan, assignors to Murakami Kaimeido Co., Ltd., Japan

Filed Feb. 7, 1979, Ser. No. 10,128

Int. Cl.<sup>3</sup> G02B 17/00

U.S. Cl. 350—281

11 Claims



1. A mirror mechanism for selectively producing an image of high or low brightness depending upon the intensity of incident light, comprising:

(a) support means;

(b) a mirror assembly supported by the support means for pivotal motion between two predetermined operating positions to provide the high and low brightness images;

(c) permanent magnet means secured to either of the support means and the mirror assembly;

(d) electromagnet means secured to the other of the support means and the mirror assembly in opposed relationship to the permanent magnet means;

(e) the electromagnet means including core means normally coacting with the permanent magnet means to hold the mirror assembly in a selected one of the operating positions;

(f) sheets of magnetic rubber attached to at least one of said permanent magnet means and said electromagnet means to effect noise reduction;

(g) a light sensitive element arranged to sense the intensity of light impinging on the mirror assembly; and

(h) electric circuit means responsive to the sensing by said light sensitive element of a change in the intensity of the incident light, for energizing the electromagnet means for a preset length of time for causing the pivotal motion of the mirror assembly from one to the other of the operating positions by virtue of magnetic attraction and/or repulsion between the permanent magnet means and the electromagnet means;

(i) whereby the energization of the electromagnet means is

required only for moving the mirror assembly between the operating positions.

4,281,899

# ADJUSTING DEVICE FOR MOTORCAR MIRRORS

Aane A. Oskam, De Meern, Netherlands, assignor to Industrie Koot B.V., Montfoort, Netherlands

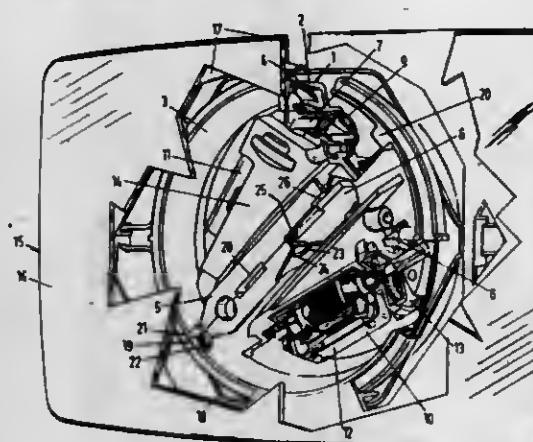
Filed Sep. 19, 1979, Ser. No. 76,953

Claims priority, application Netherlands, Jul. 26, 1979, 7905806

Int. Cl.<sup>3</sup> B60R 1/06; G02B 7/18

U.S. Cl. 350—289

6 Claims



1. A device for adjusting the mirror of an automotive vehicle about at least two perpendicular axes, said device comprising: a cup-shaped housing having a raised edge and a ridge extending along a median plane of said housing; said ridge having an upper edge having at the center of the length thereof a substantially semi-cylindrical fulcrum; a tiltable adjusting ring mounted in said housing for relative movement with respect thereto, said ring being in sealing contact with said raised edge of said housing in all positions of said ring; a stiffening element of U-shaped cross-sectional configuration defined by two legs, said stiffening element having opposite ends received in diametrically opposed holes in said adjusting ring, and said stiffening element being mounted in contact with said semi-cylindrical fulcrum of said ridge and with said two legs positioned on opposite sides of said ridge;

first and second mirror adjustment members mounted for engagement with said adjusting ring at positions off-set from each other by 90° with respect to said adjusting ring, each said adjustment member including a rack portion; and

first and second drive and transmission means for achieving relative movement of said ring with respect to said housing in at least two perpendicular axes, said first and second drive and transmission means being arranged mirror-symmetrically relative to said median plane of said ridge of said housing and extending in directions enclosing an acute angle, each said drive and transmission means comprising a motor having an output shaft, a planetary transmission system mounted on said motor output shaft and having an output shaft, and a gear fixed to said transmission system output shaft and engaging a said rack portion of a respective said adjustment member.

4,281,900

# FRONTAL REFLECTOR BRACING

I. Earl Lewis, Jr., Menlo Park, Calif., assignor to Ford Aerospace & Communications Corp., Detroit, Mich.

Filed Oct. 31, 1979, Ser. No. 90,151

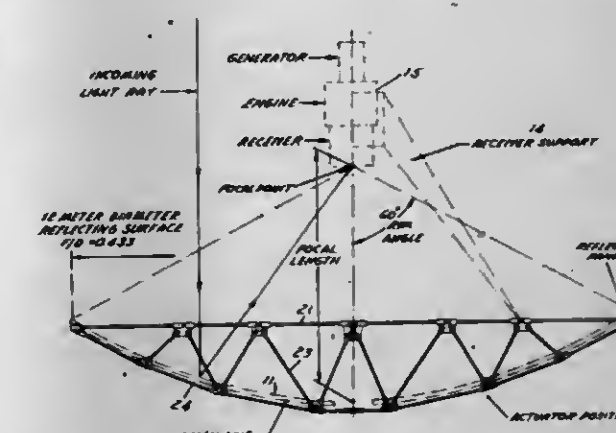
Int. Cl.<sup>3</sup> G02B 5/10, 7/18

U.S. Cl. 350—292

10 Claims

1. A reflector system having a generally dish-shaped concave reflective surface and further comprising a frontal bracing system with front members extending between points posi-

tioned generally in a plane covering the opening of said dish shaped concave reflective surface, and back radial members, positioned adjacent said reflective surface on the convex side thereof, having an orientation generally following the curvature of said reflective surface of said reflector system, a plurality of rigid bracing truss members connecting said front mem-



bers and said back radial members so that a portion of said frontal bracing system is positioned on the energy receiving and transmitting side of said reflector and provides a structural support for said reflective surface;

wherein each of said back radial members extends across substantially the entire diameter of said reflective surface.

4,281,901

# ELECTRODE STRUCTURE IN DISPLAY DEVICE

Yoshito Ushiyama, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

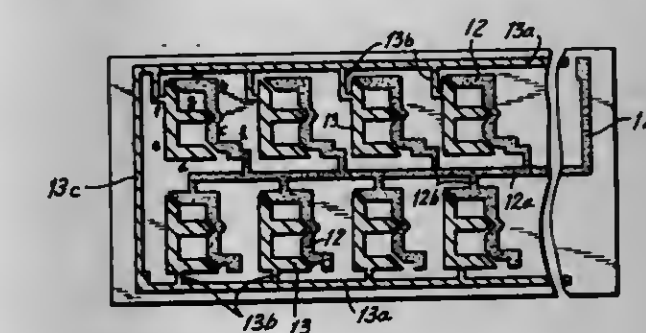
Filed May 10, 1978, Ser. No. 904,651

Claims priority, application Japan, May 11, 1977, 52-54116

Int. Cl.<sup>3</sup> G02F 1/133

U.S. Cl. 350—336

8 Claims



1. An improvement in an electrode structure in a display device for operation in a multiplexing mode, said device including at least two panel substrates, a display material therebetween, electrode segments disposed in a plurality of first groups on one of said substrates said segments in each of said first groups being arranged in individually-activatable first subgroups, said first groups being disposed for displaying a plurality of characters in each of a plurality of spaced-apart rows, the term "rows" including but not being restricted to rows and columns, the arrangement of segments into subgroups being the same for all of said groups;

electrode segments in a plurality of second groups on the other of said substrates, each of said second groups being disposed opposite one of said first groups for cooperating therewith in producing display of a character, said segments in each of said second groups being arranged in individually-activatable first and second common electrodes, the arrangement of said segments into said first and second common electrodes being the same for all of said second groups; first trunk lines connecting together all of said first common electrodes, and second trunk lines con-



necting together all of said second common electrodes, said improvement comprising the disposition of said first and second trunk lines alternately between and at the outer sides of said plurality of rows so that only one trunk line is disposed between any pair of rows, thereby eliminating the need for an insulating space between adjacent trunk lines and increasing the fraction of the display area of said display device available for displaying said characters.

**4,281,902**  
**ELECTRO-OPTIC DEVICE FOR THE DISPLAY OF DARK SYMBOLS COMPOSED OF SEPARATELY SELECTABLE DISPLAY SEGMENTS AGAINST A BRIGHT BACKGROUND AND A MEANS FOR ADDRESSING THIS DEVICE**

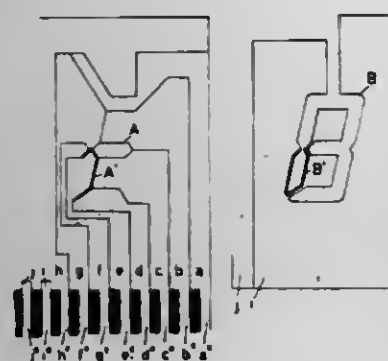
Allan R. Kmetz, Nussbaumen, and Klaus Müller, Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jul. 17, 1978, Ser. No. 925,539

Claims priority, application Switzerland, Jul. 29, 1977, 9397/77

Int. Cl.<sup>3</sup> G02F 1/133  
U.S. Cl. 350—336

4 Claims



1. An electro-optical indicating device for representing a plurality of numerical symbols consisting of seven separately controllable indicating elements arranged in the shape of a numeral 8, said indicating device comprising:

- a front electrode;
- a rear electrode;

an electro-optical activatable medium located between said front and rear electrodes, said medium acting to absorb light in areas thereof where a potential difference of less than a transition voltage is imposed across said medium, said medium acting to transmit light in areas thereof where a potential difference at least equal to said transition voltage is imposed, said transition voltage being specific to said medium;

said front electrode being formed of a first portion (h) which can apply a voltage across said medium in regions outside the regions of said indicating elements and seven second portions (a-g), each of which can apply a voltage across said medium in the region of one of said indicating elements, said portions being isolated from each other by very thin recesses so that the front electrode is substantially covered by said first and second portions;

said rear electrode being formed of a first portion (i) which forms the outer and inner boundaries for said indicating elements and for applying a voltage to the background region of said numeral 8 and a second portion (j) for simultaneously applying a voltage to all of said indicating elements, said first and second portions of said rear electrode being isolated from each other by very thin recesses so that the rear electrode is substantially covered by said first and second portions;

each of said portions being connected to an electrical contact for receiving electrical signals from a control circuit;

each of said second portions of said front electrode (a-g)

consisting of a segment electrode for one of said indicating elements and a supply line;

said second portion of said rear electrode (j) consisting of a first part in the shape of a numeral eight for applying a voltage to all of said indicating elements and a supply line; wherein the said first portion of the front electrode (h) overlays the supply line of said second portion of said rear electrode (j);

wherein the said first portion of the rear electrode (i) overlays the supply lines of said plurality of second portions of said front electrode (a-g);

wherein said portions of said front and rear electrodes are selectively supplied with electrical signals from said control circuit to form a specific one of said plurality of numerical symbols, the potential difference between said second portion of said rear electrode (j) and said second portions of said front electrode (a-g) being less than said transition voltage, the potential difference between the rear electrode and the first portion of said front electrode (h) being at least equal to said transition voltage, the potential difference between the said first portion of the rear electrode (i) and the supply lines of the plurality of second portions of said front electrode (a-g) being at least equal to said transition voltage; and

whereby said specific numerical symbol appears as a dark symbol against a uniformly bright background.

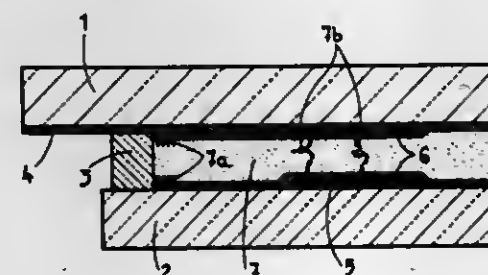
**4,281,903**  
**ELECTRO-OPTIC PASSIVE DISPLAY CELL**  
Fereydoun Gharadjedaghi, Neuchâtel, Switzerland, assignor to Ebauches S.A., Neuchâtel, Switzerland

Filed Feb. 1, 1979, Ser. No. 8,239

Claims priority, application Switzerland, Feb. 6, 1978, 1272/78

Int. Cl.<sup>3</sup> G02F 1/137  
U.S. Cl. 350—349

6 Claims



1. An electro-optic passive display cell comprising: two substantially parallel spaced plates; a frame sealed between said plates and defining a tight chamber therebetween; control electrodes arranged on the inner facing surfaces of said plates for providing an electric field therebetween; a coating of homeotropic alignment material covering said inner surfaces and said electrodes, an active component disposed in said chamber, said active component comprising a mixture of a nematic liquid crystal having a negative dielectric anisotropy, dichroic molecules and a chiral compound capable of providing a helical structure to the said active component when an electric field is applied and a homeotropic structure in the absence of an applied electric field, the concentration of the said chiral compound being selected to provide a pitch of the helical structure having a value substantially comprised between 0.9 and 3 times the distance between plates whereby satisfactory readable contrast is provided between areas under effect of an electric field and areas where such electric field effect is absent.

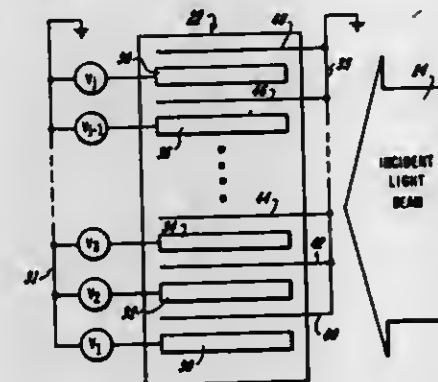
**4,281,904**  
**TIR ELECTRO-OPTIC MODULATOR WITH INDIVIDUALLY ADDRESSED ELECTRODES**  
Robert A. Sprague, Saratoga, and Richard V. Johnson, Pasadena, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 21, 1979, Ser. No. 40,607

Int. Cl.<sup>3</sup> G02B 5/14

U.S. Cl. 350—356

15 Claims



1. An electro-optic modulator for providing modulated phase fronts of light incident thereon comprising: an electro-optical material,

an electrode pattern array formed on a predetermined surface of said material, said electrode pattern array comprising first and second sets of electrodes, each of the electrodes of said first set being addressable by individual voltage levels, said second set of electrodes being connected to a common voltage level, the voltage levels applied to said first set of electrodes inducing an electric field adjacent said predetermined surface, and means for generating light and directing such generated light in a manner such that the light is incident on the material and suffers a single internal reflection from said predetermined surface and travels in a direction substantially parallel to the length of said first and second sets of electrodes, said electric field producing a simultaneous phase modulation of the incident light beam corresponding to the location of each electrode, the local magnitude of which is related to the voltage level applied to that electrode.

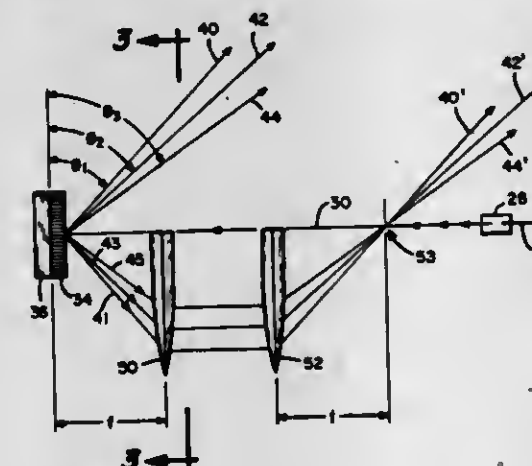
**4,281,905**  
**MAGNETO-OPTIC LIGHT DEFLECTOR BEAM RECOMBINATION APPARATUS**  
William A. Harvey, and Ernest J. Torok, both of Minneapolis, Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,917

Int. Cl.<sup>3</sup> G02F 1/31; G02B 27/10

U.S. Cl. 350—377

5 Claims



1. A light deflection system, comprising: a diffraction grating; a source of an input light beam that is directed normally

incident to the near surface of said diffraction grating and along an input optical axis;

a mirror on the far side of said diffraction grating reflecting said input laser light beam back through said diffraction grating for generating a single 0<sup>th</sup> order light beam directed back along said input optical axis and a pair of conjugate 1<sup>st</sup> order light beams;

a pair of converging half-lenses that are formed from a single converging lens the center of which is removed and which is then cut in half along a diameter;

said two converging half-lenses oriented superposed with their planes parallel to the plane of said diffraction grating, with their optical axes aligned with said input optical axis, with the nearest converging half-lens located one focal length away from the plane of said diffraction grating and the two converging half-lenses separated two focal lengths.

**4,281,906**  
**ZOOM LENS**

Kazuo Tanaka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

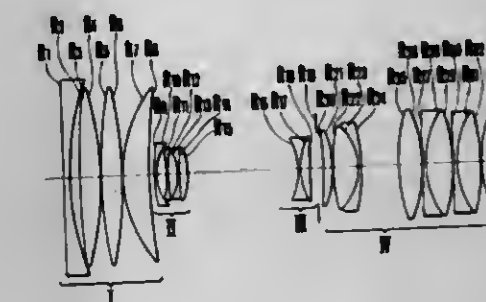
Filed Mar. 20, 1979, Ser. No. 22,331

Claims priority, application Japan, Mar. 27, 1978, 53-35236

Int. Cl.<sup>3</sup> G02B 15/18

U.S. Cl. 350—427

3 Claims



1. A zoom lens comprising: a positive first lens group having a focusing function; a negative second lens group having a zooming function; a negative third lens group actuated in synchronism with said second lens group to be moved for zooming purposes; an always-fixed positive fourth lens group for focusing the light flux from said negative third lens group on a predetermined plane; said first lens group including, from front to rear, a negative 1-1<sup>st</sup> lens, a positive 1-2<sup>nd</sup> lens, a positive 1-3<sup>rd</sup> lens and a positive 1-4<sup>th</sup> lens, and an air lens defined by said negative 1-1<sup>st</sup> lens and said positive 1-2<sup>nd</sup> lens having a negative power, wherein the axial thickness of said negative air lens is thicker than that of said negative 1-1<sup>st</sup> lens and thinner than that of said positive 1-2<sup>nd</sup> lens; and said second lens group having at least two negative lenses on the object side and a cemented lens of a positive lens element and a negative lens element at the rearmost position.

**4,281,907**  
**ARRANGEMENT FOR ADJUSTING A MEMBER IN A LENS BARREL FOR EFFECTING A ZOOMING FUNCTION ZOOM LENSES**

Shigeru Kamata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1979, Ser. No. 64,806

Claims priority, application Japan, Aug. 21, 1978, 53-114783[U]

Int. Cl.<sup>3</sup> G02B 7/10

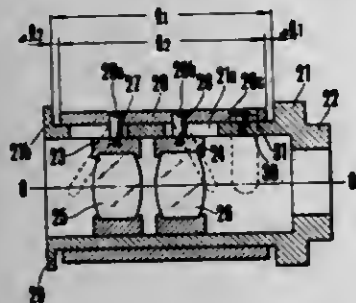
U.S. Cl. 350—427

2 Claims

1. A mechanism for adjusting the position of a cam member which contributes to the zooming effect in a lens barrel of a zoom lens, comprising:



- (a) a fixing member having a guide for moving a photo-taking lens in an axial direction;
- (b) a cam member having a cam groove for performing the zooming function of the photo-taking lens in cooperation with the above-described straight guide, said cam member being fitted to said fixing member and having a range of axial movement with reference to said fixing member;
- (c) an encasing barrel connected in unison with the cam member by a fastening member; and
- (d) adjusting means for adjustment of the axial displacement of said cam member, said adjusting means being provided



with a circumferential groove formed in the outer circumference round the optical axis of said cam member, an eccentric roller arranged to fit in the circumferential groove and a fastening member which pivotally carries said eccentric roller to permit the roller to rotate within said circumferential groove and also is arranged to carry said fixing member, said encasing barrel which is disposed over the circumferential groove of said cam member being provided with a piercing hole for permitting a rotating operation on said eccentric roller through said piercing hole.

4,281,908

#### TESSER TYPE OBJECTIVE LENS SYSTEM HAVING A REAR APERTURE STOP

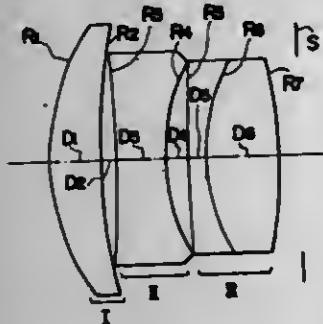
Tamikazu Yamaguchi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 4, 1979, Ser. No. 26,829

Claims priority, application Japan, May 10, 1978, 53/55856  
Int. Cl.<sup>3</sup> G02B 9/20

U.S. Cl. 350—476

7 Claims



1. An improved tesser type objective lens system having a rear aperture stop comprising:
  - a first positive meniscus lens convex to the object side;
  - a second negative lens located at the image side of the first positive meniscus lens;
  - a third positive doublet located at the image side of the second negative lens, the third positive doublet consisting of a positive element and a negative element cemented to the positive element by an intermediate cemented surface convex to the object side; and
  - an aperture stop located at the image side of the third doublet, wherein the lens system fulfills the following conditions:

$$\begin{array}{lcl} 0.3 & < & D_3/(D_1 + D_2 + D_3) & < & 0.45 \\ 0.05F & < & D_3 & < & 0.08F \end{array}$$

-continued

0.03F <	D <sub>4</sub>	< 0.045F
-2.4F <	R <sub>3</sub>	< -1.6F
0.25F <	R <sub>6</sub>	< 0.33F
0.13 <	N <sub>4</sub> -N <sub>3</sub>	< 0.22
(N <sub>1</sub> + N <sub>4</sub> )/2 > 1.75		

wherein:

F represents the focal length of the whole lens system;  
D<sub>i</sub> represents the i-th axial distance from the object side;  
R<sub>i</sub> represents the radius of curvature of the i-th surface from the object side; and  
N<sub>i</sub> represents the refractive index of the i-th glass material from the object side with respect to the ray of d-line.

4,281,909

#### MODULAR CAMERA SYSTEM

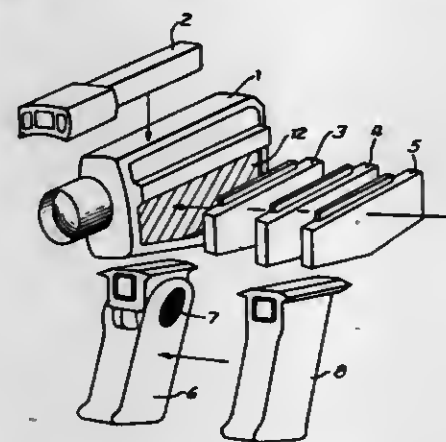
Takao Ishibashi, Higashiyamato, and Kenjiro Osonol, Tokorozawa, both of Japan, assignors to Osawa Precision Industries, Ltd., Tokyo, Japan

Filed May 17, 1979, Ser. No. 39,993

Claims priority, application Japan, May 22, 1978, 53-060058  
Int. Cl.<sup>3</sup> G03B 31/00, 19/18

U.S. Cl. 352—25

16 Claims



1. A modular camera system, comprising:
  - a basic operation camera including a camera housing, an image forming optical system, an image focal plane arrangement and having basic imaging and camera functions; and,
  - a selectively attachable and connectable module for providing additional camera and imaging function controls, said module including module control means for controlling the operation of said basic camera concerning predetermined camera and imaging functions when said module is attached to said basic camera, said module including means for changing at least one of said basic imaging and camera functions.

4,281,910

#### CAMERA APPARATUS FOR ENDOSCOPE

Syuichi Takayama, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Mar. 5, 1980, Ser. No. 127,515

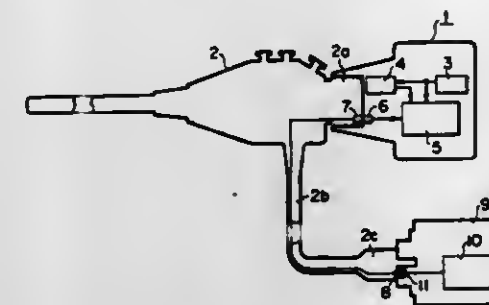
Claims priority, application Japan, Apr. 2, 1979, 54/39610  
Int. Cl.<sup>3</sup> G03B 29/00; A61B 1/04

U.S. Cl. 354—62

7 Claims

1. A camera apparatus adapted to be mounted on an endoscope, said apparatus comprising:
  - a first electrical circuit located in said camera which must be energized both during a photographing operation and when no photographing operation is in progress;
  - a second electrical circuit located in said camera which must be energized during said photographing operation;
  - a battery located in said camera for energizing at least said first electrical circuit;
  - a connection terminal located on said camera and adapted to be connected to an external power supply associated with

the endoscope when said camera is connected to the endoscope; and  
detecting means for detecting whether said camera apparatus is mounted on the endoscope.



tus if mounted on an endoscope, said detecting means connecting said connection terminal to said second electrical circuit during said photographing operation when said camera apparatus is mounted on the endoscope.

4,281,911

#### MOTORIZED FILM-TRANSPORTING MECHANISM

Dieter Engelsmann, Unterhaching; Reinhard Nicko; Leo Lippl, both of Munich, and Dieter Maas, Pöding, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

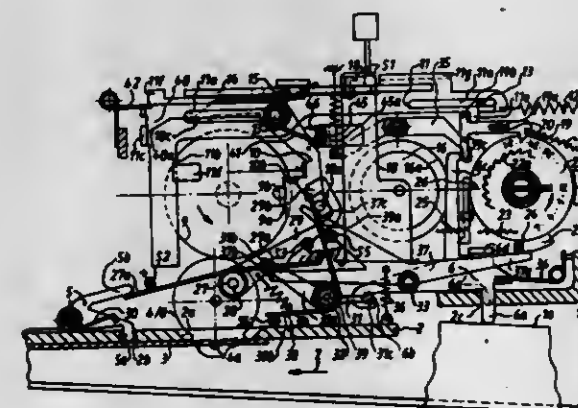
Filed Mar. 24, 1980, Ser. No. 133,123

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2915098

Int. Cl.<sup>3</sup> G03B 1/18

U.S. Cl. 354—173

6 Claims



1. In a roll film camera having a housing with a back wall movable between open and closed positions, a film-transporting and shutter-cocking arrangement comprising a film counter having a projection and being movable to counting position in response to closing of the back wall and to zero position in response to opening of the back wall; switch means operative for controlling the supply of electrical energy to a camera motor and being movable to closed position in response to insertion of film into the camera and to open position in response to the absence of film in the camera; a control lever having an arm engaging said projection when said film counter is in the zero position and becoming disengaged therefrom in response to repeated stepwise operation of the film counter; a switch in series with said switch means and being closed when said back wall is closed; and a blocking lever engaged by said control lever when said arm engages said projection and becoming released from said control lever when said arm disengages from said projection, so that said blocking lever can cooperate with a film metering means upon transportation of the film by the length of a film frame resulting in deenergization of the motor.

4,281,912

#### CONTROL CIRCUIT FOR CAMERA OR MOTOR DRIVE DEVICE

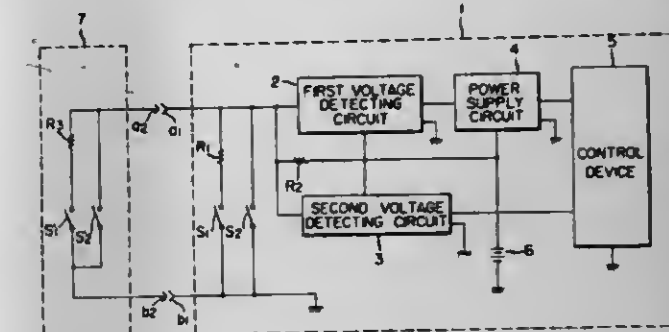
Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,761

Claims priority, application Japan, Apr. 21, 1979, 54/48538  
Int. Cl.<sup>3</sup> G03B 1/00, 17/38

U.S. Cl. 354—173

6 Claims



1. In a circuit for controlling a camera or a motor drive device by means of a control switch unit connected through a pair of connecting terminals thereof to a pair of remote control terminals of said camera or motor drive device: said control switch unit comprises;

- (1) plural control switches and
- (2) a voltage generating circuit adapted for generating plural different voltages in response to various combinations of the states of said control switches; and said camera or motor drive device comprises;
- (3) plural voltage detecting circuits of different detecting voltages for detecting the voltages supplied to said remote control terminals, whereby said camera or motor drive device is controlled in response to the outputs from said voltage detecting circuits.

4,281,913

#### CAMERA CAPABLE OF COMMONLY USING STANDARD FILM AND 70 MM

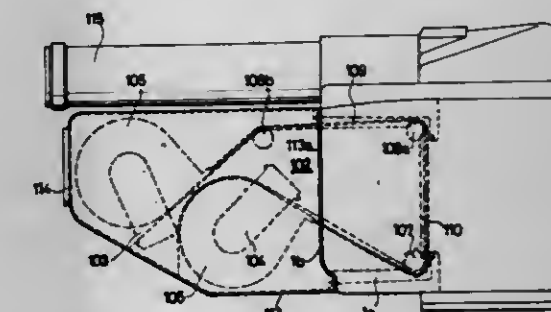
Tetsuji Sbono, Kawagoe, and Takumi Kobayashi, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 16,698, Feb. 28, 1979. This application Jan. 2, 1980, Ser. No. 155,820

Claims priority, application Japan, Feb. 28, 1977, 52-22315  
Int. Cl.<sup>3</sup> G03B 17/00, 1/48, 17/26, 19/06

U.S. Cl. 354—203

9 Claims



1. In a camera in which a 120 or 220 type film is loaded behind a picture plane by using a compatible film reel with a compatible film spool, mounting members and means for guiding and holding said 120 or 220 type film, and wherein the camera is not of the film back exchange type, the improvement comprising: said compatible film reel designed to be detachably mounted on said camera, said camera having an opening formed in the rear part of a reel accommodating chamber in said camera through which opening said compatible reel may be detached; said reel being contained entirely within said reel accommodating chamber; said reel replaceable by a 70 mm



reel provided with mounting members for mounting a 70 mm film magazine outside said reel accommodating chamber, and means for guiding 70 mm film from said magazine into said reel accommodating chamber and holding it therein, said means for guiding configured to be detachably mounted on said camera; whereby said camera commonly uses 120 or 220 type film and 70 mm film.

4,281,914

## FOCAL PLANE SHUTTER

Nobuo Tezuka, Tokyo; Teiji Hashimoto, Kawasaki; Mitio Senuma, Tokyo, and Yutaka Iwata, Chichibu, all of Japan; assignors to Canon Kabushiki Kaisha, Tokyo, Japan

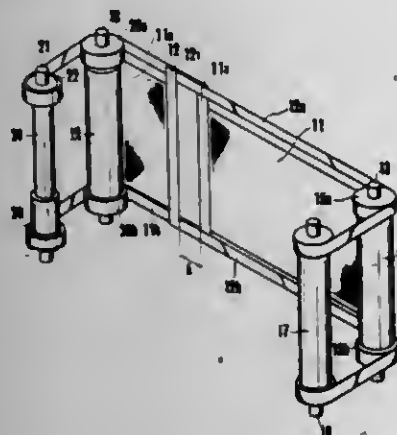
Filed Jan. 23, 1980, Ser. No. 114,516

Claims priority, application Japan, Jan. 31, 1979, 54-10177; Jan. 31, 1979, 54-10919[U]

Int. Cl.<sup>3</sup> G03B 9/34

U.S. Cl. 354-244

3 Claims



1. A focal plane shutter comprising: shutter screens each having two ribbons; a take-up shaft for winding each of said ribbons; a first roller rotatable together with said take-up shaft for winding one of said two ribbons thereon, said first roller being provided with an extension part; and a second roller having said take-up shaft extending therethrough and arranged to wind the other of said two ribbons thereon, said second roller being provided with an extension part which is fitted into said extension part of said first roller with a frictional force being developed therebetween exceeding a predetermined degree of force, said second roller including an engaging part which is arranged to permit an external member to engage therewith, said second roller being arranged such that when said external member is engaged with said engaging part and is operated to apply a force greater than said frictional force, said second roller is rotated thereby relative to said first roller to adjust the amount of said other ribbon wound thereon and in turn to adjust parallelism between the ends of said shutter screens.

4,281,915

## ARRANGEMENT FOR OPENING AND CLOSING A CLOSURE OF AN OPENING IN A FILM CASSETTE

Heinz Kröbel, Taufkirchen, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 31, 1980, Ser. No. 174,026

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2934985

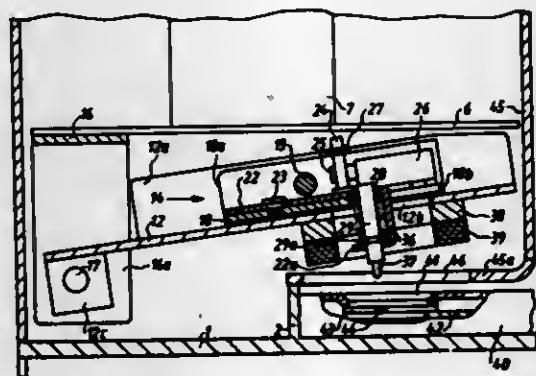
Int. Cl.<sup>3</sup> G03B 17/26; G11B 1/00

U.S. Cl. 354-275

22 Claims

1. An arrangement for displacing a closure of an opening in a cassette accommodating photosensitive material in a predetermined path between closed and open positions thereof, particularly for use in a device for exposing an image onto the photosensitive material through the opening, comprising a support; an entraining member; means for mounting said entraining member for displacement along said predetermined path, including a mounting member and a carriage displaceable

relative to the latter and carrying said entraining member; means for supporting said mounting member on said support for movement with said carriage and with said entraining member between a retracted and an extended position of the entraining member in which the latter respectively is spaced



from said path and extends into said path and engages the closure for entraining the same for displacement between the closed and open positions during the displacement of the carriage relative to said mounting member; means for moving said mounting member; and means for displacing said carriage.

4,281,916

## INTERCHANGEABLE LENS ASSEMBLY FOR A CAMERA

Masao Aoyagi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

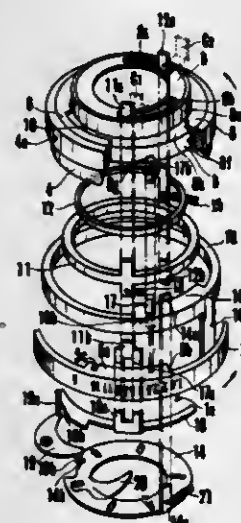
Filed Mar. 12, 1980, Ser. No. 129,430

Claims priority, application Japan, Mar. 15, 1979, 54-33526[U]

Int. Cl.<sup>3</sup> G02B 7/02; G03B 17/00

U.S. Cl. 354-286

14 Claims



1. A support structure for the operation means of a diaphragm device of an interchangeable lens assembly for a camera including first component means held at a certain predetermined position with reference to said camera and second component means having lens operative components thereon and arranged so as to be rotatable relative to said first component means, comprising:

- (a) a first part included in said operation means for transmitting driving power from said camera to said diaphragm device and a ring part in which the operation means is rotatably engaged relative to said first component means;
- (b) said first component means being engaged in said ring part of said operation means and provided with a prevention part for preventing movement of said operation means along the direction of the optical axis of said lens assembly; and
- (c) projections included in said first component means in

which the operation means is rotatably engaged for making contact with said ring part of said operation means.

4,281,917

## INFORMATION DISPLAY DEVICE FOR CAMERA

Masahiro Kitagawa, and Michiharu Saito, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

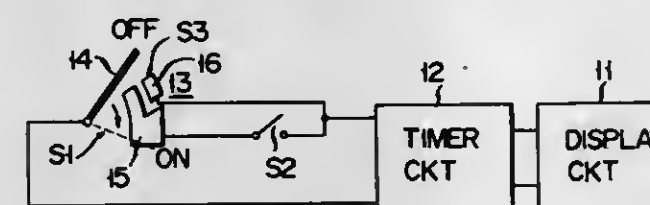
Filed May 4, 1979, Ser. No. 35,981

Claims priority, application Japan, May 4, 1978, 53-53443

Int. Cl.<sup>3</sup> G03B 17/18; G08B 1/08

U.S. Cl. 354-289

9 Claims



1. In an information display device for a camera, comprising a power source, an information display circuit, a timer circuit, and switch means for causing said timer circuit to connect said information display circuit to said power source for a predetermined period of time, said switch means comprising a first switch which is turned on while being shifted from an OFF position to an ON position, a second switch which is operated independently of the first switch and which renders said information display circuit operable only when the first switch is in ON state, and a third switch which is ganged with the first switch, said third switch being temporarily turned on while the first switch is being shifted from the OFF position to the ON position, thereby causing said timer circuit to connect said information display circuit to said power source for a predetermined period of time.

4,281,918

## ELECTROPHOTOGRAPHIC COPIER PERMITTING A TONER DISPENSING CASSETTE TO BE SUBSEQUENTLY EMPLOYED AS A RESIDUAL TONER RECEPTACLE

Hermann Fortmann, Bremen, Fed. Rep. of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

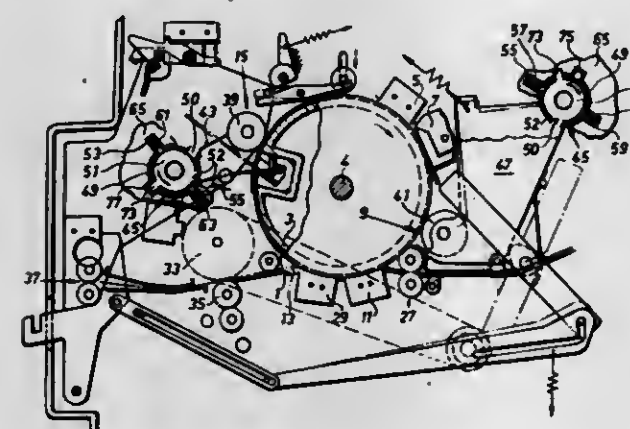
Filed Aug. 6, 1979, Ser. No. 64,525

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1978, 2834508

Int. Cl.<sup>3</sup> G03G 15/00

U.S. Cl. 355-3 R

6 Claims



1. In a photocopier including a movable member carrying a photoconductive layer, a charging station for charging the layer, an illuminating station for photographically exposing the layer, a developing station provided with a magnetic brush and arranged to supply a magnetic single component toner to the brush for developing the image formed on the layer, a transfer

station for transferring the developed image to a record material sheet, and a cleaning station for cleaning the layer, the stations being disposed in succession along the path of movement of the movable member for bringing each portion of the layer into operative association with each station in succession, in combination with a cassette containing a supply of such toner, the improvement wherein said developing station comprises means for receiving and holding said cassette in a position for dispensing toner for supply thereof to the magnetic brush, said cleaning station comprises means for receiving and holding said cassette in a position for collecting residual toner removed from the photoconductive layer in said cleaning station, whereby one and the same cassette can be used to initially supply toner to said developing station and, after having been emptied, can serve as a receptacle for residual toner in said cleaning station, said cassette has an open state in which a flow passage is present between its interior and the region outside of said cassette and a closed state in which its interior is closed, and said means at said developing and cleaning stations are constructed for permitting said cassette to be inserted in or removed from each said station only when in its closed state.

4,281,919

## COPYING APPARATUS PROVIDED WITH AN AUTOMATIC ORIGINAL FEEDING DEVICE

Akihiro Nomura, Kawasaki; Kimiaki Hayakawa, Tokyo; Shigeru Yoshimura, Yokohama; Shunichi Masuda, Tokyo; Katsuichi Shimizu, Hoya, and Toshiaki Yagasaki, Hino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

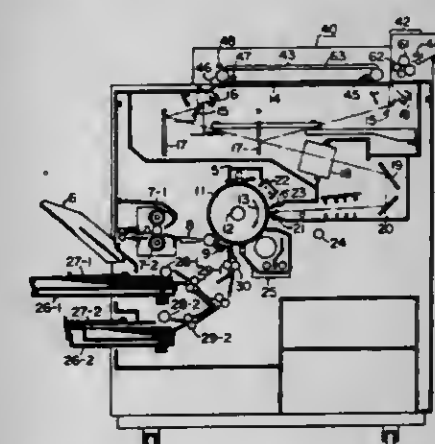
Filed Oct. 11, 1979, Ser. No. 83,779

Claims priority, application Japan, Oct. 14, 1978, 53-126706; Oct. 14, 1978, 53-126742; Oct. 14, 1978, 53-126744

Int. Cl.<sup>3</sup> G03B 27/48, 27/50

U.S. Cl. 355-50

30 Claims



1. A copying apparatus comprising:

- (a) original feeding means for feeding an original document to an exposure position, and for discharging the original document from the exposure position after exposure;
- (b) image formation means for forming an image corresponding to the image of said original document;
- (c) start instruction means for initiating operation of said original feeding means;
- (d) detector means for detecting the presence of the original document at said exposure position; and
- (e) control means responsive to an output of said detector means, when said original feeding means is operating in response to said instruction means, for controlling said image formation means to produce a predetermined number of copies of said original document and for controlling said original feeding means to discharge the original document upon completion of said copies.



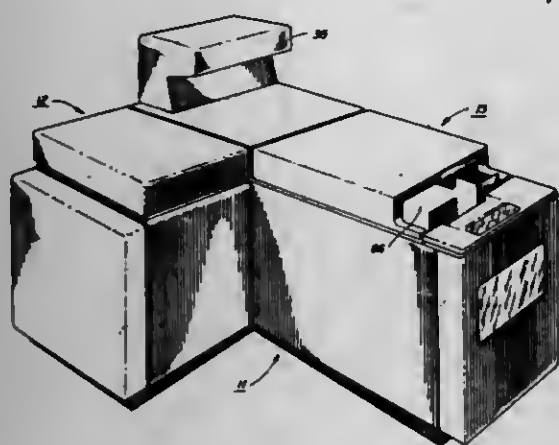
4,281,920

**STAPLER ARRANGEMENT FOR A COPIER/FINISHER**  
Thomas R. Cross, Williamsoo, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 30, 1979, Ser. No. 89,333  
Int. Cl.<sup>3</sup> G03B 27/62

U.S. Cl. 355—75

6 Claims



1. In an electrostatic reproduction system having a document handling apparatus for advancing individual document sheets from a stack to an exposure station and an electrostatic processor for processing copy sheets, the improvement comprising:  
means for compiling copy sheets into sets preparatory to attaching thereof,  
copy sheet attaching apparatus arranged to apply a fixing element to a corner of a compiled set wherein said element has leg portions driven through the sheets and a bridge portion from which the legs extend,  
said applying of the fixing element to said corner being such that the bridge element is at an acute angle relative to each edge of said corner,  
said bridge element of the staple is positioned to be approximately perpendicular to the diagonal of the corners of the sheets.

4,281,921

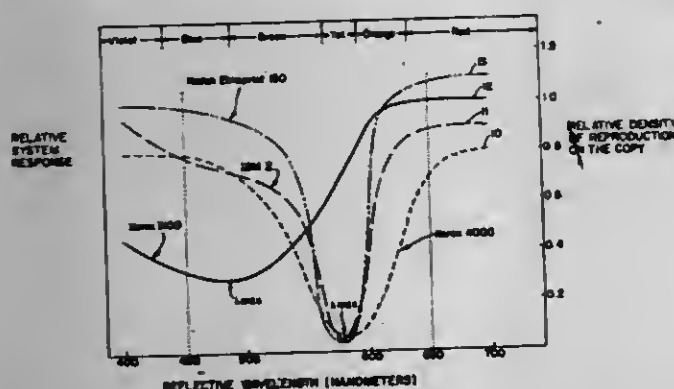
**PLURAL COLOR ANTI-COPYING SYSTEMS FOR XEROGRAPHIC AND ELECTROSTATIC COPYING MACHINES**

John A. Van Aiken, 16 La Gorce Cir., Miami Beach, Fla. 33141  
Filed Sep. 17, 1979, Ser. No. 76,225

Int. Cl.<sup>3</sup> G03B 27/32

U.S. Cl. 355—77

16 Claims



1. An anti-copying method of preparing an original, image-bearing paper document to inhibit or prevent intelligible reproduction of the image on the original document with xerographic and electrostatic copying machines, comprising the steps of providing said document with a yellow background, printing a first pre-selected portion of said image on said background in a first pre-selected color having a dominant wavelength which is greater than that of said yellow background, and printing the remainder of said image in a second pre-

selected color having a dominant wavelength which is less than that of said yellow background.

4,281,922

**PLATE FEEDING APPARATUS FOR PRINTING APPARATUS**

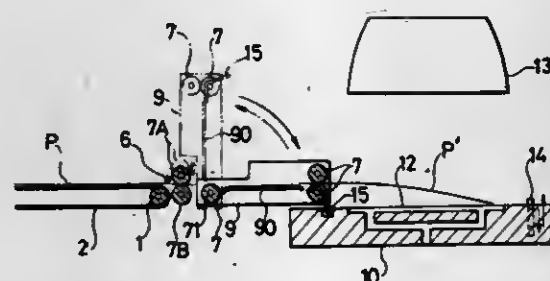
Nobuo Matsumoto, Minami-asbigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan  
Filed Nov. 7, 1979, Ser. No. 91,926

Claims priority, application Japan, Nov. 14, 1978, 53/156366[U]; Dec. 11, 1978, 53/170659[U]; Jan. 5, 1979, 54/753[U]

Int. Cl.<sup>3</sup> G03B 27/04

U.S. Cl. 355—99

18 Claims



1. A plate feeding apparatus for feeding printing plates to a printing apparatus one after another in synchronization with the operation of the printing apparatus comprising feeding-out means engageable with the printing apparatus while a printing plate is being transferred from the feeding-out means to the printing apparatus and disengageable therefrom during printing of said printing plate, a front-end stopper means projectable from a base plate during feeding of said printing plate and retractable into said base plate during printing of said printing plate, and rear-end guide means provided at an end of the feeding-out means adapted to be received in an aperture in said base plate.

4,281,923

**INTERCONNECTED, ADJUSTABLE ZOOM LENS AND RETICLE UTILIZED IN LENS SYSTEMS FOR STEREOPLOTTER**

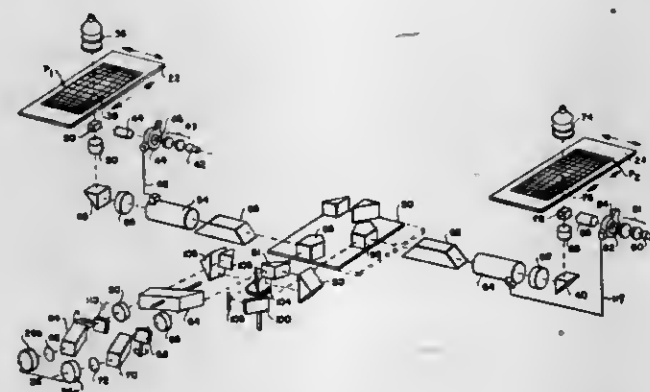
S. Jack Friedman, Alexandria, Va., assignor to O.M.I. Corporation of America, Alexandria, Va.

Filed May 4, 1979, Ser. No. 36,013

Int. Cl.<sup>3</sup> G01C 11/12

U.S. Cl. 356—2

5 Claims



1. A stereoplotter for viewing pairs of aerial photographic transparencies comprising, in combination,  
(a) a binocular viewer,  
(b) a first photocarriage for supporting the first one of a pair of panoramic photographic transparencies having inherent distortions,  
(c) means for translating said first photocarriages along a first and a second axis,  
(d) a second photocarriage for supporting the second one of

a pair of panoramic aerial photographic transparencies having inherent distortions,  
(e) means for translating said second photocarriage along in a first and a second axis, said axes being parallel to the axes within which said first photocarriage is translated,  
(f) a first light source positioned above the first photocarriage to illuminate selected portions thereof and project images from the transparency supported thereon,  
(g) first means for producing a first reference mark and projecting same into the plane of the images projected from the first photocarriage,  
(h) a first lens system including a first zoom lens for transferring the combined image of the first transparency and the first reference mark to one ocular of the binocular viewer,  
(i) a second light source positioned above the second photocarriage to illuminate selected portions thereof and project images from the transparency supported thereon,  
(j) second means for producing a reference mark and projecting same into the plane of the image projected from the second photocarriage,  
(k) a second lens system including a second zoom lens for transferring the combined image of the second transparency and the second reference mark to the other ocular of the binocular viewer,  
(l) the improvement comprising:

- (1) first interconnecting means for joining said zoom lens in said first lens system to said first means for producing a first reference mark in an inverse relationship so that as the power of the zoom lens is increased the size of the first reference mark is diminished proportionately, and
- (2) second interconnecting means for joining said zoom lens in said second lens system to said second means for producing a second reference mark in an inverse relationship so that as the power of the zoom lens is increased the size of the second reference mark is diminished proportionately, whereby the pair of reference marks seen through the binocular viewer can be fused to provide a unitary reference point.

4,281,924

**REFLECTOR FOR THE LASER BEAM OF A PARTICLE ANALYZER**

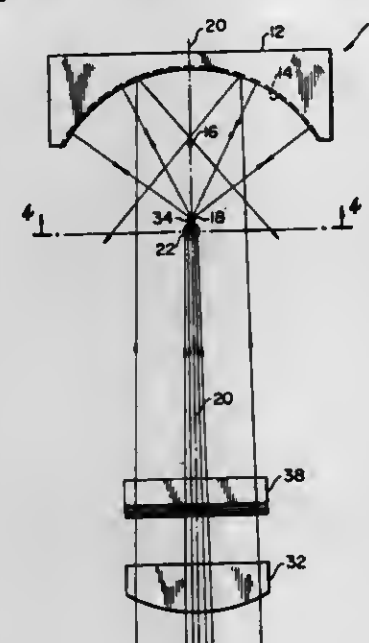
Robert E. Auer, South Miami, and Wallace H. Coulter, Miami Springs, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jan. 24, 1979, Ser. No. 6,011

Int. Cl.<sup>3</sup> G01N 21/49, 21/64

U.S. Cl. 356—73

10 Claims



1. In an apparatus for analyzing particles suspended in a liquid of the type having means for providing a substantially cylindrical stream of the liquid and means for impinging the

stream with a beam of illuminating radiation to create detectable signals from the particles, the improvement comprising:  
a reflector having a concave reflector surface with an optical axis and a center of curvature;  
said concave reflector surface being arranged to have said optical axis disposed in intersecting relationship with the stream of liquid and to have the beam of illuminating radiation positioned on said optical axis;  
said concave reflector surface being arranged to have said center of curvature positioned substantially at a focus of the stream of liquid, whereby the stream of liquid defines a cylindrical lens having the focus.

4,281,925

**FIBER OPTIC ATTENUATION SIMULATOR**

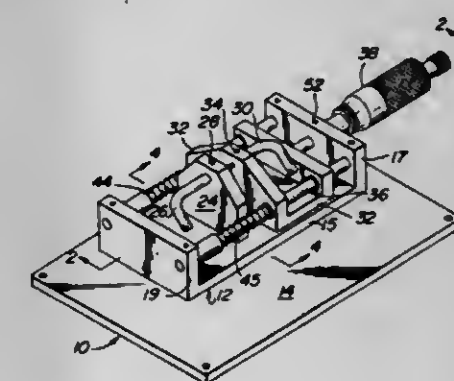
John W. Forrest, West Acton, and Robert D. Livingstone, Townsend, both of Mass., assignors to Bowmar/All, Inc., Acton, Mass.

Filed Jul. 31, 1979, Ser. No. 62,594

Int. Cl.<sup>3</sup> G01N 21/84

U.S. Cl. 356—73.1

6 Claims



1. Apparatus for simulating attenuation in a fiber optic cable of significant length, comprising:  
first and second foreshortened fiber optic cables, each having one end adapted to be connected to a proximate device for measuring light transmission through said cables and the apparatus, the other end of each of said cables being supported within said apparatus in opposed coaxial relationship along a common optical axis so that light can pass from one cable to the other,  
support means for axially positioning said other ends of said cables within the apparatus, said support means comprising a first support for the other end of said first cable and a second support for the other end of said second cable, at least one of said first and second supports being a carriage displaceable relative to the other support for adjusting the distance between said other ends of said cables while maintaining them in optical coaxial relation to each other, means for precisely and repeatedly controlling the distance between said other ends, and  
an enclosure for excluding ambient light from the area adjacent said other ends of the first and second cables.

4,281,926

**METHOD AND MEANS FOR ANALYZING SPHERO-CYLINDRICAL OPTICAL SYSTEMS**  
Tom N. Cornsweet, Mission Viejo, Calif., assignor to Rodeo-stock Instruments Corp.

Filed Jul. 3, 1978, Ser. No. 921,503

Int. Cl.<sup>3</sup> G01B 9/00

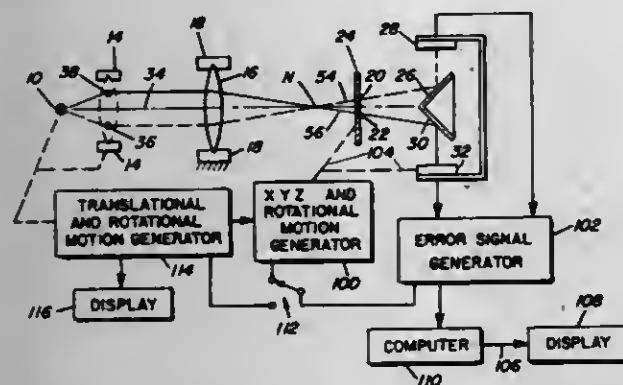
U.S. Cl. 356—124

23 Claims

1. In a lens meter:  
(a) first and second spaced light detector means, each comprising a light detector having a plurality of light sensitive areas arranged side by side and capable of detecting presence of a light beam, for providing position signals indicating which areas of the light detector are subjected to a light beam;

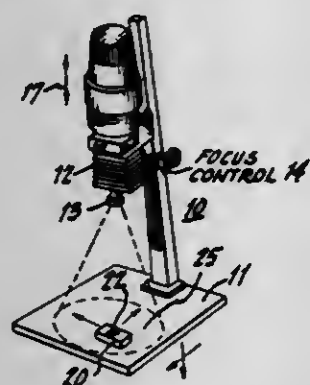


- (b) a single point light source;  
 (c) means for directing at least two light beams derived from said light source such that each beam is directed at a respectively associated one of said first and second light detection means;  
 (d) means for interposing a lens to be tested between said light source and said means for directing two light beams



derived from said light source such that said two light beams will have passed through different regions of the lens to be tested before being directed at said light detection means; and  
 (e) means for recognizing when each of said light beams lies on a line extending between the areas of its respectively associated first and second light detection means.

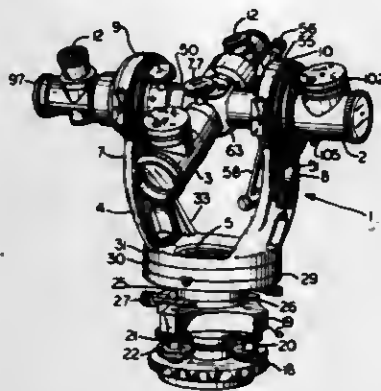
**4,281,927**  
**APPARATUS FOR INDICATING MAXIMUM RESOLUTION FOR PROJECTED IMAGES**  
 Louis Dzuban, 384 Jeffries St., Perth Amboy, N.J. 08861  
 Filed Aug. 27, 1979, Ser. No. 69,627  
 Int. Cl.<sup>3</sup> G03B 27/34  
 U.S. Cl. 356—124 7 Claims



1. Apparatus for providing an indication of maximum resolution indicative of an optimum focusing position for a photographic apparatus of the type operative to respond to an image located at a given plane from said photographic apparatus, comprising:

- (a) a single photocell located at said plane and positioned to intercept a portion of said image,  
 (b) an opaque disc having a single radial slot therein with said slot being substantially smaller in area than half the area of said disc, and positioned in contact with said photocell to expose a predetermined portion of the surface of said cell to said image,  
 (c) means coupled to said disc for rotating the same,  
 (d) means coupled to the output of said photocell and responsive solely to high frequency components emanating therefrom during rotation of said disc, to provide a signal indicative of the amplitude of said components whereby a maximum amplitude indicates maximum resolution.

**4,281,928**  
**OPTICAL TRANSIT SQUARE WITH FOCUSABLE CROSSING TELESCOPES**  
 Amber N. Brunson, Kansas City, Mo., assignor to Brunson Instrument Company, Kansas City, Mo.  
 Filed Dec. 3, 1979, Ser. No. 99,616  
 Int. Cl.<sup>3</sup> G01C 1/00  
 U.S. Cl. 356—140 11 Claims

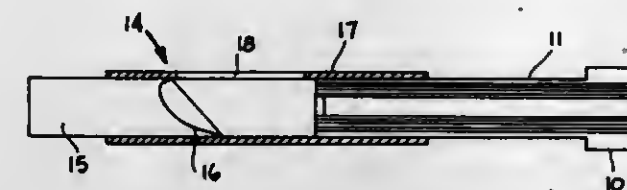


1. A precision optical transit square instrument for accurately determining lines and planes respectively perpendicular to reference lines and planes and comprising:  
 (a) a support;  
 (b) a standard having spaced arms and rotatably mounted on said support and having an axis of rotation;  
 (c) a main telescope having a barrel with an optical axis and with aligned lenses therein for focusing upon objects in a line of sight thereof and positioned at different distances from said barrel;  
 (d) bearings in said spaced arms and rotatably supporting trunnions receiving said main telescope and forming a mounting therefor for rotation about the optical axis of said main telescope, said main telescope being rotatable with said standard about the axis of rotation thereof to sweep a plane perpendicular to the axis of rotation of said standard and focusable upon objects therein; and  
 (e) a cross telescope having a barrel with an optical axis and with aligned lenses therein for focusing upon objects in a line of sight thereof;  
 (f) said cross telescope extending transversely between said arms and mounted perpendicularly to said main telescope with the respective optical axes thereof in intersecting relation at a point in line with the axis of rotation of said standard;  
 (g) said cross telescope being movable with rotation of the main telescope about the optical axis thereof to sweep a plane perpendicular to the plane swept by the main telescope with the axis of rotation of said standard being in said plane swept by the cross telescope, sweep a cone emanating from the intersection point of said optical axes and the axis of rotation of said standard and to focus upon objects in a line of sight thereof.

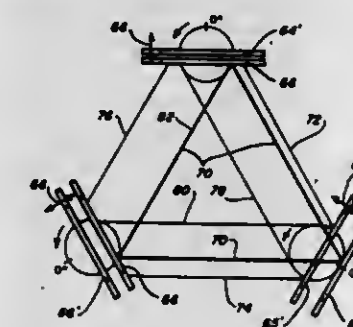
**4,281,929**  
**SMALL DIAMETER, DEEP BORE OPTICAL INSPECTION SYSTEM**  
 David E. Lord; Richard R. Petrini, and Gary W. Carter, all of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.  
 Filed May 17, 1979, Ser. No. 39,985  
 Int. Cl.<sup>3</sup> G01N 21/01  
 U.S. Cl. 356—241 11 Claims

1. Apparatus for viewing a small diameter, deep bore with minimal optical distortion comprising: a small-diameter rod optic system having a rod lens, a curved mirror having a single inclined convex surface and a diameter approximately equal to that of the rod optic system, said inclined convex surface extending at an angle to the longitudinal axis of the rod lens,

and means having a slot therein adjacent said curved mirror for mounting the curved mirror in spaced relationship to the rod



**4,281,930**  
**LASER GYRO WITH PHASED DITHERED MIRRORS**  
 Thomas J. Hatchblags, Thousand Oaks, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.  
 Filed Dec. 18, 1978, Ser. No. 970,603  
 Int. Cl.<sup>3</sup> G01C 19/64  
 U.S. Cl. 356—350 15 Claims



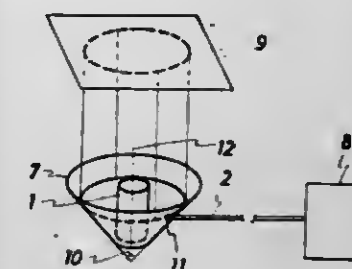
1. A ring laser comprising:  
 means forming a closed loop optical cavity containing an active lasing medium for generating primary counter-rotating laser light beams therein, the frequency difference between the light beams having a measure of the rate of rotation experienced by the ring laser, said cavity forming means including a plurality of mirrors for reflecting said light beams; and  
 means for vibrating each of said mirrors in translation at the same frequency in a direction only perpendicular to the surface of the mirror with each said mirror being vibrated at a phase difference with respect to each adjacent mirror substantially equal to 360° divided by the number of mirrors.

**4,281,931**  
**MEASURING APPARATUS COMPRISING LIGHT OPTICS UTILIZING CYLINDRICAL FOCUSING GLASS FIBER**

Toshio Chikama, Tokyo, Japan, assignor to Machida Endoscope Co., Ltd., Tokyo, Japan  
 Filed Dec. 11, 1978, Ser. No. 968,025  
 Claims priority, application Japan, Dec. 21, 1977, 52/171115[U]; Nov. 2, 1978, 53/151380[U]; Nov. 2, 1978, 53/151381[U]  
 Int. Cl.<sup>3</sup> G01B 11/00

- U.S. Cl. 356—372 23 Claims  
 1. A measuring apparatus for remotely measuring the size of an object on a surface and/or the distance of said apparatus from said object, said apparatus comprising  
 a rod lens comprising a generally cylindrical focusing glass fiber having an axis,  
 a non-diffusive light beam and a light guide means for carrying said light beam to said rod lens to intersect with the radial side of said focusing glass fiber radially scattering said light beam,  
 said radially scattered light beam impinging on said surface to form a visible light on said surface,

a housing containing said rod lens located at the distal end thereof toward said object,  
 viewing means to view said visible light and said object for said measuring wherein the axis of said rod lens is oriented



substantially orthogonal to said surface, further comprising optical means optically coupled to said rod lens, wherein said optical means forms a circle of light, said visible light comprising said circle of light.

**4,281,932**  
**LIGHT ABSORPTIVITY MEASURING DEVICE**  
 Thomas A. Young, Box 1018, Oak Hill, W. Va. 25901  
 Filed Jan. 14, 1979, Ser. No. 48,658  
 Int. Cl.<sup>3</sup> G01J 3/50  
 U.S. Cl. 356—416 3 Claims



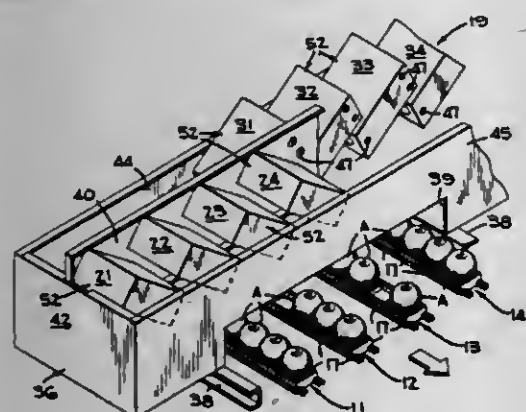
1. A device for measuring the light absorptivity characteristics of a medium over some substantially continuous range, comprising one or more absorptivity measuring devices, each consisting of a light source-sensor, a means for limiting the range of color response, a means for storing the sensor output representative of the medium under test, a reference consisting of a medium unidirectionally varying in absorptivity, a comparator to indicate equality of the sensor output representative of said reference and that output stored by said storing means, and a means for moving said light source-sensor combination over the medium under test and then over said reference medium using the same color range, the position on said reference medium relative to the light source-sensor combination when said comparator indicates equality, being the measure of the absorptivity of said medium under test.

**4,281,933**  
**APPARATUS FOR SORTING FRUIT ACCORDING TO COLOR**  
 Robert K. Houston, Santa Clara, and James Meador, Simi Valley, both of Calif., assignors to FMC Corporation, San Jose, Calif.  
 Filed Jan. 21, 1980, Ser. No. 113,908  
 Int. Cl.<sup>3</sup> G01N 21/27

- U.S. Cl. 356—425 7 Claims  
 1. Apparatus for sorting fruit according to color, comprising:  
 a conveyor for moving the fruit down a path in single file;  
 means for viewing the fruit to determine the color thereof comprising an upstream viewer and a downstream viewer, said viewers being positioned adjacent to said path with the upstream viewer being positioned on one side of the path and with the downstream viewer being positioned on the other side of the path, said viewers being spaced in the direction of movement of said conveyor along said path so



that the upstream viewer observes a first side of an individual fruit at an earlier time than the downstream viewer observes the opposite side of the same fruit; at least one light source positioned to illuminate said first side of the fruit as the fruit passes by the upstream viewer and at least one light source positioned to illuminate the opposite side of the fruit as the fruit passes the downstream viewer;



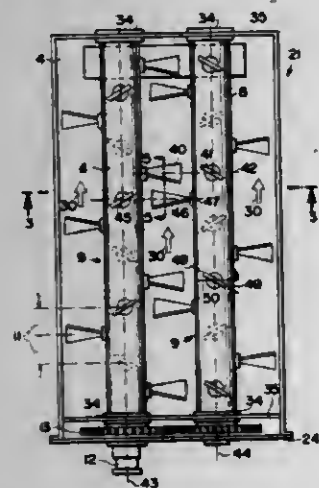
photosensor means in each viewer for receiving light reflected from one side of an individual fruit as said fruit passes in front of each viewer and for providing an output signal indicative of the color of said fruit, and control means for receiving the signal from the upstream viewer when it is viewing said individual fruit, storing said signal until the individual fruit reaches the downstream viewer, receiving the signal from the downstream one of the viewers for said individual fruit and comparing both of said signals to determine the color of said fruit.

4,281,934

#### APPARATUS FOR MIXING CONSTRUCTION MATERIALS

Ulrich Krause, Prinz Christianweg 13, and Peter Krause, Park Rosenhoehe 4, both of 6100 Darmstadt, Fed. Rep. of Germany  
Filed Aug. 29, 1979, Ser. No. 70,875

Claims priority, application Austria, Sep. 12, 1978, 6571/78  
Int. Cl.<sup>3</sup> B28C 5/14, 7/06; B01F 7/04, 15/02  
U.S. Cl. 366—30 7 Claims



1. An apparatus for mixing construction materials and for placing the resulting mixture on a surface, comprising mixing trough means having an inlet for the construction material and a discharge end for the mixture, supply means arranged for supplying said construction materials into the inlet of said mixing trough means, first and second mixing tools supported for rotation about first and second side-by-side parallel longitudinal rotational axes in said mixing trough means for mixing and simultaneously transporting the materials from said inlet to said discharge ends, each mixing tool comprising a shaft mounted along one of said longitudinal, rotational axes and a plurality of mixing blades operatively secured to each shaft in helical succession with a 90° circumferential staggering from blade to blade on the same shaft, whereby the blades form four

in line rows of blades on each shaft, each blade having an axis extending radially relative to the respective longitudinal, rotational shaft axis, said blades being mounted with a uniform axial spacing between adjacent blades along both shafts, all the blades on both shafts further having the same configuration, said shafts being aligned with the uniform axial spacing between adjacent blades coinciding whereby the blade radial axes lie in equally spaced radial planes along the longitudinal rotational shaft axes perpendicular to said longitudinal axis, each blade being mounted on its shaft at a blade angle of attack relative to the respective radial plane, said two shafts being adjusted in their rotational angular position relative to each other so that any two blades on different shafts enclose a right angle between their respective radial axes at each quarter turn of the shafts when these radial axes are located in a common radial plane and so that said first and second shafts comprise a plurality of meshing blade pairs, each meshing pair comprising one blade from each shaft axially spaced from each other in next adjacent radial planes along said longitudinal rotational axes, said shafts being constructed and arranged for rotation in opposite directions with the blades moving upward from the center line between said axes and with the blades of each meshing pair overlapping the major portion of the area of said blades in the space between the shafts, the blades of each meshing pair being substantially parallel when the radial axes of said meshing blades are pointing toward and away from each other, thereby imparting a mixing shearing action to construction material in said trough means and moving said material upwardly along the zone between the mixing tool shafts and then laterally toward the walls of the trough.

4,281,935

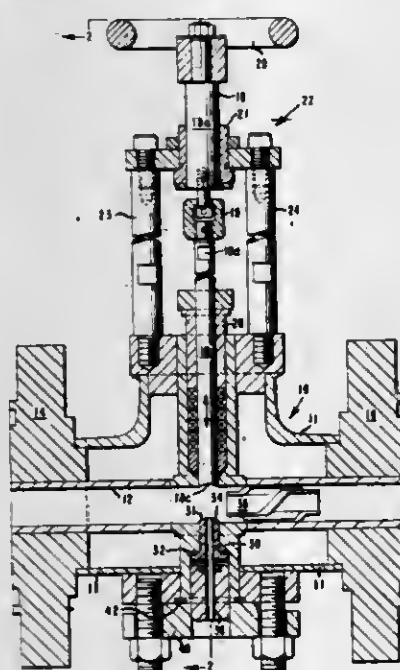
#### ADDITIVE INJECTION VALVE

Gregory D. Cramer; Irvin B. King; Robert D. Sauerbrunn, all of Seaford, and Albert T. Strand, Newark, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 25, 1980, Ser. No. 115,214  
Int. Cl.<sup>3</sup> F16K 1/02

U.S. Cl. 366—174

6 Claims



1. A valve for adding ingredients to or sampling the fluid flowing through the valve comprising: a body member having a fluid flow path therethrough from an inlet end to an outlet end; a valve stem connected to the body and movable through said flow path to engage a valve seat located directly opposite said valve stem in said body member, said valve seat having an upper surface exposed to said flow path, said seat having a passage therethrough extending from said upper surface; and removable tubing closely fitting in said passage extending from said upper surface to a location outside said body member.

4,281,936

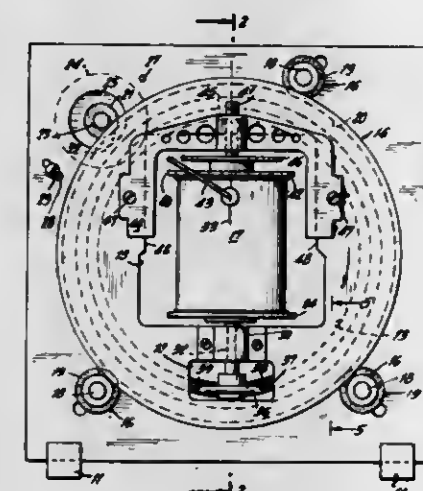
#### PAINT MIXING AND CONDITIONING MACHINE

Richard D. Schotter, Glenwood, and Robert P. Heinis, Totowa, both of N.J., assignors to Red Devil, Inc., Union, N.J.

Filed Nov. 13, 1979, Ser. No. 93,591  
Int. Cl.<sup>3</sup> B01F 9/00

U.S. Cl. 366—209

6 Claims



1. A paint mixing and conditioning machine comprising in combination:

- a base support;
- an upstanding support plate having an aperture therein secured to the base support;
- a plurality of spaced resilient wheels journaled in the upstanding support and extending outwardly therefrom;
- a pulley-shaped circular disc having a window therein in register with the support plate aperture, said disc being peripherally and rotatably carried by the spaced resilient wheels;
- a source of rotary power carried by the support plate;
- a resilient drive wheel secured to the power source and in frictional contact with the pulley-shaped circular disc;
- A first clamping plate to receive the bottom of the container for the paint;
- a second clamping plate to secure the said container against the first clamping plate; said first and second clamping plates being disposed normal to the support plate and the pulley shaped disc and extending through the aperture and window therein;
- means to urge the second clamping plate in the direction of the first clamping plate;
- a resilient friction drive wheel freely carried by the pulley shaped disc adjacent the first clamping plate in contact with the support plate;
- a shaft secured at one end to the drive wheel and at its opposite end to the first clamping plate; and
- a stud carried by the clamping means, freely supporting the second clamping plate to permit rotational movement of the container.

4,281,937  
MIXER

Joseph E. Ferri, Shillington; Allan A. Gundersen, Sinking Spring, and Oliver N. Seelig, Reading, all of Pa., assignors to SKG Industries, Inc., West Lawn, Pa.

Filed Jun. 1, 1979, Ser. No. 44,458

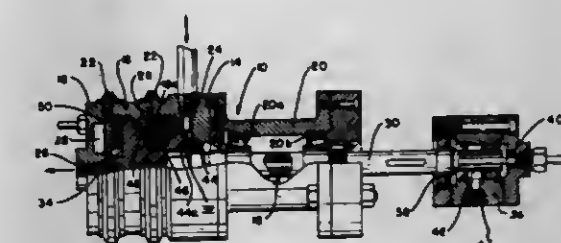
Int. Cl.<sup>3</sup> B01F 7/00

U.S. Cl. 366—303

19 Claims

1. A mixing head comprising: a stator, a rotor mounted for rotation with respect to the stator; the stator and rotor defining therebetween a fluid flow path; means defining an inlet to the fluid flow path and means defining an outlet from the fluid flow path; the fluid flow path including a first shearing zone defined between a portion of the rotor and the stator and a second shearing zone, positioned longitudinally and downstream

from the first shearing zone and defined between the stator and the rotor; the fluid flow path including also an intermediate zone extending from the first to the second shearing zone and



opening into the second shearing zone, the intermediate zone being defined by the stator and a surface of the rotor extending between the first and second shearing zones, and disposed at an acute angle with respect to the axis of rotation of the rotor.

4,281,938

#### AUTOMATIC PRINT WHEEL ELEMENT CHANGING MECHANISM FOR A SERIAL PRINTER

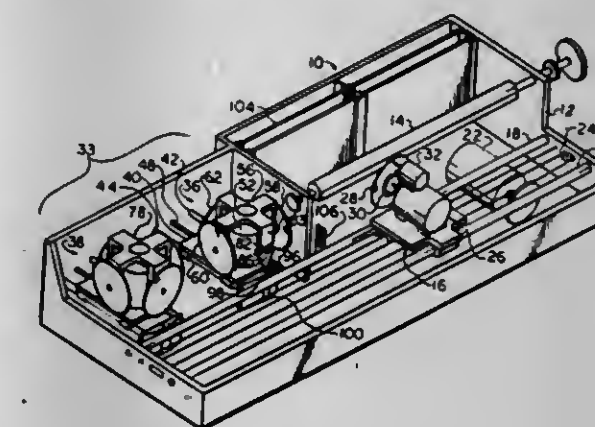
Stephen R. Phillips, 120 El Dorado Rd., Walnut Creek, Calif. 94595

Filed Jan. 14, 1980, Ser. No. 112,043

Int. Cl.<sup>3</sup> B41J 3/54

U.S. Cl. 400—171

16 Claims



1. A print element interchange mechanism for use on a serial printer of the type having a rotary print element mounted on a carriage assembly which moves along a printing track parallel to a platen on which a printing medium is advanced, said track having a printing portion and at least one exchange position, the interchange mechanism comprising:

at least one changer assembly mounted for movement along an interchange track which is generally orthogonal to said printing track, said interchange track having a load position adjacent to said exchange position on said printing track and a retracted position remote from said exchange position; a print element storage carousel mounted for rotation on said changer assembly and having a plurality of arms each of which is adapted to hold a different print element; means for directly transferring a print element between said carriage assembly and said carousel wherein said print element is simultaneously engaged by one of said carousel arms and by said carriage assembly when said carriage assembly is in said exchange position and said changer assembly is in said load position whereby when either one of said carriage assembly or said changer assembly moves along its respective track, said print element is retained by the moving assembly.



4,281,939

## MECHANICAL PENCIL

Yoshihide Mitsuya, 1-4-106, Nagata 3-chome, Jyotob-ku, Osaka-shi, Japan

Filed Jun. 4, 1979, Ser. No. 45,262

Int. Cl.<sup>3</sup> B43K 21/22, 21/16

U.S. Cl. 401-54

1 Claim



1. A mechanical pencil having a lead protective device, said pencil comprising: a pencil body; a lead insertion tube on the forward end of said pencil body and having a substantially uniform inner diameter; a thin film of an elastic material, such as rubber, synthetic resin or the like, on the inner surface of said lead insertion tube, the portion of the thin elastic film on the forward end of the tube having a greater thickness than the thickness of the film on the remainder of said tube for frictionally engaging a lead for preventing it from falling out of said insertion tube; and

a lead guide integral with said film at the rear end of said tube and projecting out of said tube and having a rearwardly diverging funnel shaped hole opening into the interior of the remainder of said film, the material of said lead guide extending forwardly over the outer surface of said tube and having a check flange on the forward end thereof around the outside of said tube functioning as a check for preventing said tube from falling out of the pencil body.

4,281,940

## LOOSE-LEAF BINDER

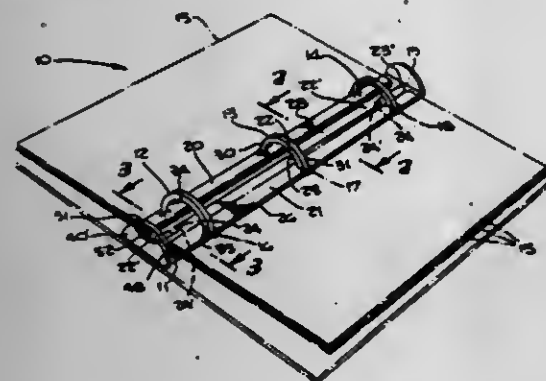
Gwang H. Rhee, 6700 Seville Ave., #909, Huntington Park, Calif. 90255

Filed Aug. 8, 1979, Ser. No. 64,727

Int. Cl.<sup>3</sup> B42F 13/22

U.S. Cl. 402-38

13 Claims



1. A loose-leaf binder for sheets which are provided with a plurality of holes adjacent one edge, said binder comprising a back member on which is mounted a plurality of separable ring assemblies in spaced relationship for retention of said sheets, said back member comprising a pair of separate parallel composite hinge leaves with a pivotal connection interconnecting said hinge leaves at adjacent edges, and a releasable interlock between said hinge leaves comprising a flange on each of the leaves, said flanges being of relatively thin flat sheet material and of substantially uniform thickness, said flanges being laterally yieldable and having an overlying relationship with a shoulder on one flange and a shoulder on the other flange being in abutting engagement when the hinge leaves and ring

assemblies are interlocked, at least one of said flanges having a lateral resilient displacement relative to the other whereby to disengage said shoulders and enable movement of said flanges in planes parallel to each other to effect separation of said ring assemblies for removal and replacement of said sheets.

4,281,941

## DEVICE FOR HIGH THERMAL STRESS CONNECTION BETWEEN A PART MADE OF A CERAMIC MATERIAL AND A PART MADE OF A METALLIC MATERIAL

Paul Rottenkolber, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

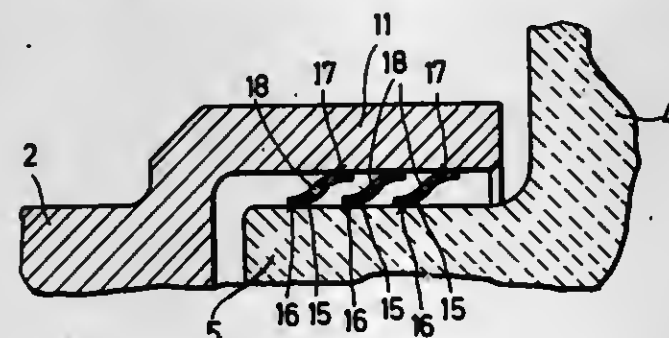
Filed Oct. 16, 1979, Ser. No. 85,271

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1978, 2845716

Int. Cl.<sup>3</sup> F16C 9/00; F16D 1/00; F16G 11/00

U.S. Cl. 403-29

14 Claims



1. In a high thermal stress connection between an essentially rotationally symmetrical component made of ceramic material and a component made of metallic material in which the components are connected by means of high temperature soldering, the improvement wherein a connecting part is provided which connects said ceramic component to said metallic component, and which said connecting part is elastic and radially and axially resilient so that stresses produced by differential expansion of said ceramic component and said metallic component during soldering are substantially absorbed by elastic deformation of said connecting part.

4,281,942

## LUBRICATION SYSTEM FOR HIGH SPEED SPLINE CONNECTION AND BEARING

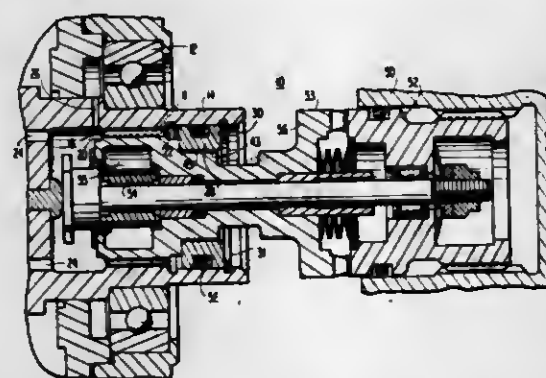
Fred J. Gaecle, and John L. Butterfield, both of Erie, Pa., assignors to General Electric Company, Wilmington, Mass.

Filed Nov. 13, 1978, Ser. No. 959,851

Int. Cl.<sup>3</sup> F16C 11/00; F16D 1/12, 3/00

U.S. Cl. 403-38

6 Claims



1. A spline and bearing lubrication system for use in high speed aircraft generator drive systems having:  
a stub shaft having external splines for transmitting power,  
a power receiving internally splined tube having a splined portion and a smooth portion,  
a bearing located around said power receiving internally splined tube,

a splined connection formed by the stub shaft external spline and the power receiving internally splined tube, said connection having first and second ends,

a source of high pressure engine lubricating oil which is supplied to said first end of said splined connection, the improvement comprising:

a lubrication hole connecting said first side of said splined connection to said generator bearing for supplying said engine lubricating oil to said generator bearing and means located at said second end of said splined connection and secured to said power receiving splined tube for retarding the flow of said oil across said splined connection, for forcing a portion of said oil into said lubrication hole and for preventing fretting or corrosion of said splined connection.

4,281,944

## MANHOLE COVER SUPPORT

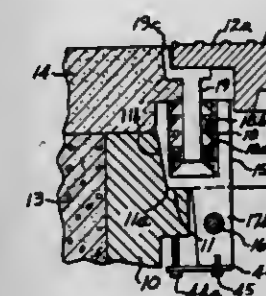
Harold M. Bowman, 18967 N. Valley Dr., Fairview Park, Ohio 44126

Filed Sep. 10, 1979, Ser. No. 73,910

Int. Cl.<sup>3</sup> E01D 7/00

U.S. Cl. 404-26

9 Claims



1. A sectional manhole cover support for vertically adjusting the level of a manhole cover in the opening of a manhole housing to a new road grade, wherein said manhole housing has at its upper edge an arcuate recess opening upwardly and also radially inwardly; each section of said support comprising generally arcuate base members adapted to be fixed within said opening against vertical movement downwardly in use thereof; said members comprising a plurality of arcuate base members collectively substantially forming a ring with an upper horizontal linear surface for supporting said manhole cover at a raised level; each of said base members having an integral downwardly extending post near each end thereof; each of said posts having respectively right-hand and left-hand threads in adjacent ends of each pair of base members; whereby coacting adjustable threaded bolt means may be affixed between adjacent posts for moving the sections of said base member circumferentially apart to expand said base member within said opening of said manhole housing to tightly engage said housing.

4,281,943

## METHOD AND DEVICE FOR ANCHORING RODS OF INSULATING MATERIAL IN ATTACHMENT FITTING

Pierre Vleunot, 32, rue des Garrements, 92140 Clamart, France

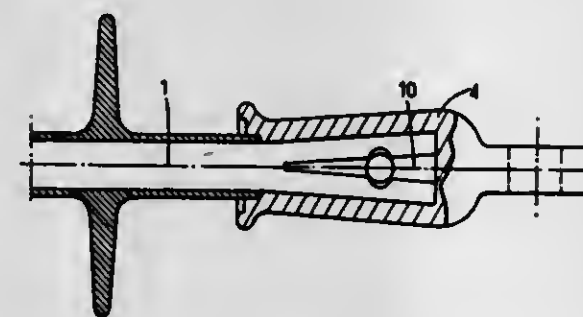
Filed May 28, 1980, Ser. No. 154,014

Claims priority, application France, Jan. 15, 1979, 79 15432

Int. Cl.<sup>3</sup> F16B 11/00, 13/04

U.S. Cl. 403-267

9 Claims



1. A method of fixing an insulating rod in a metal attachment fitting, in which the insulating rod has a segmented end traversed by a hole, the attachment fitting having an inwardly flaring internal cavity and a blind hole extending across the cavity, and a fastening member having a channel therethrough and a frustoconical tip and being adapted to be received in the blind hole; said method comprising the steps of:

- inserting the segmented end of the rod into the internal cavity of the attachment fitting;
- inserting the fastening member into the blind hole in the attachment fitting and through the hole traversing the rod end, the frustoconical tip of the fastening member spreading the rod segments apart and into contact along large wall portions of the internal cavity of the attachment fitting;
- applying a vacuum to the internal cavity;
- filling the cavity with a resin through the channel in the fastening member, the resin being of high strength, non-shrinking and having a coefficient of expansion identical to that of the metal of the attachment fitting;
- permitting the resin to polymerize which thereby forms a rigid block with the rod fast with the attachment fitting, the undercut of the internal cavity of the attachment fitting preventing extraction of the rod even against the application of the high traction forces; and
- after polymerization of the resin, severing the end of the fastening member flush with the attachment fitting.

4,281,945

## ROLLER ASSEMBLY FOR REFUSE CRUSHERS

Matti S. Sinkknen, 40950 Maurame Kp 1, Finland

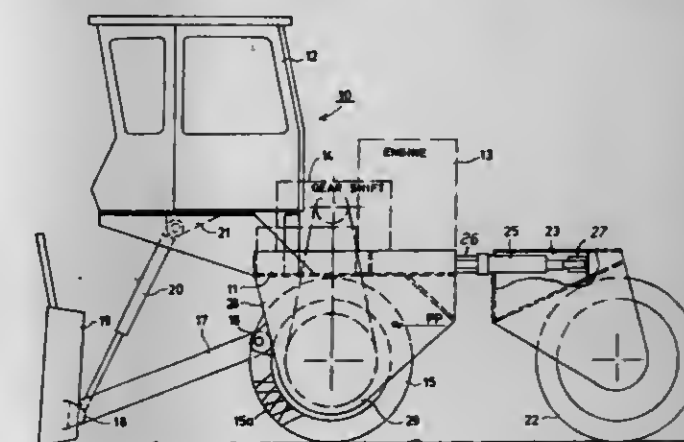
Filed Aug. 23, 1979, Ser. No. 69,165

Claims priority, application Finland, Aug. 25, 1978, 782616

Int. Cl.<sup>3</sup> E01C 19/26

U.S. Cl. 404-121

9 Claims



1. A roller assembly, particularly for use in a refuse crusher or the like, comprising:  
a roller element having an axis of rotation and two axial end faces, and a substantially cylindrical surface extending between said end faces having refuse crushing means provided thereon;  
means for supporting said roller element for rotation about said axis, said supporting means including at least one surface in opposing relationship to and spaced outwardly from a corresponding one of said roller element end faces



to define a space therebetween contiguous with said corresponding one of said roller element end faces; and cooperating means provided on said at least one surface and said corresponding roller end face for crushing refuse which enters into said space therebetween.

4,281,946

# **PNEUMATIC CONVEYANCE DEVICE AND CONVEYING METHOD EMPLOYING PERCOLATION OF GAS INTO FLOWABLE BULK MATERIAL IN A FEED PIPE**

Andras Kanics, Laasphe, Fed. Rep. of Germany, assignor to Bühler-Miag, Braunschweig and Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, both of, Fed. Rep. of Germany

Continuation of Ser. No. 862,497, Dec. 20, 1977, abandoned.

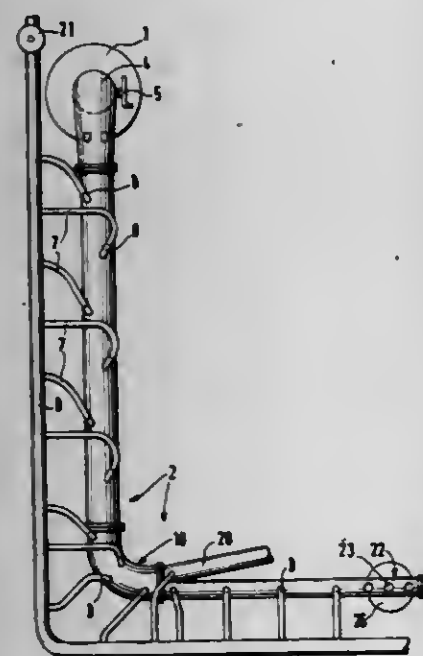
This application Oct. 26, 1979, Ser. No. 88,486

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1976, 2657677

Int. Cl.<sup>3</sup> B65G 53/06

U.S. Cl. 406—95

23 Claims



8. In a feed pipe for the pneumatic conveyance of flowable bulk material, viscous substances, sludges and other like products, the improvement comprised in that said feed pipe is constructed as an elongated single chamber which has an undivided cross section, said feed pipe having at least one outlet, product supply means connected to an inlet of said feed pipe for filling the feed pipe over its entire cross section with said product, said product being fed to said inlet by the force of gravity from said product supply means located thereabove, said feed pipe being horizontal or somewhat upwardly sloped from said product inlet to said outlet, gas supply means connected over the length of said feed pipe for permeating the product therein beyond its capacity with gas and therewith expanding the volume occupied by a unit weight of said product in a progressively increasing manner along the length of said feed pipe from said product inlet to said outlet with a corresponding decreasing in product angle of repose until the entire feed pipe is filled with said product, said gas supply means including a gas supply line and a low pressure gas source and a plurality of similar percolation inlets distributed over the length of said feed pipe and which point into the lower area of said feed pipe, said percolation inlets each being connected to said gas supply line and said low pressure gas source, said product supply means and said feed pipe being free of gas inlets in addition to said percolation inlets, the pressure level of said gas source and the size of said percolator inlets being dimensioned such that through said percolation inlets gas is continuously supplied to said feed pipe slowly and without turbulence in such quantity that said product undergoes said permeation beyond its capacity with said gas and said expansion in volume occupied by a unit weight of product progressively along the

length of said feed pipe, said percolation inlets including means adjacent the feed pipe for blocking entry of product into said gas line while admitting said gas to said feed pipe.

4,281,947

## **SPOT FACE CUTTER**

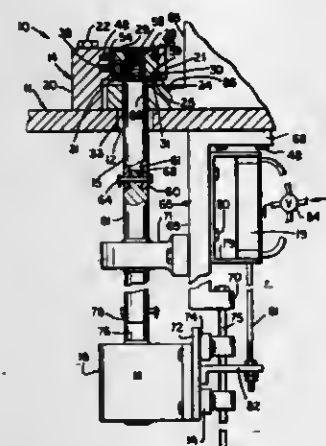
J. Taylor Marlowe, Rte. 3, Box 303, Ringgold, Ga. 30736

Filed Dec. 31, 1979, Ser. No. 108,687

Int. Cl.<sup>3</sup> B23B 35/00, 39/00, 41/00

U.S. Cl. 408—1 R

6 Claims



1. A spot facing tool for connection to a work table defining an opening therethrough, said tool including a reversible motor with a drive shaft, an arbor connected to said motor drive shaft for rotation about its longitudinal axis, support means movably supporting said arbor beneath the table in alignment with the opening of the table, means for moving said arbor vertically through the opening of the work table, a cutter holder mounted on the upper surface of the work table and including a cutter receptacle positioned in spaced relationship over the upper surface of the work table and over the opening of the work table and in alignment with said arbor, a cutter sized and shaped to be received in said cutter receptacle and normally rotatably received in said cutter receptacle and movable between a position where it is received in said receptacle and to a lower position closer to the upper surface of the work table, said cutter and said cutter holder including means for releasably maintaining said cutter in said receptacle, said arbor and said cutter including connector means for releasably connecting together said arbor and said cutter, whereby a work piece defining a hole therein is moved between the cutter receptacle and the work table with the hole in the work piece aligned with the arbor, the arbor is raised to extend through the hole in the work piece and into the cutter in the receptacle, the cutter and arbor are connected together, the cutter and arbor are lowered and rotated so that the cutter engages and treats the work piece about the hole in the work piece.

4,281,948

## **INDEXING MEANS**

John R. Van Wase, Caulfield, Australia, assignor to Albert Edward Armitage, Victoria, Australia

Filed May 25, 1979, Ser. No. 42,635

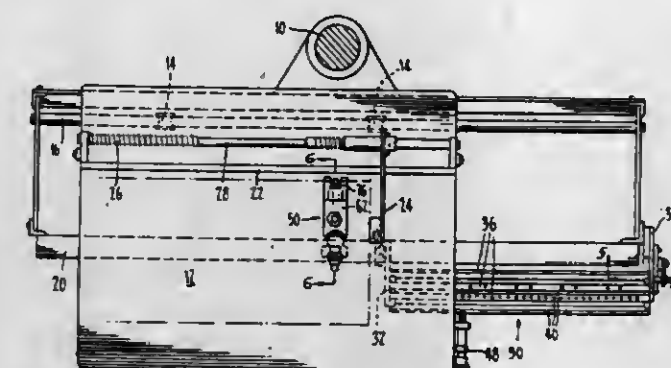
Int. Cl.<sup>3</sup> B23B

U.S. Cl. 408—3

16 Claims

1. A drilling apparatus comprising a vertically movable drilling head and a table for receiving material to be drilled, the drilling head and table being laterally movable relative to one another, said apparatus further comprising an indexing means having a plurality of rows of indexing members of pre-set spacing, and engaging means for stepwise indexing engagement with the indexing members of a selected row, whereby the material can be drilled with a desired arrangement of holes at a pre-set spacing, wherein means are provided to automatically disengage said engaging means from an indexing member in response to the completion of the drilling operation, to-

gether with movable means, movable in response to the disengagement of said engaging means, to hold said engaging means out of engagement with said indexing members until after said engaging means and said indexing member have moved out of alignment and prior to alignment of said engaging means with



the next indexing member of said selected row, said movable means moving into a position between the engaging means and the indexing members and acting to hold the engaging means out of engagement until alignment of said engaging means with the next indexing member.

4,281,949

## **COMBINATION DEPTH GAUGE AND LEVEL FOR A DRILL**

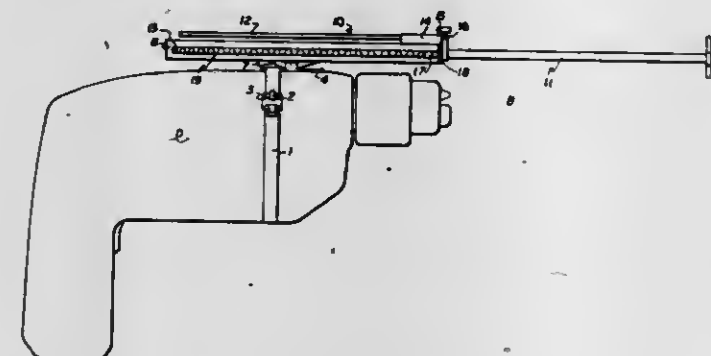
Tony L. Bugarin, 9808 Fair Oaks #606, Fair Oaks, Calif. 95628

Filed Aug. 6, 1979, Ser. No. 63,744

Int. Cl.<sup>3</sup> B23B 39/00

U.S. Cl. 408—241 R

5 Claims



1. A combination depth gauge and level for a drill and its associated drill bit comprising in combination:

an elongate plunger means defined by an elongate casing supported on the said drill, means to fasten said plunger means to the drill a spring disposed within said casing, a plunger rod partially within said casing abutting said spring and extending out from said casing towards a forward portion of the said drill, guide means on a terminal portion of said plunger rod remote from said spring, said casing including a linear groove on an elongate face thereof substantially coextensive with said casing, a bolt affixed to said plunger rod and extending out from said groove thereby constrained to ride within said groove, a depth gauge means defined by a trackway disposed on said casing, a ruler slideably disposed within said trackway and passing through a support carried on said casing at an end thereof through which said plunger rod passes, and a thumbscrew threaded on said support whereby when tightened, said thumbscrew clamps down on said ruler and said depth gauge has been locked.

4,281,950

## **WHEELBARROW TRANSPORT DEVICE**

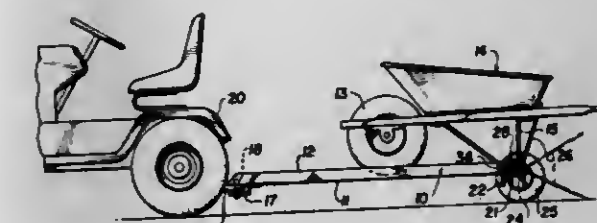
Maurice E. Lehman, 1960 Horseshoes Rd., Lancaster, Pa. 17601, and Roland P. Gehman, Stevens, Pa., assignors to Maurice E. Lehman, Lancaster, Pa.

Filed Apr. 6, 1979, Ser. No. 27,723

Int. Cl.<sup>3</sup> B60P 1/24

U.S. Cl. 410—3

1 Claim



1. A wheelbarrow transport vehicle comprising a longitudinal upwardly open channel member adapted to receive guiding and support a wheelbarrow wheel and adapted to have its forward end coupled to a towing vehicle, a transverse downwardly open channel member rigidly coupled in back-to-back relationship to the longitudinal channel member near the rear end of the latter and extending equidistantly on opposite sides thereof, a pair of support wheels for the vehicle journaled on the opposite ends of the transverse channel member, a ramp plate for a wheelbarrow wheel hingedly secured to the longitudinal channel member at the rear thereof and having substantially the same width as the longitudinal channel member, past dead center biasing spring means for the ramp plate connected between the ramp plate and the longitudinal channel member, and a pair of wheelbarrow leg locking units on the transverse channel member on opposite sides of the longitudinal channel member, the transverse channel member having adjusting apertures for said units on opposite sides of the longitudinal channel member, attaching means for said units engageable within selected adjusting apertures, each locking unit including a body portion having spaced upstanding side walls and a rear partial wall defining with said side walls a pair of bolt handle receptor slots, and each unit including a transverse axis locking bolt having an adjusting handle engageable selectively in either of said receptor slots, said bolts when in active locking positions projecting laterally outwardly of said body portions and locking the legs of a wheelbarrow to the transverse channel member, such channel member having wheelbarrow leg support surfaces outwardly of said locking units and between the units and said support wheels.

4,281,951

## **CONTAINER PEDESTAL SUPPLEMENTAL LOCK**

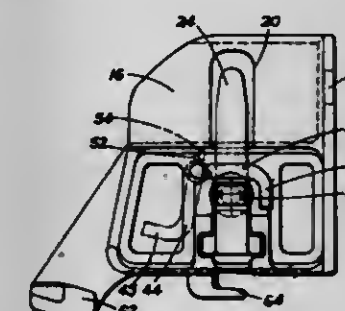
Thomas B. Baker, and Richard J. Mandrell, both of St. Charles, Mo., assignors to ACF Industries, Inc., New York, N.Y.

Filed Jan. 11, 1980, Ser. No. 111,505

Int. Cl.<sup>3</sup> B60P 7/10; B65J 1/22; B61D 45/00

U.S. Cl. 410—70

12 Claims



1. In a container pedestal including a base and a spring biased latch pivotally mounted about a horizontal axis and having a nose extending through an opening in the pedestal; said nose including upper and lower inclined surfaces which are engaged



by the container respectively as the container enters the pedestal and exits from the pedestal; the improvement comprising: a supplemental locking member extending horizontally through an opening in said base; said supplemental locking member including a movable lug rotatable to a weighted position engaging a fixed lug on the pedestal; thereby tending to prevent the latch from pivoting about its horizontal axis to allow exit or entry of containers.

4,281,952

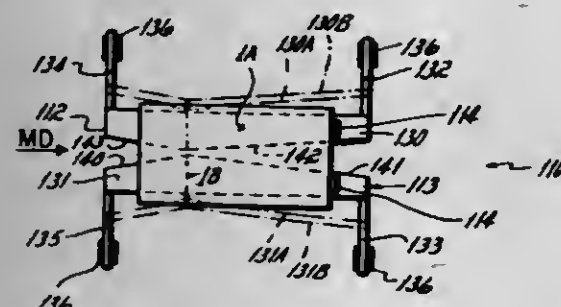
# METHODS AND APPARATUS FOR STACKING CEMENTITIOUS REINFORCED PANELS

Theodore E. Clear, 903 Harrison Ave., Hamilton, Ohio 45013  
Division of Ser. No. 887,324, Mar. 16, 1978, Pat. No. 4,203,788.  
This application Sep. 26, 1979, Ser. No. 78,932

Int. Cl.<sup>3</sup> B65G 57/00

U.S. Cl. 414—82

5 Claims



1. A method of stacking flexible assemblies, each comprising an uncured cementitious panel carried on a carrier sheet, one atop another, comprising the steps of:  
conveying an assembly onto a drop table, said drop table comprising a plurality of drop panels supporting said carrier sheet and withdrawable therefrom to drop said assembly onto a stack of assemblies, said drop plates having tapered edges beneath said carrier sheets;  
withdrawing support from said carrier sheet, first from corners thereof and then from central portions thereof, to drop said assembly, all by sliding said drop plates horizontally from beneath said carrier sheet.

4,281,953

# VERTICAL SORT BIN

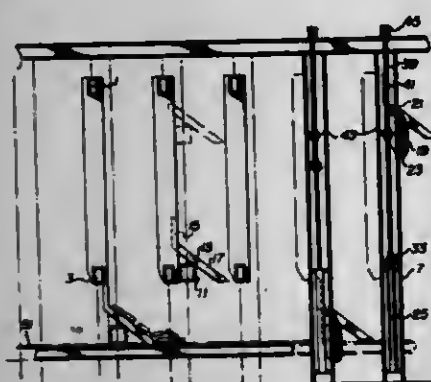
W. R. Newnes, 2621 4 Ave. NE., (P.O. Box 8), Salmon Arm, British Columbia, Canada

Filed Mar. 13, 1978, Ser. No. 886,305

Int. Cl.<sup>3</sup> B65G 57/03

U.S. Cl. 414—268

4 Claims



1. A sort bin having substantially vertical bin walls and a vertically movable bin floor, the floor being mounted such that it is in a predetermined and fixed inclined attitude throughout its vertical movement, said sort bin comprising:  
a pair of spaced apart, facing, substantially vertical bin walls supported at their ends between vertical columns of an I-beam configuration;  
a downwardly inclined bin floor extending between said bin walls, said bin floor consisting of a plurality of down-

wardly inclined arms and a horizontal beam, each arm being secured to said horizontal beam; and  
a carriage having an upper roller and a lower roller rigidly secured to its upper end and its lower end respectively, the carriage being supported from and guided between the columns of one bin wall, each carriage being disposed with its upper roller running against the inner surface of one flange of said vertical column and its lower roller running against the outer surface of said flange to be vertically movable therealong so that said bin floor can vertically move between a raised position adjacent to the upper ends of said bin walls and a lower-most position at the region of an unloading conveyor with the bin floor being maintained at all times during operation in its downwardly inclined attitude whereby as the bin is filled with cut lumber, the bin floor lowers until the bin is full, whereafter further lowering of the bin floor permits the cut lumber to slide down the bin floor and below the bin walls, at which time the cut lumber discharges onto said unloading conveyor.

4,281,954

# APPARATUS FOR IRRADIATION OF PIECE GOODS

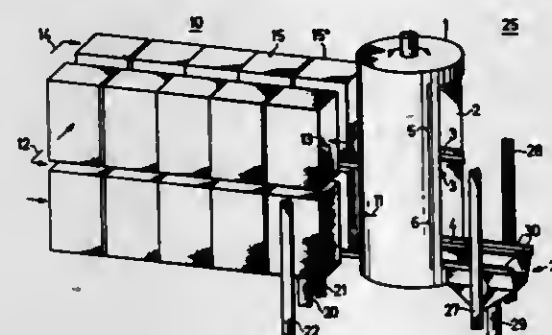
Ernst Bosshard, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland  
Filed May 30, 1978, Ser. No. 910,096

Claims priority, application Switzerland, May 27, 1977, 6545/77

Int. Cl.<sup>3</sup> B65G 65/00

U.S. Cl. 414—287

13 Claims



1. An apparatus for irradiation of piece goods, said apparatus comprising  
an irradiation chamber;  
a conveying means in said chamber including a plurality of trolleys for conveying a sequence of piece goods through two levels within said chamber;  
a rotary lock for introduction and removal of each piece goods of the sequence of piece goods into and out of said chamber, said rotary lock having two levels, one of said levels being disposed to permit entry of a piece goods into said chamber and the other of said levels being disposed to permit exit of a piece goods from said chamber; and  
a lifting means for conveying empty trolleys between said levels of said rotary lock, said lifting means being disposed before and immediately adjacent said rotary lock.

4,281,955

# METHOD AND APPARATUS FOR UNLOADING BULK MAIL VANS

Joseph E. McWilliams, 1345 Canterbury La., Glenview, Ill. 60025

Filed Oct. 31, 1979, Ser. No. 89,962

Int. Cl.<sup>3</sup> B65G 65/00, 67/00, 15/00

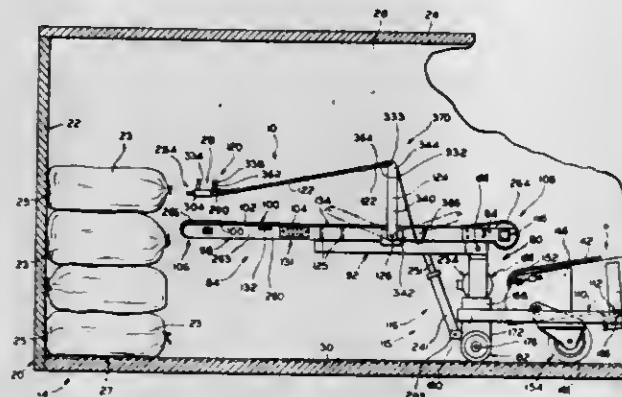
U.S. Cl. 414—398

16 Claims

1. In a facility for unloading discrete bagged and cartoned goods from the load receiving area of an end loading transport vehicle including an unloading dock having an unloading bay defining a load receiving shoulder equipped with a dock plate

adapted to bridge the gap between the loading dock and the vehicle end opening when the vehicle is backed into load discharging relation with respect to the bay, and an elongate mobile unloading conveyor mounted on the loading dock for movement along a rectilinear path between a retracted position on the loading dock in which the load receiving end of same is spaced from the dock plate inwardly of the loading dock and an extended relation for movement of the load receiving end of same across the dock plate into the vehicle load receiving area for having applied to the load receiving end of same the bagged and cartoned goods to be unloaded from the vehicle, and means for driving the conveyor to convey the bagged and cartoned goods received thereon onto the loading dock as they are applied to the conveyor load receiving end, the improvement comprising:

a chassis connected to the unloading conveyor adjacent its load receiving end and disposed in advance of same with respect to the unloading bay,  
said chassis journalling wheels, on which said chassis rides, for rotation about a common axis extending transversely of the movement path,  
said chassis being pivoted to the conveyor for swinging movement relative thereto about a horizontal axis extending transversely of the unloading conveyor,  
said chassis journalling an upright shaft for pivotal movement about an axis that is normal to the movement path, said shaft and said axis of said wheels being in coplanar relation in an upright plane extending transversely of the movement path,



said shaft having mounted on the upper end of same a conveyor head for movement about an axis extending normally of said shaft axis,  
said head being cantilever mounted on said shaft to project over the dock plate when horizontally disposed in alignment with the movement path,  
an adjustable strut structure connected between the lower end of said shaft and said head for supporting said head cantilever fashion from said shaft and including power means for adjusting the length thereof for adjusting the forward end of said head vertically,  
said head including an endless conveyor presenting an upwardly facing load receiving run and including means for driving said run to move toward the unloading conveyor,  
said endless conveyor having a load receiving end adjacent the forward end of said head and a load discharge end at the other end of said head disposed to discharge the bagged and cartoned goods onto the load receiving end of said mobile conveyor when said head is substantially aligned therewith,  
said shaft being journaled for free swinging movement of same and said head about said shaft pivot axis with sufficient static friction opposing said swinging movement to maintain said head and shaft at desired positions of manual adjustment angularly of said shaft pivot axis,  
said head carrying a bag shifting mechanism including:  
a manually manipulatable bag gripping hand tool,  
a cable connecting said hand tool to said head adjacent one side of said head intermediate the ends of said head,  
said cable having sufficient length to permit said tool to be

manually extended beyond the forward end of said head for application in gripping relation to a bag to be shafted from a position of rest in the vehicle onto the head conveyor run, when said head has been positioned to be adjacent and directed toward the bag,  
means for drawing said cable longitudinally of said head to draw the bag onto the head conveyor run,  
and means for automatically releasing said tool from the bag when the bag is conveyed by said head conveyor run for manual application to another bag to be shifted onto said head.

4,281,956

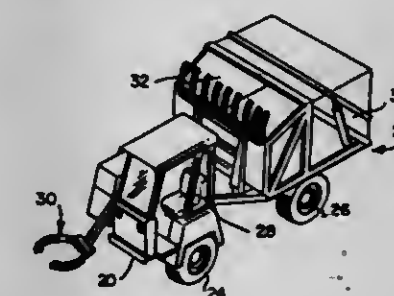
# CONTAINER HANDLING MECHANISM FOR TRASH COLLECTING VEHICLES

John W. Pickrell, 4206 N. 68th St., Scottsdale, Ariz. 85251

Continuation-in-part of Ser. No. 710,621, Aug. 2, 1976, abandoned. This application May 16, 1977, Ser. No. 797,530  
Int. Cl.<sup>3</sup> B65B 21/02

U.S. Cl. 414—409

4 Claims



1. In a container handling mechanism for trash collecting vehicles; a frame; a container grasping and pickup means moveably mounted on said frame; actuating means for said grasping and pickup means; said actuating means disposed to move said grasping means upwardly and downwardly; said actuating means provided with pivotal support means adapted to swing said grasping and pickup means about a generally horizontal axis so as to transfer said grasping means from an upright position to an elevated substantially upsidown position; said container grasping and pickup means comprising a pickup arm; pivotal axis means pivotally mounting said arm on a pivotal support to pivot about said generally horizontal axis; said actuating means disposed for concurrently elevating said pivotal support means and rotating said arm about said generally horizontal axis, of said pivot axis means, to said elevated substantially upsidown position in which the contents of said container may be emptied into a trash receiver; said actuating means being provided with arcuate means coupled to said arm; and means constantly engaged with said arcuate means and connected to said frame; and means for actuating said pivotal support upwardly and downwardly on said frame to an uppermost position and to a lowermost position whereby constant engagement of said arcuate means with said actuating means causes continuous and concurrent pivotal movement of said arm about said horizontal axis as it moves upwardly and downwardly between said uppermost position and said lowermost position.

4,281,957

# PROJECTILE DOLLY FOR SEPARATE LOADING AMMUNITION

Richard A. Vishe, 2723 S. Queen St., York, Pa. 17403, and  
Richard A. Koster, R.D. 11, York, Pa. 17406

Filed Apr. 26, 1979, Ser. No. 33,505

Int. Cl.<sup>3</sup> B62B 1/14

U.S. Cl. 414—457

1 Claim

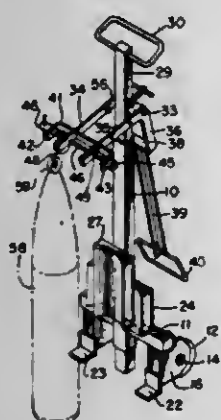
1. A dolly for handling at least one projectile of separately loading ammunition, the projectile having a nose plug and a ring for the plug, the dolly having a frame and a pair of spaced



rollers mounted on an end of said frame, the improvement comprising a housing member mounted on said frame above and away from said rollers curved to accommodate the curvature of said at least one projectile;

a lever pivoted on said frame above said housing, an actuating arm for said lever on side of said frame above said rollers, at least one fork on said lever on a side of said frame above said housing;

a pin for sliding in said at least one fork to pass through the ring of the nose plug of said at least one adjacent projectile whereby when the dolly is moved adjacent an at least one



projectile and said lever is rotated about the pivot in one direction said pin may be passed through the ring, and thereafter, movement of said lever in an opposite direction will lift the at least one projectile for swinging movement into engagement with said housing, said lever comprising a pair of spaced arms on opposite sides of said frame, a U-shaped cross-piece extending across and secured to said arms above said housing member, said arms extending beyond said U-shaped cross-piece forming a center fork and a fork on each side of said center fork and aligned openings in said forks to receive said pin.

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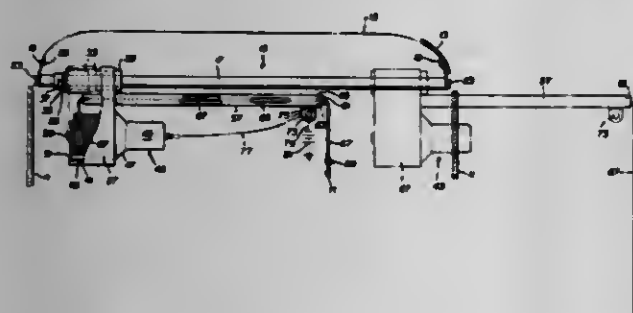
**WHEEL CHAIR HOIST ASSEMBLY FOR VEHICLES**  
Bernard E. Molski, 5001 Coventry, Royal Oak, Mich. 48073

Filed Dec. 13, 1979, Ser. No. 97,688

Int. Cl.<sup>3</sup> B60P 1/02

U.S. Cl. 414—542

10 Claims



1. A wheel chair hoist assembly adapted for mounting within the interior of a vehicle having a body provided with an access opening on the driver's side of the vehicle, a front seat adjacent the access opening, with the access opening controlled by a door which may be opened to permit a person to enter the body and to use the wheel chair hoist assembly and the front seat, a battery and a roof comprising:

an elongated support bar located entirely within the body rearwardly of the seat extending transversely of the length of the body;

hanger brackets connected to the ends of said support bar and secured to the roof adjacent the opposite sides of the body;

a mount tube slidably supported upon said support bar;

a winch mount bracket fixedly secured to and depending from said mount tube;

a boom located parallel to and spaced below said support bar at one end secured to said mount tube, with its other end projecting laterally of said mount tube and said winch mount bracket; said boom having a length less than the length of said support bar;

said boom being normally positioned within the body;

said boom being manually slidable along said support bar for projecting said other end of said boom laterally outward of the vehicle body through the access opening on the driver's side of the vehicle;

a power operated winch assembly secured upon said winch mount bracket and including a reversible rotatable drum; a cable at one end secured to and mounted around said drum, longitudinally and guidably projected through the interior of said boom, with its free other end depending from said other end of said boom;

a hook mounted upon said other end of said cable adapted to supportably engage a collapsed wheel chair;

and a manually operable control switch means mounted on said boom interconnecting said winch assembly and battery;

said winch assembly adapted to lift the collapsed wheel chair a predetermined distance;

said boom being successively slidable manually to project the collapsed wheel chair into the body for storage in the vehicle body behind the front seat.

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**HANK TRANSFER APPARATUS**

Federico Minnetti, Pieve a Nievole, Italy, assignor to Officine Minnetti di Ornella Ravaggi & C. S.A.S., Pieve a Nievole, Italy

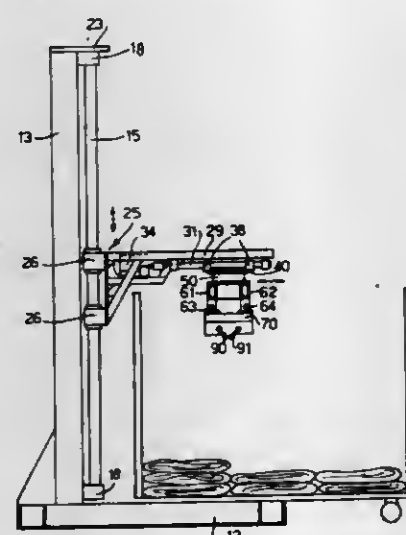
Filed Jul. 16, 1979, Ser. No. 57,802

Claims priority, application Italy, May 10, 1979, 22531 A/79

Int. Cl.<sup>3</sup> B65G 47/36

U.S. Cl. 414—668

12 Claims



1. An apparatus for hank transfer from a hank-carrier to a holding or transporting device, said apparatus comprising a base (12, 13); a rod holding movable head (72) mounted for horizontal and vertical movement with respect to said base; a pair of extended rods (90, 91) on said head, which are substantially parallel to each other and movable with respect to said head between a closed approach position and a spread apart position; means for controlling the movement of said rods between said positions; and movement means for moving said head including means for moving said head in a direction substantially parallel with the direction in which said rods extend from said head, said rods in said closed approach position being positioned close to each other to minimize transverse dimensions of said rods.

4,281,960

**AUTOMATIC BROACH MACHINE LOADER**

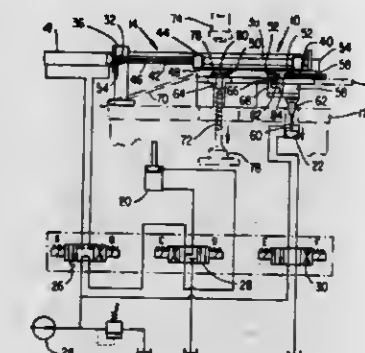
John X. Russell, Troy, Mich., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 5, 1979, Ser. No. 72,797

Int. Cl.<sup>3</sup> B65G 25/02

U.S. Cl. 414—750

8 Claims U.S. Cl. 415—89



1. A device for supplying parts to and for removing parts from a machining station having a machining tool acting in a reciprocating manner between a start machining position and a finish machining position comprising a shuttle table on which said parts are conveyed to said machining station, means for indexing said parts on said shuttle table as they traverse same to said machining station, and means for removing said parts from said machining station at the end of the movement of the tool through said part, said indexing means being selectively engaged with said parts on said shuttle table so as to permit the advancement of said parts on said shuttle table in one position when said indexing means is engaged with parts on said shuttle table and the introduction of new parts onto said shuttle table during a second position when said indexing means is disengaged from the parts on said shuttle table, the machining of said part at said machining station being performed with said indexing means in said second position.

4,281,961

**COIL TRANSFER APPARATUS**

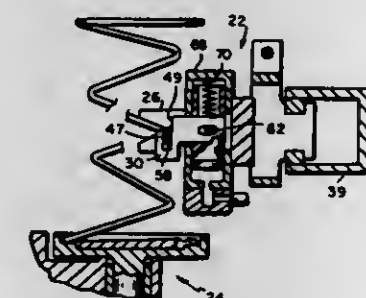
Howard E. Redman, Duxbury, Mass., assignor to Mathewson Corporation, Quincy, Mass.

Filed Sep. 13, 1978, Ser. No. 941,774

Int. Cl.<sup>3</sup> B65G 47/90

U.S. Cl. 414—751

11 Claims



10. In a coil transfer apparatus, means defining a recess having a concavely-arcuate surface and first spaced, parallel surfaces symmetrically positioned and perpendicular to the axis of the arcuate recess for receiving an arcuate portion of a coil, a latch member movable into the recess to close a portion of the open side thereof to thereby retain the coil in the recess, said latch defining second spaced, parallel surfaces perpendicular to the first spaced, parallel surfaces with one of said spaced, parallel surfaces tangent to the arcuate surface and the other spaced therefrom, said spaced, parallel surfaces defining in conjunction an enclosure within the recess for capturing the coil and a freely-rotatable roller supported between the second spaced, parallel surfaces, said roller defining one side of the enclosure.

4,281,962

**HIGH PRESSURE CENTRIFUGAL PUMP**

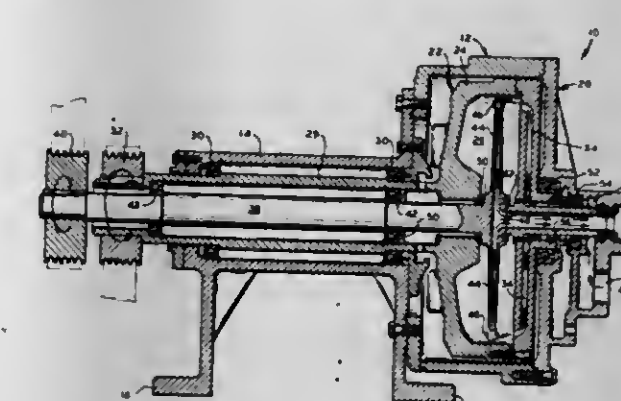
John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Filed Mar. 23, 1979, Ser. No. 23,206

Int. Cl.<sup>3</sup> F04B 25/08

8 Claims U.S. Cl. 415—89

14 Claims



1. A centrifugal pump for pumping fluids under relatively high pressure comprising: a rotor assembly supported for rotation about an axis and defining a chamber; fluid inlet means in fluid communication with said chamber; fluid pickup means supported for rotation about said axis in said chamber for collecting fluid from said chamber; and outlet means in fluid communication with said pickup means for discharging said fluid at the relatively high pressure when said rotor assembly and said pickup means are rotated in opposite directions.

4,281,963

**APPARATUS FOR THE CONVEYANCE AND/OR TREATMENT OF HOT GASES**

Heinrich Buchner, Bochum-Weitmar, and Hannes S. Horn, Dortmund, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

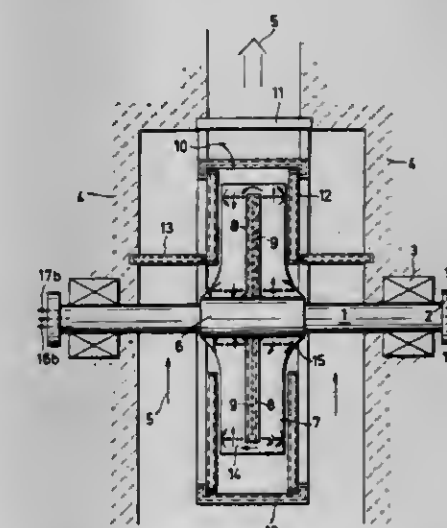
Filed Jan. 30, 1979, Ser. No. 7,805

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836163

Int. Cl.<sup>3</sup> F01D 5/08, 5/18

U.S. Cl. 415—178

14 Claims



1. A shaft furnace or kiln ventilator system for cooling material laden hot gases produced during calcination and sintering of one of the materials selected from the group consisting of lime, dolomite, and magnesite, comprising: a liquid cooled ventilator positioned in the furnace or kiln to convey the hot gases and having a rotating shaft and radial blades extending from a hub on said shaft, and a disc on said hub extending perpendicular to the shaft, perpendicular to a major surface of the blades, and bisecting the blades along a line of connection therewith; a guide housing at least partially surrounding the radial blades; and a means for introducing a heat



carrying liquid into the ventilator through the rotating shaft and means for guiding the liquid through the radial blades.

4,281,964

# **TURBINE HOUSING AND METHOD FOR MAKING THE SAME**

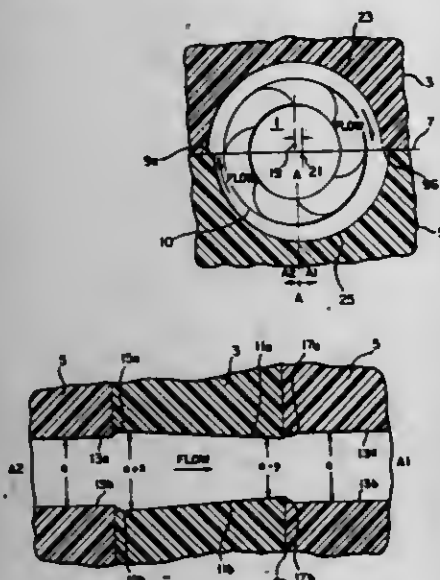
Daeny R. Jenkins, Bel Air, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Jan. 21, 1980, Ser. No. 113,801

Int. Cl.<sup>3</sup> F01D 25/24

U.S. Cl. 415-203

15 Claims



1. A turbine housing formed from at least two mating members, said at least two mating members having mating wall portions which are positioned adjacent to each other to form the peripheral walls of said housing, wherein said mating wall portions are offset from one another such that the distance from the plane through the center of the housing and parallel to the walls of the mating members, to the first mating wall portions, in the direction of fluid flow in the turbine, is less than or equal to the distance from said plane to the second mating wall portions, in the direction of flow.

4,281,965

# **CANTILEVER MOUNTED WIND TURBINE**

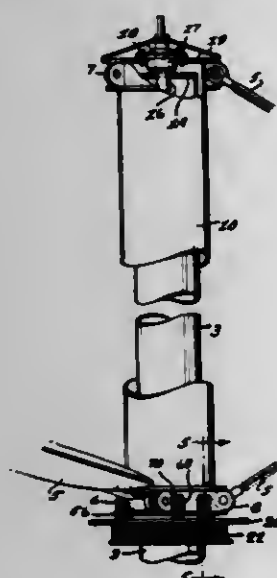
Dale T. Stjernholm, 1490 Tari Dr., Colorado Springs, Colo. 80908

Filed May 7, 1979, Ser. No. 36,420

Int. Cl.<sup>3</sup> F03D 3/06

U.S. Cl. 416-227 A

4 Claims



1. A moment decoupling connection between first and second concentrically mounted and respectively rotatable members, including:

radial thrust bearing means having first and second bearing surfaces;  
means securing the first bearing surface to the said first member; and  
means flexibly coupling the second bearing surface to the said second member including:  
a pair of spaced apart flanges; a plurality of circumferentially equi-spaced torque transmitting drive pin means interconnecting the flanges; and  
elastic cushioning means disposed between the flanges.

4,281,966

# **MULTI-BLADE PROPELLERS**

Maurice L. Duret, Aix-en-Provence; Bernard L. J. Lamarche, Velaux; Marc A. Declercq, Pelissanne, and Robert D. Martin, Aix-en-Provence, all of France, assignors to Societe Nationale Industrielle Aerospatiale, France

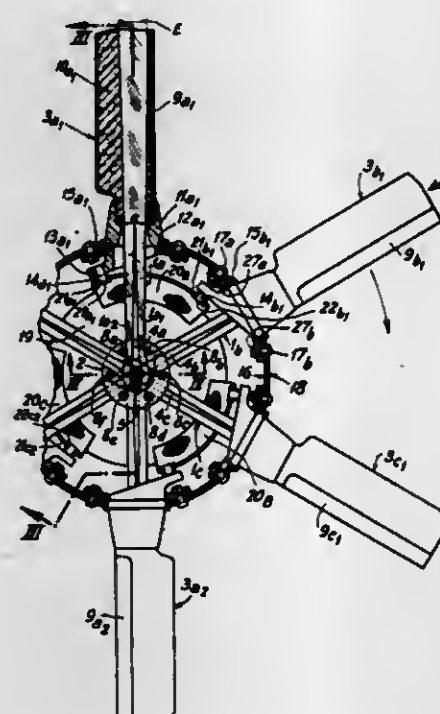
Filed Jul. 5, 1979, Ser. No. 55,096

Claims priority, application France, Jul. 7, 1978, 78 20258

Int. Cl.<sup>3</sup> B64C 11/06, 11/32

U.S. Cl. 416-134 A

12 Claims



1. A variable pitch multi-blade propeller of use more particularly as the rear rotor of a rotary-wing aircraft comprising an axis of the rotor,  
at least one pair of blades mounted diametrically opposed with respect to said rotor axis,  
a tubular rotor driving shaft bearing a rigid rotor hub rotatably mounted around said rotor axis,  
said at least one pair of blades including  
a single composite spar common to the two said blades secured at its central part to said rotor hub and made of fibers having high mechanical strength and agglomerated by a synthetic resin,  
and two radial shells having an aerodynamic cross-section and secured to said composite spar, one on each side of said rotor hub,  
a pitch control shaft slidingly mounted through said tubular driving shaft, said hub and the central part of each said spar for collectively controlling the pitch angles of all said blades,  
a coupling element substantially perpendicular to and integral with said pitch control shaft,  
a pitch control assembly with the inward end of each said shell secured to said assembly and subjecting said shell to a torque centered on the longitudinal axis of the corresponding said spar,  
each said composite spar being made up of a single elongated strip, the fibers of which are all unidirectional and longitudinal fibers,

said strip being made up in its central portion, between said two corresponding shells, of two flat bundles each presenting fibers all extending without any interruption from one end of said corresponding bundle to the other end, and having a slot defined in the middle of said strip by the central parts of said two bundles being separated one from the other,

said pitch control shaft directly and freely slidingly mounted through said slot,  
said shell of each said blade being internally connected along its entire length to the corresponding part of said elongated strip by a mass of adhesive synthetic cellular or foam material.

4,281,967

# **RESONATOR DEVICE FOR DAMPING THE VIBRATIONS OF A ROTOR OF A ROTARY-WING AIRCRAFT**

Rene L. Mouille, Aix-en-Provence; Gerard C. L. Genoux, Gardanne; Marc A. Declercq, Pelissanne; Jean-Luc M. Leman, Aix-en-Provence, and Robert J. Suzzi, Marseilles, all of France, assignors to Societe Nationale Industrielle Aerospatiale, France

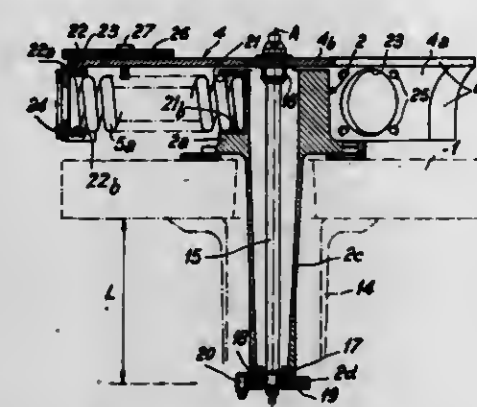
Filed Feb. 5, 1979, Ser. No. 9,578

Claims priority, application France, Feb. 10, 1978, 78 03810

Int. Cl.<sup>3</sup> B64C 27/32

U.S. Cl. 416-145

19 Claims



2. A resonator device for damping the vibrations of a rotary-wing aircraft rotor having a shaft supporting a hub (1) to which at least two blades extending radially are attached,  
said resonator device comprising a substantially annular weight (4) disposed concentrically of the rotor axis (A) and supported substantially without bending by at least three helical springs (5a, 5b, 5c) whose axes radiate in directions distributed regularly around the rotor axis (A) and which are radially biased in said directions, said biased springs (5a, 5b, 5c) applying statically balanced centrifugal thrusts to said annular weight (4), said annular weight (4) being bell-shaped and presenting an annular skirt-like part (4a) and a flat top member (4b), said skirt-like part (4a) being concentric of a spindle (2) axially extending the rotor shaft above a rigid central part of the hub (1) and said flat top member (4b) extending transversely of said spindle (2),  
wherein the inner end of each said springs (5a, 5b, 5c) bears directly on said spindle (2) and the outer end of each said springs (5a, 5b, 5c) bears directly on said skirt-like part (4a) and wherein said bell-shaped annular weight (4) is formed in registration with each rotor blade with an aperture (6A, 6B, 6C) extending at least in its skirt-like part (4a) and enabling said corresponding blade to make vertical flapping movements.

4,281,968

# **WATER STORAGE AND PUMPING SYSTEM**

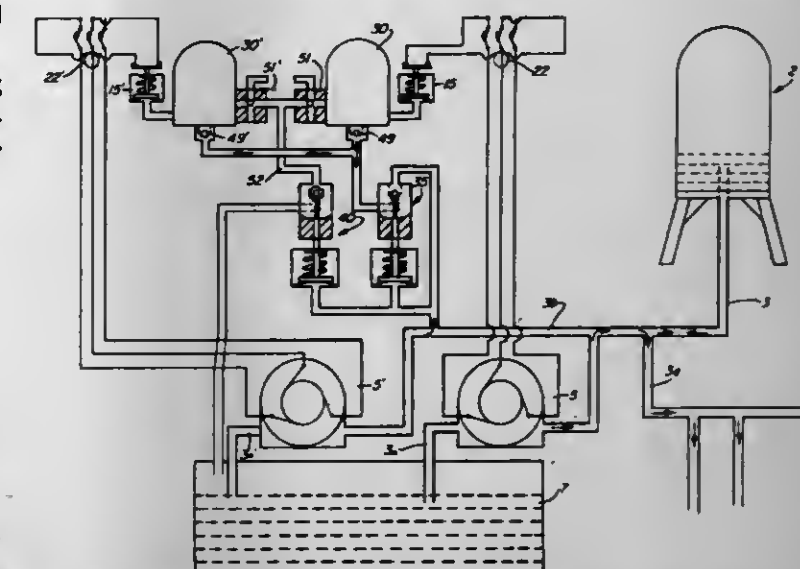
Francis A. Akers, 355 Peachtree St. N.E., Atlanta, Ga. 30308

Filed Aug. 21, 1978, Ser. No. 935,471

Int. Cl.<sup>3</sup> F04B 49/02, 49/06

U.S. Cl. 417-2

4 Claims



1. A pressure responsive motor control system comprising:  
at least one electrical motor;  
a source of electrical power;  
pressure responsive switching means interconnecting the motors and the source of electrical power;  
first and second oppositely operating pressure responsive fluid valves, each having fluid inputs and outputs;  
a source of fluid pressure connected in parallel to the said pair of valves and to the input of the first valve;  
at least one pressure tank;  
means interconnecting the tanks to the output of the first valve including a reverse flow check valve;  
drain means connected to the tank, including at least one bleed valve and the second valve; and  
conduit means interconnecting the tank and the switching means.

4,281,969

# **THERMAL PUMPING DEVICE**

Ernest L. Doub, Jr., 4593 Orchard St., Montclair, Calif. 91763

Filed Jun. 25, 1979, Ser. No. 51,700

Int. Cl.<sup>3</sup> F04B 19/24

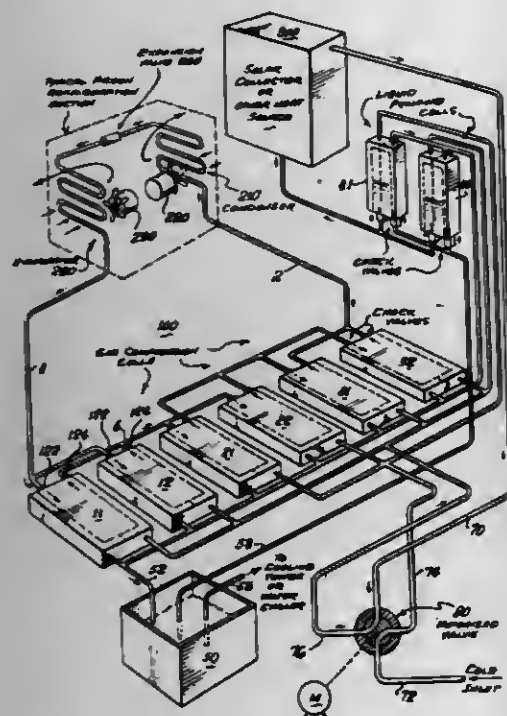
U.S. Cl. 417-52

7 Claims

1. A cell for pumping a first fluid, and which cooperates with an associated heat sink, an associated heat source, and associated first and second heat transfer fluids, which comprises:  
means for alternately heating and cooling the first fluid with the second fluid,  
first and second one-way valves,  
said means for alternately heating and cooling comprising a fluid chamber in fluid communication with the heat source via said first one-way valve and communicating with the associated heat sink via said second one-way valve, said first and second one-way valves permitting flow of said first fluid only in a direction from the associated heat source and toward the associated heat sink,  
a heat transfer jacket disposed about said chamber for directing circulation of the second fluid about said chamber, and means for alternately admitting heated and cooled second fluid to said jacket,  
whereby at least some of the first fluid in said chamber is



alternately cooled to reduce pressure in the chamber to draw pumped first fluid therein via said first one-way



valve, and heated to increase pressure therein to discharge pumped first fluid via said second one-way valve.

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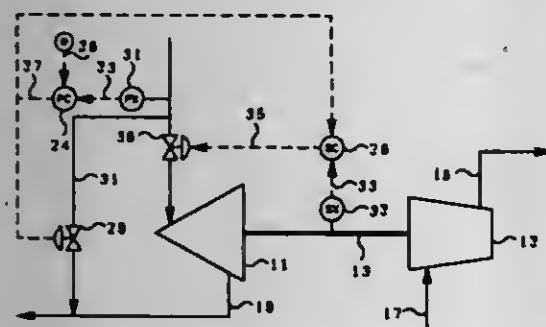
**TURBO-EXPANDER CONTROL**

William S. Stewart, and Virgil R. Spurgeon, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 15, 1979, Ser. No. 48,930  
Int. Cl.<sup>3</sup> F04B 49/00

U.S. Cl. 417-53

7 Claims



4. A method for controlling a system in which a turbo-expander is utilized to drive a compressor comprising the steps of:

- supplying a fluid through a first control valve to the suction inlet of said turbo-expander;
- withdrawing a fluid from the discharge outlet of said turbo-expander;
- supplying a fluid to the suction inlet of said compressor;
- withdrawing a fluid from the discharge outlet of said compressor;
- establishing a first signal which is a function of the pressure at the suction inlet of said turbo-expander, said first signal having a first range and a second range where at least a part of the first range of said first signal is outside the second range of said first signal and at least a part of the second range of said first signal is outside the first range of said first signal;
- manipulating said first control valve in response to the first range of said first signal to thereby manipulate the flow of fluid to the suction inlet of said turbo-expander; and
- recycling fluid from the discharge outlet of said compressor to the suction inlet of said compressor through a second control valve, which is manipulated in response to the

second range of said first signal, said second control valve being substantially fully closed when said first signal is in the first range, the transition point between said first range and said second range of said first signal being selected so as to be substantially representative of the substantially maximum operating speed of said turbo-expander.

4,281,971

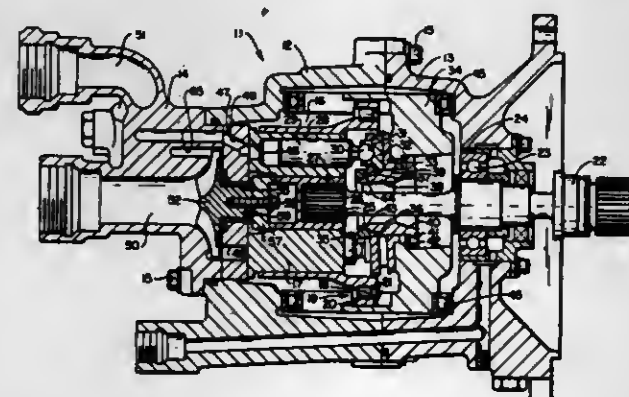
**INLET INDUCER-IMPELLER FOR PISTON PUMP**

Herbert H. Kouns, Camarillo, Calif., assignor to ABEX Corporation, New York, N.Y.

Filed Jul. 31, 1979, Ser. No. 62,599  
Int. Cl.<sup>3</sup> F04B 23/14

U.S. Cl. 417-203

2 Claims



1. An axial piston pump which comprises: a housing, a port cap which closes one end of the housing, a barrel rotatably mounted in the housing, a shaft attached to the barrel for driving the barrel, a plurality of pistons mounted in bores for reciprocation within the barrel, a port plate having an inner face adjacent one end of the barrel, an inlet port in the port plate for directing low pressure fluid to the pistons, an outlet port in the port plate for receiving discharge pressure fluid from the pistons, an impeller rotatably connected to the drive shaft adjacent the outer face of the port plate, means for supplying low pressure fluid to the center of the impeller to enable the impeller to impart a tangential velocity to the fluid, characterized by a collector formed in the port cap adjacent the outer face of the port plate which receives a portion of the fluid from the impeller, wherein the inlet of the collector is just beyond the inlet port in the direction of impeller rotation and the exit of the collector is adjacent the beginning of the inlet port in the direction of impeller rotation, such that the collector is adjacent the major portion of the impeller's circumference, the collector directs the axial velocity component of the fluid in the direction of the inlet port, means for directing a substantial portion of the fluid exiting from the collector back into the impeller before it flows into the inlet port to thereby increase the fluid's tangential velocity to that of the piston barrel cylinder ports, wherein the fluid from the collector which enters the impeller combines with fluid which flows directly from the impeller to the inlet port and the combined fluid entering the inlet port is at substantially the same tangential velocity as the piston barrel ports.

4,281,972

**APPARATUS FOR CONTROLLING THE PERFORMANCE OF A MOTOR COMPRESSOR**

John J. Jacobs, Pulaski, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 31, 1979, Ser. No. 7,868  
Int. Cl.<sup>3</sup> F04B 35/04

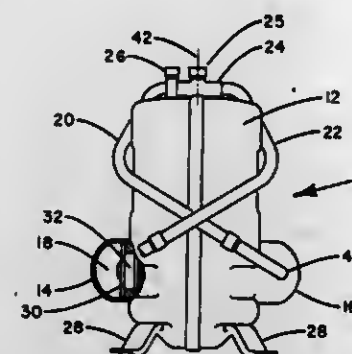
U.S. Cl. 417-415

4 Claims

1. Apparatus for controlling the performance of a motor compressor unit enclosed within a hermetically sealed shell and having at least two cylinders in which a gas is compressed comprising:

- a plurality of cover means, with each cylinder surrounded
- by a cover means defining a suction plenum for receiving gas at suction pressure; and

a plurality of conduit means disposed externally of said hermetically sealed shell for delivering gas to said suction plenums, with a first end of each conduit means connected



to a suction plenum and second ends of said conduit means interconnected for coherently conducting pressure pulses between the suction plenums to vary the pressure thereof.

4,281,973

**CASE STRUCTURE FOR ROTARY MACHINES**

Gaetano Meneghello, Via Contra Lodi, 48, Vicenza, Italy

Filed Feb. 5, 1979, Ser. No. 9,613

Claims priority, application Italy, Feb. 9, 1978, 20125 A/78  
Int. Cl.<sup>3</sup> F04B 39/12, 39/14

U.S. Cl. 417-424

8 Claims



1. A case structure for rotary machines of the type having prevailing axial extension and at least one stationary portion and at least one rotary portion, in particular for electric motors and multistage pumps, the case structure comprising at least one tubular member having two ends and a plurality of roll-formed threaded portions and at least one roll-formed groove in the wall of said tubular member, said plurality of threaded portions including at least one threaded portion for threadably supporting said at least one stationary portion within said at least one tubular member, at least another threaded portion between said at least one threaded portion and one of said ends for threadable engagement with a support for said at least one rotary portion within said at least one tubular member, and at least one further threaded portion at each of said ends for threadably engaging respective end caps of said case, said threaded portions having a depth such as to allow subsequent insertion and removal in an axial direction of said at least one stationary portion and said at least one rotary portion through said one of said ends into, and out of, said tubular member, and said at least one groove being arranged at a position adjacent said at least one threaded portion and having a depth such as to lock axially at least said at least one stationary portion.

4,281,974

**SEAL MECHANISM IN GEAR PUMPS OR MOTORS**

Hideo Teruyama, Shobo, Japan, assignor to Kayabakogyokabu-shikikaisha, Tokyo, Japan

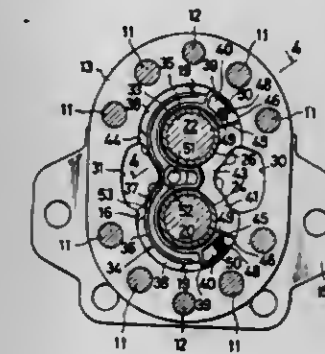
Filed Sep. 18, 1979, Ser. No. 76,783

Claims priority, application Japan, Sep. 19, 1978, 53-114831

Int. Cl.<sup>3</sup> F03C 2/08; F04C 2/18, 15/00

U.S. Cl. 418-132

4 Claims



1. A seal mechanism for use between pressure plates and end plates of the housing of a gear pump or motor, comprising a seal member having the shape of a figure 3 and being adapted to subdivide the interior of the pump or motor into a high-pressure zone and a low-pressure zone, said seal member having a body and spaced ends each provided with a loop-shaped portion which surrounds a space; a plate member engaging said spaced ends, and a block member accommodated in each of said spaces and movable relative to the respectively adjacent pressure plate, each of said block members having a free end facing in direction away from said body and provided with a face which tapers in said direction whereby fluid pressure from said high pressure zone acting on said body forces the loop-shaped portions and block members against the plate member so that said tapered faces press the loop-shaped portions.

4,281,975

**ANTI-FRICTION SLIDE VALVE SUPPORT FOR SCREW COMPRESSOR**

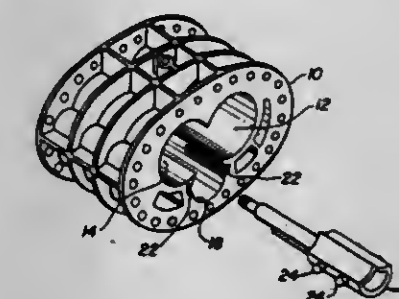
Thomas D. Blackwell, 136 Monument Rd., York, Pa. 17403

Filed Oct. 9, 1979, Ser. No. 82,680

Int. Cl.<sup>3</sup> F04C 18/16, 29/08; F16C 29/04

U.S. Cl. 418-201

7 Claims



1. A screw compressor comprising a pair of coacting helical screw rotors operable within complementary intersecting bores within a housing, and a slide valve axially movable in parallelism with the axes of said rotors within a substantially cylindrical bore formed in said housing below and partially intersecting said complementary intersecting bores, said side valve forming a continuation of said intersecting bores so as to be closely adjacent the screw rotors, in combination with rotatable anti-friction means mounted in at least one longitudinal groove in said cylindrical bore for horizontal operation between said cylindrical bore and slide valve longitudinally of the axis thereof and operable to prevent rotation of said slide valve about its longitudinal axis and to support said slide valve relative to said cylindrical bore and minimize friction therebetween.



tween, thereby minimizing the force required to move said slide valve axially within said cylindrical bore.

4,281,976

# **PELLET AND CHOPPING MACHINE**

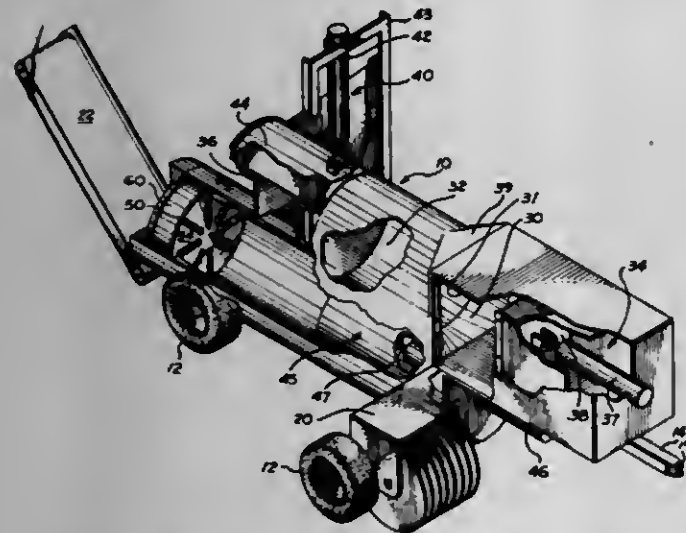
William K. Nichols, P.O. Box 18, Corral, Id. 83322

Filed Oct. 12, 1979, Ser. No. 84,356

Int. Cl.<sup>3</sup> A23L 1/01; B28B 1/00

U.S. Cl. 425-62

7 Claims



1. In an apparatus for forming hay pellets from bales of hay, such apparatus having means for urging a bale of hay through a bale chamber, the improvement comprising:

- a pellet forming die plate disposed within the bale chamber to rotate about a center, said die plate including;
- a front face disposed towards the bale of hay,
- a rear face disposed opposite said front face, and
- a plurality of elongate pellet forming bores extending diagonally through said die plate from said front face to said rear face, with each of said bores having an entrance opening at said front face and an exit opening at said rear face, said exit opening trailing said entrance opening relative to the direction of rotation of said die plate;
- a cutter knife disc secured to the front face of said die plate for cutting said hay away from the bale prior to entry into said die plate bores, said disc;
- being substantially thinner than the thickness of said die plate,
- carrying a plurality of cutter knives each in alignment with a corresponding die plate bore, with each knife having a cutting edge disposed at the same angle with respect to the cutter knife disc as the die plate bore is disposed with respect to said die plate; and
- having an opening beneath each of said cutter knives in alignment with the corresponding pellet forming bore to allow hay to be urged into each pellet forming bore by the urging means after being cut by said cutter knives;
- an elongate pellet compressing tube removably disposed in communication with each of said die plate bores for receiving cut hay from said bores for further compression within said tubes, each of said compressing tubes;
- being aligned with a corresponding pellet forming bore, having a forward end portion inset into the rear face portion of said die plate, and
- imposing frictional drag on the hay as the hay passes through said tube to thereby further compress the hay; and
- means for supporting said pellet compressing tubes in alignment with corresponding die plate bores.

4,281,977

# **APPARATUS FOR SETTING A CLAMPING LOAD**

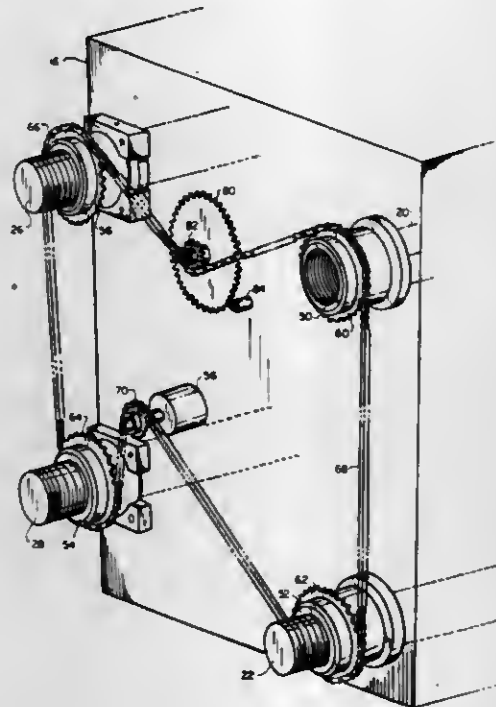
Robert E. Farrell, Springfield, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.

Filed Oct. 1, 1979, Ser. No. 80,180

Int. Cl.<sup>3</sup> B29F 1/00

U.S. Cl. 425-149

5 Claims



1. In a molding, pressing or like machine having a first die plate that is reciprocated between opened and closed positions relative to a second die plate in a cyclic machine operation by means of a known displacement clamping mechanism connected between the first die plate and a thrust plate tied to the second die plate for reacting the clamping load between the die plates in the closed position of the die plates and drive means for moving the thrust plate and the second plate relative to one another and thereby adjusting the relative positioning of the second die plate and the thrust plate and correspondingly the clamping load between the die plates in the closed position, the drive means including a high ratio mechanical drive having a large displacement mechanical input member connected for movement by a drive motor and a small displacement output member connected for movement of the second plate and thrust plate relative to one another, apparatus for establishing a predetermined clamping load between the die plates comprising: displacement sensing means operatively connected with the large displacement mechanical input of the drive means for measuring relative movement of the input from one position of adjustment to another.

4,281,978

# **SURFACE COATING DEVICE OF CORE BODY**

Sbozo Shigematsu, Habikino, Japan, assignor to Kabushiki

Gaisha Mitokako, Osaka, Japan

Filed Feb. 25, 1980, Ser. No. 124,000

Int. Cl.<sup>3</sup> B29F 3/10

U.S. Cl. 425-376 B

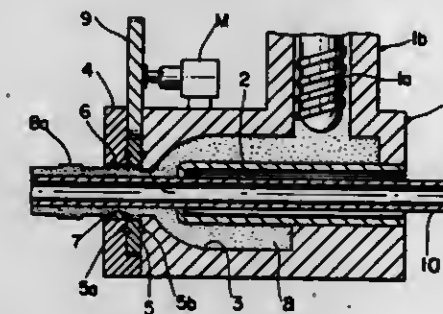
11 Claims

1. Apparatus for providing a synthetic resin coating on an elongate cylindrical article comprising

- an extrusion body having an extrusion chamber and an extrusion opening, said extrusion opening and chamber being adapted to receive an elongate article to permit passage thereof through said chamber and out through said opening, said chamber being provided with synthetic resin inlet means for feeding extrudable synthetic resin to said chamber;
- a fixed die mounted outside said chamber opening in fixed position relative thereto and having a fixed die orifice axially aligned with said chamber opening for permitting passage of said elongate article therethrough, said die

orifice being sized to provide an extruded resin coating on said elongate article and being provided along its length with a plurality of grooves in its surface extending from one end to the other of said die orifice; and

a moveable die mounted between said chamber opening and said fixed die, and having a moveable die orifice axially aligned with said chamber opening and said fixed die orifice permitting passage of said elongate article therethrough, said moveable die orifice being sized to provide an extruded resin coating on said elongate article and being provided along its length with a plurality of grooves in its surface extending from one end to the other of said moveable die orifice and which, upon rotation of said moveable die, can be brought into and out of alignment with the grooves in said fixed die;



said grooves in said moveable die orifice surface being in flow communication with said extrusion chamber whereby resin in said extrusion chamber flow thereto; whereby, when said grooves in said moveable die orifice surface are in alignment with said grooves in said fixed die orifice surface, said resin will flow into the grooves in said fixed die orifice surface and thus form a plurality of projections of resin spaced circumferentially about the resin coating extruded onto an elongate article passing through said die orifices;

and whereby, when said grooves in said moveable die orifice surface are out of alignment with said grooves on said fixed die orifice surfaces, said resin will not flow into the grooves in said fixed die orifice surface thus interrupting the formation of said resin projections.

4,281,979

# **APPARATUS TO FORM A FLAT-TOPPED RIM ON A THIN-WALLED FOAM PLASTIC CONTAINER**

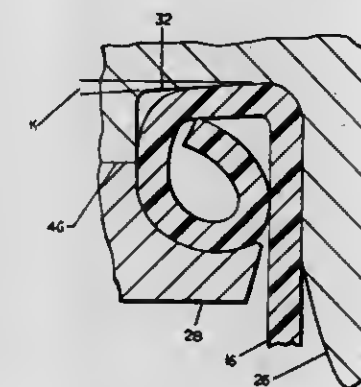
Thomas E. Doberty, Setauket, N.Y., and William F. Herzog, Perrysburg, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 26, 1979, Ser. No. 88,450

Int. Cl.<sup>3</sup> B29C 17/00; B29D 27/00

U.S. Cl. 425-391

9 Claims



1. An apparatus for forming a flat-topped rim on a thin-walled container comprising a die cavity of toroidal configuration formed of an internal die section to which is attached a plurality of external die segments, an ingress for the insertion of a container top edge into said die cavity, said cavity when

viewed in cross section being defined by an incoming first linear section for the guidance of the container top edge, a first arcuate section connected to said first linear section, a second linear section connected to said first arcuate section, a second arcuate section connected to said second linear section, a third linear section connected to said second arcuate section and a third arcuate section connected to said third linear section.

4,281,980

# **EXPANSION DEFORMABLE EXTRUSION DIE BLADE**

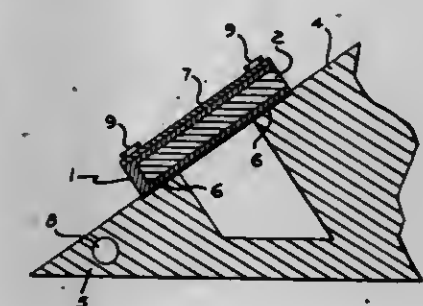
John C. Hoagland, Longmeadow; Peter H. Farmer, Springfield, and Rocco M. Carabotta, Jr., East Longmeadow, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 18, 1980, Ser. No. 113,437

Int. Cl.<sup>3</sup> B29F 3/04

U.S. Cl. 425-461

6 Claims



1. An integrally formed die blade having a body portion, a flexible lip portion and a plurality of elongated connector members each having one end rigidly connected to the body portion of the die blade and the other rigidly connected to the flexible lip and at least some of the said connector members being provided with heater elements such that activation of any such heater element produces expansion of the connector member and a resultant local deformation of the flexible die lip in the region of the expanded connector member.

4,281,981

# **DIE ASSEMBLY PROVIDING UNIFORM PRESSURE AND FLOW**

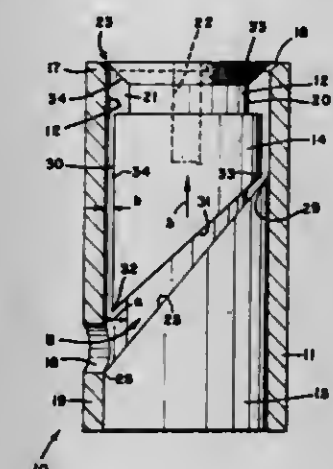
Daniel W. Feldman, Beachwood, Ohio, assignor to Standard Oil Company (Ohio), Cleveland, Ohio

Filed Feb. 25, 1980, Ser. No. 109,750

Int. Cl.<sup>3</sup> B29F 3/04; B29D 23/04

U.S. Cl. 425-467

5 Claims



1. A die assembly for extrudable materials comprising:

- a first member providing an external wall of a continuous cavity for passage of said extrudable material;
- an entrance port in said first member communicating with said cavity;
- a second member providing the internal wall of said cavity;
- bushing means, for directing the flow of extrudable material within said cavity in one axial direction, said bushing



means providing an inclined surface continuous with the bottom of said entrance port and rising to an elevated point on said external wall opposite said entrance port; distributor means, interposed within said cavity, for providing a restricted space therein for passage of said extrudable material and having an inclined surface originating at a point proximal said entrance port and terminating at a point opposite said elevated point, the length thereof being defined by the peripheral distance between said two points and the rise thereof being defined by the axial distance between said two points, wherein the ratio of the radial thickness of said restricted space to the radial thickness of said cavity is the same as the ratio of said rise to said length; and

a channel formed between said inclined surfaces of said bushing and distributor means through which said extrudable material flows axially and peripherally.

4,281,982

# METHOD AND APPARATUS OF HEAT-PULSED RECUPERATION OF ENERGY

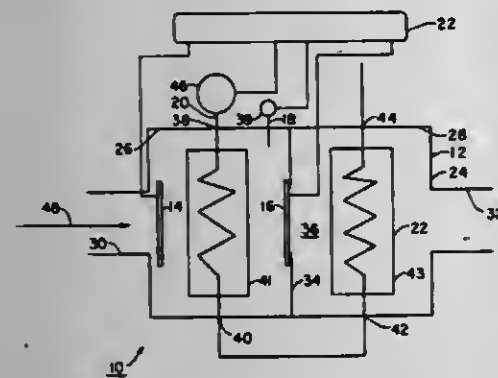
Alan Kardas, Chicago, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Feb. 19, 1980, Ser. No. 122,424

Int. Cl.<sup>3</sup> F23C 11/04

U.S. Cl. 431—1

25 Claims



1. A method of recuperating heat from, and imparting kinetic energy to, a gas, comprising the steps of:
  - (a) mixing the gas with a hereinafter-defined remainder to form an admixture thereof;
  - (b) confining the admixture, to produce a constant volume, confined admixture;
  - (c) supplying heat to the confined admixture, to produce a heated and compressed admixture;
  - (d) partially releasing the heated and compressed admixture, to produce a released portion and a confined remainder of the heated and compressed admixture, and to impart kinetic energy to the released portion; and
  - (e) transferring heat from the confined remainder to a transfer medium.

4,281,983

# PREMIX BURNER SYSTEM FOR LOW BTU GAS FUEL

Hershel E. Goodnight, and Kurt S. Jaeger, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Apr. 6, 1979, Ser. No. 16,210

Int. Cl.<sup>3</sup> F23C 5/08, 5/06, 7/00; F23D 17/00

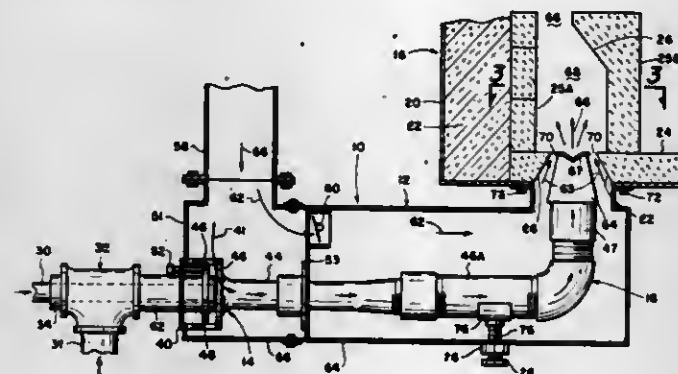
U.S. Cl. 431—161

1 Claim

1. A premix burner system for alternate or simultaneous combustion of low BTU (100 BTU per cubic foot or less) higher BTU gaseous fuels in a furnace comprising:
  - (a) an inner tube, and means to supply higher BTU gas under pressure to the upstream end of said inner tube;
  - (b) a larger concentric outer tube surrounding said inner tube, forming an annular space therebetween, said annular space closed at the upstream end; and means to supply said low BTU gas under pressure to said annular space;
  - (c) a downstream outlet for said inner and outer tubes terminating opposite and spaced from a burner tube whereby

primary air is inducted and mixed with said gases for flow in said burner tube, means to control the flow of said primary air into said burner tube;

- (d) a burner head comprising a long narrow rectangular structure transversely connected to said burner tube, said head tapered inwardly in the downstream direction;
- (e) a furnace having a floor with a rectangular opening therein selectively larger than the dimensions of said burner heads; said opening tapering in the same direction as said burner head;



- (f) means to support said burner below said furnace floor with said burner head inserted into said opening;
- (g) a secondary air plenum surrounding said burner tube and leading to the annular space between said burner head and said opening in said furnace floor; and including means to control the flow of air into said secondary air plenum;
- (h) an enclosure means surrounding the primary and secondary air inlet portion of said burner system, forming a combustion air plenum; and
- (i) means for vertical adjustment of said burner head in said opening.

4,281,984

# METHOD OF HEATING A SIDE-BURNER TYPE HEATING FURNACE FOR SLAB

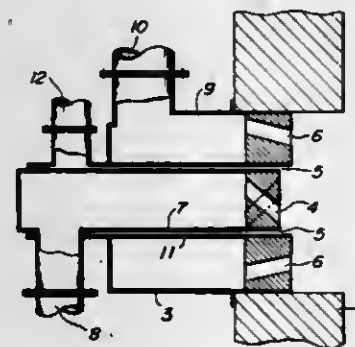
Zenjiro Kobayashi; Masaki Aihara, and Kuniaki Sato, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jul. 18, 1979, Ser. No. 58,739

Int. Cl.<sup>3</sup> F27D 3/00, 13/00

U.S. Cl. 432—9

2 Claims



1. A method of heating slabs by the use of a side-burner type heating furnace having flame length-variable type burners on both side walls thereof, each burner consisting of an inner air flow nozzle, a fuel gas nozzle and an outer air nozzle arranged concentrically, the method comprising arranging the fuel gas nozzle of each burner between the inner air flow nozzle and the outer air flow nozzle thereof, and adjusting the ratio of the flow rate of air passing through the inner air flow nozzle to the flow rate of air passing through the outer air flow nozzle depending upon the variation of the flow rate of fuel gas.

4,281,985

# AUTOMATIC THERMOCOUPLE POSITIONER FOR USE IN VACUUM FURNACES

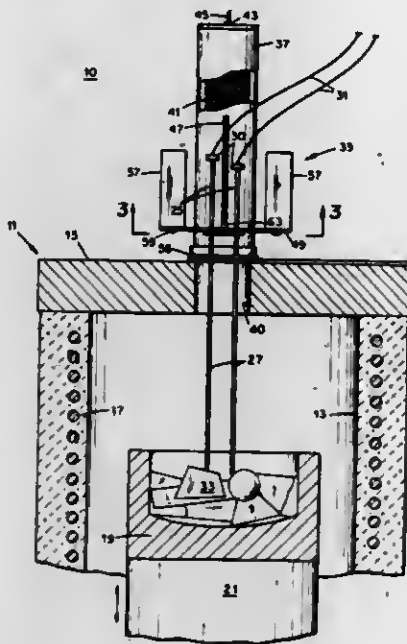
David K. Mee, and Albert E. Stephens, both of Knoxville, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 6, 1980, Ser. No. 156,955

Int. Cl.<sup>3</sup> F27B 5/04; G01K 1/08; C22B 7/04

U.S. Cl. 432—205

9 Claims



1. In a vacuum-furnace assembly including a casing, a furnace therein, and a crucible in said furnace, said crucible containing solids to be melted when said casing is evacuated to a low pressure, the improvement comprising:
    - an evacuated, vertically oriented bellows disposed in said casing and above said crucible, the upper end of said bellows being fixed and the exterior of said bellows being exposed to the atmosphere in said casing,
    - thermocouple-support means carried by the lower end of said bellows, and
    - a vertically extending sheathed thermocouple carried by said support and extending toward the mouth of said crucible, said thermocouple and support being coupled for relative vertical movement,
- said bellows responding to pumpdown of said casing from atmospheric pressure to said pressure by expanding toward said crucible to effect (1) lowering of said support and thermocouple to a first position where said thermocouple rests on said solids and (2) further lowering of said support to a second position while said thermocouple rests on said solids.

4,281,986

# DENTAL APPLIANCE

Norman R. Erickson, 1215 Felicita La., Escondido, Calif. 92025

Filed Sep. 14, 1979, Ser. No. 75,827

Int. Cl.<sup>3</sup> A61C 17/04

U.S. Cl. 433—93

16 Claims



1. A collector member having a semi-rigid bite block portion adapted to be deformed upon the initial bite of the patient so as

to form a mold thereof for secure placement within a patient's mouth and which bite block portion resists further deformation permitting a patient to exert substantial pressure on said bite block portion:

- a combination tongue guard and collector membrane holder connected to said bite block portion which is adapted to be captured within a patient's mouth, said combination tongue guard and collector membrane holder having means on its sides for detachably securing predetermined lateral edge surfaces of a collector membrane thereto;
- a flexible collector membrane that is substantially planar in its unassembled state having lateral edge surfaces, said collector membrane having laterally spaced first and second means for detachably securing said collector membrane to said bite block portion in order to pull said membrane into a preformed cup-shape configuration and to hold said membrane in such a configuration, said collector membrane having a cutout portion along its lateral edge between said first and second means for detachably securing said collector membrane to said bite block portion, said collector membrane in its assembled state having a preformed cup configuration produced by the lateral edges of said cut-out portion conforming to said means on the sides of said combination tongue guard and collector membrane holder, said membrane when in its assembled preformed cup configuration is adapted to be placed into its functional position within a patient's mouth to form a top of the mouth portion and a bottom of the mouth portion, the peripheral contour of the bottom of the mouth portion forms a sealing contact with the soft tissues overlying the mylohyoid line of the mandible, and the lateral edges of the collector membrane where it is folded upwardly lies in sealing contact with tissue covering the internal walls of the ascending ramus of the mandible forming a reservoir for the collection of fluids and saliva generated, the top of the mouth portion of the collector membrane extends forwardly from the folded area over the palate where it conforms to and lies on the maxillary and palatal tissue thereby functioning to separate the mouth into a forward compartment that is being worked on and a rear compartment.

4,281,987

# ULTRASONICALLY DRIVEN LOW-SPEED ROTARY MOTOR

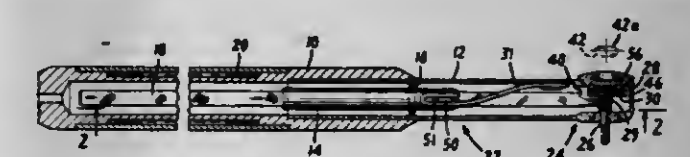
Claus Kleesattel, Rego Park, N.Y., assignor to Cavitron Corporation, New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,983

Int. Cl.<sup>3</sup> A61C 1/07

U.S. Cl. 433—103

11 Claims



1. An insert for a device having housing means for exciting longitudinal ultrasonic vibrations, the insert comprising:
  - a sleeve connectable to the housing means;
  - a shaft rotatably supported on the sleeve;
  - a disc normal to the shaft and connected to the shaft for rotation therewith;
- a vibrator supported in the sleeve, the vibrator having transducer means at one end responsive to the housing means for producing longitudinal ultrasonic vibrations in the vibrator, and having driving tip means at the other end for converting the longitudinal vibrations into elliptical motion and for engaging one face of the disc with the elliptical motion so as to impart to the disc substantially only torque-generating vibrational thrusts tangential of the disc



for rotating the disc and vibrational thrusts normal to the disc; and  
means for urging the driving tip means against the disc with a static pressure.

4,281,988

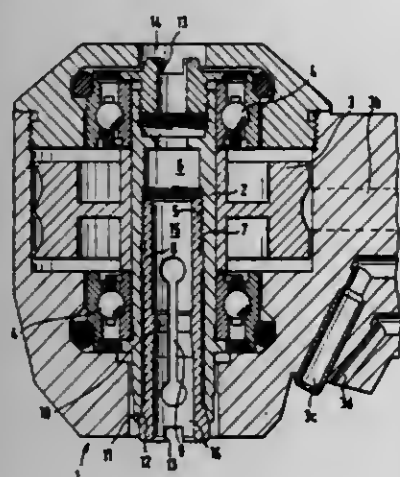
## DENTAL HANDPIECE

Eugen Eibofner, Biberach, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Fed. Rep. of Germany  
Filed Jan. 9, 1979, Ser. No. 56,000  
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832157

Int. Cl.<sup>3</sup> A61C 1/14

U.S. Cl. 433—129

6 Claims



1. In a dental handpiece including a drive shaft rotatably supported interiorly thereof, said drive shaft being hollow at least at the operating end thereof and having an internal thread; and a tubular friction collet in the hollow space, having an external thread and evidencing in the inoperative condition thereof inwardly bent resilient tongues formed by a plurality of slits for the receipt and gripping of the shaft of an implement; the improvement comprising: the external thread of said friction collet being arranged at the implement-sided end thereof as in a threaded collet, said friction collet having an external conical surface and said hollow drive shaft an internal conical surface cooperating with said external conical surface, and wherein the internal conical surface of said hollow drive shaft widens to the shaft end at the implement-sided end region thereof, and the external conical surface of the friction collet widens at the implement-sided end region thereof towards that end of said collet.

4,281,989

## ARTICULATED DENTAL HANDPIECE

Douglas L. Glover, Roger H. Rubenstein, Peter H. Douglas, and Lee R. Bridges, all of Phoenix, Ariz., assignors to The Idea Syndicate, Inc., Phoenix, Ariz.

Filed Jan. 25, 1979, Ser. No. 51,823

Int. Cl.<sup>3</sup> A61C 7/12

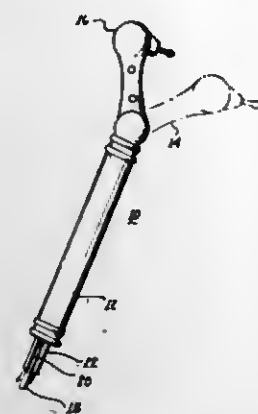
U.S. Cl. 433—130

13 Claims

1. An articulated dental hand piece, said articulated dental hand piece comprising in combination:

- (a) a handle having a longitudinal axis for manually grasping and manipulating said dental hand piece;
- (b) a head for rotatably supporting an air turbine driven burr;
- (c) arm means comprising a pair of mating members for articulately interconnecting said handle and said head;
- (d) pivot means disposed at the interconnections between said handle, said head and said arm means for pivotally repositioning each of said handle and said head with respect to said arm means;
- (e) conduit means for channeling an air flow from said handle, via said arm means and into said head for powering the burr supporting turbine, one member of said pair of members comprising a segment of said conduit means;
- (f) further conduit means for channeling the air exhausted

from the turbine, another member of said pair of members comprising a segment of said further conduit means;  
(g) water conduit means for channeling a flow of water from



said handle, through said arm means and into said head for discharge in proximity to the burr;  
whereby, said head is laterally and angularly positionable with respect to the longitudinal axis of said handle.

4,281,990

## BLADE LOCKING MECHANISM

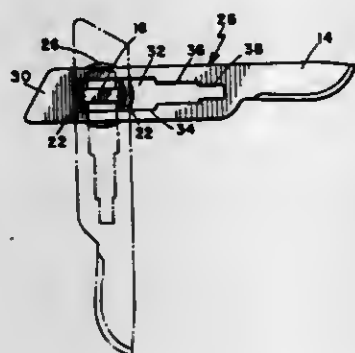
Steven G. Detsch, 4146 Bryan St., Oceanside, Calif. 92054

Filed Jan. 17, 1980, Ser. No. 112,740

Int. Cl.<sup>3</sup> A61C 3/02

U.S. Cl. 433—144

5 Claims



1. A blade locking mechanism for the end of a surgical instrument handle for attachment of slot mountable surgical blades to the service end of said surgical instrument handle comprising means located on the service end of said surgical instrument for mounting said surgical blades perpendicular to the service end of said surgical instrument, said mounting means comprising a cleat integrally formed in said handle service end and projecting from said handle service end surface for attaching said blade to said handle service end, said cleat comprising a base section and cleat horns formed at the projecting end of the base section with the axis of the horns lying in a plane perpendicular to said handle service end, said cleat horns being sized and shaped to pass through the slot in said blade when in line therewith but preventing withdrawal of said cleat horns from the slot of said blade by contacting the blade adjacent the slot in the slot mountable surgical blade when said blade is turned 90 degrees to said cleat horns, a threaded section on said handle service end adjacent to said cleat and a locking collar threadable on the threaded section to clamp a mounted blade between the locking collar and the underside of said cleat horns.

4,281,991

## DENTAL PROSTHESES

Rudy Michl, and Peter Wollwage, both of Mauren, Steinbos, Liechtenstein, assignors to Perdent, GmbH, Schaan, Liechtenstein

Division of Ser. No. 543,532, Jan. 23, 1975. This application Jul. 20, 1978, Ser. No. 926,398

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1974, 2403211

The portion of the term of this patent subsequent to May 21, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> A61K 6/08

U.S. Cl. 433—202

17 Claims

1. A dental prosthesis having clear opalescence, resistance to abrasion and capable of being polished, comprising a hardened composition, comprising:

- a first component comprising a monomeric binding material selected from a member of the group consisting of (a) long chain monomer esters of bisphenol A and glycidyl methacrylates, (b) adducts of diisocyanates and hydroxymethylacrylates, (c) difunctional esters of acrylic and methacrylic acids, and (d) mixtures of two, or of three of (a), (b) and (c), and
- a second component comprising a micro-fine inorganic filler being present in an amount of about 50 to 90% based on the weight of said composition and having a particle size within the range of about 10 to 400 millimicrons and a BET surface area of less than about 200 m<sup>2</sup>/g, wherein at least 50% of the filler particles have a particle size within the range of 10 to 40 millimicrons, in admixture with at least one bead or chip polymer of the group consisting of polyvinylchloride and copolymers thereof, polystyrene and copolymers thereof, polyamides, polymeric acrylates and polymeric methacrylates.

4,281,992

## PROSTHETIC DENTURE PREPARED FROM POLYURETHANE ELASTOMER

Ralph W. Colplitts, Chesterfield, and Jens H. Wendt, Springfield, both of Mo., assignors to Polythetics, Inc., St. Louis, Mo.

Division of Ser. No. 13,159, Dec. 21, 1979, Pat. No. 4,225,696. This application Nov. 23, 1979, Ser. No. 96,680

Int. Cl.<sup>3</sup> A61C 13/00

U.S. Cl. 433—212

11 Claims

1. An artificial denture comprising (1) a tooth holding portion integrally applied to (2) a mouth engaging portion, the tooth holding portion prepared from a hard, substantially non-hydrophilic polyurethane elastomer having a hardness of not less than about Shore D60, said hard elastomer consisting essentially of the reaction product of a polyether polyol and an aromatic polyisocyanate in which the isocyanate groups are bonded directly to the aromatic nucleus, the mouth engaging portion comprising a soft, substantially non-hydrophilic elastomer.

4,281,993

## SEMICONDUCTOR LASER ALIGNMENT DEVICE

Bon F. Shaw, Winter Park, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 19, 1980, Ser. No. 150,874

Int. Cl.<sup>3</sup> F41F 27/00; F41G 3/26

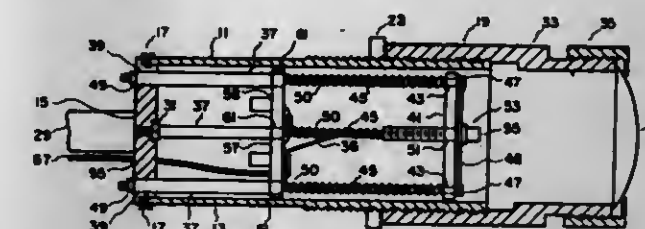
U.S. Cl. 434—22

12 Claims

1. A semiconductor laser alignment device comprising in combination:

- a tubular housing having at the back end thereof a rear end plate, said rear end plate having a trio of apertures located near the periphery thereof;
- a weapon having a barrel, the barrel of said weapon being fixedly attached to the rear end plate of said tubular housing;
- light source means located within said tubular housing

adapted for broadcasting a laser light beam along an optical light path;  
means threadably connected to the front end of said tubular housing adapted for collimating the laser light beam broadcast by said light source means; and



zeroing means mounted within said tubular housing and having said light source means connected thereto for positioning said light source means such that the laser light beam broadcast by said light source means is in alignment with the aiming direction of said weapon.

4,281,994

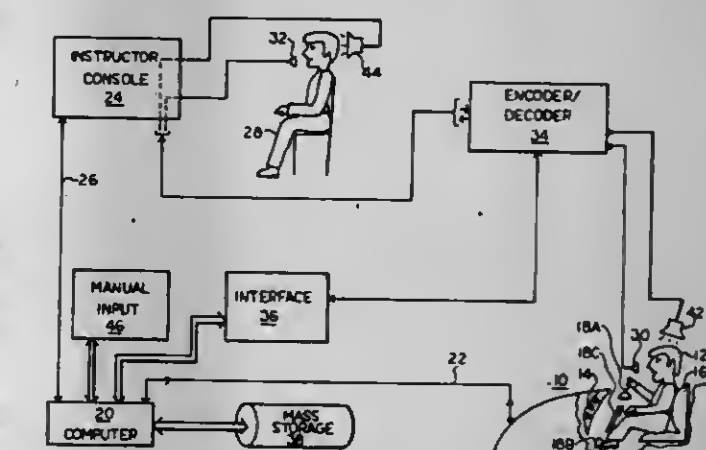
AIRCRAFT SIMULATOR DIGITAL AUDIO SYSTEM  
Harold R. Dell, Menlo Park, Calif.; William L. Holtsman, Endwell, N.Y.; Michael V. Lamasney, San Jose, Calif., and Charles P. L. Mortimer, Binghamton, N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,297

Int. Cl.<sup>3</sup> G01C 21/00; H04M 1/00

U.S. Cl. 434—49

8 Claims



1. In a vehicle simulator for training an operator, having controls for manipulation by the operator and control means for providing cues back to the operator in response to said manipulation of said controls, apparatus for receiving a multitude of audible vocal instructions and information, digitally storing such instructions and information and playing back selected ones of said instructions and information in response to the manipulation of said controls by said operator, comprising:

- a simulator cockpit having controls and instruments, means for providing electrical output signals representative of manipulation of said controls, and means for receiving electrical input signals for driving said instruments;
- input means for receiving audio information and for providing input electrical analog signals representative of the said audio information;
- encoding means for receiving said input electrical analog signals and converting said electrical analog signals into an input digital signal representative of said input audio information according to a preselected format;
- storage means having a multiplicity of storage locations for storing said input digital signals; control means to operate in accordance with a predetermined flight profile program for providing said electrical input signals for driving said instruments, for controlling said apparatus, and for receiving and directing said input digital signals to selected ones of said multiplicity of storage locations to provide stored



digital signals, said stored digital signals being the same as said input digital signals, and for retrieving said stored digital signals from selected ones of said storage locations; decoding means for receiving and converting according to said preselected format, said retrieved stored digital signals into output analog electrical signals representative of said stored digital signals; and  
output means for receiving said output analog electrical signals and for providing audible vocal information substantially similar to said audio information received by said input means.

4,281,995

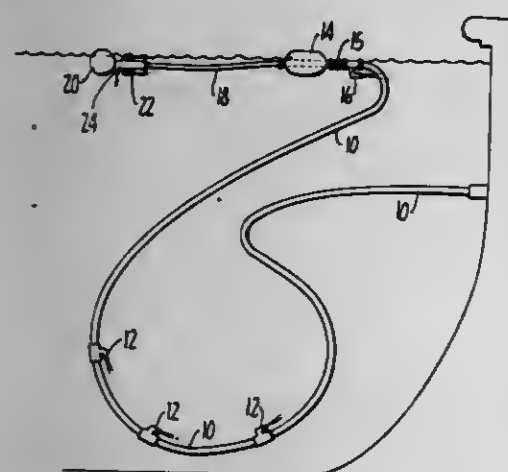
## AUTOMATIC POOL CLEANERS

Andrew L. Pansini, 180 Los Cerros Dr., Greenbrae, Calif.  
Continuation of Ser. No. 629,514, Nov. 6, 1975, abandoned, which is a continuation of Ser. No. 386,946, Aug. 9, 1973, abandoned, which is a continuation-in-part of Ser. No. 143,549, May 14, 1971, abandoned. This application Mar. 7, 1977, Ser. No. 774,683

Int. Cl.<sup>3</sup> B64C 21/06

U.S. Cl. 440—38

16 Claims



1. A swimming pool cleaner comprising a flexible water supply hose having a fixed end and a free end, a surfacing member attached to the hose, means to drive the surfacing member about a pool comprising a jet means carried by the hose adjacent the member adapted to place the upstream part of the supply hose under tension, and pool wall cleaning means comprising a plurality of separate, spaced jet means mounted directly on the hose intermediate the ends thereof operable to constantly discharge jet streams substantially axially of said hose and thereby apply tension forces to respective upstream portions of the hose and, when said surfacing member is obstructed, to apply a compression force to the supply hose portion between said first mentioned and second mentioned jet means and thereby bend said supply hose portion and re-direct said first mentioned jet means to move said surfacing member in another direction.

6. A swimming pool cleaner comprising a flexible water

supply hose having a fixed end and a free or distal end, water supply means attached to the fixed end, and water discharge transporter means attached to the distal end operable to move horizontally and vertically through the pool water and to tow the supply hose accordingly.

4,281,996

## PROPELLER WITH A WATER-JET FOR CRAFTS

Michel Mouraret, 16, rue des Amouriers, Celleneuve, Montpellier (Hérault), France

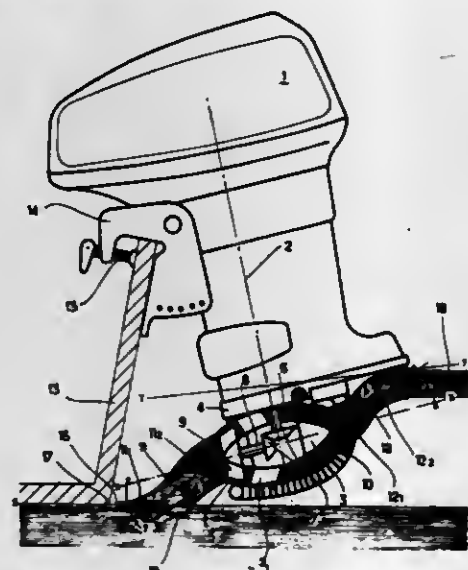
Filed Jan. 30, 1979, Ser. No. 7,716

Claims priority, application France, Feb. 1, 1978, 78 02794

Int. Cl.<sup>3</sup> B63H 23/32, 11/10

U.S. Cl. 440—89

1 Claim



1. A water-jet propeller for a boat provided with an outboard having an output axis, the engine being capable of being swivelled, carrying means for securing the outboard engine to the stern of the boat, a propeller rigidly secured to the outboard engine, the propeller comprising a propulsion unit provided with an inlet aperture for water and an outlet aperture for water, a rotor for said propulsion unit, said rotor and apertures being arranged in axial alignment and perpendicular to the output axis of the outboard engine, inlet and outlet nozzles attached respectively to said inlet and outlet apertures, said nozzles making angles respectively that are substantially identical to one another in relation to said rotor axis of said propulsion unit while said angles are directed one of them above said rotor axis, the other beneath the same, an exhaust-pipe for said outboard engine, said exhaust pipe being parted into two legs each laterally positioned beneath the propulsion unit, said two legs joined together to form an exhausting aperture arranged beneath said propulsion unit and behind the inlet nozzle for the water.

## CHEMICAL

4,281,997

## PROCESS FOR THE GREASING OF LEATHER AND FUR SKINS

Kurt Rosenbusch, Frankfurt am Main, and Merten Schlingmann, K  oigstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 21, 1980, Ser. No. 123,199

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907065

Int. Cl.<sup>3</sup> C14C 9/02

U.S. Cl. 8—94.1 P

4 Claims

1. A process for greasing a material which is a leather or fur skin or a dyed leather or fur skin, which comprises treating, by batchwise exhaustion, said material at a temperature below boiling point and at normal pressure with a liquid formulation containing one or more phospholipids, each obtained by methanol fermentation with bacteria of *Pseudo Monas* species or with *Methylomonas Clara* and subsequently emulsified in water or chemically modified by conversion of functional groups present in said phospholipid into a water-solubilizing form or by introduction into the phospholipid of water-solubilizing groups, and then acidifying the treated material.

4,281,998

## SOLVENT-RESISTANT ALKYLATED MELAMINE CROSS-LINKED CELLULOSE ESTER ARTICLES

Cephas H. Sloan, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 4, 1980, Ser. No. 117,918

Int. Cl.<sup>3</sup> D06M 1/00

U.S. Cl. 8—129

10 Claims

1. Process for treating a cellulose ester article which comprises applying to the surface of said article a solution of an alkylated melamine wherein each of the alkyl groups contain from 1 to 4 carbon atoms and an acid catalyst, said solution being at a concentration and applied in an amount such as to result in a deposit of alkylated melamine in an amount of between about 1% and about 10% based on the weight of the cellulose ester article and said acid catalyst in an amount of from about 0.01 to about 1.0% based on the weight of the cellulose ester article, and applying heat to said article thereby causing a reaction to occur between the alkylated melamine and the surface of the cellulose ester article to form a cross-linked skin.

4,281,999

## AQUEOUS DYE PREPARATIONS OF DYES DIFFICULTLY SOLUBLE IN WATER

Carl Becker, Basel, Switzerland; Georges Mahler, Sierentz, France, and Paul Erzinger, Liestal, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 27, 1978, Ser. No. 973,777

Claims priority, application Switzerland, Dec. 29, 1977, 16184/77

Int. Cl.<sup>3</sup> C09B 1/00, 5/62, 67/00

U.S. Cl. 8—527

15 Claims

1. An aqueous dyestuff composition, containing at least 10% by weight of water, 25 to 60% by weight of a finely dispersed dye which is difficultly soluble in water and is soluble in boiling perchloroethylene to the extent of less than 0.5 g/kg, an effective amount of a dispersing agent selected from the group consisting of anionic dispersing agents and non-ionic dispersing agents, and a resin which has affinity for the dye and which is more soluble than the dye in a solvent that is soluble in water to the extent of about 10 to 350 g/l, wherein the resin is a synthetic ketone resin and is present in an amount of 1 to 10% by weight, relative to the dye.

4,282,000

## DYESTUFF SOLUTIONS, THEIR PREPARATION AND THEIR USE FOR DYEING PAPER

Manfred Groll, Cologne, and Friedhelm M  ller, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 25, 1980, Ser. No. 115,529

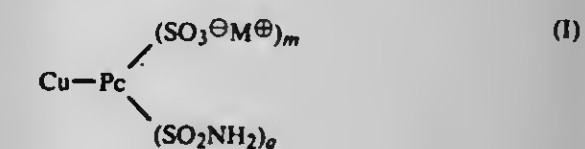
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2904928

Int. Cl.<sup>3</sup> C09B 47/08

U.S. Cl. 8—527

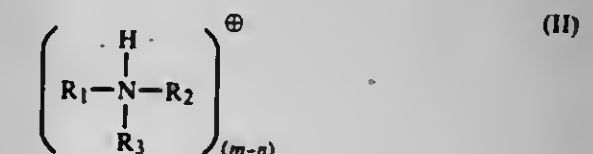
9 Claims

1. Aqueous solutions of copper phthalocyaninesulphonic acid salts of the formula



in which

Cu-Pc a copper phthalocyanine radical,  
m a number from 1.8 to 3.0,  
q a number from 1.0 to 2.0, with the proviso that the sum m+q is a number from 2.8 to 4.0, and  
M<sup>⊕</sup> a mixture of A<sub>n</sub><sup>⊕</sup> and an ammonium ion of the formula



wherein

A<sup>⊕</sup> represents an alkali metal ion or NH<sub>4</sub> ion,  
n represents a number from 0.8 to 2.0,  
m has the meaning indicated above,  
R<sub>1</sub> and R<sub>2</sub> designate hydrogen, C<sub>1</sub>—C<sub>4</sub>—alkyl or a radical  
—(CH<sub>2</sub>—CH<sub>2</sub>—O)<sub>p</sub>—H and  
R<sub>3</sub> designates the radical —(CH<sub>2</sub>—CH<sub>2</sub>—O)<sub>p</sub>—H,  
wherein  
p is 1, 2, 3, 4, 5 or 6.

4,282,001

## COMPOSITIONS AND METHOD FOR REDUCING TURBIDITY IN SAMPLES

Sigmar Klose, Berg; Herbert Buschek, Starnberg, and Helmut Schlumberger, Polling, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Waldhof, Fed. Rep. of Germany

Filed Apr. 4, 1979, Ser. No. 26,851

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816229

Int. Cl.<sup>3</sup> G01N 33/52, 33/66, 33/92

U.S. Cl. 23—230 B

12 Claims

1. Process for the removal of turbidity in aqueous reaction mixtures clouded by sample material, which method comprises adding to the reaction mixture

(a) at least one low molecular weight organic compound selected from the group consisting of aromatic condensed and non-condensed alcohols and amines; esters of aromatic acids and alkanolic acids; straight-chained, cyclic and branched aliphatic alcohols containing more than 3 carbon atoms; halogenated, short-chained aliphatic compounds; aliphatic ketones aldehydes; carboxylic acids; ethers; and benzene and  
(b) at least one detergent which is capable of dissolving in the reaction mixture, in the absence of compound (a), to give a clear solution and capable of forming a sparingly soluble complex with said compound (a), and being selected from alkyl, aralkyl or alkylthio ether or an alkyl or aralkyl ester of a polyethylene oxide glycol containing 8



to 22 carbon atoms in the alkyl radical and 5 to 25 ethylene oxide units, in an amount sufficient to bring about the appearance of a precipitate of said complex, and then adding further detergent until the precipitated complex again dissolves.

4,282,002

# SENSITIZED SHEEP STROMA IMMUNOASSAY FOR RHEUMATOID FACTOR

Rita C. Prodell, West Orange, N.J., assignor to Akzona Incorporated, Asheville, N.C.

Filed Sep. 6, 1979, Ser. No. 73,167

Int. Cl.<sup>3</sup> G01N 33/54

U.S. Cl. 23—230 B

24 Claims

20. The method for detection or determination of rheumatoid factors in human blood, plasma, serum or synovial fluid by means of the immunochemical reaction of said factors, which method comprises:

- (1) admixing a predetermined amount of a neat or serially diluted sample of said blood, plasma, serum or fluid with a predetermined amount of an absorbing antigen capable of combining with heterophile antibodies in said blood, plasma, serum or synovial fluid;
- (2) further admixing with mixture (1) a predetermined amount of a reagent having as its essential reactive component a supply of red cell stroma coated with a sensitizing agent, which sensitizing agent sensitizes red cell stroma for the detection or determination of said rheumatoid factors; and
- (3) detecting or determining the presence or extent of agglutination of the rheumatoid factors with said sensitized reagent (2), which detection or determination is a measure of the presence or quantity of said rheumatoid factors in said sample.

4,282,003

# METHOD FOR CONSTRUCTING A SELF-REGULATING ELECTRIC HEATER

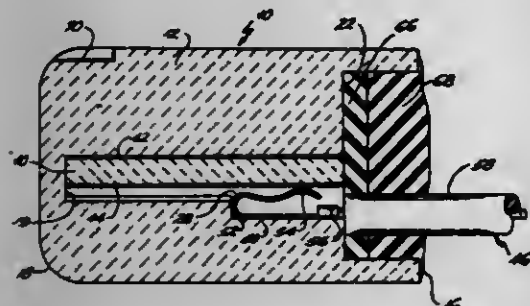
Michael A. Yashin, Foxboro, Mass., and Lucilio A. Rebelo, Pawtucket, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 966,837, Dec. 6, 1978, Pat. No. 4,236,065. This application Jan. 18, 1980, Ser. No. 160,714

Int. Cl.<sup>3</sup> H01C 1/14; H05B 3/02

U.S. Cl. 29—619

7 Claims



1. A method for constructing an efficient, self-regulating heater comprising the steps of forming a body of electrically insulating ceramic material into a cylindrical configuration with an axially extending slot in communication with one end of the body and extending toward a closed end of the body, forming an axially extending groove in each of two walls of the body defining the slot, providing a stop surface in each groove intermediate the ends thereof, selecting a single resistor element generally complementary in configuration with the slot and only slightly smaller in volume than the slot, the element composed of ceramic PTC material and having spaced electrically conductive layers thereon, inserting the resistor element into the slot, injecting thermal transfer material between the resistor and walls of the body defining the slot, selecting two flat resilient electrical terminals having a selected dimension larger than the grooves but being compressible so as to fit

within the grooves, sliding a terminal into each groove so that the terminals are in physical and electrical contact with the resistor element and disposing a seal at the said one end of the body with leads for the terminals extending through the seal.

4,282,004

# PROCESS FOR AGGLOMERATING COAL

George P. Masologites, Columbus, N.C., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Dec. 20, 1978, Ser. No. 971,480

Int. Cl.<sup>3</sup> C10L 9/00

U.S. Cl. 44—1 SR

15 Claims

1. A method of agglomerating coal particles, a portion of the coal particles having a fine particle size comprising:

- (1) separating at least part of the coal particles having a fine particle size to provide a first fraction of coal particles having a reduced coal fines content;
  - (2) contacting a slurry of coal particles of the first fraction with hydrocarbon oil to form coal-oil agglomerates; and
  - (3) recovering coal-oil agglomerates of reduced oil content.
5. A method of agglomerating coal particles, a portion of the coal particles having a fine particle size comprising:
- (1) separating at least part of the coal particles having a fine particle size to provide (a) a first fraction of coal particles having a reduced coal fines content, and (b) a second fraction of coal particles having a fine size;
  - (2) agitating a slurry of coal particles of the first fraction, water and hydrocarbon oil to form coal-oil agglomerates;
  - (3) contacting an aqueous slurry of the coal-oil agglomerates with at least part of the coal particles from the second fraction; and
  - (4) recovering coal-oil agglomerates of reduced oil content.
11. A method of beneficiating coal containing ash and iron pyrite mineral matter comprising:
- (1) reducing the coal size to form coal particles, and separating at least part of the coal particles having a fine particle size to provide (a) a first fraction of coal particles having a reduced coal fines content, and (b) a second fraction of coal particles having a fine size;
  - (2) contacting an aqueous slurry of the coal particles of reduced size from step 1 or as fractions (a) and (b) with a promoting amount of at least one conditioning agent capable of modifying or altering the existing surface characteristics of the pyrite under conditions to effectuate alteration or modification of at least a portion of the contained pyrite;
  - (3) contacting the slurry of coal particles of the first fraction with hydrocarbon oil to form coal-oil agglomerates;
  - (4) contacting the aqueous slurry of the coal-oil agglomerates with at least part of the coal particles from the second fraction; and
  - (5) recovering coal-oil agglomerates wherein the coal reduced iron pyrite and mineral content.

4,282,005

# BODY WARMER FOR HEATING BY EXOTHERMIC HEAT

Masaharu Sato, and Michio Sugiyama, both of Tokyo, Japan, assignors to Kensen Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1979, Ser. No. 106,742

Claims priority, application Japan, Mar. 5, 1979, 54-27763[U] Int. Cl.<sup>3</sup> F24J 1/00; A61F 7/00

U.S. Cl. 44—3 R

1 Claim

1. A body warmer for heating a human body by exothermic heat comprising:

- (a) an elongated air permeable paper bag for holding heat producing materials
- (b) a sheath bag disposed around said air permeable bag; and
- (c) heat producing materials in said paper bag consisting of about 20 parts of ferrosulfuric oxide about 25 parts of manganese dioxide about 5 parts of magnesium oxide

about 2 parts of holmium oxide  
about 4 parts of sodium chloride  
about 2 to 15 parts of sugar-beet waste materials  
about 1 part boron oxide  
about 3 parts of pearlite  
about 5 parts of carbon, and  
about 40 parts of iron filings or iron dust.

4,282,006

# COAL-WATER SLURRY AND METHOD FOR ITS PREPARATION

James E. Funk, Alfred Station, N.Y., assignor to Alfred University Research Foundation Inc., Alfred, N.Y.

Continuation-in-part of Ser. No. 957,166, Nov. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 790,337, Apr. 25, 1977, abandoned. This application Oct. 26, 1979, Ser. No. 88,815

Int. Cl.<sup>3</sup> C10L 1/32

U.S. Cl. 44—51

40 Claims

1. A coal compact comprising finely divided coal particles, characterized in that said coal compact comprises finely divided coal particles having a particle size in the range of 1180  $\mu$ m to 0.05  $\mu$ m with at least 5 wt. % of the particles being of colloidal size, said particles in said compact having a particle size distribution substantially in accordance with the following formula:

$$CPFT = \left[ \frac{D_{\mu}^n - D_S^n}{D_L^n - D_S^n} \right] \cdot 100, \text{ where}$$

CPFT = cumulative weight percent, dry basis, of particles finer than a particle  $\mu$  of stated size,

$D_{\mu}$  = diameter of particle  $\mu$ ,

$D_L$  = diameter of largest particle in compact, sieve size or its equivalent, being from 38 to 1180  $\mu$ m,

$D_S$  = diameter of smallest particle in compact, SEM size or its equivalent, being from 0.05 to 3  $\mu$ m,

$n$  = numerical exponent, with  $n$  being in the range of 0.2 to 0.7, and with all diameters sized in  $\mu$ m

wherein, when said compact is admixed with dispersing agent and a sufficient amount of water to produce a suspension containing at least about 60 weight percent of said coal and at least about 20 weight percent of said water, said suspension has a Brookfield viscosity at 60 revolutions per minute of less than 4000 centipoise.

4,282,007

# NOVEL FUEL COMPOSITION CONTAINING ALCOHOL

Rodney L. Sung, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,528

Int. Cl.<sup>3</sup> C10L 1/22, 1/18

U.S. Cl. 44—53

19 Claims

1. A fuel composition for internal combustion engines comprising

- (a) a major portion of a fuel containing (i) at least one alcohol selected from the group consisting of ethanol and methanol and (ii) gasoline in amount of 0-50 volumes per volume of alcohol; and
- (b) a minor corrosion inhibiting amount of, as a corrosion inhibiting agent, a reaction product of (i) C<sub>15</sub>-C<sub>30</sub> hydrocarbyl succinic acid anhydride and (ii) aminotriazole.

4,282,008

# NOVEL FUEL COMPOSITION CONTAINING ALCOHOL

Rodney L. Sung, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,529

Int. Cl.<sup>3</sup> C10L 1/18, 1/22

U.S. Cl. 44—53

28 Claims

1. A fuel composition for internal combustion engines comprising
  - (a) a major portion of a fuel containing (i) at least one alcohol selected from the group consisting of ethanol and methanol and (ii) gasoline in amount of 0-50 volumes per volume of alcohol; and
  - (b) a minor corrosion inhibiting amount of, as a corrosion inhibiting agent, a reaction product of (i) an aminotriazole, (ii) an isatoic anhydride, and (iii) a C<sub>3</sub>-C<sub>12</sub> poly-primary amine bearing at least one free —NH<sub>2</sub> group and at least one —NHR' group wherein R' is a C<sub>12</sub>-C<sub>18</sub> hydrocarbon group.

4,282,009

# ROTATING FLUIDIZED BED GASIFIER SYSTEM

William H. Belke, Peoria; Alexander Goloff, East Peoria, and George B. Grim, Washington, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

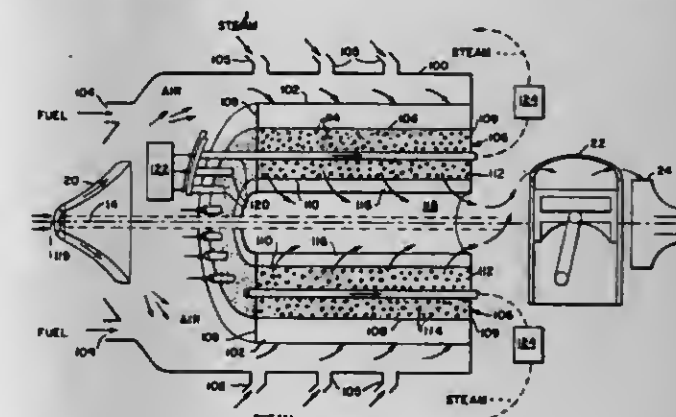
PCT No. PCT/US79/00929, 8 371 Date Nov. 1, 1979, 8 102(e) Date Nov. 1, 1979, PCT Pub. No. WO81/01295, PCT Pub. Date May 14, 1981

This PCT application filed Nov. 1, 1979, Ser. No. 99,136

Int. Cl.<sup>3</sup> C10J 3/56

U.S. Cl. 48—61

6 Claims



1. A rotating fluidized bed gasifier system for endothermically reacting steam and carbon comprising:
  - a. an outer substantially cylindrical elongated perforated wall (108);
  - b. an inner substantially cylindrical perforated wall (110) spaced apart and substantially coaxial and co-extensive with said outer perforated wall (108);
  - c. enclosing walls (109) defining within said outer and inner perforated walls (108, 110) a substantially annular fluidization chamber (112);
  - d. a fluidizable bed of pulverulent solid particles (114) in said chamber (112), said particles comprising a minor proportion of carbon particles and a major proportion of inert particles;
  - e. means (111) for rotating said chamber (112) about the axis (119) to cause the particles to centrifugally gravitate toward said outer perforated wall (108);
  - f. means (20, 104, 102) for feeding a combustible fuel in a gaseous agent stream into said chamber (112) through said outer perforated wall (108), said fuel reacting with at least a portion of said gaseous agent in said chamber (112) to generate heat and to form gaseous combustion products, any unreacted gaseous agent and said gaseous combustion products exiting said chamber (112) through said inner perforated wall (110);
  - g. means (105, 102) for introducing steam through said outer



perforated wall (108) into said chamber (112), said steam reacting with at least a portion of said carbon particles in said chamber (112) to form gaseous reaction products, said gaseous reaction products exiting said chamber (112) through said inner perforated wall (110);

h. means (120) for maintaining at least a portion of said particles (114) in said chamber (112) at a temperature conducive to said steam-carbon reaction;

i. means (116) for receiving said gaseous reaction products, gaseous combustion products, unreacted gaseous agent and unreacted steam exiting from said chamber (112) through said inner perforated wall (110); and

j. means (118), communicating with said means (116) for receiving, for directing said unreacted steam, unreacted gaseous agent, gaseous combustion products and gaseous reaction products exiting said inner perforated wall (110) away from said chamber (112).

4,282,010

# FLUIDIZED BED INJECTION ASSEMBLY FOR COAL GASIFICATION

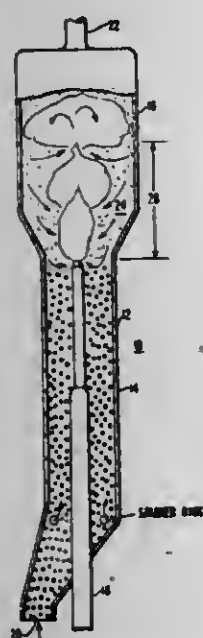
Peter Cherish, Bethel Park, and Louis A. Salvador, Hempfield Township, Westmoreland County, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 17, 1979, Ser. No. 58,237

Int. Cl.<sup>3</sup> C10J 3/68

U.S. Cl. 48—77

1 Claim



1. In a fluidized bed coal gasification reactor system including an elongated vertically disposed vessel having a cylindrical lower body and an enlarged cylindrical upper body, and a sparger ring disposed at the lower end of said lower body, wherein solid combustibles in a transport gas, an oxidizing gas and a fluidization and cooling gas flow into said vessel to intermediately produce char and ultimately produce a combustible product gas and ash, the improvement comprising:

- means for transporting said combustibles and transport gas, said means including a fixed vertical inner tube extending upwardly into said vessel and being open at its upper discharge end;
- means for transporting said oxidizing gas, said means for transporting said oxidizing gas including a fixed vertical intermediate tube extending upwardly into said vessel and surrounding said inner tube so as to form an inner annulus, said intermediate tube being open at its upper discharge end; and
- means for transporting said fluidizing and cooling gas, said means for transporting said fluidizing and cooling gas including a fixed vertical outer tube extending upwardly into said vessel and having a tubular wall, said outer tube surrounding said intermediate tube so as to form an outer annulus, said outer tube having means for sealing its upper

end and means for radially discharging said fluidizing gas said sealing means comprising a truncated conical transition between said outer tube and said intermediate tube, said transition forming a slip fit with respect to said intermediate tube, a seal ring affixed radially about the exterior of said intermediate tube, and a packing disposed within said outer annulus above said sealing ring, said packing completely filling the volume of said outer annulus bounded by said seal ring and said truncated conical transition, said radial discharge means including apertures disposed radially through said tubular wall at an elevation within said lower body above said sparger ring.

4,282,011

# WOVEN FABRICS CONTAINING GLASS FIBERS AND ABRASIVE BELTS MADE FROM SAME

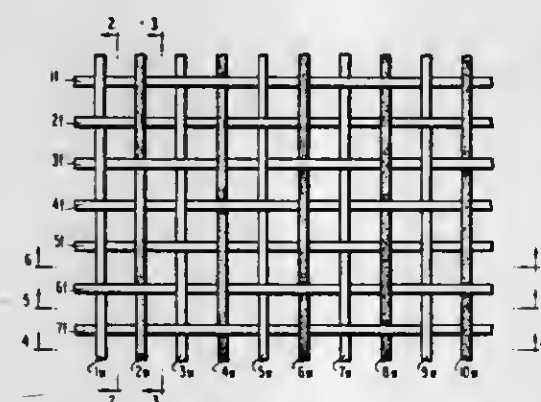
John M. Terpay, Danville, Va., assignor to Dan River Incorporated, Danville, Va.

Filed May 30, 1980, Ser. No. 154,996

Int. Cl.<sup>3</sup> B24D 3/00, 11/00

U.S. Cl. 51—298

13 Claims



1. A woven fabric comprising glass fibers which are cushioned from each other along their length by organic fibers, the sinuosity of the glass fibers being less than or equal to the sinuosity of the organic fibers in a given length of the woven fabric, and organic fibers in the direction generally transverse to said glass fibers.

4,282,012

# COMPOSITION FOR THE MANUFACTURE OF ABRASIVE TOOLS

Viktor A. Lobachev, ulitsa Z. Kosmodemianskoi, 4, kv. 4, Khimki, Moskovskaya oblast; Vladimir G. Safronov, Kronshadt'sky bulvar, 43, korpus 3, kv. 283, Moscow; Faina B. Danilova, ulitsa B. Uchitel'skaya, 10, kv. 10, poselok Vodniki, Moskovskaya oblast, and Vladimir N. Lvov, ulitsa Obrucbeva, 5, korpus 1, kv. 10, Moscow, all of U.S.S.R.

Filed Feb. 5, 1979, Ser. No. 9,743

Claims priority, application U.S.S.R., May 14, 1978, 2608953

Int. Cl.<sup>3</sup> B24D 3/02

U.S. Cl. 51—309

15 Claims

1. In a composition for the manufacture of abrasive tools consisting essentially of abrasive powders, metal powders and a binding agent, wherein the improvement comprises, the binding agent is a solid caustic alkali selected from the group consisting of potassium hydroxide and sodium hydroxide separately or in combination, the components being present in the following proportions, in percent by volume:

abrasive powders	12.5 to 37.5
metal powders	25.0 to 62.5
caustic alkali(s)	12.5 to 50.0

4,282,013

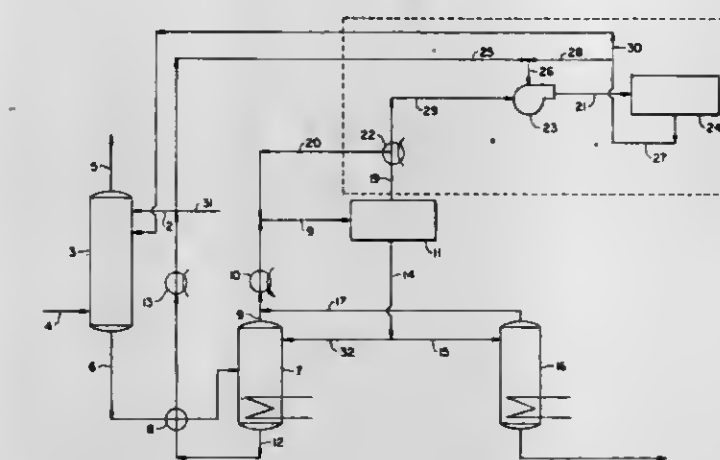
# VACUUM PUMP OPERATION IN A MALEIC ANHYDRIDE RECOVERY SYSTEM

Frederick C. Franklin, Pinole, and Stephen G. Paradis, Fairfax, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Nov. 14, 1977, Ser. No. 851,248

Int. Cl.<sup>3</sup> B01D 19/00

U.S. Cl. 55—48



1. A method for increasing the yield and reducing mechanical vacuum pump fouling from precipitated maleic anhydride in a continuous process for preparing maleic anhydride by vapor phase oxidation of a hydrocarbon feedstock followed by absorption of the maleic anhydride by a liquid organic absorbent therefor in an absorption zone and then stripping of the maleic anhydride from the organic absorbent under reduced pressure conditions, wherein a mechanical vacuum pump means is employed to develop said reduced pressure conditions in said stripping zone of said process, the improvement in recovery of residual maleic anhydride which comprises:

- flowing vapors containing said residual maleic anhydride from said stripping zone to the central portion of a liquid-ring seal vacuum pump constituting said mechanical pump means;
  - concurrently flowing at least a portion of said stripped organic absorbent into the circumferential ring portion of said liquid-ring seal vacuum pump to form the liquid-ring seal and working liquid of said pump;
  - continuously mixing said vapors with said stripped organic absorbent to form a liquid maleic anhydride-rich organic absorbent phase and a gaseous disposables phase;
  - withdrawing the resultant liquid maleic anhydride-rich organic absorbent phase and reduced gaseous disposables phase from said pump;
  - separating said gaseous disposables phase from said liquid maleic anhydride-rich organic absorbent phase and venting said separated gaseous disposables phase;
  - passing a portion of said liquid maleic anhydride-rich organic absorbent phase to said absorption zone of said process to recycle said maleic anhydride;
  - passing the remainder of said liquid maleic anhydride-rich organic absorbent phase into the circumferential ring portion of said pump to maximize the concentration of maleic anhydride therein;
- whereby said method substantially eliminates vapor phase maleic anhydride from said gaseous disposables phase and from contact with portions of said mechanical vacuum pump exposed to ambient atmospheric conditions.

4,282,014

# DETECTOR FOR DETECTING VOLTAGE BREAKDOWNS ON THE HIGH-VOLTAGE SIDE OF AN ELECTRIC PRECIPITATOR

Heinrich Winkler, Nuremberg; Gerhard Rumold, Bubenreuth, and Helmut Schummer, Heusenstamm, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

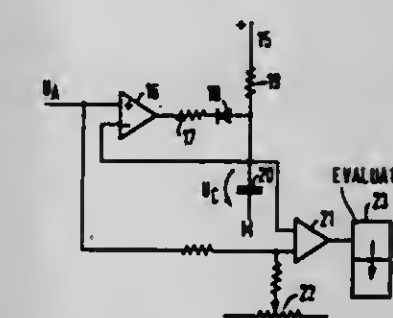
Continuation of Ser. No. 870,627, Jan. 19, 1978, abandoned. This application May 21, 1979, Ser. No. 40,525

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1975, 2504084

Int. Cl.<sup>3</sup> B03C 3/66

U.S. Cl. 55—105

4 Claims



1. In a detector for detecting voltage breakdowns on the high-voltage side of an electric precipitator coupled to the detector, the voltage of the precipitator being supplied from an a-c network through a thyristor control circuit coupled to said a-c network, a high-voltage transformer coupled in series relationship to said thyristor control circuit, and a rectifier coupled in series relationship to said high-voltage transformer, said precipitator being coupled in series relationship to said rectifier, and said detector continuously comparing characteristic parameters of successive half-waves of periodical variations of the voltage at the precipitator, a predetermined deviation between successive characteristic parameters being a criterion for determining a breakdown of the precipitator voltage, the improvement comprising said detector including means for detecting a decrease of the precipitator voltage below a minimum value of the periodical precipitator voltage during continuous operation of said precipitator, said decrease of said precipitator voltage below said minimum value comprising said criterion for determining a breakdown of said precipitator voltage.

4,282,015

# METHOD OF AND APPARATUS FOR REGENERATING AN ADSORPTION AGENT

Ernst Bartoschek, Leitershofen, and Emil Christof, Augsburg, both of Fed. Rep. of Germany, assignors to Böwe Maschinenfabrik GmbH, Augsburg, Fed. Rep. of Germany

Filed May 10, 1979, Ser. No. 37,830

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820771

Int. Cl.<sup>3</sup> B01D 53/04

U.S. Cl. 55—179

1 Claim

1. An adsorber apparatus, especially for machines with organic solvents, comprising:

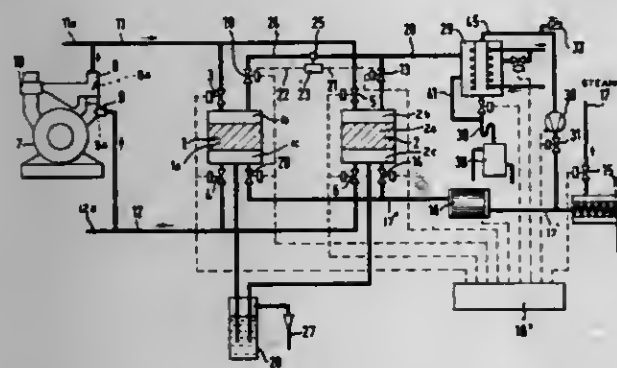
a pair of functionally interchangeable adsorbers each having a body of adsorbent, a first side for an air/vapor mixture to traverse the respective body, and a second side for air freed from said vapor upon traversal of the body;

a first and second valve respectively connecting said first side and said second side of each of said adsorbers in a closed air/vapor circulating path whereby the first and second valves of one of said adsorbers are closed for regeneration thereof when the first and second valves of the other adsorber are open for the removal of vapor therein;

a respective third valve connected to the first side of each



adsorber and a respective fourth valve connected to the second side of each adsorber for passing steam there-through upon regeneration of the respective adsorber; a condenser connected to said adsorbers through said third valves; a source of regenerating steam connectible to said adsorbers through said fourth valves; means for communicating between said third valves of said adsorbers to permit steam admitted to one of said adsorbers to drive vapor-carrying air from said one of said adsorbers into the other of said adsorbers during the admission of steam to said one of said adsorbers for the regeneration thereof and for blocking communication between said adsorbers upon the displacement of air from said one of said adsorbers by the steam in response to an elevated temperature;



a blower connected to said condenser; an air heater connected to said blower; and means connecting said air heater to said adsorber through said fourth valves, said condenser being provided with a controllable air-blocking device open only over a portion of the drying period for a regenerated adsorber with heated air, said device comprising a tube extending downwardly in said condenser to a location close to the bottom thereof and internally connected to said blower, a valve connecting the bottom of said condenser to a water separator, a cooling coil surrounding said tube and having a water inlet pipe and a water outlet pipe, and a further valve connecting said water outlet pipe with the interior of said condenser outwardly of said tube.

4,282,016

**GAS AND FAILURE PARTICLE SEPARATOR SYSTEM**  
Thomas E. Tauber, Lansdowne, and George E. Chapman, Woodlyn, both of Pa., assignors to Technical Development Co., Glenolden, Pa.

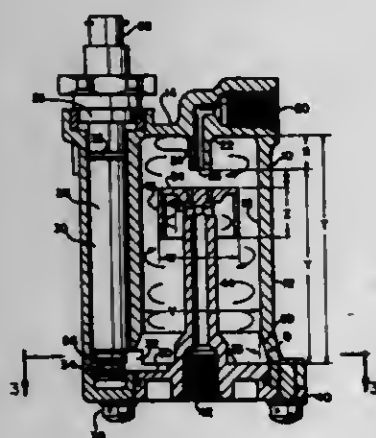
Continuation-in-part of Ser. No. 8,526, Feb. 1, 1979, abandoned.

This application Feb. 29, 1980, Ser. No. 126,102

Int. Cl.<sup>3</sup> B01D 35/14, 45/16, 19/00

U.S. Cl. 55—204

4 Claims



1. In the pressurized lubrication system for mechanical

drives, a particle separator adapted to remove entrapped gases and to separate failure particles from wear particles and segregate them for subsequent removal comprising:

a cylindrical housing having a smooth inner wall;

a fluid inlet adapted to tangentially inject the fluid into said housing;

a gas removing means having an outlet in the top of said housing;

a first hollow cylindrical tube within said housing and concentric with it depending downward from said gas outlet and adapted to cooperate with said fluid inlet such that when the fluid is injected into the annulus between said first tube and said inner wall, a downwardly directed spiral flow pattern is developed, said flow pattern generating a centrifugal force field which firstly causes the entrapped gases to coalesce substantially in the center of said flow pattern and secondly selectively propels failure particles to the outer reaches of said pattern for eventual separation, capture and removal;

fluid removal means having an outlet in the bottom of said housing;

a second hollow cylindrical tube within said housing and concentric with it depending upward from said fluid outlet and adapted first to cooperate with said first tube to maintain said downward spiral flow pattern and said centrifugal force field and then to cooperate with said bottom to create a second centrifugal force field which causes said failure particles to be selectively propelled to and kept at the bottom of said housing from which location they are captured for removal;

means adapted for receiving said separated failure particles connected to said housing whereby they are segregated and trapped for subsequent removal from the system; and means for detecting and indicating the presence of failure particles, connected to said receiving means.

4,282,017

**AUTOMOBILE DIRTY SMOKE ELIMINATOR**

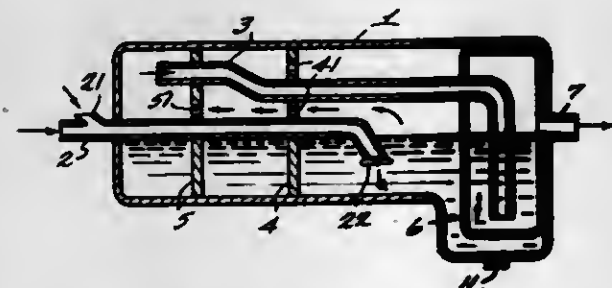
Hsi-Chi Chen, 435-8 Peitun Rd., Taichung City, Taiwan

Filed Sep. 12, 1979, Ser. No. 74,892

Int. Cl.<sup>3</sup> B01D 47/02

U.S. Cl. 55—247

5 Claims



1. An exhaust purifier for use in connection with an internal combustion engine of a vehicle comprising:

an outer tank for holding a quantity of water, having a front wall and a rear wall horizontally spaced from said front wall;

at least one vertically extending inner wall separating a portion of said tank into an inlet chamber, and at least one intermediate chamber;

a containment means including a containment wall inside said tank defining a discharge chamber, said inlet chamber and at least one intermediate chamber communicating with each other so that said quantity of water maintains a same level in all of said inlet and intermediate chambers, said at least one inner wall having small openings above said water level for transmitting said exhaust gases between said inlet chamber and said at least one intermediate chamber;

a first conduit for delivering exhaust gases from said internal combustion engine into said outer tank, having a first

outlet port in said inlet chamber; said first outlet port being inclined to the horizontal;

a rotary blade having a substantially vertical axis of rotation formed at said first outlet port, said first port and blade being submerged in said water when said quantity of water is disposed in said tank, said blade being disposed so that said exhaust gases turn said blade to mix said gases with said water; and

a second conduit for delivering gases from said at least one intermediate chamber to said discharge chamber; said second conduit having an inlet in one of said at least one intermediate chamber above said water level and an outlet port in said discharge chamber beneath said water level; said rear wall having an opening therein; said discharge communicating with the outside atmosphere through said opening in said rear wall above said water level.

4,282,018

**GLASS MANUFACTURING PROCESS WITH IN-SITU COLEMANITE CALCINATION**

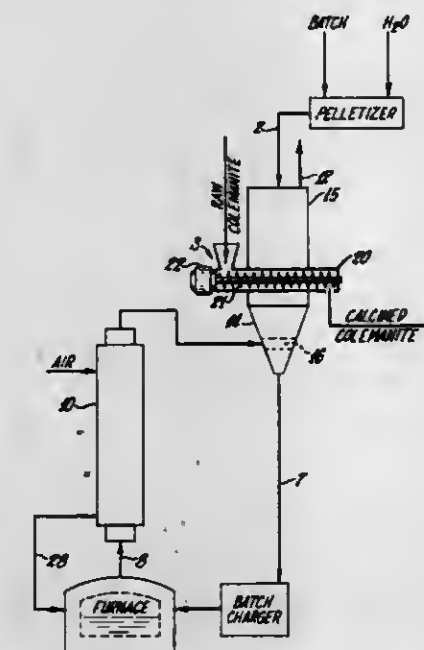
Magnus L. Froberg, Granville, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Apr. 7, 1980, Ser. No. 137,684

Int. Cl.<sup>3</sup> C03B 1/00, 3/00; C03C 1/02, 3/08

U.S. Cl. 65—27

4 Claims



1. In a process for manufacturing a B<sub>2</sub>O<sub>3</sub> and CaO containing glass comprising converting glass forming batch ingredients, including calcined colemanite, into agglomerates, heating a bed of said agglomerates in chamber by direct contact with gaseous combustion products so as to produce heated, non-aggregated agglomerates and supplying said agglomerates to a glass melting furnace, the improvement comprising passing raw colemanite through said chamber and in indirect heat exchange relation to said combustion products so as to heat said raw colemanite to a temperature in excess of its decrepitation temperature and withdrawing said heated colemanite from said chamber.

4,282,019

**GLASS MANUFACTURING PROCESS WITH IN-SITU COLEMANITE CALCINATION AND POLLUTION ABATEMENT FEATURES**

Charles S. Dunn, Pataskala, and Mark A. Propster, Gahanna, both of Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed May 12, 1980, Ser. No. 149,097

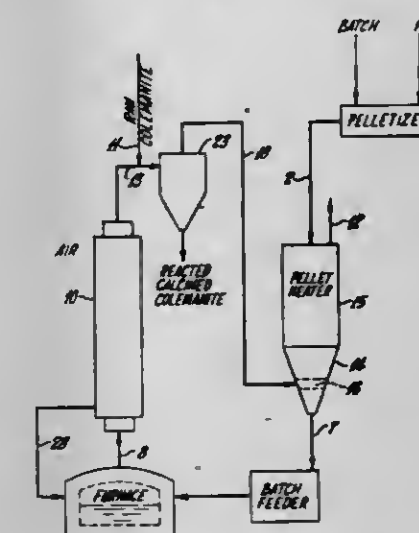
Int. Cl.<sup>3</sup> C03B 3/00

U.S. Cl. 65—27

6 Claims

4. In a process for producing a calcia and boric oxide containing glass, said glass optionally containing fluorine, in a

combustion fired melter comprising, converting glass forming batch ingredients, including calcined colemanite, into agglomerates, heating a bed of said agglomerates in a chamber by direct contact with flue gases so as to produce heated, non-aggregated agglomerates, said gases originating in said melter and containing boron values and also fluorine when said glass contains fluorine and having been cooled in a heat exchanger



prior to said direct contact heating, and supplying said heated agglomerates to said melter, the improvement comprising introducing raw colemanite into said flue gases prior to heating said bed with said gases and allowing said raw colemanite to form a solid, boron reacted, and, when present, fluorine reacted, calcined colemanite, and separating said calcined colemanite from said gases prior to heating said bed with said gases.

4,282,020

**METHOD OF USING A WASTE GLASS COLLECTOR AND CULLET DUMPER**

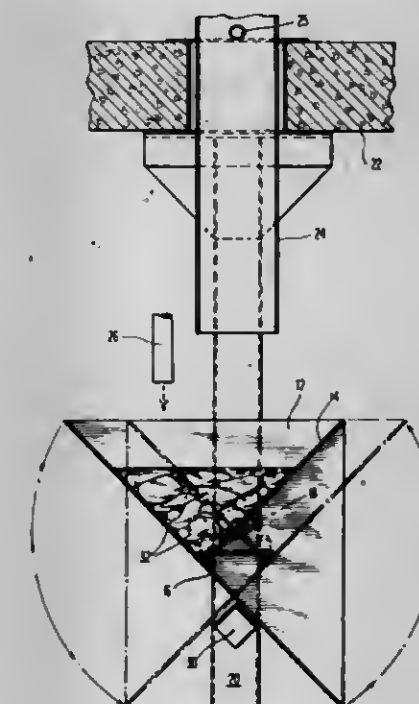
Frank H. Wheaton, Millville, N.J., assignor to Wheaton Industries, Millville, N.J.

Filed Nov. 25, 1977, Ser. No. 854,669

Int. Cl.<sup>3</sup> C03B 5/16

U.S. Cl. 65—28

2 Claims



1. Method for collecting molten waste glass cullet and dumping same in hardened lump form, said method comprising permitting said molten glass stream to fall into and simultaneously introducing water to one of a pair of adjacent pivotally mounted bins, said bins being adapted for reciprocal pivotal movement between alternative limit positions wherein one of said bins is upwardly facing to receive the molten glass or



water and the other of said bins is in position to dump the contents thereof, said bins further being adapted to be pivoted to the alternative limit position by the weight of glass and water in the upwardly facing bin.

4,282,021

# METHOD OF MAKING PHOTOCROMIC GLASSES SUITABLE FOR SIMULTANEOUS HEAT TREATMENT AND SHAPING

Jean P. Mazeau, Avon, France, and Thomas P. Seward, III, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 947,502, Oct. 2, 1978, abandoned, which is a division of Ser. No. 895,646, Apr. 12, 1978, Pat. No. 4,130,437. This application Oct. 26, 1979, Ser. No. 88,546

Int. Cl.<sup>3</sup> C03C 3/26

U.S. Cl. 65—30 R

4 Claims

1. A method for forming glass sheet from potentially photochromic glass and thereafter simultaneously shaping articles from said glass sheet and developing photochromic properties therein which comprises the steps of:

- melting a batch for a glass consisting essentially, in weight percent on the oxide basis, of about 57.1–65.3% SiO<sub>2</sub>, 9.6–13.9% Al<sub>2</sub>O<sub>3</sub>, 12–22% B<sub>2</sub>O<sub>3</sub>, 1–3.5% Li<sub>2</sub>O, 3.7–12% Na<sub>2</sub>O, 0–5.8% K<sub>2</sub>O, 6–15% total of Li<sub>2</sub>O+Na<sub>2</sub>O+K<sub>2</sub>O, the molar ratio Li<sub>2</sub>O:Na<sub>2</sub>O+K<sub>2</sub>O not exceeding 2:3, 0.15–0.7% PbO, 0.12–0.18% Ag, 0.2–1% Cl, 0.06–0.13% Br, 0–2.5% F, and 0.002–0.02% CuO, the Ag, Cl, and Br ranges representing values as analyzed in the glass;
- adjusting the temperature of at least one region of the glass melt to provide a viscosity therein of about 10<sup>4</sup>–10<sup>6</sup> poises;
- drawing the glass melt at a viscosity of about 10<sup>4</sup>–10<sup>6</sup> poises directly past platinum or platinum-clad refractory forming means to produce potentially photochromic drawn glass sheet of optical quality, said glass exhibiting good resistance to surface crystal growth in contact with platinum such that over a contact period of 30 days the growth of a crystalline layer will not exceed 10 microns in thickness;
- cooling the glass sheet below the softening point of the glass and cutting articles of desired geometries therefrom;
- edge supporting said articles on alveolated molds; and then
- heating said articles at a temperature between about 610°–660° C. for a period of time sufficient to simultaneously sag the glass to a desired curvature into the concave portions of the alveolated molds, but not into contact with the inner surface of said molds, and develop photochromic properties in the glass.

4,282,022

# METHOD FOR MAKING POLARIZING GLASSES THROUGH EXTRUSION

Kuang-Hsin K. Lo, Big Flats, and Daniel A. Nolan, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,537

Int. Cl.<sup>3</sup> C03B 17/06; C03C 3/26

U.S. Cl. 65—85

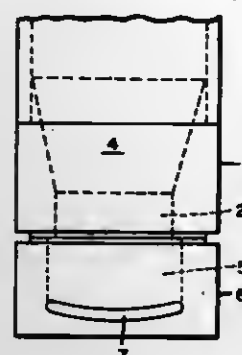
9 Claims

9. A method for making glass strip exhibiting polarizing properties from silver-containing glasses characterized as containing particles of metallic silver and/or as being photochromic through the presence of silver halide particles therein selected from the group of AgCl, AgBr, and AgI, said strip having a concavo-convex configuration across the width thereof and a linear curvature therein, which comprises the steps of:

- extruding said glass at an elevated temperature between about the annealing and softening points of the glass at an applied pressure of at least 3000 psi to elongate said metallic silver and/or silver halide particles to an aspect ratio of

at least 2:1 and align them in the direction of glass flow, said extrusion being carried out utilizing a die structure having a curved slot orifice;

- passing said glass into a channel having a cross-sectional configuration similar to that of said curved slot orifice and



- having a bend therein to form a glass strip having a concavo-convex configuration across the width thereof and a linear curvature therein; and then
- subjecting said glass strip to conditions sufficient to inhibit respheroidization of the elongated particles.

4,282,023

# GLASS MELTING ENHANCEMENT BY TOROIDAL BATCH SHAPING

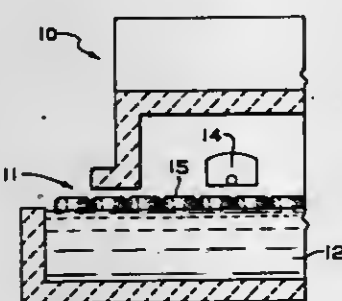
Joseph J. Hammel, O'Hara Township, Allegheny County, Pa., and John D. Mackenzie, Los Angeles, Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1980, Ser. No. 174,469

Int. Cl.<sup>3</sup> C03B 5/00

U.S. Cl. 65—134

8 Claims



1. In a method for melting glass wherein particulate glass batch materials are fed into a heated enclosure, where the batch floats on the surface of a pool of molten glass therein until the batch becomes liquefied, the improvement comprising feeding the batch into the enclosure in the form of toroidally shaped aggregates whereby run-off of liquified batch from the unmelted mass of batch into the pool of molten glass is enhanced.

4,282,024

# APPARATUS FOR MAKING POLYCRYSTALLINE ARTICLES

Stephen M. Copley, Palos Verdes Estates; Virendra V. S. Rana, Los Angeles, and James M. Whelan, La Canada, all of Calif., assignors to The University of Southern California, Los Angeles, Calif.

Division of Ser. No. 936,540, Aug. 23, 1978, abandoned, which is a division of Ser. No. 827,279, Aug. 24, 1977, Pat. No. 4,146,379. This application Sep. 13, 1979, Ser. No. 75,308

Int. Cl.<sup>3</sup> C03B 19/06

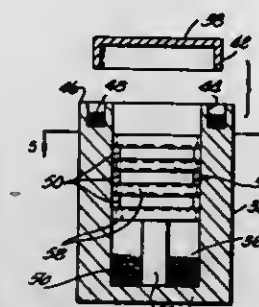
U.S. Cl. 65—144

15 Claims

1. Apparatus for densifying at least one compact comprising powder to be densified mixed with a sintering aid therefor, under changing pressure conditions in response to a change in temperature applied to said apparatus, comprising:

a vessel having a cavity;

means for defining in said cavity a specimen section for containing a compact to be densified and a reservoir section containing atmosphere material for providing overpressure during sintering to aid in densification, said sections being in communication with each other, said atmo-



sphere material having a melting point greater than the temperature required to outgas said compact but less than the temperature at which said sintering aid evaporates rapidly from said compact; and seal means for containing a liquid seal against atmosphere for said cavity.

4,282,025

# CARRIAGE FOR TRANSPORTING SHEETS OF GLASS AND FOR PLACING THEM IN A PRESS FOR IMPARTING A CONVEX SHAPE

Mario Roth, Aachen; Werner Pagel, Herzogenrath, and Gunther Schmidt, Richterich, all of Fed. Rep. of Germany, assignors to Saint Gobain Industries, Neuilly-sur-Seine, France

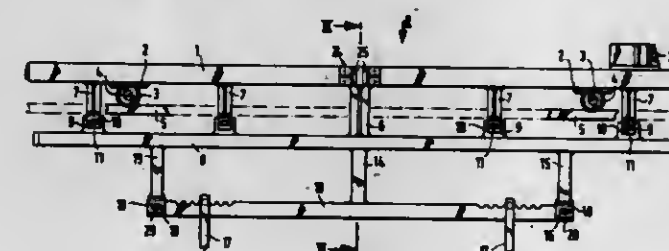
Filed Dec. 21, 1979, Ser. No. 105,913

Claims priority, application France, Dec. 22, 1978, 78 36188

Int. Cl.<sup>3</sup> C03B 23/03

U.S. Cl. 65—273

4 Claims



1. A device for transporting a sheet of glass through a furnace having a plurality of sheet processing stations including a sheet convexing station having movable forms for pressing a sheet of glass into a convex shape and where said device comprises a carriage movably mounted on a rail extending above said furnace with said carriage having a carrying frame including a first rigid unitary horizontal longitudinal member supporting a plurality of sheet hangers; the improvement comprising in that said carriage has a coupling member at its middle adapted to couple with a coupling member positioned at said convexing station to anchor and position said carriage with respect to said convexing station; in that said first horizontal longitudinal member is longitudinally and vertically rigidly connected at its center portion to said carriage, and in that horizontal sliding means are provided for slidably connecting other portions of said first horizontal longitudinal member with respect to said carriage.

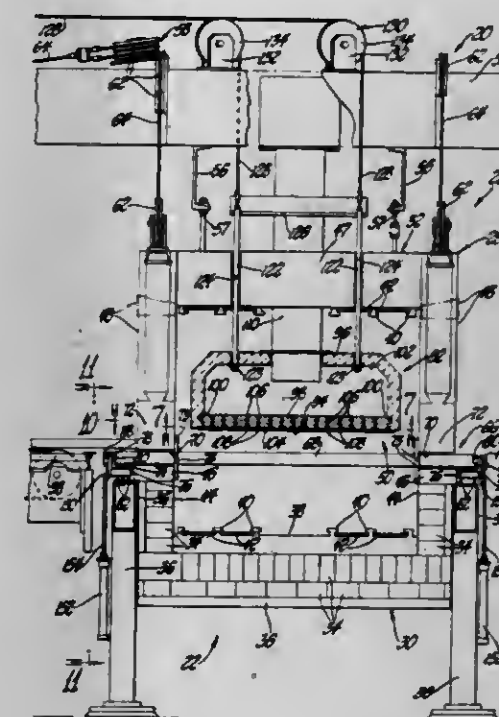
4,282,026

APPARATUS FOR BENDING AND TEMPERING GLASS  
Harold A. McMaster, 707 Riverside Dr., Woodville, Ohio 43469; Norman C. Nitschke, 9102 Buck Rd., and John S. Nitschke, 324 E. Second, both of Perrysburg, Ohio 43551  
Continuation of Ser. No. 872,201, Jan. 25, 1978, abandoned. This application Feb. 5, 1980, Ser. No. 118,822

Int. Cl.<sup>3</sup> C03B 23/025

U.S. Cl. 65—273

18 Claims



1. Apparatus for bending and tempering glass sheets comprising: a heating chamber for heating glass sheets to a sufficiently high temperature to permit tempering thereof; a conveyor for conveying glass sheets through the heating chamber; a holder for receiving a heated glass sheet from the conveyor; said holder having a downwardly facing surface of a predetermined shape against which a differential gas pressure supports the heated sheet of glass received from the conveyor in preparation for bending; a mold having a generally open center and a curved shape over at least a substantial portion thereof with a greater curvature than said predetermined shape of the holder surface; means for providing relative movement between the mold and the holder such that the mold is positioned below the holder to receive the heated glass sheet at tempering temperature from the holder for substantial sag bending of the glass sheet on the mold solely under gravity; a quench unit for tempering bent glass sheets; and an actuator for moving the mold from the holder to the quench unit in a time to control the extent of bending before tempering of the glass sheet.

4,282,027

# TRI/PENTA/AZA-TETRACYCLO-DODECA/ENES/DI-ENES OR DIECAENES

Rolf Platz, Mannheim; Werner Fuchs, Ludwigshafen; Norbert Rieber, Mannheim; Ulf-Rainer Samel, Mutterstadt; Johann Jung, and Bruno Wuerzer, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 781,767, Mar. 28, 1977, Pat. No. 4,189,434

This application Jan. 16, 1980, Ser. No. 112,436

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1976, 2615878

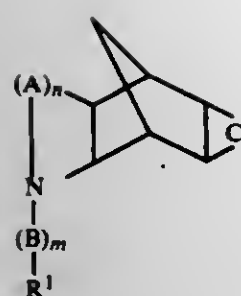
Int. Cl.<sup>3</sup> C07D 487/04

U.S. Cl. 71—76

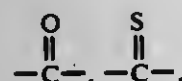
3 Claims

1. A polycyclic nitrogen-containing compound of the formula

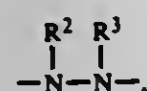




where A denotes the radical  $-N=N-$ , B denotes the radicals  $-SO_2-$ ,



$-S-$ , C denotes the radicals  $-N=N-$  or



n denotes one of the integers 0 and 1, m denotes one of the integers 0 and 1, and  $R^1$  denotes thiazol-2-yl, and  $R^2$  and  $R^3$  are identical or different and each denotes  $(B)_m-R^4$ ,  $R^4$  having the same meanings as  $R^1$ , and salts of these compounds.

2. A process for reducing crop plant growth height wherein the plants or the soil are treated with an effective amount of a polycyclic nitrogen-containing compound of the formula of claim 1 to reduce crop plant growth height.

4,282,028

# HERBICIDAL AND PLANT-GROWTH-REGULATING N-SUBSTITUTED-N-(2,5-DIALKYLPIRROL-1-YL) HALOACETAMIDES

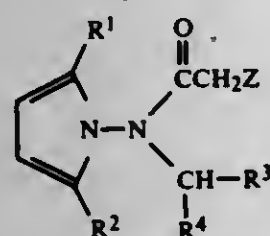
Stephen D. Ziman, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 25, 1979, Ser. No. 60,320  
Int. Cl.<sup>3</sup> A01N 43/78; C07D 277/22

U.S. Cl. 71-90

5 Claims

1. A compound according to the formula (1):



wherein  $R^1$  and  $R^2$  are alkyl of 1 to 3 carbon atoms or halo;  $R^3$  is hydrogen or alkyl of 1 to 3 carbon atoms; Z is halo; and  $R^4$  is a 1,3-thiazole ring optionally substituted on a ring carbon atom with an alkyl group of 1 to 4 carbon atoms or phenyl.

5. A method for killing vegetation which comprises applying to said vegetation or its growth environment an herbicidally effective amount of the compound of the formula defined in claim 1.

## 4,282,029 N-(PYRIDYLMETHYL)-2-OXOBENZOTHAZOLINE DERIVATIVES AND THEIR USE AS PLANT GROWTH REGULANTS

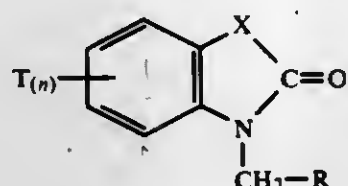
John J. D'Amico, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 31, 1980, Ser. No. 117,403  
Int. Cl.<sup>3</sup> C07D 513/04; A01N 43/86

U.S. Cl. 71-90

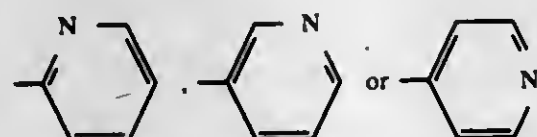
21 Claims

1. A compound of the formula

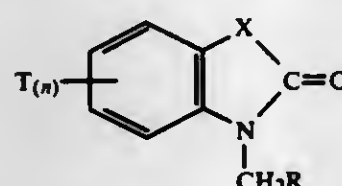


wherein:

T is hydrogen,  $C_{1-5}$  alkyl, halo,  $-CF_3$ ,  $-CN$  or  $-NO_2$ ;  
x is sulfur  
n is 1 or 2;  
R is

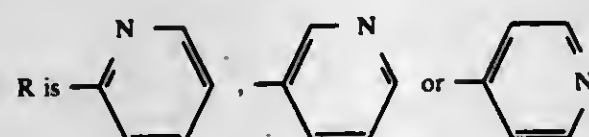


8. A method of regulating the natural growth and development of leguminous plants which method comprises applying to said leguminous plants or their habitat an effective plant growth regulating amount of a compound of the formula



wherein:

T is hydrogen,  $C_{1-5}$  alkyl, halo,  $-CF_3$ ,  $-CN$  or  $-NO_2$ ;  
x is sulfur  
n is 1 or 2;  
R is



4,282,030

## METHOD FOR PLANT GROWTH REGULATION

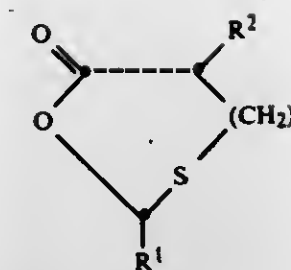
Eriks V. Krumkalns, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 3, 1980, Ser. No. 193,857  
Int. Cl.<sup>3</sup> A01N 43/28, 43/32

U.S. Cl. 71-90

11 Claims

1. A method for regulating plant growth comprising applying to a plant an amount effective to provide plant growth regulation of a compound of the formula



wherein:

$R^1$  is trichloromethyl, or trifluoromethyl;  
 $R^2$  is hydrogen or methyl; and n is 0 or 1.

4,282,031

## SUBSTITUTED THIOSEMICARBAZIDES, THEIR MANUFACTURE AND USE AS PLANT GROWTH REGULANTS

Jerry L. Rutter, Overland Park, and James L. Ahle, Shawnee, both of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

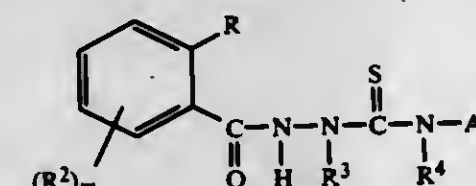
Continuation-in-part of Ser. No. 851, Jan. 3, 1979, abandoned, and Ser. No. 942,232, Sep. 14, 1978, abandoned. This application Aug. 2, 1979, Ser. No. 62,258

Int. Cl.<sup>3</sup> A01N 33/26

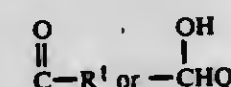
U.S. Cl. 71-99

66 Claims

1. A method of regulating the growth of plants comprising applying to the plants a growth-regulating amount of a compound of the formula



wherein  
R is



$R^1$  is  $-OH$ ,  $-NR''$ ,  $C_{1-4}$  alkyl or hydrogen;

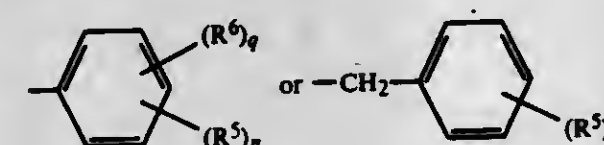
Q is H or  $C_{1-4}$  straight chain alkyl;  
each of  $R'$  and  $R''$  independently is hydrogen or  $C_{1-10}$  alkyl,  $C_{3-7}$  alkoxyalkyl or alkoxyalkoxyalkyl,  $C_{3-6}$  cycloalkyl, phenyl  $C_{1-2}$  alkyl where phenyl group is optionally monosubstituted by fluoro or methoxy, or  $R'$  and  $R''$  taken together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino or morpholino ring;

each  $R^2$  independently is chloro, fluoro, bromo, methyl, nitro or trifluoromethyl;  
m is 0, 1 or 2;

$R^3$  is hydrogen,  $C_{1-4}$  alkyl,  $C_{3-4}$  alkenyl containing no  $\alpha,\beta$ -unsaturation, 2-hydroxyethyl, phenyl or benzyl;

$R^4$  is hydrogen or  $C_{1-3}$  alkyl;

Ar is naphthyl, anthranyl, phenanthryl or a group having one of the following formulae:



each  $R^5$  independently is  $C_{1-4}$  alkyl, chloro, bromo, fluoro, nitro,  $C_{1-3}$  alkoxy or  $C_{1-3}$  alkylthio, provided that both ortho positions are not substituted by alkyl;

$R^6$  is carbethoxy, phenoxy, benzyloxy, phenyl or dimethylamino;  
n is 0, 1, 2 or 3;  
q is 0 or 1;  
the sum of n plus q does not exceed 3; and p is 0 or 1;  
or an agriculturally-acceptable salt or ester thereof.

4,282,032

## DIRECT METHOD FOR PRODUCTION OF HIGH-GRADE, HIGH-PURITY FERROMANGANESE

Yoshishige Nagoya, Tokyo; Kosuke Mural, Hachinohe; Hirota Amano, Hachinohe, and Yoshisada Soga, Hachinohe, all of Japan, assignors to Pacific Metals Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1979, Ser. No. 89,749  
Int. Cl.<sup>3</sup> C22B 47/00

U.S. Cl. 75-80

2 Claims

1. A method for the production of high-grade, high-purity ferromanganese consisting of not less than 90% Mn, not more than 1.5% Si, not more than 0.1% C and not more than 0.05% P comprising the steps of charging a molten Mn-containing material having a Mn content in the range from 10 to 40%, at least one non-carbonaceous reducing agent selected from the group consisting of Si-containing alloys, Al-containing alloys and Ca-containing alloys and a slagging material in a reaction vessel capable of performing horizontal eccentric circular motion and subjecting the reaction vessel to the said horizontal eccentric circular motion at between 35 and 65 cycles per minute to mix and agitate the contents of the vessel, whereby the Mn oxide contained in the molten Mn-containing material is reduced by the non-carbonaceous reducing agent.

4,282,033

## MELTING METHOD FOR HIGH-HOMOGENEITY PRECISE-COMPOSITION NICKEL-TITANIUM ALLOYS

David Goldstein, Adelphi, and Scott Hoover, Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1980, Ser. No. 160,050  
Int. Cl.<sup>3</sup> C22C 19/03

U.S. Cl. 75-170

7 Claims

1. A method of preparing a highly homogeneous nickel-titanium base shape change memory alloy comprising the following steps in order:

- (1) converting a consumable electrode arc melt prepared nickel-titanium base shape change memory alloy into particles selected from the group consisting of powder, shot, chips, and flakes;
- (2) blending the nickel-titanium base alloy particles;
- (3) melting the nickel-titanium base particles; and
- (4) allowing the molten nickel-titanium base alloy to solidify into a desired shape.

4,282,034

## AMORPHOUS METAL STRUCTURES AND METHOD

Jeffery S. Smith, Hamilton; John H. Perepezko, Madison, both of Wis.; Don H. Rasmussen, Canton, N.Y., and Carl R. Loper, Jr., Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 13, 1978, Ser. No. 960,100  
Int. Cl.<sup>3</sup> B01J 2/02

U.S. Cl. 75-232

4 Claims

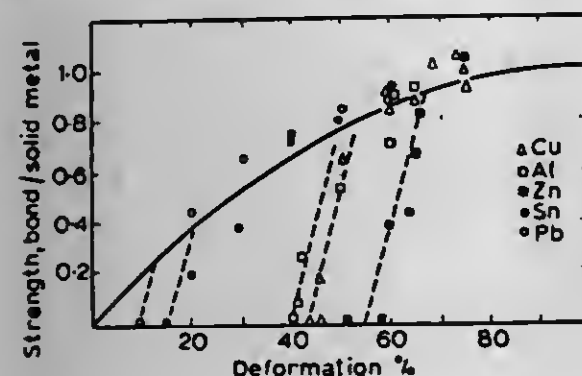
1. In the method of producing amorphous metal structures from amorphous metal particles produced by  
(a) emulsifying the metal as droplets in a molten state in an inert carrier fluid,  
(b) reacting the molten metal while in the emulsified state in the fluid to form a reaction product on the surface of the metal droplets which stabilizes the metal droplets in the emulsion,  
(c) cooling the emulsion whereby the metal droplets solidify



as particles of undercooled metal in the amorphous state, and

(d) separating the undercooled amorphous metal particles, the improvement comprising:

(1) compressing the particles while deforming the particles to apply shear and compressive forces to said particles



cles to expose the amorphous metal interior of the reaction product on the surface of the particles while at a temperature below recrystallization temperature of the metal to avoid recrystallization, whereby the exposed amorphous metal of the particles interbond with each other to form a solid amorphous metal structure.

#### 4,282,035

##### LEAD-FREE AND CADMIUM-FREE FRITS

Jaroslava M. Nigrin, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 15, 1980, Ser. No. 121,745  
Int. Cl.<sup>3</sup> C03C 3/08, 5/00

U.S. Cl. 106—48

2 Claims

1. A frit essentially free from cadmium and lead demonstrating good glass stability, a coefficient of thermal expansion ( $20^{\circ}$ – $300^{\circ}$  C.) between about  $52$ – $65 \times 10^{-7}/^{\circ}$ C., a viscosity suitable for firing at about  $850^{\circ}$ – $1100^{\circ}$  C., and excellent resistance to attack by acids and bases as evidenced by no visual change in appearance and a weight loss of no more than about 0.05% after an exposure of 24 hours at  $96^{\circ}$  C. to a stirred aqueous solution containing 10% by weight citric acid and by no visual change in appearance and a weight loss of no more than 0.02% after an exposure of 24 hours at  $96^{\circ}$  C. to an aqueous solution containing 0.3% by weight alkaline detergent, said frit consisting essentially, expressed in weight percent on the oxide basis as calculated from the batch, of

SiO <sub>2</sub>	51–60
B <sub>2</sub> O <sub>3</sub>	4.5–8
BaO	0–13
SrO	0–18
BaO + SrO	6–30
ZrO <sub>2</sub>	4–8
Al <sub>2</sub> O <sub>3</sub>	5–8
Li <sub>2</sub> O	0–4
Na <sub>2</sub> O	0–5
K <sub>2</sub> O	0–5
Li <sub>2</sub> O + Na <sub>2</sub> O + K <sub>2</sub> O	1–5
MgO	0–6
CaO	0–12
Bi <sub>2</sub> O <sub>3</sub>	0–10
MgO + CaO + Bi <sub>2</sub> O <sub>3</sub>	0–20

#### 4,282,036 FLOWABLE CONCRETE MIXTURE

Ulrich Finsterwalder, Munich; Klemens Finsterwalder, Berg Starnberger See; Kurt Koch, Puchheim, and Hans Puls, Hamburg, all of Fed. Rep. of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany  
Continuation-in-part of Ser. No. 863,408, Dec. 22, 1977, abandoned. This application Oct. 19, 1979, Ser. No. 86,521  
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658128

Int. Cl.<sup>3</sup> C04B 13/02

U.S. Cl. 106—97

4 Claims

1. In a concrete mixture for the production of steel reinforcing concrete or prestressed concrete suitable for use as water-tight floating bodies made of steel and concrete wherein cement glue composed of a mixture of cement and water is used to fill the hollow spaces between the pieces of a particulate aggregate and hold said aggregate together, the improvement consisting essentially of the volume of cement glue being larger than the volume required to fill the hollow spaces between the particulate aggregate alone and the viscosity of the cement glue, the particle size and the volume/weight ratio of the aggregate being adjusted so that the aggregate particles are suspended in the cement glue and remain suspended until the cement glue hardens and wherein the cement glue contains pozzolana as a filler for the formation of a matrix.

#### 4,282,037

##### GILSONITE EMULSION COMPOSITIONS

Michael V. Burris, 1760 Industrial Rd., Las Vegas, Nev. 89102  
Continuation-in-part of Ser. No. 912,357, Jun. 5, 1978, Pat. No. 4,193,815. This application Dec. 7, 1979, Ser. No. 101,148  
Int. Cl.<sup>3</sup> C08L 95/00, 1/00; C09D 11/13

U.S. Cl. 106—202

11 Claims

1. An emulsion composition consisting essentially of  
(a) a gilsonite phase consisting of a mixture of between about 33 and about 95% gilsonite, and a petroleum hydrocarbon having a boiling point above about  $200^{\circ}$  F., and  
(b) a water phase consisting essentially of water and between about 0.05 and about 10% of an emulsifying agent, and wherein the gilsonite:water phase ratio is between about 1:2 and 3:1, respectively.  
2. A composition for producing an insulation board comprising cellulosic particles and an emulsion composition of claim 1 or 5.

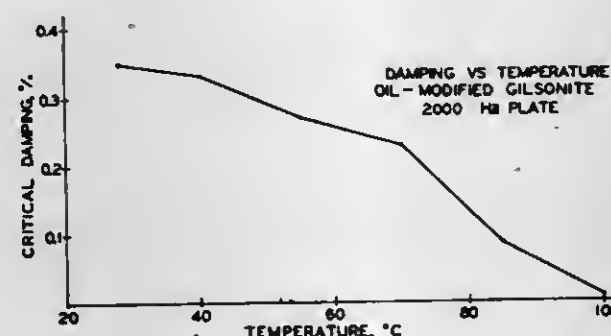
#### 4,282,038

##### COIL IMPREGNANT WITH MODIFIED ASPHALTITE BASE

Mason H. Earing, Danville, Ill., assignor to General Electric Company, Schenectady, N.Y.  
Division of Ser. No. 614,320, Sep. 17, 1975, Pat. No. 4,022,635.  
This application Oct. 18, 1976, Ser. No. 733,432  
Int. Cl.<sup>3</sup> C08L 95/00

U.S. Cl. 106—273N

2 Claims



1. An impregnating compound for electrical coils comprising: 75–85% by weight of a modified asphaltite composition having a softening point of from  $90$ – $105^{\circ}$  C.; 15–25% by

weight of a wax: the mixture having a softening point of from  $125^{\circ}$ – $135^{\circ}$  C., a penetration at  $25^{\circ}$  C. with a 100 gram mass after 5 seconds of from  $5$ – $20$  mm, and a viscosity at  $170^{\circ}$  C. of from 70–125 centipoise, the asphaltite composition being gilsonite which is modified by the addition of an oil having a viscosity gravity constant greater than 0.90 and a viscosity in SSU at  $100^{\circ}$  C. of from 40 to 55 and added to the extent of from 29 to 36% by weight of the oil-gilsonite mixture.

#### 4,282,039

##### CARBON RAMMING MIX

Vaughn L. Bullough, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Filed Jun. 30, 1980, Ser. No. 164,222

Int. Cl.<sup>3</sup> C08L 95/00

U.S. Cl. 106—278

11 Claims

1. A cold ramming mix suitable for ramming of alumina reduction cell cathode seams at ambient temperature comprising:

- A solid portion comprising
  - from about 30 to about 60 weight percent of coarse calcined anthracite;
  - from about 50 to about 30 weight percent of anthracite dust; and
  - from about 1 to about 10 weight percent graphite dust;
- from about 5 and about 15 weight percent based on the weight of the solid portion of a binder pitch; and
- from about 5 to about 10 weight percent based on the weight of the solid portion of a heavy petroleum distillate oil having a 95% distillation range between about  $370^{\circ}$  and  $540^{\circ}$  C.

#### 4,282,040

##### MONOOLEFINIC PLASTICIZED SULFUR

Ronald A. Schneider, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 952,526, Oct. 18, 1978, abandoned, which is a continuation of Ser. No. 718,236, Aug. 27, 1976, abandoned. This application Mar. 17, 1980, Ser. No. 130,779

Int. Cl.<sup>3</sup> C01B 17/00; C09K 3/00

U.S. Cl. 106—287.32

10 Claims

1. A plasticized sulfur composition, having superior resistance to crazing and cracking when coated on a surface, consisting essentially of at least 75 weight percent sulfur, 5 to 20 weight percent of a solid filler; and from 0.2 to 5 weight percent of a sulfur plasticizing compound selected from group consisting of essentially linear alpha-monoolefin having 6 to 14 carbon atoms and mixtures thereof.

#### 4,282,041

##### METHOD FOR REMOVING ALUMINIDE COATINGS FROM NICKEL OR COBALT BASE ALLOYS

Frank Cork, Alveston, England, assignor to Rolls-Royce Limited, London, England

Continuation of Ser. No. 966,757, Dec. 5, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,557

Int. Cl.<sup>3</sup> C23G 1/04

U.S. Cl. 134—3

5 Claims

1. A method of removing an aluminum containing alloy coating from a nickel or cobalt base alloy substrate comprising immersing the coated substrate in an aqueous mixture containing from about 5 to about 30% vol./vol. nitric acid and from about 5 to about 30% wt./vol. sulphamic acid.

#### 4,282,042

##### WIRE ROD STEEPING EQUIPMENT

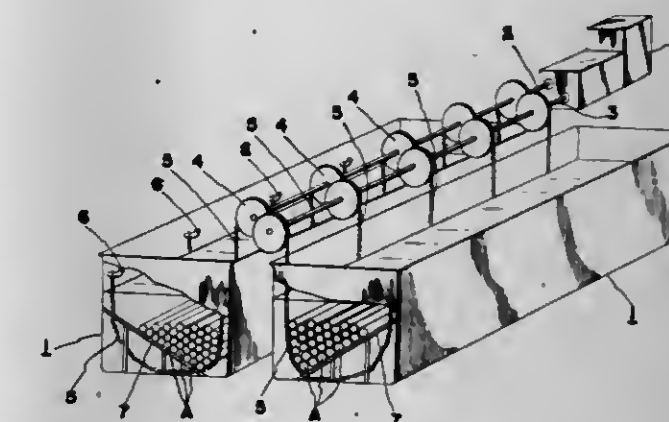
Kotono Tsukamoto, 7-8, Kashima 4-chome, Yodogawa-ku, Osaka, Japan

Filed Sep. 1, 1977, Ser. No. 829,863

Int. Cl.<sup>3</sup> B08B 3/04, 9/02

U.S. Cl. 134—140

2 Claims



1. A wire rod steeping apparatus comprising an elongated tank, a rotary shaft extending along one side of the tank, a drive means connected to said shaft for driving said rotary shaft in opposite rotational directions, a plurality of chain wheels spaced along the length of said shaft, chains having their one ends connected to and extending from said wheels and drooping into said tank and having the other ends connected to the opposite side of the tank from the side of the tank along which said shaft extends, and a plurality of slanting frames fixed in said tank spaced at intervals therealong and having slanting members slanting upwardly from the side of the tank along which said shaft extends to the opposite side of the tank; said chains drooping below said slanting members when the chains are fully extended.

#### 4,282,043

##### PROCESS FOR REDUCING THE INTERDIFFUSION OF CONDUCTORS AND/OR SEMICONDUCTORS IN CONTACT WITH EACH OTHER

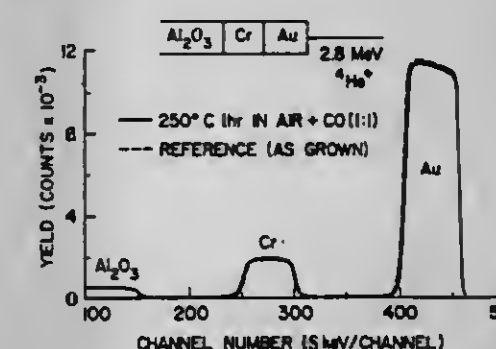
Chin-An Chang, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 25, 1980, Ser. No. 124,187

Int. Cl.<sup>3</sup> H01L 29/46; B32B 15/04; H01L 21/283

U.S. Cl. 148—1.5

20 Claims



1. A method for reducing the interdiffusion when at elevated temperature of a first material and a second material which is adjacent to and in intimate contact with the first material, wherein the electronegativity of the first material is different from the electronegativity of the second material, and wherein each of the first material and the second material is a metallic-type electrical conductive material or a semiconductive material or a mixture thereof which method comprises when at elevated temperature of at least about  $100^{\circ}$  C. exposing at least one surface of said first material containing CO or O<sub>2</sub> or both, provided that the gas increases the work function of the first



material when it is more electronegative than the second material or decreases the work function of the first material when it is less electronegative than the second material, and thereby reducing the interdiffusion of the first and second materials at their interface and at elevated temperature.

4,282,045

PB<sub>1-w</sub>CD<sub>w</sub>S EPITAXIAL THIN FILM

James D. Jensen, Highland, and Richard B. Schoolar, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

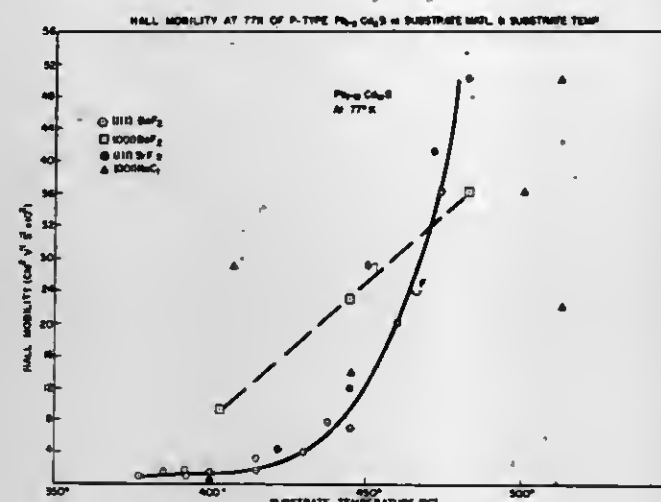
Division of Ser. No. 864,417, Dec. 27, 1977, Pat. No. 4,227,948.

This application Apr. 25, 1980, Ser. No. 143,562

Int. Cl.<sup>3</sup> H01L 29/26, 27/12

U.S. Cl. 148—33.3

6 Claims



1. An epitaxial thin-film of an alloy of:



where  $0 < w \leq 0.15$ .

4,282,046

## METHOD OF MAKING PERMANENT MAGNETS AND PRODUCT

Peter G. Frischmann, Scotia; Fred E. Luborsky, Schenectady, and Russell E. Tompkins, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 898,820, Apr. 21, 1978, abandoned.

This application Jul. 16, 1979, Ser. No. 58,062

The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> H01F 1/00

U.S. Cl. 148—121

9 Claims

1. The method of making a magnetically hard article having a desired shape, volume and coercive force, which comprises the steps of casting a magnetic alloy composition in the form of a ductile, magnetically-soft amorphous metal ribbon, tightly winding the ductile ribbon to build up substantially the desired article shape and volume, preselecting a value of coercive force to be provided to said article, heating said wound ribbon to a preselected temperature above the crystallization temperature for said magnetic alloy, and maintaining said wound ribbon at said preselected temperature for a period of time at least sufficient to develop said preselected coercive force, whereby the desired magnetically hard article results.

4,282,047

## METHOD OF PRODUCING STEEL PIPE MATERIAL FOR OIL WELL

Mitsukuni Yamagata, Chiba; Keiichi Takitani, Nagoya; Sadao Hasuno, Chita, and Kuniaki Motoda, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Aug. 29, 1979, Ser. No. 70,905

Int. Cl.<sup>3</sup> C21D 1/18

U.S. Cl. 148—143

2 Claims

1. A method of producing steel pipe material for an oil well,

4,282,044  
METHOD OF RECYCLING ALUMINUM SCRAP INTO SHEET MATERIAL FOR ALUMINUM CONTAINERS

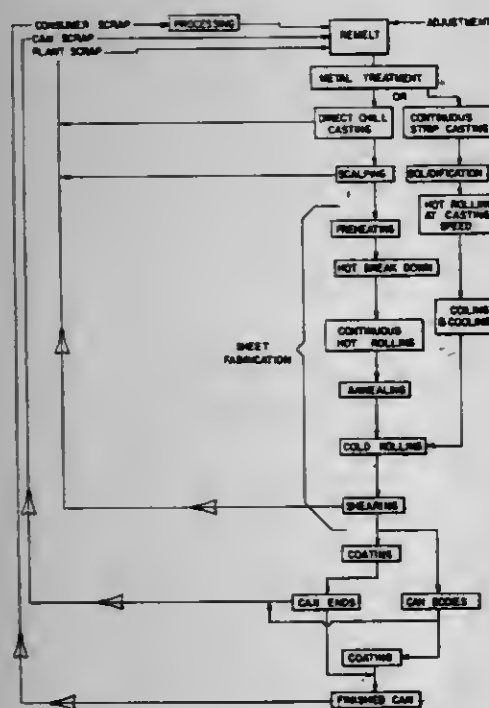
King G. Robertson, and Donald C. McAuliffe, both of Golden, Colo., assignors to Coors Container Company, Golden, Colo.

Filed Aug. 4, 1978, Ser. No. 931,041

Int. Cl.<sup>3</sup> C22F 1/04

U.S. Cl. 148—2

17 Claims



1. A process of manufacturing comprising:

- providing a supply of aluminum alloy consumer scrap;
- melting said aluminum alloy consumer scrap in a heated furnace to form a melt composition;
- adjusting the melt composition to a composition within a range of 1.3–2.5% magnesium and 0.4–1.0% manganese, with between 0.15–1.0% silicon, wherein said manganese and magnesium are present in a total concentration of 2.0–3.3% and a ratio of magnesium to manganese of between 1.4:1 and 4.4:1 from about 0.1% to 0.9% iron and from about 0.05% to 0.4% copper;
- treating the composition to remove materials which would impair casting and quality of finished sheet;
- casting the composition; and
- fabricating the composition into aluminum alloy sheet suitable for manufacturing aluminum containers.

4,282,049

## METHOD FOR MAKING RESIN PANELS

Donald B. Morse, Joliet, Ill., assignor to Kemlite Corporation, Joliet, Ill.

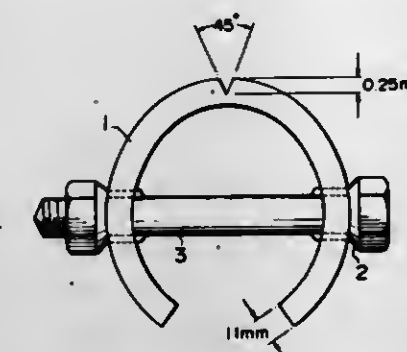
Continuation of Ser. No. 474,372, May 30, 1974, abandoned.

This application Apr. 5, 1976, Ser. No. 673,869

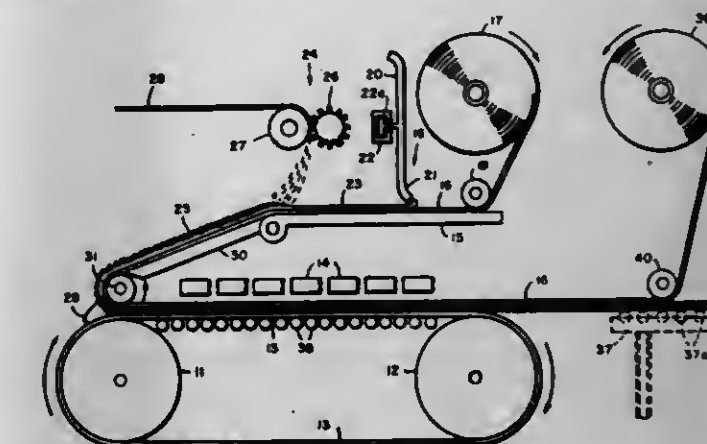
Int. Cl.<sup>3</sup> B32B 31/12

U.S. Cl. 156—62.2

4 Claims



mation point  $Ac_1$  to the transformation point  $Ac_3$  plus  $50^\circ\text{C}$ . at an average heating rate of  $1^\circ\text{--}30^\circ\text{C./sec}$ , quenched at the heating temperature ranging from the transformation point  $Ac_3$  plus  $50^\circ\text{C}$ . to the crystal grain coarsening initiating temperature, and thereafter, tempered at a temperature not higher than the transformation point  $Ac_1$ .



1. In a method for preparing a resin impregnated glass fiber sheet in which a layer of liquid thermosetting resin is deposited on a carrier film and a layer of reinforcing glass fibers is deposited in random arrangement on top of said resin layer to form a laminate structure in which a layer of resin is over said film and a layer of glass fibers is over said resin layer, the improvement comprising passing said structure to an upper portion of the upper roll of a pair of vertically spaced rotating rolls, passing said structure downwardly on the descending side of said upper roll, passing about the lower roll of said pair of rolls and endless belt which is impervious to said resin, turning said structure downwardly and then rearwardly about said upper roll to thereby bring said glass fiber layer into contact with said belt, passing said structure rearwardly through the nip of said pair of rolls while said film is in contact with said upper roll and while said glass fiber layer is in contact with said belt and while said pair of rolls is set at a predetermined spacing, to thereby squeeze such structure as it passes through said nip and to press resin from said resin layer through said glass fiber layer and into contact with said belt, while supporting said structure on said belt passing said structure through a heating zone to cure the resin contained therein, and controlling the rate at which said resin is deposited on said film with respect to the rate at which said resin is passed through said nip to provide and to maintain a pool of liquid on the surface of said belt in advance of said nip.

4,282,048

## METHOD FOR COOLING HOT-ROLLED SHAPES

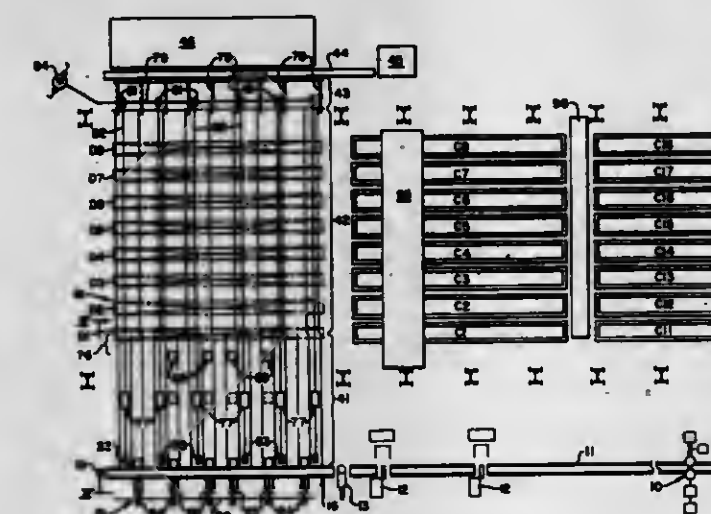
John W. Zentner, 42238 Edwards Cir., Columbiana, Ohio 44408

Filed Nov. 6, 1979, Ser. No. 91,869

Int. Cl.<sup>3</sup> C21D 9/00

U.S. Cl. 148—155

6 Claims



1. A method for cooling hot-rolled shapes, said method including the steps of:

- cooling hot lengths of rolled shapes, at a first cooling rate on a first bed section of a cooling bed by laterally advancing the shapes therealong at a first selected spacing, thereafter forming a layered collection of hot-rolled shapes having a second selectable spacing on said cooling bed to reduce the cooling-rate thereof as compared with the first cooling rate in said first bed section;
- moving the layered collection of hot-rolled shapes along the cooling bed to at least one predetermined discharged station on said cooling bed;
- loading the layered collection of hot-rolled shapes into a container;
- cooling the hot-rolled shapes in said container, and
- unloading the hot-rolled shapes from said container after cooling.

4,282,050

## PROCEDURE FOR COVERING ROOFS

Harald Thies-Evensen, Porsgrunn, Norway, assignor to Isola Fabrikker A/S, Eidanger, Norway

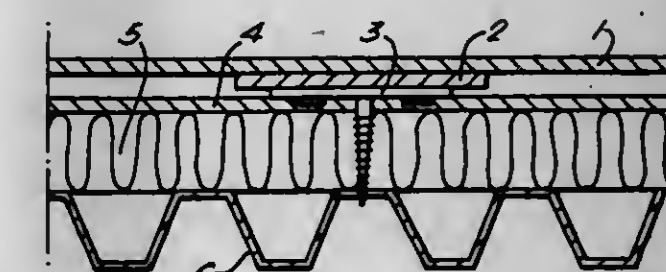
Filed Jul. 31, 1979, Ser. No. 62,288

Claims priority, application Norway, Aug. 11, 1978, 782746

Int. Cl.<sup>3</sup> B32B 7/08, 7/04

U.S. Cl. 156—71

1 Claim



1. A process for the cladding of a roof on to a support structure, comprising the steps of applying, without securing, a layer of insulation over said structure, applying, without securing, webs of impervious cladding material over said layer of



insulation, said webs being applied with adjacent edges thereof in abutting relationship, simultaneously anchoring said insulation layer and said cladding mechanically to said structure, said anchoring step including the application of fastening devices which span said edges of said webs for simultaneously holding them in place, and sealing over said edges of said webs as well as over said fastening devices by welding strips for covering said edges and said devices.

4,282,051

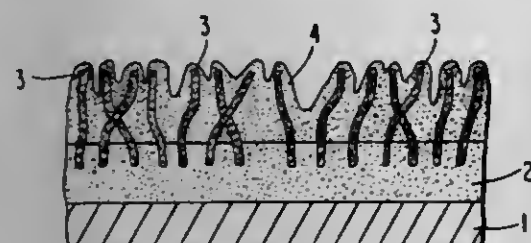
# PRESSURE-SENSITIVE FLOCKED FASTENER AND METHOD OF MAKING SAME

John M. Terpay, 528 River Oak Dr., Danville, Va. 24541  
Filed Mar. 6, 1980, Ser. No. 127,858

Int. Cl.<sup>3</sup> E04B 2/00

U.S. Cl. 156—71

20 Claims



1. A pressure-sensitive fastener having a discontinuous surface comprising a flocked pile surface adhered to a base material by a permanent adhesive, and a reservoir of aqueous pressure-sensitive adhesive adhering to and between the fibers forming said flocked pile surface.

4,282,052

# METHOD OF PREPARING A SELF-SEALING PNEUMATIC TIRE

Robert L. Dobson, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio  
Continuation of Ser. No. 21,656, Mar. 19, 1979, abandoned, which is a division of Ser. No. 368,145, Jan. 8, 1973, Pat. No. 4,163,467. This application Jan. 14, 1980, Ser. No. 112,027  
The portion of the term of this patent subsequent to Aug. 7, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> B60C 19/12

U.S. Cl. 156—79

11 Claims



1. A method of preparing a self-sealing pneumatic tire which comprises (A) building a green, unvulcanized rubber tire construction; said construction comprised of tread, spaced beads, connecting sidewalls and supporting structure and having an adherent unvulcanized rubber layer containing a heat activatable, gas liberating blowing agent on its inner surface, (B) shaping, molding and heating said tire construction under pressure to substantially simultaneously both covulcanize said construction and adherent layer and activate said blowing agent to cause its decomposition to form a gaseous product and (C) releasing said pressure to allow expansion of said gaseous product and provide a pneumatic tire having an integral, thin gauge, covulcanized, resilient rubber closed cell structure on

its inner surface with said closed cells containing a gas under a greater than atmospheric pressure.

4,282,053

# TUBE FORMING APPARATUS AND METHOD

Donald B. Lupton, Colne, and Kenneth Lawrence, Baildon, both of England, assignors to PH Thermal Products Limited, West Yorkshire, England

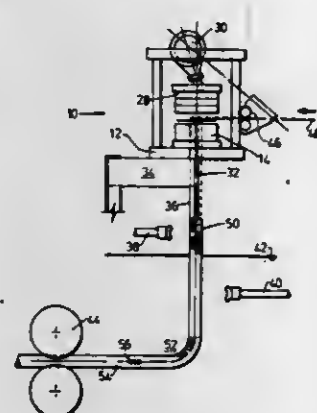
Filed Aug. 27, 1979, Ser. No. 69,913

Claims priority, application United Kingdom, Sep. 13, 1978, 36729/78

Int. Cl.<sup>3</sup> B32B 31/04

U.S. Cl. 156—264

37 Claims



1. An apparatus which comprises a pair of concentric cutting edges mounted above and aligned with a guide bar along which a ring of material is adapted to be guided, means for pressing a sheet of material against the cutting edges to cut a ring of material and transfer said rings to said guide bar, and means for coating the cut rings of material on the guide bar.

9. An apparatus comprising means for cutting successive rings from sheet material, means for guiding the rings for coaxial movement along a predetermined path of travel, and means for coating at least exterior circumferential surfaces of the rings during the movement thereof along the predetermined path.

4,282,054

# COATING COMPOSITION FOR RELEASE SHEETS

John A. Mattor, Bar Mills, and Lawrence Price, Old Orchard Beach, both of Me., assignors to Scott Paper Company, Philadelphia, Pa.

Division of Ser. No. 863,804, Dec. 23, 1977, Pat. No. 4,166,150. This application Apr. 20, 1979, Ser. No. 31,767

Int. Cl.<sup>3</sup> B32B 31/00

U.S. Cl. 156—289

12 Claims

5. In a method of consolidating a plurality of laminae impregnated with thermosetting resin by simultaneously heating and pressing the laminae, the improvement wherein at least one of the outer laminae is pressed against a release surface of a dried and cured coating composition comprising, in effective amounts for release, a release agent, a crosslinkable thermosetting resin, and a water dispersible organic compound containing polyoxyethylene, polyoxypropylene, or a block copolymer of polyoxyethylene and polyoxypropylene.

4,282,055

# APPARATUS FOR APPLYING ADHESIVE RIDER STRIPS TO THE FLATTENED END EDGES OF TUBE SECTIONS OR SACKS

Frank Bosse, Tecklenburg, and Horst Zemella, Leeden, both of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

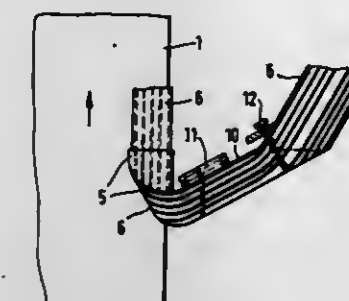
Filed Apr. 9, 1980, Ser. No. 138,754

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914696

Int. Cl.<sup>3</sup> B32B 3/04; B65B 61/18

U.S. Cl. 156—464

4 Claims



1. An apparatus for applying adhesive rider strips to the flattened end edges of tube sections or sacks, comprising a curved forming plate over the convex outer side of which the rider strip-forming web is guided and which, starting from its rectilinear run-up edge up to the transverse apex line of the curvature, is increasingly curved about its axis lying in the direction of web travel and, behind the apex line up to its run-off edge, is increasingly oppositely curved into the shape of the rider strip framing the edge, characterised in that the groove of the forming plate (5) that embraces the end edges and deforms the web to U shape is disposed in a substantially horizontal plane and the run-up edge is so inclined to the groove that it includes an acute angle with the upper side from its medial plane, and that the hot melt-applying adhesive nozzle (8) is formed by a plate (8.1) which is provided with a slot or bores, is disposed closely above and parallel to the web (6) running up the oblique run-up edge, and is displaceable between its front operative position and a retracted inoperative position.

4,282,056

# BOTH-SURFACE ADHESIVE TAPE PRODUCING APPARATUS

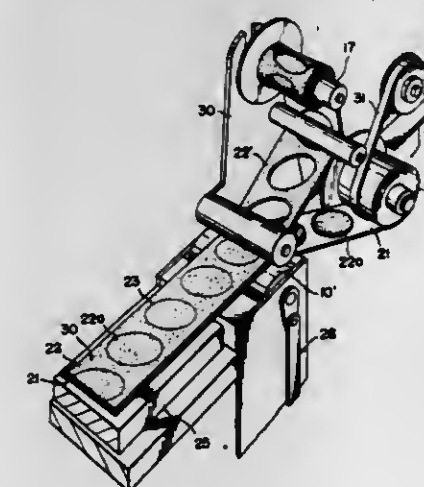
Tokujiro Okui, 3, C10-204, 3-chrome, Shinsenri Minamimachi, Toyonaka City, Japan

Division of Ser. No. 1,032, Jan. 4, 1979, abandoned. This application Jul. 2, 1979, Ser. No. 53,931

Int. Cl.<sup>3</sup> B32B 31/00

U.S. Cl. 156—519

15 Claims



1. A both-surface adhesive tape producing apparatus comprising a means for unwinding a both-surface adhesive tape

consisting of a bandshaped film and a band-shaped adhesive adhered on one side of said film, a means for supporting and guiding said both-surface adhesive tape pulled out of said unwinding means, a means for cutting a part of said adhesive to be of a fixed shape and size without cutting the still adhered film, feeding means for moving said both-surface tape to said cutting means, a peeling means for peeling the excess portion of said adhesive from the film while leaving the adhesive of fixed shape and size adhered to the film, means for winding up the excess portion of the adhesive and means for winding up said film with the adhered adhesive shape.

4,282,057

# VAPOR GROWTH OF MERCURY IODIDE FOR USE AS HIGH ENERGY DETECTORS

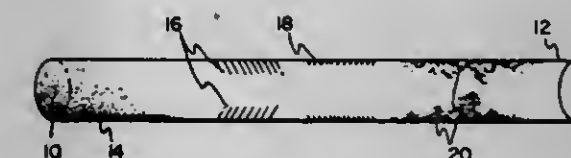
Samuel P. Faile, Cincinnati, Ohio, assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Feb. 27, 1980, Ser. No. 125,157

Int. Cl.<sup>3</sup> C30B 29/12

U.S. Cl. 156—614

14 Claims



1. A method for vapor phase growth of mercuric iodide crystals, said method comprising the steps of: providing an envelope; introducing into said envelope a mercuric iodide source material along with an organic transport material that is, at least in part, an organic polymer when subjected to heat sufficient to cause crystal growth in said envelope; and providing heat to said envelope to cause crystal growth to occur in said envelope in the presence of said organic polymer therein.

4,282,058

# APPARATUS FOR THERMAL TREATMENT OF FLOWABLE MATERIALS

Johann Gruter, and Heinz Märki, both of Zürich, Switzerland, assignors to Lura AG, Zürich, Switzerland

Filed Apr. 24, 1980, Ser. No. 143,279

Claims priority, application Switzerland, May 3, 1979, 137/79; May 3, 1979, 138/79

Int. Cl.<sup>3</sup> B01D 1/24

U.S. Cl. 159—13 R

16 Claims

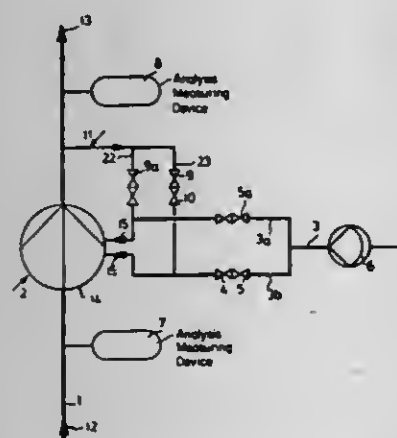
1. An apparatus for the thermal treatment of flowable materials comprising: means defining a treatment compartment; an essentially vertically disposed insert member arranged in said treatment compartment; said insert member having an outer surface constituting a treatment wall; a translatorily up-and-down movable treatment element cooperating with said treatment wall; said treatment element comprising at least one spreader element which coats with the treatment wall for forming a thin film;







- a reactor coolant conduit;
- a feed pump having a housing;
- a first plurality of gas injection nozzles positioned within said housing;
- a second plurality of gas injection nozzles positioned within said housing;
- a first gas injection conduit establishing fluid communication between the outlet of said gas pump and said first plurality of gas injection nozzles;
- a second gas injection conduit establishing fluid communication between the outlet of said gas pump and said second plurality of gas injection nozzles;
- a first bypass flow conduit establishing fluid communication between said reactor coolant conduit downstream from said pump and said first gas injection conduit;
- a second bypass flow conduit establishing fluid communication between said reactor coolant conduit downstream from said feed pump and said second gas injection conduit;
- a first gas injection conduit isolation valve for selectively opening and closing said first gas injection conduit between said gas pump and said first bypass flow conduit;
- a second gas injection conduit isolation valve for selectively opening and closing said second gas injection conduit between said gas pump and said second bypass flow conduit;
- a first gas injection conduit check valve positioned between



- said gas pump and said first bypass flow conduit for precluding fluid flow in the direction of said gas pump within said first gas injection conduit;
- a second gas injection conduit check valve positioned between said gas pump and said second bypass flow conduit for precluding fluid flow in the direction of said gas pump within said second gas injection conduit;
- a first bypass flow conduit isolation valve for selectively opening and closing said first bypass flow conduit between said reactor coolant conduit and said first gas injection conduit;
- a second bypass flow conduit isolation valve for selectively opening and closing said second bypass flow conduit between said reactor coolant conduit and said second gas injection conduit;
- a first bypass flow conduit check valve positioned between said reactor coolant conduit and said first gas injection conduit for precluding fluid flow in the direction of said reactor coolant conduit within said first bypass flow conduit;
- a second bypass flow conduit check valve positioned between said reactor coolant conduit and said second gas injection conduit for precluding fluid flow in the direction of said reactor coolant conduit within said second bypass flow conduit;
- and, analysing means for determining the gas content of the reactor coolant at both the inlet and outlet of said feed pump.

#### 4,282,063 DEVICE FOR CORE CONTAINER-CRASH PROTECTION AND COOLANT GUIDANCE IN A NUCLEAR REACTOR PRESSURE VESSEL

Lothar Werres, Langensendelbach, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

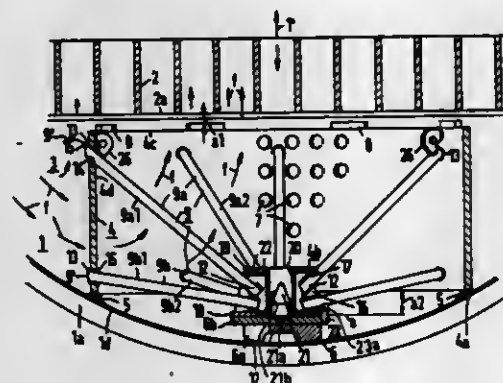
Filed Oct. 19, 1978, Ser. No. 952,921

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748483

Int. Cl.<sup>3</sup> G21C 5/10

U.S. Cl. 176—38

9 Claims



1. Apparatus for core-barrel crash protection and conduction of coolant in a nuclear reactor pressure vessel having a spherical bottom, including a core support structure having a core barrel and being disposed within the pressure vessel, the apparatus comprising coolant collecting means disposed below the core support structure and supported on the spherical bottom for uniformly distributing coolant flow, said collecting means being in the form of a substantially hollow cylindrical wall perforated barrel having coolant passage openings formed therein, the spherical bottom having an annular bracket and a central bracket rigid with said spherical bottom, said perforated barrel having a lower rim disposed on said annular bracket and a central support piece disposed on said central bracket, and means for pressing said lower rim against said annular bracket, said pressing means including a strut system connecting said central support piece to said cylindrical wall of said perforated barrel and detachable connecting means for clamping said central support piece to said central bracket, said central bracket and said central support piece defining a small gap therebetween closed under elastic tensional deformation of said strut system by said detachable connecting means so as to press the lower rim of said perforated barrel through said strut system against said annular bracket, a first set of anchor points distributed about the periphery of said central support piece and a second set of anchor points distributed about said cylindrical wall of said perforated barrel, said strut system being in the form of a multiplicity of rods disposed in star-like manner, each of said rods extending from a first to a second anchor point, and, for elastically tensionally deforming said strut system by clamping action of said detachable connecting means, said central support piece extending at least partially above said lower rim in the axial direction of said cylindrical perforated barrel.

#### 4,282,064 NUCLEAR FUEL ELEMENT

Kiyozumi Hayashi, Toride, and Kazushige Domoto, Yokohama, both of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed May 25, 1979, Ser. No. 42,512

Claims priority, application Japan, May 24, 1978, 53-62003

Int. Cl.<sup>3</sup> G21C 3/30

U.S. Cl. 176—73

5 Claims

1. A nuclear fuel element comprising:  
a cladding tube having end plugs for sealing the ends of said tube; and

- a multiplicity of fuel pellets stacked within the cladding tube;
- each of said fuel pellets having a substantially cylindrical external lateral surface and a plurality of longitudinal recesses having rounded root portions on the external



lateral surface, a height of each pellet ranging from  $\frac{1}{2}$  to  $\frac{3}{4}$  of the outer diameter thereof, the fuel pellets being stacked in such a manner that the recesses of one pellet are not aligned with the recesses of adjacent upper and/or lower pellets.

#### 4,282,065 FUEL ASSEMBLY FOR GAS-COOLED NUCLEAR REACTORS

Theodor Hensolt, Nuremberg, and Peter Rau, Mittelrehnbach, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

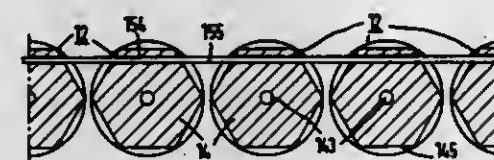
Filed Dec. 18, 1978, Ser. No. 970,454

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1977, 2756667

Int. Cl.<sup>3</sup> G21C 3/02

U.S. Cl. 176—78

3 Claims



1. A fuel assembly for gas-cooled nuclear reactors, having a plurality of fuel rods fastened to a mounting plate formed with throughbores serving as passageways for a coolant, the fuel rods having respective perforated end caps by which the fuel rods are connected to a fission-gas exhaust system, the end caps being formed with a respective external thread and being threadedly secured thereby in the mounting plate and simultaneously connected to the fission-gas exhaust system through channels formed in the mounting plate, the mounting plate and the end caps having surfaces formed thereon having a residual roughness of from 4 to 16 microns and being sealingly pressable against one another by the threaded connection between the end caps and the mounting plate, comprising a threaded sleeve serving as means for threadedly securing the respective end caps to the mounting plate, said threaded sleeve being provided with means for gripping the sleeve by a tool and being formed with an internal thread in threaded engagement with the external thread of the respective end caps and an external thread in threaded engagement with a corresponding internal thread formed in the mounting plate, said external thread of said threaded sleeve having a greater pitch than said internal thread thereof.

#### 4,282,066 PROCESS AND APPARATUS FOR COKING COAL USING MICROWAVE RADIATION

Dietrich Wagener, Horst Fach, and Hayri Ergun, all of Essen, Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

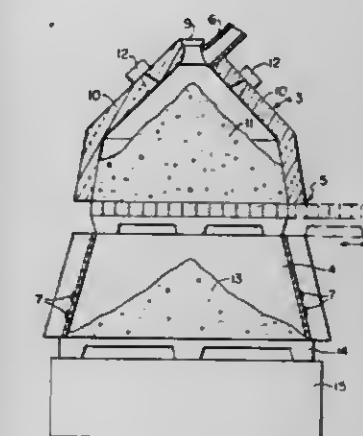
Filed Mar. 22, 1979, Ser. No. 23,092

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812520

Int. Cl.<sup>3</sup> C10B 19/00, 23/00

U.S. Cl. 201—6

22 Claims



1. A process for coking coal, said process comprising: introducing coal to be coked into a coking chamber; exposing said coal within said coking chamber to microwave radiation only, and thereby forming said coal into hot coke; and withdrawing said hot coke from said coking chamber, introducing said hot coke into a cooling zone, and at least partially cooling said hot coke within said cooling zone to form cooled coke, said cooling comprising exposing photocells to said hot coke, whereby said photocells absorb radiant energy from said coke and transform the thus absorbed radiant energy into electricity.

#### 4,282,067 APPARATUS FOR HIGH VOLUME DISTILLATION OF LIQUIDS

Jerome Katz, and Sidney J. Fogel, both of Rochester, N.Y. Division of Ser. No. 787,832, Apr. 18, 1977, Pat. No. 4,186,058, and Ser. No. 769,291, Feb. 22, 1977, Pat. No. 4,186,060, which is a continuation-in-part of Ser. No. 681,290, Apr. 28, 1976, Pat. No. 4,035,243. This application Aug. 10, 1979, Ser. No. 65,466

The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.

Int. Cl.<sup>3</sup> C02F 1/04

U.S. Cl. 202—180

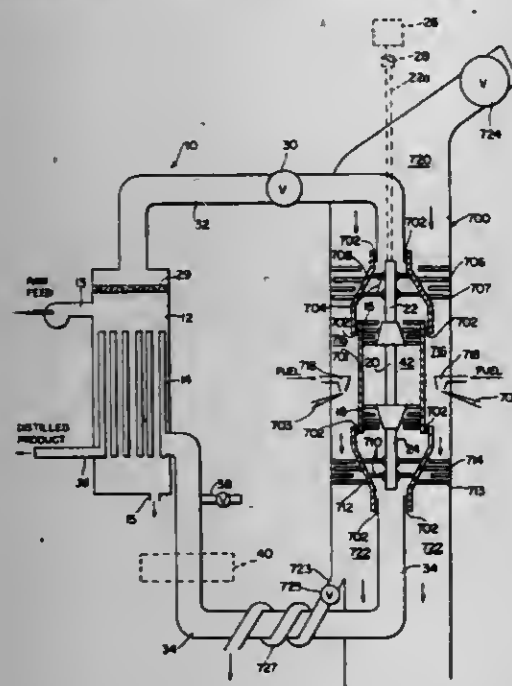
47 Claims

1. A closed system for high volume distillation of impure liquids comprising:

- (a) evaporator means, including means for supplying impure liquid feed thereto, for evaporating said impure liquid at a temperature above the freezing point of said liquid at ambient pressure and at a pressure not exceeding a pressure corresponding to said evaporation temperature under saturated conditions;
- (b) first compressor means receiving said vapor from said evaporator means for increasing said vapor pressure and temperature;
- (c) condenser means in heat transfer relationship with said impure liquid feed for receiving said vapor and for at least partially condensing said vapor whereby the heat released by said vapor is transferred to said feed liquid to supply at least a part of the heat energy necessary for evaporating said feed liquid;
- (d) duct means communicating with said condenser means for carrying said vapor from said first compressor means to said condenser means;



- (e) means for recovering condensate from said condenser means;
- (f) means for removing unevaporated liquid feed from said evaporator means; and
- (g) auxiliary turbine means drivingly connected to said first compressor means, said auxiliary turbine means including an auxiliary flow conduit for hot gas flow therethrough,



said auxiliary flow conduit annularly disposed with respect to and separated from the space in which said vapor flows, and turbine blading in said conduit, said turbine blading drivingly linked to said first compressor means whereby hot gas flow through said conduit does work on said turbine blading which work is transmitted to said first compressor means.

4,282,068

# APPARATUS FOR THE TRANSFER AND QUENCHING OF COKE

Claus Flockenhaus; Manfred Galow, both of Essen; Joachim F. Meckel, Heiligenhaus, and Horst G. Joseph, Essen, all of Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Fed. Rep. of Germany

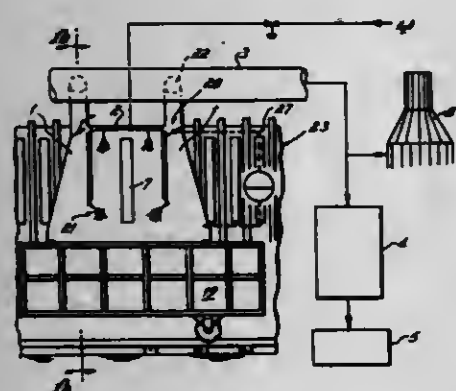
Filed Dec. 28, 1979, Ser. No. 108,008

Claims priority, application Fed. Rep. of Germany, Jan. 2, 1979, 2900079

Int. Cl.<sup>3</sup> C10B 39/04, 39/08, 45/00

U.S. Cl. 202—227

4 Claims



1. In a coke quenching system, the combination comprising a coke quenching car for receiving hot coke from a coke oven and transferring it from the coke oven, a hood located in close proximity above the quenching car, means for moving the hood independently of but with the quenching car, the hood including in the interior thereof means for spraying the coke and the quenching car with water, and conduit means communicating with the movable hood to exhaust the steam resulting

from quenching of the coke from inside the hood and conduct the steam to a stationary treating station without venting of the steam to the atmosphere there between.

4,282,069

# COKE DRY QUENCHING APPARATUS

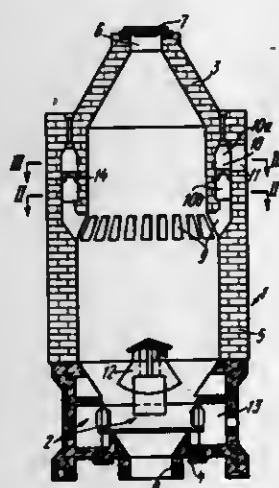
Alexandr N. Minasov, ulitsa Ivanova, 12/16, kv. 59; Evgeny P. Likhogub, ulitsa Slinko, 2, kv. 11, and Vasily S. Kononenko, prospekt 50-letia SSSR, 12, kv. 81, all of Kharkov, U.S.S.R.

Filed Jul. 22, 1980, Ser. No. 171,164

Int. Cl.<sup>3</sup> C10B 39/02

U.S. Cl. 202—228

4 Claims



1. A coke dry quenching apparatus comprising:
  - (a) a vertical chamber having
    - a roof with a charging hole;
    - a bottom with a discharging gate;
    - walls in which are disposed an annular collector with a common gas withdrawal conduit, and a plurality of gas peripheral conduits communicating the inner space of the chamber with said annular collector;
    - a horizontal partition having ports and being installed within said annular collector so that the hollow thereof is divided into a lower cavity communicated with said gas peripheral conduits, and an upper cavity communicated with said common gas withdrawal conduit; and
  - (b) a quenching gas feeding means disposed in the lower portion of said chamber.

4,282,070

# ENERGY CONVERSION METHOD WITH WATER RECOVERY

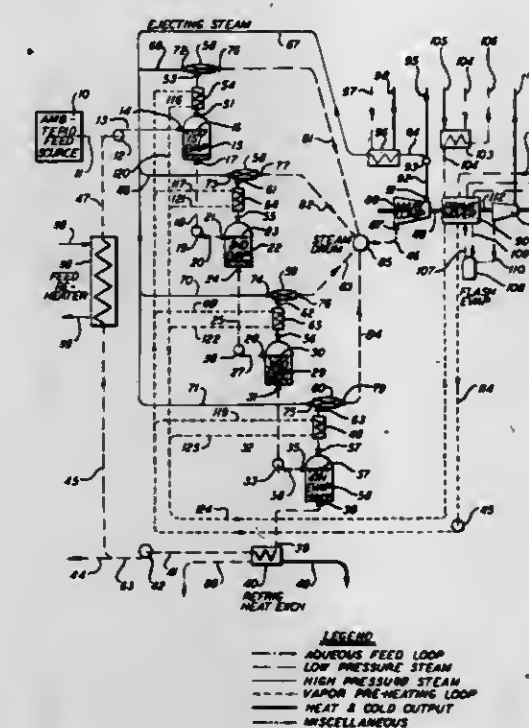
Dan Egosi, 7 Ben Gurion Blvd., Tel Aviv, Israel  
Filed May 30, 1978, Ser. No. 910,098  
Int. Cl.<sup>3</sup> C02F 1/04; F22D 1/00

U.S. Cl. 203—11

55 Claims

1. A process of continuously generating heat energy, cooling capacity and pure water from an available aqueous feed medium, the process comprising:
  - introducing a continuous flow of an aqueous liquid feed medium from a source at an initial temperature into at least one enclosed region maintained at an under-pressure below the boiling pressure of said medium at the initial temperature;
  - evaporating part of the water in the aqueous feed medium inside the region by extracting at least a part of the heat of vaporization from the remainder of the aqueous medium;
  - withdrawing water vapor evaporated from the feed medium in the region;
  - compressing the withdrawn vapor to a predetermined output pressure;
  - delivering at least part of said compressed withdrawn vapor as a first source of output heat energy and as a source of pure output water; and

discharging continuously the cooled remainder of the aqueous feed medium from the region as a source of cooling capacity, wherein the improvement comprises: the step of withdrawing water vapor from the region comprises supplying a jet of ejecting steam for evacuating water vapor evaporated from the feed medium in the region into a combined flow with said jet of ejecting steam; and



the step of compressing the withdrawn vapor comprises thermo-compressing the vapor by means of the ejecting steam jet in a converging-diverging throat to a first pressure, intermediate between the pressure maintained in the region and the final output pressure, and then mechanically compressing the combined thermo-compressed vapor and ejecting steam from the first pressure to the output pressure.

4,282,071

# ANHYDROUS SEPARATION OF VOLATILE ALUMINUM CHLORIDE COMPLEX FROM AN ETHYLBENZENE PRODUCTION STREAM BY DISTILLATION

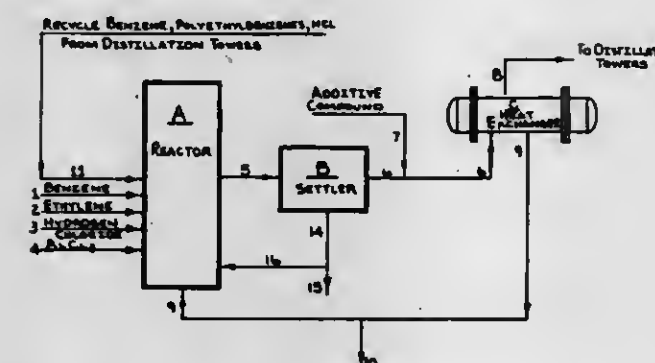
Fred A. Sherrod, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 25, 1977, Ser. No. 790,517

Int. Cl.<sup>3</sup> B01D 3/34

U.S. Cl. 203—38

26 Claims



1. A process for the anhydrous separation of the volatile, organic aluminum chloride complex from ethylbenzene both of which are contained in an ethylbenzene production stream, said process comprising:
  - a. adding to the production stream a compound capable of transforming the volatile aluminum chloride complex into an aluminum chloride product which is essentially non-

volatile at the temperature and pressure at which the ethylbenzene will distill; and  
b. distilling the production stream at a temperature sufficient to cause the volatilization of the ethylbenzene.

4,282,072

# METHOD FOR AUTOMATIC INDUSTRIAL ELECTROCHEMICAL ANALYSIS

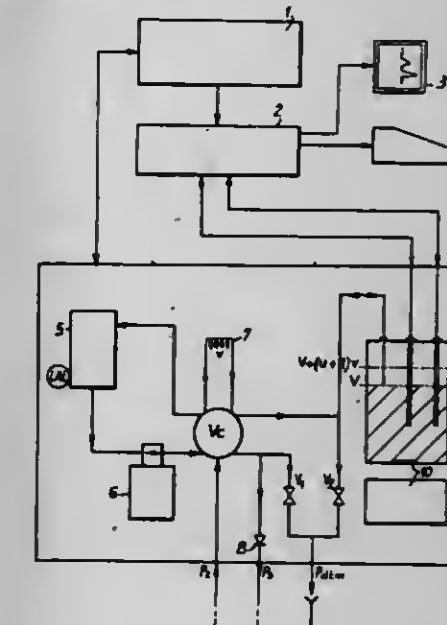
Michel Barbelet, Lyons; Jean-Pierre Caujolle, Ste Foy les Lyons; Claude Scramoncin, St Priest, and Edmond Thibault, Saint Chamond, all of France, assignors to ELF France, Paris, France

Filed Sep. 17, 1979, Ser. No. 75,998

Claims priority, application France, Sep. 18, 1978, 78 26653  
Int. Cl.<sup>3</sup> G01N 27/42

U.S. Cl. 204—1 T

5 Claims



1. A method for automatic titration of a plurality of samples by argentimetric coulometry which comprises: automatically introducing a predetermined volume  $v$  of a sample, containing a substance A to be titrated, and a predetermined volume  $uv$  of an electrolyte, into a coulometric titration zone containing a known volume  $V$  of a mixture of electrolyte and sample at the potential of equivalence, said volume  $V$  being left over from a prior sample, and wherein the reaction volume held in the titration zone is equal to  $V + (u+1)v$ , the ratio of sample to electrolyte equal to  $u$ ; coulometrically titrating the sample in the titration zone by producing a determined quantity of substance B and following the reaction between substances A and B by potentiometry wherein A is the substance in the sample whose quantity is to be determined and B is the substance which reacts with A which is generated in the coulometric titration zone and repeating said titration a plurality of times, wherein said volume  $V$  remains substantially constant from sample to sample.

4,282,073

# ELECTRO-CO-DEPOSITION OF CORROSION RESISTANT NICKEL/ZINC ALLOYS ONTO STEEL SUBSTRATES

Theodore A. Hirt, and Robert H. Dillon, both of Warren, Ohio, assignors to Thomas Steel Strip Corporation, Warren, Ohio

Filed Aug. 22, 1979, Ser. No. 68,877

Int. Cl.<sup>3</sup> C25D 3/56, 5/04, 5/12

U.S. Cl. 204—28

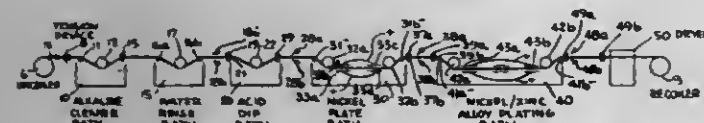
16 Claims

1. A process for plating a protective corrosion-resistant coating on iron or steel substrates which comprises the steps of immersing the substrates in a plating bath solution having a combined dissolved metal content consisting of nickel and zinc in the range of 10 to 25 ounces per gallon of plating bath; wherein the ratio of nickel to zinc in said bath is in the range of



0.1:1 to 0.4:1; the nickel content of said bath is in the range 1.4 to 3.5 ounces per gallon, the balance of metal being dissolved zinc present in said plating bath solution in the range 8.4 to 21 ounces per gallon; said bath having a pH in the range 2.3 to 4.5; said bath being maintained at a temperature in the range 135° F. to 145° F.; and subjecting said iron substrate to a cathodic plating current density in the range 30 to 120 amperes/ft<sup>2</sup> until the nickel/zinc alloy coated on said substrate is in the range of 0.00005 to 0.0005 inches in thickness; said alloy having a nickel content of 10% to 15%, the balance being zinc and said coating providing a corrosion resistance to said substrate in excess of 0.5 hour per microinch of nickel/zinc alloy by the Salt Spray Test.

4. The method of plating protective corrosion-resistant layers on iron or steel substrates according to claim 1 wherein the nickel/zinc alloy coating is underlaid with a substantially pure nickel priming coat having a thickness in the range 0.000005 to 0.00005 inches whereby said composite corrosion-resistant coating has a corrosion-resistance to salt spray at least twice that of said coated substrate in the absence of the nickel priming layer.



7. The method of plating protective corrosion-resistant coatings according to claim 4 wherein said process is continuous and said iron substrate is a steel strip which comprises the steps of causing said strip to traverse a first section comprising an aqueous nickel salt-containing bath wherein said strip is made cathodic as it passes through said bath; maintaining an electroplating current density to said cathodic strip in said first section sufficient to deposit from said bath a substantially pure nickel priming layer of a thickness of from 0.000005 to 0.00005 inches; then immersing said strip in a second section containing an alloy plating solution having a combined dissolved metal content of nickel and zinc in the range 10 to 25 ounces per gallon and wherein the ratio of nickel to zinc in said solution ranges from 0.1:1 to 0.4:1 and the nickel content of said bath is in the range 1.4 to 4.4 ounces per gallon; said bath having a pH in the range 2.3 to 4.5; and then electroplating at a temperature in the range 135° F.-145° F., an alloy layer of thickness 0.00005 to 0.0005 inches at a current density in the range of 40-110 amperes per square foot.

4,282,074

#### ELECTROLYTIC PROCESS UTILIZING A TRANSITION METAL-GRAPHITE INTERCALATION COMPOUND CATHODE

Donald W. Du Bois, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 7, 1980, Ser. No. 165,995

Int. Cl.<sup>3</sup> C25B 1/34, 11/12

U.S. Cl. 204—98

8 Claims

1. In a method of electrolyzing an alkali metal chloride brine in an electrolytic cell having an anolyte compartment with an anode therein, a catholyte compartment with a cathode therein, and an ion permeable separator therebetween, which method comprises feeding the brine to the anolyte compartment, passing an electrical current from the anode to the cath-

ode, and recovering chlorine from the anolyte compartment and alkali metal hydroxide solution from the catholyte compartment, the improvement wherein the cathode comprises an intercalation compound comprising graphite and transition metal component.

4,282,075

#### ELECTRODEPOSITION OF METALS

Edward G. Baggio, and Clifford J. Krauss, both of Trail, Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed May 15, 1980, Ser. No. 149,960

Claims priority, application Canada, Jan. 28, 1980, 344488

Int. Cl.<sup>3</sup> C25C 1/06, 1/08, 1/10, 1/12

U.S. Cl. 204—105 R

20 Claims

1. A method for the electrolytic deposition of metals using an electrolytic cell containing an electrolyte in which a multiplicity of electrodes, consisting of alternate, substantially equally spaced anodes and cathodes is immersed; the anodes and cathodes, respectively, independently being connected to a source of electrical power; wherein the current between at least one end electrode and its immediate neighbouring electrode is controlled at a desired value by increasing the spacing of the end electrode from its immediate neighbouring electrode to a value higher than that between the remainder of the electrodes in the cell.

4,282,076

#### METHOD OF VISBREAKING POLYPROPYLENE

Donald E. Boynton, Kennett Sq., Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sep. 17, 1979, Ser. No. 76,054

Int. Cl.<sup>3</sup> C08J 3/28

U.S. Cl. 204—159.2

13 Claims

1. A process for preparing an environmentally stable plastic composition by visbreaking a propylene polymer to controllably reduce its molecular weight, using an activated portion of said propylene polymer as a prodegradant, which process comprises:

- forming a prodegradant by activating a first portion of propylene polymer by exposure to ionizing radiation;
- incorporating said prodegradant into a second portion of propylene polymer, wherein said second portion is at least as large as said first portion;
- adding to the mixture of said first and second portions of said propylene polymer a stabilizing amount of an antioxidant; and
- visbreaking said mixture by shear mixing in an extruder while heating said mixture to an extrusion temperature between about 200° C. and 300° C. to controllably lower the molecular weight of said mixture and narrow the molecular weight distribution, while substantially retaining the stabilizing effect of said antioxidant stabilizer.

4,282,077

#### UNIFORM PLASMA ETCHING SYSTEM

Joseph A. Reavill, Mira Loma, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jul. 3, 1980, Ser. No. 165,821

Int. Cl.<sup>3</sup> C23F 1/00; H01L 21/306

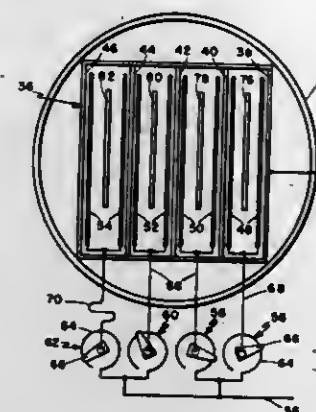
U.S. Cl. 204—192 E

9 Claims

1. A uniform plasma etching system comprising in combination:

- a chamber;
- a source of reactive gas for supplying to said chamber;
- an RF generator coupled to said chamber for generating a plasma therein; and
- a plurality of part cells within said chamber formed by pairs of generally opposed electrodes of the same polarity and plasma cells at each side of said part cells, each of said part cells being separated from each adjacent part cell by a

plasma cell, each of said plasma cells being defined by adjacent generally opposed electrodes of opposite polarity



positioned to generate plasma externally of the adjacent part cell.

4,282,078

#### SOLID STATE SENSOR FOR ANHYDRIDES

Andre M. Chamberland, Boucherville, and Michel Gauthier, Laprairie, both of Canada, assignors to Hydro-Quebec, Montreal, Canada

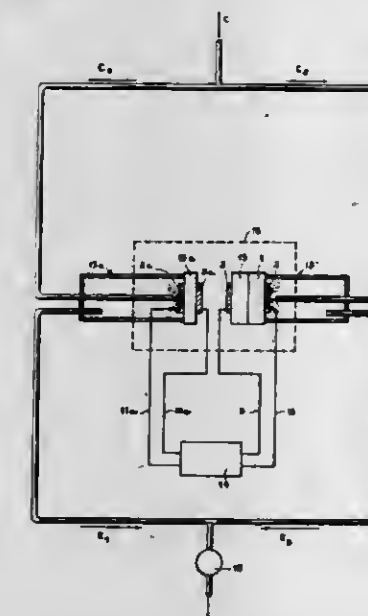
Continuation-in-part of Ser. No. 472,904, May 23, 1974, abandoned. This application Aug. 30, 1976, Ser. No. 718,511

Claims priority, application Canada, Aug. 29, 1975, 234646

Int. Cl.<sup>3</sup> G01N 27/58

U.S. Cl. 204—195 S

16 Claims



1. A sensor for accurately detecting the activity of gaseous anhydrides in an oxygen-bearing gas, comprising a solid state electrolyte element having oxyanions corresponding to the anhydride to be detected; a reference electrode being in contact with said electrolyte element, a detection electrode remote from said reference electrode and also in contact with the electrolyte element; said electrolyte and detection electrode being arranged such that they are free to come into contact with said gaseous anhydride, said reference and detection electrodes being arranged such that a difference of potential occurs between said reference and detection electrodes when a sample of said anhydride to be detected is contacted with said detection electrode and with said electrolyte material; heating means for heating said electrolyte element to a temperature such that a logarithmic variation in the concentration of the anhydride to be detected causes a potential and substantially linear variation in said difference of potential, said temperature being below the fusion temperature of said electrolyte element; and a potentiometric measurement device connected to said electrodes for measuring the activity of said anhydride to be detected by measuring said difference of potential wherein at least one solid material is sealing fixed to said

electrolyte material and said solid material has at least two channels bored therethrough, wherein said two channels are in gas communication with each other by way of a passage at one extremity of said two holes, one of said electrodes being located in said passage.

4,282,079

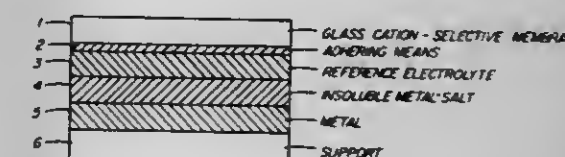
PLANAR GLASS ION-SELECTIVE ELECTRODE  
Jack C. Chang, Webster, and James R. Sandifer, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 13, 1980, Ser. No. 121,080

Int. Cl.<sup>3</sup> G01N 27/36

U.S. Cl. 204—195 G

10 Claims



1. A planar ion-selective glass electrode comprising:
  - (a) an inherently conductive internal reference electrode comprising a metal/metal salt reference material, said reference electrode comprising a conducting layer of a metal in contact with a layer of an insoluble salt of said metal, and an inherently conductive adhesive electrolyte layer comprising a water-soluble salt having as an anion the anion of said metal salt layer and a polymeric binder;
  - (b) a cation-selective glass membrane of predetermined uniform thickness in regions intended for contact with a sample for analysis; and
  - (c) means for adhering said reference electrode to said glass membrane comprising said inherently conductive adhesive electrolyte layer.
6. A planar ion-selective glass electrode comprising:
  - (a) an inherently conductive redox internal reference electrode comprising an inherently conductive, adhesive redox couple layer comprising a redox couple and a binder over an electrically conducting layer;
  - (b) a cation-selective glass membrane of predetermined uniform thickness in a region thereof intended for contact with a sample for analysis; and
  - (c) means for adhering said reference electrode to said glass electrode comprising said inherently conductive, adhesive redox couple layer.

4,282,080

#### ELECTROCHEMICAL SENSOR, PARTICULARLY FOR OXYGEN DETERMINATION IN COMBUSTION GASES

Klaus Müller, Tamm; Ernst Linder, Mühlacker; Helmut Meier, Schwieberdingen; Karl-Hermann Friese, Leonberg; Franz Rieger, Aaleo, and Heinz Geier, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,632

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 2909452

Int. Cl.<sup>3</sup> G01N 27/58

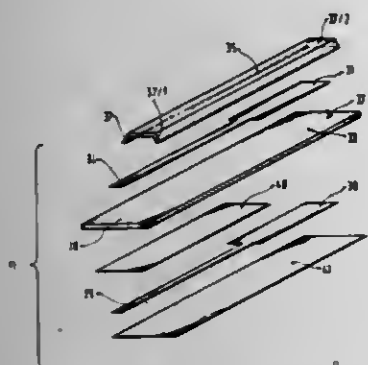
U.S. Cl. 204—195 S

13 Claims

1. Electrochemical sensor, particularly for determination of oxygen content in combustion gases, especially from an internal combustion engine, having  
a metal housing (13) formed with a longitudinal opening therethrough;  
an elongated plate-like sensing element (11) having a sensing portion at one end thereof adapted to be exposed to the gases, a terminal portion at the other end for connection to an external circuit, and an intermediate portion, said plate-like sensing element being secured and sealed in said housing at said intermediate portion, with the sensing portion



thereof projecting from the intermediate portion and being exposed to the gases;  
said sensing element (11) including an oxygen ion conductive solid electrolyte body (32, 43) in form of an essentially plane flat plate;  
a reference electrode (31, 46) applied to one major surface (33) thereof;  
an electron conductive sensing electrode (30) applied to the other major surface thereof and located opposite the reference electrode, the reference electrode being exposed to a reference substance having a predetermined oxygen partial pressure to provide a reference level,



conductor means (39, 34) extending from said electrodes to the terminal portion,  
and a trough-like cover element (35, 50) having a concave inner surface covering the reference electrode (31, 46), secured to said one major surface of the solid electrolyte body (32, 43) with the concave surface facing said one major surface of the reference electrode, defining a chamber (36, 51) therebeneath and providing for clearance between the reference electrode and the inner surface of the trough-like cover element,  
said reference substance being located in said chamber.

4,282,081

## DOUBLE JUNCTION REFERENCE ELECTRODE

Frank C. Arrance, Sr., Costa Mesa, Calif., assignor to Graphic Controls Corp., Buffalo, N.Y.

Filed Jul. 10, 1980, Ser. No. 167,768

Int. Cl.<sup>3</sup> G01N 27/30

U.S. Cl. 204—195 F

10 Claims



1. A double junction reference electrode providing a precise and reproducible reference potential stable over at least a 24-hour time period,  
said electrode comprising  
a pair of in-line coaxial, vertically-oriented sealable, tubular fluid compartments including an upper compartment and a lower compartment each adapted to retain an electrically conductive chemical composition therein,  
joinder means coaxial with said upper compartment and with said lower compartment and interposed therebetween for mechanically and dissociably intercoupling said compartments in fluid-tight interengagement with one another,  
fluid-retentive, fluid-flow-restricting first conduit means supported by and extending axially through said joinder means for providing an ion-permeable electrically conductive fluid path between said upper compartment and said lower compartment,  
cap means surmounting said upper compartment for sealing

an upper open end thereof, to provide a fluid-tight closure therefor,  
electrically conductive external cable means sealed into to extend through said cap means in electrically conductive communication with said upper compartment interiorly thereof,  
plug means sealing a lower open end of said lower compartment as a fluid tight closure therefor,  
fluid permeable second conduit means extending axially through said plug means for providing an electrically conductive fluid-permeable junction between said lower compartment and a test system exterior of said electrode.

4,282,082

## SLURRY ELECTROWINNING APPARATUS

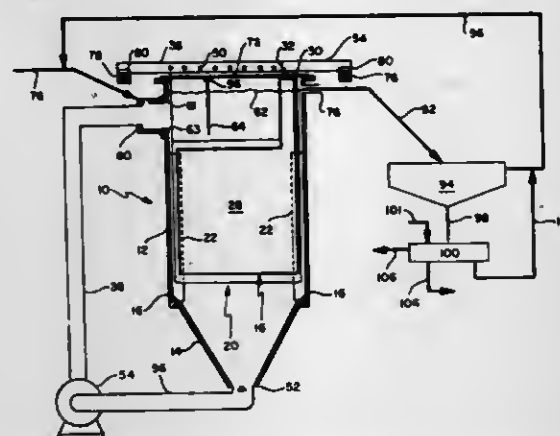
Robert D. Cook, Farmington; Robert C. Emmett, Jr., Salt Lake City; Bruce C. Wojcik, Kearns, and Frank A. Baczek, Sandy, all of Utah, assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Jan. 29, 1980, Ser. No. 116,507

Int. Cl.<sup>3</sup> C25D 21/10; C25C 1/12, 7/00, 7/02

U.S. Cl. 204—237

13 Claims



1. An electrowinning apparatus for recovering copper from a slurry comprising copper-bearing solids and an electrolyte, the apparatus comprising:

- a tank for containing said slurry, said tank having alternating spaced-apart anodes and cathodes mounted therein;
- an inlet opening formed in a side of said tank, at a level above the top of said anodes and cathodes and adapted to be below the upper level of the slurry, for introducing said slurry into said tank;
- an overflow opening formed in a side of said tank for maintaining a slurry level within said tank which is above said inlet opening such that said slurry is introduced to said tank below said level;
- a tank bottom including means to recirculate a portion of said slurry from said tank bottom to the inlet opening; and
- electrical bussing in contact with said anodes and cathodes for providing electric current to same such that when current is passed therebetween through said slurry, copper deposits upon said cathodes.

4,282,083

## PENNING SPUTTER SOURCE

Gabor Kertesz, and György Vago, both of Budapest, Hungary, assignors to Hirada Stechnikai Ipari Kutató Intézet, Budapest, Hungary

Filed Feb. 13, 1980, Ser. No. 121,135

Claims priority, application Hungary, Feb. 19, 1979, HI 507

Int. Cl.<sup>3</sup> C23C 15/00

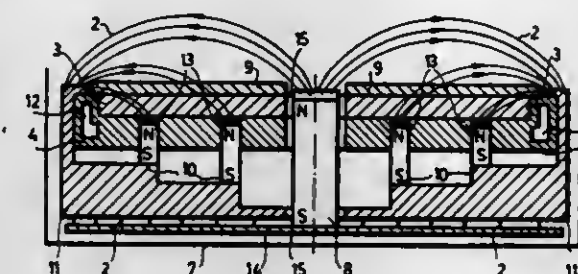
U.S. Cl. 204—298

13 Claims

1. A Penning sputter source comprising a screen system forming an outer housing, an anode, a cathode, an exciting magnet, and a cooling system positioned within said housing, said cathode being separated from said anode and forming a target, said cooling system being connected to said target, a

magnetic conductor magnetically coupled to said exciting magnet and separated therefrom, and at least one auxiliary magnet is situated on said magnetic conductor, wherein said at

adjusting the flow rate of the oxygen containing gas in the direction to reduce said deviation.



least one auxiliary magnet has a lower magnetic intensity than said exciting magnet and its upper level lies under the upper level of said exciting magnet.

4,282,084

## CATALYTIC CRACKING PROCESS

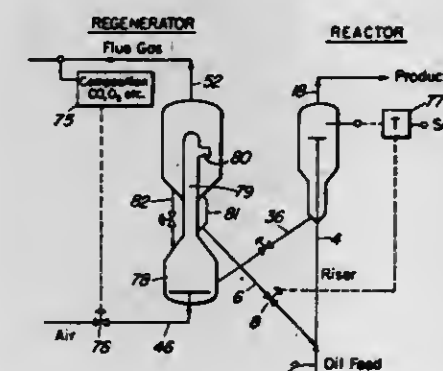
Benjamin Gross, and Wooyoung Lee, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 946,004, Sep. 27, 1978, abandoned, which is a continuation of Ser. No. 830,955, Sep. 6, 1977, abandoned, which is a continuation of Ser. No. 651,109, Jan. 21, 1976, abandoned, which is a continuation-in-part of Ser. No. 529,055, Dec. 3, 1974, Pat. No. 3,960,707, which is a division of Ser. No. 472,525, May 23, 1974, abandoned. This application Apr. 7, 1980, Ser. No. 137,877

Int. Cl.<sup>3</sup> C10G 11/18

U.S. Cl. 208—113

12 Claims



1. In a process for the fluid catalytic cracking of a hydrocarbon oil in the absence of added hydrogen to produce products boiling in the gasoline and the fuel oil range, said process comprising contacting said hydrocarbon oil with a regenerated, porous acidic solid catalyst in a cracking vessel under conditions effective to convert said oil to said products and deposit coke on said catalyst; transferring said coked catalyst to a regeneration vessel wherein in a dense fluid bed of catalyst is maintained at an elevated temperature and burning at least a portion of said coke in the presence of an oxygen containing gas with production of carbon dioxide and carbon monoxide in said dense bed, said production being characterized by a CO<sub>2</sub>/CO ratio; and recycling regenerated catalyst from said regeneration vessel to said cracking vessel to catalyze further cracking and supply at least part of the heat required for said cracking, the improvement in control of said regenerator which comprises:

- selecting a temperature within the range of about 1200° to about 1350° F. for operation of said dense bed;
- adding to said circulating catalyst a metal promoter selected from the group consisting of Pt, Pd, Rh, Ir, Os and Re in an amount effective to produce a CO<sub>2</sub>/CO ratio within the range of 1 to 6;
- determining the deviation of the temperature of the dense bed with metal promoter from said selected temperature; and

4,282,085

## PETROLEUM DISTILLATE UPGRADING PROCESS

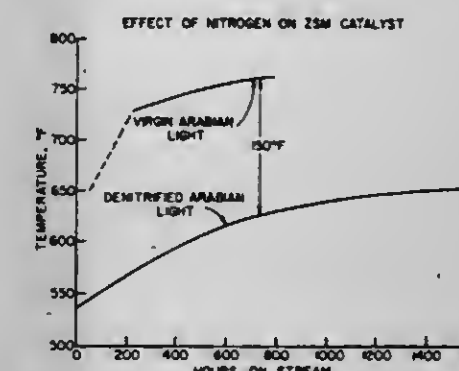
Dennis J. O'Rear, Tiburon, and Jerome F. Mayer, San Anselmo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 954,062, Oct. 23, 1978, Pat. No. 4,171,257. This application May 21, 1979, Ser. No. 41,209

Int. Cl.<sup>3</sup> C10G 11/05, 25/03

U.S. Cl. 208—120

9 Claims



1. A process for upgrading a petroleum distillate feed consisting essentially of hydrocarbons having a normal boiling point range in the range of from about 400° to 1000° F. and producing C<sub>3</sub>-C<sub>4</sub> olefins, based upon feed converted, in an amount in the range of from about 2 to 10 weight percent, comprising producing an effluent stream containing C<sub>3</sub>-C<sub>4</sub> olefins by contacting said feed with a catalyst comprising ZSM-5-type crystalline aluminosilicate zeolite in a form which is substantially free of hydrogenation activity, said contacting being under conditions including (a) a temperature in the range of from about 500° to 800° F.; (b) a pressure below about 13 atmospheres gauge; and (c) a liquid hourly space velocity in the range of from about 0.1 to 15, said feed having a content of nitrogen-containing impurities, calculated by weight as nitrogen, below about 5 ppm.

4,282,086

## REFORMING WITH MULTIMETALLIC CATALYSTS

Paul E. Eberly, Jr., Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 969,548, Dec. 14, 1978, Pat. No. 4,213,881, which is a continuation-in-part of Ser. No. 862,114, Dec. 19, 1977, Pat. No. 4,148,758, and Ser. No. 862,116, Dec. 19, 1977, Pat. No. 4,151,115, each, said Ser. No. 862,114, and Ser. No. 862,116, is a continuation-in-part of Ser. No. 826,996, Aug. 23, 1977, abandoned. This application Sep. 27, 1979, Ser. No. 79,577

Int. Cl.<sup>3</sup> C10G 35/06

U.S. Cl. 208—139

3 Claims

1. In a process for reforming a hydrocarbon feed at reforming conditions which comprises contacting said feed with a catalyst which comprises a Group VIII noble metal hydrogenation-dehydrogenation component, a component comprised of iridium, rhenium, or both, and a halogen component, the improvement wherein the catalyst also contains sufficient selenium, and sulfuric acid or sulfurous acid, or both, as components to increase the activity or selectivity, or both, as contrasted with a catalyst otherwise similar except that it does not contain selenium, and sulfuric acid or sulfurous acid, or both, as components:



4,282,087

**SELECTIVE FLOCCULATION FOR IRON VALUES**

Richard M. Goodman, Norwalk, and Hans P. Panzer, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 21, 1979, Ser. No. 41,031

Int. Cl.<sup>3</sup> B03D 3/06

U.S. Cl. 209—5

2 Claims

1. A process for recovering iron values from a mixture of hematitic ore and its gangue material which comprises:

- slurrying a finely ground hematitic ore in water;
- treating said slurry with an effective amount of a hydroxymethylated polyacrylamide wherein the hydroxymethylated polyacrylamide has a molecular weight in excess of six million and has a degree of hydroxymethylation in excess of about 90%;
- settling the iron values as an underflow concentrate; and
- recovering the iron concentrate.

4,282,088

**PROCESS FOR CLEANING FINE COAL**

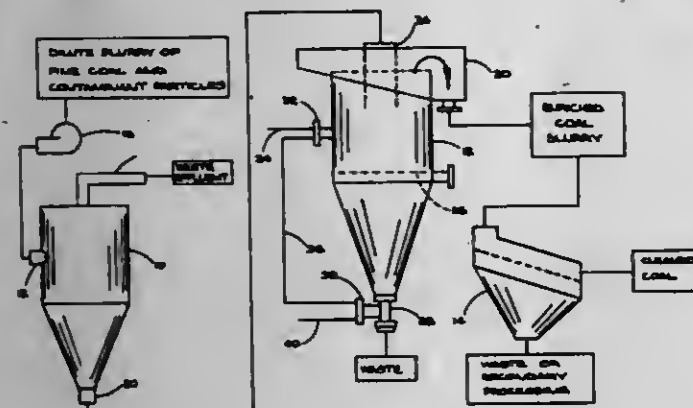
Robert E. Ennis, West Simsbury, Conn., assignor to Linatex Corporation of America, Stafford Springs, Conn.

Filed Mar. 3, 1980, Ser. No. 126,287

Int. Cl.<sup>3</sup> B03B 7/00, 5/66

U.S. Cl. 209—17

10 Claims



1. A process for the wet concentration and cleaning of fine coal comprising the steps of introducing a feed slurry of coal and associated contaminant particles having an average particle size predominantly less than about 6 mm to a hydrocyclone separator having an ascending vortex finder and an underflow discharge port, regulating the discharge from the discharge port to provide controlled discharge at said port of a coal particle fraction having a particle size greater than about 0.1 mm while discarding substantially all the fine silt of less than 0.1 mm reporting to the ascending vortex finder, introducing the controlled discharge of greater particle size to the upper end of a dense medium separation vessel having a manifold for injecting water at an intermediate level and having a variable orifice at its lower end for releasing the heavier particles therefrom, controlling the effective size of the orifice at the lower end for maintaining a fluidized bed of heavier than coal contaminant particles extending upward from the lower end of the vessel whereby heavier contaminant particles in the feed slurry may enter and pass downward for removal while the portion of the feed slurry containing only the lighter particles of coal and very small heavier contaminant will be suspended above said fluidized bed for selective recovery and introducing the latter slurry to a concentrating and dewatering screen to release water and particles having a size of the order of 0.25 mm or less and thereby recovering the cleaned and dewatered coal fraction of the feed slurry.

4,282,089

**PHOSPHATE FLOTATION WITH TRIBASIC ACIDS**

Shuang-Shih Hsieh, Florence, and Dennis G. Brooks, Auburn, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 93,355, Nov. 13, 1979, now Defensive Publication No. T100,302. This application Jul. 14, 1980, Ser. No. 168,913

Int. Cl.<sup>3</sup> B03D 1/02

U.S. Cl. 209—166

2 Claims

- An ore flotation process which comprises the steps of
  - subjecting a phosphate ore containing silica and silicates to froth flotation in the presence of a collector, said collector consisting essentially of high molecular weight tribasic acids comprising three carboxylic groups;
  - recovering the phosphate ore concentrate from the overflow; and
  - removing the separated silica and silicates in the underflow.

4,282,090

**ROTARY SIFTING DEVICE**

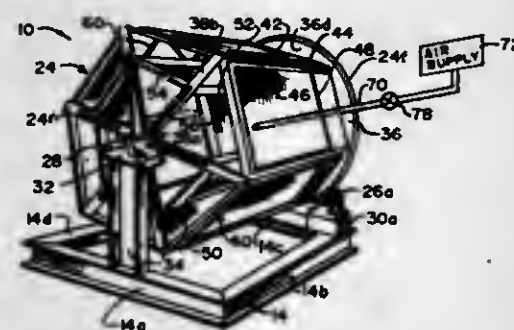
August B. Hoernschemeyer, Alan L. Zinser, both of St. Louis County, and John F. Myers, Jefferson County, all of Mo., assignors to St. Louis Conveyor Company Inc., St. Louis, Mo.

Filed Jun. 20, 1980, Ser. No. 155,211

Int. Cl.<sup>3</sup> B07B 1/24, 1/55

U.S. Cl. 209—291

12 Claims



- A rotary sifting device, comprising:
  - a disc mounted for rotation at a first end of said rotary sifting device;
  - a spider structure mounted for rotation at a second end of said rotary sifting device, said spider structure including a plurality of arms extending radially outwardly from a central hub;
  - a first screened enclosure mounted between said spider structure and said disc for rotation therewith, said first screened enclosure including a sizing screened portion;
  - a second screened enclosure mounted between said spider structure and said disc for rotation therewith and mounted concentrically inboard of said first screened enclosure, said second screened enclosure including a sizing screened portion and a baffle member portion, said baffle member portion defining an inlet for said rotary sifting device, said baffle preventing material entering said device at said second screened enclosure from impinging directly upon said second screened enclosure and for imparting rotational movement to said material prior to the introduction thereof onto the sizing screened portion of said second screened enclosure;
  - a pressurized air supply line having a plurality of nozzles directed radially inwardly toward said first screened enclosure, said nozzles including an outlet part axially aligned with each other outlet part of said nozzle plurality so as to direct a continuous axial air current radially inward of said first screened enclosure along the entire sizing screened portion of said first screened enclosure;
  - means for rotating at least one of said spider structure and said disc; and
  - means for generating an air current through said nozzles to disengage material lodged in said first screened enclosure.

4,282,091

**PEANUT SEPARATOR**

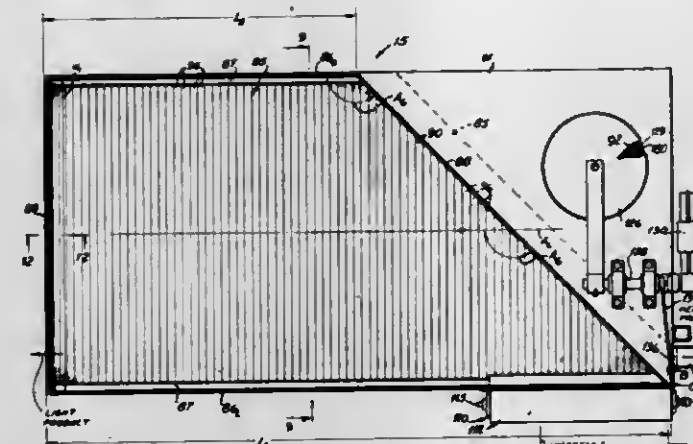
Lewis M. Carter, Sr., Donalsonville, Ga., assignor to Lewis M. Carter Mfg. Co., Inc., Donalsonville, Ga.

Filed Oct. 10, 1979, Ser. No. 83,412

Int. Cl.<sup>3</sup> B03B 4/00

U.S. Cl. 209—467

9 Claims



- A separator for separating granular materials according to specific weight including:

a deck having a longitudinal axis and including a perforated screen; a first upstanding short side wall along one side of said screen parallel to the longitudinal axis; a second upstanding long side wall along the opposite side of said screen parallel to the longitudinal axis and having a length greater than said short side wall; an upstanding banking wall extending across one end of said screen between said first and second side walls and defining an obtuse angle with the longitudinal axis; and an upstanding discharge end wall extending across the opposite end of said screen between said first and second side walls oriented normal to the longitudinal axis and having a height less than said first and second side walls and said banking wall; said screen, said first and second side walls, said banking wall and said discharge end wall defining an open top separating chamber in said deck for supporting a bed of the granular material therein, said long side wall defining a first elongate discharge opening therethrough adjacent the juncture of said long side wall and said banking wall, said first discharge opening having a lower edge spaced a first prescribed distance above said screen, said banking wall defining a second discharge opening therethrough adjacent the juncture of said banking wall and said long side wall, said second discharge opening extending upwardly from said screen for a second prescribed distance less than said first prescribed distance;

a bottom air plenum below said screen in said deck and connected thereto in a sealed relationship therewith; fan means for forcing air into said bottom air plenum so as to force air upwardly through said perforated screen and the bed of granular material carried on said screen to fluidize the bed and cause stratification of the granular material in the bed according to the specific weight thereof;

feed means for directing the granular material into the open top separating chamber to form a bed of the granular material in said separating chamber supported on top of said screen;

tilt means for adjustably tilting said deck until that end of said screen at said banking wall is higher than that end of said screen at said discharge end wall;

vibratory means for reciprocating said deck along the longitudinal axis thereof and oscillating said deck about a generally vertical axis while air is forced upwardly through said screen to separate the granular material in said separating chamber into a first fraction, a second fraction heavier than the first fraction, and a third fraction heavier than the second fraction where the third fraction settles onto said screen and is moved toward said banking wall under said first discharge opening, where the second

fraction settles toward said screen and is moved toward said banking wall and where said first fraction is moved toward said discharge wall, said banking wall arresting the movement of the third fraction toward said banking wall to cause the third fraction to accumulate along said banking wall in registration with said second discharge opening, said banking wall arresting the movement of the second fraction toward said banking wall to cause the second fraction to accumulate adjacent said banking wall over the accumulated third fraction and be maintained in registration with said first discharge opening with the accumulated second fraction having a decreasing depth in a direction from said banking wall toward said discharge end wall; and

pneumatic pressure operated gate means selectively covering said discharge opening so as to selectively control the flow of the granular material therethrough in response to the pneumatic pressure in said bottom air plenum, said gate means selectively varying both the effective height and effective length of said first discharge opening in response to the pneumatic pressure below said deck so that the maximum effective height of said first discharge opening is always toward that end of said first discharge opening closest to said banking wall and the effective length of said first discharge opening is increased from that end of said first discharge opening closest to said banking wall toward the other end thereof.

4,282,092

**PROCESS FOR PREPARING INORGANIC PARTICULATE ADSORBENT AND PROCESS FOR TREATING NUCLEAR REACTOR CORE-CIRCULATING WATER**

Kazunori Fujita, Ibaraki; Shigeo Uno, Hitachi; Seizi Takeuchi, Hitachiota, and Hisao Yamashita, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 1, 1979, Ser. No. 80,468

Claims priority, application Japan, Sep. 29, 1978, 53-119255

Int. Cl.<sup>3</sup> C02F 1/42; B01J 21/04, 21/06

U.S. Cl. 210—682

22 Claims

- A process for preparing an inorganic particulate adsorbent of a titania-alumina system for treating superheated water containing radioactive materials, which comprises:

- hydrolyzing a titanium alkoxide and an aluminum alkoxide, thereby forming a hydrous titanium oxide and a hydrous aluminum oxide, respectively;
- precipitating the hydrous titanium oxide and the hydrous aluminum oxide, thereby forming titania and alumina;
- mixing and molding the resulting titania and alumina, thereby preparing a particulate mixture of titania and alumina; and
- calcining the resulting particulate mixture in an oxidative atmosphere.

4,282,093

**APPARATUS FOR DETECTING COAGULATION EFFECT**

Teturo Haga, and Takashi Ikeguchi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 6, 1979, Ser. No. 55,464

Claims priority, application Japan, Jul. 5, 1978, 53-81006

Int. Cl.<sup>3</sup> B01D 21/01; C02F 1/52

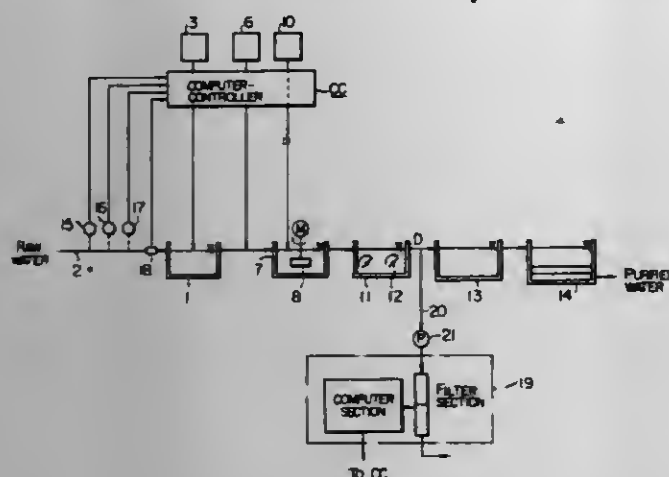
U.S. Cl. 210—90

10 Claims

- An apparatus for detecting a coagulation effect in a water purification plant, which comprises means for introducing a dose of a coagulant into raw water to form floc of turbidity-causing suspended particles, a flocculation basin for receiving the raw water containing said coagulant and for allowing growth of said floc, a sedimentation basin for separating the grown floc, means for leading the water containing the grown floc to said sedimentation basin to separate the grown floc by sedimentation, thereby purifying the raw water, means for by-passing a portion of the water containing the grown floc



and being led to the sedimentation basin from said flocculation basin through a filter means, said filter means containing a layer of filter medium and having a filtration pressure detection point means at a specific level in the filter medium layer,



means for monitoring a rate of change in filter pressure and for detecting an improper dosage of the coagulant into said raw water in correlation to a rate of change in filtration pressure within said filter medium layer and means for signaling an improper dosage of coagulant.

#### 4,282,094 FILTERING APPARATUS

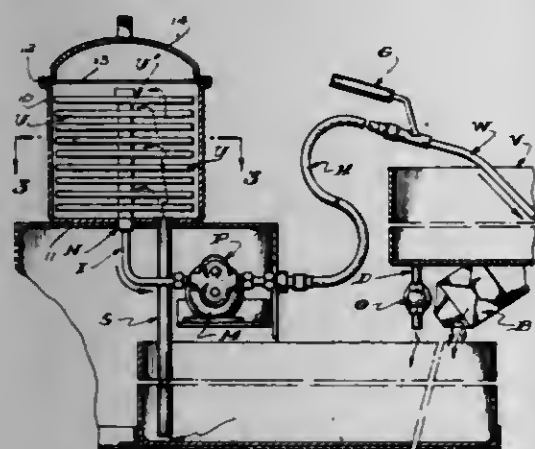
Edson Mitchell, Northridge, Calif., assignor to Charles F. Betz, Arcadia, Calif.

Filed Jan. 7, 1980, Ser. No. 109,981

Int. Cl.<sup>3</sup> B01D 29/24

U.S. Cl. 210-167

10 Claims



1. An oil filtering and purifying apparatus comprising a receptacle open to atmosphere, a supply of oil laden with particulate and gaseous impurities in the receptacle, a vessel opened to atmosphere to receive oil worked upon, a closed pressure tank with an inlet opening and an outlet opening; a fluid conductor communicating with and between the inlet opening and the supply of oil; a motor driven pump with inlet and outlet sides; a fluid duct between and communicating with said outlet opening and the inlet side of the pump; a fluid delivery line between and communicating with the outlet side of the pump and the vessel and a filter unit assembly in the tank and connected with the outlet opening, whereby oil in the tank flows through the assembly and particulate impurities are separated therefrom as it flows to said outlet opening, said pump operates to establish a negative pressure in the tank, whereby oil from the supply of oil flows into the tank and is acted upon by said minus pressure, whereby gaseous impurities separate therefrom and operates to draw oil in the tank through the filter unit assembly from the tank and thence into said vessel

#### 4,282,095 AQUARIUM FILTERING SYSTEM

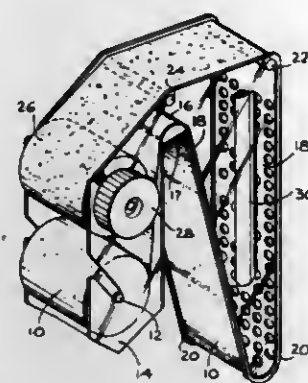
Parker I. Tsubako, 1412 W. 148th St., Gardena, Calif. 90247

Filed Jan. 2, 1980, Ser. No. 109,166

Int. Cl.<sup>3</sup> E04H 3/20

U.S. Cl. 210-169

10 Claims



1. An immersible aquarium filtration system comprising:
  - (a) filtration medium supply structure for mounting adjacent an aquarium;
  - (b) expended filtration medium storage structure for mounting adjacent an aquarium;
  - (c) an immersible housing comprising:
    - (1) a first opposed pair of side walls; and
    - (2) a second opposed pair of perforated side walls, said opposed pairs of walls forming an immersible portion and an external portion extending laterally from the immersible portion to support said supply structure and said storage structure;
  - (d) filtration medium positioning guides locating said filtration medium over perforations of said perforated side walls;
  - (e) a fluid conduit independent of ambient fluid within said aquarium for controlling fluid level in said immersible housing, said immersible housing and filtration medium being structured so that the aquarium medium will only flow between interior and exterior of the housing by passing through the filtration medium; and
  - (f) means for advancing filtration medium between the supply and storage structures over said guides.

#### 4,282,096 TAR SEPARATING DEVICE

Rudolf Burkert, Essen, Fed. Rep. of Germany, assignor to Didier Engineering GmbH, Fed. Rep. of Germany

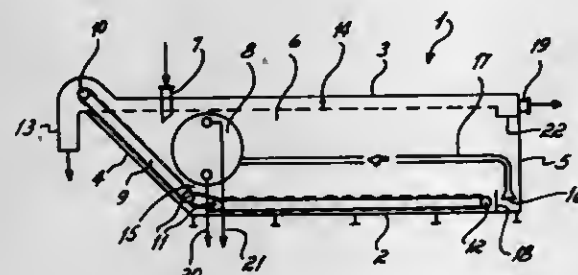
Filed Aug. 18, 1980, Ser. No. 179,163

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934324

Int. Cl.<sup>3</sup> B01D 21/12

U.S. Cl. 210-182

9 Claims



1. A tar separating device for separating tar from a hot rinsing liquid comprising:
  - a container having a rinsing liquid inlet,
  - a solids removal device for removing solids from said liquid as said liquid enters said container,
  - a tar dewatering chamber located in said container near said inlet such that the rinsing liquid entering said container flows over the outer surface of said chamber,

tube means in said container for conveying rinsing liquid into said tar separating chamber, the inlet to said tube means being located at point distant from said rinsing liquid inlet where said liquid is lower in temperature than at said inlet, means for removing tar from said container, and means for removing water from said container.

down hinge assembly including a bolt having a threaded shank and a head having a transverse opening, a nut which is threadably compatible with said bolt, a pin, said pin anchored to said housing and passing through said bolt head opening with clearance, said bolt head located between said spaced marginal tabs with said pin extending from one tab to the other, said bolt being pivotal about said pin from an upright to a generally

#### 4,282,097 DYNAMIC OIL SURFACE COALESCER

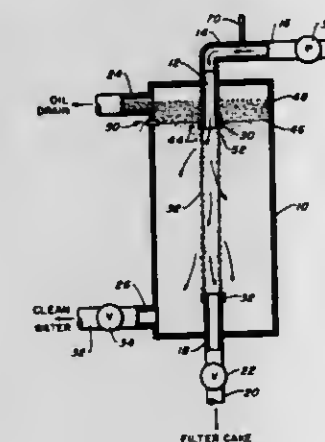
Theodore A. Kuepper, 4907 Marlin Way, Oxnard, Calif. 93030, and Robert S. Chapler, 680 Evergreen, #4, Port Hueneme, Calif. 93041

Filed Sep. 24, 1979, Ser. No. 77,959

Int. Cl.<sup>3</sup> B01D 25/32

U.S. Cl. 210-200

20 Claims



1. Apparatus for treating water-based liquid waste mixtures comprising:
  - a stilling chamber for maintaining a volume of liquid within its boundaries in relatively still condition;
  - a water-permeable, fabric, tubular element having an inlet end and an outlet end, the inlet end coupled to receive said mixture under pressure;
  - means for introducing air into said liquid waste mixture prior to its input into said tubular element;
  - means for selectively controlling the passage of fluid through the outlet end of said element;
  - said means for controlling being capable of closing the outlet end of the element to prevent said mixture from flowing through said outlet end, the water in said mixture thereby being forced to pass through the fabric walls of said element, whereas solid particulates in said mixture are entrained on the inner surface of said fabric element;
  - said means for controlling being capable of opening said outlet end of the element to allow said mixture to flow through said outlet end to dislodge said particulates entrained on the inner wall of said element from said inner wall and to flush said particulates out of said element through said outlet end.

#### 4,282,098 FILTER TOP HINGE

Howard W. Morgan, Jr., Michigan City, Ind., assignor to Filter Specialists, Inc., Michigan City, Ind.

Filed May 19, 1980, Ser. No. 150,791

Int. Cl.<sup>3</sup> B01D 35/16

U.S. Cl. 210-238

3 Claims

3. In a filter including a housing having an upper opening, a cap for spanning said housing upper opening, a liquid inlet into an outlet from said housing, a filtering element in said housing between said inlet and outlet, a plurality of securement means for releasably securing said cap to the housing when spanning said housing open end, the improvement wherein at least one of said securement means constitutes a hold-down hinge assembly, said housing includes spaced marginal tabs, said cap includes a tongue having a leg part movably fitting between said spaced marginal tabs, said cap tongue and spaced marginal tabs forming a part of said hold-down hinge assembly, said hold-



transverse position, a bore in said cap tongue, said bolt shank passing through said cap tongue, said nut threaded upon said bolt shank to secure said cap to the bolt, said nut being turnable against said cap when the cap spans said housing opening and said bolt is upright to secure the cap to the housing, said cap being pivotal about said pin from its housing opening spanning position into an elevated position in which said cap leg part will abut said housing with said nut loosened upon the bolt.

#### 4,282,099 INTEGRAL PARTITIONED HEMODIALYSIS UNIT

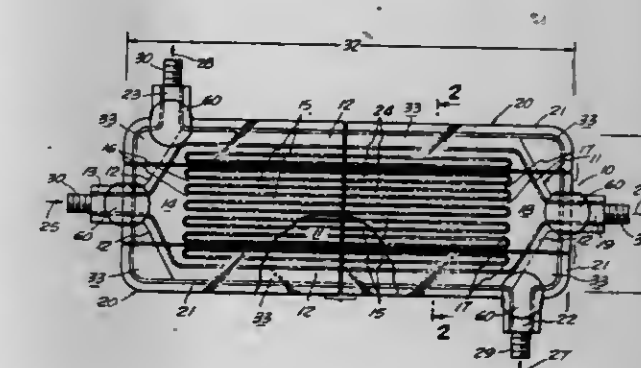
John L. Jones, P.O. Box 233, Pasadena, Calif. 91102

Filed Dec. 10, 1979, Ser. No. 98,323

Int. Cl.<sup>3</sup> B01D 31/00, 13/00

U.S. Cl. 210-247

6 Claims



6. In a hemodialysis unit comprising a dialysis chamber having inlet and outlet dialysate ports and a pair of opposed sealed membrane sheets forming an integral blood perfusion unit having integral blood inlet and outlet ports, inlet and outlet blood manifolds, and multiple blood tubules disposed in parallel between said inlet and outlet manifolds, said integral blood perfusion unit having a length parallel to said parallel blood tubules, a width normal to said blood tubules, said membrane having high permeability to waste excreta products of patients, said blood perfusion unit disposed in the interior of said dialysis chamber, the combination comprising:
  - said membrane exterior margins of said blood perfusion unit adaptively sized and interiorly secured at all said membrane exterior margins to the bonded edge of said dialysate chamber, said membrane exterior margins bonded and positioned to provide two separate dialysate subchambers, a first dialysate subchamber having a first exterior face of said blood perfusion unit providing a first subchamber floor, and a second dialysate subchamber having a second



exterior opposed face of said blood perfusion unit providing a second subchamber ceiling,  
said two dialysate subchambers having the cross sectional areas of said two subchambers adaptively sized and adaptively positioned to provide a high velocity flow of dialysate solution over the length of said two subchambers, and,  
said two dialysate subchambers having one dialysate solution input nozzle having a septum providing a split dialysate solution input, and one solution output nozzle, said input and output solution nozzles adaptively positioned to provide a high velocity flow of dialysate solution over the length of said two subchambers, providing a high velocity sweep of the diffusional boundary layer from the two opposed exterior faces of the blood perfusion unit and providing a high rate of removal of waste excreta products from patient's blood.

4,282,100

# APPARATUS FOR REFORMING FUEL OIL WHEREIN ULTRASONIC WAVES ARE UTILIZED

Misao Kunishio, Tokyo; Kenshi Shirai, Higashiyamato, and Hiroyuki Takezi, Tachikawa, all of Japan, assignors to The Sanko Steamship Co., Ltd., Osaka, Japan

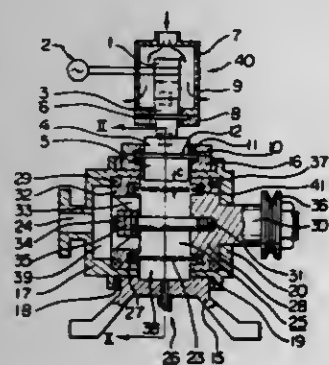
Filed Sep. 5, 1979, Ser. No. 72,860

Claims priority, application Japan, Sep. 18, 1978, 53-114102; Aug. 29, 1979, 54-109220

Int. Cl.<sup>3</sup> B01D 33/10

U.S. Cl. 210—384

11 Claims



1. An apparatus for reforming fuel oil wherein ultrasonic waves are utilized and which comprises:  
a closed vessel means;  
a rotary collector means, shaped in a cylindrical form and having a layered mesh structure mounted on the cylindrical surface thereof for continuously collecting sludge contained in said fuel oil, which means is encircling an axis and is disposed rotatably about said axis within said vessel means so that said vessel means is partitioned into inlet and outlet chambers;  
an inlet conduit, connected to said inlet chamber, for supplying fuel oil to be reformed to said vessel means;  
an outlet conduit, connected to said outlet chamber, for delivering reformed fuel oil; and  
a means for generating ultrasonic waves provided with a device for irradiating said ultrasonic waves, the end of which device is positioned adjacent to said layered mesh structure mounted on said rotary collector means so that said sludge collected on said cylindrical surface of said layered mesh structure is dissociated into particles by means of said ultrasonic waves being irradiated from said device.

## 4,282,101 FILTERING APPARATUS

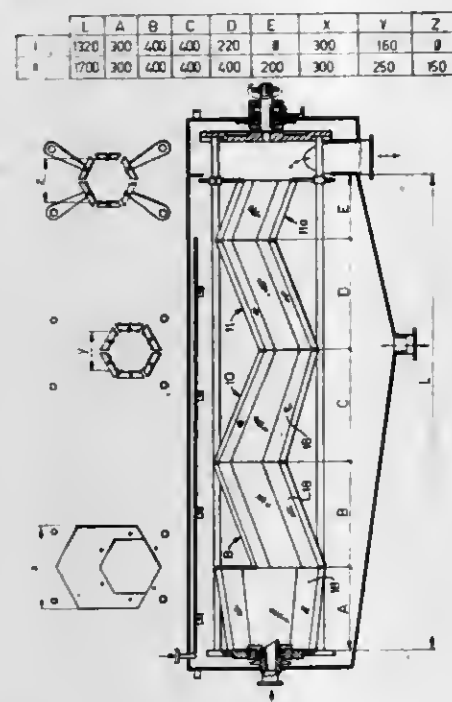
Istvan Takacs; Gyula Bosits; Endre Vereczkey, and György Kerey, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

Filed Nov. 28, 1979, Ser. No. 98,042

Claims priority, application Hungary, Mar. 21, 1979, RI 699 Int. Cl.<sup>3</sup> B01D 33/02

U.S. Cl. 210—403

26 Claims



1. A filtering device comprising:  
a horizontally elongated housing;  
a filter body extending along said housing and disposed therein said filter body including:  
an intake drum in the form of a frustum of polygonal cross section mounted in said housing for at least partial rotation about a substantially horizontal axis and having a polygonal small end plate proximal to one end of said housing and a polygonal large end plate spaced therefrom along said axis, said small end plate being provided with a first orifice concentric with said axis and said large end plate being provided with a second orifice eccentrically disposed with respect to said axis, said drum further having a surface provided with first filter means and joining a periphery of said small end plate to a periphery of said large end plate whereby said first filter means forms angularly adjoining walls of said frustum, and  
a generally zig-zag-shaped tube of linear tube sections rigidly connected at one end to said large end plate at said second orifice for communicating with said drum and rotatably supported near an opposite end of said tube by said housing, said arms having respective surfaces provided with second filter means, said tube having an outlet at an opposite end of said housing and being of polygonal cross section;  
feeder means traversing said first orifice for conveying to said drum material to be filtered by said device;  
drive means connected to said body for swinging same through at least a part of an arc about said axis;  
washing means including a respective pipe section extending centrally along each of said tube sections and provided with spray nozzles, said pipe sections being joined in a generally zig-zag-shaped pipe connected to a source of solvent;  
first transport means attached to said housing for collecting filtrate forced from said body through said filter means; and  
second transport means attached to said housing for collecting filtered material from said tube via said outlet.

## 4,282,102 ACTIVATED SLUDGE WASTEWATER TREATMENT HAVING SUSPENDED INERT MEDIA FOR BIOTA GROWTH

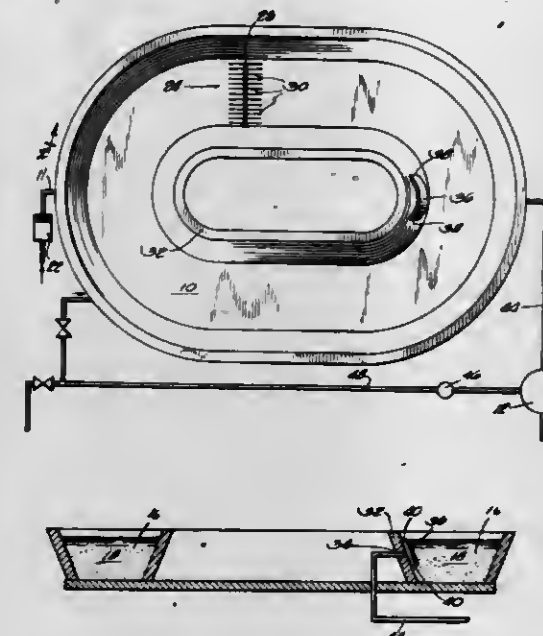
Thomas C. Rooney, Waukesha, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Continuation of Ser. No. 940,923, Sep. 11, 1978, abandoned. This application Nov. 29, 1979, Ser. No. 98,693

Int. Cl.<sup>3</sup> C02F 3/08

U.S. Cl. 210—616

3 Claims



1. A method of wastewater treatment comprising introducing wastewater containing organic material into an oxidation ditch; adding inert, solid particulate material to said wastewater; continuously circulating said wastewater and particulate material in a substantially horizontal direction within said oxidation ditch by creating a turbulent flow of said wastewater and particulate material, which turbulent flow maintains said particulate material suspended in said wastewater and enables living organisms in said wastewater to attach to and grow on said particulate material; aerating said wastewater and particulate material to promote the growth of said living organisms in said wastewater and on said particulate material; employing centrifugal forces acting on said circulating wastewater and particulate material to produce a concentration of particulate materials at the outer wall of said oxidation ditch; and withdrawing substantially only said wastewater from the interior wall of said ditch, whereby substantially all of said living organisms and particulate materials remain in said reactor.

4,282,103

## METHOD FOR CONTROLLING FLOCCULANT ADDITION TO TAR SAND TAILINGS

Bryan J. Fuhr, and Joseph K. Liu, both of Edmonton, Canada, assignors to Petro-Canada Exploration Inc., Calgary; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity, Edmonton; PanCanadian Petroleum Limited, Calgary; Esso Resources Canada Ltd., Calgary; Canada-Cities Service, Ltd., Calgary and Gulf Canada Resources Inc., Calgary, all of, Canada

Filed Nov. 20, 1979, Ser. No. 96,177

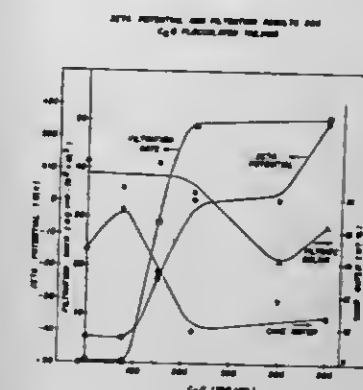
Int. Cl.<sup>3</sup> B01D 21/01; C02F 1/52

U.S. Cl. 210—709

5 Claims

1. In the hot water extraction process, wherein a solids-laden aqueous whole tailings stream, containing coarse and fine solids, is generated as a waste product, the improvement comprising:  
treating said whole tailings stream with flocculating agent to co-flocculate coarse and fine solids and produce settled aggregates thereof;  
simultaneously monitoring the zeta potential of the fine solids left in suspension;  
continuing the addition of the flocculating agent until said zeta potential is about zero; and

simultaneous with the treating and monitoring, separating the constituents of the stream to produce a substantially



water-free solids phase and a substantially clarified aqueous phase.

4,282,104

## ANTICARCINOGEN ADDITIVE FOR WATER SUPPLIES

August J. Pacini, 1065 Belle Meade Island Dr., Miami, Fla. 33138,

Continuation of Ser. No. 596,368, Jul. 16, 1975, abandoned. This application Feb. 22, 1977, Ser. No. 770,445

Int. Cl.<sup>3</sup> C02F 1/76

U.S. Cl. 210—754

3 Claims

1. Method of treating a water supply to sanitize the water supply, reduce carcinogen concentration in the water supply and prevent the formation of carcinogens in the water supply comprising the steps of  
adding chlorine to the water supply to a concentration in excess of the amount needed to sanitize the water supply; and  
adding a concentration of ascorbic acid thereto sufficient to inactivate an amount of chlorine equal to the excess of the chlorine over the amount needed to sanitize the water supply;  
said concentration of ascorbic acid being sufficient to destroy existing carcinogens and prevent the formation of carcinogens while leaving a residual free chlorine concentration in the water supply sufficient to sanitize the water supply.

## 4,282,105 FILTER

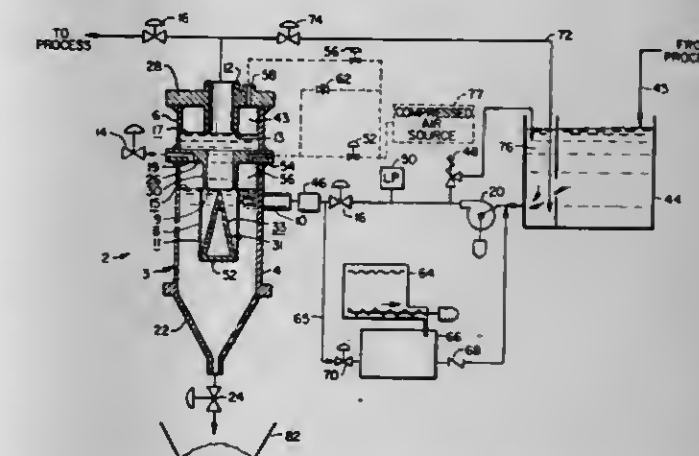
William D. Crowe, San Francisco, Calif., assignor to J. R. Schneider Co., Inc., Corte Madera, Calif.

Filed Jan. 28, 1980, Ser. No. 116,360

Int. Cl.<sup>3</sup> B01B 29/40

U.S. Cl. 210—798

33 Claims



1. An improved filter for the removal of particulate contaminants from a contaminated incoming liquid comprising:  
a vessel defining first and second chambers and including bulkhead means separating the chambers, the vessel having an inlet communicating with the first chamber and an outlet communicating with the second chamber;







4,282,115

# CATALYST FOR SELECTIVELY REDUCING NITROGEN OXIDES FROM OXYGEN-CONTAINING EXHAUST GASES

Masumi Atsukawa; Yoshihiko Nishimoto; Naruo Yokoyama, and Toshikuni Sera, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 66,546, Aug. 14, 1979, abandoned, which is a continuation of Ser. No. 836,961, Sep. 27, 1977, Pat. No. 4,186,109. This application Feb. 1, 1980, Ser. No. 117,765

Claims priority, application Japan, Sep. 30, 1976, 51-117424; Feb. 18, 1977, 52-16874

Int. Cl.<sup>3</sup> B01J 21/06, 23/02, 23/72, 23/74

U.S. Cl. 252-440

6 Claims

1. A catalyst for the treatment of exhaust gases containing soot and dust comprising a catalytically active constituent on a carrier in having a honeycomb or parallel plate structure, said carrier being prepared from a slurry of crystallized calcium silicate prepared by mixing silicic acid and lime and treating the mixture under pressure, said calcium silicate having the structure of xonotrite and the formula:  $6\text{CaO} \cdot 6\text{SiO}_2 \cdot \text{H}_2\text{O}$ .

4,282,116

# SUPPORTED CATALYST CONTAINING VANADIUM AND TITANIUM AND/OR ZIRCONIUM FOR THE PREPARATION OF PHTHALIC ANHYDRIDE

Peter Reuter, Bad Dürkheim; Kurt Blechschmitt, Schifferstadt, and Friedrich Wirth, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 8, 1980, Ser. No. 138,413

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914683

Int. Cl.<sup>3</sup> B01J 21/06, 23/22, 35/00

U.S. Cl. 252-461

2 Claims

1. A supported catalyst containing vanadium and titanium and/or zirconium, obtained by applying a mixture of finely divided titanium dioxide and/or zirconium dioxide and a solution or suspension of a vanadium compound to an inert, non-porous, ring-shaped carrier having an external diameter of from 6 to 10 mm, a length of from 4 to 10 mm and a wall thickness of from 0.5 to 3 mm in such a way that the carrier, after drying, carries a coating from 0.05 to 1 mm thick of an active material containing from 1 to 30% by weight of vanadium pentoxide and from 70 to 99% by weight of titanium dioxide and/or zirconium dioxide, wherein the two end faces of the ring-shaped carrier are outwardly beveled at an angle such that the length of the outer cylindrical wall is at least 20% shorter than the length of the inner cylindrical wall.

4,282,117

# METHOD FOR PRODUCING ELECTRICALLY CONDUCTIVE ZINC OXIDE

Makoto Muramoto; Nobuyuki Ishida, and Fujio Matsushita, all of Neyagawa, Japan, assignors to The Honjo Chemical Corporation, Japan

Filed May 30, 1979, Ser. No. 43,646

Claims priority, application Japan, Jun. 12, 1978, 53/71161; Jul. 11, 1978, 53/84812

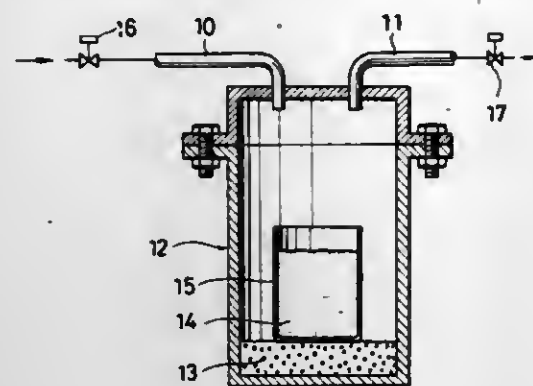
Int. Cl.<sup>3</sup> H01B 1/06

U.S. Cl. 252-508

8 Claims

1. A method for producing electrically conductive zinc oxide comprising: calcining zinc oxide under an ambient atmosphere in a vessel at a temperature of about 800° C. to about 1100° C. in a mixture thereof with aluminum oxide or a precursor thereof convertible into the oxide under the conditions of treatment, the precursor being selected from the group consisting of aluminum nitrate, aluminum sulfate, aluminum chloride, aluminum bromide, aluminum hydroxide, aluminum formate and aluminum acetate, in an amount of from 0.5 moles to about 5 moles, based on the aluminum

therein, in relation to 100 moles of zinc oxide, in the presence of solid carbon, while allowing the gases generated by the reaction of the solid carbon with the ambient atmo-



sphere to be discharged spontaneously from the vessel as the gases are generated; and cooling the thus calcined mixture to a temperature below about 200° C. under a non-oxidizing atmosphere.

4,282,118

# ELECTROCONDUCTIVE POLYMER COMPOSITION

Mei H. Hwang, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 960,808, Nov. 15, 1978, abandoned. This application Aug. 23, 1979, Ser. No. 69,029

Int. Cl.<sup>3</sup> H01B 1/06

U.S. Cl. 252-518

4 Claims

1. An electroconductive polymer composition containing from 90 to 99.5% by weight of a water-soluble electroconductive cationic-quaternary ammonium polymer; sufficient amounts of a stabilizer to adjust the pH to 8.0 or more, said stabilizer selected from the group consisting of potassium hydroxide, sodium hydroxide and ammonium hydroxide; and from 0.5 to 10% by weight of the polymer composition of mono- and bis-(1H,1H,2H,2H-perfluoroalkyl)phosphate esters of the formula:



wherein m is an integer between 4 and 10, n is an integer between 1 and 11, y is 1 or 2 and M is a water-solubilizing cation selected from the group consisting of an alkali metal, ammonium or substituted ammonium; or ammonium bis-(N-ethyl-2-perfluoroalkylsulfonamido ethyl)phosphates, containing not more than 15% ammonium mono(N-ethyl-2-perfluoroalkylsulfonamido ethyl)phosphates, where the alkyl group is more than 95%  $\text{C}_8$  and the salts have a fluorine content of 50.2% to 52.8% as determined on a solids basis.

4,282,119

# MANUFACTURE OF CHIPBOARD HAVING HIGH STRENGTH AND REDUCED FORMALDEHYDE EMISSION, USING A MINOR AMOUNT OF PROTEIN IN COMBINATION WITH LOW FORMALDEHYDE:UREA RESINS

Arie Tinkelenberg, Limbricht; Henricus W. L. M. Vaessen, Wijnandsrade; Kwal W. Suen, Geleen, and Anton J. Van Doorn, Steenderen, all of Netherlands, assignors to Methanol Chemie Nederland V.o.F., Haren, Netherlands

Filed Dec. 18, 1979, Ser. No. 104,761

Claims priority, application Netherlands, Dec. 20, 1978, 7812336

Int. Cl.<sup>3</sup> C08L 61/24, 97/02

U.S. Cl. 260-6

6 Claims

1. In the manufacture of chipboard material by hardening at elevated temperature and pressure of cellulose-containing material with an aminoplast resin on the basis of formaldehyde, urea and optionally melamine as bonding agent to form a sheet,

the improvement of using in combination an aminoplast resin which contains 0.45 to 0.65 mole of formaldehyde per mole equivalent of amino groups and to which between 2 and 20% by wt., relative to the resin, of a protein, dissoluble or dispersible in the resin solution, has been added.

4,282,120

# SHEET MATERIAL FOR GENERAL COVERINGS AND METHOD OF MAKING THE SAME

Leandro Cisterni, Forli, Italy, assignor to S.U.B. Societa Utilizzazione Brevetti S.R.L., Forli, Italy

Filed Jan. 25, 1978, Ser. No. 872,053

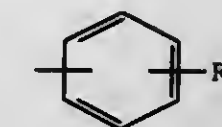
Claims priority, application Italy, Jan. 31, 1977, 19781 A/77 The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> C08L 1/00; B29D 7/14

U.S. Cl. 260-17.4 R

9 Claims

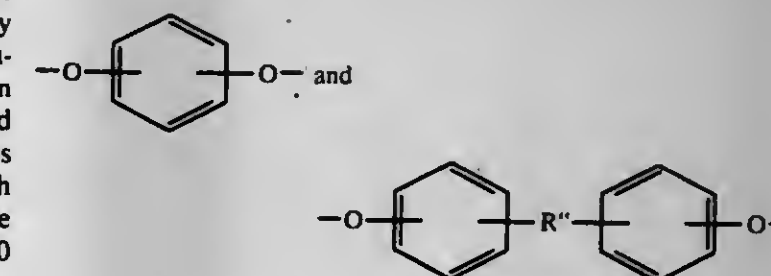
1. A method of producing a stratiform material comprising stirring 35-45 parts by weight of solvents, polyvinylacetate homopolymer in the form of flakes or pearls with 10-15 parts of polyvinylacetate and 2-5 parts by weight of oil, separately mixing 25-30% by weight of wood powder having a granulometry in the range of 50-150 microns and mineral fillers in an amount of 10-20% by weight, then intermixing the liquid and powdery phases to obtain a homogeneous mixture which is passed through calendaring rollers, the last pair of which produces an embossing on at least one of the two surfaces, the layer being reduced to a thickness in the range of 0.2-2.0 millimeters.



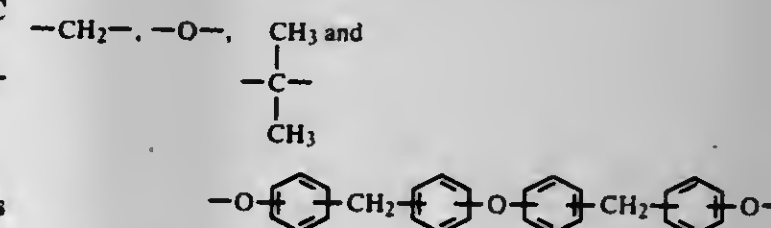
where  $\text{R}_2$  is hydrogen or alkyl to  $\text{C}_4$ , and said diglycidyl ether of a diphenol has the formula



where  $\text{R}'$  is a diphenol radical selected from the group consisting of



where  $\text{R}''$  is selected from the group consisting of



n is an average of less than 1.

4,282,122

# LIQUID MODIFIED EPOXY RESINS

Leonard E. Edelman, and Robert H. Runk, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

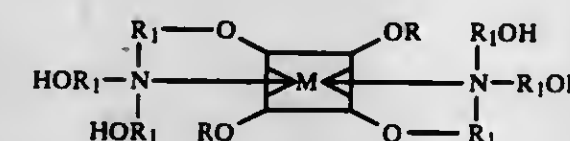
Continuation of Ser. No. 180,873, Sep. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 845,405, Jul. 28, 1969, abandoned. This application Sep. 17, 1975, Ser. No. 614,717

Int. Cl.<sup>3</sup> C09D 3/30, 3/58

U.S. Cl. 260-18 EP

22 Claims

1. A method of making a liquid modified epoxy resin comprising reacting under non-hydrolyzing conditions to the clear pill stage about 20 to about 80% by weight of at least one liquid diglycidyl ether of a diphenol with about 20 to about 80% by weight of at least one non-hydroxylated drying oil in the presence of about 0.1 to about 1.5% by weight (based on the diglycidyl ether and the drying oil) of at least one catalyst having the formula



where M is titanium, aluminum, or silicon,  $\text{R}_1$  is ethylene,

4,282,123

# ELASTOMERIC URETHANE COATING

Joseph E. Ilaria, Cranford, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 64,293, Aug. 6, 1979, abandoned. This application Feb. 25, 1980, Ser. No. 124,016

Int. Cl.<sup>3</sup> C08G 18/58

U.S. Cl. 260-18 PT

4 Claims

1. A two-component coating composition wherein:  
(1) Component A comprises an adduct of a diglycidyl ether of bisphenol A, having an epoxy equivalent weight between about 170 and about 2,000, polyfunctional acid, and a mixture of aliphatic and aromatic amine, pigment, magnesium silicate talc extender, and a solvent mixture of alkoxyethyl acetate, alkyl ketone, ethyl acetate, and aromatic hydrocarbon with a solids content of 60-70 weight percent; and  
(2) Component B comprises a urethane prepolymer based on flexible polyhydroxy functional oligomers and toluene diisocyanate or isophorone diisocyanate;  
(3) said Component A and Component B being mixed at the time of application.



4,282,124

**DIETHYL FUMARATE REACTIVE DILUENT FOR AIR DRY COATINGS**

Joseph E. McLaughlin, Philadelphia, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 14, 1979, Ser. No. 94,284

Int. Cl.<sup>3</sup> B32B 15/08, 27/40; C09D 3/64, 3/80

U.S. Cl. 260—22 A 16 Claims

1. A mixture of a drying oil coating resin and diethyl fumarate, the resin:diethyl fumarate weight ratio being in the range 50:1 to 50:50.

4,282,125

**POLYMER COMPOSITION WITH A POLYESTER BASIS AND UTILIZATION THEREOF FOR THE PRODUCTION OF TRANSPARENT FLEXIBLE LAMINATES WITH INERT AND/OR FIBROUS FILLING MATERIALS**

Romeo Ferretti, Rome, Italy, assignor to PRO SAC S.p.A., Reggio Calabria, Italy

Filed Feb. 8, 1980, Ser. No. 119,915

Claims priority, application Italy, Feb. 15, 1979, 48016 A/79

Int. Cl.<sup>3</sup> C08L 67/08

U.S. Cl. 260—22 CB 4 Claims

1. A polymer composition for manufacturing flexible laminates with a basis of thermosetting polyesters, characterized in that it comprises:

Orthophthalic polyester resin with a low unsaturation	46-38%
Polyester adipic resin	32.73-36.20%
Soy oil	1-2%
Glycerol	0.37-0.80%
Trichloroethylphosphate	6.60-8.40%
Paraffin	6-5%
Styrene	1-2%
Cobalt salt	0.40-0.60%
Methyl-ethylketone peroxide	6-7%

4,282,126

**POLYISOBUTYLENE RUBBER ANTIFOULING PAINT**

Stephen D. Rodgers, Bowie, and Bernard R. Appleman, Gaithersburg, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1979, Ser. No. 69,192

Int. Cl.<sup>3</sup> C08L 93/04

U.S. Cl. 260—27 R 4 Claims

1. A camouflage antifouling composition essentially comprising, by weight, non-volatile ingredients including from about 2% to about 23% polyisobutylene polymer having a molecular weight from about 81,000 to about 99,000; from about 23% to about 29% rosin; from about 45% to about 57% tributyltin fluoride and from about 9% to about 11% pigment; the remainder of the composition being principally a volatile solvent.

4,282,127

**POLYMER-CONTAINING BITUMINOUS COMPOSITION AND COMPOSITE SEALING SHEET INCLUDING THE SAME**

Henri F. M. Desgouilles, Residence La Closerie, 4 Rue des Fontaines, 60500 Chantilly, France

Filed Sep. 11, 1979, Ser. No. 74,332

Claims priority, application France, Sep. 13, 1978, 78 26336

Int. Cl.<sup>3</sup> C08L 91/00

U.S. Cl. 260—28.5 AS 14 Claims

1. Bitumen-, polyolefin- and elastomer-based sealant composition consisting essentially of a mixture of (a) 52-78 wt. % of bitumen, (b) 20-40 wt. % of a polyolefin selected from a polypropylene, a polybutylene, an ethylene-propylene copolymer and a propylene-ethylene-butylene copolymer and having a

viscosity in the order of 10,000 to 30,000 centipoises at 190° C. and a TBA softening point between about 100° C. and about 180° C., and (c) 2-8 wt. % of a styrene-butadiene copolymer elastomer having a molecular weight of about 100,000 to about 300,000, said composition having a TBA softening point of at least 140° C., a tensile elongation at break of about 800% to about 2000%, and a flexibility in the cold such that cracks do not form at temperatures as low as -40° C.

4,282,128

**THERMOSETTING BINDERS FOR CATHODIC DEPOSITION IN ELECTRODEPOSITION PAINTS**

Georgios Pampouchidis, and Helmut Hönig, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Dec. 21, 1979, Ser. No. 106,165

Claims priority, application Austria, Dec. 27, 1978, 9280/78

Int. Cl.<sup>3</sup> C08L 75/02, 63/00

U.S. Cl. 260—29.2 TN 13 Claims

1. Process for preparing thermosetting binders for cathodically depositable electrodeposition paints characterized in that (A) 1 mole of an isocyanate having the formula OCN—R—(N—CO)<sub>n</sub>, wherein R is an aromatic, aliphatic or cycloaliphatic hydrocarbon radical, and n is 1 or 2, is reacted at from 0°-50° C., with(a) 0.1-0.5, if n is 1, or 0.1-1.0, if n is 2, moles of a tertiary dialkylalkanol amine, and subsequently with (b) 0.5-0.9, if n is 1, or 1.0-1.9, if n is 2, moles of a monohydroxy compound with from 1-3 CH<sub>2</sub>=CR<sub>1</sub> groups, wherein R<sub>1</sub>=H or CH<sub>3</sub>, and selected from the groups consisting of monohydroxy esters of acrylic or methacrylic acid and an alkanol having from 1 to 4 hydroxy groups and monohydroxy ethers of allyl alcohol and an alkanol having from 3 to 4 hydroxy groups, and

(B) reaction intermediate (A) carrying an average of 1 free isocyanate group is reacted at from 10°-100° C., with the hydroxy groups of a 1,2-epoxy resin/amine adduct until an isocyanate value of 0 is obtained; the quantities of reactants selected to provide a binder which, in 1000 molecular weight units, carries at least 0.5 chain end or side chain double bonds and at least 0.15 basic nitrogen atoms.

4,282,129

**PROCESS FOR THE PRODUCTION OF POLYOL-ALKALI METAL SILICATE EMULSION**

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 146,474, May 5, 1980. This

application Sep. 29, 1980, Ser. No. 191,375

Int. Cl.<sup>3</sup> C08J 3/06, 3/08; C09K 3/00

U.S. Cl. 260—29.2 E 10 Claims

1. The process for the production of a stable polyol-alkali metal silicate emulsion by mixing the following components:

- Aqueous alkali metal silicate solution, 1 to 50 parts by weight;
- Polyol, 25 parts by weight;
- Organic acid, 1% to 5% by weight, percentage based on weight of alkali metal silicate solution.

4,282,130

**PROCESS FOR CONTROLLED GELATION OF POLYMERIC SOLUTION (C-669)**

Robert D. Landberg, Bridgewater, N.J.; Dennis E. O'Brien, Houston, Tex.; Henry S. Makowski, Scotch Plains, and Robert R. Klein, Berkeley Heights, both of N.J., assignors to Exxon Research &amp; Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 930,044, Aug. 1, 1978, abandoned. This

application Dec. 21, 1979, Ser. No. 106,027

Int. Cl.<sup>3</sup> C08F 8/36

U.S. Cl. 260—29.6 SQ 35 Claims

1. A process for forming a polymeric solution or water insoluble gel having a viscosity of at least about 50,000 cps which includes the steps of:

4,282,133

**FILLED UNSATURATED POLYESTER RESIN COMPOSITIONS**

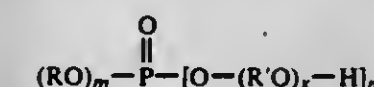
Ralph B. Fearing, Bardonia, and Edward D. Weil, Hastings-on-Hudson, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 26, 1979, Ser. No. 107,283

Int. Cl.<sup>3</sup> C08K 5/36

U.S. Cl. 260—30.6 R 7 Claims

1. A filled unsaturated polyester resin composition which comprises an unsaturated polyester resin, filler, and an effective amount of a substantially neutral lower alkoxyated alkyl acid phosphate composition for reduction of the viscosity of the composition wherein said alkyl acid phosphate contains a major amount of at least one compound of the formula

where x is an integer of from 1 to 5, m and n are either 1 or 2, with the sum of m and n being 3, R is a C<sub>1</sub>-C<sub>20</sub> alkyl group and R' is a C<sub>2</sub>-C<sub>5</sub> alkylene group.

4,282,131

**CAR UNDERCOATING COMPOSITION**

Edward G. Trousil, Arvada, Colo., assignor to Chapman Enterprises Corp., Waterloo, Iowa

Filed Feb. 8, 1980, Ser. No. 119,952

Int. Cl.<sup>3</sup> C08L 9/08

U.S. Cl. 260—29.7 R 8 Claims

1. An aqueous emulsion butadiene styrene latex composition consisting essentially of from about 40% to about 65% weight butadiene styrene, from about 5% to about 20% by weight of mica platelets as filler and flattening agent which effectively prevents vapor transmission and also as an anti-gelling agent for said composition and a sufficient amount of ammonium hydroxide to enhance anti-foaming properties of said composition and to provide a pH within the range of about 7.5 to 10.0 from about 0.02% to about 0.2% by weight of a bacteriostatic agent, from about 0.1% to about 1% by weight of a wetting agent, from about 0.05% to about 1% by weight of a defoaming agent, from about 0.5% to about 2% by weight of a viscosity control agent, and from about 1% to about 5% by weight of pigment, the balance of said composition comprising water.

4,282,132

**LUBRICATING OIL ADDITIVES**

Rainer Benda, Rosdorf; Helmut Knoll, Lautertal; Peter Neudoerfl, and Horst Pennewiss, both of Darmstadt-Neukranichstein, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

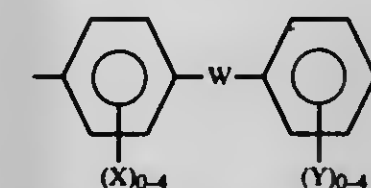
Filed Aug. 6, 1979, Ser. No. 63,682

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1978, 2835192

Int. Cl.<sup>3</sup> C10M 1/32, 3/26, 5/20, 7/30

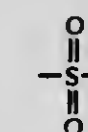
U.S. Cl. 260—30.2 14 Claims

1. A method for making a lubricating oil additive which comprises a first step of free-radically graft copolymerizing an alkyl ester of acrylic acid or of methacrylic acid, alone or in combination with styrene in a weight ratio of styrene to esters of 1:15 to 1:9, onto a backbone copolymer which is a hydrogenated block copolymer of styrene and a conjugated diene having 4 to 6 carbon atoms and a residual content of olefinic double bonds of less than 15 percent, in a medium suitable for use as a lubricant, to form a first graft copolymer, and a second step of free-radically graft copolymerizing at least one N-heterocyclic monomer selected from the group consisting of N-vinyl-pyrrolidone-2 and N-vinyl-imidazole, alone or in combination with a hydrophobizing vinyl ester in a weight ratio of ester to said N-heterocyclic monomer of 1:0.1 to 1:3, onto said first graft copolymer, in a medium suitable for use as a lubricant, to form a second graft copolymer comprising 5 to 50 percent by weight of said hydrogenated block copolymer, from 49.5 to 85 percent by weight of monomers graft copolymerized in said first step, and from 0.5 to 10 percent by weight of monomers graft copolymerized in said second step.



wherein W is selected from the group consisting of:

- O—;
- S—;



(c)

wherein X and Y are independently selected from the group consisting of, halogen and C<sub>1</sub> to C<sub>12</sub> alkyl, said



organic plasticizer being nonvolatile at an elevated temperature for extrusion or molding.

4,282,135

# AMINOPLAST DISPERSIONS AND POLYURETHANES PREPARED THEREFROM

Kuno Wagner, Leverkusen-Steinboeckel, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 464,099, Apr. 25, 1974, Pat. No. 4,225,481.

This application Feb. 25, 1980, Ser. No. 124,161

Claims priority, application Fed. Rep. of Germany, May 12, 1973, 2324134

Int. Cl.<sup>3</sup> C08K 5/05

U.S. Cl. 260—33.4 UR

5 Claims

1. A process for making a polyurethane resin which comprises reacting an organic polyisocyanate with a stable dispersion having a solids content of about 0.5% to about 80% by weight obtained by condensing ammonia, hydrazine or an organic compound having a molecular weight of from about 50 to about 400 and which contains at least two groups selected from the group consisting of —NH<sub>2</sub> and —NH— with benzoquinone or a compound of the formula R—Co—R' in which R and R' stand for the same or different radicals selected from the group consisting of hydrogen, C<sub>1</sub>–C<sub>4</sub> alkyl groups which may carry chlorine substituents, C<sub>2</sub>–C<sub>4</sub> alkenyl groups, C<sub>6</sub>–C<sub>10</sub> aryl groups, C<sub>7</sub>–C<sub>10</sub> aralkyl groups, C<sub>5</sub>–C<sub>10</sub> cycloalkyl groups and semi-acetals obtained by reacting said carbonyl compounds with monohydric or dihydric aliphatic alcohols having one to ten carbon atoms in an organic polyhydroxyl compound having a molecular weight of from about 250 to about 14,000 as the reaction medium.

4,282,136

# FLAME RETARDANT EPOXY MOLDING COMPOUND METHOD AND ENCAPSULATED DEVICE

Earl R. Hunt, 2408 Cherry Hill Dr., Toledo, Ohio 43615; Robert K. Rosler, 4751 Santa Maria Dr., Toledo, Ohio 43614, and James O. Peterson, 6752 Gettysburg Dr., Sylvania, Ohio 43615

Filed Apr. 9, 1979, Ser. No. 28,155

Int. Cl.<sup>3</sup> C08L 63/00

U.S. Cl. 260—38

24 Claims

1. In a method of encapsulating a semiconductor device wherein a thermosetting epoxy molding compound is cured in a liquid state in a mold surrounding a semiconductor device, said epoxy molding compound comprising a mixture of an epoxy, a hardener selected from phenol-derived and substituted phenol-derived resin, carboxylic acid anhydride and amine hardeners, a catalyst, a mold release agent, optionally a filler, optionally a colorant, optionally a coupling agent and a flame retardant system which may include one or more of the other ingredient; the improvement wherein the flame retardant system comprises about one percent antimony pentoxide by weight of molding compound and from about 1.3 to about 1.6 percent of a reactive bromine-containing organic compound by weight of molding compound.

4,282,137

# PROCESS FOR THE PRODUCTION OF POLYESTER FIBERS AND FILAMENTS WHICH CAN BE DYED IN THE ABSENCE OF CARRIERS AND THE FILAMENTS AND FIBERS PRODUCED THEREBY

Armia Köhler, Dormagen; Peter Hoffmann, Leverkusen; Herbert Peloušek, and Eduard Specht, both of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 904,816

Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721984

Int. Cl.<sup>3</sup> C08K 67/00; D01F 1/04

U.S. Cl. 260—40 P

6 Claims

1. A process for the production of polyester filaments and

fibers which can be dyed in the absence of a carrier which comprises introducing into the polymer to be spun from 0.1 to 4.0% by weight based on the mixture as a whole of a silicate charged with an inert gas, melt spinning the mixture obtained in known manner and further processing into filaments or fibers, wherein said silicate has a three dimensional network and contains channels or vacuoles which can be charged with inert gas.

4,282,138

# ESTERS OF TETRACARBOXYLIC ACIDS AND RESINS DERIVED THEREFROM

Erich Kuehn, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 748,170, Dec. 7, 1976, Pat. No. 4,139,577.

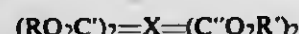
This application Oct. 26, 1978, Ser. No. 955,137

Int. Cl.<sup>3</sup> C08K 7/02, 7/04, 7/06; C08L 67/06

U.S. Cl. 260—40 R

12 Claims

1. A polymerizable composition comprising a carbocyclic tetracarboxylic ester monomer useful for imparting flame retardance to resins made therefrom and having a general formula:



wherein X= is selected from a tetravalent 5- or 6-membered single- ring system wherein the C' carbons are attached to a pair of vicinal carbons in said ring system and the C'' carbons are attached to another pair of vicinal carbons in said ring system wherein one each of R and R' is a halogenated ethylenically unsaturated organic radical containing at least two atoms selected from the group consisting of chlorine and bromine and the other of each R and R' is selected from the group consisting of —H, CH<sub>2</sub>CH(OH)CH<sub>2</sub>O<sub>2</sub>CCR''=CH<sub>2</sub>, and CH[CH<sub>2</sub>(OH)]-CH<sub>2</sub>O<sub>2</sub>CCR''=CH<sub>2</sub>, wherein R'' is —H or —CH<sub>3</sub>; one or more ethylenically unsaturated monomers and an ethylenically unsaturated resin selected from the group consisting of polyesters, polyurethanes, polyepoxy condensation products, polyethers, epoxidized polybutadienes and polyisocyanurates.

4,282,139

# FIBER-REINFORCED RESIN COMPOSITION CONTAINING POLYPHENYLENE ETHER RESIN

Akitoshi Sugio, Ohmiya; Masanobu Masu, Tokyo, and Masatugu Matunaga, Matsudo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Sep. 19, 1979, Ser. No. 76,950

Claims priority, application Japan, Sep. 25, 1978, 53/117723

Int. Cl.<sup>3</sup> C08K 7/12; C08L 11/04

U.S. Cl. 260—42.17

3 Claims

1. A fiber-reinforced resin composition having improved rigidity and dimensional stability, said composition consisting essentially of (a) a resin component which contains at least 30% by weight of a polyphenylene ether resin and, the balance being a styrene resin and (b) chrysotile asbestos fibers which are used in the form of pellets and in the amount of 10 to 100 parts by weight per 100 parts by weight of said resin component.

4,282,140

# ACRYLIC CEMENT APPLICABLE IN BONE SURGERY AND IN STOMATOLOGY

Gilles Bousquet, Saint Etienne; Jean-Bernard Egraz, Ecullay; Andre Rambert, Lyons, and Georges Ravet, Saint Genis les Ollieres, all of France, assignors to Societe d'Exploitation des Procédés Coatex, Caluire, France

Filed Feb. 22, 1979, Ser. No. 13,891

Claims priority, application France, Feb. 22, 1978, 78 06377

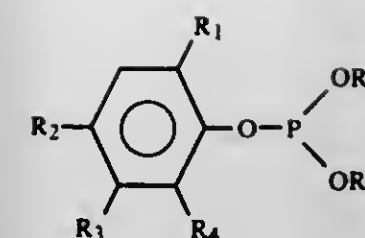
Int. Cl.<sup>3</sup> C08F 8/00; C08L 33/06; C08F 265/04

U.S. Cl. 260—42.52

9 Claims

1. The method of preparing an acrylic homopolymer and/or

copolymer base self-polymerizable sealing cement, applicable for prosthetic implants, the purpose of which is the safety of the patient due to the absence of monomer exudation and due to a polymerization temperature which is always lower than the mobilization temperature of human fat, said cement being prepared by mixing a liquid phase and a solid phase in a weight ratio range of 1 to 0.5–2.5, in which the liquid phase is a colloid formed of an acrylic homopolymer and/or copolymer selected from the group consisting of polyalkylacrylate, polyalkylmethacrylate and copolymers consisting of alkylacrylates and/or alkylmethacrylates in which the alkyl group is methyl, ethyl, propyl or butyl in at least one acrylic monomer selected from the group consisting of alkylacrylate and alkylmethacrylate in which the alkyl group is methyl, ethyl, propyl or butyl consisting of at least 65% by weight of acrylic monomer and between 15% and 35% by weight of acrylic homopolymer and/or copolymer, and in which the solid phase is composed of an acrylic homopolymer and/or copolymer selected from the group consisting of polyalkylacrylate, polyalkylmethacrylate and copolymers consisting of alkylacrylates and/or alkylmethacrylates.



in which R<sub>1</sub> is a t-butyl, t-amyl, phenyl or cycloalkyl group having 5 to 8 carbon atoms; each of R<sub>2</sub> and R<sub>3</sub> independently is a hydrogen atom, a phenyl group, an alkyl group having 1 to 5 carbon atoms, or a cycloalkyl group having 5 to 8 carbon atoms; R<sub>4</sub> is a hydrogen atom or a methyl group, and each of R<sub>5</sub> and R<sub>6</sub> independently is a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 5 to 20 carbon atoms, an aryl group having 6 to 12 carbon atoms, an aralkyl group having 7 to 12 carbon atoms, an alkaryl group having 7 to 18 carbon atoms, or an ether-substituted group having 3 to about 80 carbon atoms and 1 to about 40 ether oxygen atoms.

4,282,142

# FLAME-RETARDED POLYOLEFIN POLYMERIC COMPOSITIONS CONTAINING

## 3,9-BROMOPHENOXOXY-2,3,8,10-TETRAOXA-3,9-DIPHOSPHASPIRO (5,5)UNDECANE-3,9-DIOXIDES

James A. Albright, Hampton, N.J., and Chester J. Kmiec, Williamsville, N.Y., assignors to Velsicol Chemical Corporation, Chicago, Ill.

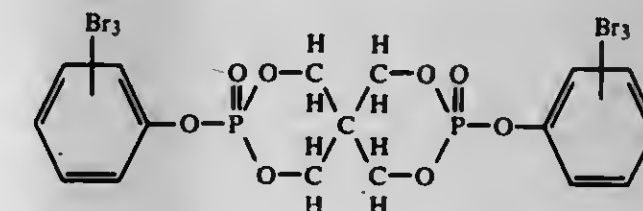
Division of Ser. No. 33,601, Apr. 27, 1979, Pat. No. 4,226,813, which is a continuation-in-part of Ser. No. 685,754, May 13, 1976, abandoned. This application Mar. 14, 1980, Ser. No. 130,312

Int. Cl.<sup>3</sup> C07F 9/15; C08K 5/52

U.S. Cl. 260—45.7 P

6 Claims

1. A flame retarded polyolefin polymer containing from about 1 to about 40 percent (by combined weight of polymer and flame retardant) of the compound of the formula



4,282,143

# OCTAPEPTIDES LOWERING GROWTH HORMONE

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

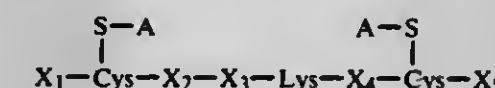
Filed Jun. 13, 1980, Ser. No. 159,327

Int. Cl.<sup>3</sup> C07C 103/52; C08L 37/00

U.S. Cl. 260—112.5 S

3 Claims

1. A compound of the formula:



in which

X<sub>1</sub> is Phe, D-Phe or C<sub>6</sub>H<sub>5</sub>CH<sub>2</sub>CH<sub>2</sub>CO—;

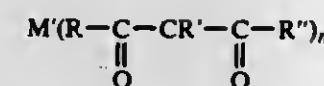
X<sub>2</sub> is Phe, Tyr, Trp, Met or Leu;

X<sub>3</sub> is Trp or D-Trp;

X<sub>4</sub> is Thr, Val, α-Abu or Phe; and

X<sub>5</sub> is Phe, D-Phe or —NHCH<sub>2</sub>CH<sub>2</sub>C<sub>6</sub>H<sub>5</sub>

and the A groups are hydrogen or a direct bond between the two sulfur atoms;



in which R is a hydrocarbon group, a halohydrocarbon group, an alkoxyhydrocarbon group, or an alkenedioxyhydrocarbon group having 1 to 18 carbon atoms; R' is a hydrogen atom, an acyl group



where R''' is alkyl or a hydrocarbon group having 1 to 18 carbon atoms; R'' is a hydrogen atom or a hydrocarbon group, a halohydrocarbon group, an alkoxyhydrocarbon group, or an alkenedioxyhydrocarbon group, having 1 to 18 carbon atoms; M' is hydrogen or a metal selected from the group consisting of lithium, sodium, potassium, magnesium, calcium, strontium, barium, and zinc; and n is an integer from 1 to 3 depending on the valence of M'; and an organic phosphite, the improvement in which the organic phosphite has the formula:



or a pharmaceutically acceptable salt or amide thereof.

**4,282,144**  
**AZO DYES DERIVED FROM 5-MEMBERED**  
**HETEROCYCLIC AMINES AND AROMATIC AMINE**  
**COUPLERS CONTAINING SULFO GROUPS, OR SALTS**  
**THEREOF**

Max A. Weaver; Clarence A. Coates, Jr., and Jean C. Fleischer,  
 all of Kingsport, Tenn., assignors to Eastman Kodak Com-  
 pany, Rochester, N.Y.

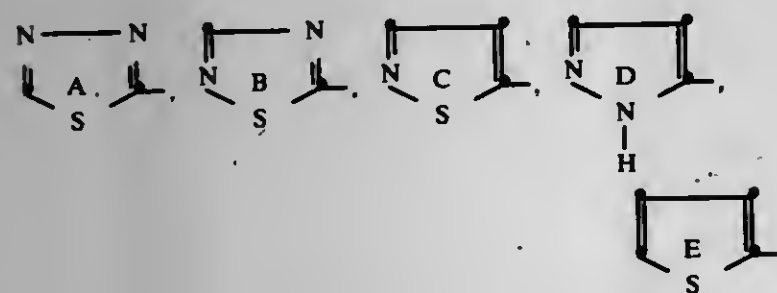
Filed Jan. 1, 1979, Ser. No. 44,446

Int. Cl.<sup>3</sup> C09B 29/22, 31/14, 31/28, 62/08

U.S. Cl. 260-152

12 Claims

1. A compound of the formulae  $D-N=N-Coupler$ ,  
 wherein D is selected from the heterocyclic amines of the  
 formula



ring A may bear a substituent selected from lower alkyl,  
 substituted lower alkyl, lower alkoxy, halogen, lower  
 alkylsulfonyl,  $SO_2O$  aryl,  $SO_2NH_2$ ,  $SO_2NH$ —lower alkyl,  
 $SO_2N$ —(dialkyl), arylsulfonyl, substituted  $SO_2N$ —  
 H—lower alkyl, acylamido, aryl, arylthio, alkenylthio,  
 cyclohexylthio, thiocarbonyl, cyclohexylsulfonyl, lower  
 alkylthio, substituted lower alkylthio and cyclohexyl;

ring B may bear a substituent selected from lower alkyl,  
 substituted lower alkyl, aryl, lower alkylthio, cyclohex-  
 ylthio, substituted lower alkylthio and lower alkylsulfo-  
 nyl;

ring C may bear one or two substituents selected from alkyl,  
 substituted lower alkyl, halogen, cyano, carbamoyl,  $CONH$ —  
 lower alkyl, substituted  $CONH$ —lower alkyl, lower  
 alkoxy, carbonyl, lower alkylthio, substituted lower alkyl-  
 thio, alkenylthio, arylthio, cyclohexylthio, S-heterocycle,  
 aryloxy, and lower alkoxy;

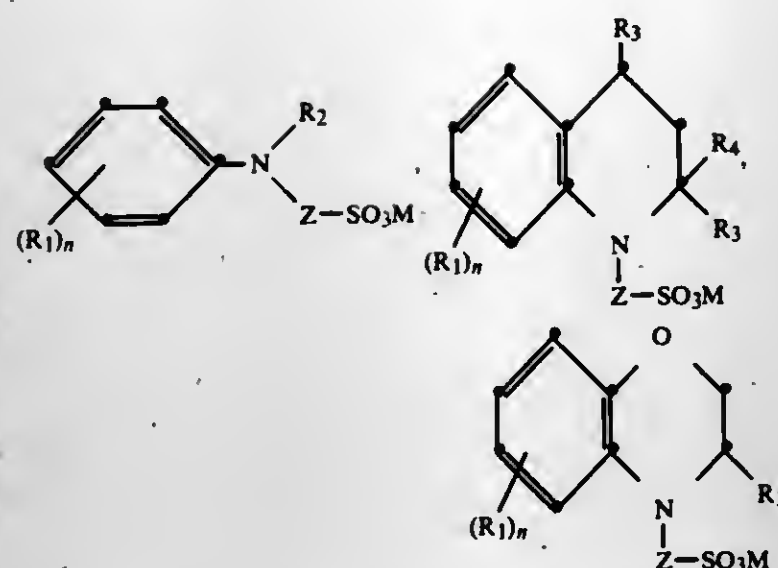
ring D may bear one or two substituents selected from lower  
 alkyl, substituted lower alkyl, lower alkoxy, carbonyl,  
 lower alkylthio, aryl, cyano, carbamoyl, lower alkyl car-  
 bamoyl, lower alkylcarbonyl, substituted lower alkyl  
 carbamoyl, and lower alkyl sulfonyl; and

ring E may be substituted with one to three substituents  
 selected from lower alkyl, substituted lower alkyl, cyano,  
 lower alkoxy, carbonyl, acyl, aroyl, lower alkylsulfonyl,  
 arylsulfonyl, carbamoyl, lower alkyl carbamoyl, substi-  
 tuted lower alkyl carbamoyl, aryl, halogen, sulfamoyl,  
 lower alkyl carbamoyl, substituted lower alkyl, sulfamoyl  
 and formyl;

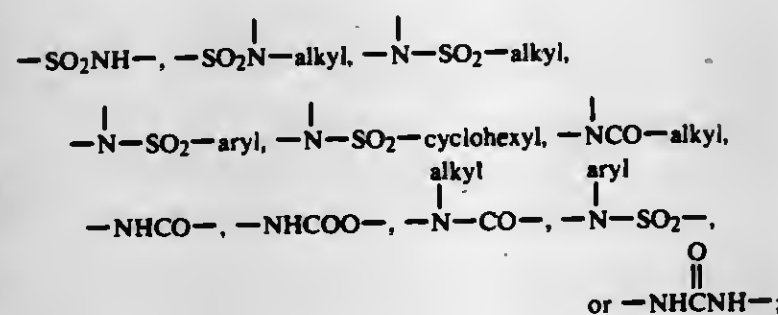
and wherein the various alkyl groups may bear one to three  
 substituents selected from hydroxy, lower alkoxy, aryl,  
 aryloxy, cyclohexyl, lower alkylcyclohexyl, acyloxy,  
 lower alkoxy carbonyl, acylamido, lower alkylsulfonyl,  
 amido, succinimido, glutarimido, phthalimido, 2-pyr-  
 rolidono, cyano, carbamoyl, lower alkoxy-alkoxy, lower  
 alkylthio, halogen, arylthio, lower alkylsulfonyl and aryl-  
 sulfonyl;

and wherein the various aryl groups may be substituted with  
 one to three substituents selected from lower alkyl, lower  
 alkoxy, halogen, lower alkoxy carbonyl, lower alkyl sulfo-  
 nyl, and lower alkylthio; and

the Coupler is selected from those of the formulae



wherein  $R_1$  is selected from hydrogen, lower alkyl, halo-  
 gen, lower alkoxy, aryloxy, and  $NHCO-R_5$  or  $NH$ -  
 $SO_2-R_5$  wherein  $R_5$  is selected from lower alkyl which  
 may be substituted with hydroxy, lower alkoxy, cyano,  
 aryloxy, aryl, halogen, cycloalkyl, lower alkyl car-  
 bonyloxy, or carbamoyl; hydrogen; aryl; alkoxy; alkyl-  
 amine; 2-furyl;  $R_2$  is selected from hydrogen, aryl, cycloal-  
 kyl, and lower alkyl which may be substituted  $SO_3M$   
 with alkoxy, alkoxyalkoxy, hydrogen, aryloxy, aryl, cy-  
 cloalkyl, lower alkylcycloalkyl, furyl,  $NHCOR_5$ ,  
 $NHSO_2R_5$ , aryloxy, carbamoyl, lower alkyl carbamoyl,  
 lower alkyl substituted carbamoyl, cyano, alkanoyloxy,  
 halogen, alkoxy, carbonyl, succinimido, glutarimido,  
 phthalimido, 2-pyrrolidono, sulfamoyl, lower alkyl substi-  
 tuted sulfamoyl, lower alkylsulfonamide,  $NHSO_2$ —aryl,  
 $NHCOO$ —alkyl,  $NHCONH$ —alkyl, formamido, alkylsul-  
 fonyl, arylsulfonyl, alkylthio, or arylthio;  $R_2$  may in con-  
 junction with  $R_1$  form a 1,2,3,4-tetrahydroquinoline or  
 benzomorpholine derivative;  $n$  is 0, 1 or 2;  $M$  is  $Na^+$ ,  $K^+$ ,  
 $NH_4^+$ , or  $H^+$ ;  $R_3$  and  $R_4$  are each selected from hydro-  
 gen or lower alkyl;  $Z$  is selected from straight or branched  
 chain lower alkylene, lower alkylene substituted with  
 aryl, aryloxy, alkoxy, halogen, aryloxy or  $SO_3M$ ,  
 $-CH_2(CH_2)_mX-CH_2(CH_2)_p$ , where  $m$  is 1, 2, or 3,  $p$  is 0,  
 1, 2 or 3, and  $X$  is O, S,  $SO_2$ .



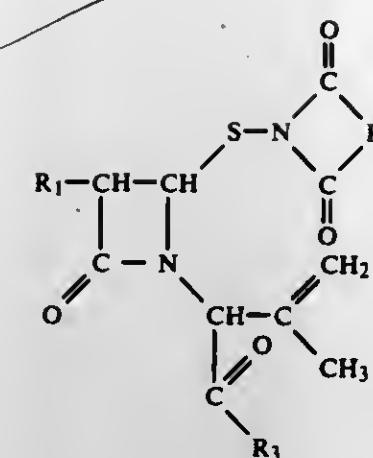
and the various aryl groups may be substituted with lower  
 alkyl, lower alkoxy, or halogen.

**4,282,145**  
**PROCESS FOR THE PREPARATION OF AZETIDINES**  
 Jan Verwey, Leiden, and Hong S. Tan, Bleiswijk, both of Neth-  
 erlands, assignors to Gist-Brocades N.V., Delft, Netherlands  
 Division of Ser. No. 440,725, Feb. 8, 1974, Pat. No. 3,966,738.  
 This application Oct. 21, 1975, Ser. No. 624,332  
 Claims priority, application United Kingdom, Feb. 9, 1973,  
 06576/73

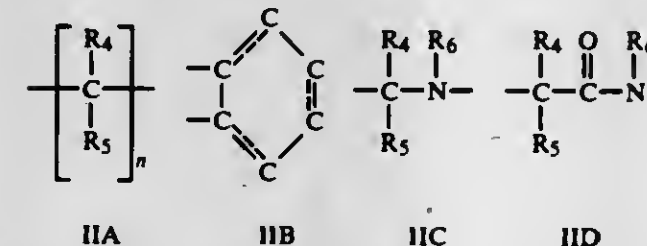
Int. Cl.<sup>3</sup> C07D 401/12, 403/12  
 U.S. Cl. 260-239 A

10 Claims

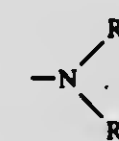
1. A process of preparing azetidines of the formula



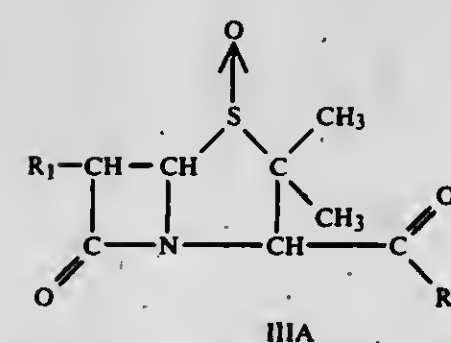
wherein  $R_1$  is a conventional penicillin- or cephalo-  
 sporinacylamido group,  $R_2$  represents one of the groups of the  
 following formulae:



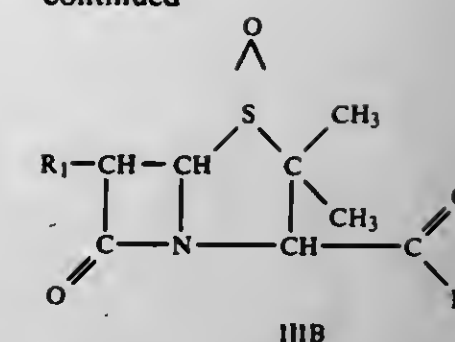
wherein  $R_4$ ,  $R_5$  and  $R_6$  are individually selected from the group  
 consisting of hydrogen, lower alkyl and lower alkenyl,  $n$  is 2 or  
 3 and—in case formula IIB represents a phenylene group—this  
 group may carry one to four further substituents selected from  
 the group consisting of halogen, lower alkyl, lower alkenyl and  
 phenyl,  $R_3$  is an amino group of the formula



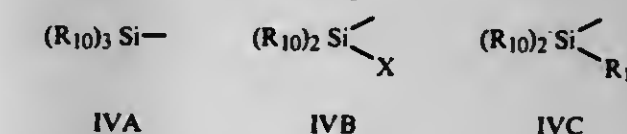
wherein  $R_7$  is hydrogen or lower alkyl and  $R_8$  is lower alkyl, or  
 $R_3$  is a  $N,N'$ -disubstituted hydrazino group wherein the substitu-  
 ents are lower alkyl groups, or  $R_3$  is  $OR_9$  wherein  $R_9$  is  
 hydrogen, lower alkyl or lower alkyl substituted by 1 to 3  
 halogen atoms or by 1 or 2 phenyl groups, wherein the phenyl  
 groups may be substituted by a methoxy or a nitro group, or  
 $R_9$  represents the phenacyl group or a salt-forming cation  
 selected from the group consisting of alkali metal and alkaline  
 earth metal ions, and corresponding azetidines of formula I  
 wherein the double bond in the propenyl side chain has been  
 shifted from the 2-to the 1-position which comprises the step of  
 reacting a penicillanic sulfoxide of the formulae



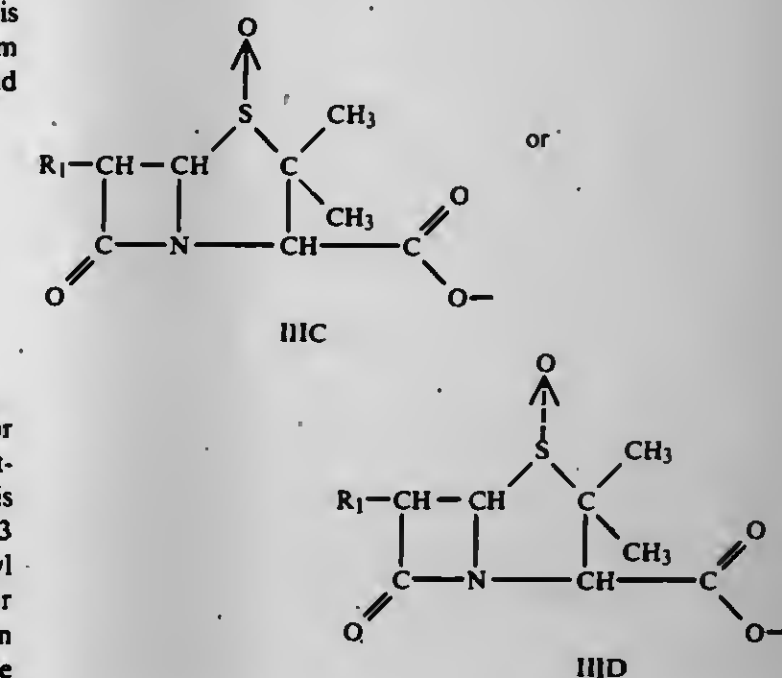
-continued



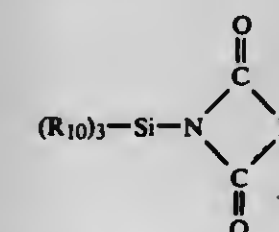
wherein  $R_1$  is as defined above and  $R_3'$  has the same signifi-  
 cance as defined for symbol  $R_3$  except that when  $R_3'$  represents  
 $OR_9$ ,  $R_9$  does not represent a salt-forming cation, but  $R_9$  also  
 represents a silyl group of one of the following formulae:



wherein the symbols  $R_{10}$  are the same or different and each  
 represents a lower alkyl or alkoxy group or lower alkyl or  
 lower alkoxy substituted by a halogen atom, or a phenyl group,  
 $X$  is a halogen atom and  $R_{11}$  is a penicillanic sulfoxide acyl  
 group of the formulae:



wherein  $R_1$  is as defined above with a silicon-containing com-  
 pound of the formula



wherein  $R_2$  and  $R_{10}$  are as hereinbefore defined, under anhy-  
 drous conditions, in an inert organic solvent at temperature  
 between 50° and 180° C.



4,282,146

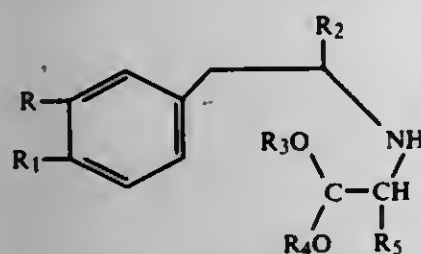
**PREPARATION OF 1,2,4,5-TETRAHYDRO-7-ALKOXY-(AND 7,8-DIALKOXY)-3H,3-BENZAZEPINES AND 3-SUBSTITUTED DERIVATIVES THEREOF FROM THE CORRESPONDING PHENETHYLAMINES**  
Thomas A. Davidson, Rochester, and Ronald C. Griffith, Pittsburgh, both of N.Y., assignors to Peonwalt Corporation, Philadelphia, Pa.

Filed Nov. 20, 1978, Ser. No. 962,223  
Int. Cl.<sup>3</sup> C07D 223/16

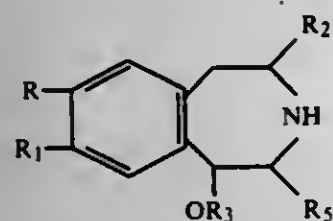
U.S. Cl. 260—239 BB

10 Claims

1. In a process for preparing 1-alkoxy-1,2,4,5-tetrahydro-3H,3-benzazepines by ring closure of N-(2,2-dialkoxyethyl)-phenethylamines with BF<sub>3</sub>, the improvement which comprises the step of reacting a N-(2,2-dialkoxyethyl)phenethylamine having the formula



with an excess of BF<sub>3</sub> complex selected from BF<sub>3</sub> etherate or BF<sub>3</sub> ethanolate, in an inert solvent at elevated temperatures, to form



wherein:

R is C<sub>1</sub>-C<sub>4</sub> alkoxy;  
R<sub>1</sub> is H or C<sub>1</sub>-C<sub>4</sub> alkoxy; or  
R and R<sub>1</sub> taken together are methylenedioxy;  
R<sub>2</sub> is H or C<sub>1</sub>-C<sub>4</sub> alkyl;  
R<sub>3</sub> and R<sub>4</sub> are C<sub>1</sub>-C<sub>4</sub> alkyl; and  
R<sub>5</sub> is H, C<sub>1</sub>-C<sub>4</sub> alkyl or phenyl.

4,282,147

**DISPERSION OF AROMATIC ISOCYANATOSULFONIC ACID URETDIONES IN ORGANIC POLYISOCYANATES AND A PROCESS FOR THEIR PREPARATION**

Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed Nov. 15, 1979, Ser. No. 94,414

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1978, 2851341

Int. Cl.<sup>3</sup> C07D 229/00; C08G 18/78

U.S. Cl. 260—239 A

9 Claims

1. Non-sedimenting dispersions in organic polyisocyanates comprising: finely divided solid aromatic isocyanatosulfonic acid uretdiones having a mean particle size of less than 0.02 mm which are liquid at room temperature or may be liquefied by heating to at most 60° C. and which contain a total of from 5 to 60 equivalent % of free and dimerized isocyanate groups of aromatic polyisocyanatosulfonic acids, based on the total number of equivalents of isocyanate groups.

4. A process for producing dispersions comprising: sulfonating an aromatic polyisocyanate with from 5 to 60 mole % of sulfur trioxide or with a corresponding quantity of a sulfonating agent containing or forming sulfur trioxide in the presence of from 0.2 to 25% by weight, based on the weight of the polyisocyanate, of a hydrophobic organic substance which does not contain any hydrophilic substituents inert to isocya-

nate groups, is soluble in isocyanates, at least at an elevated temperature, is solid or liquid at room temperature and contains polar groups and, optionally contains isocyanate-reactive groups.

4,282,148

**SYNTHESIS OF THIENAMYCIN VIA ESTERS OF (3SR, 4RS)-3-[(SR)-1-HYDROXYETHYL]-β,2-DIOXO-4-AZETIDINEBUTANOIC ACID**

Thomas M. H. Liu, Westfield; David G. Melillo, Scotch Plains; Kenneth M. Ryan, Clark; Ichiro Shinkai, Westfield, and Meyer Slettinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

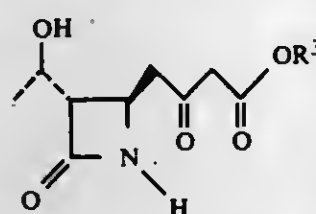
Filed Jan. 14, 1980, Ser. No. 112,022

Int. Cl.<sup>3</sup> C07D 705/08, 487/04

U.S. Cl. 260—239 A

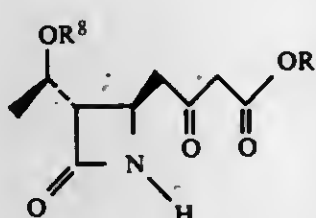
2 Claims

1. A compound having the structural formula:



wherein R<sup>3</sup> is hydrogen or a readily removable protecting group selected from p-nitrobenzyl, o-nitrobenzyl, benzyl, phenyl, methyl, ethyl, t-butyl, or 1,1,1-trichloroethyl.

2. A compound having the structural formula:



wherein

R<sup>8</sup> is a readily removable acyl group selected from formyl, acetyl, and benzoyl and R<sup>3</sup> is hydrogen or a readily removable protecting group selected from p-nitrobenzyl, o-nitrobenzyl, benzyl, phenyl, methyl, ethyl, t-butyl, or 1,1,1-trichloroethyl.

4,282,149

**CARBON AND OXYGEN ANALOGS OF PENICILLIN**  
John C. Sheehan, Lexington, and Young S. Lo, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

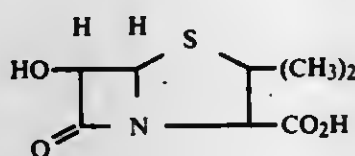
Division of Ser. No. 779,828, Mar. 21, 1977, Pat. No. 4,143,046, which is a continuation of Ser. No. 347,772, Apr. 4, 1973, abandoned. This application Sep. 27, 1978, Ser. No. 946,438

Int. Cl.<sup>3</sup> C07D 499/00

U.S. Cl. 260—245.2 R

32 Claims

1. An oxygen analog of 6-aminopenicillanic acid having the formula:



4,282,150

**2,6-DISUBSTITUTED PENEM COMPOUNDS**

Marcel Menard, Candiac, and Alain Martel, Delson, both of Canada, assignors to Bristol-Myers Company, New York, N.Y.

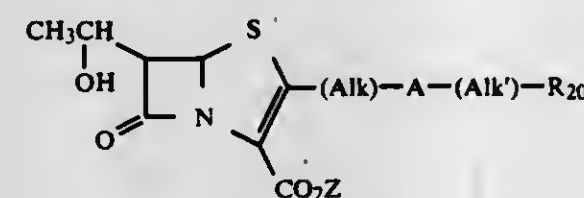
Continuation-in-part of Ser. No. 968,663, Dec. 18, 1978, abandoned. This application Sep. 21, 1979, Ser. No. 77,886

Int. Cl.<sup>3</sup> C07D 499/00

U.S. Cl. 260—245.2 R

12 Claims

1. A compound having the formula



wherein Z is hydrogen or an easily cleavable ester protecting group; Alk is a C<sub>1</sub>-C<sub>2</sub> alkylene group optionally substituted by a C<sub>1</sub>-C<sub>4</sub> alkyl radical; A is O, S, SO, SO<sub>2</sub> or NR<sub>21</sub> in which R<sub>21</sub> is hydrogen, (lower)alkyl, phenyl or phenyl(lower)alkyl; Alk' is a C<sub>2</sub>-C<sub>4</sub> alkylene group and R<sub>20</sub> is —NHOH, —NO<sub>2</sub> or —NR<sub>22</sub>R<sub>23</sub> in which R<sub>22</sub> and R<sub>23</sub> are each independently hydrogen or (lower)alkyl; or a pharmaceutically acceptable salt thereof.

4,282,151

**REACTIVE ASYMMETRICAL DICARBOXYLIC ACID ESTERS AND REAGENTS FOR THE INVESTIGATION OF CARDIAC GLYCOSIDES**

Hans-Georg Batz, Tutzing; Hans-Ralf Linke, Wielenbach; Klaus Stellner, Bernried, and Günter Wiemann, Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Fed. Rep. of Germany

Division of Ser. No. 715,020, Aug. 16, 1976, Pat. No. 4,133,949.

This application Mar. 6, 1978, Ser. No. 883,981

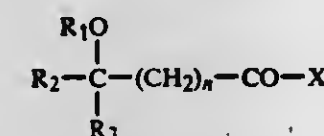
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1975, 2537129

Int. Cl.<sup>3</sup> C07D 209/48

U.S. Cl. 260—326 A

7 Claims

1. Reactive asymmetrical dicarboxylic acid ester of the formula



wherein

R<sub>1</sub> is alkyl of up to 3 carbon atoms;  
R<sub>2</sub> and R<sub>3</sub> are individually selected from alkoxy of up to 3 carbon atoms or together represent an oxygen atom;  
X is phthalimido-N-oxy; and  
n is 2, 3, 4 or 5.

4,282,152

**INTERMEDIATES FOR PREPARING SPECTINOMYCIN AND ANALOGS THEREOF**

David R. White, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

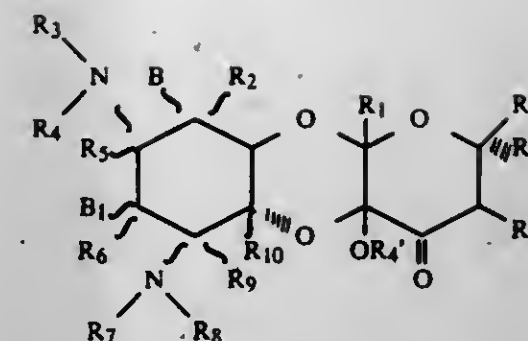
Filed Aug. 23, 1979, Ser. No. 68,926

Int. Cl.<sup>3</sup> C07D 319/24

U.S. Cl. 260—340.3

4 Claims

1. Anomers and asteric mixtures of a compound having the formula:



wherein

R<sub>1</sub> is selected from the group consisting of hydrogen and lower alkyl, R'<sub>1</sub> through R'<sub>3</sub> may be the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower haloalkyl, acyloxyalkyl, lower aminoalkyl, lower alkenyl, lower alkynyl, —OX and —(CH<sub>2</sub>)<sub>n</sub>—OX and isomers thereof with the proviso that R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are not hydroxy,

X is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, and lower alkynyl;

n is an integer of from one to four;

R<sub>2</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>9</sub> and R<sub>10</sub> are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl and lower alkynyl; R<sub>3</sub>, R<sub>4</sub>, R<sub>7</sub> and R<sub>8</sub> are selected from the group consisting of hydrogen, alkyl, lower alkenyl, lower alkynyl, and a blocking group selected from the group consisting of aralkoxycarbonyl, halogenated alkoxyalkyl and alkoxyalkyl; with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is always a blocking group; R'<sub>4</sub> is aryl or acyl; and B and B<sub>1</sub> are the same or different and are selected from the group consisting of hydrogen, hydroxy, alkoxy, o-lower alkenyl, thio, thio-lower alkyl and thio-lower alkenyl; with the proviso that at least one of R'<sub>1</sub> or R'<sub>2</sub> is always acyloxyalkyl.

4,282,153

**PROCESS FOR PREPARING ESTERS OF O,O-DIALKYL DITHIOPHOSPHORIC ACID**

James Mann, Hattiesburg, Miss., assignor to Boots Hercules Agrochemicals Co., Wilmington, Del.

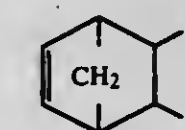
Filed Feb. 22, 1980, Ser. No. 123,549

Int. Cl.<sup>3</sup> C07D 319/10

U.S. Cl. 260—340.6

9 Claims

1. In the process for producing a dithiophosphoric acid ester of p-dioxane by reacting an O,O-dialkyl dithiophosphoric acid with a chloro-p-dioxane in the presence of a catalytic amount of zinc chloride, ferrous chloride or stannous chloride and a stoichiometric excess of said acid, the improvement which comprises adding to the system resulting from said reaction from 2.5 to 100 mole % based on the O,O-dialkyl dithiophosphoric acid of a bicyclo(2,2,1)heptene of the formula



where R and R' are independently hydrogen, alkyl or halogen or together with the carbon atoms to which they are attached form a condensed hydrocarbon ring containing 5 to 6 carbon atoms, reacting said bicycloheptene with the O,O-dialkyl dithiophosphoric acid present in the system whereby an O,O-dialkyl dithiophosphoric acid adduct is formed and recovering the resulting product containing said ester and said adduct.



4,282,154

## TAGGED GIBBERELLINS

Manfred Lischewski, Halle-Neustadt, and Günter Adam, Halle Isaale, both of German Democratic Rep., assignors to Akademie der Wissenschaften DER, Berlin, German Democratic Rep.

Filed Mar. 28, 1979, Ser. No. 24,781

Claims priority, application German Democratic Rep., Apr. 13, 1978, 204769; Apr. 13, 1978, 204771; Sep. 12, 1978, 207758

Int. Cl.<sup>3</sup> C07D 307/77

U.S. Cl. 260—343.3 G

1. [6-<sup>3</sup>H]-6-Epigibberellines.

13 Claims

4,282,155

## ANTIHYPERCHOLESTEROLEMIC COMPOUNDS

Robert L. Smith, and Ta-jyh Lee, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

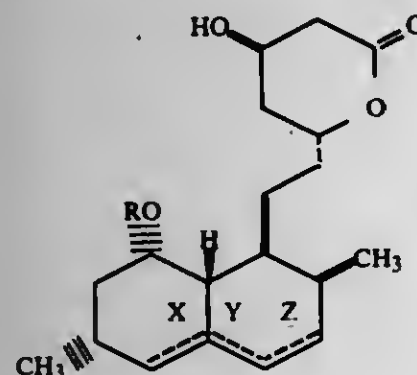
Continuation-in-part of Ser. No. 118,048, Feb. 4, 1980, abandoned. This application Aug. 5, 1980, Ser. No. 175,459

Int. Cl.<sup>3</sup> C07D 309/30; C07C 59/1

U.S. Cl. 260—343.5

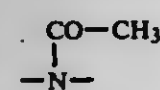
1. A compound of the structure:

6 Claims

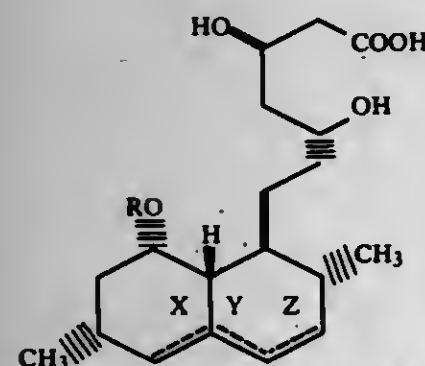


in which R is:

- C<sub>1-18</sub> alkyl, straight or branched chain,
- C<sub>4-10</sub> cycloalkyl,
- C<sub>2-10</sub> alkenyl,
- C<sub>5-10</sub> cycloalkenyl,
- C<sub>2-10</sub> alkynyl,
- phenyl C<sub>1-3</sub> alkyl,
- substituted phenyl C<sub>1-3</sub> alkyl in which the substituent is halogen, CF<sub>3</sub> or CN, and
- C<sub>1-10</sub> alkyl having one or more —O—, —S—, or



in the chain, in which the dotted lines at X, Y and Z represent possible double bonds, said double bonds, when any are present, being either X and Z in combination or X, Y or Z alone, and the corresponding hydroxy acids of the formula:



and the pharmaceutically acceptable salts, the loweralkyl esters and the phenyl, dimethylamino and acetylaminio substituted loweralkyl esters of said hydroxy acids.

4,282,156

## METHOD FOR THE PRODUCTION OF NOVEL ANHYDRIDE POLYCARBOXYLATES

Eddie N. Gutierrez, Fort Lee, N.J., assignor to Lever Brothers Company, New York, N.Y.

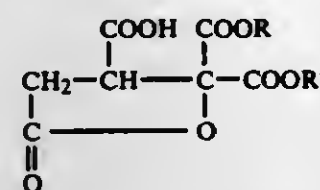
Division of Ser. No. 970,840, Dec. 18, 1978, abandoned. This application Apr. 1, 1980, Ser. No. 136,189

Int. Cl.<sup>3</sup> C07D 307/32

U.S. Cl. 260—343.6

1 Claim

1. A lactone of the formula



wherein R and R' are independently selected from the group consisting of methyl and ethyl.

4,282,157

## PROCESS FOR THE PREPARATION OF POLYALKENYL-SUBSTITUTED SUCCINIC ANHYDRIDE

Henricus G. P. van der Voort, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 6, 1980, Ser. No. 194,644

Claims priority, application United Kingdom, Oct. 24, 1979, 36863/79

Int. Cl.<sup>3</sup> C07D 307/20

U.S. Cl. 260—346.74

5 Claims

1. In a process for the preparation of polyalkenyl-substituted succinic anhydride which comprises preparing a mixture of an alkene polymer and maleic anhydride, contacting the mixture with chlorine at elevated temperature followed by a post-reaction and then removing excess maleic anhydride, the improvement which comprises after removing excess maleic anhydride, subjecting the formed polyalkenyl succinic anhydride to a thermal treatment at a temperature of from 140°–230° C. for a period of 0.1 to 30 hours.

4,282,158

## PROCESS FOR PRODUCING α,β-UNSATURATED KETONES

Richard A. Mueller, Glencoe, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

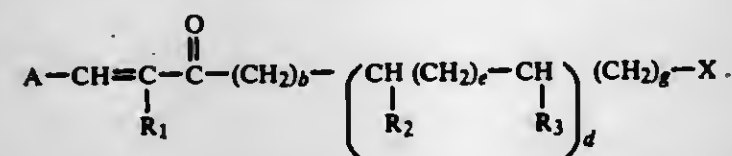
Division of Ser. No. 61,732, Jul. 30, 1979. This application Feb. 27, 1980, Ser. No. 125,302

Int. Cl.<sup>3</sup> C07C 49/23, 49/235, 49/242, 49/248

U.S. Cl. 260—347.8

8 Claims

1. A process for producing a compound of the formula



wherein A is a phenyl, furyl or cyclohexyl radical, each being either unsubstituted or substituted with at least one nitro, halogen, hydroxy, alkyl, alkoxy or trifluoromethyl radical with each alkyl radical being a straight-chain or branched-chain group containing from 1 to 6 carbon atoms and with each alkoxy radical being a straight-chain or branched-chain group containing from 1 to 4 carbon atoms; R<sub>1</sub> is hydrogen or a methyl radical; b is an integer from 0 to 4; g is an integer from 1 to 5; d and e are each 0 or 1; the sum of b, e, g and 2d is an integer from 3 to 5; when e is 0 or 1, R<sub>2</sub> and R<sub>3</sub> are each a hydrogen, methyl, ethyl or phenyl radical, the phenyl radical being unsubstituted or substituted with at least one halo or

4,282,160

## NOVEL TRIARYLMETHANE COMPOUNDS

James W. Foley, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

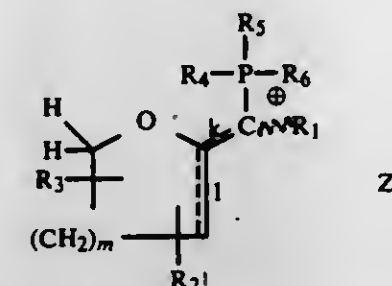
Filed May 22, 1980, Ser. No. 152,181

Int. Cl.<sup>3</sup> C07C 15/16; C07D 455/06; C07C 79/22, 79/28; C09B 11/12

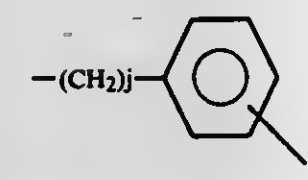
U.S. Cl. 260—388

9 Claims

1. A compound of the formula



wherein m is an integer from 1 to 3; one of k and l is a double bond and the other is a single bond; Z<sup>-</sup> is a halide anion; R<sub>2</sub> and R<sub>3</sub> are attached either to adjacent carbon atoms on the ring or to carbon atoms on the ring separated by only one carbon atom, R<sub>4</sub>, R<sub>5</sub> and R<sub>6</sub> are the same or different and are each an alkyl radical containing 1 to 6 carbon atoms, a cycloalkyl radical containing 5 or 5 carbon atoms or a radical having the formula



wherein j is an integer from 0 to 4 and Y is hydrogen, halogen or an alkyl radical containing 1 to 6 carbon atoms, or an alkoxy radical containing 1 to 4 carbon atoms, and said aldehyde reactant being unsubstituted or substituted with at least one nitro halogen, hydroxy, straight-chain or branched-chain alkyl, containing 1 to 6 carbon atoms, straight-chain or branched-chain alkoxy containing 1 to 4 carbon atoms, or trifluoromethyl radical.

4,282,159

## PREPARATION OF ALKYLENE OXIDES

Robert S. Davidson, and Richard A. Grieger-Block, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 916,480, Jun. 19, 1978, abandoned.

This application Feb. 1, 1980, Ser. No. 117,542

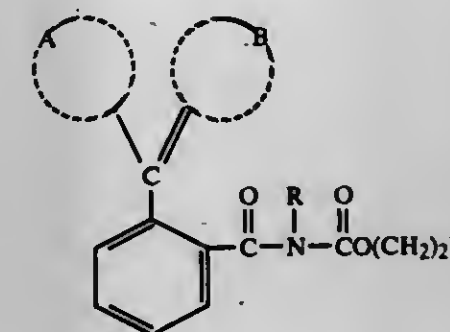
Int. Cl.<sup>3</sup> C07D 301/26; C07J 9/00

U.S. Cl. 260—348.21

23 Claims

1. In a process for the production of epoxides from olefins comprising

- (a) wherein the olefin is reacted with iodine in the presence of water and a catalyst to yield iodohydrin and hydrogen iodide as a first reaction product,
- (b) adjusting the pH of the reaction product in the presence of a buffer to within the range of 5–10.5 and at a temperature within the range of 30°–90° C. to yield the epoxide and hydrogen iodide,
- (c) removing the epoxide from the reaction product of (b) the improvement comprising
- (d) introducing an oxygen containing gas to oxidize the hydrogen iodide remaining in the reaction product of reaction (b) after the epoxide has been removed at a pH within the range of 5–10.5 and at a temperature within the range of 30°–90° C. in the presence of a catalyst of copper and an azole selected from the group consisting of imidazole and benzimidazole to convert the iodide to iodine,
- (e) recycling the iodine from reaction (d) to reaction (a).



wherein A is a phenyl moiety or a naphthyl moiety; B is a 4'-oxo-1'-phenylidene moiety or a 4'-oxo-1'-naphthylidene moiety; R is an alkyl group or a phenyl group, unsubstituted or substituted with a solubilizing group, and Y is an electron-withdrawing group.

4,282,161

## NOVEL PURIFICATION PROCESS

Armand Guillemette, 17, Avenue d'Alsace-Lorraine, 93130 Noisy-le-Sec, and Abel Francois, 139, Avenue Carnot, 93140 Bondy, both of France

Filed May 5, 1980, Ser. No. 146,496

Claims priority, application France, May 23, 1979, 79 13117

Int. Cl.<sup>3</sup> C07J 9/00

U.S. Cl. 260—397.1

6 Claims

1. A process for the purification of ursodesoxycholic acid comprising reacting an aqueous solution of an alkali metal salt of ursodesoxycholic acid in the presence of chloroform with an acid and recovering crystalline ursodesoxycholic acid.

4,282,162

## RECOVERY OF FLUORINATED EMULSIFYING ACIDS FROM BASIC ANION EXCHANGERS

Jürgen Kuhl, Barghausen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 115,803

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2903981

Int. Cl.<sup>3</sup> C07C 51/42; C08F 1/88

U.S. Cl. 260—408

5 Claims

1. Process for eluting fluorinated emulsifying acids adsorbed on basic anion exchangers, which comprises eluting the adsorbed fluorinated emulsifying acid from the anion exchanger with a mixture of a dilute mineral acid and an organic solvent.

4,282,163

## METHOD OF PRODUCING HYDROGENATED FATTY ACIDS

Massao Suzuki, Nishinomiya; Takeshi Matsuo, and Naomichi Yamada, both of Amagasaki, all of Japan, assignors to Nippon Oil and Fats Co., Ltd., Japan

Filed Dec. 11, 1979, Ser. No. 102,533

Claims priority, application Japan, Dec. 19, 1978, 53-157101

Int. Cl.<sup>3</sup> C11C 3/12

U.S. Cl. 260—409

10 Claims

1. A method of producing hydrogenated fatty acids comprising hydrogenating a fatty acid, oil or fat in the presence of a hydrogenation catalyst, a reducing metal and a boric acid compound, and distilling the crude hydrogenated fatty acid; or



splitting the hydrogenated oil or fat into a crude hydrogenated fatty acid, and distilling the crude hydrogenated fatty acid.

#### 4,282,164 FRACTIONATION OF ALKYL CARBOXYLATE MIXTURES

Ted J. Logan, and Richard M. King, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

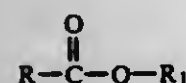
Filed Jan. 2, 1980, Ser. No. 108,988  
Int. Cl.<sup>3</sup> C09F 5/10; C11B 3/00

U.S. Cl. 260—428.5 18 Claims

1. A process for separating an alkyl carboxylate mixture according to degree of unsaturation, said process comprising the steps of

- contacting a solution of said mixture in solvent with surface aluminated silica gel adsorbent to selectively adsorb alkyl carboxylate of higher degree of unsaturation and to leave in solution in solvent a fraction of said mixture enriched in content of alkyl carboxylate of lesser degree of unsaturation;
- removing solution of fraction enriched in content of alkyl carboxylate of lesser degree of unsaturation from contact with adsorbent which has selectively adsorbed alkyl carboxylate of higher degree of unsaturation;
- contacting adsorbent which has selectively adsorbed alkyl carboxylate of higher degree of unsaturation with solvent to cause desorption of adsorbed alkyl carboxylate and provide solution in solvent of fraction enriched in content of alkyl carboxylate of higher degree of unsaturation;
- removing solution of fraction enriched in content of alkyl carboxylate of higher degree of unsaturation from contact with adsorbent;

the alkyl carboxylate in said mixture having the formula



in which R is aliphatic chain which contains from 5 to 25 carbon atoms and in which R<sub>1</sub> is alkyl chain containing from 1 to 4 carbon atoms; the solvent in step (a) and the solvent in step (c) having the same composition or different compositions and being characterized by a solubility parameter (on a 25° C. basis) ranging from about 7.0 to about 15.0, a solubility parameter dispersion component (on a 25° C. basis) ranging from about 7.0 to about 9.0, a solubility parameter polar component (on a 25° C. basis) ranging from 0 to about 6.0 and a solubility parameter hydrogen bonding component (on a 25° C. basis) ranging from 0 to about 11.5; said adsorbent being derived from silica gel having a surface area of at least about 100 square meters per gram; said adsorbent being further characterized by a ratio of surface-silicon atoms to aluminum atoms ranging from about 3:1 to about 20:1, a moisture content less than about 10% by weight, and a particle size ranging from about 200 mesh to about 20 mesh; said adsorbent having cation substituents selected from the group consisting of cation substituents capable of forming  $\pi$  complexes and cation substituents not capable of forming  $\pi$  complexes and combinations of these; the solvent in step (a) and the solvent in step (c) and the ratio of surface-silicon atoms to aluminum atoms in the adsorbent and the level of cation substituents capable of forming  $\pi$  complexes being selected to provide selectivity in step (a) and desorption in step (c).

#### 4,282,165 PREPARATION OF TRIMETHYL TIN CHLORIDE FROM DIMETHYL TIN DICHLORIDE

Koei-Liang Lianw, Wyckoff, and Michael H. Fisch, Wayne, both of N.J., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,041  
Int. Cl.<sup>3</sup> C07F 7/22

U.S. Cl. 260—429.7 10 Claims

1. In a process for the preparation of a trialkyltin chloride in which the alkyl groups contain from one to six carbon atoms, by heating a mixture containing a dialkyltin dichloride, a polyvalent metal having an electrode potential in the range from -0.14 volt to -1.7 volt, and a polar liquid, the improvement comprising the presence of a catalytic amount of a catalyst consisting essentially of stannic chloride and a compound having the formula R<sub>3</sub>E in which each R is a hydrocarbon group having 1 to 8 carbon atoms and E is a member of the group consisting of nitrogen and phosphorus, in which the molar proportions of stannic chloride to compound R<sub>3</sub>E range from about 1:4 to about 1:1.

#### 4,282,166 PREPARATION OF LOWER TRIALKYL TIN HYDRIDE FROM TRIALKYL TIN CHLORIDE

Koei-Liang Lianw, Wyckoff, and Michael H. Fisch, Wayne, both of N.J., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Apr. 11, 1980, Ser. No. 139,601  
Int. Cl.<sup>3</sup> C07F 7/22

U.S. Cl. 260—429.7 10 Claims

1. A process for preparing an organic solvent solution of a lower trialkyltin hydride, comprising reacting a lower trialkyltin chloride with an alkali metal bis(2-alkoxyethoxy)aluminum dihydride in the presence of a solvent, said solvent consisting essentially of hydrocarbon boiling in the 50° to 200° C. range, whereby lower trialkyltin hydride is obtained.

#### 4,282,167 CONVERSION OF AMIDES TO ISOCYANATES VIA PHASE TRANSFER CATALYSIS

Anita O. Sy, and Joseph W. Raksis, both of Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 16, 1980, Ser. No. 112,649  
Int. Cl.<sup>3</sup> C07C 118/04

U.S. Cl. 260—453 P 21 Claims

1. A process for the preparation of an organic isocyanate which comprises contacting a solution of a substantially water-insoluble aliphatic or cycloaliphatic organic amide in a substantially water-immiscible organic solvent, with an alkali metal hypobromite and a quaternary salt as phase transfer catalyst and a sufficient amount of water to form a continuous or discontinuous aqueous phase and form an organic isocyanate in the organic phase.

18. A process for the preparation of an organic isocyanate which comprises contacting a solution of a substantially water-insoluble aliphatic or cycloaliphatic N-halo organic amide in a substantially water-immiscible organic solvent, with an alkali metal hypobromite and a quaternary salt as phase transfer catalyst and a sufficient amount of water to form an organic isocyanate in the organic phase.

#### 4,282,168 S-(SUBSTITUTED PHENYL) N-ALKYL THIOLCARBAMATES

Jay K. Rinehart, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 702,563, Jul. 6, 1976, Pat. No. 4,055,657.  
This application Oct. 17, 1977, Ser. No. 843,014

Int. Cl.<sup>3</sup> C07C 155/02

U.S. Cl. 260—455 A 4 Claims

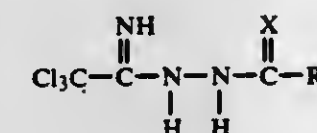
1. S-3,4-dichlorophenyl N-methylthiolcarbamate.

#### 4,282,169 SELECTED 2-ACYL- OR 2-THIOACYL-1-TRICHLOROACETIMIDONYLHYDRAZINES AND THEIR USE AS FUNGICIDES

Eugene F. Rothgery, North Branford, and Lawrence E. Katz, Orange, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 19, 1980, Ser. No. 122,202  
Int. Cl.<sup>3</sup> C07C 109/087, 109/10; A01N 9/20  
U.S. Cl. 260—455 A 14 Claims

1. A compound of the formula:



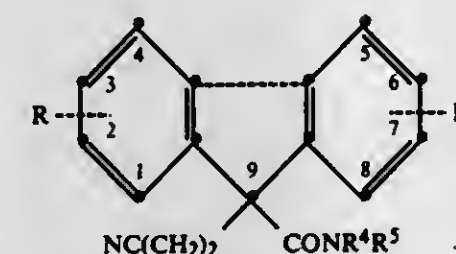
wherein X is an atom selected from the group consisting of oxygen and sulfur; and R is hydrogen, a lower alkyl group having 1 to 4 carbon atoms, a lower alkoxy group having 1 to 4 carbon atoms, or an unsubstituted or substituted phenyl group.

#### 4,282,170 9-CARBAMOYL-9-(2-CYANOETHYL)FLUORENES

Edward R. Lavagnino; Andrew J. Pike, and Jack B. Campbell, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 17, 1980, Ser. No. 141,229  
Int. Cl.<sup>3</sup> C07C 121/78  
U.S. Cl. 260—465 D 6 Claims

1. A compound of the formula



wherein R and R<sup>1</sup> independently are hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, fluoro or chloro; R<sup>4</sup> and R<sup>5</sup> independently are hydrogen or C<sub>1</sub>-C<sub>6</sub> alkyl.

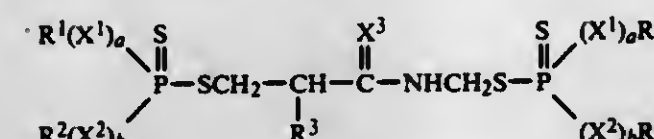
#### 4,282,171 PHOSPHORUS AND SULFUR CONTAINING AMIDES AND THIOAMIDES

Donald I. Hoke, Chagrin Falls, Ohio, assignor to The Labrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 503,892, Sep. 6, 1974, Pat. No. 4,032,461. This application Jan. 17, 1977, Ser. No. 759,614  
Int. Cl.<sup>3</sup> C07F 9/165, 9/40

U.S. Cl. 260—928 3 Claims

1. A compound having the formula



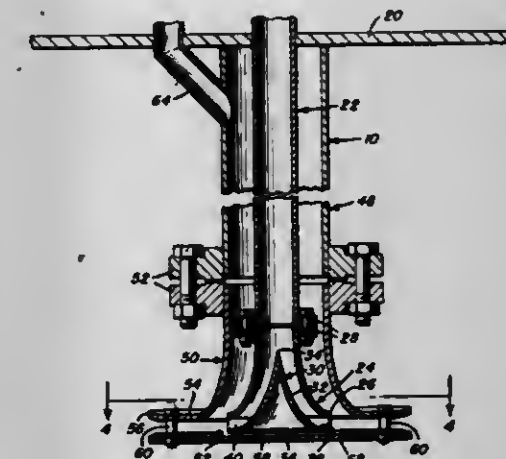
wherein each of R<sup>1</sup> and R<sup>2</sup> is a hydrocarbon radical selected from phenyl, naphthyl, alkylphenyl, alkylphenyl, phenylalkyl, naphthylalkyl, alkylphenylalkyl, and alkylphenylalkyl, R<sup>3</sup> is selected from hydrogen, halogen, lower alkyl, or substituted lower alkyl; each of X<sup>1</sup>, X<sup>2</sup> and X<sup>3</sup> is oxygen or sulfur; and a and b are each 0 or 1.

#### 4,282,172 GAS TO LIQUID DIFFUSER

William J. McKnight, Tyler, Tex., assignor to Howe-Baker Engineers, Inc., Tyler, Tex.

Filed Sep. 11, 1980, Ser. No. 186,328  
Int. Cl.<sup>3</sup> B01F 3/04 7 Claims

U.S. Cl. 261—76



1. For use in an ozonator system incorporating a tank within which liquid is to be ozonated; a static diffuser, said diffuser comprising a liquid feed pipe having a discharge end portion adapted for positioning within the tank below the level of liquid within the tank, said discharge end portion being outwardly flared, a static flow modifier positioned within the flared discharge end portion and defining therewith a liquid discharge opening laterally directed relative to said pipe, means for producing a pressurized flow of liquid through said pipe and out said discharge opening, an ozone feeding shroud outward of and generally paralleling said pipe, a discharge slot in said shroud in outwardly aligned relation with said discharge opening for passage of discharging liquid therethrough, said shroud, at the shroud slot, defining a general venturi configuration for acceleration of the liquid passing through and entrainment of ozone within the discharging liquid.

#### 4,282,173 METHOD FOR MANUFACTURING REFRACTORY MATERIAL HAVING NUMEROUS THROUGH PORES EXTENDING IN A CERTAIN DIRECTION

Tsunemi Ochiai; Goro Saiki; Terao Shimao, all of Himeji; Toshitaro Saito, Toyokawa; Shizuo Nakanishi, Okazaki, and Takeo Saeki, Toyokawa, all of Japan, assignors to Nippon Steel Corporation and Isolute Insulating Product Company Limited (Isolute Kogyo K.K.), both of Tokyo, Japan

Continuation-in-part of Ser. No. 869,445, Jan. 16, 1978, abandoned, which is a continuation of Ser. No. 714,970, Aug. 16, 1976, abandoned, which is a continuation-in-part of Ser. No. 559,524, Mar. 18, 1975, abandoned. This application Nov. 13, 1978, Ser. No. 959,731

Claims priority, application Japan, Oct. 31, 1974, 49-125895; Oct. 31, 1974, 49-125896; Oct. 31, 1974, 49-125897; Oct. 31, 1974, 49-125898; Oct. 31, 1974, 49-125899; Oct. 31, 1974, 49-125900

U.S. Cl. 264—59 12 Claims

1. In a method for making a shaped article of a refractory material suitable for contact with molten metal, said shaped article being the type wherein a refractory material in paste or slurry state is contacted with a woven fabric and the thus contacted fabric and refractory material are laminated into the desired shape and the laminate preform block thus obtained is heated to dry the block and to burn off the combustible fibers of said fabric and then fired to sinter said refractory material, the improvement which comprises at least one of the weft fibers or the warp fibers of the woven fabric being combustible



and said combustible fibers having a diameter between 40 to 300 microns, and wherein a vibration between about 900 to 10,000 Vpm and an amplitude of 0.1 to 1.0 mm is applied to said woven fabric in said laminating step to remove air bubbles from and increase the uniformity of the laminate, and the combustible portion of the fabric is removed by said heating to produce a multiplicity of pores extending through said shaped refractory article corresponding to the thus removed fibers and wherein prior to the burn off, the surface of the body which is parallel to the through pores is temporarily covered with an insulating layer, leaving the end faces perpendicular to the through pores uninsulated and wherein the burn off is carried out by applying heat to the uninsulated end faces so as to exhaust the gas produced by the combustion of the fibers and produce smooth escape of the gas and avoid pressure buildup, and then removing the temporary insulating layer.

4,282,174

# METHOD OF MAKING AN ARTICLE OF BONDED METAL PARTICLES

Barry J. Chase, 22 Orchard Ave., Sonning Common, Reading, Berkshire; Roy W. E. Rushforth, 77 Nightingale Rd., Woodley, Reading, Berkshire, and Gordon J. Selman, 59 Peppard Rd., Sonning Common, Reading, Berkshire, all of England  
Filed Feb. 12, 1980, Ser. No. 120,889

Claims priority, application United Kingdom, May 13, 1977, 2027/77

Int. Cl.<sup>3</sup> B29C 3/00

U.S. Cl. 264—111

11 Claims

1. A process for producing a metallic article comprising forming a mixture of metallic particles selected from the group consisting of platinum group metals, gold and silver and particles of a thermoplastic material, placing said mixture in a mold and molding the mixture under pressure and at elevated temperature, and removing from said mold said metallic article, the metallic particles comprising at least 92.5% by weight of the article and having a size falling within the range  $\frac{1}{2}$  to 50 microns, and the thermoplastic polymeric material having a minimum dimension of  $\frac{1}{4}$  micron.

4,282,175

# STAB-TYPE COUPLING AND METHOD

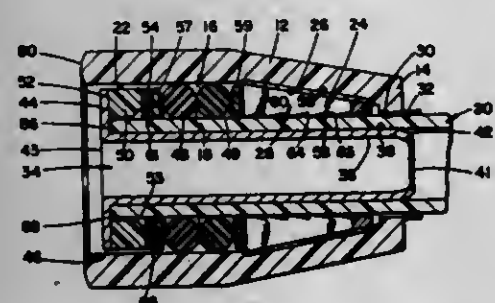
Frank R. Volstadt, Madison, and David P. Passerell, Geneva, both of Ohio, assignors to Perfection Corporation, Madison, Ohio

Continuation of Ser. No. 899,813, Apr. 25, 1978. This application Oct. 11, 1979, Ser. No. 83,861

Int. Cl.<sup>3</sup> B29C 19/00

U.S. Cl. 264—248

2 Claims



1. A method of assembly of a double ended stab-type coupling for connecting a first smooth wall non-metallic pipe to a second smooth wall non-metallic pipe, said method comprising the steps of:

- providing a first non-metallic coupling body having a first end and a second end and an internal recess adapted to receive the end portion of the first smooth wall non-metallic pipe, said internal recess defining a generally frusto-conical surface;
- providing a second non-metallic coupling body having a first end and a second end and an internal recess adapted to receive the end portion of the second smooth wall

non-metallic pipe, said internal recess defining a generally frusto-conical surface;

- providing a first and second elongated hollow insert, each of said inserts having a radial flange extending outwardly therefrom;
- providing a first and second seal ring;
- providing a first and second retaining collet, each of said collets having a tapered external surface which converges toward one end thereof and a toothed internal surface;
- providing a first and second generally annular spacer ring;
- inserting a respective retaining collet, seal ring, spacer ring, and hollow insert into a respective coupling body such that the internal surface of each respective coupling body is generally complementary to the external surface of each respective retaining collet and the radial flange of each respective hollow insert is generally disposed adjacent the second end of each respective coupling body;
- fusing the respective coupling bodies together at the second ends thereof.

4,282,176

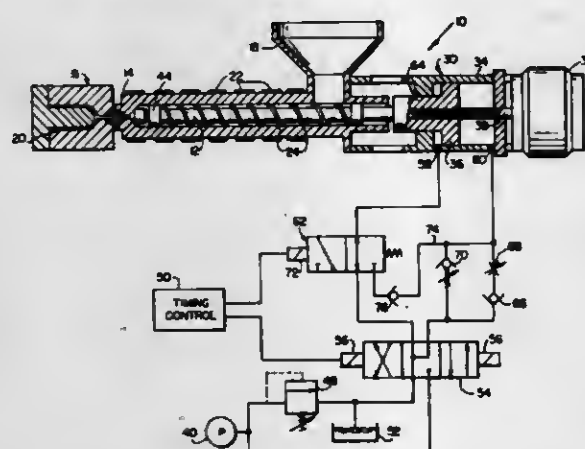
# INJECTION MOLDING MACHINE WITH REGENERATIVE FEED SYSTEM

Robert E. Farrell, Springfield, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.  
Division of Ser. No. 948,082, Oct. 2, 1978. This application Sep. 24, 1979, Ser. No. 78,560

Int. Cl.<sup>3</sup> B29F 1/06

U.S. Cl. 264—328.13

12 Claims



1. A method of operating an injection molding machine having a ram which is displaced by an unbalanced piston and cylinder assembly to inject settable material into a mold cavity comprising the steps of:

- controlling the flow of a pressurized fluid to the unbalanced piston and cylinder assembly regeneratively during one portion of the ram displacement in an injection stroke;
- controlling the flow of the pressurized fluid to the unbalanced piston and cylinder assembly nonregeneratively during another portion of the ram displacement in the injection stroke; and
- controlling the flow of the pressurized fluid to the unbalanced piston and cylinder assembly nonregeneratively during at least one portion of the ram displacement in a direction opposite to the injection stroke.

4,282,177

# METHOD FOR REDUCING SHARKSKIN MELT FRACTURE DURING EXTRUSION OF ETHYLENE POLYMERS

Stuart J. Kurtz, Martinsville; Theodore R. Blakeslee, III, Hillsborough, and Leonard S. Scarola, Union, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

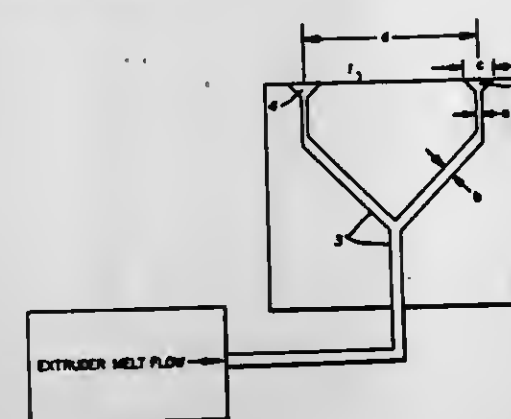
Continuation-in-part of Ser. No. 1,932, Jan. 8, 1979. This application Dec. 12, 1979, Ser. No. 99,061

The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> B29D 23/04

U.S. Cl. 264—564

16 Claims



1. A process for reducing the melt fracture during extrusion of a molten narrow molecular weight distribution linear ethylene polymer under conditions of flow rate and melt temperature which would otherwise produce higher levels of melt fracture, which comprises extruding said polymer through a die having a die gap greater than about 50 mils and wherein at least a portion of one surface of the die lip and/or die land in contact with the molten polymer is at an angle of divergence or convergence relative to the axis of flow of the molten polymer through the die.

4,282,178

# USE OF HYDRAZINE COMPOUNDS AS CORROSION INHIBITORS IN CAUSTIC SOLUTIONS

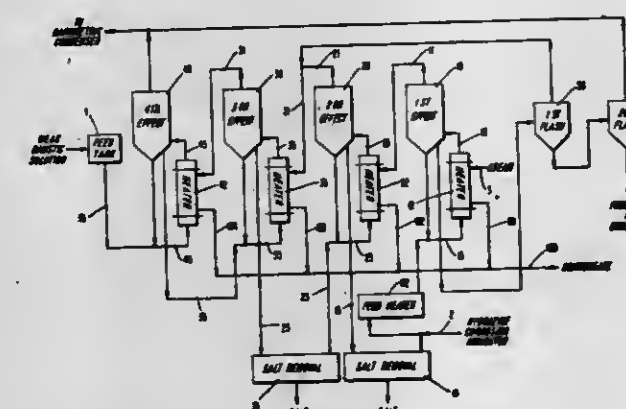
Gyaneshwari P. Khare, Wichita, Kans., assignor to Vulcan Materials Company, Wichita, Kans.

Continuation-in-part of Ser. No. 94,390, Nov. 15, 1979, abandoned. This application Jul. 25, 1980, Ser. No. 172,703

Int. Cl.<sup>3</sup> C23F 11/06

U.S. Cl. 422—13

10 Claims



2. An aqueous solution according to claim 1 comprising at least 10% sodium hydroxide, sodium chlorate as an impurity, and hydrazine in a corrosion-inhibiting amount of up to 1000 ppm.

5. In a process wherein an aqueous solution comprising at least 10% of sodium hydroxide is heated at a temperature between about 100° and 175° C. in contact with a metal surface composed in major part of nickel, the improvement which comprises adding to said solution a corrosion-inhibiting

amount of hydrazine or an equivalent amount of an inorganic or organic derivative of hydrazine.

4,282,179

# DISINFECTION WITH ISOPROPANOL VAPOR

Donald A. Gunther, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Feb. 8, 1980, Ser. No. 119,788

Int. Cl.<sup>3</sup> A61L 2/06, 2/20

U.S. Cl. 422—27

6 Claims

1. A method of disinfecting heat-sensitive or liquid-sensitive articles that are brought into physical contact with patients in the course of examination, surgery or therapy and that consequently are subject to contamination with microorganic pathogens, the said method comprising:

bringing such article subsequent to exposure to any such contamination into direct, sustained and totally enveloping contact with a substantially liquid-free vapor at a pressure not substantially exceeding atmospheric pressure, said vapor consisting essentially of from 40% by volume to 100% by volume of isopropanol and the remainder consisting predominantly of water vapor;

maintaining said contact at a temperature between about 45° C. and 65° C. for a period effective to destroy said pathogens;

removing the said article from contact with the isopropanol-containing vapor; and

allowing any condensed isopropanol on the surface of the so-treated article to evaporate from the said surface.

4,282,180

# BLOOD OXYGENATOR

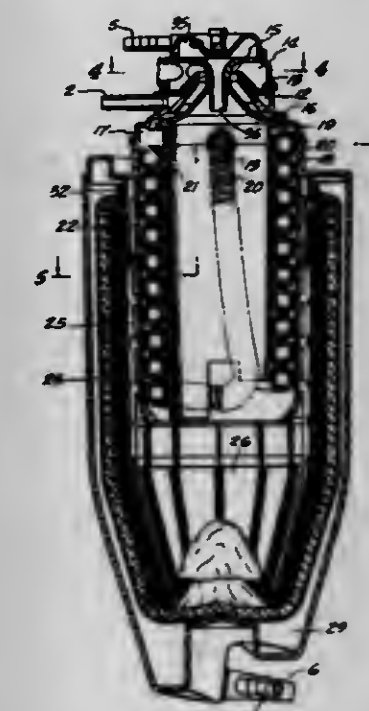
Donald A. Raible, Orange, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 689,971, May 26, 1976, which is a continuation-in-part of Ser. No. 584,464, Jun. 6, 1975, abandoned. This application Aug. 9, 1977, Ser. No. 823,149

Int. Cl.<sup>3</sup> A61M 1/03

U.S. Cl. 422—46

12 Claims



1. A blood oxygenator comprising a vertically oriented housing having an upper and lower end, blood inlet means and oxygen inlet means connected to and communicating with said upper end of said housing, a downwardly extending blood-oxygen mixing chamber, said blood and oxygen inlet means each being adapted to direct the blood and oxygen downwardly to said mixing chamber to co-currently contact blood and oxygen, said mixing chamber having means therein for inducing secondary flow in the blood-oxygen mixture which



flows therethrough, blood outlet means connected to and communicating with said lower end and being axially spaced from said blood inlet means, and defoaming means located between said blood inlet and outlet means.

4,282,181

## ACCELERATED CORROSION TEST APPARATUS

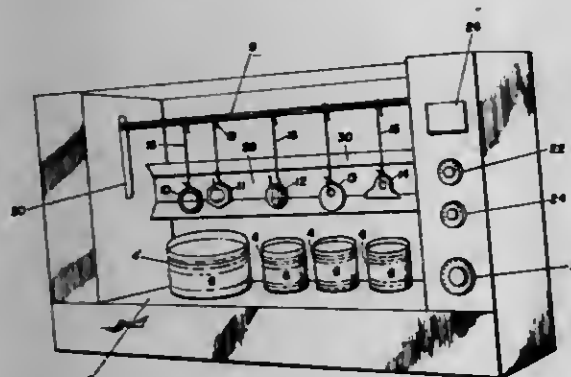
Danny A. Pierce, Columbus, Ohio, assignor to IPM Corporation, Columbus, Ohio

Filed Dec. 11, 1978, Ser. No. 968,056

Int. Cl.<sup>3</sup> G01N 17/00

U.S. Cl. 422-53

1 Claim



1. In an apparatus for accelerated testing of the corrosion resistance of a plurality of parts comprising:

a support bar disposed substantially in the horizontal direction,

means connected to the support bar for individually supporting each part to be tested in a position depending downwardly from the support bar, the supporting means being substantially corrosion resistant,

a reservoir for holding a liquid corrosive media, the reservoir located vertically below the support bar and sized sufficient to allow immersion of each part depending from the support bar on the supporting means, the reservoir being substantially corrosion resistant, and

means for repetitively raising and lowering the support bar in a vertical plane, while the support bar retains its horizontal disposition, such that all supported parts are immersed in the corrosive media for the same period of time each instance that the bar is moved to its lowermost position;

the improvement comprising a drying zone located vertically above the reservoir, means for maintaining an elevated temperature within a range of from room temperature to about 75° C., in the drying zone, said temperature being controlled to within plus or minus 10° C. with a silicon coated heating element mounted on the inside surface, with respect to the test environment, of a stainless steel reflector,

means for retaining all supported parts completely within the drying zone each instance that the support bar is moved to its uppermost position, and

a housing, at least partially transparent, for isolating the test environment including the drying zone from the ambient surroundings.

4,282,182

## PACKAGE SAMPLING SYSTEM

Milo E. Webster, Braintree, Mass., assignor to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Apr. 20, 1980, Ser. No. 142,463

Int. Cl.<sup>3</sup> G01N 1/10, 1/24

U.S. Cl. 422-68

16 Claims

1. Apparatus for analyzing the contents of a sealed package comprising

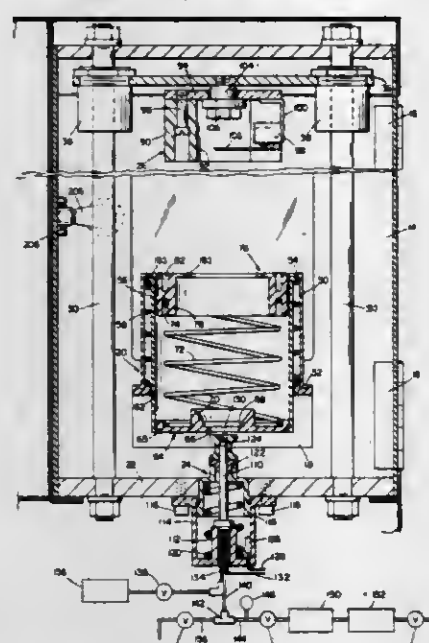
a package alignment assembly,

a probe assembly,

said package alignment assembly including a support surface having an aperture therein for positioning the wall of the

package to be punctured in alignment with said probe assembly, and alignment structure resiliently supported in spaced relation to said support surface for positioning the package to be analyzed in alignment with said probe assembly,

said probe assembly having a puncturing tip portion for puncturing the wall of a package on said support surface



and a flow path extending from said tip portion for withdrawing a sample to be analyzed from said package, a drive for causing relative motion of said probe assembly and said package support surface towards one another to cause said puncturing tip portion to penetrate the wall of a sealed package on said support surface, and an analysis unit connected to said flow path for analyzing the sample of the contents withdrawn from said package.

4,282,183

## COMBUSTION SYSTEM

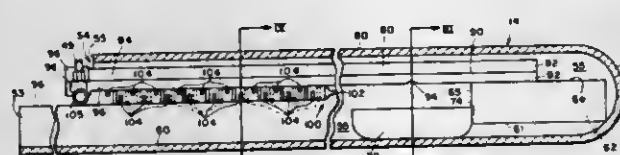
Roger L. Bredeweg, Stevensville; Larry S. O'Brien, St. Joseph, and Charles B. Vallance, Berrien Springs, all of Mich., assignors to Leco Corporation, St. Joseph, Mich.

Filed Nov. 9, 1978, Ser. No. 958,967

Int. Cl.<sup>3</sup> G01N 31/12

U.S. Cl. 422-78

35 Claims



1. A combustion chamber for use in combusting a liquid or solid specimen into a gaseous state for subsequent analysis to determine the amount of one or more constituent elements contained in the specimen comprising:

an elongated combustion chamber having a length significantly greater than its width and adapted to be oriented with its longitudinal axis extending generally horizontally, said chamber being of relatively thin walled construction and continuously open at one end to receive samples to be combusted which are positioned in said chamber through said open end, said chamber including an elongated horizontally extending floor for supporting a sample thereon and enclosed at its opposite end; wherein said combustion chamber is made of a material to withstand temperatures of combustion in excess of 2000° F.; an eduction tube means communicating with the interior of said chamber for withdrawing specimen gases therefrom from a position closer to said enclosed end than to said open end; and

means for providing a sealing curtain of gas near said continuously open end of said combustion chamber.

4,282,184

## CONTINUOUS REPLENISHMENT OF MOLTEN SEMICONDUCTOR IN A CZOCHRALSKI-PROCESS, SINGLE-CRYSTAL-GROWING FURNACE

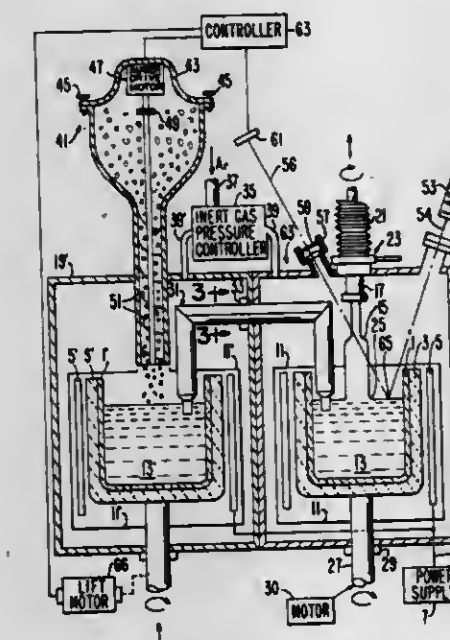
George Fiegl, Palo Alto, and Walter Torbet, Newark, both of Calif., assignors to Siltec Corporation, Menlo Park, Calif.

Filed Oct. 9, 1979, Ser. No. 83,169

Int. Cl.<sup>3</sup> C30B 15/12

U.S. Cl. 422-106

15 Claims



1. Apparatus for producing solid crystals from a melted material comprising:

A. a drawing crucible for containing a melt of said material from which a solidifying crystal is drawn;

B. crystal drawing means to progressively draw a solidifying crystal from melt contained in said drawing crucible;

C. heater means surrounding said drawing crucible for applying the thermal energy to said melt required to permit formation of said solidifying crystal;

D. means to rotate said drawing crucible relative to said heater during the drawing of a solidifying crystal from melt contained therein;

E. a melt replenishment crucible separate from but adjacent to said drawing crucible, containing melt for replenishing melt in said drawing crucible;

F. heater surrounding said replenishment crucible for forming and maintaining a melt of said material in said replenishment crucible;

G. a siphon tube providing fluid communication between said drawing and melt replenishment crucibles, said tube having its opposite ends respectively immersed within the melt contained in said replenishment crucible and within the melt contained in said drawing crucible;

H. means to initiate flow of melted material through said siphon tube;

I. level sensing means to sense the level of said melted material in one of said crucibles and generate an electrical signal indicative of said sensed level; and

J. level control means responsive to said sensed level for automatically controlling the level of melt in said drawing crucible, said level control means including a lift mechanism connected to said replenishment crucible for changing the elevation of the same relative to said drawing crucible and thereby cause automatic flow of melt material between said replenishment and drawing crucibles through said siphon tube to control the melt level in the drawing crucible.

4,282,185

## CHLORINE AND IRON OXIDE FROM FERRIC CHLORIDE APPARATUS

James W. Reeves, Wilmington, N.C.; Robert W. Sylvester, Wilmington, Del., and David F. Wells, Avondale, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

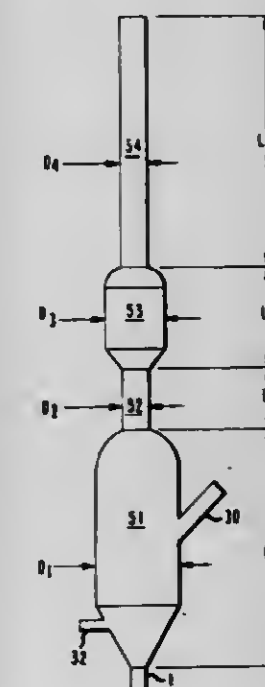
Division of Ser. No. 899,696, Apr. 24, 1978. This application

Jun. 15, 1979, Ser. No. 49,208

Int. Cl.<sup>3</sup> B01J 8/28; F27B 15/08

U.S. Cl. 422-142

5 Claims



1. In a reactor including a means for accepting gaseous and solid feed materials, means for forming a fluidized bed from said solids and gases entering the reactor, a means for reacting the feed materials in a fluidized bed, a means for passing a portion of the fluidized bed out of the reactor, and a means for receiving recycled portions of the fluidized bed into the reactor; the improvement wherein the reactor comprises four vertical zones for reacting feed materials in open communication with each other without any restrictive means in the opening between each zone the vertical axis of each zone being in the same plane, said reactor comprising

(a) a first zone provided by a generally cylindrical vessel with a conical bottom having inlets for feed materials and recycled bed material and inlets for receiving a fluidizing medium for forming a fluidized bed, a length-to-diameter ratio, (L/D)<sub>1</sub>, from 2:1-4:1, and an outlet at the top connected to

(b) a second zone provided by a first cylindrical conduit having a length-to-diameter ratio, (L/D)<sub>2</sub>, from 1:1-15:1 and an outlet at the top connected to

(c) a third zone provided by a second cylindrical conduit having a region of enlarged cross section with a length-to-diameter ratio, (L/D)<sub>3</sub>, from 1:1-4:1 and an outlet at the top connected to

(d) a fourth zone provided by a third cylindrical conduit having a length-to-diameter ratio, (L/D)<sub>4</sub>, of from 10:1-50:1 and an outlet at the top, the diameter of the vessel in the first zone being from 1.1-1.8 times the diameter of the third zone and from 3-5 times the respective diameters of the second and fourth zones.



4,282,186

## CARTRIDGE FOR PURIFYING EXHAUST GAS

Manfred Nonnenmann, Schwieberdingen; Wolfgang Hesse, Remseck; Klaus Haller, Korntal, and Helmut Bardong, Stuttgart, all of Fed. Rep. of Germany, assignors to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

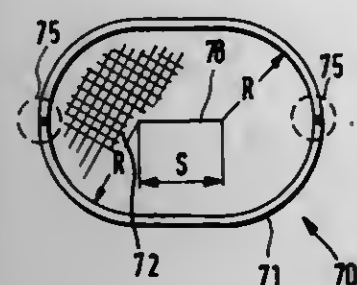
Filed Dec. 17, 1979, Ser. No. 104,019

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856030

Int. Cl.<sup>3</sup> F01N 3/28, 7/18

U.S. Cl. 422—180

12 Claims



1. A cartridge for purifying exhaust gases, comprising:
  - a catalyst support matrix comprised of spirally wound, alternately disposed smooth and corrugated metallic sheets defining a plurality of exhaust gas passageways therebetween, said catalyst support matrix comprising an oval transverse cross-sectional configuration, defined by opposing parallel straight side circumferential segments of a length S and opposing semi-circular end circumferential segments each having a radius R, and wherein said spirally wound metallic sheets from the top half and the bottom half of said oval configuration contiguously abut along a central interface line having a length S;
  - a metal jacket housing said catalyst support matrix, the interior of said metal jacket holding said catalyst support matrix by means of a press fit relationship with the exterior of said catalyst support matrix along at least a circumferential portion of its length; and
  - a bond between the exterior of said catalyst support matrix and the interior of said metal jacket formed in said circumferential portion.

4,282,187

## PRODUCTION OF SYNTHETIC HYDROCARBONS FROM AIR, WATER AND LOW COST ELECTRICAL POWER

Marshall J. Corbett, E. Northport, and Salvatore C. Salina, Bethpage, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Sep. 21, 1979, Ser. No. 77,880

Int. Cl.<sup>3</sup> B01J 8/04

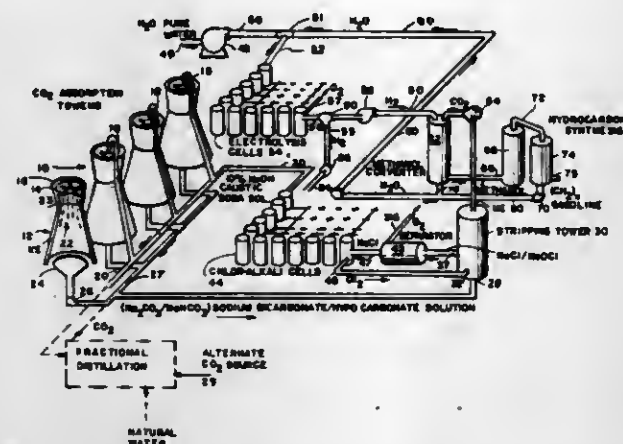
U.S. Cl. 422—190

6 Claims

1. A system for producing methanol comprising:
  - at least one CO<sub>2</sub> absorption venturi tower;
  - means for delivering NaOH solution to the tower;
  - means located in the tower for forming droplets of NaOH solution and directing the droplets to pass through air, in the tower, thus causing CO<sub>2</sub> in the air to be absorbed by the solution which results in a carbonate solution of sodium bicarbonate/hypo carbonate;
  - means receiving the carbonate solution and combining Cl<sub>2</sub>

therewith for stripping CO<sub>2</sub> as a first byproduct from the carbonate solution;

means for transferring the CO<sub>2</sub> to a methanol converter;



electrolysis means for disassociating H<sub>2</sub> and O<sub>2</sub> from water provided to it; and

means for transferring the H<sub>2</sub> to the methanol converter.

4,282,188

## PROCESS FOR THE RECOVERY OF URANIUM CONTAINED IN PHOSPHATED SOLUTIONS

Jean-Michel Demarthe, Viroflay; Paolo Fossi, Elancourt, and Dominique Guery, Plaisir, all of France, assignors to Minemet Recherche, Trappes, France

Filed Aug. 23, 1978, Ser. No. 935,943

Claims priority, application France, Aug. 25, 1977, 77 25899

Int. Cl.<sup>3</sup> B01D 11/00

U.S. Cl. 423—10

20 Claims

1. A process for recovering uranium contained in phosphate solutions comprising the steps of:
  - (a) contacting a uranium-containing phosphate solution with an organic phase which contains a diester of pyrophosphoric acid, whereby a product containing an organic phase and an aqueous phase results, with the uranium being extracted from the aqueous phase into the organic phase;
  - (b) contacting the resulting uranium-containing organic phase with an alkaline solution, in an amount sufficient to, and at a pH which will, enable extraction of at least a portion of the uranium into the aqueous phase which is present after the addition of the alkaline solution;
  - (c) adding a uranium precipitation agent to the aqueous phase resulting from step (b) so as to form a uranium-containing precipitate, where the agent is present in sufficient amount for and is capable of resulting in the formation of the precipitate;
  - (d) acidifying the liquid of the product resulting from step (c);
  - (e) agitating the resulting acidified liquid;
  - (f) separating the organic phase from the aqueous phase of the liquid; and
  - (g) recycling the organic phase to step (a); and wherein the precipitate produced in step (c) is recovered from the liquid prior to conducting the recycling step.

4,282,189

## PRECIPITATION OF METAL VALUES FROM ORGANIC MEDIA

Gunnar Thorsen, Steinhaugen 41., 7000 Trondheim, Norway, and Andrew J. Monhemius, 64 S. Western Rd., St. Margarets, Twickenham, Middlesex, England

Filed Feb. 6, 1980, Ser. No. 119,112

Claims priority, application United Kingdom, Feb. 7, 1979, 04232/79

Int. Cl.<sup>3</sup> C01B 13/18, 13/36

U.S. Cl. 423—24

13 Claims

1. A process for stripping metal values from an organic liquid medium, said process comprising:
  - providing an organic liquid medium loaded with metal ions, said organic liquid medium being substantially immiscible with water and comprising an organic carboxylic acid cation exchanger; and
  - contacting the loaded liquid organic medium with an aqueous phase at a temperature of contact which is sufficiently high so as to cause the metal values to precipitate as metal oxide as herein defined in the presence of the organic liquid medium.
6. The process of claim 1, wherein the organic medium is loaded with ion selected from iron, copper and nickel.

4,282,190

## PROCESS FOR THE MANUFACTURE OF IRON AND ALUMINUM-FREE ZINC CHLORIDE SOLUTIONS

Wolfgang Müller, Mannheim, and Lothar Witzke, Brühl, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Nov. 8, 1979, Ser. No. 92,535

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2849004

Int. Cl.<sup>3</sup> C01G 9/04, 49/06; C01F 7/34

U.S. Cl. 423—104

6 Claims

1. A process for the removal of iron and aluminum values from acidic solutions thereof with zinc chloride comprising:
  - (a) treating the solution for a period of from about 0.1 to 3 hours at a pH of about 1.5 to 4 at a temperature from about 150° to 260° C. and a pressure of from 6 to 48 bar to convert the iron and aluminum values to the hydroxide or oxide hydrate,
  - (b) rapidly cooling the reaction mixture to form a precipitate, and
  - (c) separating the precipitate from the solution, and then subjecting the separated solution to steps (a), (b), and (c) again.

4,282,191

## ZINC REMOVAL FROM ALUMINATE SOLUTIONS

Robert D. Bird, and Harry R. Vance, both of Portland, Tex., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jul. 25, 1980, Ser. No. 172,420

Int. Cl.<sup>3</sup> C01F 7/06

U.S. Cl. 423—119

7 Claims

1. In a process for the preparation of NaAlO<sub>2</sub> from an alumina value containing material wherein a caustic sodium aluminate process liquor is subjected to a treatment to reduce the level of zinc impurity by the addition of ZnS seed in the presence of sulfide ion, the improvement comprising:
  - (A) forming the zinc sulfide seed by a process comprising the steps of:
    - (I) dissolving ZnO in NaOH to produce a caustic Na<sub>2</sub>ZnO<sub>2</sub> solution; and
    - (II) reacting the solution of step (I) with Na<sub>2</sub>S to form ZnS, the Na<sub>2</sub>S being present at a level sufficient to provide a concentration of Na<sub>2</sub>S of at least about 0.15 g/l of Na<sub>2</sub>S when the product of this step is added to the process liquor;
  - (B) adding the product of step (II) to the process liquor to

precipitate as ZnS, zinc contained in the process liquor in the form of sodium zincate; and

(C) filtering the process liquor to yield a NaAlO<sub>2</sub> liquor containing less than about 15 mg/l zinc as ZnO.

4,282,192

## PROCESS FOR PRODUCING A CALCIUM SULFATE PRODUCT CONTAINING LOW AMOUNTS OF RADIUM

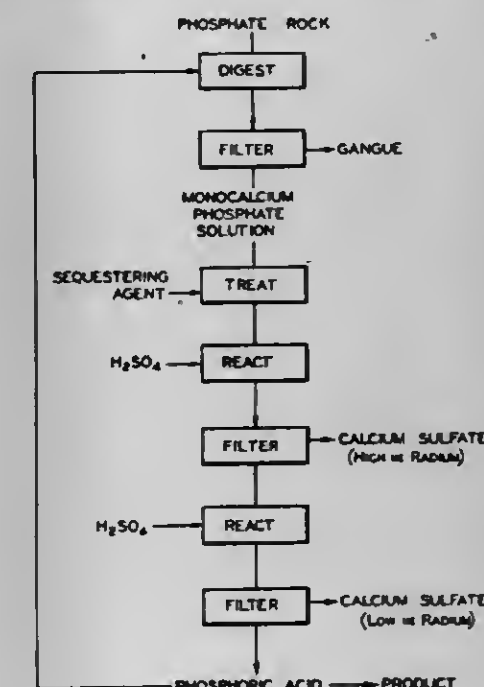
Harold V. Larson, Houston, Tex., assignor to Olin Corporation, New Haven, Conn.

Filed Feb. 27, 1980, Ser. No. 125,007

Int. Cl.<sup>3</sup> C01B 25/16; C01F 11/46, 13/00

U.S. Cl. 423—166

5 Claims



1. A process for producing a calcium sulfate product having low amounts of radium comprising the steps of:
  - (a) adding at least one sequestering agent to a substantially homogeneous radium-containing monocalcium phosphate solution, the amount of said sequestering agent added being at least the stoichiometric amount necessary to complex with said radium in said solution;
  - (b) then reacting said solution with sufficient sulfuric acid to form a monocalcium phosphate/phosphoric acid solution, to precipitate a first calcium sulfate product and to precipitate at least a portion of said radium, the amount of said sulfuric acid added being from about 5% up to about 50% of the stoichiometric amount necessary to react with the total Ca<sup>++</sup> present in said monocalcium phosphate solution in forming calcium sulfate;
  - (c) separating said resulting monocalcium phosphate/phosphoric acid solution from said first radium-containing calcium sulfate precipitate;
  - (d) then reacting the monocalcium phosphate/phosphoric acid solution with sufficient sulfuric acid to form a phosphoric acid solution and to precipitate a second calcium sulfate product, the amount of sulfuric acid being at least sufficient to react with substantially all of the Ca<sup>++</sup> present in said monocalcium phosphate/phosphoric acid solution in forming calcium sulfate; and
  - (e) separating the phosphoric acid solution from the second calcium sulfate product, said second calcium sulfate product having a lower radium concentration than said first calcium sulfate product.



4,282,193

## PROCESS FOR CONVERTING CYCLIC UREA TO CORRESPONDING DIAMINE IN A GAS TREATING SYSTEM

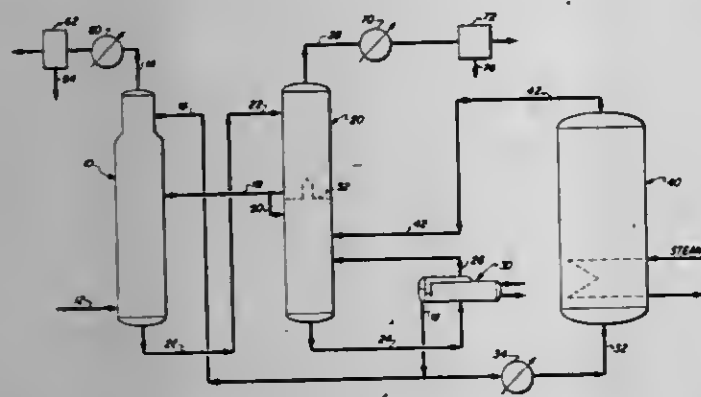
Michael T. Melchior, Scotch Plains; George E. Milliman, Fanwood; Chang J. Kim, Somerset, and George R. Chludzinski, South Orange, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 19, 1980, Ser. No. 122,588

Int. Cl.<sup>3</sup> B01D 53/34

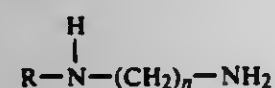
U.S. Cl. 423—223

13 Claims



1. A method for removing carbon dioxide from a gaseous mixture including carbon dioxide in a scrubbing system comprising an absorption zone and a desorption zone, said method comprising:

- (a) contacting the gaseous mixture in the absorption zone with an acid absorbing scrubbing solution comprising:
- A basic alkali metal compound selected from the class consisting of alkali metal bicarbonates, carbonates, hydroxides, borates, phosphates and their mixtures; and
  - an activator for said basic alkali metal compound having the formula



where R is a secondary or tertiary alkyl group and n is the integer 2, 3 or 4, wherein at least some of the carbon dioxide is absorbed by the scrubbing solution and wherein at least some of said activator is converted to cyclic urea;

- (b) passing at least a portion of the scrubbing solution containing the cyclic urea from the absorption zone to the desorption zone wherein the CO<sub>2</sub> loading of the scrubbing solution is reduced to below about 20%;
- (c) passing at least a portion of the scrubbing solution containing the cyclic urea from the desorption zone to a thermal conversion zone maintained at a temperature within the range of 120° C. to 200° C. wherein at least a portion of the cyclic urea is converted back to the activator; and
- (d) returning the scrubbing solution from the thermal conversion zone back to the scrubbing system.

4,282,194

## PROCESS FOR CONVERTING CYCLIC UREA TO CORRESPONDING DIAMINE IN A GAS TREATING SYSTEM

Geoffrey R. Say; James R. Hays, Sr., both of Baton Rouge, La.; Jagannathan N. Iyengar, Rockaway, and Barbara A. Hacker, Princeton, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 19, 1980, Ser. No. 122,589

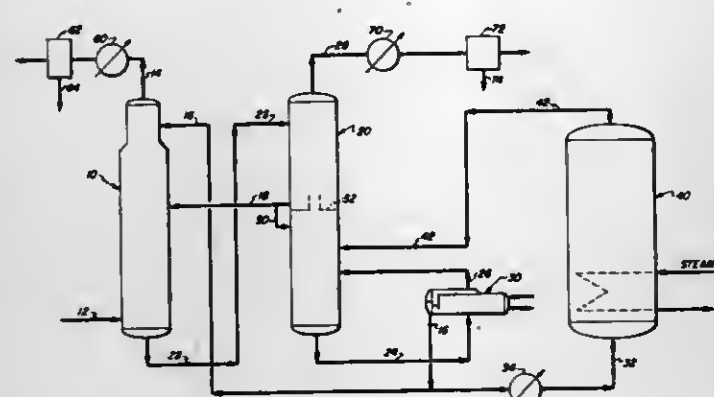
Int. Cl.<sup>3</sup> B01D 53/34

U.S. Cl. 423—223

11 Claims

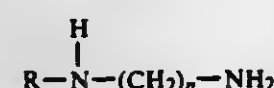
1. A method for removing carbon dioxide from a gaseous mixture including carbon dioxide which comprises:

- (a) contacting the gaseous mixture in an absorption zone with an acid-absorbing scrubbing solution comprising:
- a basic alkali metal compound selected from the class

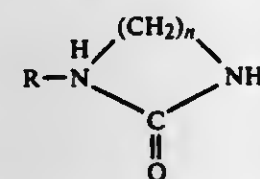


consisting of alkali metal bicarbonates, carbonates, hydroxides, borates, phosphates and their mixtures; and

- an activator for said basic alkali metal compound having the formula



where R is a secondary or tertiary alkyl group and n is the integer 2, 3 or 4, whereby at least some of the acidic component is absorbed by the scrubbing solution and whereby at least some of said activator is converted to a cyclic urea having the formula



- (b) passing at least a portion of the scrubbing solution containing the absorbed carbon dioxide and the cyclic urea from the absorption zone to a desorption zone wherein the carbon dioxide loading of the scrubbing solution is reduced to below about 20%; and
- (c) passing at least a portion of the scrubbing solution from the desorption zone to a thermal conversion zone maintained at a temperature within the range of 120° C. to 200° C. to convert at least a portion of the cyclic urea back to the activator, the thermal conversion zone communicating with both the absorption zone and the desorption zone whereby a portion of the scrubbing solution in the thermal conversion zone relatively rich in carbon dioxide is vaporized and returned to the desorption zone, and another portion of the scrubbing solution in the thermal conversion zone relatively lean in carbon dioxide is returned to the absorption zone.

4,282,195

## SUBMICRON TITANIUM BORIDE POWDER AND METHOD FOR PREPARING SAME

Howard H. Hoekje, Portland, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 546,838, Feb. 3, 1975, abandoned. This application Feb. 12, 1979, Ser. No. 11,596

Int. Cl.<sup>3</sup> C01B 35/04

U.S. Cl. 423—289

14 Claims

1. Submicron titanium diboride powder comprising at least 99 weight percent titanium diboride, said powder having a surface area of between about 3 and 25 square meters per gram and containing less than 0.4 weight percent metal impurities and less than 0.1 weight percent carbon, wherein the nominal

sectional diameter of at least 90 percent of the titanium diboride particles of said power are less than one micron, said particles being tabular to equidimensional hexagonal crystals having well developed faces, and a number median particle size of between about 0.08 and 0.6 microns, said powders being characterized by the property of being able to be cold formed and sintered to a density of at least 90 percent of the theoretical density for titanium diboride.

4,282,196

## METHOD OF PREPARING OPTICAL FIBERS OF SILICA

Thomas Y. Kometani, Warren Township, Somerset County, and Darwin L. Wood, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 12, 1979, Ser. No. 84,066

Int. Cl.<sup>3</sup> C01B 33/12

U.S. Cl. 423—337

6 Claims

1. A method of making an optical fiber by steps comprising oxidizing silicon tetrachloride to form silica, CHARACTERIZED by the additional step of purifying prior to oxidation impure liquid silicon tetrachloride by steps comprising adding water to said impure liquid silicon tetrachloride and separating the gel formed thereby from the remaining silicon tetrachloride, with the amount of the added water being less than 25 weight percent of said impure liquid silicon tetrachloride, and thereafter forming an optical fiber comprising silica produced by the oxidation of said remaining silicon tetrachloride, and further characterized in that said water is added in sufficient amount so that the concentration of OH-containing impurities in said remaining silicon tetrachloride is approximately 95 parts per million by weight.

4,282,197

## DI-IRON TRI-OSMIUM CARBONYL HYDRIDE COMPOUND AND ITS PREPARATION

Sheldon G. Shore, Columbus, Ohio; Jeffrey S. Plotkin, Monsey, and Donna G. Alway, Eggertsville, both of N.Y., assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed May 15, 1980, Ser. No. 150,229

Int. Cl.<sup>3</sup> C01G 1/04

U.S. Cl. 423—417

13 Claims

1. A method for making H<sub>2</sub>Fe<sub>2</sub>O<sub>3</sub>(CO)<sub>15</sub> which comprises:

- establishing a reaction mixture comprising a salt of [HFe(CO)<sub>4</sub>]<sup>1-</sup>, H<sub>2</sub>O<sub>3</sub>(CO)<sub>10</sub>, and a solvent which solubilizes said [HFe(CO)<sub>4</sub>]<sup>1-</sup> salt to generate an [HFe(CO)<sub>4</sub>]<sup>1-</sup> anion, under conditions substantially free of molecular oxygen and water, and at temperature not substantially above about room temperature; and
- adding a protic acid to said reaction mixture to form said H<sub>2</sub>Fe<sub>2</sub>O<sub>3</sub>(CO)<sub>15</sub>.

4,282,198

## PROCESS FOR THE PRODUCTION OF HIGH QUALITY CARBON BLACK

Lothar Rothbühler, Hermülheim; Werner Sroka, Brühl, and Walter Fritz, Stein, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Schmelzeanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 962,187, Nov. 20, 1978, Pat. No. 4,225,416, which is a division of Ser. No. 735,888, Oct. 26, 1977, Pat. No. 4,154,808. This application Jan. 4, 1980, Ser. No. 109,540

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1975, 2547679

Int. Cl.<sup>3</sup> C01B 31/02, 31/00; C09C 1/48

U.S. Cl. 423—445

12 Claims

1. Carbon black having a high abrasion resistance in rubber compositions prepared by reacting (1) a carbon black forming feedstock prepared by a process consisting essentially of dissolving aromatic pitch in a thin liquid hydrocarbon carbon black feedstock having a viscosity at 100° C. of 5 to 30 cp, there being present suspended matter in the mixture thus formed, mechanically separating suspended matter from the

mixture obtained and recovering the pitch containing feedstock having viscosity at 100° C. of 40 to 300 cp with (2) air and (3) a fuel gas.

7. Carbon black having a high abrasion resistance in rubber compositions prepared by reacting (1) a carbon black forming feedstock prepared by a process consisting essentially of mechanically separating suspended matter from a thermally cracked aromatic pitch containing thin liquid hydrocarbon carbon black feedstock having a viscosity at 100° C. of 40 to 300 cp, there being present suspended matter in the mixture thus formed, the feedstock in the absence of the pitch having a viscosity at 100° C. of 5 to 30 cp, and recovering the pitch containing feedstock with (2) air and (3) a fuel gas.

4,282,199

## CARBON BLACK PROCESS

Trevor G. Lamond, and Peter Aboytes, both of Borger, Tex., assignors to J. M. Huber Corporation, Locust, N.J.

Filed Feb. 25, 1980, Ser. No. 124,010

Int. Cl.<sup>3</sup> C01B 31/02; C09C 1/48

U.S. Cl. 423—461

6 Claims

1. In a method of using the tail gas generated by the production of carbon black comprising:

- producing carbon black and tail gas by the decomposition of a hydrocarbon feedstock;
- filtering said tail gas from said carbon black;
- dehumidifying said filtered tail gas; and
- using said dehumidified tail gas as a fuel in a drying means to dry said carbon black; the improvement comprising heat treating said carbon black in a heat treatment means, wherein said heat treatment means uses as a fuel, a fuel free of sulfur and nitrogen compounds; and wherein said heat treatment means operates at a higher temperature than the drying means.

4,282,200

## PROCESSES FOR THE PREPARATION OF FIBROUS TITANIC ACID METAL SALTS

Yasuo Nishikawa, Okayamashi; Hiroaki Yanagida, Kashiwashi; Tadao Shimizu, Tachikawashi; Masayoshi Hori, Narashino, and Tetsuro Yoshida, Okayamashi, all of Japan, assignors to Kyushu Refractories Co., Ltd., Okayama, Japan

Filed Feb. 25, 1980, Ser. No. 124,065

Claims priority, application Japan, Feb. 26, 1979, 54-21563

Int. Cl.<sup>3</sup> C01G 23/00

U.S. Cl. 423—598

15 Claims

1. A process for preparing fibrous compounds having a ratio of length to diameter of at least 10 of the formula



wherein M is a bivalent metal selected from the group consisting of barium, strontium, calcium, magnesium, cobalt, lead, zinc, beryllium, and cadmium which comprises:

reacting a compound selected from the group consisting of fibrous potassium titanate hydrate having a ratio of length to diameter of at least 10 of the formula



wherein x is 2 to 13 and y is zero to 6 and x and y are not limited to integers and fibrous titanium dioxide hydrate having a ratio of length to diameter of at least 10 of the formula



wherein z is less than 5 and z is not limited to integers with an aqueous solution of a bivalent metal ion in a closed vessel under hydrothermal conditions for at least 30 minutes.







4,282,206

## METHOD OF PROTECTING HUMAN SKIN FROM ULTRAVIOLET RADIATION

Paul L. Warner, Jr., Clarence, and F. Christopher Zusi, Williamsburg, both of N.Y., assignors to Westwood Pharmaceuticals Inc., Buffalo, N.Y.

Filed Nov. 15, 1979, Ser. No. 94,419  
Int. Cl.<sup>3</sup> A61K 7/42

U.S. Cl. 424—59

2 Claims

1. A method for protecting human skin from ultraviolet radiation comprising applying to the skin to be protected an effective ultraviolet radiation-absorbing amount of 1-(4-amino-phenyl)-2-morpholinylethanone in a vehicle suitable for topical administration.

4,282,207

## ADHERENT CONTROLLED RELEASE PESTICIDES

Robert W. Young, New York, N.Y.; Samuel Prussin, Big Sur, Calif., and Norman G. Gaylord, New Providence, N.J., assignors to Young, Prussin, MGK, J.V., New York, N.Y.

Filed Nov. 8, 1979, Ser. No. 92,633  
Int. Cl.<sup>3</sup> A01N 25/24

U.S. Cl. 424—78

10 Claims

1. A composition capable of undergoing hydrolysis under ambient conditions to form a polymeric network capable of controlling the release of an insecticide, consisting essentially of (a) a carbinol-containing organic polymer, (b) a crosslinking agent for said polymer comprising a hydrolyzable silane selected from the group consisting of (1) a hydrocarbon substituted hydrolyzable silane, (2) an organopolysiloxane containing hydrolyzable silane groups, and (3) a partial hydrolyzate of (1) and/or (2), and (c) a pesticide.

4,282,208

## ADHERENT CONTROLLED RELEASE PESTICIDES

Robert W. Young, New York, N.Y.; Samuel Prussin, Big Sur, Calif., and Norman G. Gaylord, New Providence, N.J., assignors to Young, Prussin, MGK, J.V., New York, N.Y.

Filed Nov. 8, 1979, Ser. No. 92,634  
Int. Cl.<sup>3</sup> A01N 25/24

U.S. Cl. 424—78

6 Claims

1. A composition capable of undergoing hydrolysis under ambient conditions to form a polymeric network capable of controlling the release of an insecticide, consisting essentially of (a) a carbinol-containing organic polymer, (b) a crosslinking agent for said polymer comprising a hydrolyzable titanium compound or a partial hydrolyzate thereof, said titanium compound being selected from the group consisting of tetraesters, tetraanhydrides, tetraamides and chelates of glycols, hydroxy acids, dicarboxylic acids, diketones, ketoesters and alkanolamines, and (c) a pesticide.

4,282,209

## PROCESS FOR PREPARING INSECTICIDAL COMPOSITIONS

Stanley Tocker, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 892,396, Mar. 31, 1978, abandoned. This application Nov. 8, 1979, Ser. No. 92,331

Int. Cl.<sup>3</sup> A61K 31/78; A01N 33/24, 37/00, 47/10

U.S. Cl. 424—81

7 Claims

1. A process for preparing controlled release particles of methomyl which comprises:

(a) dissolving a water-insoluble polymer and methomyl in an organic solvent, the concentration of methomyl in the resulting solution being about 1-50% by weight and the concentration of said polymer in the resulting solution being about 1-60% by weight;

(b) comingling, with high shear agitation, said methomyl-polymer solution with a nonsolvent for both methomyl

and said polymer, to produce particles of polymer embedded with methomyl;

(c) and recovering said particles; wherein

(i) said organic solvent is miscible with said nonsolvent, and

(ii) said polymer is poly(methylmethacrylate), poly(ethylmethacrylate), methylmethacrylate or ethylmethacrylate or styrene copolymers with polar monomers, ethyl cellulose, cellulose acetate, cellulose acetatebutyrate, polystyrene, polyvinyl chloride or vinyl chloride-vinyl acetate copolymers.

4,282,210

## METHOD FOR THE CONTROL OF SHIPPING FEVER PNEUMONIA IN CATTLE

Michael R. Irwin, New City, N.Y., assignor to American Cyanamid Co., Stamford, Conn.

Filed Dec. 20, 1979, Ser. No. 105,687  
Int. Cl.<sup>3</sup> A61K 39/12

U.S. Cl. 424—89

5 Claims

1. A method for the control of shipping fever in cattle comprising parenterally administering to said animals from 2 mg/kg of body weight to 8 mg/kg of body weight of a pharmaceutically acceptable salt of a compound selected from the group consisting of dl 6-phenyl-2,3,5,6-tetrahydroimidazo-[2,1-b]thiazole and 1(-)-6-phenyl-2,3,5,6-tetrahydroimidazo-[2,1-b]thiazole and, the same day or within 21 days thereafter, parenterally administering to said cattle an immunizing or prophylactically effective amount of an infectious bovine rhinotracheitis virus vaccine.

4,282,211

## 1-EPI-2-DEOXYFORTIMICIN B AND DERIVATIVES

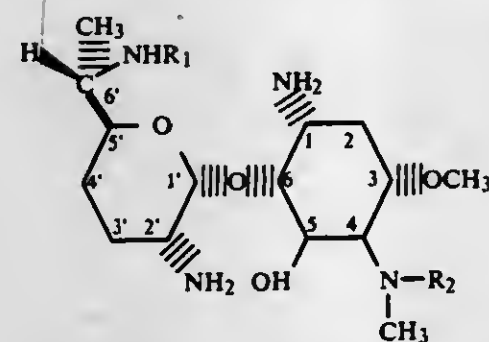
James B. McAlpine, Libertyville, and Ronald E. Carney, Gurnee, both of Ill., assignors to Abbott Laboratories, Chicago, Ill.

Filed Sep. 26, 1979, Ser. No. 79,146  
Int. Cl.<sup>3</sup> A61K 31/77; C07H 15/22

U.S. Cl. 424—180

14 Claims

1. A 1-epi-fortimicin represented by the formula



wherein: R<sub>1</sub> is hydrogen or loweralkyl; and R<sub>2</sub> is selected from the group consisting of loweralkyl, aminoloweralkyl, diaminoloweralkyl, N-loweralkylaminoloweralkyl, N,N-diloweralkylaminoloweralkyl, hydroxyloweralkyl, N-loweralkylaminohydroxyloweralkyl, N,N-diloweralkylaminohydroxyloweralkyl, acyl, aminoacyl, diaminoacyl, hydroxyacyl, hydroxy-substituted aminoacyl, N-loweralkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxy-substituted-N-loweralkylaminoacyl and hydroxy-substituted N,N-diloweralkylaminoacyl; with the limitation that R<sub>2</sub> cannot be glycyl, formylglycyl or hydantoyl; and the pharmaceutically acceptable salts thereof.

12. A pharmaceutical composition comprising an anti-bacterially effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier or diluent.

4,282,212

## IMMUNE-STIMULATING

## 1-(N-ACYLCARBAMOYL)-2-CYANOAZIRIDINES

Herbert Berger, Mannheim-Käfertal; Rudi Gall, Hirschberg-Grossachsen; Wolfgang Kampe, Heddesheim; Uwe Bicker, Mannheim, and Gottfried Hebold, Mannheim-Vogelstang, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Sep. 30, 1977, Ser. No. 838,426

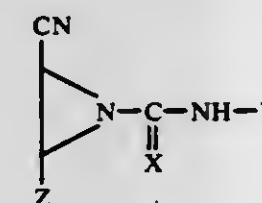
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1976, 2644820; Jun. 18, 1977, 2727550

Int. Cl.<sup>3</sup> C07D 203/20; A61K 31/395; C07F 9/22, 9/24

U.S. Cl. 424—200

11 Claims

1. Claim (once amended) A 1-(N-acyl-carbamoyl)-2-cyanoaziridine of the formula

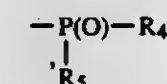


wherein

X is oxygen or sulphur,

Z is hydrogen, alkyl containing up to 4 carbon atoms, and

Y is a —CO—R<sub>1</sub>, —SO<sub>2</sub>—R<sub>2</sub>, —S—R<sub>3</sub> or



R<sub>1</sub> is

(a) hydrogen, nitrile, lower alkoxy, alkoxy-carbonyl, N,N-dialkylaminocarbonyl, lower N-alkyl-N-phenyl or N,N-dialkylamino,

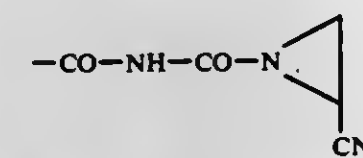
(b) aliphatic hydrocarbon saturated or unsaturated optionally substituted once or twice by

(i) halogen, nitrile, lower N-alkanoylamino, N,N-dialkylamino, alkoxy, alkoxy-carbonyl, alkanoyloxy, benzoyloxy, alkylsulphonyloxy, arylsulphonyloxy, N,N-dialkylaminocarbonyloxy, alkylsulphonyl or alkylthio,

(ii) phenyl, naphthyl, phenylthio or phenoxy optionally substituted once or twice by halogen, nitro, phenyl, lower alkyl, alkoxy or alkylthio,

(iii) dialkoxylphosphoryloxy or dialkoxylphosphono,

(iv) cycloalkyl, or

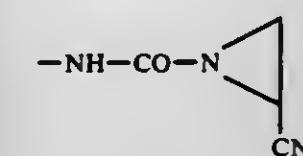


R<sub>2</sub> is

(a) a lower aliphatic hydrocarbon radical optionally substituted by halogen, lower alkoxy-carbonyl or alkanoyloxy,

(b) cycloalkyl, amino or lower dialkylamino,

(c) phenyl optionally substituted by lower alkyl, lower alkoxy, halogen or nitro, or



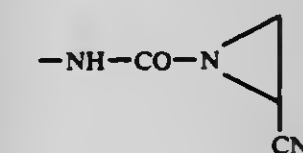
R<sub>3</sub> is

(a) lower alkyl on trifluoromethyl, or

(b) phenyl optionally substituted by lower alkyl, halogen or nitro, and

R<sub>4</sub> and R<sub>5</sub> each independently is

(a) lower alkyl or alkoxy,



or

R<sub>4</sub> and R<sub>5</sub> together are alkylenedioxy containing up to 4 carbon atoms, or

a pharmacologically compatible salt thereof with a base, when present alkyl having up to 6 carbon atoms, the hydrocarbon substituents containing up to 12 carbon atoms, and cycloalkyl having 3 to 8 ring carbon atoms.

9. An immune-stimulating composition of matter comprising an immune-stimulating effective amount of a compound or salt according to claim 1 in combination with a pharmacologically compatible diluent.

4,282,213

## AMIDINO AND GUANIDINO PHOSPHONATES

Graham J. Durant, Welwyn Garden City; Rodney C. Young, Bengoe, both of England, and Zev Tashma, Jerusalem, Israel, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 913,180, Jun. 6, 1978, Pat. No. 4,190,664.

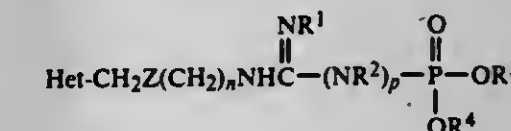
This application Aug. 27, 1979, Ser. No. 70,208

Int. Cl.<sup>3</sup> C07F 9/58, 9/65; A61K 31/675

U.S. Cl. 424—200

10 Claims

1. A compound of the structure



in which

Het is a 5- or 6-membered fully unsaturated heterocycle containing at least one nitrogen atom, said heterocycle being pyridine or triazole which is attached at a ring carbon, and optionally substituted by lower alkyl, trifluoromethyl, hydroxymethyl, halogen, hydroxy or lower alkoxy;

Z is sulphur or methylene;

n is 2 or 3,

R<sup>1</sup> is hydrogen, lower alkyl or Het—CH<sub>2</sub>Z(CH<sub>2</sub>)<sub>n</sub>—;

p is 0 or 1;

R<sup>2</sup> is hydrogen or lower alkyl;

or R<sup>1</sup> and R<sup>2</sup> together form a (CH<sub>2</sub>)<sub>2</sub> or (CH<sub>2</sub>)<sub>3</sub> group;

R<sup>3</sup> is lower alkyl, phenyl or phenyl(lower alkyl); and

R<sup>4</sup> is hydrogen when p is 0 and hydrogen, lower alkyl, phenyl or phenyl(lower alkyl) when p is 1.



4,282,214

## PHENYLACETATE ANTI-INFLAMMATORY COMPOSITION

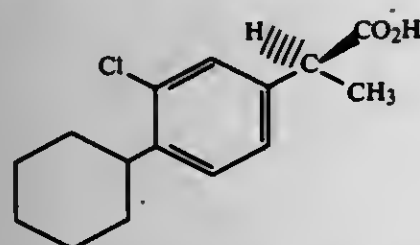
Lawrence Flora, Hamilton, and Marjoe D. Francis, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 929,476, Jul. 31, 1978, abandoned, which is a continuation of Ser. No. 801,705, May 31, 1977, abandoned. This application Oct. 22, 1979, Ser. No. 86,849  
Int. Cl.<sup>3</sup> A61K 31/19, 31/66, 31/195

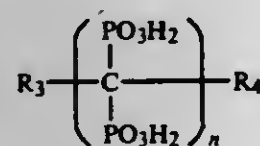
U.S. Cl. 424—204

19 Claims

1. An anti-inflammatory composition, comprising: (1) from about 10 mg to about 500 mg of a phenylacetic acid-based compound selected from the group consisting of fenoprofen, ketoprofen, MK-830 having the formula



and pharmaceutically-acceptable salts and esters thereof; and (2) from about 50 mg. to about 250 mg. of an organophosphate compound selected from the group consisting of geminal organophosphonates of the formula



or pharmaceutically acceptable salts thereof, wherein n is an integer from 1 to about 10; R<sub>3</sub> is selected from the group consisting of H, —CH<sub>2</sub>OH, C<sub>1</sub>–C<sub>20</sub> alkyl or cycloalkyl, C<sub>2</sub>–C<sub>20</sub> alkenyl, aryl, phenylethyl, benzyl, halogen, amino, substituted amino, —CH<sub>2</sub>COOH, —CH<sub>2</sub>PO<sub>3</sub>H<sub>2</sub>, —CH(PO<sub>3</sub>H<sub>2</sub>)(OH) or —CH<sub>2</sub>CH(PO<sub>3</sub>H<sub>2</sub>)<sub>2</sub>; and R<sub>4</sub> is selected from the group consisting of H, lower alkyl, amino, benzyl, halogen, —OH, —CH<sub>2</sub>COOH, —CH<sub>2</sub>PO<sub>3</sub>H<sub>2</sub> or —CH<sub>2</sub>CH<sub>2</sub>PO<sub>3</sub>H<sub>2</sub>.

4,282,215

## ANALGESIC MIXTURE OF NALBUPHINE AND ACETYSALICYLIC ACID, DERIVATIVE OR SALT THEREOF

John R. Dudzinski, East Northport, N.Y., and William K. Schmidt, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 160,437, Jun. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 69,083, Aug. 23, 1979, abandoned. This application Jul. 28, 1980, Ser. No. 170,931

Int. Cl.<sup>3</sup> A61K 31/625

U.S. Cl. 424—232

24 Claims

1. A pharmaceutical composition consisting essentially of (a) nalbuphine or a pharmaceutically suitable acid addition salt thereof and (b) acetylsalicylic acid, sodium acetylsalicylate, calcium acetylsalicylate, salicylic acid, or sodium salicylate or any combination thereof in a weight ratio of (a) to (b) of from about 1:1.76 to about 1:61.7.

4,282,216

## TOPICAL ANTI-INFLAMMATORY DRUG THERAPY

D. Thomas Rovee, Bridgewater; John R. Marvel, and James A. Mezick, both of East Brunswick, all of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 788,453, Apr. 20, 1977, Pat. No. 4,185,100, which is a continuation-in-part of Ser. No. 685,942, May 13, 1976, abandoned. This application Aug. 6, 1979, Ser. No. 64,311  
Int. Cl.<sup>3</sup> A61K 31/15, 31/19, 31/40, 31/56

U.S. Cl. 424—240

13 Claims

1. A method of topical treatment of an inflammatory condition of the skin comprising applying to the affected area a non-steroidal anti-inflammatory agent which is an inhibitor of prostaglandin synthetase selected from the group consisting of the tolmetin and ethyl 5-p-chlorobenzoyl-1,4-dimethylpyrrole-2-acetate and, concurrently therewith, a topically active anti-inflammatory corticosteroid, each of said prostaglandin synthetase inhibitor and said corticosteroid being applied in a pharmaceutically acceptable topical vehicle selected from the group consisting of creams, gels, ointments, powders, aerosols and solutions suitable for topical administration, the amounts of said anti-inflammatory drugs being sufficient, in combination, to combat said inflammatory condition.

4,282,217

## PHARMACEUTICAL COMPOSITIONS CONTAINING A CORTICOSTEROID SUBSTANCE

Alessandro Baglioni, Monza, and Giancarlo Sportoletti, Milan, both of Italy, assignors to Italfarmaco S.p.A., Milan, Italy

Filed Jun. 25, 1980, Ser. No. 162,686

Claims priority, application Italy, Dec. 28, 1979, 28417 A/79  
Int. Cl.<sup>3</sup> A61K 31/36

U.S. Cl. 424—240

4 Claims

1. A pharmaceutical composition consisting essentially of a salt of 6-α-methyl-prednisolone-21-hemisuccinate and a L-arginine ester in the form of the hydrochloride salt.

4,282,218

## AMIDES

Alasdair T. Glen, and Richard W. Bayles, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 950,142, Oct. 10, 1978, Pat. No. 4,239,776. This application Jun. 27, 1980, Ser. No. 163,483

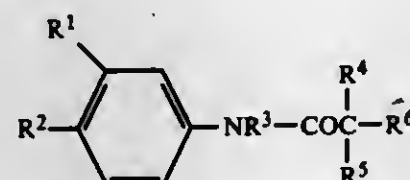
Claims priority, application United Kingdom, Oct. 12, 1977, 42454/77

Int. Cl.<sup>3</sup> A61K 31/56, 31/275

U.S. Cl. 424—240

4 Claims

1. A pharmaceutical or veterinary composition having antiandrogenic properties which comprises an effective amount of an acylanilide of the formula:



wherein R<sup>1</sup> is cyano, nitro, trifluoromethyl or iodo, or has the formula —CONR<sup>11</sup>R<sup>12</sup>, and wherein R<sup>2</sup> is cyano, nitro, trifluoromethyl, chloro, bromo or iodo, or has the formula —CONR<sup>11</sup>R<sup>12</sup>, wherein R<sup>11</sup> and R<sup>12</sup>, which may be the same or different, each is hydrogen or alkyl of up to 4 carbon atoms; wherein R<sup>3</sup> is hydrogen or alkyl of up to 4 carbon atoms; wherein either R<sup>4</sup> and R<sup>5</sup>, which may be the same or different, each is alkyl of up to 4 carbon atoms; or R<sup>4</sup> and R<sup>5</sup> are joined together with the adjacent carbon atom to form cycloalkyl of 3 or 4 carbon atoms; and wherein R<sup>6</sup> is hydrogen, hydroxy, halogen, alkyl, hydroxyalkyl or alkoxy each of up to 4 carbon atoms, or acyloxy of up to 15 carbon atoms, provided that at least one of R<sup>1</sup> and R<sup>2</sup> is cyano, in association with a pharma-

ceutically acceptable diluent or carrier and which additionally contains one or more drugs selected from antioestrogens, progestins, inhibitors of gonadotrophic secretion, cytotoxic agents, antibiotics and anti-inflammatory agents.

4,282,219

## 7-N-HETEROCYCLYL CEPHALOSPORINS AND ANTIBIOTIC PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

John Hannah, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

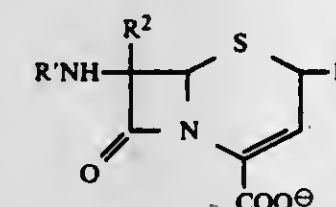
Filed Aug. 1, 1979, Ser. No. 62,827

Int. Cl.<sup>3</sup> A61K 31/545; C07D 501/14

U.S. Cl. 424—246

6 Claims

1. A compound having the structural formula:

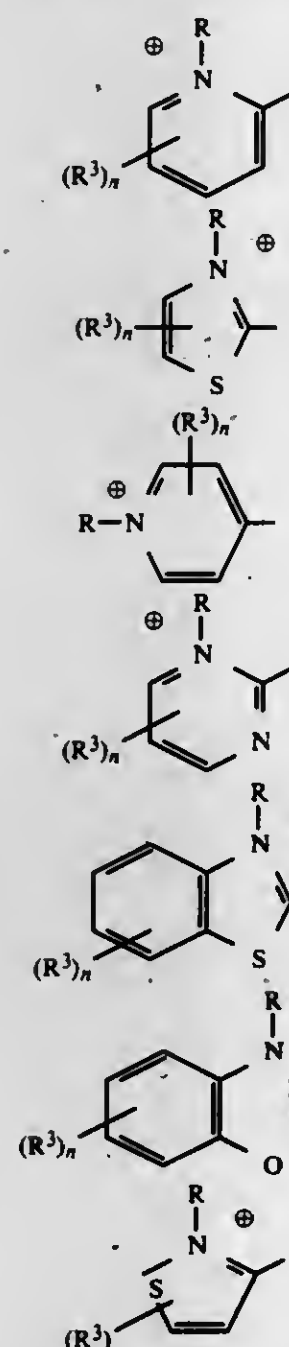


and the pharmaceutically acceptable salts and esters thereof

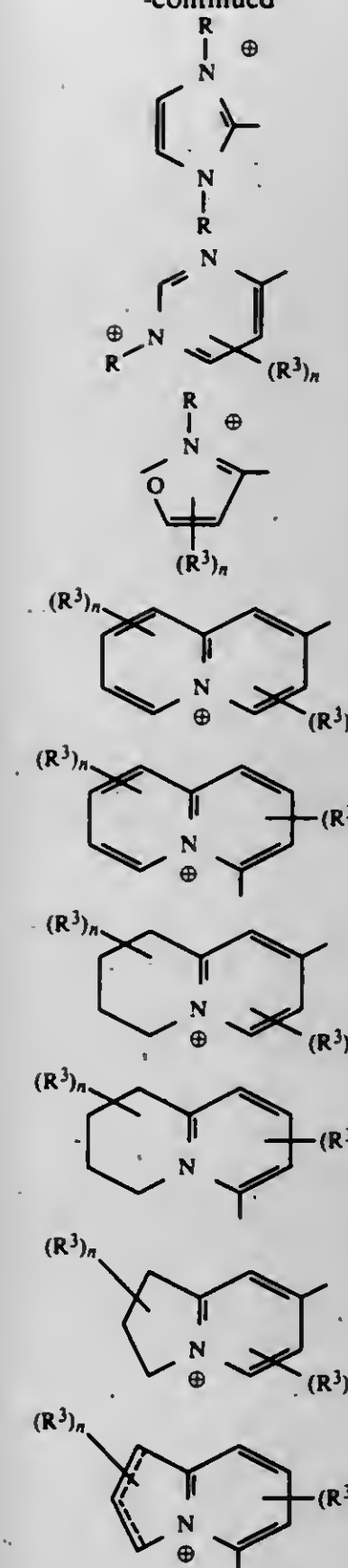
wherein: R<sup>\*</sup> is hydrogen or methyl;

R<sup>2</sup> is hydrogen or methoxyl;

R<sup>1</sup> is selected from the group consisting of:



-continued



wherein the dotted line indicates both saturated and unsaturated rings; and wherein:

R is alkyl having from 1–6 carbon atoms, substituted alkyl having from 1–6 carbon atoms wherein the substituent is chloro, fluoro, hydroxyl, alkoxy (C<sub>1</sub>–6), carboxyl, amino, sulfo and mono- and dialkylamino wherein each alkyl has 1–6 carbon atoms substituted and unsubstituted phenylalkyl and phenylalkenyl having 7–12 carbon atoms wherein the substituent is selected from chloro, fluoro, carboxyl, amino, cyano, hydroxyl and sulfo;

R<sup>3</sup> is chloro, fluoro, hydroxyl, carboxyl, sulfo, cyano, amino, mono- and dialkylamino, alkoxy, alkyl having from 1–6 carbon atoms, substituted alkyl having 1–6 carbon atoms wherein the substituent is carboxyl, cyano, alkoxy having 1–6 carbon atoms, phenyl and phenyloxy;

n is an integer selected from 0 to 3.

6. An antibiotic pharmaceutical composition comprising a



therapeutically effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

4,282,220

## CEPHEM DERIVATIVES

Dieter Bormann, Kelkheim; Walter Dürckelmer, Hattersheim, and Elmar Schrinner, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 24, 1979, Ser. No. 42,066

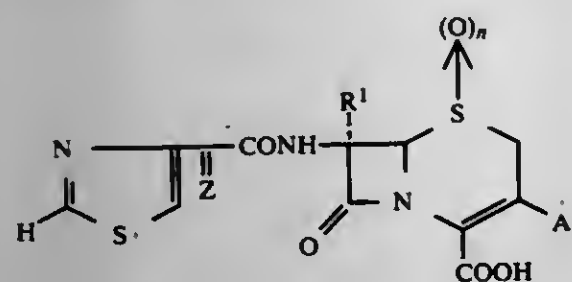
Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2822860

Int. Cl.<sup>3</sup> C07D 501/20

7 Claims

U.S. Cl. 424—246

1. A cephalosporin compound selected from the group consisting of  
(a) compounds of the formula



wherein n is 0 or 1,

A is methyl or  $-\text{CH}_2\text{O}$  acyl where acyl is alkanoyl having 1 to 5 carbon atoms,

Z is oxygen or  $=\text{NOR}$  wherein

R is hydrogen or saturated or unsaturated aliphatic hydrocarbon having up to five carbon atoms, and

R<sup>1</sup> is hydrogen or lower alkoxy;

(b) pharmaceutically acceptable salts thereof; and

(c) phthalide esters, lower alkyl esters, and substituted methyl esters thereof wherein the methyl group is mono-substituted by trichloromethyl or alkanoyloxy having 2 to 5 carbon atoms, or is mono- or di-substituted by phenyl or by phenyl in turn substituted by lower alkoxy or nitro.

4,282,221

## PHARMACOLOGICALLY ACTIVE COMPOUNDS TO INHIBIT H-2 HISTAMINE RECEPTORS

Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote, and Charon R. Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 893,859, Apr. 6, 1978, which is a division of Ser. No. 736,662, Oct. 29, 1976, Pat. No. 4,104,381, which is a division of Ser. No. 619,985, Oct. 6, 1975, Pat. No. 4,005,205, which is a division of Ser. No. 463,647, Apr. 24, 1974, Pat. No. 3,932,644. This application Jul. 25, 1979, Ser. No. 60,324

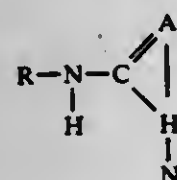
Claims priority, application United Kingdom, May 3, 1973, 21063/73; Jul. 2, 1973, 35551/73

Int. Cl.<sup>3</sup> A61K 31/47, 31/53, 31/54, 31/415

U.S. Cl. 424—249

5 Claims

1. A method of inhibiting H-2 histamine receptors, said H-2 histamine receptors being those histamine receptors which are not inhibited by mepyramine but are inhibited by burimamide, which comprises administering to an animal in need of inhibition of said receptors in an effective amount to inhibit said receptors a heterocyclic compound of the formula:



wherein A taken together with the nitrogen and carbon atoms

shown forms a 1,2,4-triazin-2H-5-one or 6-methyl-1,2,4-triazin-2H-5-one ring; R is a grouping of the formula:



wherein Het is an imidazole ring, said ring being optionally substituted by lower alkyl; Z is sulphur or a methylene group and n is 2 or 3 or a pharmaceutically acceptable acid addition salt thereof.

4,282,222

## 3-PIPERIDINO OR APIPERAZINO-1-PHENYL OR 1-SUBSTITUTED PHENYL ISOQUINOLINE AND ANTIDEPRESSANT COMPOSITIONS THEREOF

Wilhelm Bartmann; Elmar Konz, both of Bad Soden am Taunus, Fed. Rep. of Germany, and Harry M. Geyer, Somerville, N.J., assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

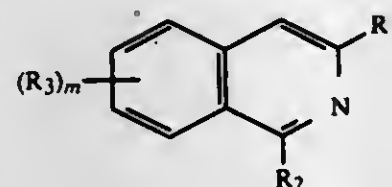
Continuation-in-part of Ser. No. 033,325, Apr. 25, 1979, abandoned. This application Sep. 12, 1979, Ser. No. 75,038 Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818403

Int. Cl.<sup>3</sup> A61K 31/47, 31/495; C07D 401/04

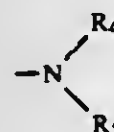
U.S. Cl. 424—250

5 Claims

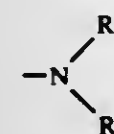
1. An isoquinoline of the formula



or a physiologically acceptable salt thereof in which m is 1 or 2, R<sub>1</sub> is an amino group of the formula



in which R<sub>4</sub> and R<sub>5</sub>, which are identical or different, stand for hydrogen or a straight-chain or branched alkyl of from 1 to 8 carbon atoms, substituted alkyl of 1 to 8 carbon atoms being substituted by hydroxy, C<sub>1</sub>-C<sub>4</sub>-alkoxy or an amino group of the formula



in which R<sub>6</sub> and R<sub>7</sub> are identical or different and represent hydrogen or a straight-chain or branched alkyl of from 1 to 6 carbon atoms, or together with the nitrogen atom represent a heterocyclic ring of up to 7 carbon atoms; R<sub>4</sub> and R<sub>5</sub> may also from a 5- to 8-membered heterocyclic ring together with the nitrogen atom, one carbon atom of which may be substituted by C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, hydroxy, carboxy, or C<sub>1</sub>-C<sub>4</sub>-alkoxycarbonyl and in which one of the carbon atoms of the heterocyclic ring may be replaced by an oxygen, sulfur, nitrogen or nitrogen substituted by thienyl, furyl, pyridyl or formyl, C<sub>3</sub>-C<sub>8</sub>-alkenylloxycarbonyl or C<sub>3</sub>-C<sub>8</sub>-alkynylloxycarbonyl, C<sub>1</sub>-C<sub>6</sub>-alkoxycarbonyl, substituted C<sub>1</sub>-C<sub>6</sub>-alkoxycarbonyl substituted by hydroxy or C<sub>1</sub>-C<sub>4</sub>-alkoxy, phenyl substituted by one or more C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, methylenedioxy, hydroxy, nitro or amino, or halogen, and in which the hydrogen atom at the nitrogen atom in the heterocycle may further be (a) replaced by  $-\text{COR}_8$ , wherein R<sub>8</sub> represents thienyl, furyl, pyridyl, phenyl or phenyl substituted as defined above, or (b)

replaced by C<sub>1</sub>-C<sub>6</sub>-alkyl substituted in turn by hydroxy, C<sub>1</sub>-C<sub>4</sub>-alkoxy, C<sub>1</sub>-C<sub>6</sub>-dialkyl-amino, ethylenedioxy, trimethylenedioxy or a phenyl radical; R<sub>2</sub> is a pyridyl, thienyl, phenyl or phenyl mono- or disubstituted by halogen, hydroxy, nitro, amino or amino substituted by one or two aliphatic, cycloaliphatic or aromatic hydrocarbon radicals and having from 2 to 18 carbon atoms, by acylamino, by alkyl or by alkoxy, with 1 to 6 carbon atoms each, by benzyloxy or by trifluoromethyl; R<sub>3</sub> is hydrogen, halogen, hydroxy, alkyl or alkoxy with 1 to 6 carbon atoms, nitro, amino, benzyloxy, methylene-dioxy or ethylene-dioxy.

3. Antidepressant composition comprising an effective amount of a compound as defined in claim 1 and physiologically acceptable auxiliary agent or carrier thereof.

4,282,223

## ISOQUINOLINE DERIVATIVES, PROCESSES FOR THEIR MANUFACTURE AND THEIR USE FOR THE MANUFACTURE OF MEDICAMENTS

Wilhelm Bartmann; Elmar Konz, both of Bad Soden am Taunus; Hansjörg Kruse, Kelkheim, all of Fed. Rep. of Germany, and Harry M. Geyer, Flemington, N.J., assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

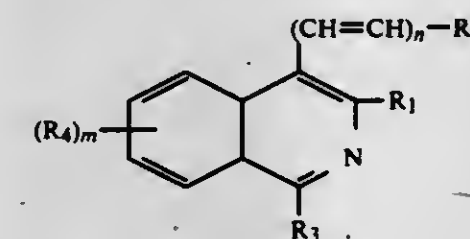
Continuation-in-part of Ser. No. 20,411, Mar. 14, 1979, abandoned. This application Sep. 19, 1979, Ser. No. 76,862 Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811312

Int. Cl.<sup>3</sup> A61K 31/47, 31/495; C07D 401/04

U.S. Cl. 424—250

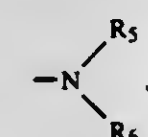
14 Claims

1. An isoquinoline compound of the formula I

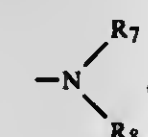


in which

m is one or two, n is zero or one, R<sub>1</sub> is an amino group of the formula



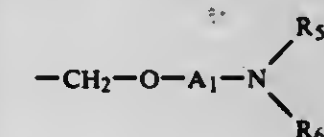
in which R<sub>5</sub> and R<sub>6</sub> are identical or different and are hydrogen or an alkyl radical with 1 to 8 carbon atoms, substituted alkyl radicals of 1 to 8 carbon atoms substituted by hydroxyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy or an amino group of the formula



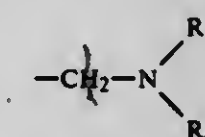
in which R<sub>7</sub> and R<sub>8</sub> are identical or different and represent hydrogen or a straight-chain or branched alkyl radical with 1 to 6 carbon atoms, or together with the nitrogen atom represent a heterocyclic ring with up to 7 carbon atoms, and wherein the alkyl radicals R<sub>5</sub> and R<sub>6</sub>, when taken together with the nitrogen atom, define a 5-membered to 8-membered ring, and a substituted heterocyclic ring thereof on one of the carbon atoms with the substituents being a C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, hydroxyl, carboxyl or C<sub>1</sub>-C<sub>4</sub>-alkoxycarbonyl group, and in said ring one of said carbon atoms may further be replaced by an

oxygen, sulfur, a nitrogen atom with a hydrogen atom thereon, or wherein the hydrogen atom on the nitrogen is replaced with a thienyl, furyl, pyridyl, or formyl group, a C<sub>3</sub>-C<sub>8</sub>-alkenylloxycarbonyl or C<sub>3</sub>-C<sub>8</sub>-alkynylloxycarbonyl group, a C<sub>1</sub>-C<sub>6</sub>-alkoxy carbonyl group and substituted alkoxy carbonyl group substituted by hydroxy or C<sub>1</sub>-C<sub>4</sub>-alkoxy groups or a phenyl radical, or a substituted phenyl radical, wherein said phenyl may be substituted by up to three C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, methylenedioxy, hydroxyl, nitro or amino groups or halogen;

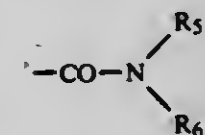
R<sub>2</sub> denotes a carboxyl, cyano, formyl or hydroxymethyl group, an alkoxyethyl group with 1 to 6 carbon atoms, an aminoalkyl group of the formula



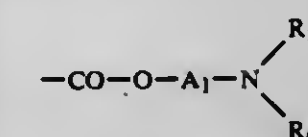
in which A<sub>1</sub> represents a straight-chain or branched C<sub>2</sub>-C<sub>6</sub>-alkylene group, which may be substituted by hydroxyl or C<sub>1</sub>-C<sub>4</sub>-alkoxy groups, and in which R<sub>5</sub> and R<sub>6</sub> are as defined above, an acyloxymethyl group of the formula  $-\text{CH}_2-\text{O}-\text{CO}-\text{R}_{10}$ , in which R<sub>10</sub> is a C<sub>1</sub>-C<sub>6</sub>-alkyl radical or a phenyl radical wherein said phenyl radicals may be substituted as defined above, an amino-methyl group of the formula



in which R<sub>5</sub> and R<sub>6</sub> are as defined above, a carboxamide group of the formula



in which R<sub>5</sub> and R<sub>6</sub> are as defined above, or a carboxylic acid ester group of the formula



in which A<sub>1</sub>, R<sub>5</sub> and R<sub>6</sub> are as defined above;

R<sub>3</sub> denotes a phenyl radical or a substituted phenyl group, monosubstituted or disubstituted with halogen, hydroxyl, nitro, amino or a substituted amino group with two to eighteen carbon atoms, a substituted amino group wherein the same is substituted by one or two aliphatic, cycloaliphatic or aromatic hydrocarbon radicals and in which the nitrogen atom may be incorporated in a heterocyclic ring, or an acylamino, alkyl or alkoxy group, each with one to six carbon atoms, a benzyloxy group of a trifluoromethyl group, or wherein R<sub>3</sub> denotes a pyridyl or thienyl radical; and

R<sub>4</sub> denotes hydrogen, halogen, hydroxyl, an alkyl or alkoxy group with one to six carbon atoms, or a nitro, amino, benzyloxy or methylenedioxy or ethylenedioxy group and;

a physiologically acceptable salt thereof.

12. An antidepressant composition which comprise an effective amount of a compound defined in claim 1 and a physiologically acceptable carrier therefor.



4,282,224

## ALKOXY-PYRIDYL SUBSTITUTED ALKANES

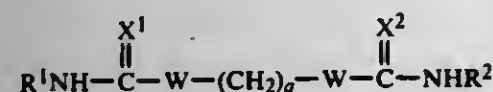
Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and George S. Sech, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 948,616, Oct. 4, 1978, Pat. No. 4,219,553, which is a division of Ser. No. 816,420, Jul. 18, 1977, Pat. No. 4,139,624. This application Jan. 16, 1980, Ser. No. 112,486

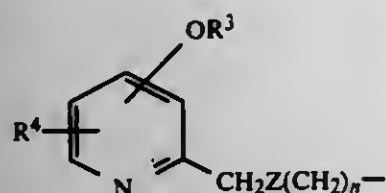
Claims priority, application United Kingdom, Jul. 28, 1926, 31392/76

Int. Cl.<sup>3</sup> C07D 401/12; A61K 31/50, 31/505, 31/495  
U.S. Cl. 424—250 8 Claims

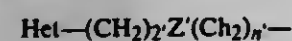
1. A compound of the formula



wherein  $X^1$  and  $X^2$ , which may be the same or different, are each  $CHNO_2$  or  $NY$  where  $Y$  is hydrogen, hydroxy, lower alkyl, cyano or  $CONH_2$ ;  $R^1$  is a grouping of the structure



wherein  $R^3$  is lower alkyl or  $-(CH_2)_pA$  where  $p$  is 2 to 4, and  $A$  is hydroxy, lower alkoxy or dimethylamino;  $R^4$  is hydrogen, lower alkyl, lower alkoxy, amino, halogen or methylamino; or  $-OR^3$  and  $R^4$  can together form a  $-O(CH_2)_bO-$  group attached to adjacent carbon atoms on the pyridine ring; where  $b$  is 1 to 4;  $Z$  is sulphur or methylene;  $n$  is 2 or 3;  $R^2$  is a grouping of the structure:



wherein  $Het$  is pyrimidine, pyrazine or pyridazine which is optionally substituted by lower alkyl, hydroxy, halogen or amino;  $Z'$  is sulphur or methylene;  $m'$  is 0, 1 or 2;  $n'$  is 2 or 3 and the sum of  $m'$  and  $n'$  is 3, 4;  $W$  is  $NH$ , and when  $X^1$  and  $X^2$  are both  $NH$ ,  $W$  may also be sulphur; and  $q$  is an integer from 2 to 8 or a pharmaceutically acceptable acid addition salt thereof.

2. A pharmaceutical composition to inhibit H-2 histamine receptors comprising, in an effective amount to inhibit said receptors, a compound according to claim 1 in combination with a pharmaceutically acceptable carrier.

4,282,225

## THIAZOLE DERIVATIVES USEFUL IN THERAPY AS ANTI-DEPRESSANT AGENTS

Dennis C. H. Begg, Jony ea Josas, France, assignor to Synthelabo, Paris, France

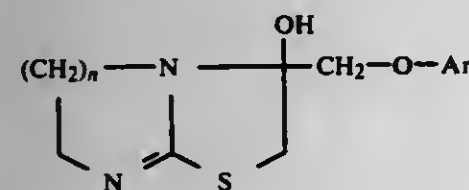
Filed Feb. 4, 1980, Ser. No. 117,990

Claims priority, application France, Feb. 12, 1979, 79 03431

Int. Cl.<sup>3</sup> C07D 277/60, 239/00, 277/00; A61K 31/425, 31/505

U.S. Cl. 424—251 6 Claims

1. Thiazole derivatives, in the form of racemates or optically active isomers, of the formula



in which  $n$  is 1 or 2 and  $Ar$  represents phenyl which is unsubstituted or substituted by one or more substituents which are the same or different, selected from the group consisting of halogen,  $CF_3$ , phenyl, straight or branched chain alkyl of 1 to 4

carbon atoms, and cyclohexyl of 3 to 6 carbon atoms, and their pharmaceutically acceptable acid addition salts.

4,282,226

## THIOXOPYRAZOLO[1,5-C]QUINAZOLINE DERIVATIVES, ANTI-ALLERGIC COMPOSITIONS AND METHODS FOR TREATING ALLERGIC CONDITIONS BY PARENTERAL ADMINISTRATION, AEROSOL OR INSUFFLATION

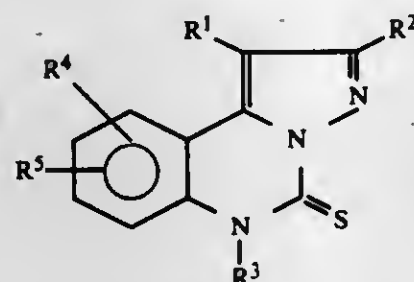
B. Richard Vogt, Yardley, Pa., and Ligaya G. Magbanua, Allentown, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 900,050, Apr. 26, 1978, abandoned. This application May 9, 1980, Ser. No. 148,433

Int. Cl.<sup>3</sup> A61K 31/505; C07D 487/04 8 Claims

U.S. Cl. 424—251

1. A compound of the structure



wherein  $R^1$  is hydrogen or lower alkyl containing 1 to 8 carbons;  $R^2$  is carboxyl or lower alkoxy carbonyl containing 1 to 8 carbons in the alkoxy group;  $R^3$  is hydrogen, lower alkyl containing 1 to 8 carbons or benzyl;  $R^4$  and  $R^5$  are the same or different and are selected from the group consisting of hydrogen, alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, lower alkanoyloxy of 1 to 4 carbons, nitro, halogen, trifluoromethyl, benzyloxy, benzyloxy having a lower alkoxy containing 1 to 8 carbons, halogen, hydroxy, or trifluoromethyl substituent, with the proviso that where  $R^4$  and  $R^5$  are alkyl at least one of  $R^4$  and  $R^5$  is other than  $t$ -butyl; and physiologically acceptable salts thereof.

7. A pharmaceutical composition for use in treating allergic conditions and adapted for administration parenterally, by aerosol or by insufflation, consisting essentially of a compound as defined in claim 1 and a pharmaceutically acceptable parenteral, aerosol or insufflation carrier thereof.

8. A method for treating allergic conditions in mammals, which includes the step of administering to the mammalian host by parenteral administration, aerosol or insufflation a therapeutic amount of a compound as defined in claim 1.

4,282,227

## RENAL VASODILATING 3,4-DIHYDROXYPHENYLTETRAHYDROTHIENOPYRIDINES

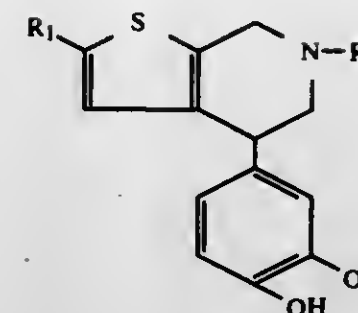
L. Martin Brenner, Havertown, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed May 22, 1980, Ser. No. 152,253

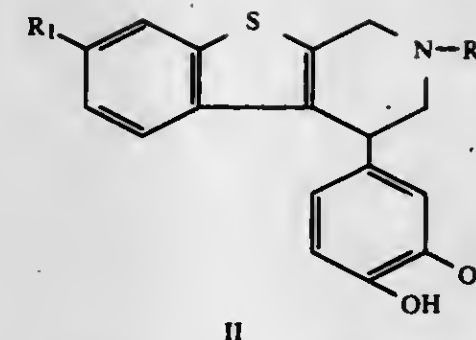
Int. Cl.<sup>3</sup> A61K 31/44; C07D 495/04 8 Claims

U.S. Cl. 424—256

1. A chemical compound of the formula:



or



II

in which  $R$  is hydrogen or methyl and  $R_1$  is hydrogen or halo; or a pharmaceutically acceptable acid addition salt thereof.

8. The method of producing renal vasodilation in a patient in need thereof comprising administering orally or parenterally to said patient a renal vasodilating but nontoxic quantity of a compound of claims 1, 3 or 4.

4,282,228

## ANIMAL FEED AND PROCESS

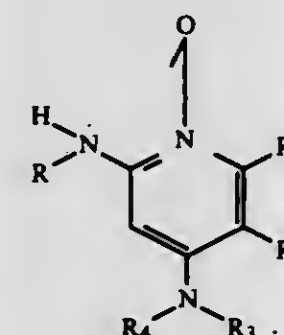
Melvin J. DeGeeter, and John M. McCall, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 23, 1980, Ser. No. 161,945

Int. Cl.<sup>3</sup> A61K 31/505, 31/54, 31/44, 31/445 8 Claims

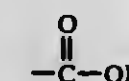
U.S. Cl. 424—251

1. A process for obtaining increased production in meat-producing, egg-laying or milk-producing animals comprising feeding to said animals an effective amount of a compound of the formula

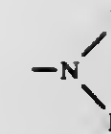


Formula I

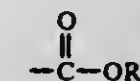
wherein  $R$  is a member selected from the group consisting of hydrogen,  $R_5$ ,



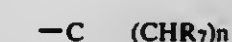
wherein  $R_5$  is alkyl of from 1 to 8 carbon atoms, inclusive, including isomeric forms thereof alkenyl of from 2 to 8 carbon atoms, inclusive, and isomeric forms thereof, cycloalkyl of from 3 to 7 carbon atoms; or lower acyl wherein acyl is up to and including 5 carbon atoms;  $R_1$  is a member selected from the group consisting of  $R_5$  and



wherein  $R_6$  is selected from the group consisting of hydrogen,



or acyl wherein acyl is up to and including 5 carbon atoms;  $R_2$  is a member selected from the group consisting of hydrogen,  $R_5$ , bromo or chloro;  $R_3$  and  $R_4$  are the same or different and are selected from the group consisting of hydrogen, provided that  $R_3$  and  $R_4$  are not both hydrogen;  $R_5$ , cycloalkyl of from 3 to 8 carbon atoms, alkyl substituted cycloalkyl of the formula



wherein  $n$  is an integer of from 2 to 7, inclusive and  $R_7$  is a member selected from the group consisting of hydrogen and alkyl of from 1 to 5 carbon atoms, inclusive, including isomeric forms thereof; alkenyl of from 2 to 8 carbon atoms, inclusive, including isomeric forms thereof, aralkyl wherein  $Ar$  is a member selected from the group consisting of phenyl, substituted phenyl wherein 1 or 2 hydrogens are replaced with chlorine, fluorine, bromine, iodine,  $R_5$ ,  $-OR_5$  or  $-CF_3$  and the substituents can be the same or different, and alkyl is from 1 to 4 carbon atoms, inclusive, including isomeric forms thereof; and  $R_3$  and  $R_4$  taken together with  $-N>$  is a heterocyclic moiety of from 4 to 8, inclusive, ring atoms and 1 or 2 hetero atoms selected from the group consisting of nitrogen, oxygen or sulfur or a substituted heterocyclic moiety wherein 0, 1, 2 or 3 of the carbon atoms of the heterocycle are substituted with  $R_5$  in combination with a nutrient feed.

4,282,229

## HYDANTOIN DERIVATIVES AS THERAPEUTIC AGENTS

Reinhard Sarsas, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 961,256, Nov. 16, 1978, Pat. No. 4,210,756,

which is a division of Ser. No. 849,546, Nov. 8, 1977, Pat. No.

4,147,795, which is a division of Ser. No. 767,803, Feb., 1977,

Pat. No. 4,117,230, which is a continuation-in-part of Ser. No.

733,062, Oct. 18, 1976, abandoned. This application Sep. 4, 1979,

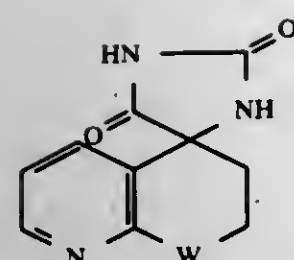
Ser. No. 72,219

Int. Cl.<sup>3</sup> A61K 31/47, 31/44

U.S. Cl. 424—258 6 Claims

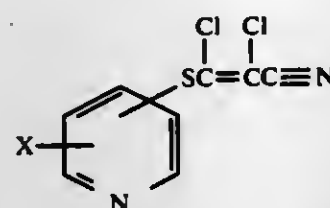
1. A method of treating a diabetic host to prevent or alleviate ocular and neuritic diabetes-associated chronic complications, which comprises orally, parenterally or topically administering to said host an effective amount of a compound selected from the group consisting of spiro-hydantoins of the formula:





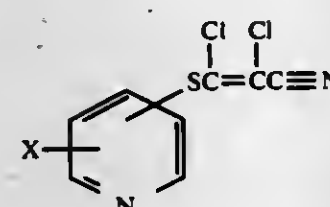
and the base salts thereof with pharmacologically acceptable cations, wherein W is  $-(CH_2)_n-$  and n is zero or one.

4,282,231  
**BIOCIDAL MERCAPTOPYRIDINE  
 HALOACRYLYLNITRILE COMPOUNDS**  
 Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chem-  
 ical Company, Westport, Conn.  
 Filed Jul. 25, 1980, Ser. No. 172,356  
 Int. Cl.<sup>3</sup> C07D 213/57; A01N 43/40  
 U.S. Cl. 424-263  
 1. A compound having the structural formula



wherein X is selected from the group consisting of  $-H$ ,  $-Br$ ,  $-Cl$ ,  $-F$ , methyl, ethyl, propyl and butyl.

5. A method for the control of bacteria, fungi and algae comprising applying to the locus of said bacteria, fungi and algae a biocidally effective amount of a compound having the structural formula



wherein X is selected from the group consisting of  $-H$ ,  $-Br$ ,  $-Cl$ ,  $-F$ , methyl, ethyl, propyl and butyl.

4,282,230  
**IMIDAZOLYLETHOXY DERIVATIVES OF  
 QUINOLINE-2- OR 4-METHANOLS, ANTIMICROBIAL  
 COMPOSITIONS CONTAINING THEM AND METHOD  
 FOR TREATING BACTERIAL OR FUNGAL INFECTIONS  
 WITH THEM**

Hans Hoehn, Tegernheim, Fed. Rep. of Germany, assignor to E.  
 R. Squibb & Sons, Inc., Princeton, N.J.

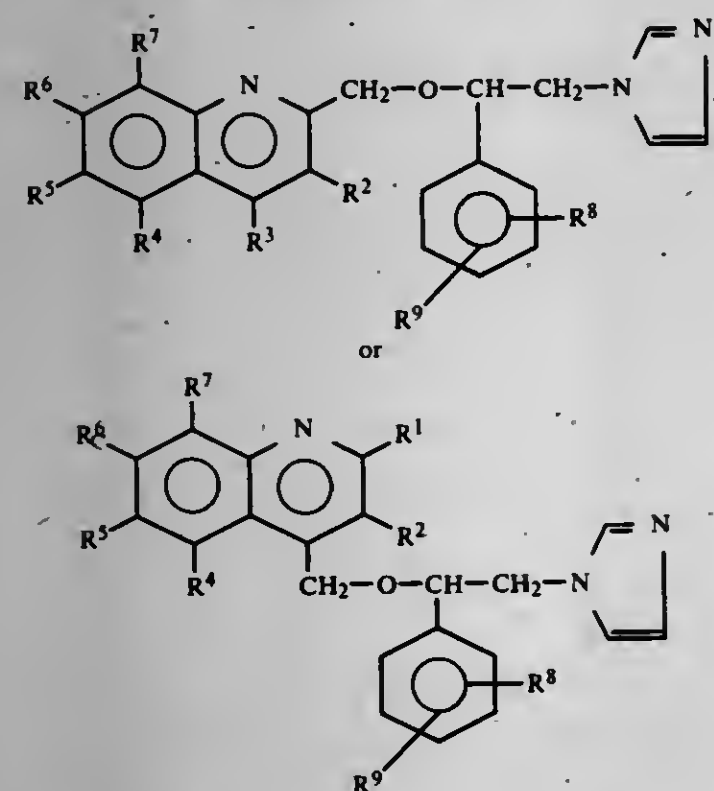
Filed Nov. 15, 1979, Ser. No. 94,528

The portion of the term of this patent subsequent to May 13,  
 1997, has been disclaimed.

Int. Cl.<sup>3</sup> A61K 31/47; C07D 401/12

U.S. Cl. 424-258

1. A compound of the formula



wherein  $R^1$  to  $R^9$  each is hydrogen, hydroxy, halogen, lower alkyl containing 1 to 7 carbons, lower alkoxy containing 1 to 7 carbons, or lower alkylthio containing 1 to 7 carbons, and physiologically acceptable acid addition salts thereof.

19. An antimicrobial composition comprising a compound as defined in claim 1 and a pharmaceutically acceptable carrier therefor.

20. A method for treating bacterial or fungal infections in mammals which comprises administering to a mammalian host an effective amount of a compound as defined in claim 1.

4,282,232  
**NITROIMIDAZOLE RADIOSENSITIZERS FOR  
 HYPOXIC TUMOR CELLS AND COMPOSITIONS  
 THEREOF**

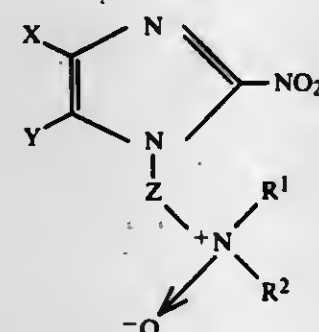
Krishna C. Agrawal, New Orleans, La., assignor to Research  
 Corporation, New York, N.Y.

Filed Apr. 26, 1979, Ser. No. 33,513

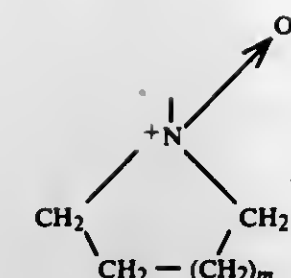
Int. Cl.<sup>3</sup> A61K 31/415, 31/445; C07D 401/06, 403/06

U.S. Cl. 424-267

1. Biologically active hypoxic cell radiosensitizers of the formula



wherein Z is a  $C_2-C_4$  alkylene group; wherein  $R^1$  and  $R^2$  taken together with the nitrogen atom form a heterocyclic ring of the formula

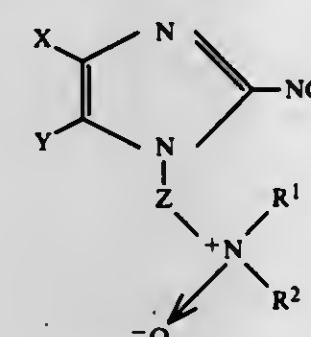


wherein

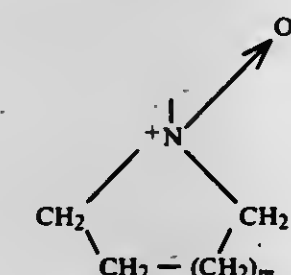
$m=1$  or  $2$ ;

X and Y are the same or different substituents selected from the group consisting of hydrogen, nitro;  $R^3CO-$  where  $R^3$  is  $C_1-C_4$  alkyl; nitrile, carboxamide;  $R^5OCO-$  where  $R^5$  is  $C_1-C_4$  alkyl;  $R^6-N(O)=CH-$  where  $R^6$  is  $C_1-C_4$  alkyl; and nitrilomethyl.

8. A composition useful for the radiosensitization of hypoxic tumor cells which comprises a pharmaceutically active amount of a compound having the formula:



wherein Z is a  $C_2-C_4$  alkylene group; wherein  $R^1$  and  $R^2$  taken together with the nitrogen atom form a heterocyclic ring of the formula



wherein

$m=1$  or  $2$ ;

X and Y are the same or different substituents selected from the group consisting of hydrogen, nitro;  $R^3CO-$  where  $R^3$  is  $C_1-C_4$  alkyl; nitrile, carboxamide;  $R^5OCO-$  where  $R^5$  is  $C_1-C_4$  alkyl;  $R^6-N(O)=CH-$  wherein  $R^6$  is  $C_1-C_4$  alkyl; and nitrilomethyl; and an inert pharmaceutically acceptable carrier.

4,282,233  
**ANTI-HISTAMINIC  
 .11-(4-PIPERIDYLIDENE)-5H-BENZO-[5,6]-CYCLOHEP-  
 TA-[1,2-B]-PYRIDINES**

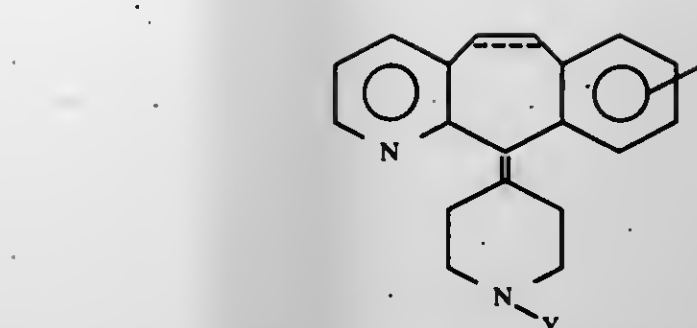
Frank J. Vilani, West Caldwell, N.J., assignor to Schering Cor-  
 poration, Kenilworth, N.J.

Filed Jun. 19, 1980, Ser. No. 160,795

Int. Cl.<sup>3</sup> A61K 31/445; C07D 401/04

U.S. Cl. 424-267

1. A compound of the formula:



wherein the dotted line represents an optional double bond; X is hydrogen or halo; and wherein Y is  $-COOR$  or  $SO_2R$ ; with the proviso that when Y is  $-COOR$ , R is  $C_1$  to  $C_{12}$  alkyl, substituted  $C_1$  to  $C_{12}$  alkyl, phenyl, substituted phenyl,  $C_7$  to  $C_{12}$  phenylalkyl,  $C_7$  to  $C_{12}$  phenylalkyl wherein the phenyl moiety is substituted or R is -2, -3, or -4 piperidyl or N-substituted piperidyl wherein the substituents on said substituted  $C_1$  to  $C_{12}$  alkyl are selected from amino or substituted amino and the substituents on said substituted amino are selected from  $C_1$  to  $C_6$  alkyl, the substituents on said substituted phenyl and on said substituted phenyl moiety of the  $C_7$  to  $C_{12}$  phenylalkyl are selected from  $C_1$  to  $C_6$  alkyl and halo, and the substituent on said N-substituted piperidyl is  $C_1$  to  $C_4$  alkyl; and with the proviso that when Y is  $SO_2R$ , R is  $C_1$  to  $C_{12}$  alkyl, phenyl, substituted phenyl,  $C_7$  to  $C_{12}$  phenylalkyl,  $C_7$  to  $C_{12}$  phenylalkyl wherein the phenyl moiety is substituted, wherein the substituents on said substituted phenyl and said substituted phenyl moiety of the  $C_7$  to  $C_{12}$  phenylalkyl are selected from  $C_1$  to  $C_6$  alkyl and halo.

13. A method of effecting an anti-allergic response in an animal comprising administering to the animal an effective amount of a compound as claimed in any one of claims 1 to 11.

4,282,234  
**CERTAIN HETEROCYCLIC-METHYLTHIOALKYL  
 GUANIDINE DERIVATIVES**

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden  
 City, and Rodney C. Young, Beugeo, all of England, assignors  
 to Smith Kline & French Laboratories Limited, Welwyn Gar-  
 den City, England

Division of Ser. No. 896,848, Apr. 17, 1978, which is a division  
 of Ser. No. 794,178, May 5, 1977, Pat. No. 4,107,319, which is a  
 division of Ser. No. 551,220, Feb. 19, 1975, Pat. No. 4,036,971.

This application May 14, 1979, Ser. No. 39,090

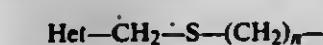
Claims priority, application United Kingdom, Mar. 12, 1974,  
 10869/74

Int. Cl.<sup>3</sup> C07D 277/28, 275/02, 285/08; A61K 31/425  
 U.S. Cl. 424-269

1. A compound of the formula:



wherein  $R_1$  represents a grouping of the structure

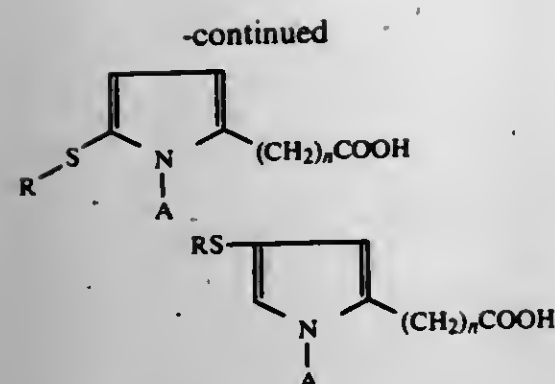


wherein Het is a nitrogen containing 5 membered heterocyclic ring selected from thiazole, isothiazole, thiadiazole and isoxazole which is optionally substituted by lower alkyl, hydroxyl, halogen or amino; n is 2 or 3;  $R_2$  is  $NHR_3$ ;  $R_3$  is  $R_1$ ; and  $R_5$  is lower alkyl, or a pharmaceutically acceptable acid addition salt thereof.



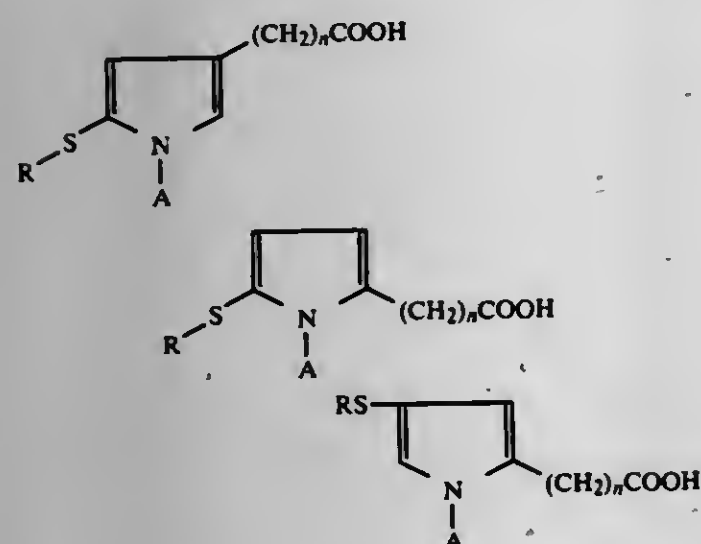






wherein n is an integer of value 0 or 1; A is selected from the group consisting of hydrogen and (C<sub>1</sub>-C<sub>2</sub>)alkyl; and R is selected from the group consisting of (C<sub>1</sub>-C<sub>5</sub>)alkyl; benzyl; phenyl; phenyl monosubstituted in the 2-, 3- and 4-positions with methyl, methoxy, chloro, fluoro or trifluoromethyl; 2,5-, 2,4- or 3,4-dichlorophenyl; and 2,4,5-trichlorophenyl; the pharmaceutically-acceptable salts thereof, and the (C<sub>1</sub>-C<sub>5</sub>)alkyl esters thereof.

13. A method of lowering the level of blood glucose in a hyperglycemic mammal which comprises administering to said hyperglycemic mammal a compound selected from the group consisting of pyrrole carboxylic acids of structures I, II and III:



wherein n is an integer of value 0 or 1; A is selected from the group consisting of hydrogen and (C<sub>1</sub>-C<sub>2</sub>)alkyl and R is selected from the group consisting of (C<sub>1</sub>-C<sub>5</sub>)alkyl; benzyl; phenyl; phenyl monosubstituted in the 2-, 3- and 4-positions with methyl, methoxy, chloro, fluoro and trifluoromethyl; 2,5-, 2,4- and 3,4-dichlorophenyl; and 2,4,5-trichlorophenyl; and the pharmaceutically-acceptable salts thereof, in an amount sufficient to lower said blood glucose level in said hyperglycemic mammal.

4,282,243

#### OPTICAL ISOMERS OF 4-AMINO-N-(1-CYCLOHEXYL-3-PYRROLIDINYL)-N-METHYLBENZAMIDE

Albert D. Cale, Jr., Mechanicsville, and Charles A. Leonard, Richmond, both of Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Division of Ser. No. 914,833, Jun. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 658,989, Feb. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 518,125, Oct. 25, 1974, abandoned, which is a continuation of Ser. No. 340,417, Mar. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 240,840, Apr. 30, 1972, abandoned. This application Mar. 10, 1980, Ser. No. 128,693 Int. Cl.<sup>3</sup> C07D 207/14; A61K 31/40

U.S. Cl. 424-274

2 Claims

1. A method for reducing the effects of drug-induced catalepsy in warm-blooded animals which comprises administering

internally to animals in need thereof an effective amount of (+)-4-amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methyl benzamide fumarate in the presence of a pharmaceutical carrier thereof.

2. A method for reducing the effects of drug-induced catalepsy in warm-blooded animals which comprises administering internally to animals in need thereof an effective amount of (+)-4-amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methyl benzamide malate in the presence of a pharmaceutical carrier therefor.

4,282,244

#### OPTICAL ISOMERS OF 4-AMINO-N-(1-CYCLOHEXYL-3-PYRROLIDINYL)-N-METHYLBENZAMIDE

Albert D. Cale, Jr., Mechanicsville, and Charles A. Leonard, Richmond, both of Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Division of Ser. No. 914,833, Jun. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 658,989, Feb. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 518,125, Oct. 25, 1974, abandoned, which is a continuation of Ser. No. 340,417, Mar. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 240,840, Apr. 30, 1972, abandoned. This application Mar. 10, 1980, Ser. No. 128,694 Int. Cl.<sup>3</sup> C07D 207/14; A61K 31/40

(I) U.S. Cl. 424-274

2 Claims

1. A method for controlling emesis in warm blooded animals which comprises administering internally to said animals in need thereof an effective amount of (-)-4-amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methylbenzamide malate in the presence of a pharmaceutical carrier therefor.

(II) 2. A method for controlling emesis in warm blooded animals which comprises administering internally to said animals in need thereof an effective amount of (-)-4-amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methylbenzamide fumarate in the presence of a pharmaceutical carrier therefor.

(III)

4,282,245

#### DIBENZOTHIOPIN DERIVATIVES AND A PROCESS FOR PRODUCING THE SAME

Yasuo Fujimoto, Tokyo, and Shigern Yamabe, Kobe, both of Japan, assignors to Nippon Chemphar Co., Ltd., Tokyo, Japan

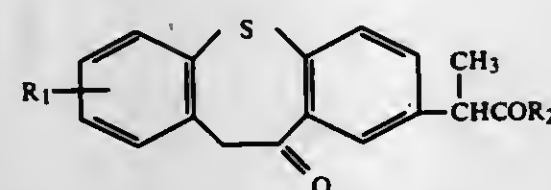
Filed May 23, 1979, Ser. No. 41,560

Claims priority, application Japan, Jun. 2, 1978, 53-65691 Int. Cl.<sup>3</sup> A61K 31/38; C07D 337/14

U.S. Cl. 424-275

17 Claims

1. A compound of the formula (I),



wherein R<sub>1</sub> represents a halogen atom, or a hydroxy, nitro, amino, trihalogenomethyl or lower alkoxy group having 1 to 5 carbon atoms, and R<sub>2</sub> represents a hydroxy or amino group.

4,282,246

#### ANTIDIABETIC FURAN-CARBOXYLIC AND THIOPHENECARBOXYLIC ACIDS

Gerald F. Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Mar. 7, 1980, Ser. No. 128,362

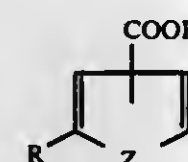
Int. Cl.<sup>3</sup> A61K 31/38, 31/34

U.S. Cl. 424-275

43 Claims

1. A method of lowering the blood glucose level in a hyper-

glycemic mammal which comprises administering a compound of structure



wherein

Z is oxygen or sulfur;

R is (C<sub>1</sub>-C<sub>2</sub>)alkoxy;

phenoxy;

benzyl;

phenylthiomethyl;

phenylthio;

phenylthio monosubstituted in the 2-, 3- or

4-position with (C<sub>1</sub>-C<sub>3</sub>)alkyl, phenyl, methoxy, chloro,

fluoro or trifluoromethyl;

phenylthio disubstituted in the 2,5- or 3,5-positions with

methyl, methoxy, chloro, or fluoro;

2,3,5,6-tetrafluorophenylthio;

1- or 2-naphthylthio;

(C<sub>2</sub>-C<sub>6</sub>)alkylthio; or

halo (bromo or chloro); or

a pharmaceutically-acceptable salt thereof, to said hyperglycemic mammal in an amount sufficient to lower said blood glucose level.

4,282,247

#### 5-(2-HYDROXY-3-THIOPROPOXY) CHROMONE-2-CARBOXYLIC ACIDS CHEMICAL PROCESS AND PHARMACEUTICAL COMPOSITIONS

Andrea Pedrazzoli, Milan, and Sergio Boveri, Monza, both of Italy, assignors to CM Industries, Paris, France

Filed Mar. 27, 1980, Ser. No. 134,690

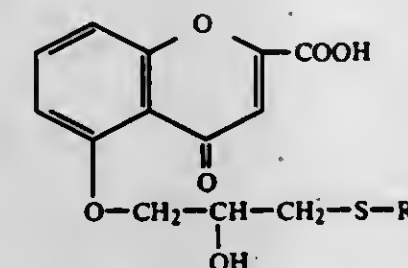
Claims priority, application France, Apr. 6, 1979, 79 08859

Int. Cl.<sup>3</sup> A61K 31/35; C07D 311/22

U.S. Cl. 424-283

4 Claims

1. A compound selected from the group consisting of 5-(2-hydroxy-3-thiopropoxy)chromone-2-carboxylic acids of the formula



wherein R is a member selected from the group consisting of alkyl groups of from 1 to 16 carbon atoms, alkenyl groups of 3 to 4 carbon atoms, cycloalkyl groups of from 3 to 8 carbon atoms and cycloalkylalkyl groups of from 4 to 9 carbon atoms; and alkali and alkaline-earth metal salts thereof; and alkyl esters thereof having 1 to 4 carbon atoms.

4. The compound as recited in claim 1, 2, or 3 in admixture with a pharmaceutical carrier wherein said compound is present in the range from 5 to 250 milligrams by weight and serves as an active ingredient to inhibit allergic reactions.

4,282,248

#### PINENE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Raphael Mechoulam, Tcherichovsky 12, Jerusalem; Naphtali Lander, Even Gevirol 182, Tel-Aviv, and Shabtay Dikstein, 7 Habanai St., Jerusalem, all of Israel

Filed Jul. 23, 1979, Ser. No. 59,859

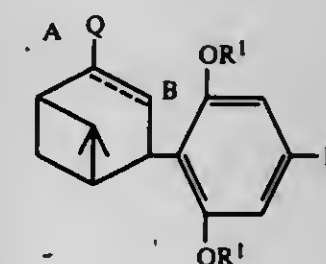
Claims priority, application Israel, Aug. 2, 1978, 55274

Int. Cl.<sup>3</sup> A61K 31/22, 31/05; C07C 69/013, 39/17

U.S. Cl. 424-299

12 Claims

1. A compound of the general formula



wherein

R<sup>1</sup> is hydrogen or —CO—alk, where alk is lower alkyl of up to 5 carbon atoms,

R<sup>2</sup> is 1,1-dimethylheptyl or 1,2-dimethylheptyl, with the proviso that:

when A—B is a single bond Q is —CH<sub>3</sub>, and

when A—B is a double bond, Q is —CH<sub>2</sub>OR<sup>4</sup> and R<sup>4</sup> is hydrogen or —CO—alk where alk is lower alkyl of up to 5 carbon atoms.

8. An analgesic composition comprising an analgesically effective amount of the compound of claim 1 together with a pharmaceutically acceptable carrier.

4,282,249

#### OXYIMINO-SUBSTITUTED (1R, CIS)-CYCLOPROPANECARBOXYLATE PESTICIDES

Steven A. Roman, Oakdale, and Samuel B. Soloway, Modesto, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 911,743, Jan. 2, 1978, abandoned. This application Feb. 21, 1979, Ser. No. 13,841

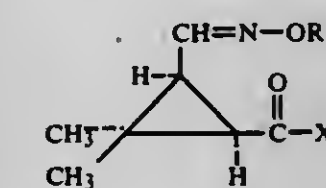
The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> A01N 35/10, 37/34; C07C 61/37, 69/747

U.S. Cl. 424-304

14 Claims

1. A (1R,cis)-cyclopropane compound, substantially free of other stereoisomers, having the formula



wherein R<sup>1</sup> is a (cycloalkyl)alkyl group containing 3 to 6 ring carbon atoms and 4 to 8 total carbon atoms and X is chlorine, bromine or OR in which R represents a hydrogen atom, a salt-forming cation, an alkyl group containing from 1 to 20 carbon atoms, 3-phenoxybenzyl or α-cyano-3-phenoxybenzyl, with the proviso that when R is α-cyano-3-phenoxybenzyl then the alcohol moiety is in the R,S-racemic or in the S-optical configuration.



4,282,250

## REMEDY FOR SKIN INJURIES AND DISEASES

Vassilios P. Papageorgiou, Angelaki 33, Thessaloniki, Greece  
Filed Jan. 6, 1978, Ser. No. 867,532

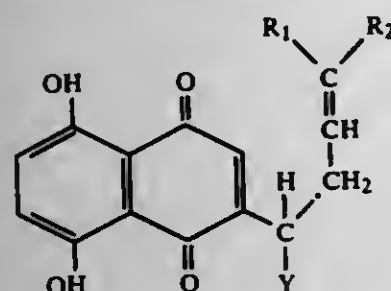
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1977, 2700448

Int. Cl.<sup>3</sup> A61K 31/22

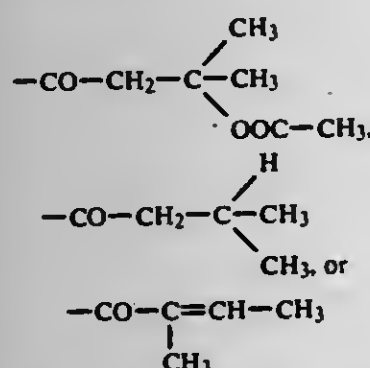
U.S. Cl. 424—311

17 Claims

1. A composition suitable for external application for healing open wounds, including Ulcus cruris, comprising as its essential active ingredient from about 0.01–3% by weight of at least one compound of the general formula:



wherein Y is —OX in which X represents



and R<sub>1</sub> and R<sub>2</sub> are methyl and a suitable carrier.

4,282,251

## TRANS-N-CINNAMYL-N-METHYL-(1-NAPHTHYLME-THYL)AMINE

Daniel Berney, Lausanne, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 1,479, Jan. 8, 1979, abandoned, which is a continuation of Ser. No. 789,808, Apr. 22, 1977, abandoned. This application Dec. 3, 1979, Ser. No. 100,024

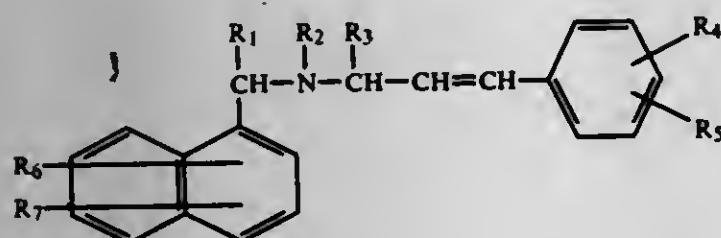
Claims priority, application Switzerland, Apr. 28, 1976, 5335/76; Dec. 22, 1976, 16182/76; Jan. 26, 1977, 920/77; Jan. 26, 1977, 921/77

Int. Cl.<sup>3</sup> A01N 33/02, 37/30; C07C 87/28

U.S. Cl. 424—316

29 Claims

1. Compounds of formula I,



in which

R<sub>1</sub> is hydrogen or alkyl,  
R<sub>2</sub> is alkyl, alkenyl, alkynyl, cycloalkyl or cycloalkylalkyl,  
R<sub>3</sub> is hydrogen or lower alkyl, and  
R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub>, which may be the same or different, each signifies hydrogen, halogen, trifluoromethyl, hydroxy, nitro or lower alkyl or alkoxy, and  
chemotherapeutically acceptable acid addition salts thereof.

3. A method of treating mycotic disorders comprising ad-

ministering to an animal in need of such treatment, an effective amount of a compound of claim 1.

4,282,252

## METHOD OF INCREASING CORONARY BLOOD FLOW WITH IBUPROFEN

Allan M. Lefer, Montgomery, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Filed May 15, 1980, Ser. No. 150,048

Int. Cl.<sup>3</sup> A61K 31/19

U.S. Cl. 424—317

9 Claims

1. A method of treating a patient suffering from angina, coronary heart disease, or coronary vasospasm, and who exhibits periodic symptoms of reduced coronary blood flow, which comprises administering to said patient an amount of ibuprofen effective to cause dilation of the coronary arteries of said patient, whereby coronary blood flow is substantially increased.

4,282,253

## TOPICAL PROPHYLAXIS AGAINST SCHISTOSOMIASIS

Edgar A. Steck, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 14, 1979, Ser. No. 94,259

Int. Cl.<sup>3</sup> A61K 31/135

U.S. Cl. 424—330

16 Claims

1. A method for preventing schistosomiasis in a mammal exposed to schistosome-infected water which comprises: applying to the skin of said mammal prior to exposure to the schistosome-infected water a composition comprising dehydroabietylamine or a pharmaceutically acceptable salt or adduct thereof in an amount sufficient to achieve an anti-penetrant effect against cercariae of infectious schistosome parasites.

4,282,254

## DOG FOOD OF IMPROVED ACCEPTABILITY

Roger W. Franzen, Pleasantville, N.Y.; Gerald Greber, Westport, Conn., and William C. Rieken, New Milford, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 4, 1979, Ser. No. 81,975

Int. Cl.<sup>3</sup> A23K 1/00

U.S. Cl. 426—2

11 Claims

1. In a nutritionally-balanced dog food consisting essentially of fat, protein, carbohydrates, vitamins and minerals, the improvement wherein the dog food contains an amino acid selected from the group consisting of L-tryptophan; L-arginine, L-isoleucine, L-leucine, L-serine, and combinations of any of these in an amount between about 0.001% to 0.8%, the amount being effective to increase the palatability of the dog food for dogs.

4,282,255

## METHOD AND STARTER COMPOSITIONS FOR THE GROWTH OF ACID PRODUCING BACTERIA AND BACTERIAL COMPOSITIONS PRODUCED THEREBY

William E. Sandine, and James W. Ayres, both of Corvallis, Oreg., assignors to State of Oregon, by and through the Oregon State Board of Higher Education on behalf of Oregon State University, Corvallis, Oreg.

Filed Jan. 28, 1979, Ser. No. 52,960

Int. Cl.<sup>3</sup> A23C 9/123, 9/12; C12N 1/20

U.S. Cl. 426—7

25 Claims

1. In a method for growing acid producing bacteria to be used in fermenting foods by inoculating the bacteria into a growth medium containing water and nutrients for the bacteria and then growing the bacteria in the growth medium and using the bacteria so grown for fermenting the food the improvement which comprises:

(a) providing an essentially water insoluble non-toxic basic neutralizing agent in the growth medium such that a portion of the neutralizing agent remains in solid form in the medium, wherein the neutralizing agent is a magnesium phosphate or magnesium ammonium phosphate in an amount sufficient with other media ingredients to inhibit lactic bacteriophage, wherein an amount of the neutralizing agent is added initially to the growth medium prior to the generation of acid by the bacteria which is at least sufficient to maintain the pH above about 5 over a period of time such that without the neutralizing agent the pH would be reduced to below about pH 5 and wherein the growth medium and neutralizing agent are adapted for growing the acid producing bacteria to be used in fermenting the food;

(b) growing the bacteria in the growth medium in the presence of the neutralizing agent with the medium and cells in contact with the neutralizing agent, wherein a pH range in the medium is maintained so as to promote growth of the bacteria by a controlled reaction of the neutralizing agent with at least a part of the acid produced by the bacteria in the medium over a period of time; and  
(c) fermenting the food with the bacteria after they have been grown in the growth medium including the neutralizing agent.

4,282,256

## PREPARATION OF AN ANIMAL FEED SUPPLEMENT FROM FISH CANNERY PROCESS WASTE WATER

Vince J. Evich, San Pedro; Gerald C. Brown, Long Beach, and Howard J. Dunn, Lomita, all of Calif., assignors to Star-Kist Foods, Inc., Terminal Island, Calif.

Filed Oct. 22, 1979, Ser. No. 87,060

Int. Cl.<sup>3</sup> A23K 1/10

U.S. Cl. 426—7

12 Claims

1. A method for the preparation of an animal feed from fish cannery wastes comprising:  
aerating fish cannery waste water until the water is substantially saturated with air;  
separating the aerated waste water with an air flotation cell, in the presence of a first polyionic polymer and a flocculating agent, into a sludge fraction concentrated in fat and protein, a clarified water fraction, and a grit fraction;  
aerating the separated sludge fraction;  
dewatering the sludge fraction by centrifugation in the presence of a second polyionic polymer with substantially the opposite charge of said first polyionic polymer;  
adding to the aerated, dewatered sludge an antioxidant to prevent oxidation of lipids in the sludge;  
drying the sludge under vacuum at a low temperature while blending with an absorptive, animal-edible bulk carrier solid in volumetric proportions from about 1:4 to 1:1 parts carrier to sludge solids to produce an animal feed supplement as a dry particulate solid.

4,282,257

## PRODUCTION OF VINEGAR WITH HIGH ACETIC ACID CONCENTRATION

Yoshio Kunimatsu; Hajime Okumura; Hiroshi Masai; Koki Yamada, and Mikio Yamada, all of Handa, Japan, assignors to Nakano Vinegar Co., Ltd., Japan

Filed Jan. 25, 1980, Ser. No. 115,419

Claims priority, application Japan, Feb. 13, 1979, 54-14216

Int. Cl.<sup>3</sup> C12J 1/00; C12P 7/54

U.S. Cl. 426—17

1 Claim

1. A process for the production of vinegar by a submerged fermentation, which comprises maintaining the temperature of a fermenting broth at 27°–32° C. until the acetic acid concentration of the fermenting broth after the initiation of the fermentation reaches 12–15% weight by volume and thereafter maintaining the temperature of the fermenting broth at 18°–24°

C. until finished vinegar having an acetic acid concentration higher than 18% weight by volume is obtained.

4,282,258

## METHOD AND APPARATUS FOR THE MANUFACTURE OF FORMED EDIBLE PRODUCTS AND PRODUCTS RESULTING THEREFROM

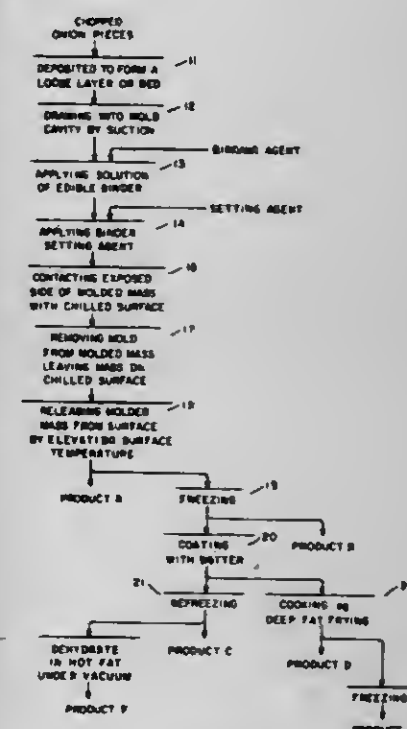
John H. Forkner, 2116 Mayfair Dr. West, Fresno, Calif. 94118

Continuation-in-part of Ser. No. 892,670, Apr. 3, 1978, abandoned. This application Aug. 6, 1979, Ser. No. 63,821

Int. Cl.<sup>3</sup> A23L 1/04

U.S. Cl. 426—100

33 Claims



1. In a method for producing molded forms from moist edible material, the steps of applying a die having a mold cavity to a layer or bed of pieces of the material, the mold cavity having its open side faced toward the bed, applying pneumatic suction to the die cavity while it is so applied whereby pieces are drawn into the cavity to fill the same, removing the die from the bed with the pieces within the cavity, applying a solution of a binding agent to the pieces while in the cavity, applying the open side of the die cavity and the corresponding side of the mass of material within the cavity to a surface that is at a temperature level below that of the material in the cavity, whereby the material is chilled and caused to adhere to the surface, removing the mold from the chilled surface whereby the molded form of the material is left adhering to the chilled surface, and elevating the temperature of the chilled surface to release the molded form from the surface and then removing the molded form from the same.

4,282,259

## PROCESS FOR PREPARING AN EXTRACT OF HOPS

Alfred G. Wheldon, and Peter E. Cockerill, both of Dagenham Dock, England, assignors to The Distillers Company (Carbon Dioxide) Limited, Reigate, England

Continuation of Ser. No. 898,246, Apr. 20, 1978, abandoned.

This application Mar. 7, 1980, Ser. No. 128,061

Claims priority, application United Kingdom, Apr. 29, 1977, 18056/77

Int. Cl.<sup>3</sup> A23L 1/20, 1/28

U.S. Cl. 426—231

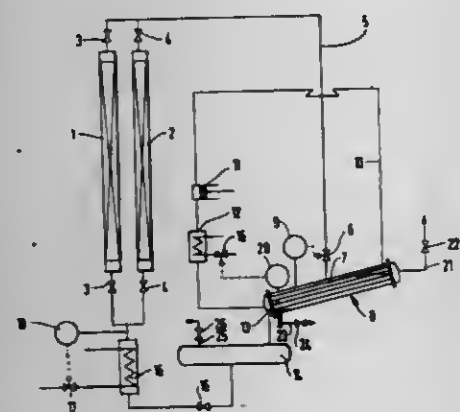
9 Claims

1. A method of preparing an extract of hops by extraction with liquid, non-supercritical carbon dioxide, comprising the steps of:

(a) contacting a supply of hops with carbon dioxide in the liquid, non-supercritical state and at a first temperature to dissolve matter, to be extracted, in said liquid, non-supercritical carbon dioxide;



- (b) supplying heat to the resulting solution of extract matter in liquid carbon dioxide to evaporate non-supercritical carbon dioxide vapour from said solution and concentrate said extract matter in said solution to form a concentrated solution of extract matter in liquid carbon dioxide, said concentrated solution of extract matter in liquid carbon dioxide being at a second temperature which is at or above said first temperature and below the critical temperature of carbon dioxide;
- (c) compressing said evaporated carbon dioxide vapour to increase its liquefaction temperature to a third temperature which is above said second temperature and below the critical temperature of carbon dioxide, whereby said carbon dioxide vapour is maintained in its non-supercritical state;
- (d) bringing said heated and compressed carbon dioxide vapour into indirect thermal heat exchanging contact with said resulting solution to condense said compressed carbon dioxide vapour and re-form liquid, non-supercritical carbon dioxide therefrom, and to simultaneously transfer heat released during such condensation to said resulting solution, said heat released during said condensation pro-



viding said heat supplied to said resulting solution of extract matter in liquid carbon dioxide to evaporate non-supercritical carbon dioxide vapour from said resulting solution;

- (e) sub-cooling said condensed, reformed, liquid, non-supercritical carbon dioxide to reduce its temperature to said first temperature;
- (f) re-cycling said reformed, liquid, non-supercritical carbon dioxide at said first temperature to contact said supply of hops;
- (g) continuing said re-cycling of said reformed, liquid, non-supercritical carbon dioxide until said concentration of said concentrated solution of extract builds up to such an extent that two separate liquid phases are formed with one phase contacting extract matter that has fallen out of solution and the other phase being said solution of extract matter in liquid, non-supercritical carbon dioxide;
- (h) separating said one phase containing extract matter that has fallen out of solution from said other phase containing said solution of said extract matter in said non-supercritical carbon dioxide; and
- (i) recovering said one phase.

4,282,260

**METHOD FOR INHIBITING THE GROWTH OF CLOSTRIDIUM BOTULINUM AND THE FORMATION OF ENTEROTOXIN IN SMOKED MEAT PRODUCTS**  
Joseph F. Jadlocki, Jr., Mount Holly, N.J., and John S. Thompson, Wayne, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Apr. 14, 1980, Ser. No. 340,328  
Int. Cl.<sup>3</sup> A23B 4/02; A23L 1/31

U.S. Cl. 426—264 14 Claims  
1. A method of inhibiting the production of enterotoxin from *Clostridium botulinum* and, upon heating, reducing formation of nitrosamines from nitrite salt in smoked meat products which comprises the step of incorporating into meat a com-

pound selected from the group consisting of hypophosphorous acid, sodium hypophosphite, potassium hypophosphite, calcium hypophosphite and manganese hypophosphite in an amount effective to inhibit production of enterotoxin from *Clostridium botulinum* and less than 120 ppm of an alkali metal nitrite salt.

4,282,261

**BEVERAGE FILTRATION PROCESS**

James T. Greene, Middletown, Conn., assignor to AMF Incorporated, White Plains, N.Y.

Continuation-in-part of Ser. No. 65,258, Aug. 9, 1979, abandoned. This application Oct. 30, 1980, Ser. No. 202,389  
Int. Cl.<sup>3</sup> C12H 1/04

U.S. Cl. 426—330.4

15 Claims

3. A process of stabilizing unstable beverages against haze development which comprises conducting said beverage in a haze-free condition and at ambient temperature through a first filter medium to form haze in said beverage and thereafter filtering the formed haze at ambient temperature with a second filter medium; said first filter medium being comprised of fine particulate and a self-bonding matrix of cellulose fiber, the surfaces of at least one of which are modified with a polyamido-polyamine epichlorohydrin cationic resin to provide a positive Zeta potential, the matrix incorporating beaten cellulose fiber to provide a Canadian Standard Freeness of less than 600 ml.

4,282,262

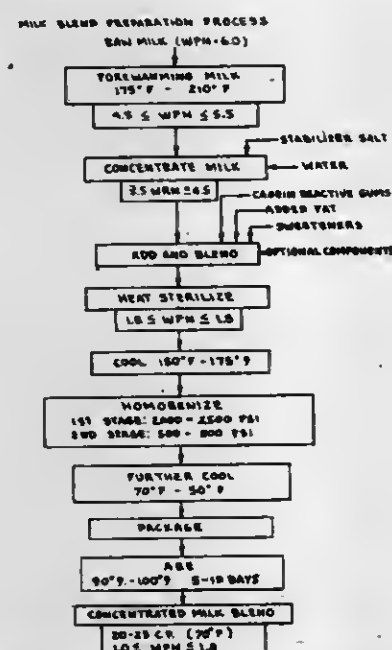
**DAIRY BASED MIXES FOR FROZEN DESSERTS AND METHOD OF PREPARATION**

Jon R. Blake, Brooklyn Center, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Mar. 4, 1980, Ser. No. 127,028  
Int. Cl.<sup>3</sup> A23C 23/00; A23G 9/02

U.S. Cl. 426—565

20 Claims



1. A two-packet dessert mix, comprising:  
A. From about 15% to 35% by weight of the dessert mix of a dry blend fraction, comprising:  
(1) from about 50% to 70% by weight of the dry blend fraction of a nutritive carbohydrate sweetening agent,  
(2) from about 3% to 8% of non-fat dry milk solids,  
(3) from about 1% to 2% of a whipping agent, and  
(4) from about 0.1% to 1.2% of a stabilizer gum selected from the group consisting of xanthan, carrageenan, guar, and mixtures thereof,  
B. From about 65% to 85% by weight of the dessert mix of a milk blend fraction, comprising:

4,282,265

**FAT COMPOSITIONS FOR INFANT FORMULAS**

Richard C. Theuer, Westport, Conn., assignor to Bristol-Myers Company, New York, N.Y.

Filed Jan. 14, 1980, Ser. No. 112,041  
Int. Cl.<sup>3</sup> A23D 5/00

U.S. Cl. 426—607

4 Claims

- (1) from about 1% to 9% by weight of the milk blend fraction of fat,  
(2) from about 17% to 21% non-fat milk solids,  
(3) from about 1% to 7% of a nutritive carbohydrate sweetening agent,  
(4) from about 0.001% to about 0.1% of a casein reactive gum selected from the group consisting of kappa carrageenan, xanthan, guar, and mixtures thereof,  
(5) from about 0.01% to 0.1% of a stabilizer salt,  
(6) from about 65% to 75% moisture; and wherein the milk blend fraction has a viscosity of from about 20 to 25 cp., and a whey protein nitrogen value of about 1.0 to 1.8.

1. A fat composition consisting of a mixture of selected vegetable oils containing from 20% to 50% by weight of palm oil, from 10% to 45% by weight of a lauric acid oil selected from the group consisting of coconut oil, babassu oil, and palm kernel oil, from 10% to 25% by weight of an oleic acid oil selected from the group consisting of oleic oil and olive oil, and up to 20% by weight of a linoleic acid oil selected from the group consisting of corn oil, soybean oil, sunflower seed oil and safflower oil wherein for each 100 parts by weight of fatty acids present as triglycerides in said composition from 28 to 46 parts by weight thereof are oleic acid, from 18 to 28 parts by weight thereof are palmitic acid, and from 6 to 16 parts by weight thereof are linoleic acid wherein the aggregate of oleic acid and palmitic acid exceeds 50 parts by weight, said composition being adapted for feeding to an infant as the sole fat ingredient of a nutritionally complete liquid formula product.

4,282,263

**PROCESS FOR PRODUCING A GASIFIED FUSIBLE SUGAR COMPOSITION**

J. Ray Barnes, Warson Woods; Robert E. Holdegraver, St. Louis, and Raymond K. Meibaum, Florissant, all of Mo., assignors to Sunmark, Inc., St. Louis, Mo.

Filed May 10, 1979, Ser. No. 37,852  
Int. Cl.<sup>3</sup> A23G 3/00

U.S. Cl. 426—572

20 Claims

1. A process for producing a gasified solid product comprising an undissolved gas in a matrix of solid material comprising a fusible sugar, the process comprising the steps of:  
continuously feeding an aqueous solution of fusible sugar to an evaporator;  
continuously heating said solution while flowing it through the evaporator to drive off water and produce a concentrated fused sugar composition whose moisture content is low enough so that, at room temperature, the composition will congeal to a glass having a viscosity high enough to contain pressurized gas bubbles therein;  
continuously discharging said concentrated sugar composition from said evaporator;  
continuously introducing a gas at a pressure of at least about 400 psig into a stream of said concentrated sugar composition; flowing said concentrated sugar composition and said gas through an in-line mixer and there subjecting them to intense agitation sufficient to achieve uniform dispersion of the gas throughout the sugar composition and produce a gasified fused sugar composition containing small evenly distributed bubbles of undissolved gas at a concentration of at least about 3 ml. (STP) gas per gram of concentrated sugar composition; and  
cooling said gasified sugar composition to produce a product comprising a solid matrix comprising sugar and having the properties of a glass and, contained within said matrix, evenly distributed small bubbles of said gas.

4,282,264

**PROCESS FOR REMOVING BITTER TASTE FROM A FRUIT OR VEGETABLE EXTRACT, AND THE DEBITTERED EXTRACT THUS OBTAINED**

Daniele Magnolato, Chardonne, Switzerland, assignor to Societe d'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jan. 23, 1980, Ser. No. 114,681

Claims priority, application Switzerland, Jan. 26, 1979, 786/79

Int. Cl.<sup>3</sup> A23L 2/00, 2/28

U.S. Cl. 426—599

10 Claims

1. A process for debittering a citrus fruit extract or juice which comprises contacting the extract or juice with an adsorbent consisting of desugared carob particles at a temperature of between 10° and 60° C.

4,282,267

**METHODS AND APPARATUS FOR GENERATING PLASMAS**

Birol Küyel, Hopewell, N.J., assignor to Western Electric Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 77,220, Sep. 20, 1979, abandoned. This application Mar. 5, 1980, Ser. No. 127,296  
Int. Cl.<sup>3</sup> C23C 11/08

U.S. Cl. 427—38

25 Claims

1. A method of separately activating at least two potentially reactive species to form a reactive plasma when combined, each of said potentially reactive species having a different activation level, said method comprising the steps of:  
(a) forming a non-reactive plasma so as to create therein an activated species of at least one of said potentially reactive species;

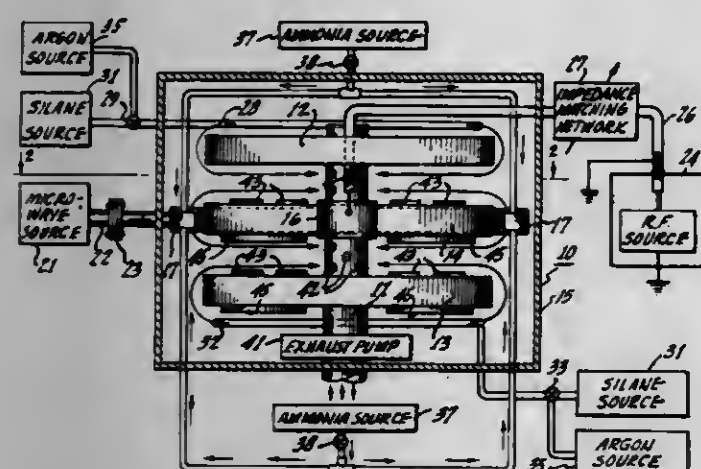


1. A method for determining the silicon content in an aluminum film on a substrate comprising the steps of:  
(a) immersion plating said substrate in a solution comprising de-ionized water, hydrofluoric acid, and copper sulfate which will plate onto the silicon in the film while etching the aluminum film; then  
(b) removing said substrate from said solution and visually examining the aluminum film to determine whether the areas plated thereon are continuous or discontinuous.



- (b) separately activating the other of said potentially reactive species having the higher activation level; and  
(c) flowing the activated species having the higher activation level into said non-reactive plasma to create a reactive plasma.

17. Apparatus for separately activating at least two potentially reactive species to form a reactive plasma when combined, each of said potentially reactive species having a different activation level, said apparatus comprising:



means for forming a non-reactive plasma so as to create therein an activated species of at least one of said potentially reactive species;  
means for separately activating the other of said potentially reactive species having the higher activation level; and  
means for flowing the activated species having the higher activation level into said non-reactive plasma to create a reactive plasma.

4,282,268

#### METHOD OF DEPOSITING A SILICON OXIDE DIELECTRIC LAYER

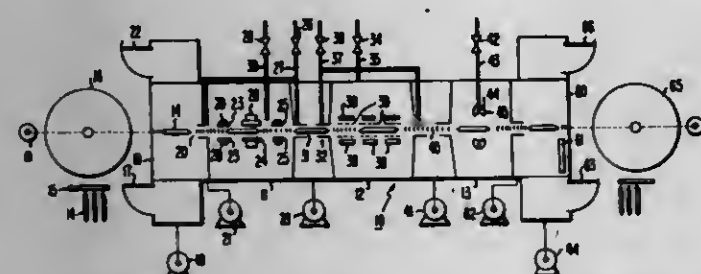
Eldon B. Priestley, East Windsor, and Patrick J. Call, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 793,641, May 4, 1977, abandoned. This application Jun. 6, 1978, Ser. No. 913,241

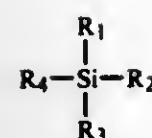
Int. Cl.<sup>3</sup> B05D 3/06

U.S. Cl. 427-39

8 Claims



1. In a method for preparing a video disc comprising a substrate containing video information in the form of a surface relief pattern having a conductive layer thereon and dielectric layer thereover wherein the said dielectric layer is deposited by the steps comprising introducing the substrate into an evacuated chamber, introducing oxygen and a dielectric precursor into the chamber and activating the precursor around the substrate by means of a glow discharge whereby a dielectric coating is deposited on the disc, wherein the improvement comprises preparing a silicon oxide dielectric layer wherein the dielectric precursor has the formula



wherein  $R_1$  is selected from the group consisting of H and  $-CH_3$ ,  $R_2$  and  $R_3$  are independently selected from the group consisting of H,  $-CH_3$ ,  $-OCH_3$  and  $-OC_2H_5$  and  $R_4$  is selected from the group consisting of  $-OCH_3$  and  $-OC_2H_5$  whereby a silicon oxide dielectric layer is deposited.

4,282,269

#### ELECTRONIC COMPONENT WITH RADIATION-HARDENABLE COATING

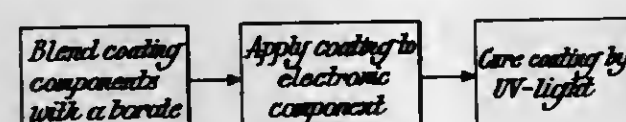
Michael F. Lucey, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jul. 14, 1980, Ser. No. 167,907

Int. Cl.<sup>3</sup> B05D 3/06

U.S. Cl. 427-54.1

18 Claims



1. An electronic component having a coating of an ultraviolet radiation-curable composition containing a borate to increase the cure rate and the thickness of the coating, said coating cured by exposure to ultraviolet light.

10. A process of coating an electronic component comprising blending ultraviolet radiation-curable resin components with a borate to decrease cure time and to increase the thickness of the coating that can be cured, applying the resulting mixture to an electronic component as a coating, and then subjecting the coated component to exposure to ultraviolet radiation to cure said coating.

4,282,270

#### METHOD FOR FORMING AN INSULATING FILM LAYER OF SILICON OXYNITRIDE ON A SEMICONDUCTOR SUBSTRATE SURFACE

Takao Nozaki, Yokohama, and Takashi Ito, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

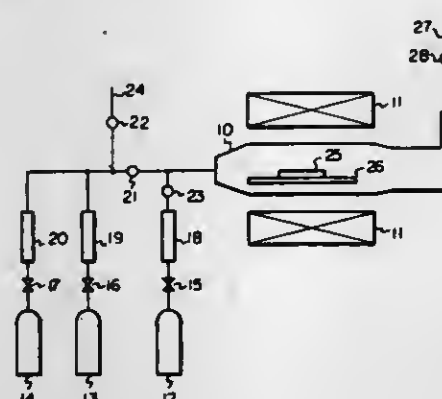
Filed Oct. 15, 1979, Ser. No. 84,570

Claims priority, application Japan, Oct. 27, 1978, 53/132310

Int. Cl.<sup>3</sup> H01L 21/316, 21/318

U.S. Cl. 427-93

13 Claims



1. A method for forming an insulating film on a surface of a silicon semiconductor substrate with a relatively low density of surface defects between the substrate and insulating film, comprising directly converting a surface portion of the silicon substrate into an insulating film layer comprising silicon oxynitride by bringing a cleaned surface of said silicon substrate into

4,282,273

#### PROCESS AND APPARATUS FOR GALVANIZING A WIRE

Werner Bucker, Düsseldorf, and Christian Rademacher, Neuss, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

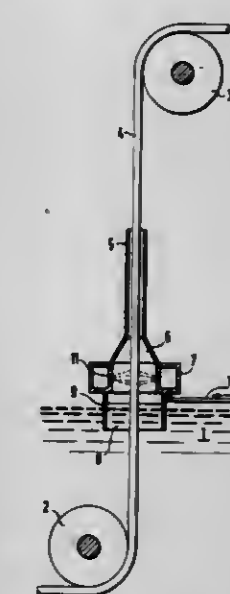
Filed Apr. 9, 1979, Ser. No. 28,194

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1978, 2815485

Int. Cl.<sup>3</sup> B05D 3/00

U.S. Cl. 427-398.3

9 Claims



1. In a process for galvanizing a workpiece wherein the workpiece vertically leaves a zinc bath and the adhering liquid zinc forms the zinc layer after its solidification, the improvement being rapidly cooling the surface of the workpiece in a shock-type manner immediately after it leaves the zinc bath by means of a low boiling liquified gas cooling agent without any high temperature gas being applied to the workpiece in the time period between the workpiece leaving the zinc bath and the low boiling liquified gas being applied to the workpiece.

4,282,271

#### DISPERSIONS FOR ACTIVATING NON-CONDUCTORS FOR ELECTROLESS PLATING

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Division of Ser. No. 934,344, Aug. 17, 1978, Pat. No. 4,220,678, which is a division of Ser. No. 830,456, Sep. 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 731,212, Oct. 12, 1976, Pat. No. 4,136,216, which is a division of Ser. No. 607,506, Aug. 26, 1975, Pat. No. 3,993,799, which is a

continuation-in-part of Ser. No. 512,224, Oct. 4, 1974, abandoned. This application Jul. 11, 1979, Ser. No. 56,622

Int. Cl.<sup>3</sup> C23C 3/02

U.S. Cl. 427-98

39 Claims

1. A process for the electroless plating of a non-conductor substrate which comprises

- (a) immersing said substrate into a colloidal dispersion of at least one non-precious catalytic metal capable of electroless plating initiation and an antioxidant capable of decreasing the surface oxidation of said catalytic metal when contacted with water and/or air and further wherein said antioxidant is incapable of reducing ions of said catalytic metal to the metallic state; and  
(b) immersing said treated substrate into an electroless plating bath to deposit a metallic coating.

4,282,272

#### METHOD FOR FORMING ELECTROCHROMIC FILM

Kenzi Matsuhiro, Sagamihiro, and Yasushi Masuda, Yamato, both of Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

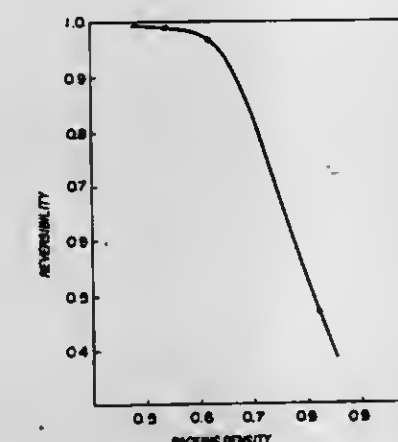
Filed Jun. 5, 1979, Ser. No. 45,651

Claims priority, application Japan, Jan. 9, 1978, 53-68764

Int. Cl.<sup>3</sup> B05D 5/12; G02F 1/01

U.S. Cl. 427-126.3

7 Claims



1. A process for forming an amorphous electrochromic film upon a substrate having an electrode which comprises carrying out a vacuum evaporation and deposition of electrochromic material under a pressure of  $2 \times 10^{-4}$  to  $2 \times 10^{-3}$  torr upon said substrate having an electrode to provide an electrochromic film, and then, carrying out a heat-treatment,

4,282,274

#### ORGANOLEPTIC USES OF 2- AND 3-CYCLOTETRADECEN-1-ONES

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown; Manfred H. Vock, Locust; Domenick Luccarelli, Jr., Ocean; Frederick L. Schmitt, Holmdel; Gilbert Stork, Englewood, all of N.J.; Timothy MacDonald, Nashville, Tenn., and Arthur L. Lieberman, Highlands, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

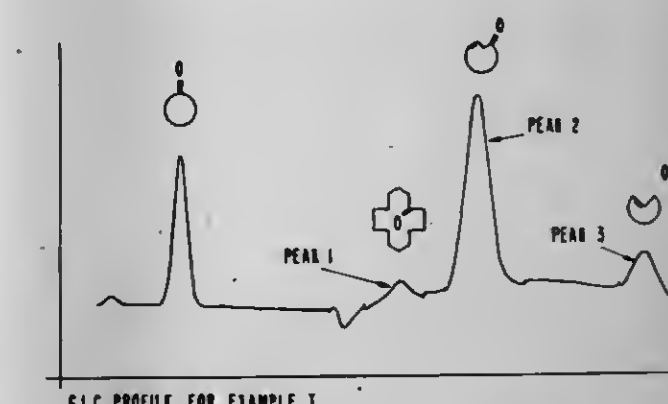
Division of Ser. No. 973,093, Dec. 26, 1978, Pat. No. 4,183,965.

This application Jun. 27, 1979, Ser. No. 52,668

Int. Cl.<sup>3</sup> C11D 17/04, 17/06

U.S. Cl. 427-402

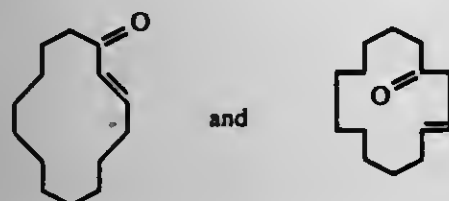
1 Claim



1. A process for augmenting or enhancing the aroma of a fabric softener article which fabric softener article comprising a paper or cloth substrate, a waxy, cationic or nonionic substrate coating material, and an outer coating consisting essen-



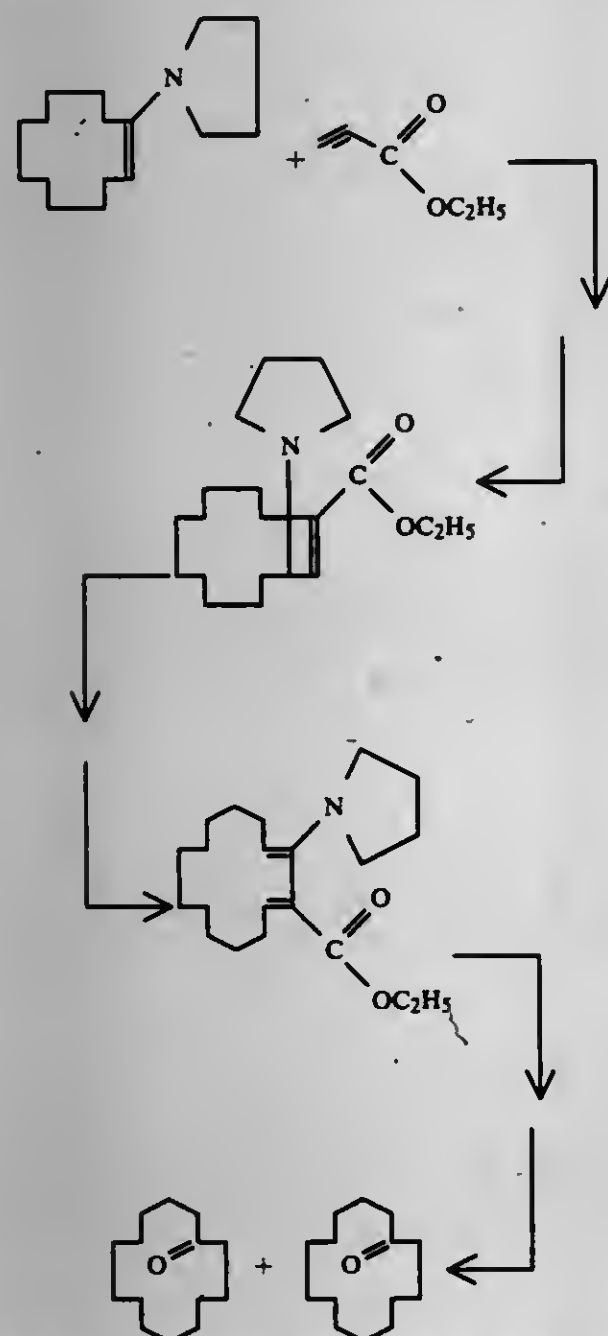
tially of a fabric softener composition, said process comprising the step of intimately admixing with said outer coating composition an aroma augmenting or enhancing quantity of a product which comprises a mixture of 2- and 3-cyclotetradecen-1-ones having the structures:



and cyclotetradecanone having the structure:



produced according to the process defined according to the reaction sequence:



wherein one of the dashed lines represents a carbon-carbon single bond and the other of the dashed lines represents a carbon-carbon double bond, coating the substrate with the substrate coating and then coating the substrate coating with the outer coating comprising said product by process which

contains the 2- and 3-cyclotetradecen-1-ones and the cyclotetradecanone.

#### 4,282,275 COATING METHOD APPARATUS FOR CAPSULAR COATINGS

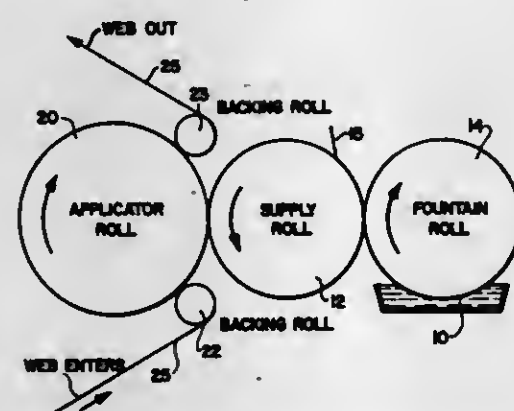
Charles E. Werner, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 14, 1980, Ser. No. 111,741

Int. Cl.<sup>3</sup> B05D 1/28

U.S. Cl. 427-428

5 Claims

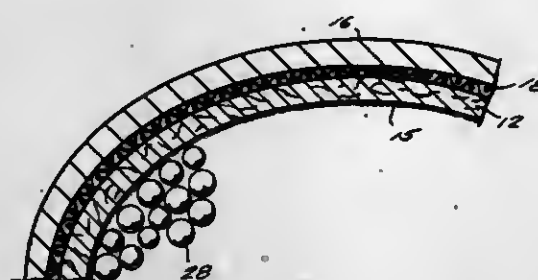


1. A method for applying a fluid coating composition containing rupturable microcapsules, to an endless web, comprising:

- (a) metering said coating composition onto the peripheral surface of a supply roll,
- (b) transferring said metered composition to an applicator roll, and
- (c) passing the endless web around and in tensioned, substantially uncompressed contact with more than half of the surface of the applicator roll, and keeping the web in contact with the applicator roll for a time sufficient to substantially absorb said metered composition into the web to uniformly and evenly transfer said metered coating composition to the web without shearing the composition when on the web or mechanically pressing the solids therein into the web.

4,282,276  
**THERMAL INSULATION PACKET**  
Stuart B. Smith, 2069 Christian Cir., Conyers, Ga. 30207  
Division of Ser. No. 937,133, Aug. 28, 1978, Pat. No. 4,214,418.  
This application Dec. 10, 1979, Ser. No. 101,563  
Int. Cl.<sup>3</sup> B32B 1/02; E04B 2/00  
U.S. Cl. 428-35

2 Claims



1. A thermal insulation packet comprising a completely closed container including an inner layer of flexible material, an outer impermeable layer of aluminum foil and an intermediate layer of fiberglass webbing disposed between said outer and inner layers, said layers being adhesively secured together, said inner layer having a fire-retardant composition impregnated therethrough and a heat-activated adhesive coating on the interior surface thereof a portion of said interior surface overlaps and is secured to a portion of said outer layer by said

heat-activated coating, said container being filled with expanded foam pellets and a hydrate compound.

#### 4,282,277 ORIENTED, SEMI-CRYSTALLINE POLYMER PRODUCT AND METHOD AND APPARATUS FOR PRODUCING SUCH PRODUCT

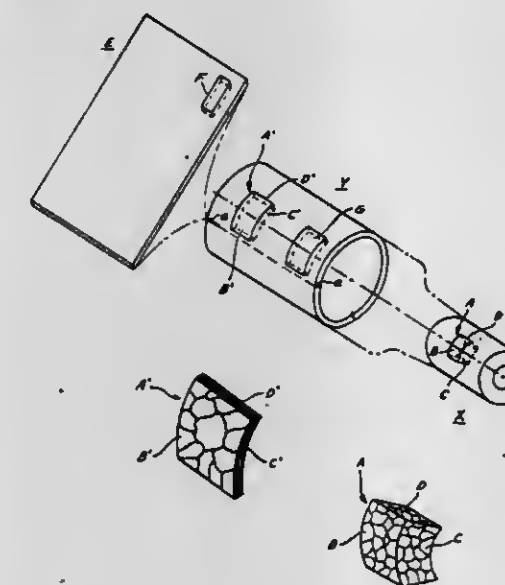
Alfred R. Austen, Center Valley, and Darral V. Humphries, Allentown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 941,116, Sep. 8, 1978. This application Sep. 5, 1979, Ser. No. 72,807

Int. Cl.<sup>3</sup> B29C 23/00; F16L 9/12; B32B 27/06, 27/32

U.S. Cl. 428-36

65 Claims



1. A rigid conduit having a substantially uniform wall thickness which does not vary circumferentially and axially by more than plus or minus 10 percent, and which is from about 0.5 percent to about 6.25 percent of the outside diameter, the thickness being not less than 0.079 centimeter (1/32 inch) in conduits having an outside diameter of between 2.54 centimeters (1 inch) and 7.62 centimeters (3 inches), comprising at least one layer of at least one oriented semi-crystalline thermoplastic polymer characterized by a density which is at least equal to the density of the unoriented polymer and by having a microstructure substantially devoid of process induced microvoids and microfibrils and comprised of radially compressed, discrete, platelet-like spherulitic crystalline aggregates which are oriented in the plane of the conduit wall; the conduit having a circumferential tensile impact strength at -45 C. (-50 F.) which is not less than 20 percent of its circumferential tensile impact strength at 24 C. (75 F.), and having a circumferential ultimate tensile strength which is at least one and three quarters that of a corresponding conduit of the same polymer in an unoriented state and a ratio of tensile impact strength over ultimate tensile strength which is at least 50% greater than that ratio determined for a conventional biaxially oriented thermoplastic conduit.

25. A method for producing the conduit of claim 1 which comprises compressively extruding a preform of a substantially non-oriented semi-crystalline thermoplastic polymer in a solid state with a hydrostatic fluid through an extrusion zone whereby the preform is expanded and elongated substantially simultaneously circumferentially at least 100 percent and axially at least 50 percent to form a conduit, while lubricating the surface of the polymer with the hydrostatic fluid.

51. An article of manufacture comprised of at least one oriented semi-crystalline thermoplastic polymer having a thickness of not less than 0.079 centimeters in at least a portion of its contour which portion is characterized by having a microstructure comprised of spherulitic crystalline aggregates compressed transversely to the plane of the portion and biaxially oriented in the plane of the portion, said portion being

substantially devoid of stretch oriented microvoids and microfibrils and having a density which is at least equal to the density of the non-oriented polymer and a tensile impact strength which is at least five times and an ultimate tensile strength which is at least 1 1/2 times that of the corresponding substantially non-oriented thermoplastic polymer melt, a tensile impact strength at -45 C. (-50 F.) which is not less than 20 percent of its tensile impact strength at 24 C. (75 F.), a ratio of tensile impact strength to ultimate tensile strength, determined by ASTM D1822 S-type specimens, is at least 50% greater than the same ratio determined for a conventional biaxially oriented semi-crystalline thermoplastic polymer of the same composition, which polymer has the same ultimate tensile strength level.

4,282,278  
**TRANSFERABLE FLOCKED FIBER STICKER MATERIAL**  
Shigehiko Higashiguchi, 3-4-2 Honjo, Sumida-ku, Tokyo, Japan  
Filed Aug. 31, 1979, Ser. No. 71,093  
Int. Cl.<sup>3</sup> B05D 1/14  
U.S. Cl. 428-90

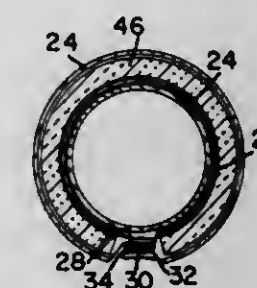
7 Claims



1. A transferable flocked fiber sticker material formed of a base sheet selected from the group consisting of paper, cellophane, cloth and non-woven fabric, a release adhesive layer applied to one surface of said base sheet, fibers releasably flocked to said adhesive-applied surface of the base sheet, a hot melt resin adhesive mixture layer applied as a paste to the exposed ends of said releasably flocked fibers and said hot melt resin adhesive mixture containing at least one elasticity imparting agent.

4,282,279  
**FORMABLE REMOVABLE INSULATING ENCLOSURE FOR A CONTAINER**  
Robert D. Strickland, Santa Barbara, Calif., assignor to Rip 'n Rap, Inc., Santa Barbara, Calif.  
Filed Oct. 16, 1979, Ser. No. 85,371  
Int. Cl.<sup>3</sup> B32B 3/06; B65D 75/00  
U.S. Cl. 428-101

15 Claims



1. A formable removable insulating enclosure for a container comprising  
a pliable elongated covering member adapted to be positioned and formed around the exterior outer surface of a said container, said covering member having an outer layer which terminates in opposed ends and wherein said outer layer of the covering member is formed of two separate protective layers which are joined around the periphery thereof; a width substantially equal to the height of a said container to be enclosed thereby and a length which is greater than the geometrical dimension



around the periphery of the exterior outer surface of a said container so as to enable the edge of one of the opposed ends of the covering member to contact and overlap with the edge of the other end of the covering member when the covering member is positioned and formed around a said container;

- a resilient insulating layer enclosed by the outer layer of said covering member, said insulating layer being adapted to be formed around the periphery of a said container together with the outer layer of the covering member;
  - a first fastening means located on one edge of a selected end of the covering member and extending substantially along the width thereof and positioned to be located in a plane substantially parallel to and spaced from the periphery of the exterior outer surface of a said container; and
  - a second fastening means adapted to make removable locking engagement with the first fastening means, said second fastening means being located on the edge of the other end of the covering member and extending substantially along the width thereof and positioned to be located in a plane substantially parallel to said first fastening means;
- said covering member being adapted to be positioned and formed around the exterior outer surface of the container and to be pulled tightly therearound to cause the covering member to be intimately engaged with the exterior outer surface of a said container such that said pair of fastening means engage and cooperate with each other to hold said covering member in a tight snug fitting relationship around a said container to insulate the same from the environment.

4,282,280

#### HEAT INSULATION FOR TANKS AT CRYOGENIC AND HIGHER TEMPERATURES, USING STRUCTURAL HONEYCOMB WITH INTEGRAL HEAT RADIATION SHIELDS

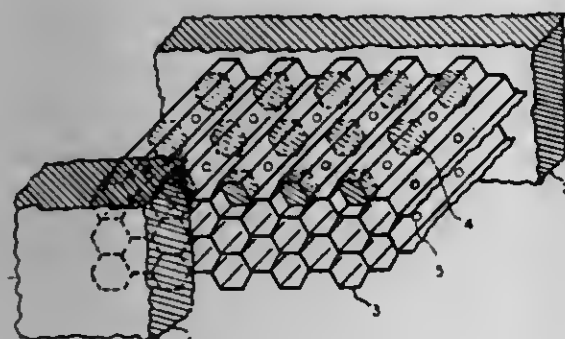
William H. Cook, Jr., 875 SE. Shoreland Dr., Bellevue, Wash. 98004

Filed Dec. 30, 1976, Ser. No. 755,818

Int. Cl.<sup>3</sup> B31D 3/02

U.S. Cl. 428—116

3 Claims



1. Heat insulation for tanks at cryogenic and higher temperatures, using structural honeycomb with integral heat radiation shields, comprising structural honeycomb with multiple low emissivity radiation shields, located within each cell of the honeycomb, each radiation shield filling a transverse cross section of the cell, and separated from adjacent heat radiation shields and also separated from inner and outer walls adjacent the honeycomb open spaces.

4,282,281

#### LONG-LIVED HEAVY-DUTY PAVEMENT MARKING

John L. Ethea, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 2, 1979, Ser. No. 90,571

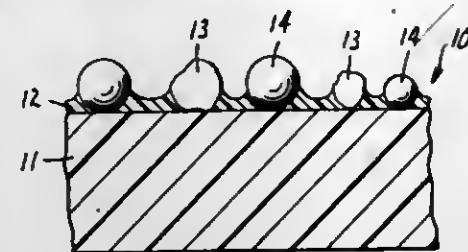
Int. Cl.<sup>3</sup> B32B 5/16, 27/20

U.S. Cl. 428—149

10 Claims

1. Pavement-marking sheet material comprising (a) a polymer-based sheet that is about one-fourth millimeter or more thick

and that comprises (i) at least 8 weight-percent of an unvulcanized acrylonitrile-butadiene polymer carrying carboxyl groups in an amount of at least 2 weight-percent based on the weight



of the polymer, and (ii) particulate fillers dispersed in mixture with the polymer, and (b) glass microspheres dispersed within the polymer-based sheet.

4,282,282

#### BARIUM ALUMINOSILICATE GLASSES, GLASS-CERAMICS AND DOPANT HOST

James E. Rapp, Oregon, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 3, 1977, Ser. No. 838,786

The portion of the term of this patent subsequent to Dec. 21, 1993, has been disclaimed.

Int. Cl.<sup>3</sup> H01L 21/223

U.S. Cl. 428—220

6 Claims

1. A glass thermally crystallizable to a glass-ceramic body, which glass is substantially free of alkali metal oxides and consists essentially of, in mole percent:

Component	Mole Percent
SiO <sub>2</sub>	45-52
Al <sub>2</sub> O <sub>3</sub>	18.5-22.5
B <sub>2</sub> O <sub>3</sub>	20-25
MgO	2.5-4.5
BaO	3.5-5.5

with the following molar ratios:

$$\begin{aligned} \text{SiO}_2/\text{Al}_2\text{O}_3 &> 2.1 \\ \text{SiO}_2/\text{B}_2\text{O}_3 &< 2.3 \\ \text{Al}_2\text{O}_3/(\text{MgO} + \text{BaO}) &2.1-3.1 \end{aligned}$$

4,282,283

#### LAMINATED FIBERGLASS FABRIC

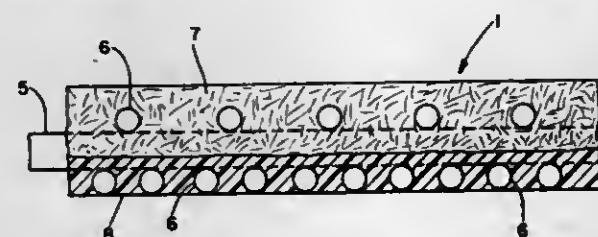
Stephen George, and Thomas H. George, both of Bronx, N.Y., assignors to Textured Products, Inc., Hartsdale, N.Y.

Filed Oct. 29, 1979, Ser. No. 88,835

Int. Cl.<sup>3</sup> B32B 17/06, 7/04, 7/12

U.S. Cl. 428—228

29 Claims



1. A laminated fiberglass fabric composition comprising: (a) a porous fabric comprising fiberglass yarn, (b) a plastisol laminating adhesive formed on the upper and lower surfaces of said fiberglass fabric, and (c) a non-woven fabric laminated to one of the surfaces of said fiberglass fabric by said adhesive, said non-woven fabric having been compressed into said fiberglass fabric

so as to envelop the yarn of the fiberglass fabric with non-woven fabric.

4,282,284

#### FLAME AND HEAT RESISTANT ELECTRICAL INSULATING TAPE

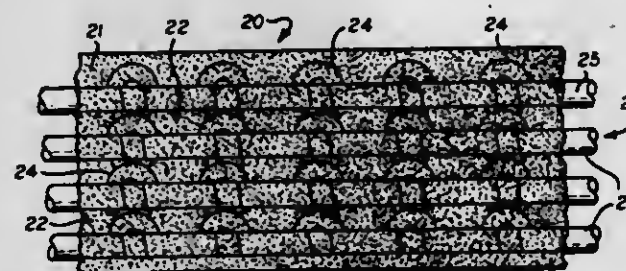
Stephen George, Bronx, N.Y., assignor to Textured Products, Inc., Mt. Vernon, N.Y.

Continuation-in-part of Ser. No. 931,121, Aug. 4, 1978, abandoned. This application Sep. 7, 1979, Ser. No. 73,362

Int. Cl.<sup>3</sup> B32B 7/00, 17/06; D02G 3/00

U.S. Cl. 428—251

7 Claims



1. A heat resistant, flexible, refractory, electrical insulating tape comprising:

- (a) a porous base fabric;
- (b) a refractory coating comprising refractory materials and a bonding agent, said refractory coating formed on the surface and interstices of said fabric by applying said refractory coating to both sides of said fabric and said refractory materials being capable of fusing with the porous base fabric at elevated temperatures;
- (c) an abrasion resistant polymeric coating formed on the outside surface of one of the refractory coatings, and
- (d) an adhesive formed on the outside surface of the other refractory coating.

2. A heat resistant, flexible, refractory electrical insulating tape comprising:

- (a) a porous base fabric;
- (b) a refractory coating comprising refractory materials and a bonding agent, said refractory coating formed on the surface and interstices of said fabric by applying said refractory coating to both sides of said fabric and said refractory materials being capable of fusing with the porous base fabric at elevated temperatures;
- (c) an abrasion resistant polymeric coating formed on the outside surface of both of the refractory coatings, and
- (d) an adhesive formed on the surface of one of the polymeric coatings.

3. A heat resistant, flexible, refractory, electrical insulating tape comprising:

- (a) a porous base fabric;
- (b) a refractory coating comprising refractory materials and a bonding agent, said refractory coating formed on the surface and interstices of said fabric with said refractory materials being capable of fusing with the porous base fabric at elevated temperatures; and
- (c) an abrasion resistant polymeric coating comprising polyvinyl chloride formed on the outside surface of said refractory coating.

4,282,285

#### PROCESS FOR PREPARING POLYURETHANE MOLDED PART

Gulam Mohluddin, Brighton, Mich., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 87,768, Oct. 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 38,505, May 14, 1979, abandoned. This application May 15, 1980, Ser. No. 149,996

Int. Cl.<sup>3</sup> B29D 27/00; B32B 5/20, 5/14

U.S. Cl. 428—315

16 Claims

15. In a process for producing a microcellular molded polyurethane part having an integral skin thereon by reaction injection molding in which the polyurethane reactants are mixed to form a liquid mixture, the mixture is fed to a metal surface mold where the mixture is reacted and molded at elevated temperatures and a shaped part is removed from said mold, the improvement comprising coating the surface of said mold, prior to molding said part and without the use of a release agent, with a paint composition containing from 0.05 to 10% by weight of the paint composition of a polyurethane catalyst, said catalyst acting as a catalyst for said polyurethane part but not for said paint composition, and molding said part while simultaneously transferring said paint composition from said mold surface and bonding it to said molded part, said process producing an integral skin microcellular shaped polyurethane part having a firmly adherent paint coating thereon.

16. A reaction injection molded microcellular polyurethane part having an integral skin and a firmly adherent uniform paint coating thereon, said part being produced in accordance with the process of claim 15.

4,282,286

#### PROCESS FOR MAKING DESTRUCTIBLE MARKING FILM AND METHOD FOR MARKING

Masao Sahara, Uozu, Japan, assignor to Nippon Carbide Kogyo Kabushiki Kaisha, Japan

Division of Ser. No. 952,134, Oct. 17, 1978. This application Dec. 3, 1979, Ser. No. 99,717

Int. Cl.<sup>3</sup> B32B 27/20, 27/30, 31/04, 31/12

U.S. Cl. 428—339

4 Claims

4. A method for marking, which comprises applying to the surface of a substrate a destructible film having a thickness of about 30 to about 60 microns and a destructibility of not more than 60 kg/cm/mm, said film consisting essentially of

- (A) 100 parts by weight of a vinyl chloride resin having a degree of polymerization of about 600 to about 2000 and containing 0 to about 5% by weight of a comonomer unit,
- (B) about 5 to about 20 parts by weight of an alkyl methacrylate resin, which is a blend of an alkyl methacrylate polymer with an alkyl group containing 1 to 3 carbon atoms and an alkyl methacrylate polymer with an alkyl group containing 4 to 10 carbon atoms, or a copolymer of an alkyl methacrylate with an alkyl group containing 1 to 3 carbon atoms and an alkyl methacrylate with an alkyl group containing 4 to 10 carbon atoms,
- (C) about 5 to about 30 parts by weight of a liquid stabilizer, and
- (D) about 10 to about 150 parts by weight of a pigment.

4,282,287

#### BIOCHEMICAL AVIDIN-BIOTIN MULTIPLE-LAYER SYSTEM

Roger W. Giese, 56 Oakland Ave., Quincy, Mass. 02170

Filed Jan. 24, 1980, Ser. No. 114,898

Int. Cl.<sup>3</sup> B32B 5/16, 9/00

U.S. Cl. 428—407

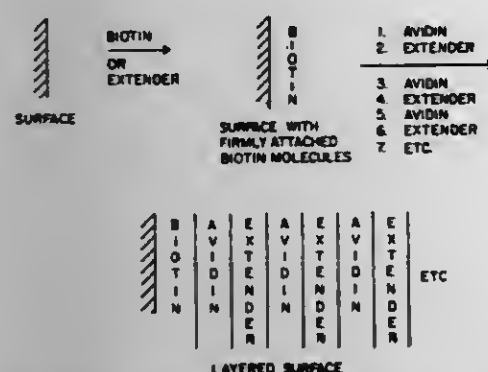
28 Claims

1. A process of modifying the surface properties of a surface, which process comprises:

applying alternative, monomolecular, successive layers of first and second materials to a surface to be modified, the first material comprising avidin and the second mate-



rial comprising a noncovalent, biotin-modified extender, one of the materials reacted to the surface, and, thereafter, at least one additional layer of each of the first and second



materials alternated, secured and reacted to the underlying layer, to provide a surface with the first or second material as the top surface layer thereon.

19. The layering system produced by the process of claim 1.

4,282,288

#### GRAPHITE REFRACTORY ARTICLE HAVING DENSE STRUCTURE WITH LOW POROSITY

Shigeo Yoshino; Tadashi Zenbutsu; Hajime Asami, all of Bizen, and Miki Suma, Niiza, all of Japan, assignors to Shinagawa Shirorenga Kabushiki Kaisha and Toshin Seiko Kabushiki Kaisha, both of Tokyo, Japan

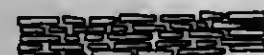
Filed Nov. 5, 1979, Ser. No. 91,487

Claims priority, application Japan, Dec. 5, 1978, 53-149661

Int. Cl.<sup>3</sup> B32B 9/00

U.S. Cl. 428—408

7 Claims



1. A graphite refractory article having a dense structure with a low porosity, which has a chemical composition consisting essentially of:

100 wt. parts of natural flake graphite, as the carbonaceous raw material, comprising at least 70 wt.% flake graphite having a particle size within the range of from 0.1 to 3 mm and up to 30 wt.% flake graphite having a particle size of under 0.1 mm;

from 4 to 10 wt. parts of powdery phenol resin as the binder; and

incidental impurities;

said graphite refractory article being obtained by press-forming a dry mixture having said chemical composition under a forming pressure of from 700 to 2,000 kg/cm<sup>2</sup> applied in one direction to prepare a formed body, and heating the resultant formed body; and, said graphite refractory article being imparted, through said press forming and said heating, a structure in which the flakes of said flake graphite are orderly arranged in substantially one direction into layers, and an apparent porosity of up to 15%.

4,282,289

#### METHOD OF PREPARING COATED CEMENTED CARBIDE PRODUCT AND RESULTING PRODUCT

Gregor H. Kullander, Älvåjö; Christopher G. Chatfield, Stockholm; Marian Mikus, Skärholmen, and Bo K. Westergren, Hägersten, all of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Apr. 16, 1980, Ser. No. 140,804

Int. Cl.<sup>3</sup> C23C 11/08

U.S. Cl. 428—457

6 Claims

1. Method of treating a cemented carbide substrate containing at least one carbide together with binder metal in order to

improve its wear resistance and utility, which method consists essentially of:

(a) treating the substrate in an atmosphere selected from carbide, nitride and carbonitride forming atmospheres to form or apply a coating essentially consisting of at least one coat of at least one member selected from the group consisting of carbides, nitrides and carbonitrides of the elements Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Si and B;

(b) adding a sulfur-and/or nitrogen containing gas at the end of or at a period during the treatment of step (a) to form a sulfide and/or nitride portion on said coating; and

(c) applying a wear resistant oxide coating on the thus pre-treated cemented carbide substrate.

4,282,290

#### HIGH ABSORPTION COATING

Samuel F. Pellicori, Santa Barbara, Calif., and Milton H. Monler, Beaverton, Oreg., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 23, 1980, Ser. No. 114,541

Int. Cl.<sup>3</sup> B32B 15/04

U.S. Cl. 428—472

1 Claim



1. A multilayer coating system for the absorption of infrared energy and particularly adapted for application to a sapphire substrate which consists essentially of:

(A) A vacuum deposited, opaque, first layer of titanium about 2000 to 3000 Å in thickness;

(B) A vacuum deposited, semitransparent, third layer of titanium about 140 Å in thickness;

(C) A vacuum deposited, dielectric, second layer of aluminum oxide about one quarter wave optical thickness at 2.8 micrometers positioned between and in contact with said first and third layers; and

(D) a vacuum deposited, dielectric, fourth layer superposed on said third layer.

4,282,291

#### DUCTILE CHROMIUM-CONTAINING FERRITIC ALLOYS

Joseph J. Demo, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 718,680, Aug. 30, 1976, abandoned, which is a division of Ser. No. 575,403, May 7, 1975, Pat. No. 3,992,198, which is a continuation-in-part of Ser. No. 371,951, Jan. 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 153,259, Jun. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 51,283, Jun. 30, 1970, abandoned, which is a continuation-in-part of Ser. No. 886,620, Dec. 19, 1969, abandoned, which is a continuation-in-part of Ser. No. 847,296, Aug. 4, 1969, abandoned. This application Jul. 14, 1977, Ser. No. 815,671

The portion of the term of this patent subsequent to May 18, 1993, has been disclaimed.

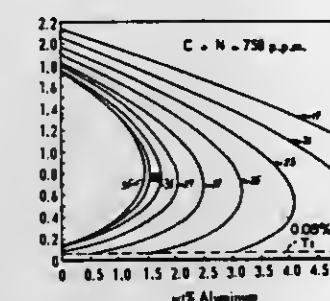
Int. Cl.<sup>3</sup> B32B 15/18

U.S. Cl. 428—683

4 Claims

1. A ferritic stainless steel welded article with high resistance to chloride stress corrosion cracking and high resistance to intergranular corrosion in combination with good weld formability, said welded article consisting essentially of, in

weight percent, a sum of carbon and nitrogen content above 0.025 but below 0.075; up to 0.8 manganese; up to 0.5 silicon; 19



to 35 chromium; up to 1.5 molybdenum; 0.05 to 2.20 titanium, and the balance iron and incidental impurities, said welded article having good as-welded ductility.

4,282,292

#### OPEN AND SHORT CIRCUIT TEST METHOD

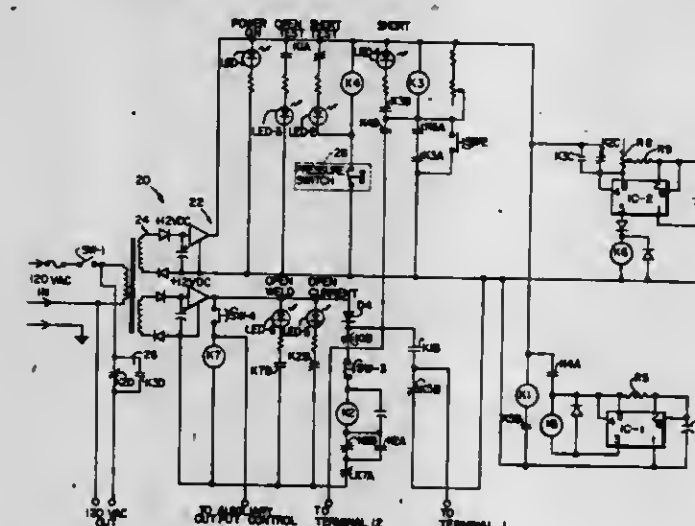
Jimmy L. Stewart, Frankfort, Ind., assignor to General Battery Corporation, Reading, Pa.

Filed Dec. 31, 1979, Ser. No. 108,470

Int. Cl.<sup>3</sup> H01M 10/48

U.S. Cl. 429—93

6 Claims



1. For a multicelled lead-acid storage battery, wherein each cell is comprised of a plurality of interleaved positive and negative plates, said plates having upstanding lugs on their top sides arranged so that each positive lug is along one side of said cell and each negative lug is along an opposite side of said cell, wherein all of said positive lugs are connected by a first conductive strap having a connector lug welded thereto and all of said negative lugs are connected by a second conductive strap having a connector lug welded thereto, said cells being alternately arranged within said battery so that the first conductive strap lug of one cell is adjacent to a second conductive strap lug in an adjoining cell, said cells being connected in series by welding together a first strap lug in one cell to the second strap lug in the adjoining cell, and further said battery comprising an external terminal at each end of said series, the method of testing the battery for short circuits between plates of opposite polarity within a cell and for electrical continuity between the cells of said battery, comprising:

- forming a series electrical connection first with the positive and negative strap lugs along one side of said battery and then with the positive and negative strap lugs along the opposite side of said battery;
- isolating the strap lugs along one side of the battery from those along the other side by breaking said series connection more or less in the middle;
- directing a voltage into one side of said broken series connection;
- monitoring the lugs on the other side of said series connection for a current flow, said flow indicating the pres-

ence of a short circuit between plates of opposite polarity in one or more cells;

- reconnecting both sides of said series;
- directing a positive voltage into one end of the reconnected series connection;
- monitoring the opposite end of said series connection for the absence of a current flow said absence indicating the occurrence of one or more open intercell welds in the battery.

4,282,293

#### SEALS FOR ELECTROCHEMICAL CELLS

Johannes A. van Lier, Cleveland, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Jun. 24, 1980, Ser. No. 162,588

Int. Cl.<sup>3</sup> H01M 2/08

U.S. Cl. 429—185

10 Claims

1. A sealed electrochemical cell comprising a cathodic material, an anodic material and an alkaline electrolyte housed in a cupped container sealed at its open end by a closure means, said closure means comprising a cover and a nonconductive gasket having at least one layer selected from the group consisting of a polyamide, an epoxy resin, asphalt and a cured epoxypolyamide resin, said coated gasket disposed and compressed between the interface of the cover and the container; the improvement being a film of a substituted organosilane disposed on the edge surface of the cover between the cover and the coated gasket interface thereby forming a fluid-tight seal therebetween.

4,282,294

#### POLYVINYL BLOCKING LAYER FOR PREVENTING CHARGE INJECTION IN A THERMOPLASTIC PHOTOCONDUCTIVE DEVICE FOR HOLOGRAPHY

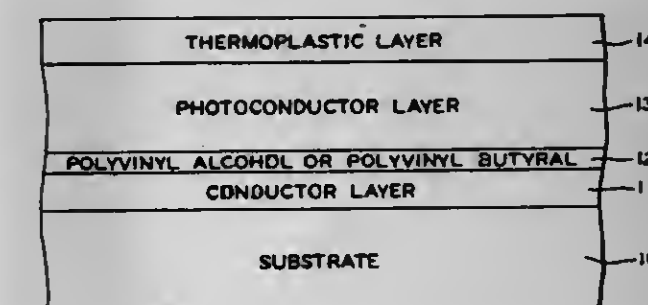
Tzuo-Chang Lee, Bloomington, and John D. Skogen, Burnsville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 6, 1980, Ser. No. 194,493

Int. Cl.<sup>3</sup> G03G 5/14; G03H 1/02

U.S. Cl. 430—1

6 Claims



1. An improved thermoplastic holographic recording medium having a charge injection inhibiting layer to inhibit unwanted charge injection, comprising in sequence:

- a substrate coated with an electrically conductive layer;
- a charge injection inhibiting layer selected from a group consisting of polyvinyl alcohol and polyvinyl butyral and mixtures thereof on the electrically conductive layer;
- a photoconductive layer on the inhibiting layer; and
- a thermoplastic layer over the photoconductive layer, whereby the inhibiting layer prevents unwanted charge injection at the conductor-photoconductor interface.

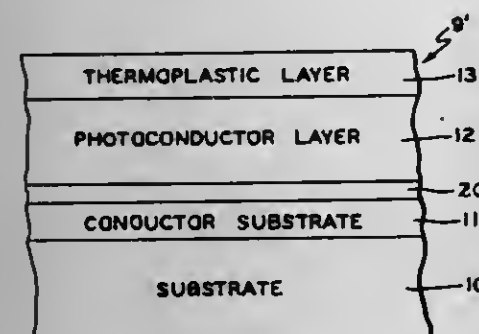


4,282,295

**ELEMENT FOR THERMOPLASTIC RECORDING**  
Tzuo-Chang Lee, and Jacob W. Lin, both of Bloomington, Minn., assignors to Honeywell Inc., Minneapolis, Minn.  
Filed Aug. 6, 1979, Ser. No. 64,271  
Int. Cl.<sup>3</sup> G03C 16/00

U.S. Cl. 430—2

6 Claims



1. A thermoplastic-photoconductive holographic recording medium comprising:  
an electrically conductive thin nickel-chromium (NiCr) layer thin enough to be transparent at the operating wavelength coated on a substrate;  
an extremely thin oxide layer relative to the NiCr layer such as a mono layer over said NiCr layer wherein the thickness of the oxide mono layer is about 1-10 Å;  
a photoconductive layer on the oxide mono-layer; and,  
a thermoplastic layer coated over said photoconductive layer.

4,282,296

**HIGH SPEED MAGNETOGRAPHIC IMAGING PROCESS**  
Cornelius B. Murphy, and Donald S. Sypula, both of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.  
Filed Apr. 30, 1980, Ser. No. 145,172  
Int. Cl.<sup>3</sup> G03G 19/00

U.S. Cl. 430—39

5 Claims

1. A method for developing magnetic latent images comprising forming a magnetic latent image on a suitable substrate, contacting the image with a dry magnetic toner consisting essentially of about 25 percent to about 50 percent by weight of a resin of a polymeric esterification product of 1,4-benzene dicarboxylic acid polymerized with 1,2,4-benzene-tricarboxylic acid-cyclic 1,2-anhydride and 2,2-dimethyl-1,3-propane diol, and from about 50 percent to about 75 percent by weight of a magnetic material selected from magnetites, metals, metal oxides, ferrites, and alloy materials, said toner having a fusing temperature of from about 300° Fahrenheit to about 390° Fahrenheit, transferring the image to a suitable substrate at a rate of above about 20 inches per second, and permanently affixing the image thereto by fusing at a temperature in excess of about 300° Fahrenheit.

4,282,297

**CHARGE TRANSFER IMAGING**  
Richard A. Fotland, Holliston, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Division of Ser. No. 969,516, Dec. 14, 1978, which is a continuation-in-part of Ser. No. 816,012; Jul. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 807,451, Jan. 17, 1977, abandoned. This application Apr. 14, 1980, Ser. No. 139,959

Int. Cl.<sup>3</sup> G03G 13/18

U.S. Cl. 430—48

5 Claims

1. An electrophotographic method comprising the steps of uniformly charging a photoconductive surface layer of a photoreceptor assembly, which photoreceptor assembly comprises the photoconductive surface layer, a conducting substrate, and a semiconductor layer having a thickness of at least 1 mil and a resistivity between  $10^3$  and  $10^{12}$

ohm centimeters, interposed between said photoconductive surface layer and said conducting substrate;  
exposing the uniformly charged photoconductive surface layer to a pattern of light and shadow representing an original to be reproduced, whereby the surface layer is selectively discharged and a latent electrostatic image is produced thereon;  
moving the image bearing portion of said photoconductive surface layer into proximity with a dielectric member; and  
transferring the latent electrostatic image to said dielectric member by means of the ionization of air in a gap between said photoreceptor assembly and said dielectric member.

4,282,298

**LAYERED IMAGING MEMBER AND METHOD**

Michael Smith, Rochester; Charles F. Hackett, Williamson, and Richard W. Radler, Marion, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 94,139, Dec. 1, 1970, which is a continuation-in-part of Ser. No. 14,280, Feb. 26, 1970, abandoned. This application Jan. 20, 1973, Ser. No. 371,647  
Int. Cl.<sup>3</sup> G03G 5/08, 5/14

U.S. Cl. 430—58

25 Claims

1. An imaging member comprising a layer of unoriented inorganic photoconductive material contained on a supporting substrate and a contacting layer of an electrically active organic material overlaying the photoconductive layer, with the ratio of the thickness of the active layer to the photoconductive layer being maintained from about 2:1 to 200:1, said photoconductive layer being at least about 0.05 micron thick and exhibiting the capability of photo-excited hole generation and injection, said active organic material being capable of supporting the injection of photo-excited holes from said photoconductive layer and transporting said holes through said active layer, wherein said active layer comprises at least one material selected from the group consisting of poly-1-vinylpyrene, polymethylene pyrene, N-substituted polymeric acrylic acid amides of pyrene, pyrene, tetraphene, 1-acetylpyrene, 2,3-benzochrysene, 6,7-benzopyrene, 1-bromopyrene, 1-ethylpyrene 1-methylpyrene, perylene, 2-phenylindole, tetracene, plicene, 1,3,6,8-tetraphenylpyrene, chrysene, fluorene, fluorenone, phenanthrene, triphenylene, 1,2,5,6-debanthracene, 1,2,3,4-dibenzanthracene, 2,3-benzopyrene, 2,3-benzochrysene, anthraquinone, dibenzothiophene, and naphthalene.

4,282,299

**PHOTOCONDUCTIVE RECORDING MATERIAL CONTAINING A ZINC OXIDE PARTICLE AND A METALLIC MERCAPTO COMPOUND**

Andre R. Suys, Hove, and Hendrik H. Sneyers, Wijnegem, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium  
Filed Sep. 7, 1978, Ser. No. 940,311

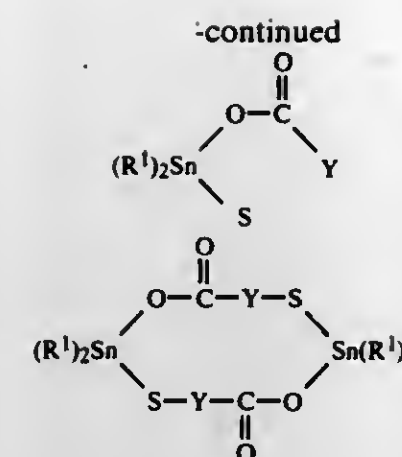
Claims priority, application United Kingdom, Sep. 13, 1977, 38164/77

Int. Cl.<sup>3</sup> G03G 5/08

U.S. Cl. 430—89

7 Claims

1. An electrophotographic recording material comprising a photoconductive layer containing photoconductive zinc oxide particles dispersed in a binder, some or all of which particles are in contact and/or in reacted form with at least one organic compound within the scope of the following general formulae (A), (B) and (C):



wherein:

R<sup>1</sup> represents an alkyl group including an aromatically substituted alkyl group,  
each of X<sup>1</sup> and X<sup>2</sup>, which may be the same or different, represents a —S—R<sup>3</sup> group wherein R<sup>3</sup> represents an alkyl group or a substituted alkyl group, and  
Y represents an alkylene group,

the amount of said organic compound present in said layer being sufficient to significantly improve the charge retention of said material in the dark and under conditions of high humidity.

4,282,300

**METHOD FOR DIAZO COPYING OF BLUE LINE ORIGINALS**

Howard W. Wegener, Amherst, N.H., assignor to Elliott Industries, Nashua, N.H.

Filed Dec. 4, 1978, Ser. No. 966,347

Int. Cl.<sup>3</sup> G03C 5/02, 5/18

U.S. Cl. 430—146

5 Claims

1. A diazo process for copying a blue line original having blue line image areas having light absorption range of about 4600-5900 Angstroms comprising the steps of:

placing the blue line original and a diazo copy sheet in light exposing relationship for imaging of the blue line image areas of the original onto the photosensitive surface of the diazo copy sheet;  
providing a light source having an emission spectrum which is absorbed by the blue line image areas of the original and which is actinic to the photosensitive surface of the copy sheet;  
exposing the photosensitive surface of the copy sheet to image-wise exposure by said emission spectrum;  
removing from the emission spectrum prior to exposure of the photosensitive surface of the copy sheet any wavelengths of light which are transmissive through said blue line image areas of the original and which are capable of exposing the copy sheet by filtering the emission spectrum of the light source to pass only the portion of the emission spectrum within said light absorption band of the blue line image areas of the original; and  
developing the copy sheet to provide a visible azo dye rendition of the original blue line image.

4,282,301

**PHOTOSENSITIVE DIAZO COATING COMPOSITIONS AND PLATES**

Takatoshi Ohta, Warabi, Japan, assignor to Okamoto Chemical Industry Corporation, Japan

Continuation-in-part of Ser. No. 969,844, Dec. 15, 1978, abandoned. This application Jul. 3, 1979, Ser. No. 54,485

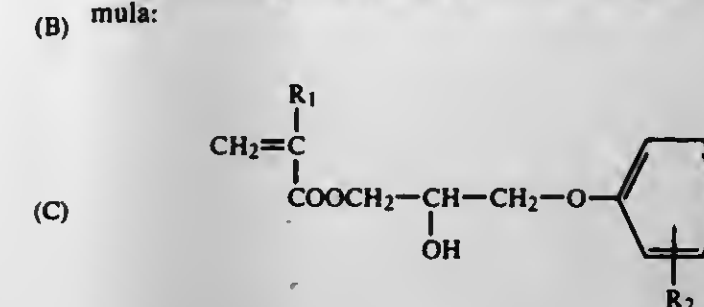
Claims priority, application Japan, Dec. 21, 1977, 52/154112  
Int. Cl.<sup>3</sup> G03C 1/60, 1/71

U.S. Cl. 430—175

7 Claims

1. A photosensitive coating composition for negative printing plates, comprising a mixture containing from 50% to 95% by weight of a copolymer, prepared by polymerizing from 10

to 70% by weight of a monomer (A) having the general formula:



in which R<sub>1</sub> and R<sub>2</sub> are hydrogen atoms or alkyl groups having 1 or 2 carbon atoms, with from 30 to 90% by weight of at least one monomer (B) selected from the group consisting of methyl methacrylate, methacrylic acid, acrylonitrile, and 2-hydroxyethyl methacrylate; in admixture with from 5% to 50% by weight of a diazo resin which is a condensation product of a diazoarylamine and an aldehyde.

4,282,302

**FERRITE POWDER TYPE MAGNETIC TONER USED IN ELECTROPHOTOGRAPHY AND PROCESS FOR PRODUCING THE SAME**

Motohiko Makino; Kenji Imamura, and Yoshinori Kurosawa, all of Tokyo, Japan, assignors to TDK Electronics, Ltd., Tokyo, Japan

Filed Oct. 22, 1979, Ser. No. 87,044

Claims priority, application Japan, Oct. 27, 1978, 53/132368  
Int. Cl.<sup>3</sup> G03G 9/00; C04B 35/04; C01G 49/08; C04B 35/26  
U.S. Cl. 430—107

1. A one-component ferrite powder type magnetic toner for use in electrophotography comprising toner particles having an average particle diameter of 5 to 40 μ, wherein each of said toner particles comprises a resinous component suitable for electrophotographic development and ferrite powder particles therein, the particles of the ferrite powder having an average particle diameter of 0.2 to 0.8 μ, the ferrite having a spinel structure comprising components of iron oxide at a ratio of 99.9 to 51 mole % as Fe<sub>2</sub>O<sub>3</sub> and at least one metal oxide selected from the group consisting of manganese oxide, nickel oxide, cobalt oxide, magnesium oxide, copper oxide, zinc oxide and cadmium oxide at a ratio of 0.1 to 49 mole % as MO wherein M represents Mn, Ni, Co, Mg, Cu, Zn or Cd, and wherein said ferrite powder is incorporated at a ratio of 0.2 to 0.7 wt. parts to 1 wt. part of said resinous component in said toner particles.

4,282,303

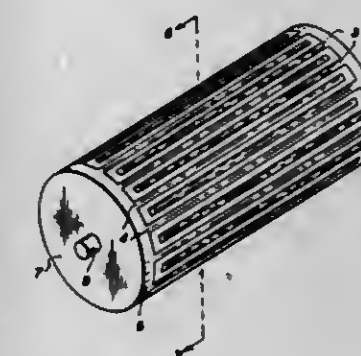
**DEVELOPMENT METHOD AND APPARATUS**  
Richard F. Bergen, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 5, 1980, Ser. No. 146,953

Int. Cl.<sup>3</sup> G03G 13/08, 15/08

U.S. Cl. 430—120

20 Claims



1. In an apparatus employing polar or polarizable toner particles for the development of a nonuniform electrostatic or magnetic latent image, a development means comprising a









wherein  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  each represents a hydrogen atom, a chlorine atom, a methyl group, an ethyl group, a methoxy group, or an ethoxy group;  $R_5$  represents an alkyl group having 1 to 4 carbon atoms, an alkoxyalkyl group wherein the number of carbon atoms in the alkyl moiety is 1 to 4, or a  $-(CH_2)_mR_6$  group where  $R_6$  represents a hydroxy group, a methylsulfonamido group, an ethylsulfonamido group; and  $m$  is a positive integer of 1 to 4.

## 4,282,313

## PHOTOGRAPHIC MATERIAL WITH STABILIZERS

Ubbo Wernicke, Odenthal; Heinrich Odenwälder, Cologne, and Friedhelm Sommer, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,445

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758720

Int. Cl.<sup>3</sup> G03C 7/00, 1/06

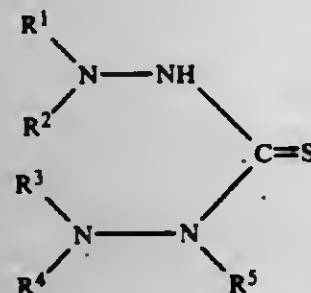
U.S. Cl. 430—407

4 Claims

1. In a photographic reversal process for the production of positive photographic images by imagewise exposure of photographic material which contains at least one silver halide emulsion layer,

first development of said exposed material in a first developer and, stabilization of the silver halide in said emulsion against fog, and subsequent treatment of said first developed material including,

a second development of the photographic material to form a positive reversal photographic image in the material, the improvement according to which the photographic material contains during said first development in a stabilizing amount at least one compound of the following formula:



in which

$R^1$  and  $R^4$  which may be the same or different, represent hydrogen, a saturated or olefinically unsaturated aliphatic group, an aryl group, a heterocyclic group or an acyl group;

$R^2$  and  $R^3$  which may be the same or different, represent hydrogen, a saturated or olefinically unsaturated aliphatic group, an aryl group or a heterocyclic group;

$R^5$  represents hydrogen, and/or  $R^1$  together with  $R^2$  and/or

$R^3$  together with  $R^4$  represent a methylenedioxy group which may be substituted by an alkyl, aryl, heterocyclic group or an acyl group selected from the group consisting of acetyl, benzoyl, phenyl, sulphonyl, carbamoyl, phenyl carbamoyl, ethoxycarbonyl, and ethoxythiocarbonyl, wherein

(II)

two such substituents together with the carbon atom of the methylenedioxy group can complete a carbocyclic or heterocyclic ring so that said stabilizer inhibits fogging in said first development.

## 4,282,314

## MASK FOR SELECTIVELY TRANSMITTING THERE THROUGH A DESIRED LIGHT RADIANT ENERGY

Donald Dinella, Berkeley Heights, and Ching-Ping Wong, West Windsor Township, Mercer County, both of N.J., assignors to Western Electric Co., Inc., New York, N.Y.

Division of Ser. No. 79,000, Sep. 26, 1979, which is a continuation of Ser. No. 900,368, Apr. 26, 1978, abandoned. This application Apr. 30, 1980, Ser. No. 145,176

Int. Cl.<sup>3</sup> B29C 17/08; G03C 5/24

U.S. Cl. 430—413

8 Claims

1. A method of fabricating a mask for selectively transmitting therethrough a desired light radiant energy, which comprises:

(a) heat treating a base comprising a copolymer of tetrafluoroethylene and hexafluoropropylene for a period of time sufficient to render it stress-relieved, essentially dimensionally stable, said base being capable of transmitting therethrough the desired light radiant energy and having a thickness of 5 to 10 mils; and

(b) selectively forming a blocking film pattern, incapable of transmitting therethrough the desired light radiant energy, on a surface of said heat treated base.

4. A method for selectively depositing a metal on a surface of a substrate, which comprises:

(a) coating the surface of the substrate with a sensitizing solution comprising at least a reducible salt of a non-noble metal and a radiation sensitive reducing agent for said reducible salt to form a sensitized surface; and

(b) selectively exposing said sensitized surface through a mask, comprising a base comprising a copolymer of tetrafluoroethylene and hexafluoropropylene, which has been heat treated for a period of time sufficient to render it stress-relieved, essentially dimensionally stable, said base being capable of transmitting therethrough the desired light radiant energy and having a thickness of 5 to 10 mils, and a blocking film formed on at least a portion of said base for blocking the transmission of the light radiant energy through said portion of said base, to a source of light radiant energy to reduce said metal salt to a reduced metal salt species to form a catalytic real image capable of catalyzing the deposition of a metal thereon from an electroless metal deposition solution.

## 4,282,315

## PREPARATION OF ENRICHED WHOLE VIRUS RADIOLIGAND

Albert A. Luderer, Corning, and Hugh C. McDonald, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 13, 1979, Ser. No. 74,918

Int. Cl.<sup>3</sup> C12N 7/00, 7/02; G01N 33/54, 33/00

U.S. Cl. 435—5

42 Claims

1. A method for preparing a virus subpopulation characterized by significantly increased binding sensitivity toward host cells for the virus, which method comprises contacting a virus population with an inanimate substrate having moieties which mimic host cell receptor sites for cell binding protein of the virus, complexing at least a portion of the virus population with the substrate, removing non-complexed virus, dissociating the complex and recovering the complexed virus from the substrate as said subpopulation.

## 4,282,316

## STABILIZED ENZYMIC SOLUTIONS FOR DETERMINING UREA

Ivan E. Modrovich, 1043 Mesa Dr., Camarillo, Calif. 93010

Filed Sep. 11, 1979, Ser. No. 74,544

Int. Cl.<sup>3</sup> C12Q 1/58

U.S. Cl. 435—12

11 Claims

1. A stabilized urease solution comprising: essentially heavy-metal-free N-2-hydroxyethyl-piperazine-N'-2-ethanesulfonic acid in an amount from about 0.5 to about 5 percent by weight of the water; a zwitterionic, low-conductivity buffering agent in an amount sufficient to provide a pH within the range of about 5 to 9 and selected from the group consisting of N-2-hydroxyethyl-piperazine-N'-2-ethanesulfonic acid, triethanolamine, tris(hydroxymethyl)aminomethane, diethanolamine, aminomethyl propanol and mixtures thereof; a bacteriostat in an amount sufficient to prohibit bacterial growth, selected from 2,4-dichlorophenol and alcohols that are nondegradative to urease; a chelating agent in an amount sufficient to chelate with any heavy metals present, selected from ethylenediamine-tetraacetic acid and amino acids; a polyhydroxy organic compound in an amount of about 50 percent by volume of the solution and selected from the group consisting of glycerol, ethylene glycol, sorbitol and propylene glycol; and urease in an amount greater than about 25,000 IU/l  $\pm 25\%$ .

## 4,282,317

## PECTIN CULTURE MEDIA AND METHOD

Jonathan N. Roth, 19676 Riverview Dr., Goshen, Ind. 46526

Continuation-in-part of Ser. No. 3,258, Jan. 15, 1979, abandoned, which is a continuation-in-part of Ser. No. 970,347, Dec. 18, 1978, Pat. No. 4,241,187. This application Feb. 21, 1979, Ser. No. 6,253

Int. Cl.<sup>3</sup> C12Q 1/04; C12N 5/00, 1/20

U.S. Cl. 435—34

34 Claims

1. A method for preparing a gelled biological growth medium which comprises the steps of:

- providing a predetermined amount of a liquid growth medium;
- providing a predetermined amount of a low methoxyl pectin material;
- providing a culture-growth container having a growth compatible gel therein, the growth-compatible gel containing a multivalent metal cation material suitable to produce gelling of the low methoxyl pectin material, said growth-compatible gel containing a multivalent metal cation material comprising a layer in contact with the bottom of said culture-growth container; and
- adding the liquid growth medium and low methoxyl pectin material to the culture growth container to produce a gelled growth medium having the low methoxyl pectin material as essentially the sole functional gelling agent.

## 4,282,318

 $\alpha$ -AMYLASE INHIBITOR FROM A STREPTOMYCETE AND PROCESS FOR ITS PREPARATION

Volker Oeding, Kelkheim; Werner Pfaff, Hofheim am Taunus; Laszlo Vertesy, Eppstein, and Hans-Ludwig Weidenmüller, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 870,247, Jan. 17, 1978, Pat. No. 4,226,764.

This application Jan. 2, 1980, Ser. No. 109,170

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1977, 2701890

Int. Cl.<sup>3</sup> C12P 21/00

U.S. Cl. 435—68

4 Claims

1. A process for preparing a peptidic glycoside hydrolase inhibitor having a molecular weight in the range of from 5,000 to 10,000, an absorption maximum in the ultraviolet light at 276 nm, an isoelectric point of 4.4 and the following amino acid composition:

aspartic acid —5-6  
threonine —5-6  
serine —3-5  
glutamic acid 5-6  
proline —2-3  
glycine —5-6  
alanine —5-6  
cysteine —3-4  
valine —5-6  
isoleucine —1-2  
leucine —3-4  
tyrosine —4-5  
phenylalanine —0-2  
histidine —1-2  
lysine —0-1  
arginine —2-3  
tryptophan —1-2

which comprises cultivating *Streptomyces tendae* 4158 (ATCC No. 31210).

## 4,282,319

## PROCESS FOR THE PREPARATION OF A HYDROLYZED PRODUCT FROM WHOLE GRAIN

Ernst Conrad, Lyckeby, Sweden, assignor to Kockums Construction AB, Hoganas, Sweden

Filed Oct. 13, 1978, Ser. No. 951,076

Claims priority, application Sweden, Oct. 18, 1977, 7711742; Nov. 1, 1977, 7712341; Aug. 22, 1978, 7808870

Int. Cl.<sup>3</sup> C12P 21/06; A23J 1/12

U.S. Cl. 435—69

13 Claims

1. A process for preparing in situ, enzymatically hydrolyzed protein and starch products from whole grain, comprising crushing said grain and thereafter subjecting the crushed grain to a treatment which consists essentially of both the following steps:

- subjecting said grain to an enzymatic treatment in an aqueous medium with an endopeptidase so as to transform substantially all water-insoluble proteins present in the grain to water-soluble protein products, which thereafter are filtered and recovered from the crushed grain as a clear filtrate containing protein products containing about 50 to 60% peptides having at least 25 amino acid residues, 35 to 45% peptides having between about 5 to 20 amino acid residues and 4-8% peptides having up to 4 amino acid residues and subjecting the remaining crushed grain to
- an enzymatic treatment in an aqueous medium with at least one starch hydrolyzing enzyme so as to transform substantially all of the water-insoluble starch fraction in the grain to water-soluble, degraded products of starch, and, wherein the starch hydrolyzing enzyme is amylase substantially free from other carbohydrate hydrolyzing enzymes.

## 4,282,320

## PRODUCTION OF 1-DESOXYNOJIRIMICIN

Werner Frommer, and Delf Schmidt, both of Wuppertal-1, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 116,174

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907190

Int. Cl.<sup>3</sup> C12P 19/26

U.S. Cl. 435—84

7 Claims

1. A process for the production of 1-desoxynojirimycin which comprises culturing a 1-desoxynojirimycin producing strain of the Bacillaceae family in a nutrient solution containing sources of carbon and nitrogen and trace elements at temperatures of 15° to 80° C. in a fermentation vessel, whilst aerating, and then isolating the 1-desoxynojirimycin, in which sorbitol is employed as the source of carbon in the nutrient solution.



4,282,321

## FERMENTATION PROCESS FOR PRODUCTION OF XANTHAN

William C. Wernau, Groton, Conn., assignor to Pfizer, Inc., New York, N.Y.

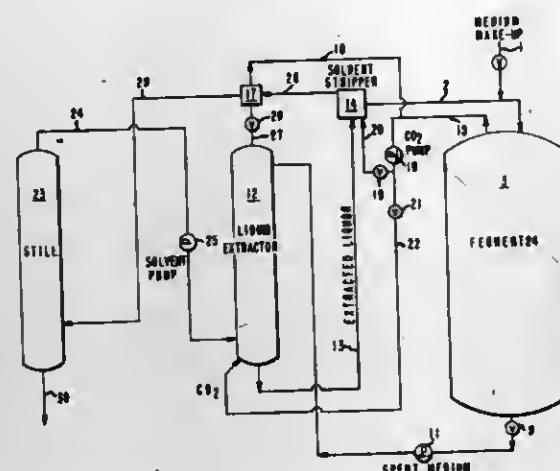
Continuation-in-part of Ser. No. 964,951, Nov. 30, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 80,195  
Int. Cl.<sup>3</sup> C12P 19/06; C12R 1/64

U.S. Cl. 435—104

4 Claims

1. A batch process for producing Xanthomonas biopolymer comprising the steps of aerobically propagating a microorganism of the genus Xanthomonas in an aqueous nutrient medium containing a source of assimilable carbon to form an inoculum, introducing said inoculum into an aqueous medium substantially free of a suitable carbon source, initially feeding at an exponentially increasing rate a source of assimilable carbon into said inoculated medium under aerobic conditions for 0 to 24 hours, then continuing feeding at a substantially constant rate until a total carbohydrate consumption equivalent to up to about 7% w/v glucose is achieved and recovering the product.

alkali metal, alkaline earth metal or ammonium salt of said carboxylic acid comprising contacting said aqueous solution, in the presence of a liquid polar organic solvent having a



boiling point of from -30° to 90° C., with carbon dioxide under pressure, to convert at least part of said salt to the corresponding acid, whereby said acid is dissolved in said solvent, and recovering said acid therefrom.

4,282,322

## PROCESS FOR ENZYMIC DEACYLATION OF ANTIBIOTICS

Jean S. Kahan, and Frederick M. Kahan, both of Rahway, N.J., assignors to Merck &amp; Co., Inc., Rahway, N.J.

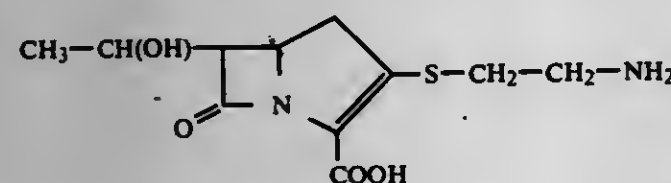
Continuation of Ser. No. 893,848, Apr. 6, 1978, abandoned, which is a continuation of Ser. No. 734,584, Oct. 21, 1976, abandoned, which is a continuation-in-part of Ser. No. 634,560, Nov. 24, 1975, abandoned. This application Aug. 27, 1979, Ser. No. 70,082

Int. Cl.<sup>3</sup> C12P 17/18

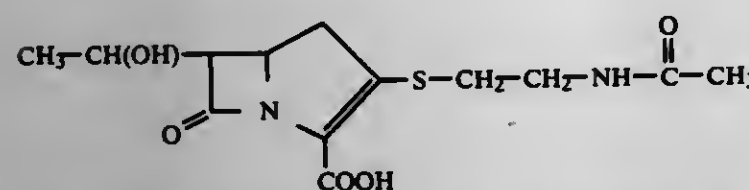
U.S. Cl. 435—119

11 Claims

1. A process for producing the compound desacetyl 890A<sub>1</sub> having the structure:



produced by enzymatic cleavage of the compound 890A<sub>2</sub> wherein 890A<sub>2</sub> has the following structure:



and wherein said 890A<sub>2</sub> has 100 MHz nuclear magnetic resonance signals having chemical shifts in ppm and multiplicities indicated as 1.35 (d, J=6.5); 1.98 (s); 3.63 (d of d, J=5.2 and J=9.8); ~4.02-4.26 (m); 3.18 (d of d, J=2 and J=10); 3.41 (t, J=6); 2.97 (d of t, J=3.5 and J=6), wherein the enzymatic cleavage utilizes an amidohydrolase capable of hydrolyzing the N-acetyl group.

4,282,323

## REMOVAL AND CONCENTRATION OF LOWER MOLECULAR WEIGHT ORGANIC ACIDS FROM DILUTE SOLUTIONS

Richard A. Yates, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 9, 1979, Ser. No. 82,986  
Int. Cl.<sup>3</sup> C12P 7/40, 7/54; C12R 1/145

U.S. Cl. 435—140

21 Claims

1. A process of recovering a carboxylic acid containing from 1 to 20 carbon atoms from an aqueous source solution of an

U.S. Cl. 435—188

5 Claims

1. An enzyme-bound-ligand according to the formula:

4,282,324

## METHOD FOR PRODUCING IODINE

Saul L. Neideman, Oakland, and John Geigert, Concord, both of CA, assignors to Cetus Corporation, Berkeley, Calif.

Filed Jun. 25, 1979, Ser. No. 51,847

Int. Cl.<sup>3</sup> C12P 3/00

U.S. Cl. 435—168

8 Claims

1. A method for producing iodine, comprising, providing, in the absence of iodine acceptor substrates, a reaction mixture of water, a halogenating enzyme, an oxidizing agent, a water-immiscible organic solvent, and a source of ionic iodide, buffering said reaction mixture to maintain it at a pH of between about 2 to 8, and recovering the molecular iodine continuously in said organic solvent as it is formed by said reaction mixture.

4,282,325

## ENZYME BOUND CORTICOSTEROIDS

Kenneth E. Rubenstein, Menlo Park, and Edwin P. Ullman, Atherton, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 857,145, Dec. 5, 1977, Pat. No. 4,203,802, which is a division of Ser. No. 722,964, Sep. 13, 1976, Pat. No. 4,067,774, which is a continuation of Ser. No. 481,022, Jun. 20, 1974, abandoned, which is a division of Ser. No. 304,157, Nov. 6, 1972, Pat. No. 3,852,157, which is a continuation-in-part of Ser. No. 143,609, May 14, 1971, abandoned, and a continuation-in-part of Ser. No. 802,683, Jan. 2, 1977, Pat. No. 4,190,496, which is a continuation of Ser. No. 760,499, Jan. 19, 1977, Pat. No. 4,191,613, which is a continuation-in-part of Ser. No. 722,964. This application May 7, 1979, Ser. No. 36,929

Int. Cl.<sup>3</sup> C12N 9/06

U.S. Cl. 435—188

5 Claims

1. An enzyme-bound-ligand according to the formula:

Tryptophan 0.99%

whereby the cell culture medium properties of blood serum are simulated.

4,282,327

## BIOLOGICALLY PURE CULTURE OF PAECILOMYCES ABRUPTUS

Ladislav J. Hanka, and Paul F. Wiley, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich. Division of Ser. No. 789,644, Apr. 22, 1977, Pat. No. 4,123,521. This application Jun. 21, 1978, Ser. No. 917,599

Int. Cl.<sup>3</sup> C12N 1/14

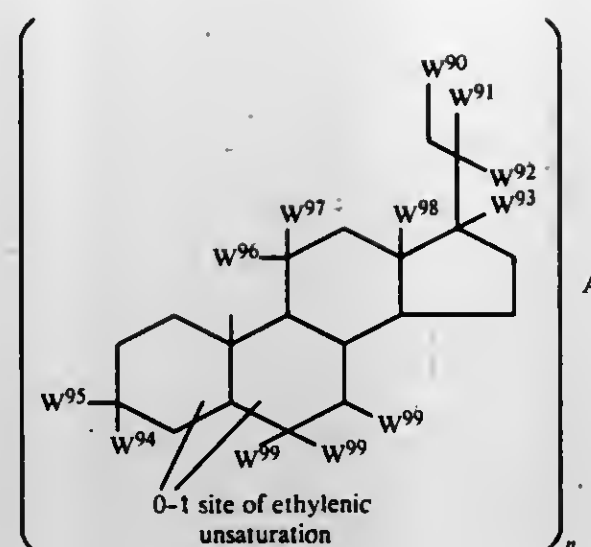
U.S. Cl. 435—254

1 Claim

1. A biologically pure culture of the microorganism *Paecilomyces abruptus* sp. nov., having the identifying characteristics of NRRL 11,110, said culture being capable of producing antibiotic U-53,946, said antibiotic in its essentially pure form:

- has the molecular formula  $C_{61}H_{107}N_{11}O_{14}$ ;
- has the following elemental analysis: C, 60.13, 59.73; H, 9.21, 8.92; N, 12.16, 11.97; O, 18.44;
- has a specific rotation of  $[\alpha]_D^{25} = -26^\circ$  (c, 0.9175 EtOH);
- is soluble in lower alcohols, for example, methanol, ethanol and butanol; ketones, for example, methyl ethyl ketone, halogenated solvents, ethyl acetate, or other ester-type solvents; and is relatively insoluble in aliphatic hydrocarbons;
- has a characteristic infrared adsorption spectrum when dissolved in a mineral oil mull as shown in FIG. 1 of the drawings; and,
- has a characteristic UV spectrum as shown in FIG. 2 of the drawings,

in a recoverable quantity upon fermentation in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic substances.



wherein:

- any one of the W groups can be  $-X^*$ , or an H of any of the W groups may be replaced by  $-X^*$ , wherein  $-X^*$  is a bond or a linking group;
- A\* is an enzyme bonded at other than its reactive site, having n ligands, wherein n is in the range of 1 to the molecular weight of A\* divided by 2,000;
- W<sup>90</sup> is hydrogen or hydroxyl;
- W<sup>91</sup> and W<sup>92</sup> are hydrogen or hydroxyl, at least one being hydroxyl, when both are hydroxyl, oxo is intended;
- W<sup>93</sup> is hydrogen or hydroxyl;
- W<sup>94-97</sup> are hydrogen or hydroxyl, at least one of W<sup>94</sup> and W<sup>95</sup> is hydroxyl;
- W<sup>98</sup> is methyl or formyl; and
- W<sup>99</sup> is hydrogen or two W<sup>99</sup>'s may be taken together to form a double bond.

4,282,326

## CELL CULTURE MEDIUM SUPPLEMENT

Jeanne Moldenhauer, Rte. 2, Box 361A, Long Grove, Ill. 60047  
Continuation-in-part of Ser. No. 950,748, Oct. 12, 1978, abandoned. This application Jun. 22, 1979, Ser. No. 51,248Int. Cl.<sup>3</sup> C12N 5/00

U.S. Cl. 435—240

5 Claims

1. A cell culture medium supplement comprising a solution of:

- approximately 0.336% by dry weight of potassium chloride;
  - approximately 0.336% by dry weight of monobasic potassium phosphate;
  - approximately 13.4% by dry weight of sodium chloride;
  - approximately 1.93% by dry weight of dibasic sodium phosphate; and
  - approximately 84.0% by dry weight of amino acids of such composition sufficient to support growth in the cells to be cultured, said amino acids comprising the following in approximate amounts:
- L-cystine-trace
  - L-tyrosine 1.26%
  - Lysine 6.25%
  - Histidine 2.62%
  - Arginine 3.45%
  - Aspartic Acid 8.96%
  - Threonine 4.30%
  - Serine 4.75%
  - Glutamic Acid 11.08%
  - Proline 4.65%
  - Glycine 5.98%
  - Alanine 6.78%
  - Valine 6.30%
  - Methionine 1.93%
  - Isoleucine 3.19%
  - Leucine 7.26%
  - Phenylalanine 4.35%

4,282,328

## APPARATUS FOR CULTIVATING AEROBIC MICROORGANISMS AND PROCESS FOR CULTIVATION USING THE SAME

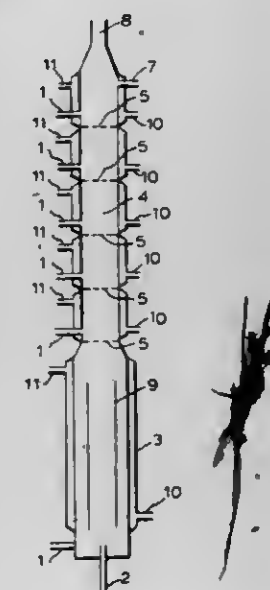
Hideki Fukuda, Hyogo; Takeshi Shiotani, Takasago, and Wataru Okada, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 19, 1979, Ser. No. 105,417

Int. Cl.<sup>3</sup> C12N 1/16

U.S. Cl. 435—255

11 Claims



1. An apparatus for cultivating microorganisms, comprising a cell multiplying means comprising a cylindrical extended draft tube fermenter having a bottom and a top and a draft tube therein extending through part of said fermenter, means for controlling the temperature of said fermenter,



inlet means disposed toward the bottom of said fermenter for supplying nutrients to said fermenter, and means for supplying air to the bottom of said fermenter thereby to cause air to travel upward through said draft tube mixed with said nutrient; and cell ripening means comprising a plurality of cylindrical units connected to each other in vertical disposition with the bottommost unit connected to the top of said tube fermenter, and the topmost unit having an opening at the top thereof and having an outlet disposed toward the top thereof, each of said units comprising an inlet means disposed toward the bottom of each unit for supplying nutrients to each unit, each unit also having an opening at the bottom thereof and an opening at the top thereof, each unit having said top and bottom connected to another respective unit, each unit having perforated plates disposed across the bottom opening, and means for controlling the temperature of each unit, whereby the bottommost unit is connected to the top of said draft tube fermenter, and the topmost unit opening being to exhaust air, and the outlet being for removal of nutrient liquor, whereby nutrients supplied to the bottom of said draft tube fermenter through said inlet means of said fermenter is mixed in said draft tube with air supplied through said means for supplying air, and caused to rise until coming into approximate contact with the perforated plate of the bottommost unit of said cell ripening means and then caused to turn downward near the exterior periphery of said fermenter, and said air is caused to continue to rise toward the opening at the topmost unit, and wherein in each unit new nutrient is supplied through said inlet means and aerated by said air, thereby to cause increased cell concentration and improved cell ripening by enhanced oxygen transfer throughout said draft tube and throughout said units.

4,282,329

## STABILIZED FILLER SUSPENSIONS IN POLYOLS

Wulf von Bonin, Leverkusen; Peter Vehlwald, Leichlingen, and Hans-Walter Illger, Roesrath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 61,715, Jul. 30, 1979, Pat. No. 4,240,950. This application Jul. 21, 1980, Ser. No. 170,328

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1978, 2834623

Int. Cl.<sup>3</sup> C08G 18/14

U.S. Cl. 521—99

5 Claims

1. In a process for the production of cellular polyurethane plastics comprising:

- polyisocyanates with
- polyhydroxyl compounds containing inorganic fillers and having a molecular weight of from 500 to 10,000 and, optionally,
- other isocyanate-reactive compounds, optionally in the presence of
- catalysts, blowing agents and other additives known per se,

the improvement wherein component (B) is a stabilized suspension obtained by reacting a suspension of an inorganic filler in a polyhydroxyl compound with from 0.1 to 2%, by weight, of a polyisocyanate, based on the weight of the suspension, at a temperature of from 30° to 200° C.

4,282,330  
ENERGY MANAGEMENT POLYETHER  
POLYURETHANE FOAM

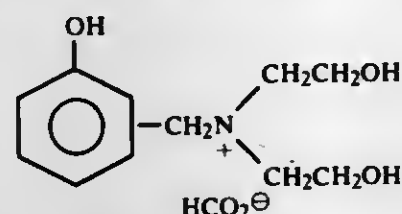
Thomas H. Austin, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 63,615, Aug. 3, 1979, abandoned. This application May 5, 1980, Ser. No. 146,961  
Int. Cl.<sup>3</sup> C08G 18/14

U.S. Cl. 521—118

2 Claims

1. In a method of preparing a molded flexible polyurethane product wherein a polyol, a polyisocyanate and water are reacted in a closable mold, the improvement which comprises: incorporating in the reaction a crosslinker of the formula:



where the crosslinker is present in amounts ranging from about 6% to 30% based on the polyol.

4,282,331

## POLYURETHANE FOAM PREPARED FROM A COPOLYMER/POLYOL COMPOSITION

David C. Priest, Charlotte, N.C., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 417,487, Nov. 20, 1973, Pat. No. 4,208,314, which is a continuation-in-part of Ser. No. 176,317, Aug. 30, 1971, abandoned. This application Feb. 19, 1980, Ser. No. 122,483

Int. Cl.<sup>3</sup> C08G 18/14

U.S. Cl. 521—137

10 Claims

1. A method for producing a polyurethane foam by reacting and foaming (a) a fluid polymer-polyol composition which is convertible to a polyurethane foam having reduced scorch by reaction with water and an organic polyisocyanate and which is the free radical catalyst-catalyzed reaction product formed by polymerizing (1) from 10 to 30 weight percent of a mixture of (a) from 33 to 75 weight percent of acrylonitrile or methacrylonitrile and (b) from 25 to 67 weight percent styrene or alpha-methyl styrene, said weight percents of the nitrile and the styrene or alpha-methyl styrene being based on the total weight of those materials dissolved or dispersed in (2) from 70 to 90 weight percent of a normally liquid polyoxyalkylene polyol having a hydroxyl number from 20 to 150, said weight percent of the mixture and polyol being based on the total weight of the monomers and the polyol and said polymer consisting essentially of polymer particles having diameters less than one micron suspended in the polyol, (b) an organic polyisocyanate, (c) a catalyst for the reaction of (a) and (b) to produce the polyurethane, (d) a blowing agent, and (e) a foam stabilizer.

4,282,332

## POLYOLS DERIVED FROM 4,4-TRICHLORO-1,2-EPOXYBUTANE AND/OR EPIHALOHYDRIN FOR USE IN THE PRODUCTION OF HEAT SEALABLE FOAMS

Barry A. Phillips, Sloan; Keith G. Spittler, Bethel Park, both of Pa., and Richard E. Keegan, New Martinsville, W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 8,147, Jan. 31, 1979. This application May 5, 1980, Ser. No. 146,983

Int. Cl.<sup>3</sup> C08G 18/14

U.S. Cl. 521—171

8 Claims

1. A polyurethane foam produced by the steps comprising reacting:

- an organic polyisocyanate;

- a polyol having a molecular weight of 2,000 to 8,000, comprising the adduct obtained by sequentially reacting:
  - a polyhydroxyl initiator having a functionality of 2 to 5 and a weight average molecular weight as determined by gel permeation chromatography of from 62 to 200; with
  - 10 to 90%, by weight, based on the total oxide present in (b) + (c) + (d), a first alkylene oxide; and subsequently reacting the product with
  - 10 to 80%, by weight, based on the total oxide present in (b) + (c) + (d), 4,4,4-trichloro-1,2-epoxybutane and/or epihalohydrin; and subsequently reacting the product with
  - 10 to 60%, by weight, based on the total oxide present in (b) + (c) + (d), a second alkylene oxide which may be the same or different alkylene oxide than component (b);
- catalysts; and optionally
- foaming agent.

4,282,333

POLYOLEFIN SERIES RESIN COMPOSITION FOR WATER-TREE RETARDANT ELECTRIC INSULATION  
Shin-ichi Irie, Ichihara; Kenji Uesugi, Chiba-Ken, and Hitoshi Kimura, Ichihara, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

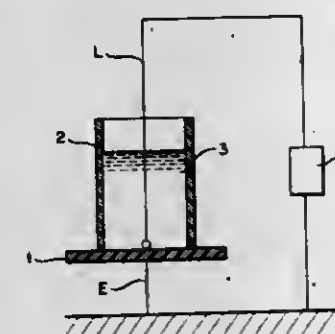
Filed Jan. 23, 1980, Ser. No. 114,570

Claims priority, application Japan, Jan. 29, 1979, 54/8896

Int. Cl.<sup>3</sup> C08K 5/29; B32B 27/18

U.S. Cl. 525—6

13 Claims



1. A polyolefin series resin composition for water-tree retardant electric insulation which comprises a polyolefin series resin and an organic isocyanate compound having at least one isocyanate radical in the molecule.

4,282,334

## MANUFACTURE OF HIGH IMPACT AND TRANSLUCENT STYRENE POLYMERS

Manfred Walter, Speyer; Dieter Stein, Limburgerhof; Gerhard Fahrback, Plankstadt; Rudolf Jung, Worms, and Adolf Echte, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 933,996, Aug. 16, 1978, abandoned, which is a continuation of Ser. No. 776,223, Mar. 10, 1977, abandoned. This application Nov. 27, 1979, Ser. No. 97,815

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1976, 2613352

Int. Cl.<sup>3</sup> C08F 279/02

U.S. Cl. 525—53

7 Claims

1. In a process for the manufacture of a high-impact polymer with a turbidity in the range of from 5 to 40/cm consisting essentially of styrene and 1 to 20% by weight of a natural or synthetic rubber by polymerizing styrene in the presence of 1 to 20% by weight, based on styrene, of the rubber in at least two stages,

in which in a first stage, the styrene, which contains the rubber in solution, is prepolymerized at from 50° to 150° C. in the presence or absence of inert diluents and/or of initiators which form free radicals, while breaking up the disperse soft-component phase which forms during the

polymerization by shearing the polymerization mixture, and thereafter

in one or more further stages, the polymerization is completed by taking it to the desired conversion with reduced shearing or entirely without shearing, in mass, in solution or in aqueous suspension, the shearing during the prepolymerization being maintained until the amount of styrene converted, based on the starting solution to be polymerized, corresponds to from 3 to 10 times the amount of elastomer constituent of the total amount of rubber employed,

wherein the improvement comprises: carrying out the shearing during the prepolymerization in such a way that the particles of the disperse soft-component phase thus formed have a weight-average mean diameter of from about 0.2 to 0.6 μm, and

the disperse soft-component phase contains, during the prepolymerization, from 35 to 65 percent by weight of free or chemically bonded polystyrene segments with at least 50% by weight of these polystyrene segments being incorporated into the rubber component in a chemically bonded form, as a polymer block or a grafted branch, said segments having a number-average molecular weight of at least 30,000 and below 250,000.

4,282,335

## HIGH MOLECULAR RESIN COMPOSITION

Akitoshi Sogio, Ohmiya; Masanobu Masu, Tokyo; Yukio Sasaki, Tokyo, and Zenpei Mizutani, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 26, 1980, Ser. No. 134,136

Claims priority, application Japan, Mar. 30, 1979, 54/37016

Int. Cl.<sup>3</sup> C08L 61/04

U.S. Cl. 525—68

36 Claims

1. A high molecular resin composition comprising  
(1) 97 to 99.9% by weight of a polymeric matrix containing polyphenylene ether, and  
(2) dispersed therein, 0.1 to 3% by weight of an olefin oligomer having a number average molecular weight of not more than about 10,000.

4,282,336

## CURABLE DIALLYL PHTHALATE COMPOUNDS AND PROCESS FOR PRODUCING SAME

Kazuya Yonezawa; Hisao Furukawa, and Masaaki Azuma, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

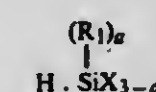
Division of Ser. No. 936,378, Aug. 24, 1978, Pat. No. 4,161,572. This application Jan. 8, 1979, Ser. No. 1,853

Claims priority, application Japan, Aug. 29, 1977, 52/103902  
Int. Cl.<sup>3</sup> C07F 7/02; C08F 8/42, 8/18, 8/32

U.S. Cl. 525—102

1 Claim

1. A curable diallyl phthalate compound produced by a process wherein diallyl phthalate monomer or diallyl phthalate prepolymer having a molecular weight of 20,000 or less, is reacted with a hydrosilane compound represented by the formula:



wherein R<sub>1</sub> is a monovalent hydrocarbon group having 1 to 10 carbon atoms; X is a group selected from the group consisting of halogen, alkoxy, acryloxy, aminoxy, phenoxy, thioalkoxy and amino groups; and n is an integer 0, 1 or 2; at a temperature of between 50° and 150° C.



4,282,337

**PROCESS FOR PREPARING GRAFT POLYMERS OF  $\alpha,\alpha'$ -DISUBSTITUTED- $\beta$ -PROPIOLACTONES ON ISOBUTYLENE-TRIENE-COPOLYMERS**

Arnaldo Roggero, S. Donato Mi, and Alberto Gandini, Milan, both of Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Apr. 25, 1980, Ser. No. 144,170

Claims priority, application Italy, May 14, 1979, 22641 A/79

Int. Cl.<sup>3</sup> C08F 35/06, 27/12

U.S. Cl. 525-153

12 Claims

1. A process for preparing graft polymers of  $\alpha,\alpha'$ -dialkylsubstituted  $\beta$ -propiolactones which comprises reacting a copolymer of isobutylene and a polyconjugated polyene linear hydrocarbon containing at least three conjugated double bonds with a dienophile under Diels-Alder reaction conditions to provide a functionalized copolymer substituted with a group selected from an acid, anhydride or ester group, and then reacting said functionalized copolymer with a  $\alpha,\alpha'$ -dialkylsubstituted  $\beta$ -propiolactone in a solvent at a temperature of from  $-80^\circ\text{C}$ . to  $20^\circ\text{C}$ . and recovering product.

4,282,338

**PROCESS FOR THE PREPARATION OF GRAFTED POLYMERS OF  $\alpha$ -SUBSTITUTED- $\beta$ -PROPIOLACTONE ON AMORPHOUS BASE POLYMERS**

Arnaldo Roggero, and Luciano Zotteri, both of S. Donato Mi, Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Mar. 26, 1980, Ser. No. 134,092

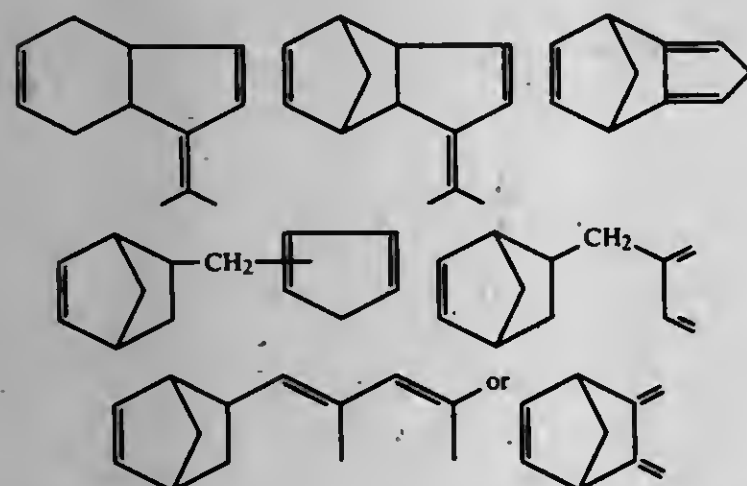
Claims priority, application Italy, Apr. 4, 1979, 21565 A/79

Int. Cl.<sup>3</sup> C08F 35/06, 27/12

U.S. Cl. 525-153

16 Claims

1. A process for preparing graft polymers of  $\alpha$ -substituted- $\beta$ -propiolactones which comprises reacting an ethylene-propylene-triene terpolymer wherein said triene component is selected from



and wherein said terpolymer has an unsaturation concentration of between 0.01 and 1 mole/kg and a functionalizing agent to form an anionic site on said terpolymer, said reaction carried out in a solvent at a temperature of from ambient to  $100^\circ\text{C}$ ., then reacting the resulting functionalized terpolymer having anionic sites with an  $\alpha$ -substituted- $\beta$ -propiolactone wherein the molar ratio of said  $\beta$ -propiolactone to said anionic sites is from 3 to 1000, in a solvent at a temperature from  $-80^\circ$  to  $200^\circ\text{C}$ .

4,282,339

**DUAL REACTOR PROCESS AND APPARATUS FOR POLYMERIZING ETHYLENE**

Charles R. Donaldson, and Claude J. Stiles, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

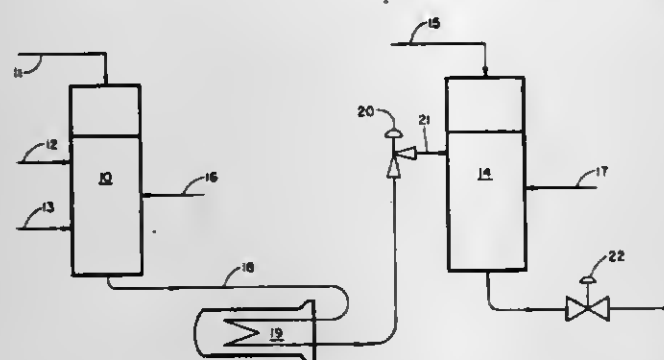
Division of Ser. No. 947,801, Oct. 2, 1978, Pat. No. 4,229,416.

This application Dec. 17, 1979, Ser. No. 104,609

Int. Cl.<sup>3</sup> C08F 2/34, 4/28, 10/02

U.S. Cl. 526-64

8 Claims



1. A process for polymerizing ethylene in a dual reactor system which comprises reacting ethylene in the presence of a catalyst at elevated pressure and temperature in a first reactor to provide a high pressure reaction stream containing dissolved polyethylene and unreacted ethylene, passing the high pressure reaction stream through an intercooler, prior to a reduction in pressure of said high pressure reaction stream, to effect cooling of the reaction stream, reducing the pressure of the cooled reaction stream, and introducing the cooled, reduced pressure reaction stream into a second reactor to effect further polymerization.

4,282,340

**POLYMERIZATION PROCESS FOR PREPARATION OF ACRYLAMIDE HOMOPOLYMERS WITH REDOX CATALYST**

Michael J. Anchor, Canton Township, Wayne County, and Robert Login, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 11, 1980, Ser. No. 111,402

Int. Cl.<sup>3</sup> C08F 4/40

U.S. Cl. 526-93

12 Claims

1. A process for the preparation of high molecular weight acrylamide homopolymers utilizing a free-radical-generating redox pair catalyst comprising

- (A) maintaining at ambient temperature and pressure under aqueous polymerization conditions a mixture of water, 10 to 50 percent by weight of said mixture of acrylamide monomer, a catalytic amount of a metal ion co-catalyst, and a catalytic amount of a first member of the Redox pair catalyst,
- (B) intimately combining an organic polymer capable of forming a colloidal dispersion in aqueous media with a catalytic amount of a second member of a redox pair catalyst,
- (C) admixing (A), (B), and allowing polymerization to initiate, no heat or pressure being added during the polymerization process, and
- (D) recovering an aqueous mixture of a high molecular weight acrylamide homopolymer.

4,282,341

**MANUFACTURE OF HOMOPOLYMERS AND COPOLYMERS OF  $\alpha$ -MONOOLEFINS**

Peter Klaerner, Battenberg; Gerhard Staiger, Bobenheim-Roxheim, and Klaus Bronstert, Carlsberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 12, 1979, Ser. No. 74,758

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 2841715

The portion of the term of this patent subsequent to Jun. 17, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> C08F 4/66, 10/06

U.S. Cl. 526-124

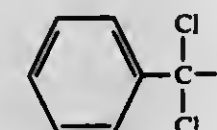
1 Claim

1. In a process for the preparation of homopolymers and copolymers of  $\text{C}_2$ - $\text{C}_6$ - $\alpha$ -monoolefins by polymerizing the monomer or monomers at from  $30^\circ$  to  $200^\circ\text{C}$ . under pressures of from 0.1 to 200 bar by means of a Ziegler-Natta catalyst comprising (I) a titanium chloride component and (II) an aluminum-alkyl component of the general formula  $\text{AlR}_3$  or  $\text{ClAlR}_2$ , where R is  $\text{C}_1$ - $\text{C}_8$ -alkyl, in the atomic ratio of titanium from catalyst component (I): aluminum from catalyst component (II) of from 1:1 to 1:100, the improvement which comprises using as the titanium chloride component (I) of the catalyst a compound obtained by milling

(1) in a first stage

(1.1) 100 parts by weight of an alcoholate of the general formula  $\text{Mg}(\text{OD})_2$ , where D is alkyl of 2 to 4 carbon atoms, with

(1.2) the appropriate number of parts by weight of a chlorotoluene of the formula



where X is chlorine or hydrogen, to give a molar ratio of alcoholate (1.1): chlorine in the chlorotoluene (1.2) of from 100:3 to 100:30,

in a vibratory ball mill, with a milling acceleration of from 45 to 55  $\text{m} \times \text{sec}^{-2}$  for a period of from 10 to 60 hours at from  $-30^\circ$  to  $-5^\circ\text{C}$ . in the absence of a diluent, thereafter bringing together

(2) in a second stage

(2.1) 100 parts by weight of the material resulting from stage (1) with

(2.2) from 500 to 1,000 parts by weight of titanium tetrachloride, the batch being kept for from 0.5 to 2 hours at from  $70^\circ$  to  $90^\circ\text{C}$ ., with constant mixing, and the resulting solid being isolated, excess titanium tetrachloride being separated off, and then bringing together

(3) in a third stage

(3.1) 100 parts by weight of the solid resulting from stage (2) with

(3.2) from 500 to 1,000 parts by weight of titanium tetrachloride, the batch being kept for from 0.5 to 2 hours at from  $120^\circ$  to  $140^\circ\text{C}$ . with constant mixing, and the resulting solid being isolated, excess titanium tetrachloride being separated off, and finally

exposing the solid resulting from stage (3) to a carbon dioxide atmosphere at a pressure of from 0.2 to 5 bar, at from  $0^\circ$  to  $50^\circ\text{C}$ ., for a period of from 1 to 30 minutes.

4,282,342

**PREPARATION OF TERPOLYMERS**

Walter Denzinger, Speyer, and Claus Cordes, Weisenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 6, 1979, Ser. No. 72,985

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1978, 2840502

Int. Cl.<sup>3</sup> C08F 222/06

U.S. Cl. 526-272

3 Claims

1. A terpolymer which has a Fikentscher K-value of from 8 to 100 and which comprises 50 mole percent of maleic anhydride units, from 35 to 45 mole percent of 2,4,4'-trimethylpent-1-ene units and from 5 to 15 mole percent of 2,4,4'-trimethylpent-2-ene units.

4,282,343

**POLY-(ALPHA-ALKOXY)ACRYLAMIDE AND POLY-(ALPHA-ALKOXY)ACRYLAMIDE COMPLEXES**

James L. Platt, Jr., Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

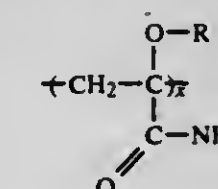
Filed Feb. 7, 1980, Ser. No. 119,254

Int. Cl.<sup>3</sup> C08F 8/00, 122/40

U.S. Cl. 525-336

8 Claims

1. Poly-(alpha-alkoxy)acrylamide having the formula:



wherein R is an alkyl group of 1 to 12 carbon atoms and x is an integer ranging from about 100 to 100,000.

4,282,344

**POLYURETHANE CURING AGENT DISPERSION, PROCESS AND PRODUCT**

Paul P. Caruso, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 957,226, Nov. 2, 1978, abandoned. This application Nov. 21, 1979, Ser. No. 96,563

Int. Cl.<sup>3</sup> C08G 18/32, 18/65

U.S. Cl. 528-51

13 Claims

1. A process for preparing a composition useful for curing an isocyanato-terminated polyurethane prepolymer, said process comprising

- (1) forming a mixture of a substantially inert organic liquid (A), with particles, (B), of a complex of 3 moles of 4,4'-methylenedianiline and 1 mole of a salt selected from the group: sodium chloride, sodium bromide, sodium iodide, lithium chloride, lithium bromide and lithium iodide, said particles having an average diameter of less than 60 microns; the weight proportion of liquid (A) in the mixture being about 20-90%, and that of particles (B) being about 10-80%, said mixture having a free methylenedianiline content of about 0.1-5% by weight;
  - (2) adding to said mixture with good agitation at least 0.5 equivalent of an organic isocyanate per equivalent of the free methylenedianiline;
  - (3) while continuing agitation, allowing said organic isocyanate to react with said methylenedianiline; and
  - (4) adding at least 0.5 weight % of lecithin.
9. A composition suitable for curing isocyanato-terminated polyurethane prepolymers, said composition comprising a substantially inert organic liquid, (A) and, dispersed in component (A), particles, (B), of a complex of 3 moles of 4,4'-methylenedianiline and 1 mole of a salt selected from the



group: sodium chloride, sodium bromide, sodium iodide, lithium chloride, lithium bromide and lithium iodide; substantially no free methylenedianiline being present in said composition, free methylenedianiline having been removed by

- (1) adding to the initial dispersion of particles (B) in the liquid (A) with good agitation about 0.5 to 2.0 equivalents of an organic isocyanate per equivalent of the initially present free methylenedianiline;
- (2) while continuing agitation, allowing said organic isocyanate to react with said methylenedianiline; and
- (3) adding at least 0.5 weight percent of lecithin.

4,282,345

# METHOD OF PREPARING RESINOUS CONDENSATION PRODUCT OF AN ALLYLATED ALKYLOL PHENOL AND AN ETHOXYLINE RESIN

John D. Nelson, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Apr. 16, 1980, Ser. No. 140,687  
Int. Cl.<sup>3</sup> C08G 59/62

U.S. Cl. 528—88

12 Claims

1. A method of preparing organic solvent soluble thermosetting resins which comprises condensing an ethoxyline resin with an allylated polyalkylol phenol by heating said reactants in the presence of an acid catalyst and a compound selected from the group consisting of isobutyl alkyl ketones, isobutyl alkyl esters, and mixtures thereof.

4,282,346

# PREPARATION OF COPOLYAMIDE FROM DICARBOXYLIC ACID MIXTURE, PIPERAZINE AND POLYOXYALKYLENE DIAMINE

Hubert J. Sharkey, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 11,456, Feb. 2, 1979. This application Oct. 26, 1979, Ser. No. 88,683  
Int. Cl.<sup>3</sup> C08G 69/28

U.S. Cl. 528—338

2 Claims

1. In a process for the preparation of thermoplastic copolyamide adhesive resins by the reaction of essentially stoichiometric amounts of reactants consisting essentially of (a) a mixture of adipic acid and a long-chain aliphatic saturated dicarboxylic acid having 8 to 14 carbon atoms, (b) piperazine and (c) a polyoxyalkylene diamine of the general formula



where R is hydrogen or a methyl group and m is a positive integer such that the average molecular weight of the polyoxyalkylene diamine is between about 200 and 800, the improvement which comprises heating the adipic acid, long-chain aliphatic saturated dicarboxylic acid and polyoxyalkylene diamine at 160° C. to 220° C. with agitation under an inert atmosphere and adding piperazine as an anhydrous melt or aqueous solution at a rate to avoid polymeric salt formation.

4,282,347

# PREPARATION OF BRANCHED POLYMERS OF ARYLENE SULFIDE

Dale O. Tieszen, and Lacey E. Scoggins, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 14, 1979, Ser. No. 66,584  
Int. Cl.<sup>3</sup> C08G 75/16

U.S. Cl. 528—388

10 Claims

1. A process for the production of branched polymers of arylene sulfide said process comprising:

- (a) contacting under polymerization conditions for a time

sufficient to form arylene sulfide polymer a reaction mixture comprising:

- (1) at least one p-dihalobenzene;
- (2) at least one alkali metal sulfide;
- (3) at least one organic amide;
- (4) water in an amount of about 1.0 mole to about 2.4 moles per mole of alkali metal sulfide, said amount including water of hydration; and
- (5) at least one alkali metal carboxylate;

(b) contacting with said arylene sulfide polymer formed in said reaction mixture, under polymerization conditions, an amount of polyhaloaromatic compound having more than 2 halogen constituents per molecule sufficient to produce branched polymer and for a time up to about 75 minutes before entering upon termination of the polymerization process said time sufficient to produce branched polymer; and

(c) contacting carbon dioxide with said arylene sulfide polymer formed in said reaction mixture in an amount sufficient to stabilize said polymer relative to thermal degradation and for a time having a range of up to about 1 hour before termination of the polymerization process.

4,282,348

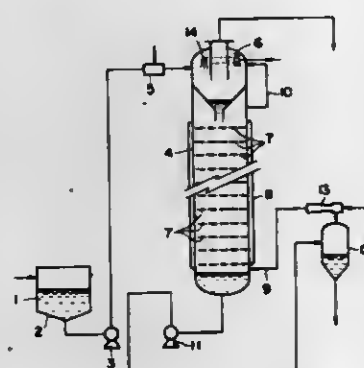
# METHOD FOR REMOVING UNREACTED MONOMER FROM THE AQUEOUS DISPERSION OF POLYMERIZATE OF VINYL CHLORIDE AND APPARATUS THEREFOR

Norinobu Wada, and Yoshitaka Okuno, both of Ibaragi, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Japan

Filed Mar. 30, 1977, Ser. No. 782,732  
Claims priority, application Japan, Apr. 3, 1976, 51/37451  
Int. Cl.<sup>3</sup> C08F 6/24, 14/06

U.S. Cl. 528—500

10 Claims



1. A method for removing unreacted residual vinyl chloride monomer from an aqueous slurry of a vinyl chloride polymerizate containing unreacted vinyl chloride monomer which slurry is of the usual range of 20 to 50% solid by weight and is produced by the polymerization of vinyl chloride or a monomer mixture mainly composed of vinyl chloride in an aqueous medium comprising:

- (a) feeding the aqueous slurry to a cyclone type mist separator positioned at the top of a column having a sequence of perforated plates with openings of from about 3 to 50 mm in diameter, the total area of the openings in one perforated plate being in the range from about 3 to 20% of the cross-sectional area of the plate,
- (b) feeding the aqueous slurry coming from the cyclone-type mist separator to the top of the column whereby the aqueous slurry flows downwardly through the perforations in the perforated plates,
- (c) blowing steam into the bottom of the column, to cause it to ascend in the column through the perforations of the perforated plates to bring the steam into counter-current contact with the descending aqueous slurry, and
- (d) maintaining a temperature of between about 60° to 120° C. and a pressure of about the saturated vapor pressure of water at that temperature inside the column.

4,282,349

# CRYSTALLINE RIBOFURANOSYL HALIDES AND OTHER DERIVATIVES AND METHODS FOR PRODUCING SAME

Hassan S. El Khadem, Houghton, Mich.; Thakur D. Audichya, Poona, India, and John Kloss, Gurnee, Ill., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Continuation of Ser. No. 750,265, Dec. 13, 1976, abandoned.  
This application Oct. 16, 1978, Ser. No. 951,969  
Int. Cl.<sup>3</sup> C07H 15/02, 15/18, 13/02

U.S. Cl. 536—4

14 Claims

1. A crystalline ribofuranosyl derivative selected from the group consisting of methyl-2,3,5-tri-O-(p-nitrobenzoyl)-β-D-ribofuranoside, a 2,3,5-tri-O-(p-nitrobenzoyl)-D-ribofuranosyl halide, 2,5-anhydro-3,4,6-tri-O-(p-nitrobenzoyl)-D-allononitrile, 2,3,5-tri-O-(p-nitrobenzoyl)-D-ribofuranose, and 1,2,3,5-tetra-O-(p-nitrobenzoyl)-β-D-ribofuranose.

13. A method for preparing a crystalline 2,3,5-tri-O-(p-nitrobenzoyl)-β-D-ribofuranosyl halide comprising the steps of

admixing a compound containing a p-nitrobenzoyl halide with a solution of methyl-D-ribofuranoside under reaction conditions whereby each of the three hydroxyl groups of the latter compound are replaced with a p-nitrobenzoyl group of the former compound to obtain methyl-2,3,5-tri-O-(p-nitrobenzoyl)-β-D-ribofuranoside;

admixing a halogenating agent with a solution of said methyl-2,3,5-tri-O-(p-nitrobenzoyl)-β-D-ribofuranoside under anhydrous reaction conditions whereby the methyl group of the latter compound is replaced by the halide of the halogenating agent; and crystallizing out said 2,3,5-tri-O-(p-nitrobenzoyl)-β-D-ribofuranosyl halide from the resultant reaction mixture.

4,282,350

# SELECTIVE 3'-N-ACYLATION OF 1,3'-DI-N-UNPROTECTED-POLY-N-PROTECTED-4,6-DI-O-(AMINOGLYCOSYL)-1,3-DIAMINOCYCLOITOLS

John J. Wright, Cedar Grove, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Aug. 5, 1977, Ser. No. 822,118  
Int. Cl.<sup>3</sup> C07H 15/22

U.S. Cl. 536—10

10 Claims

7. A 1-N-unprotected-poly-N-R-3'-N-Z-4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitol, selected from the group consisting of:

- 3,2'-di-N-R-3'-N-Z-gentamicin A,
  - 3,6'-di-N-R-3'-N-Z-gentamicin B,
  - 3,6'-di-N-R-3'-N-Z-gentamicin B<sub>1</sub>,
  - 3,2',6'-tri-N-R-3'-N-Z-gentamicin C<sub>1</sub>,
  - 3,2',6'-tri-N-R-3'-N-Z-gentamicin C<sub>1a</sub>,
  - 3,2',6'-tri-N-R-3'-N-Z-gentamicin C<sub>2</sub>,
  - 3,2',6'-tri-N-R-3'-N-Z-gentamicin C<sub>2a</sub>,
  - 3,2',6'-tri-N-R-3'-N-Z-gentamicin C<sub>2b</sub>,
  - 3,2'-di-N-R-3'-N-Z-gentamicin X<sub>2</sub>,
  - 3,2',6'-tri-N-R-3'-N-Z Antibiotic G-52,
  - 3,2',6'-tri-N-R-3'-N-Z Antibiotic 66-40B,
  - 3,2',6'-tri-N-R-3'-N-Z Antibiotic 66-40D,
  - 3,2',6'-tri-N-R-3'-N-Z Antibiotic G-418,
  - 3,2',6'-tri-N-R-3'-N-Z Antibiotic JI-20A,
  - 3,2',6'-tri-N-R-3'-N-Z Antibiotic JI-20B,
  - 3,6'-di-N-R-3'-N-Z-kanamycin A,
  - 3,2',6'-tri-N-R-3'-N-Z-kanamycin B,
  - 3,2',6'-tri-N-R-3'-N-Z-3',4'-dideoxykanamycin B,
  - 3,2',6'-tri-N-R-3'-N-Z-verdamycin,
  - 3,2',6'-tri-N-R-3'-N-Z-sisomicin,
  - 3,2',6'-tri-N-R-3'-N-Z-tobramycin, and
- the 5-epi-5-deoxy, 5-epi-fluoro-5-deoxy analogs of the foregoing wherein R is lower alkanoyl, benzoyl, lower alkoxy carbonyl, trichloroethoxycarbonyl, benzyloxycarbonyl, and Z is lower alkanoyl.

4,282,351

# CHITOSAN-GLUCAN COMPLEX, METHOD FOR ITS PRODUCTION AND END USES

Riccardo Muzzarelli, Ancona-sap-Anico, Italy, assignor to Anic, S.p.A., Palermo, Italy

Filed Jun. 4, 1979, Ser. No. 45,002  
Claims priority, application Italy, Jun. 14, 1978, 625 A/78  
Int. Cl.<sup>3</sup> C08B 37/08; C07G 7/00

U.S. Cl. 536—20

6 Claims

1. A method of producing the chitosan-glucan complex having the infrared spectrum shown in FIG. 1 A comprising treating a biomass selected from yeast, mold and fungus containing chitin and glucan with a solution of a strong alkali having a concentration of 30 to 50% at a temperature up to the boiling point of said solution.

4,282,352

# ADENOSINE TRIPHOSPHATE DERIVATIVE

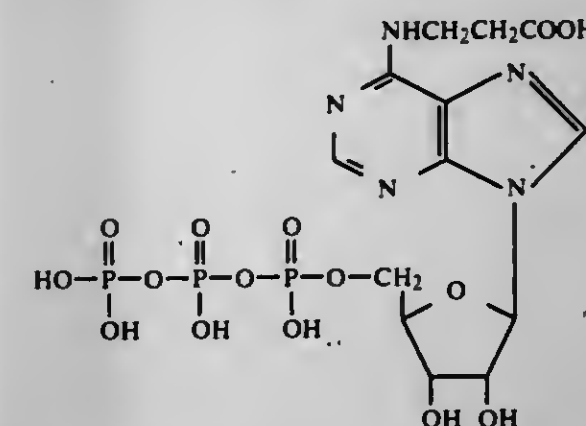
Kazutomo Imahori, Tokyo, and Kosuke Tomita, Matsudo, both of Japan, assignors to Unitika Ltd., Amagasaki, Japan

Filed Nov. 7, 1979, Ser. No. 91,996  
Claims priority, application Japan, Nov. 8, 1978, 53/138123  
Int. Cl.<sup>3</sup> C07H 17/00

U.S. Cl. 536—27

3 Claims

1. An adenosine triphosphate derivative represented by the formula:



and alkali metal salts thereof.

4,282,353

# PROCESS FOR THE PREPARATION OF UNSATURATED KETONES CONTAINING GLYCIDYL GROUPS

George E. Green, Stapleford, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

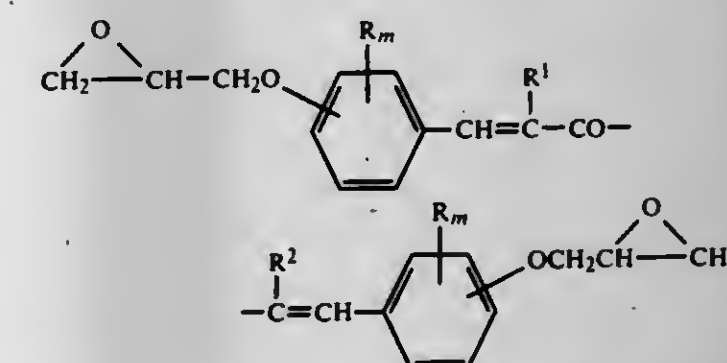
Filed Nov. 19, 1979, Ser. No. 95,873  
Claims priority, application United Kingdom, Nov. 30, 1978, 46657/78

Int. Cl.<sup>3</sup> C07D 301/00

U.S. Cl. 542—438

9 Claims

1. Process for the preparation of diglycidyl unsaturated ketones, in high yield and purity of the general formula

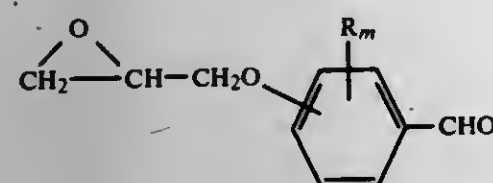


which comprises condensation of one molar equivalent of a ketone of formula





with two molar equivalents of a glycidyoxybenzaldehyde of formula



in the presence of a basic catalyst, where

R represents a straight chain or branched alkyl or alkoxy group having from 1 to 5 carbon atoms, an alkenyl group having from 2 to 5 carbon atoms, a carbalkoxy group having from 2 to 10 carbon atoms, a cycloalkyl group having from 5 to 8 carbon atoms, a halogen atom, a nitro group, or a carboxyl, sulfonic acid, or phosphonic acid group in the form of a salt,

m represents zero or a positive integer of from 1 to 4, and when m is greater than 1 the groups represented by R on the same aromatic ring may be the same or different, and R<sup>1</sup> and R<sup>2</sup>, which may be the same or different, separately represent a hydrogen atom or an alkyl group of from 1 to 5 carbon atoms, or R<sup>1</sup> and R<sup>2</sup> together form a straight chain or branched alkylene group of from 2 to 6 carbon atoms,

each glycidyoxy group in formula I being ortho- or para- to the group



and the glycidyoxy group in formula III being ortho or para- to the aldehyde group.

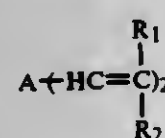
4,282,354

**ELECTROPHORETIC MIGRATION IMAGING PROCESS**  
James A. Van Allan; Louis J. Rossi, both of Rochester; Melvin S. Bloom, Penfield; Michael T. Regan, Fairport; Hal E. Wright, and Joseph Y. Kaukeisen, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.  
Continuation-in-part of Ser. No. 889,715, Mar. 24, 1978, Pat. No. 4,165,984, which is a division of Ser. No. 804,042, Jun. 6, 1977, abandoned. This application Apr. 18, 1979, Ser. No. 30,973  
Int. Cl.<sup>3</sup> C07D 407/10, 333/76; C07C 121/62

U.S. Cl. 542-441

2 Claims

I. A material having the following structure:



wherein

A represents phenylene, naphthylene, anthracenediyl and dibenzothiendiyl;

R<sub>1</sub> and R<sub>2</sub> both represent cyano or when taken together represent sufficient atoms to form a substituted or unsubstituted furanylidene and said substituents are selected from the group consisting of cyano, phenyl, nitrophenyl and oxo.

II

4,282,355

**PROCESS FOR THE MANUFACTURE OF BIS-BENZOXAZOLYL-STILBENE COMPOUNDS**  
Rüdiger Erckel, and Peter Jürges, both of Eppstein, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

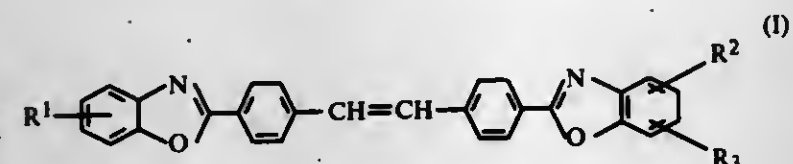
Filed Feb. 14, 1980, Ser. No. 121,296

Int. Cl.<sup>3</sup> C07D 413/10

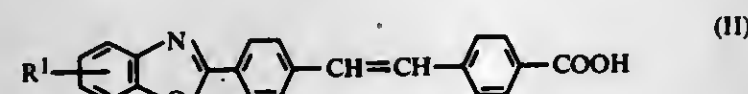
U.S. Cl. 542-459

1 Claim

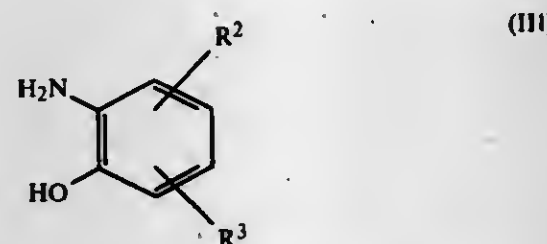
I. Process for the manufacture of bis-benzoxazolyl-stilbene compounds of the formula I



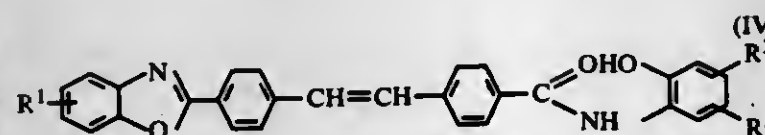
in which R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup>, independent of one another, denote hydrogen, C<sub>1</sub>-C<sub>9</sub> alkyl, carbo-C<sub>1</sub>-C<sub>4</sub> alkoxy and trifluoromethyl, at least two of the radicals R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> being hydrogen, by chlorination of an acid of the formula II



in which R<sup>1</sup> is as defined under formula I, in an inert organic solvent and subsequent reaction with an aminophenol of the formula III



in which R<sup>2</sup> and R<sup>3</sup> are as defined under formula I, which comprises adding the aminophenol in the form of a solution in an aprotic, dipolar solvent, preparing the compound of the formula IV



in which R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> are as defined under formula I by acylation and preparing therefrom the compound of the formula I by cyclization after addition of an acid catalyst.

4,282,356

**INTERMEDIATES FOR HETEROCYCLIC IMINES HAVING HYPOLIPIDAEMIC ACTIVITY**

Barrie C. C. Cantello, Redhill, England, assignor to Beecham Group Limited, Great Britain

Division of Ser. No. 94,100, Nov. 14, 1979. This application Jun. 10, 1980, Ser. No. 158,212

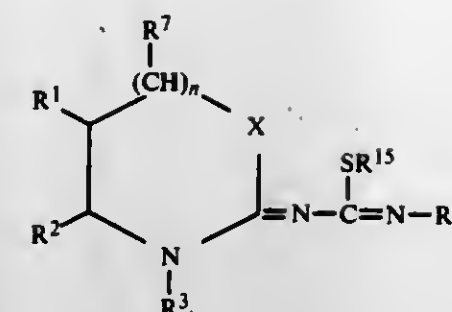
Claims priority, application United Kingdom, Nov. 29, 1978, 46531/78; May 5, 1979, 15737/79

Int. Cl.<sup>3</sup> C07D 263/06, 265/06, 277/04, 279/06

U.S. Cl. 544-53

14 Claims

I. An intermediate of formula (IV) or a salt thereof:



wherein

R<sup>1</sup> and R<sup>2</sup> are the same or different and represent hydrogen, C<sub>1</sub>-6 alkyl, phenyl, benzyl or C<sub>3</sub>-6 cycloalkyl;

R<sup>3</sup> is hydrogen, C<sub>1</sub>-6 alkyl, phenyl or benzyl;

R<sup>6</sup> is phenyl optionally substituted with up to three (3) groups selected from halogen, C<sub>1</sub>-6 alkyl, C<sub>1</sub>-6 alkoxy, C<sub>1</sub>-6 alkanoyl, C<sub>1</sub>-6 alkanoyloxy, nitro, hydroxy, amino, substituted amino, carboxy and C<sub>1</sub>-6 alkoxycarbonyl;

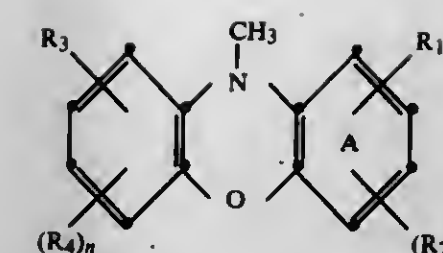
R<sup>7</sup> is hydrogen or C<sub>1</sub>-6 alkyl;

n is zero or 1;

X is oxygen or sulphur; and

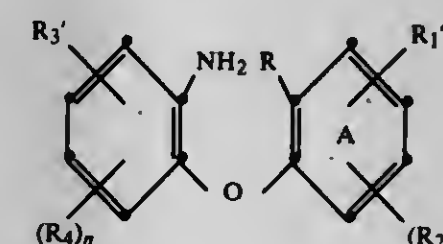
R<sup>15</sup> is C<sub>1</sub>-6 alkyl.

(IV)



(I)

wherein the ring A can also contain a nitrogen atom as ring member, each of R<sub>1</sub> and R<sub>3</sub> independently is hydrogen, lower alkyl, halogen, nitro or trifluoromethyl, each of R<sub>2</sub> and R<sub>4</sub> independently is hydrogen or halogen, and each of m and n is an integer from 1 to 3, which process comprises cyclising a compound of the formula



(2)

wherein A, R<sub>2</sub>, R<sub>4</sub>, m and n are as defined for formula (1), R is chlorine or bromine, and each of R<sub>1</sub>' and R<sub>3</sub>' independently is hydrogen, lower alkyl, halogen or trifluoromethyl, in the presence of dimethylmethanephosphonate, at reflux temperature, and, if desired, nitrating the resulting compound.

4,282,357

**AQUEOUS CHEMILUMINESCENT SYSTEMS**

Shin-Shyong Tseng, and Michael M. Rauhut, both of Bridge-water, N.J., assignors to American Cyanamid Company, Stamford, Conn.

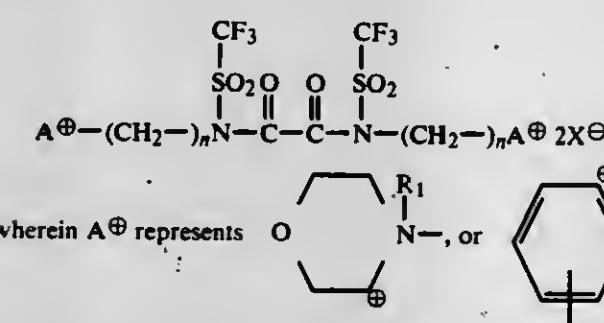
Continuation-in-part of Ser. No. 956,567, Nov. 1, 1978, Pat. No. 4,226,738. This application Feb. 19, 1980, Ser. No. 122,621

Int. Cl.<sup>3</sup> C07D 213/04, 265/30

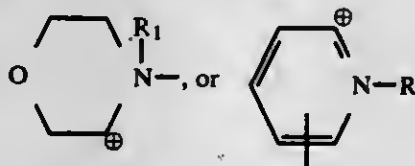
U.S. Cl. 544-85

8 Claims

I. A water-soluble amide of oxalic acid represented by the formula:



wherein A<sup>+</sup> represents



wherein R<sub>1</sub> represents hydrogen, or alkyl (C<sub>1</sub>-C<sub>6</sub>), n is an integer from 2 to 6, and X<sup>-</sup> is an anion.

4,282,359

**PURIFICATION OF CYANURIC ACID**

Basil A. Gulliano, Plainsboro; Henry A. Pfeffer, Mercerville, and Andrew D. Kurtz, Somerville, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Mar. 31, 1980, Ser. No. 135,948

Int. Cl.<sup>3</sup> C07D 251/32

U.S. Cl. 544-192

14 Claims

I. A process for recovering solid cyanuric acid in a more purified state from a slurry of solid cyanuric acid in an inert solvent containing dissolved urea and/or biuret and in which solvent the cyanuric acid is insoluble, which comprises mechanically separating the solid cyanuric acid from the slurry while maintaining the slurry at a temperature greater than about 170° C.

4,282,360

**7-METHYLTHIO OR METHYLSULFINYL-5-OXO-5H-THIAZOLO[2,3-B]QUINAZOLINE-2-CARBOXYLIC ACID**

Ronald A. LeMahien, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 12, 1979, Ser. No. 84,471

The portion of the term of this patent subsequent to Sep. 18, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> C07D 513/14, 239/72, 495/04

U.S. Cl. 544-250

3 Claims

I. A compound of the formula, 7-methylthio-5-oxo-5H-thiazolo[2,3-b]quinazoline-2-carboxylic acid, 7-methylsulfinyl-5-oxo-5H-thiazolo[2,3-b]quinazoline-2-carboxylic acid or a salt thereof with a pharmaceutically acceptable base.

4,282,358

**PROCESS FOR THE PRODUCTION OF SUBSTITUTED N-METHYLBENZOXAZINES**

Claus D. Weis, Pfaffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,855

Claims priority, application Switzerland, Jan. 10, 1979, 216/79

Int. Cl.<sup>3</sup> C07D 265/38, 498/04

U.S. Cl. 544-101

5 Claims

I. A process for the production of a N-methylbenzoxazine of the formula



4,282,361

SYNTHESIS FOR  
7-ALKYLAMINO-3-METHYLPYRAZOLO  
[4,3-D]PYRIMIDINES

Sidney M. Hecht, Newtonville, Mass., and Ulrich Jordis, Vienna, Austria, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 16, 1978, Ser. No. 887,383  
Int. Cl.<sup>3</sup> A61K 31/505; C07D 487/04

U.S. Cl. 544-262

4 Claims

1. In a method for synthesizing 7-alkylamino-3-methylpyrazolo[4,3-d]pyrimidines, including the steps of esterifying 3-methyl-4-nitropyrazole-5-carboxylic acid to ethyl 3-methyl-4-nitropyrazole-5-carboxylate, forming 3-methyl-4-nitropyrazole-5-carboxamide from ethyl 3-methyl-4-nitropyrazole-5-carboxylate, catalytically reducing and formylating ethyl 3-methyl-4-nitropyrazole-5-carboxamide to produce 4-formylamino-3-methylpyrazole-5-carboxamide, closing the ring of 4-formylamino-3-methylpyrazole-5-carboxamide to produce 3-methyl-7-hydroxypyrazolo[4,3-d]pyrimidine, chlorinating said 3-methyl-7-hydroxypyrazolo[4,3-d]pyrimidine to produce 7-chloro-3-methylpyrazolo[4,3-d]pyrimidine and reacting said 7-chloro-3-methylpyrazolo[4,3-d]pyrimidine with an alkylamine to produce a 7-alkylamino-3-methylpyrazolo[4,3-d]pyrimidine:

the improvement wherein ethyl 3-methyl-4-nitropyrazole-5-carboxamide is simultaneously catalytically reduced and formylated to produce 4-formylamino-3-methylpyrazole-5-carboxamide and the ring of 4-formylamino-3-methylpyrazole-5-carboxamide is intramolecularly closed to produce 3-methyl-7-hydroxypyrazolo[4,3-d].

4,282,362

## OCTAHYDRO-2H-PYRROLO[3,4-g]QUINOLINES

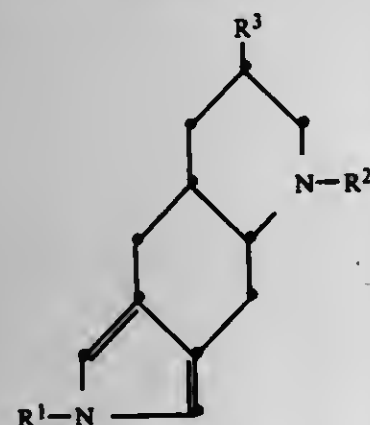
Nicholas J. Bach, and Edmund C. Kornfeld, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 31,642, Apr. 19, 1979, Pat. No. 4,235,909, which is a continuation-in-part of Ser. No. 5,062, Jan. 22, 1979, abandoned. This application Apr. 18, 1980, Ser. No. 141,750  
Int. Cl.<sup>3</sup> C07D 471/04

U.S. Cl. 546-84

4 Claims

1. A compound of the formula



wherein R<sup>1</sup> is H, or (C<sub>1</sub>-C<sub>3</sub>) alkyl, R<sup>2</sup> is H, C<sub>1</sub>-C<sub>3</sub> alkyl, allyl or benzyl and R<sup>3</sup> is COO(C<sub>1</sub>-C<sub>3</sub>) alkyl, COOH, or CH<sub>2</sub>X wherein X is CN, CONH<sub>2</sub>, SCH<sub>3</sub>, SO<sub>2</sub>CH<sub>3</sub>, or OCH<sub>3</sub> or a pharmaceutically acceptable acid addition salt thereof.

4,282,363

1-NITRO-2-(2-ALKYNYLAMINO)-2-[(2-PYRIDYLME-  
THYLTHIO)-ETHYLAMINO]ETHYLENE DERIVATIVES

Aldo A. Algieri, Fayetteville, and Ronnie R. Crenshaw, Dewitt, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

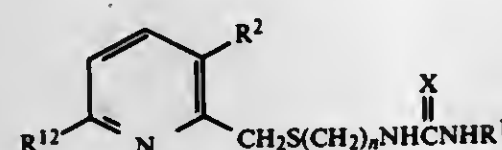
Division of Ser. No. 963,477, Nov. 24, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 129,157

Int. Cl.<sup>3</sup> C07D 213/38

U.S. Cl. 546-332

8 Claims

1. A compound of the formula



wherein R<sup>1</sup> is a straight or branched chain alkynyl group containing from 3 to 9 carbon atoms, inclusive; R<sup>2</sup> is hydrogen, hydroxy, cyano, (lower)alkyl, (lower)alkoxy, halogen or amino; n is 2 or 3; X is CHNO<sub>2</sub>; R<sup>12</sup> is hydrogen or (CH<sub>2</sub>)<sub>p</sub>NR<sup>13</sup>R<sup>14</sup>; p is an integer of from 1 to 4, inclusive; and R<sup>13</sup> and R<sup>14</sup> each are independently hydrogen or (lower)alkyl or a nontoxic, pharmaceutically acceptable salt thereof.

4,282,364

## PROCESS FOR THE PREPARATION OF THIAZOLES

Joseph S. Amato, Brooklyn, N.Y.; Sandor Karady, Moustanside, and Leonard M. Weinstock, Belle Mead, both of N.J., assignors to Merck &amp; Co., Inc., Rahway, N.J.

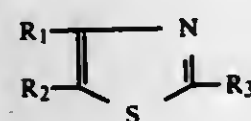
Filed May 22, 1980, Ser. No. 152,281

Int. Cl.<sup>3</sup> C07D 277/25

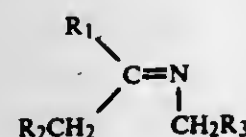
U.S. Cl. 548-202

11 Claims

1. A process for the preparation of a compound having the formula



wherein R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are independently hydrogen, loweralkyl, phenyl or substituted phenyl wherein the substituent is one or two of loweralkyl or halogen, which comprises reacting an imine having the formula:



wherein R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are as defined above, with sulfur dioxide in the presence of a catalyst consisting of a mixture of from 0.1 to 2% by weight of zirconium oxide, from 85 to 98% by weight of an alkaline earth metal oxide and from 1 to 15% by weight of an alkali metal hydroxide.

4,282,365

## DIBENZ[b,e]OXEPIN COMPOUNDS

Joshua Rokach, Chomedey-Laval, Canada; Edward J. Cragoe, Jr., Lansdale, and Clarence S. Rooney, Worcester, both of Pa., assignors to Merck &amp; Co., Inc., Rahway, N.J.

Filed Nov. 24, 1978, Ser. No. 963,705

Int. Cl.<sup>3</sup> C07P 313/12; C07D 233/40, 405/10

U.S. Cl. 548-252

17 Claims

1. A compound selected from the group consisting of 6,11-dihydrodibenz[b,e]oxepins having the structural formulae:

4,282,367

PROCESS FOR THE SEPARATION OF  
POLYURETHANE FOAM HYDROLYSATES INTO  
POLYOL AND DIAMINE

Georg Niederdelmann, Dormagen; Norbert Roemer, Monchen-Gladbach, and Ernst Grigat, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 19, 1979, Ser. No. 105,059

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2854940

Int. Cl.<sup>3</sup> C08G 18/48, 18/14

U.S. Cl. 260-2.3

2 Claims

1. A process for the separation of propylene oxide/ethylene oxide-based polyether-polyurethane hydrolysates into polyamines and polyols which can be used again for the production of polyurethanes, comprising introducing gaseous hydrogen chloride into the hydrolysate mixture which has optionally been diluted with an inert solvent, and removing the precipitated amine salt by filtration, characterized in that:

- (A) gaseous hydrogen chloride is optionally first introduced into the hydrolysate in a quantity of from 0.02 to 0.07 mol per amine equivalent, the reaction mixture is filtered and the filter residue is discarded, then
- (B) from 0.20 to 0.47 mol of gaseous hydrogen chloride, per mol of amine equivalents still present is introduced into the filtrate and the precipitated amine salt is filtered off, then
- (C) stage (B) is repeated one or more times until the amine group content in the filtrate is below 0.25% by weight, based on the solvent-free filtrate, and finally
- (D) precipitation of the amine is completed by the introduction of from 0.5 to 1.0 mol of gaseous hydrogen chloride based on the amine equivalents remaining in the filtrates.

4,282,368

PREPARATION OF P-SUBSTITUTED AROMATIC  
CARBAMIC ACID ESTERS

Franz Merger, Frankenthal, and Gerhard Nestler, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 2, 1980, Ser. No. 155,762

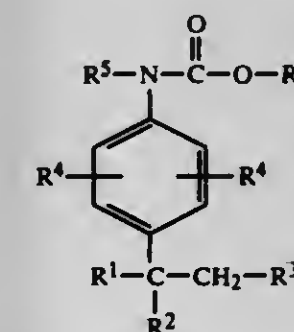
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925480

Int. Cl.<sup>3</sup> C07C 125/065, 125/067

U.S. Cl. 560-24

12 Claims

1. A process for the preparation of a p-substituted, aromatic carbamic acid ester of the formula



4,282,366

ORGANOSILICON QUATERNARY AMMONIUM  
ANTIMICROBIAL COMPOUNDS

William W. Eudy, Cornwall-on-Hudson, N.Y., assignor to International Paper Company, New York, N.Y.

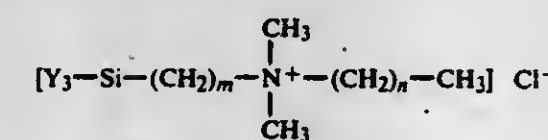
Filed Nov. 6, 1979, Ser. No. 91,749

Int. Cl.<sup>3</sup> C07F 7/10

U.S. Cl. 556-413

3 Claims

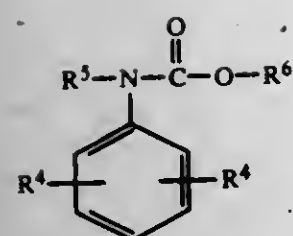
1. A compound of the formula:



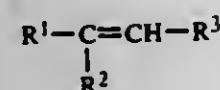
wherein m+n is 16 to 19, m is 1 or 4 to 6 and n is 13 to 17 or m+n is 20 to 23, m is 4 to 11 and n is 9 to 17; and Y is a hydrolyzable radical or hydroxy group.

where the individual radicals R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> and R<sup>6</sup> may be identical or different and each is an aliphatic radical, R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> may also each be a cycloaliphatic, araliphatic or aromatic radical, any 2 of the radicals R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> may also, conjointly with the adjacent carbon atoms, be members of an alicyclic ring, R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> conjointly with the adjacent carbon atoms may also be a bicyclic radical, R<sup>2</sup>, R<sup>3</sup> and R<sup>5</sup> may also each be hydrogen, R<sup>4</sup> may also be hydrogen or halogen and R<sup>6</sup> may also be a cycloaliphatic radical, wherein an aromatic carbamic acid ester of the formula





where  $R^4$ ,  $R^5$  and  $R^6$  have the above meanings, is reacted with an olefin of the formula



where  $R^1$ ,  $R^2$  and  $R^3$  have the above meanings, in the presence of an inorganic acid or sulfonic acid.

**4,282,370**  
**PREPARATION OF METHYLENE-BIS-PHENYLCARBAMIC ACID ESTERS AND OF POLYMETHYLENE-POLYPHENYLCARBAMIC ACID ESTERS**

Franz Merger, Frankenthal, and Gerhard Nestler, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,568

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1979, 2931554

Int. Cl.<sup>3</sup> C07C 125/073, 118/00, 119/048

U.S. Cl. 560—25

4 Claims

I. A process for preparing methylene-bis-phenylcarbamic acid esters and polymethylene-polyphenylcarbamic acid esters, wherein an N-phenylcarbamic acid ester is reacted with an acylal of the formula



where R is alkyl, in the presence of an acid at from 50° to 150° C.

**4,282,371**  
**SELECTED AMINOESTER DERIVATIVES OF TRICHLOROACETONITRILE**

Eugene F. Rothgery, North Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

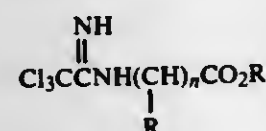
Filed Apr. 28, 1980, Ser. No. 144,744

Int. Cl.<sup>3</sup> C07C 101/24; A01N 37/50

U.S. Cl. 560—35

8 Claims

I. A compound of the formula:



wherein R is hydrogen, lower alkyl having 1 to 4 carbon atoms, phenyl, benzyl, and substituted phenyl and benzyl in which said phenyl ring substituents are selected from the group consisting of lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, halo, hydroxy, nitro, amino and mixtures thereof; wherein R' is a lower alkyl having 1 to 4 carbon atoms and n is 1 or 2.

**4,282,372**  
**PROCESS FOR PRODUCING CYCLOPENTENOLONES**

Takashi Matsuo, Itami, and Kazuoori Tsushima, Nishinomiya, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 30, 1979, Ser. No. 89,351

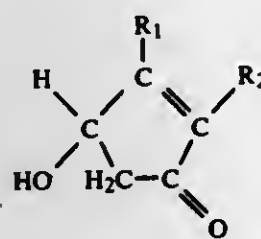
Claims priority, application Japan, Nov. 1, 1978, 53-135386; Nov. 1, 1978, 53-135387; Nov. 15, 1978, 53-141410; Nov. 15, 1978, 53-141411

Int. Cl.<sup>3</sup> C07C 45/57, 67/00

U.S. Cl. 560—121

3 Claims

I. A process for producing a cyclopentenolone derivative of the formula (I),



wherein  $R_1$  is a hydrogen atom or a  $C_1$ - $C_6$  alkyl group,  $R_2$  is a hydrogen atom, a  $C_1$ - $C_8$  alkyl group, a  $C_2$ - $C_8$  alkenyl group, a  $C_2$ - $C_8$  alkynyl group, a group of the formula,

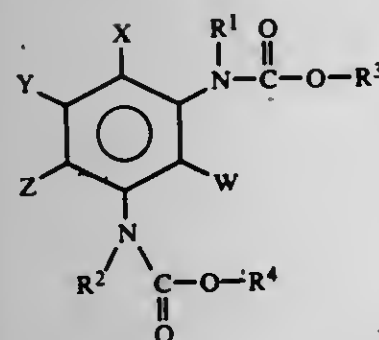
(I)

**4,282,369**  
**DIURETHANES**  
Ulrich Schirmer, Heidelberg; Wolfgang Rohr, Mannheim; Bruno Wuerzer, and Kurt Fett, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany  
Continuation of Ser. No. 869,323, Jan. 13, 1978, Pat. No. 4,227,007. This application Oct. 31, 1979, Ser. No. 89,954  
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1977, 2703838  
The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.

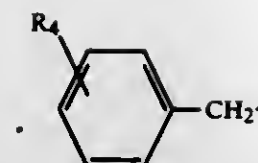
Int. Cl.<sup>3</sup> C07C 125/04; A01N 9/20

U.S. Cl. 560—25

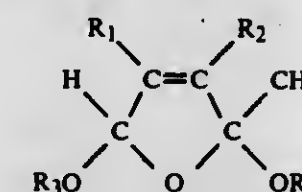
I.



where  $R^1$  and  $R^2$  are identical or different and each denotes hydrogen, alkyl, alkoxyalkyl, or haloalkyl,  $R^3$  denotes unsubstituted alkyl, alkyl substituted by halogen, alkoxy, unsubstituted aryl or halogen-substituted aryl, unsubstituted or halogen-substituted alkenyl, unsubstituted or halogen- or alkoxy-substituted alkynyl,  $R^4$  denotes unsubstituted or alkyl-substituted cycloalkyl, bicycloalkyl, tricycloalkyl, phenyl with fused ring system, phenyl, or mono- or polysubstituted phenyl with the substituents alkyl, haloalkyl, alkoxyalkyl, cycloalkyl, halogen, alkoxy, or haloalkoxy, with the proviso that  $R^3$  and  $R^4$  are different and W, X, Y and Z are identical or different and each denotes hydrogen, alkyl, haloalkyl, alkoxy, halogen, nitro and amino.



in which  $R_4$  is a hydrogen atom, a methyl group or a halogen atom, or a group of the formula,  $-\text{CH}_2-\text{CH}=\text{CH}-(\text{CH}_2)_3-\text{CO}_2\text{R}_5$  or  $-(\text{CH}_2)_6-\text{CO}_2\text{R}_5$  in which  $R_5$  is a hydrogen atom or a  $C_1$ - $C_4$  alkyl group, and  $R_1$  and  $R_2$  are not a hydrogen atom at the same time, which comprises reacting a novel substituted furan derivative of the formula (II),



wherein  $R_1$  and  $R_2$  are as defined above, and  $R_3$  is a  $C_1$ - $C_4$  alkyl group, in a solvent under acidic conditions.

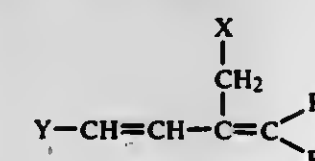
**4,282,373**  
**PROCESS FOR PREPARATION OF THIOPHENES**  
Angela W. Guest, Little Bookham; Andrew W. Taylor, Dorking, and Robert Ramage, Altrincham, all of England, assignors to Beecham Group Limited, England  
Division of Ser. No. 926,727, Jul. 21, 1978, Pat. No. 4,252,976.  
This application May 7, 1979, Ser. No. 36,407  
Claims priority, application United Kingdom, Jul. 23, 1977, 31008/77

Int. Cl.<sup>3</sup> C07C 69/602

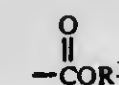
U.S. Cl. 560—181

8 Claims

1. A compound of the formula:

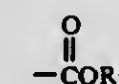


wherein  $R^1$  is



and

$R^2$  is the same or different



$R^3$  is hydrogen, alkyl of 1 to 6 carbon atoms, benzyl, phthalidyl, indanylyl, phenyl or phenyl substituted with from 1 to 3 alkyl groups each of from 1 to 6 carbon atoms, Y is halo, hydroxy or alkoxy, and X is halo, hydroxy benzenesulphonyloxy, p-toluenesulphonyloxy, p-nitrobenzenesulphonyloxy, alkylsulphonyloxy, or alkanoyloxy of 1 to 6 carbon atoms.  
7. A compound according to claim 1 wherein  $R^3$  is hydrogen, alkyl of 1 to 6 carbon atoms or benzyl.  
8. A compound according to claim 7 wherein  $R^3$  is hydrogen, methyl, ethyl or benzyl.

**4,282,374**  
**PREPARATION OF GLYOXAL FROM ETHYLENE GLYCOL**

Heinz Engelbach, Limburgerhof, and Michael J. Sprague, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany  
Filed Jul. 5, 1979, Ser. No. 54,871

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1978, 2832405

Int. Cl.<sup>3</sup> C07C 45/65

U.S. Cl. 568—471

4 Claims

1. A process for the preparation of glyoxal by vapor phase oxidation of ethylene glycol with an oxygen-containing catalyst in the presence of a copper-containing oxidation catalyst at a temperature of from about 225° to about 500° C., wherein the vapor phase oxidation is carried out in the presence of a phosphorus compound having a boiling point of less than about 500° C. under the reaction conditions, the amount of phosphorus (calculated as P) being from 1 to 100 ppm, based on the weight of ethylene glycol.

**4,282,375**  
**HALOGENATED-NAPHTHALENETRIYLTRIS(SULFONYLIMINO)ARYL MULTICARBOXYLIC ACIDS AND SALTS THEREOF**

Seymour Bernstein, New City, and John F. Poletto, Nantuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

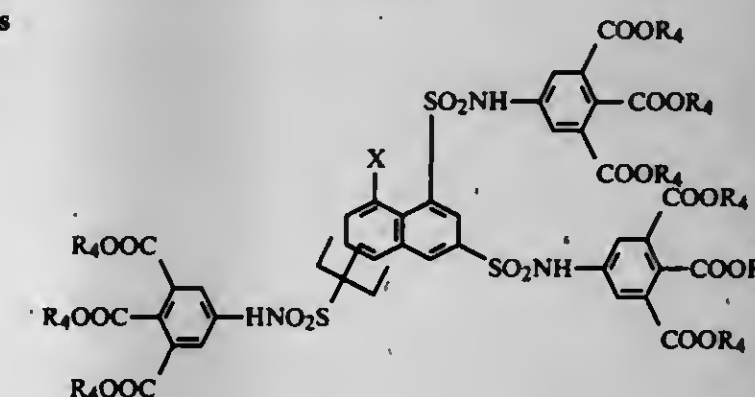
Filed Dec. 26, 1979, Ser. No. 106,611

Int. Cl.<sup>3</sup> C07C 143/75

U.S. Cl. 562—427

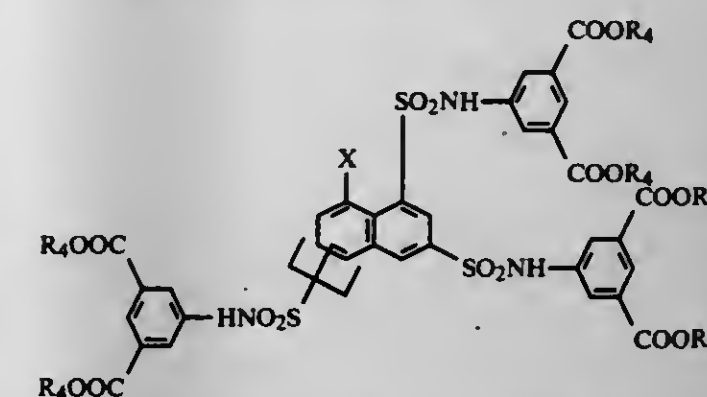
6 Claims

1. A compound of the formula:



wherein  $R_4$  is selected from the group consisting of hydrogen and a pharmaceutically acceptable salt cation; and X is halogen.

2. A compound of the formula:



wherein  $R_4$  is selected from the group consisting of hydrogen and a pharmaceutically acceptable salt cation; and X is halogen.



4,282,376

13,14-DIHYDRO-11-DEOXY-9-DEOXY-9-METHYLENE-19-OXO-PGF<sub>2</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

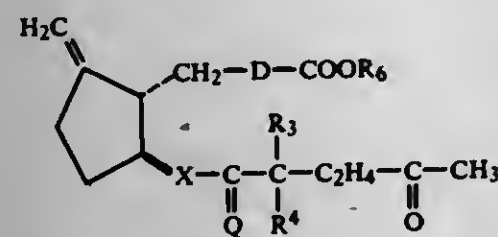
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,733

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

4 Claims

1. A compound of the formula



wherein D is

- (1)  $\text{cis-CH=CH-CH}_2\text{-(CH}_2\text{)}_g\text{-CH}_2\text{-}$ ,
- (2)  $\text{cis-CH=CH-CH}_2\text{-(CH}_2\text{)}_g\text{-CF}_2\text{-}$ ,
- (3)  $\text{cis-CH}_2\text{-CH=CH-CH}_2\text{-CH}_2\text{-}$ , or
- (4)  $\text{trans-(CH}_2\text{)}_3\text{-CH=CH-}$ ;

wherein g is zero, one, two, or three;

wherein Q is  $\alpha\text{-OH-}\beta\text{-R}_5$  or  $\alpha\text{-R}_5\text{-}\beta\text{-OH}$ , wherein R<sub>5</sub> is hydrogen or methyl;wherein R<sub>6</sub> is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,
- (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
- (g)  $\text{-(p-Ph)-CO-CH}_3$ ,
- (h)  $\text{-(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH}_3$ ,
- (i)  $\text{-(p-Ph)-NH-CO-(p-Ph)-}$ ,
- (j)  $\text{-(p-Ph)-NH-CO-CH}_3$ ,
- (k)  $\text{-(p-Ph)-NH-CO-NH}_2$ ,
- (l)  $\text{-(p-Ph)-CH=N-NH-CO-NH}_2$ ,
- (m)  $\beta\text{-naphthyl}$ ,
- (n)  $\text{-CH}_2\text{-CO-R}_{28}$ ,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R<sub>28</sub> is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or(o) a pharmacologically acceptable cation; wherein R<sub>3</sub> and R<sub>4</sub> are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is fluoro only when the other is hydrogen or fluoro; and wherein X is  $\text{-CH}_2\text{CH}_2\text{-}$ .

4,282,377

13,14-DIHYDRO-11-DEOXY-19-OXO-PGE<sub>2</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

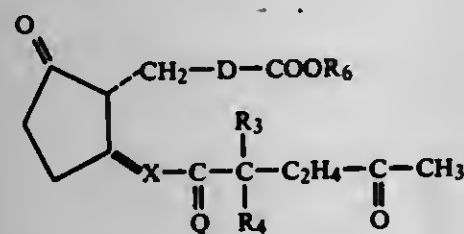
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,734

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

4 Claims

1. A compound of the formula



wherein D is

- (1)  $\text{cis-CH=CH-CH}_2\text{-(CH}_2\text{)}_g\text{-CH}_2\text{-}$ ,
- (2)  $\text{cis-CH=CH-CH}_2\text{-(CH}_2\text{)}_g\text{-CF}_2\text{-}$ ,
- (3)  $\text{cis-CH}_2\text{-CH=CH-CH}_2\text{-CH}_2\text{-}$ , or
- (4)  $\text{trans-(CH}_2\text{)}_3\text{-CH=CH-}$ ;

wherein g is zero, one, two, or three;

wherein Q is  $\alpha\text{-OH-}\beta\text{-R}_5$  or  $\alpha\text{-R}_5\text{-}\beta\text{-OH}$ , wherein R<sub>5</sub> is hydrogen or methyl;wherein R<sub>6</sub> is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,
- (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
- (g)  $\text{-(p-Ph)-CO-CH}_3$ ,
- (h)  $\text{-(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH}_3$ ,
- (i)  $\text{-(p-Ph)-NH-CO-(p-Ph)-}$ ,
- (j)  $\text{-(p-Ph)-NH-CO-CH}_3$ ,
- (k)  $\text{-(p-Ph)-NH-CO-NH}_2$ ,
- (l)  $\text{-(p-Ph)-CH=N-NH-CO-NH}_2$ ,
- (m)  $\beta\text{-naphthyl}$ ,
- (n)  $\text{-CH}_2\text{-CO-R}_{28}$ ,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R<sub>28</sub> is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or(o) a pharmacologically acceptable cation; wherein R<sub>3</sub> and R<sub>4</sub> are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is fluoro only when the other is hydrogen or fluoro; and wherein X is  $\text{-CH}_2\text{CH}_2\text{-}$ .

4,282,378

13,14-DIHYDRO-11-DEOXY-19-OXO-PGF<sub>2</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

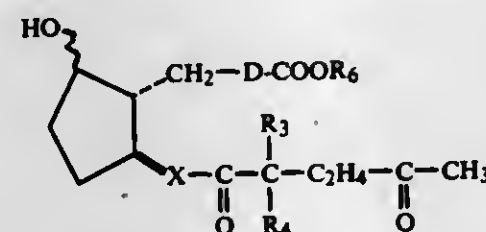
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,735

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

4 Claims

1. A compound of the formula



wherein D is

- (1)  $\text{cis-CH=CH-CH}_2\text{-(CH}_2\text{)}_g\text{-CH}_2\text{-}$ ,
- (2)  $\text{cis-CH=CH-CH}_2\text{-(CH}_2\text{)}_g\text{-CF}_2\text{-}$ ,
- (3)  $\text{cis-CH}_2\text{-CH=CH-CH}_2\text{-CH}_2\text{-}$ , or
- (4)  $\text{trans-(CH}_2\text{)}_3\text{-CH=CH-}$ ;

wherein g is zero, one, two, or three;

wherein Q is  $\alpha\text{-OH-}\beta\text{-R}_5$  or  $\alpha\text{-R}_5\text{-}\beta\text{-OH}$ , wherein R<sub>5</sub> is hydrogen or methyl;wherein R<sub>6</sub> is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,
- (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
- (g)  $\text{-(p-Ph)-CO-CH}_3$ ,
- (h)  $\text{-(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH}_3$ ,
- (i)  $\text{-(p-Ph)-NH-CO-(p-Ph)-}$ ,
- (j)  $\text{-(p-Ph)-NH-CO-CH}_3$ ,
- (k)  $\text{-(p-Ph)-NH-CO-NH}_2$ ,

- (l)  $\text{-(p-Ph)-CH=N-NH-CO-NH}_2$ ,
- (m)  $\beta\text{-naphthyl}$ ,
- (n)  $\text{-CH}_2\text{-CO-R}_{28}$ ,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R<sub>28</sub> is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R<sub>3</sub> and R<sub>4</sub> are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is fluoro only when the other is hydrogen or fluoro; andwherein X is  $\text{-CH}_2\text{CH}_2\text{-}$ .

4,282,380

## REDUCTIVE ALKYLATION AND DEHALOGENATION OF M-NITROBENZYL HALIDES

Albert W. Lutz, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

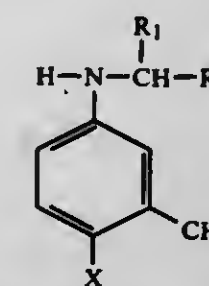
Filed Jul. 5, 1979, Ser. No. 54,739

Int. Cl.<sup>3</sup> C07C 85/08, 85/24

U.S. Cl. 564-398

5 Claims

1. A process for the preparation of a compound of formula:



4,282,379

13,14-DIHYDRO-11-DEOXY-11-HYDROXYMETHYL-9-DEOXY-9-METHYLENE-19-OXO-PGF<sub>2</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

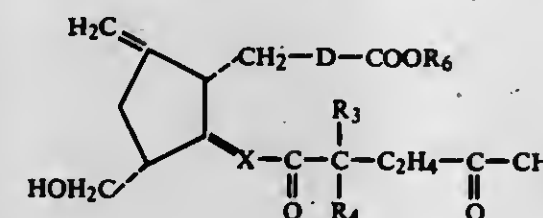
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,736

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

4 Claims

1. A compound of the formula



wherein D is

- (1)  $\text{cis-CH=CH-CH}_2\text{-(CH}_2\text{)}_g\text{-CH}_2\text{-}$ ,
- (2)  $\text{cis-CH=CH-CH}_2\text{-(CH}_2\text{)}_g\text{-CF}_2\text{-}$ ,
- (3)  $\text{cis-CH}_2\text{-CH=CH-CH}_2\text{-CH}_2\text{-}$ , or
- (4)  $\text{trans-(CH}_2\text{)}_3\text{-CH=CH-}$ ;

wherein g is zero, one, two, or three;

wherein Q is  $\alpha\text{-OH-}\beta\text{-R}_5$  or  $\alpha\text{-R}_5\text{-}\beta\text{-OH}$ , wherein R<sub>5</sub> is hydrogen or methyl;wherein R<sub>6</sub> is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,
- (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
- (g)  $\text{-(p-Ph)-CO-CH}_3$ ,
- (h)  $\text{-(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH}_3$ ,
- (i)  $\text{-(p-Ph)-NH-CO-(p-Ph)-}$ ,
- (j)  $\text{-(p-Ph)-NH-CO-CH}_3$ ,
- (k)  $\text{-(p-Ph)-NH-CO-NH}_2$ ,
- (l)  $\text{-(p-Ph)-CH=N-NH-CO-NH}_2$ ,
- (m)  $\beta\text{-naphthyl}$ ,
- (n)  $\text{-CH}_2\text{-CO-R}_{28}$ ,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R<sub>28</sub> is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R<sub>3</sub> and R<sub>4</sub> are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is fluoro only when the other is hydrogen or fluoro; and wherein X is  $\text{-CH}_2\text{CH}_2\text{-}$ .

4,282,381

## PROCESS FOR PURIFYING HEXAMETHYLENEDIAMINE

Oscar R. Buehler, Newark, and Harold P. Porter, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 21, 1980, Ser. No. 179,949

Int. Cl.<sup>3</sup> C07C 85/26

U.S. Cl. 564-498

8 Claims

1. A process for the purification of hexamethylenediamine which comprises absorbing substantially anhydrous ammonia in molten crude hexamethylenediamine in a first zone, volatilizing a portion of the dissolved ammonia in a second zone to cool and thereby crystallize at least a portion of the hexamethylenediamine, separating the crystalline hexamethylenediamine from the molten hexamethylenediamine in a third zone, and thereafter washing the thus obtained crystalline diamine with refined molten hexamethylenediamine.



4,282,382

# PRODUCTION OF CYCLOHEXYLBENZENE HYDROPEROXIDE

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 2, 1979, Ser. No. 54,081  
Int. Cl.<sup>3</sup> C07C 179/03

U.S. Cl. 568—570

13 Claims

1. A process for preparation of cyclohexylbenzene hydroperoxide comprising reacting cyclohexylbenzene with oxygen in a diluent consisting essentially of cyclohexane under conditions suitable for converting said cyclohexylbenzene to cyclohexylbenzene hydroperoxide.

4,282,383

# PROCESS FOR THE AUTOXIDATION OF CYCLOHEXYLBENZENE TO FORM CYCLOHEXYLBENZENE HYDROPEROXIDE

Sheng-Hong A. Dai, Wallingford; Chung-Yuan Lin, Northford, and Fred A. Stuber, North Haven, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 689,489, May 24, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 861,757  
Int. Cl.<sup>3</sup> C07C 179/03

U.S. Cl. 568—573

4 Claims

1. A process for the autoxidation of cyclohexylbenzene to form cyclohexylbenzene hydroperoxide which comprises heating cyclohexylbenzene at a temperature in the range of about 80° C. to about 105° C. in the presence of oxygen and from about 2 to 6 percent by weight, based on cyclohexylbenzene, of a hydroperoxide selected from the class consisting of tertiary-butyl and cumene hydroperoxides and p-diisopropylbenzene dihydroperoxide, and from about 0.1 to 5 percent by weight, based on cyclohexylbenzene, of a free radical initiator selected from the group consisting of azobisisobutyronitrile, t-butylperbenzoate and dicumyl peroxide.

4,282,384

# PREPARATION OF DIISOPROPYLBENZENE HYDROPEROXIDE

Ching-Yong Wu, Fox Chapel Borough; Harold E. Swift, Gibsonia, and John E. Bozik, Plum Borough, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 5, 1980, Ser. No. 146,232

The portion of the term of this patent subsequent to May 8, 1996, has been disclaimed.  
Int. Cl.<sup>3</sup> C07C 179/035

U.S. Cl. 568—574

11 Claims

1. A process for oxidizing diisopropylbenzene to a mixture of mono- and diisopropylbenzene hydroperoxide comprising heating o-diisopropylbenzene, m-diisopropylbenzene, p-diisopropylbenzene or a mixture thereof in contact with about 0.0005 to about 0.1 weight percent barium oxide at a temperature between about 70° C. and about 130° C. under substantially anhydrous conditions and contacting said diisopropylbenzene with molecular oxygen.

4,282,385

# HYPERACIDIC SOLID METAL LACTATES AND PROCESS FOR PRODUCING SAME

Ulrich Metz, Seebuck, Austria, and Horst Michaud, Trostberg, Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Apr. 25, 1979, Ser. No. 33,000

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820942

Int. Cl.<sup>3</sup> C07C 59/08

U.S. Cl. 562—589

12 Claims

1. A hyperacidic, non-hygroscopic, non-caking, free-flowing solid metal lactate having the formula:



wherein x corresponds to the equivalence of the metal M, M is selected from the group consisting of lithium and alkaline earth metals, and n is a number from 4 to 12.

4,282,386

# ALKYL, CYCLOALKYL DIETHERS OF (POLY)ALKYLENE GLYCOLS

Felipe A. Donate, and Zonia G. Cutie, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 2, 1980, Ser. No. 145,918

Int. Cl.<sup>3</sup> C07C 41/05

U.S. Cl. 568—606

4 Claims

1. A process for production of a glycol diether of the formula  $R_1O-(CHR'CHR''O)_nR_2$  where  $R_1$  is phenyl or  $C_{1-4}$  alkyl;  $R'$  and  $R''$  are independently in each alkyleneoxy unit hydrogen or methyl, provided that at most only one of  $R'$  or  $R''$  is methyl in each alkyleneoxy unit; n is an integer from 1 to 6; and  $R_2$  is  $C_{5-6}$  cycloalkyl by reacting one or more glycol monoalkyl ethers of the formula  $R_1O-(CHR'CHR''O)_nH$  where  $R_1$ ,  $R'$ ,  $R''$  and n are as previously defined with cyclopentene or cyclohexene in the presence of a synthetic ion-exchange resin in the acid form at a temperature from about 100° C. to about 150° C. under autogenous pressure for a time sufficient to form the desired product.

4,282,387

# PROCESS FOR PREPARING POLYOLS

Franciszek Olstowski, Freeport, and John L. Nafziger, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 26, 1979, Ser. No. 107,242

Int. Cl.<sup>3</sup> C08G 65/28

U.S. Cl. 568—618

18 Claims

1. In a process for preparing active hydrogen-containing polymers having hydroxyl equivalent weights from about 50 to about 12,500 by reacting a mono-epoxy-containing compound with a compound containing at least one active hydrogen in the presence of a catalytic quantity of a catalyst, and in the absence of a solvent or diluent other than the reactants and reaction products; the improvement wherein the catalyst is added in the form of an organic carboxylic acid salt of calcium, barium, strontium, or mixture thereof and wherein said organic acid has at least 2 carbon atoms.

4,282,388

# CYCLIC 1,2-DIOL BENZYL ETHER COMPOUNDS

Wilfried Draber; Wolf Reiser; Thomas Schmidt, all of Wuppertal; Ludwig Eue, Leverkusen, and Robert R. Schmidt, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,415

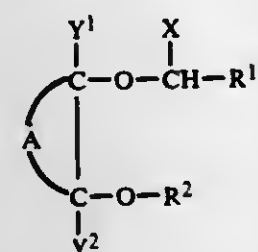
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753556; Sep. 28, 1978, 2842188

Int. Cl.<sup>3</sup> C07C 43/188, 43/192

U.S. Cl. 568—660

23 Claims

1. Benzyl ether of cyclic 1,2-diols, of the formula



wherein

$R^1$  is phenyl or substituted phenyl, which substituents are selected from the group consisting of halogen, alkyl, alkoxy with up to 4 carbon atoms, haloalkyl, haloalkoxy with

up to 4 carbon atoms each and up to 5 halogen atoms, trimethylene, tetramethylene or pentamethylene groups, and phenyl, and phenoxy, the last two radicals being optionally substituted by halogen, alkyl or alkoxy with 1 to 2 carbon atoms each or haloalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms;  $R^2$  is alkyl with 1 to 8 carbon atoms, alkenyl or alkynyl with 2 to 4 carbon atoms each, haloalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms or the grouping  $-CHX-R^1$  wherein X is defined as below; X is hydrogen, alkyl with 1 to 4 carbon atoms, alkenyl, or alkynyl with 2 to 4 carbon atoms, haloalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms, phenyl or substituted phenyl, the substituents being selected from halogen, alkyl or alkoxy with 1 or 2 carbon atoms each or haloalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms;  $Y^1$  and  $Y^2$  are individually selected from hydrogen, alkyl with 1 to 6 carbon atoms or phenyl or substituted phenyl, the substituents being selected from halogen, alkyl or alkoxy with 1 to 4 carbon atoms or haloalkyl or haloalkoxy with up to 4 carbon atoms each and up to 5 halogen atoms and A is a 2- or 6-membered saturated or unsaturated alkylene bridge or substituted alkylene bridge, the substituents being selected from halogen, alkyl with 1 to 6 carbon atoms, phenyl and substituted phenyl, the substituents being selected from halogen, alkyl or alkoxy with up to 4 carbon atoms each, haloalkyl or haloalkoxy with up to 4 carbon atoms each and up to 5 halogen atoms each.

4,282,389

# PROCESS FOR THE SIMULTANEOUS MANUFACTURE OF PURE MTBE AND A SUBSTANTIALLY ISOBUTENE-FREE MIXTURE OF $C_4$ -HYDROCARBONS

Wilhelm Droste, and Fritz Obenaus, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls A.G., Marl, Fed. Rep. of Germany

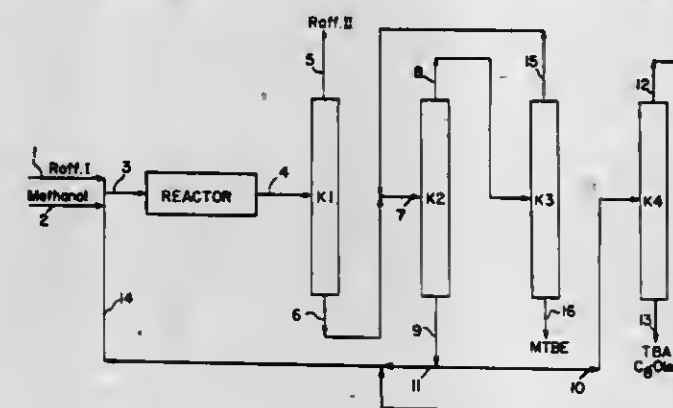
Filed Dec. 4, 1979, Ser. No. 100,058

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853769

Int. Cl.<sup>3</sup> C07C 41/12

U.S. Cl. 568—697

6 Claims



1. In a process for the simultaneous manufacture of pure methyl tertiary butyl ether and a substantially isobutene-free mixture of  $C_4$ -hydrocarbons, by reacting isobutene contained in a mixture of  $C_4$ -hydrocarbons with excess methanol in the liquid phase at elevated temperatures on strongly acid, macroporous, organic ion exchange resins, the improvement comprising:

- reacting said methanol and said isobutene in a molar ratio of 2:1 to 5:1 at temperatures of between about 30° and 100° C.;
- removing unconverted hydrocarbons as the top product under a pressure of 2 to 10 bars from a first rectification column;
- rectifying the bottom product from said first rectification column in a second column under a pressure of about normal pressure to a pressure of about 2 bars excess at the top of the second column and recycling the bottom product of said second column to step (a); and

1009 O.G.—11

(d) rectifying the distillate from said second column consisting essentially of an azeotrope of methanol and methyl tertiary butyl ether in a third rectification column under a pressure of about 5 to 30 bars without adding auxiliary material, recycling the distillate of said third column into the feed of said second column and withdrawing said pure methyl tertiary butyl ether from the bottom of said third column.

4,282,390

# 2,6-BENZYL SUBSTITUTED PHENOLS

Errol J. McGarry, Bundoora, and Bruce A. Forsyth, Croydon, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Division of Ser. No. 812,471, Jul. 5, 1977, Pat. No. 4,163,801.

This application Mar. 30, 1979, Ser. No. 25,675

Claims priority, application Australia, Jul. 7, 1976, PC6576

Int. Cl.<sup>3</sup> C07C 39/15

U.S. Cl. 568—720

7 Claims

1. A compound selected from the group consisting of: 2,6-bis(2-hydroxy-3-bromo-5-fluorobenzyl)-4-chlorophenol; 2,6-bis(2-hydroxy-3-bromo-5-chlorobenzyl)-4-fluorophenol; 2-(2-hydroxy-3-bromo-5-fluoro- $\alpha$ -methylbenzyl)-6-(2-hydroxy-3-bromo-5-fluorobenzyl)-4-chlorophenol; 2,6-bis(2-hydroxy-3-bromo-5-fluorobenzyl)-4-fluorophenol; 2,6-bis(2-hydroxy-3-iodo-5-chlorobenzyl)-4-fluorophenol; or 2,6-bis(2-hydroxy-3-iodo-5-fluorobenzyl)-4-fluorophenol.

4,282,391

# CONTINUOUS PROCESS FOR PRODUCING HALOGENATED DIPHENOLS

Clayton B. Quinn, Mt. Vernon, Ind., and Charles A. Wilson, II, Greenville, S.C., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation of Ser. No. 882,192, Feb. 28, 1978. This application Dec. 10, 1979, Ser. No. 101,841

Int. Cl.<sup>3</sup> C07C 39/16, 43/23, 39/00

U.S. Cl. 568—726

8 Claims

1. A process for halogenating a diphenol which comprises dissolving or suspending a diphenol in a solvent system comprising water and a primary solvent system member selected from the group consisting of methylene chloride and chlorobenzene, the weight ratio of said primary solvent system member to said diphenol being in the range of about 2:1-6:1 and weight ratio of water to said diphenol being in the range of about 2:1-5:1; introducing a halogen into said solvent system, said halogen being introduced in an amount of about 0.1-2.0 moles per mole of said diphenol; and, maintaining the pH of said solvent system at about pH 2-5 to obtain a predetermined statistical mixture of unhalogenated, monohalogenated, and dihalogenated diphenol with substantially reduced quantities trihalo and tetrahalo substituted diphenol.

4,282,392

# ALPHA-OLEFIN OLIGOMER SYNTHETIC LUBRICANT

Barrett L. Cupples, Franklin Township, Westmoreland County, Pa., and William J. Heilman, Houston, Tex., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 736,679, Oct. 28, 1976,

abandoned, which is a division of Ser. No. 634,624, Nov. 24, 1975, Pat. No. 4,032,591. This application Jun. 19, 1978, Ser. No. 916,476

Int. Cl.<sup>2</sup> C07C 9/14

U.S. Cl. 585—10

6 Claims

1. A lubricating oil comprising a hydrogenated mixture of normal 1-decene oligomers having a 210° F. viscosity between about 5.4 cs. and about 6.6 cs. and  $n = -40^\circ$  F. viscosity of at least about 5,500 cs. and comprising a maximum of about two percent dimer, a trimer to tetramer ratio no higher than about one to one and at least about 15 percent pentamer, and said trimer fraction having a maximum 210° F. viscosity of about 2,250 cs.



# ELECTRICAL

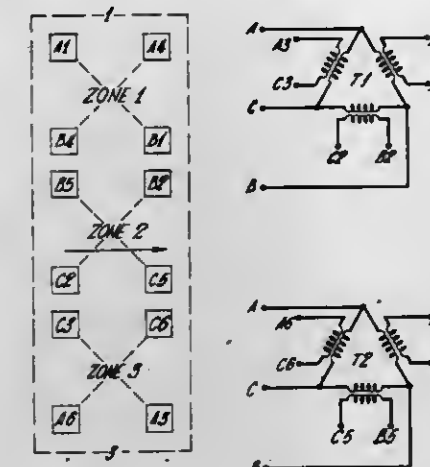
## 4,282,393 ELECTRODE MELTING-Z TYPE ELECTRODE FIRING WITH CONTINUOUS ZONES

Michael Williamson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 25, 1978, Ser. No. 954,493  
Int. Cl.<sup>3</sup> C03B 5/02

U.S. Cl. 13—6

17 Claims



1. A furnace for heating a thermoplastic material, said furnace comprising: a container for said thermoplastic material; a first group of electrodes located in said container and having a first and second electrode; a second group of electrodes located in said container and having a first and second electrode, said first electrode of said first group being located adjacent said first electrode of said second group; a first power supply connected to said first and second electrodes of said first group; and a second power supply connected to said first and second electrodes of second group, said first and second power supplies being electrically connected to each other only through said thermoplastic material and having a phase shift therebetween so that the current paths within said thermoplastic material are substantially limited to flow between said first and second electrodes of each respective group.

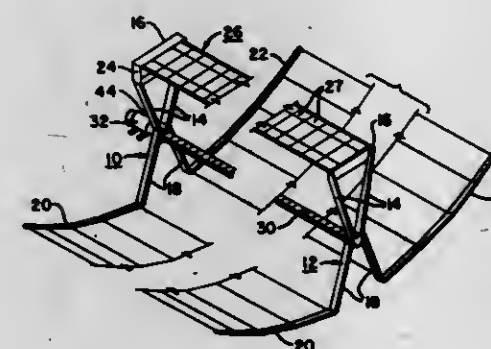
## 4,282,394 UNDERWING REFLECTOR SOLAR ARRAY

James A. Lackey, Kent; Harold L. Nordwall, Mercer Island, and Charlie B. Whitney, Federal Way, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 24, 1979, Ser. No. 88,203  
Int. Cl.<sup>3</sup> H01L 31/00

U.S. Cl. 136—245

7 Claims



1. A solar array comprising a first frame for connection to a support member, a second complementary frame movable away from said first frame, each of said frames having upper and lower parallel support members with the upper and lower support members lying in common planes, a plurality of flat solar cell devices hinged together along hinges extending parallel to each other and adapted to extend from a folded condition wherein the solar cell devices are arranged in side-by-side bundled condition to an extended position wherein all

cell devices lie in the same plane when said second frame moves away from the first frame, and strips of reflective material carried on the lower support member of said first frame, ends of said strips being connected to the lower support member of said second frame whereby the reflective strips will be extended as said second frame moves away from the first frame to provide a means for reflecting light onto said solar cells.

## 4,282,395 HIGH MELTING POINT GLASS-TO-METAL SEAL AND MELT CONNECTION, PARTICULARLY FOR TUNGSTEN SUPPLY WIRES FOR HIGH-PRESSURE DISCHARGE LAMPS

Josef Hagemann, Obereichstätt, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft für Elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

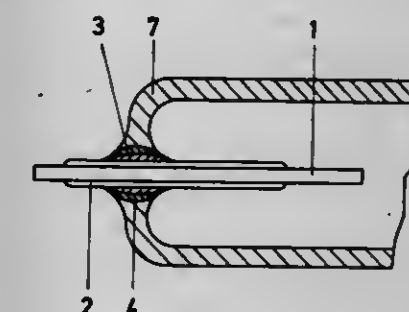
Filed Jul. 12, 1979, Ser. No. 57,259

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1978, 2833896

Int. Cl.<sup>3</sup> H01J 5/00

U.S. Cl. 174—50.61

18 Claims



1. High melting point glass-to-metal seal and melt connection subassembly in combination with a glass structure having a wall (7) to carry a metallic electrical rod-like conductor (1) having a first thermal coefficient of expansion essentially transversely through the glass wall (7), in which the glass has a thermal coefficient of expansion which is small with respect to said first coefficient of expansion, said combination including a plurality of layers of glass having progressively smaller thermal coefficients of expansion interposed between the rod-like conductor (1) and the glass wall (7), and in which the melting point of the glass forming said wall (7) is substantially higher than that of at least some of said glasses, wherein said layers of glass comprise a first glass (2) melted on and surrounding the conductor (1) and extending thereon over a predetermined axial length; a further glass (3) melted on said first glass and being axially shorter than said first glass and positioned intermediate the length of the first glass; and a glass cylinder (4) having a melting point at least substantially equal to that of the glass wall and substantially higher than that of the next adjacent further glass (3), melted on the further glass (3), the glass cylinder having an axial length which is approximately the same as the wall thickness of the wall (7).



4,282,396

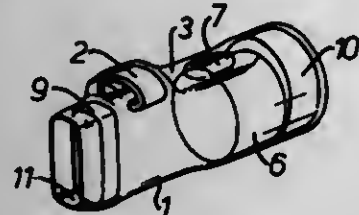
## HEAT-RECOVERABLE ARTICLES

Didier J. M. M. Watine, Maisons-Laffitte; Jean P. M. Hine, Courbevoie; Jean M. H. Catabelle, St. Cloud, and Jean C. C. Delamotte, Franconville, all of France, assignors to Raychem Pontoise S.A., Saint Ouen L'Aumone, France  
Filed May 22, 1979, Ser. No. 41,387  
Claims priority, application United Kingdom, Mar. 9, 1979, 8459/79

Int. Cl.<sup>3</sup> H01R 4/02

U.S. Cl. 174-84 R

59 Claims



1. An article which comprises a heat-shrinkable sleeve open at at least one end, and a quantity of solder positioned eccentrically within the sleeve and held by the sleeve, the solder being such that it does not extend around the entire inner circumference of any cross-section of the sleeve, the sleeve also having guide means for receiving and determining the radial location in the sleeve of an elongate substrate, the arrangement being such that when in use the elongate substrate is received in the guide means, a portion of the elongate substrate can be positioned in proximity to at least part of the quantity of solder.

4,282,397

## WRAPAROUND SPLICE CASE

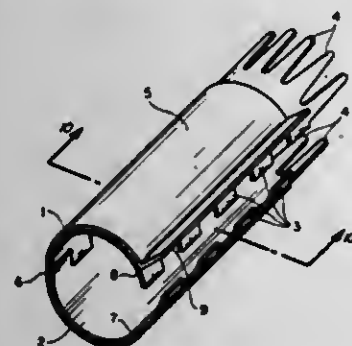
Jaergen Sledenburg, San Carlos, and Joel L. Fritzsche, Redwood City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Nov. 5, 1979, Ser. No. 91,344

Int. Cl.<sup>3</sup> H02G 15/113, 15/196

U.S. Cl. 174-92

9 Claims



1. A splice case comprising:

- (a) a hollow cylindrical shell of a relatively rigid material, said shell having an internal diameter sufficient to encircle a cable splice; and having at least one longitudinal split extending along the length thereof so that the shell can be opened to be placed about a cable splice and then closed to completely encircle the cable splice;
- (b) a sheet of plastic material bonded to the outer surface of said shell; and
- (c) a closure member which comprises an extension of said plastic sheet extending from one of the edges of said shell along said longitudinal split, said closure member being coated on the inner surface thereof with a heat activatable adhesive so that when the shell is placed about a cable splice and the closure member is placed in contact with said plastic material covering said shell and heated, the adhesive bonds the closure member to the plastic material, thereby forming a protective splice case.

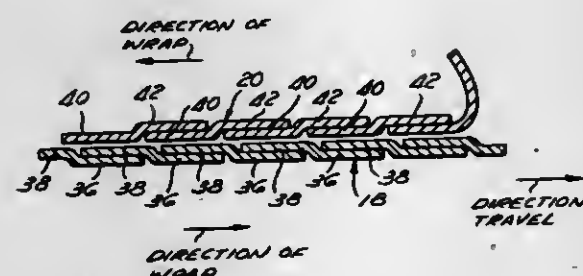
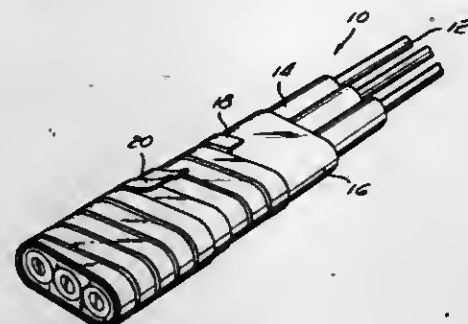
4,282,398

## ANTI-HOLIDAY CABLE ARMOR

John H. Solomon, 7890 E. Spring St., Long Beach, Calif. 90813  
Continuation of Ser. No. 950,428, Oct. 11, 1978, abandoned.  
This application Jul. 16, 1979, Ser. No. 57,736  
Int. Cl.<sup>3</sup> H01B 7/22

U.S. Cl. 174-106 R

2 Claims



1. In an electrical cable of the type comprising at least one electrical conductor surrounded by at least one electrical insulating covering and a metal armor covering enclosing the insulating covering, the improvement wherein the metal armor covering is a two-directional anti-holiday armor comprising a first metal strap having a depressed side and a raised side generally helically wrapped directionally from the first end of the cable toward the second end of the cable with the raised side of the strap overlapping the depressed side of the strap of the next preceding wrap to the helix to provide a non-snagging armor when the cable is pulled on one direction against a potentially snagging object, and a second metal strap having a depressed side and a raised side generally helically wrapped directionally from the second end of the cable toward the first end of the cable with the raised side of the second strap overlapping the depressed side of the second strap of the next preceding wrap of the helix of the second metal strip to provide a non-snagging armor when the cable is pulled in the opposite direction against a potentially snagging object.

4,282,399

## SHARED MAINTENANCE TERMINAL SYSTEM

Herbert A. Kippenhan, Jr., Elmhurst, Ill.; Eugene E. Nelson, Shore View, Minn., and George T. Ricker, Jr., Downers Grove, Ill., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed May 29, 1979, Ser. No. 43,290

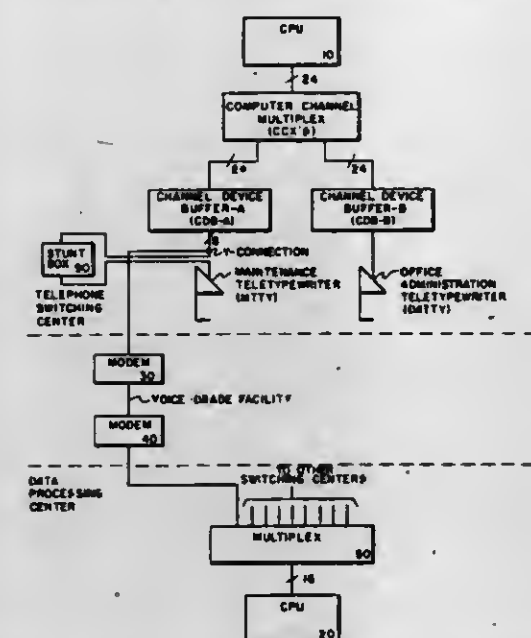
Int. Cl.<sup>3</sup> G06F 3/12; H04L 5/14, 5/24; H04M 3/22

U.S. Cl. 178-4

6 Claims

1. A telephone switching center including a first central processing unit, a first multiplex unit and a printing input/output terminal, and said switching center connected to a data processing center including a second central processing unit and a second multiplex unit, the improvement comprising: voice transmission means connected between said telephone switching center and said data processing center operated in response to messages generated by said first central processing unit to transmit said messages to said second central processing unit, and alternatively operated in response to messages generated by said second central processing unit to transmit said generated messages to said first central processing unit;

circuit means connected to said input/output terminal operated in response to first and second characters of said transmitted messages to start and stop the printing of said input/output terminal respectively; and  
circuit connection means for connecting said first multiplex unit of said first central processing unit to said input/output terminal and for connecting said second multiplex unit



via said voice transmission means to the common connection of said first multiplex unit and said input/output terminal whereby messages are transmitted from said first central processing unit concurrently to said input/output terminal and to said second central processing unit, and alternatively messages are transmitted from said second central processing unit concurrently to said first central processing unit and to said input/output terminal.

4,282,400

## SIGNALING UNIT FOR INTERCHANGE OF DATA WITH MULTIPOINT LINE SELECTION UNITS AND DATA TERMINALS

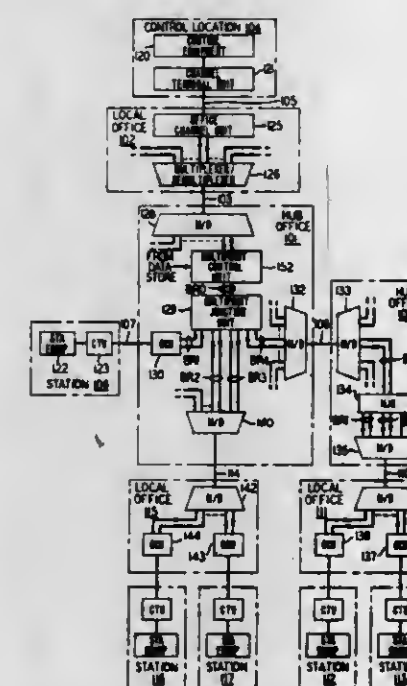
John F. Ribera, Jackson, N.J.; Walter R. Schaefer, Fremont, Calif., and Robert R. Seibel, Barnegat, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 25, 1980, Ser. No. 124,660

Int. Cl.<sup>3</sup> H04H 9/00; H04L 25/20; H04J 3/08

U.S. Cl. 178-73

8 Claims



1. A data communication system including a plurality of data switching units (129, 134, 142), each unit including means responsive to selection signals on a main line thereof (BR0) for

selecting one of a plurality of branch lines thereof (BR1-BR4) for data interchange, the communication system being arranged to interconnect branch lines (BR3, BR4) of a first unit (129) to main lines of other units and to connect data sending and receiving terminals (112, 113, 116, 117) to branch lines of the other units, the communication system further including control means (152) for sending the selection signals to the first unit main line,

characterized in that the control means includes means (201, 202, 203) responsive to address signals received from a remote source (104) defining each of the terminals for sending a sequence of the selection signals to select the first unit branch line connected to the main line of the other unit and to thereafter select the other unit branch line connected to the defined terminal.

4,282,401

## SYSTEM FOR TRANSMISSION AND RECEPTION OF DISCRETE FOUR CHANNEL STEREO

Susumu Takahashi, Tokyo, Japan, assignor to Sansul Electric Company, Tokyo, Japan

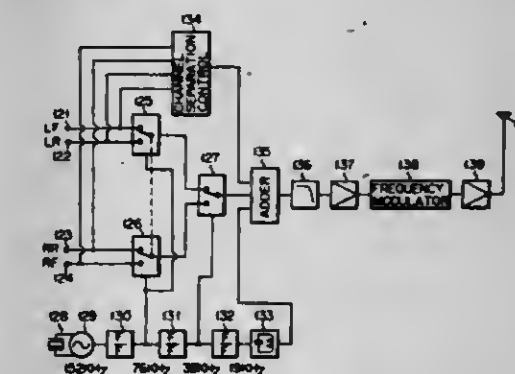
Filed Dec. 22, 1971, Ser. No. 210,866

Claims priority, application Japan, Dec. 24, 1970, 45-117258; Dec. 30, 1970, 45-122306; Apr. 27, 1971, 46-27836; Apr. 27, 1971, 46-27838; Jan. 2, 1971, 46-37888; Jan. 9, 1971, 46-40185; Jul. 15, 1971, 46-52597; Aug. 12, 1971, 46-61252

Int. Cl.<sup>3</sup> H04H 5/00

U.S. Cl. 179-1 GH

26 Claims



1. A discrete four channel stereophonic broadcasting system comprising a transmitter including a source of four-channel stereophonically related audio frequency signals representing LF, LR, RF and RR respectively, means for producing a composite signal representing a modulation function of the form:

$$f(t) = A + B \sin 2\omega t + C \cos 2\omega t + D \sin 4\omega t + K \sin \omega t$$

where

$$A = LR + LR + RR + RF,$$

$$B = LF + LR - RR - RF,$$

$$C = LF - LR - RR + RF,$$

$$D = LF - LR + RR - RF,$$

$$K \text{ is a constant, and}$$

$\omega$  is an angular frequency higher than that of said audio signals,

means for providing a main carrier wave, means for frequency modulating said main carrier wave in accordance with said composite signal, and means for broadcasting said frequency modulated main carrier wave.



4,282,402

## DESIGN OF CROSSOVER NETWORK FOR HIGH FIDELITY SPEAKER SYSTEM

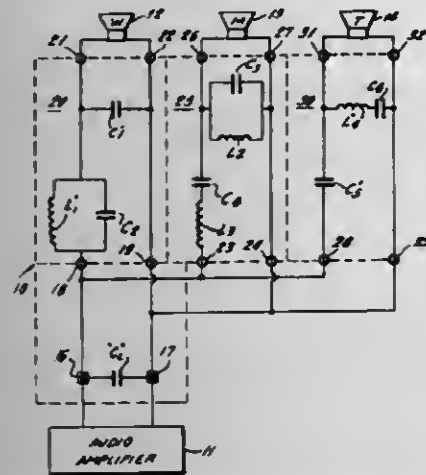
Harry D. Liontonia, 6 N. Perkins Ave., Elmsford, N.Y. 10523

Filed Apr. 23, 1979, Ser. No. 32,163

Int. Cl.<sup>3</sup> H04R 3/14

U.S. Cl. 179-1 D

12 Claims



1. A high fidelity speaker system in combination with a filter network for coupling an audio amplifier to said speaker system for generating high fidelity signals over a predetermined audio frequency spectrum; said speaker system including a woofer for high fidelity reproduction of signals in a low frequency band of said spectrum at the low end thereof, a tweeter for high fidelity reproduction of signals in a high frequency band of said spectrum at the high end thereof, and a midrange for high fidelity reproduction of signals in a mid-frequency band of signals falling between said high and low frequency bands; said filter network including input terminals for operative connection to the output of an audio amplifier, a first section of said network having an input connected across said terminals and an output having said woofer connected thereacross, a second section of said network having an input connected across said terminals and an output having said mid-range connected thereacross, and a third section of said network having an input connected across said terminals and an output having said tweeter connected thereacross, each of said sections including reactive element means connected in a predetermined circuit configuration, said reactive element means of said first section having a predetermined quantitative relationship with said relative element means of said second section, said reactive element means of said first and said second sections having a predetermined quantitative relationship with said reactive element means of said third section, and a lock capacitor means connected across said input terminals.

4,282,403

## PATTERN RECOGNITION WITH A WARPING FUNCTION DECIDED FOR EACH REFERENCE PATTERN BY THE USE OF FEATURE VECTOR COMPONENTS OF A FEW CHANNELS

Hiroaki Sakoe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1979, Ser. No. 64,965

Claims priority, application Japan, Aug. 10, 1978, 53-98069

Int. Cl.<sup>3</sup> G10L 1/00

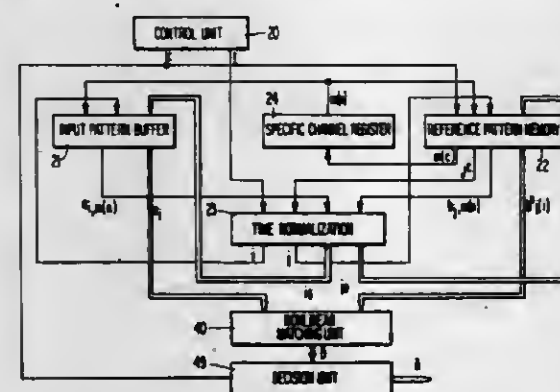
U.S. Cl. 179-1 SD

4 Claims

1. A pattern recognition device for recognizing an input pattern with reference to a plurality of reference patterns, said device comprising:  
input pattern buffer means for memorizing a time sequence of input pattern feature vectors representative of said input pattern and defined by vector components in a space of a prescribed number of dimensions;  
reference pattern memory means for memorizing time sequences of reference pattern feature vectors representative of the respective reference patterns and given by

vector components in said space, the vector components of any one of said reference pattern feature vector sequences and said input pattern feature vector components of an associated one of said input pattern feature vectors thereby corresponding to one another, said reference pattern memory means being for further memorizing dimension specifying signals in one-to-one correspondence with said reference pattern feature vector sequence, each dimension specifying signal specifying specific vector components within a specific dimension of the reference pattern feature vector sequence;

time-normalizing means connected to said input pattern buffer means and said reference pattern memory means for carrying out time normalization between said input pattern feature vector sequence and each reference pattern feature vector sequence by determining a warping function for said each reference pattern feature vector



sequence which time correlates said input pattern feature vectors and the feature vectors of said each reference pattern feature vector sequence to one another so as to minimize a difference between a pattern represented by the specific vector components specified by the dimension specifying signal corresponding to said each reference pattern feature vector sequence and another pattern represented by the input pattern feature vector components corresponding to said specific vector components; and comparing means connected to said input pattern buffer means, said reference pattern memory means, and said time-normalizing means for comparing said input pattern feature vector sequence and said reference pattern feature vector sequences with one another with reference to the warping functions determined for the respective reference pattern feature vector sequences to decide which of said reference patterns is most similar to said input pattern.

4,282,404

## SYNTHETIC-SPEECH CALCULATORS

Akira Tanimoto, Kashiwara; Sigeaki Masuzawa; Shinya Shibata, both of Nara, and Shinzo Nishizaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 874,950, Feb. 3, 1978, Pat. No. 4,185,169.

This application Aug. 10, 1979, Ser. No. 65,419

Claims priority, application Japan, Feb. 4, 1977, 52-13529[U];

Feb. 10, 1977, 52-13629; Feb. 25, 1977, 52-20496; Feb. 28, 1977,

52-22084; Feb. 28, 1977, 52-22085

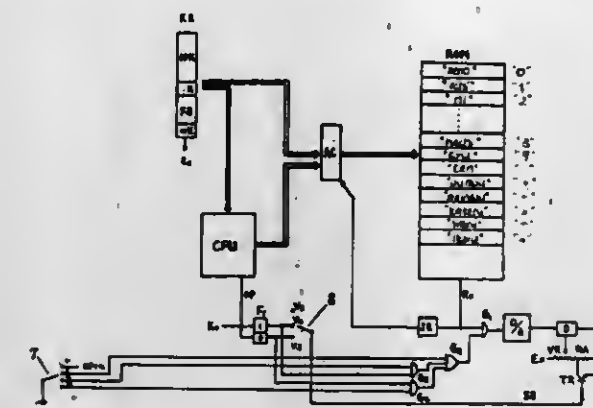
Int. Cl.<sup>3</sup> G10L 1/08

U.S. Cl. 179-1 SM

9 Claims

1. A synthetic speech calculator having a keyboard, said keyboard including a first key and a second key, comprising:  
audible sound signal generating means responsive to actuations of said first and second key for producing a first audible sound signal in response to an actuation of said first key followed by at least one actuation of said second key and for producing a second audible sound signal in response to at least one actuation of said second key; and  
audible sound generating means responsive to said first audible sound signal and said second audible sound signal

from said audible sound signal generating means for generating a first audible sound in response to said first audible



ble sound signal and for generating a second audible sound in response to said second audible sound signal.

4,282,405

## SPEECH ANALYZER COMPRISING CIRCUITS FOR CALCULATING AUTOCORRELATION COEFFICIENTS FORWARDLY AND BACKWARDLY

Tetsu Taguchi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

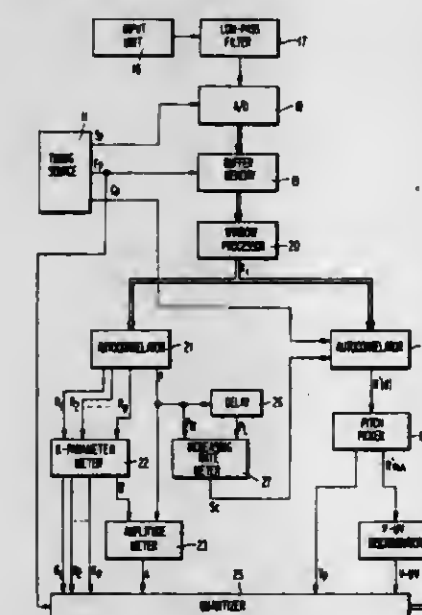
Filed Nov. 26, 1979, Ser. No. 97,283

Claims priority, application Japan, Nov. 24, 1978, 53-145084

Int. Cl.<sup>3</sup> G10L 1/00

U.S. Cl. 179-1 SC

4 Claims



1. A speech analyzer for analyzing an input speech sound signal representative of speech sound of an input speech sound waveform into a plurality of signals of a first group representative of a preselected one of spectral distribution information and spectral envelope information of said speech sound waveform and at least two signals of a second group representative of sound source information of said speech sound, said speech sound having a pitch period of a value variable between a shortest and a longest pitch period, said speech analyzer comprising:  
window processing means for processing said input speech sound signal into a sequence of a predetermined number of windowed samples, said sequence lasting each of a series of predetermined window periods, said windowed samples being representative of the speech sound in said each window period and equally spaced with respect to time between a leading and a trailing end of said each window period;  
first means connected to said window processing means for processing said windowed sample sequences into said first-group signals and a first of said second-group signals,

said first signal being representative of amplitude information of the speech sound in the respective window periods; average power calculating means operatively coupled to said first means for calculating with reference to said first signal an average power of the speech sound at least for said each window period and one of said window periods that next precedes said each window period in said series; increasing rate calculating means connected to said average power calculating means for calculating for said each window period, a rate of increase of the average power calculated for said each window period relative to the average power calculated for said next preceding window period to produce a control signal having a first and a second value when the rate of increase calculated for said each window period is greater and less than a preselected value, respectively;

second means connected to said window processing means and said increasing rate calculating means for calculating a plurality of autocorrelation coefficients for a plurality of joining intervals, respectively, by the use of reference members and joint members, said joining intervals differing from one another by the equal spacing between two successive ones of said windowed samples and including a shortest and a longest joining interval which are decided in accordance with said shortest and said longest pitch periods, respectively, said reference members being those prescribed ones of said windowed samples which are successively distributed throughout a reference fraction of said each window period, said reference fraction being placed farther with respect to time from the leading and the trailing ends of said each window period when said control signal has said first and said second values, respectively, said joint members being those sets of windowed samples, the windowed samples of each set being equal in number to said prescribed samples, which are successively distributed throughout a plurality of joint fractions of said each window period, respectively, said joint fractions being displaced in said each window period from said reference fraction by said joining intervals, respectively, farther from the trailing and the leading ends of said each window period when said control signal has said first and said second values, respectively; and

third means connected to said second means for producing a second of said second-group signals by finding a greatest value of the autocorrelation coefficients calculated for the respective joining intervals for said each window period and making said second signal represent those joining intervals as the pitch periods of the speech sound in the respective window periods for which the autocorrelation coefficients having the greatest values are calculated for the respective window periods.

4,282,406

## ADAPTIVE PITCH DETECTION SYSTEM FOR VOICE SIGNAL

Fumihiko Yato, Komae; Seishi Kitayama, Tokyo; Junzo Tamura, Tokyo; Hikoichi Ishigami, Tokyo, and Akira Kurematsu, Yokohama, all of Japan, assignors to Kokusai Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1980, Ser. No. 122,256

Claims priority, application Japan, Feb. 28, 1979, 54-22954

Int. Cl.<sup>3</sup> G10L 1/00

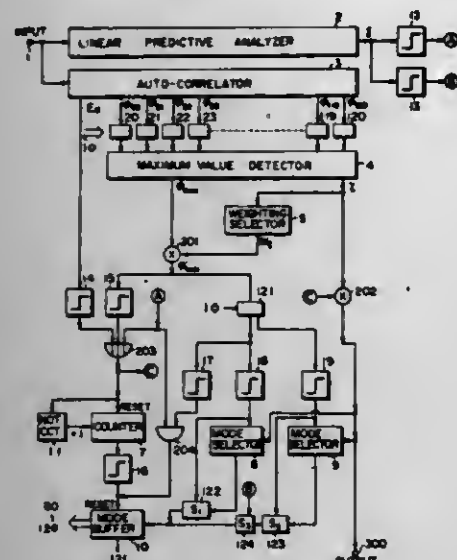
U.S. Cl. 179-1 SC

4 Claims

1. An adaptive pitch detection system for detecting the pitch of a voice signal, comprising:  
input terminal means for receiving the voice signal;  
detection means connected to the input terminal means for detecting the pitch from one of a plurality of predetermined pitch searching periods, which are determined so that pitch components of multiple relationships are not included in each of the pitch searching periods; and  
control means connected to said detection means for adap-



tively shifting said one of the predetermined pitch searching periods so as to follow the change direction of the



pitch predicted from the result of detection of the detected pitch.

4,282,407

## TELEPHONE LOOP RESISTANCE DETECTOR

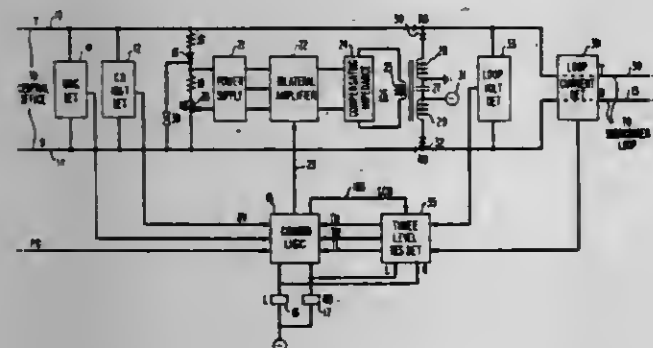
Kenneth E. Stiefel, Randolph Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 15, 1979, Ser. No. 85,025

Int. Cl.<sup>3</sup> H04G 1/30; H04M 3/00

U.S. Cl. 179-18 FA

10 Claims



1. A subscriber loop resistance detector including a loop voltage sensor and a loop current sensor, said resistance detector

characterized by

a differential amplifier having two inputs and a single output, means coupling said loop voltage sensor to one of said inputs, means coupling said loop current sensor to the other of said inputs, and means responsive to said output for modifying at least one of said coupling means.

4,282,408

## ON-HOOK/OFF-HOOK DETECTOR CIRCUIT

Olgera Stawers, Lakewood, Colo., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 25, 1979, Ser. No. 88,219

Int. Cl.<sup>3</sup> H04M 3/22; H04B 3/00

U.S. Cl. 179-18 FA

4 Claims

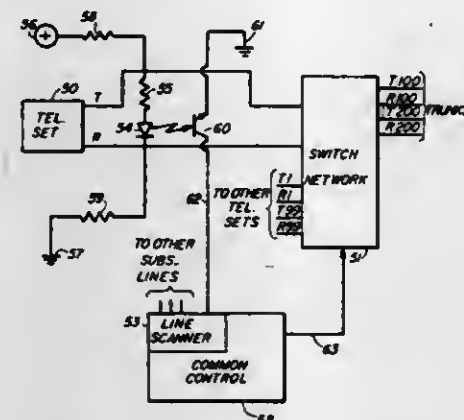
3. A circuit for detecting current flow in a subscriber's

telephone set between two leads of a talking path connected to the set, comprising:

a light-emitting device;

a current-limiting resistor connected in series with the light-emitting device, the resistor having a relatively high resistance compared to the off-hook resistance of the set;

means for connecting the device and the current-limiting resistor directly between the two leads of the talking path in parallel with the subscriber's telephone set and for connecting the two leads of the talking path to a current



source so that (1), when the subscriber's telephone set is off-hook, the device circuit is effectively shorted by current flowing through the set and insufficient current flows from the current source to the device to drive the device to emit light, and (2), when the subscriber's telephone set is on-hook, sufficient current flows from the source to the device to drive the device to emit light; and a photo-transistor responsive to light emitted from the light-emitting device for providing an indication of the current flow in the telephone set.

4,282,409

## SPEECH NETWORKS FOR TELEPHONE SETS

Raymond G. Taylor, Shreveport, La., assignor to Western Electric Company, Inc., New York, N.Y.

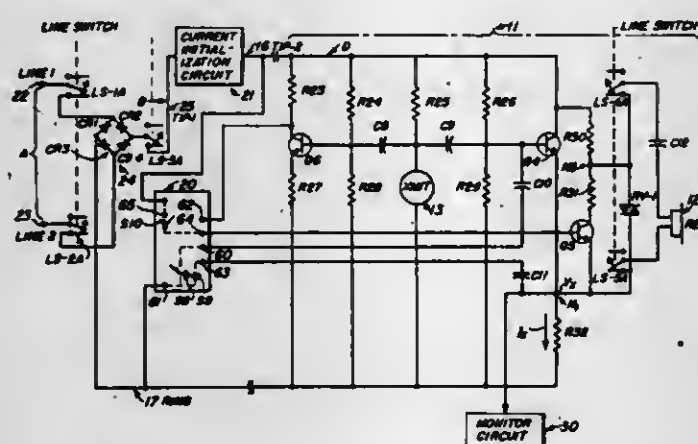
Continuation-in-part of Ser. No. 72,252, Sep. 4, 1979. This

application Oct. 17, 1979, Ser. No. 86,024

Int. Cl.<sup>3</sup> H04M 1/00

U.S. Cl. 179-81 R

10 Claims



1. A speech network for a telephone set having a receiver circuit and a transmitter circuit connected in parallel between tip and ring leads connected to a telephone line, which comprises:

(a) transistor means for amplifying speech signals;

(b) first circuit connecting means for normally connecting the transistor means between tip and ring in a first configuration or receive mode, for amplifying a received signal from the line and for applying the amplified receive signal to the receiver circuit;

(c) second circuit connecting means for connecting the

transistor means between tip and ring in a second and different configuration or transmit mode, for amplification of the transmitter output by the transistor means and transmission of an amplified transmit signal to the line; and (d) switching means, actuated by a voice-signal output from the transmitter, for switching the circuit connecting means from the receive mode to the transmit mode in response to a transmitter output above a predetermined threshold level.

4,282,410

## RINGING SIGNAL GENERATOR

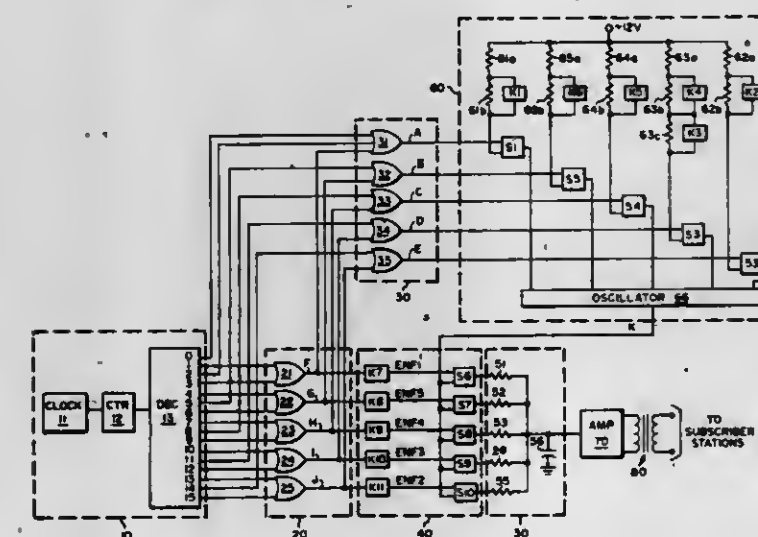
John A. Gauthier, and David M. Shaver, both of Brockville, Canada, assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Apr. 9, 1979, Ser. No. 28,622

Int. Cl.<sup>3</sup> H04M 5/00

U.S. Cl. 179-84 R

11 Claims



1. A ringing signal generator for use in a telephone communication system connectable to a plurality of telephone substations including at least a first substation responsive to a first ringing signal frequency and a second substation responsive to a second substation ringing signal frequency, said ringing signal generator comprising:

pulsing means operated to generate a plurality of periodic timing signals;

first gating means connected to said pulsing means operated in response to selected timing signals to generate a first plurality of enable signals; and

oscillation means;

a plurality of frequency determining means;

a plurality of first switching means connected between said oscillation means and said plurality of frequency determining means and also connected to said first gating means; said first plurality of switching means operated in response to each of said first plurality of enable signals to connect a predetermined one of said plurality of frequency determining means to said oscillation means; and said oscillation means operated to generate a signal of a predetermined frequency in response to being connected to said one of said plurality of frequency determining means.

4,282,411

## RESIDUAL ECHO SUPPRESSOR FOR ECHO CANCELLER

Robert C. Stewart, Hinsdale, Ill., assignor to Tellabs, Inc., Lisle, Ill.

Filed Jun. 4, 1979, Ser. No. 45,176

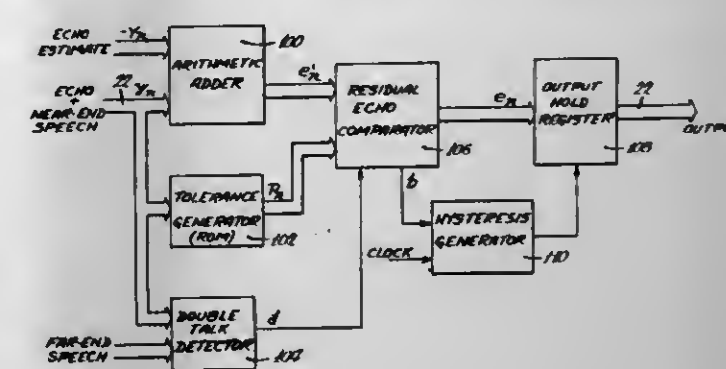
Int. Cl.<sup>3</sup> H04B 3/20

U.S. Cl. 179-170.2

33 Claims

1. A residual echo suppressor for use with an echo canceller in telephone systems having separate transmit and receive channels, wherein the echo canceller is of the type having

means in the transmit channel for subtracting or cancelling an echo estimate from a true echo in an uncanceled signal on the channel to leave a residual signal on the channel, said residual echo suppressor comprising means in the transmit channel for



comparing the values of the uncanceled and the residual signals and for suppressing the residual signal when the ratio of the value of the same to the value of the uncanceled signal has less than a selected value.

4,282,412

## MERCURY SWITCH FOR MONITORING POSITION OF PATIENT

Robert E. Florin, 7921 S. Painter Ave., Whittier, Calif. 90602

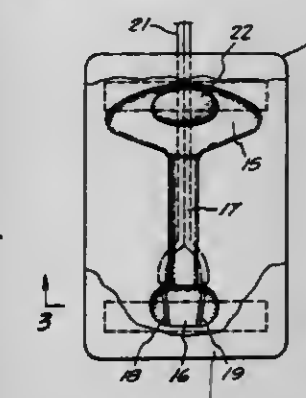
Continuation-in-part of Ser. No. 935,363, Aug. 21, 1978,

abandoned. This application Mar. 24, 1980, Ser. No. 133,002

Int. Cl.<sup>3</sup> H01H 29/20

U.S. Cl. 200-52 R

7 Claims



1. A mercury switch assembly adapted to be secured to a patient for monitoring changes in position, comprising in combination: a body formed of electrically non-conducting material having walls defining a head chamber and a foot chamber longitudinally spaced, the body having a narrow throat passageway connecting said chambers, said chambers being deeper and wider than said throat passageway, spaced electrodes projecting into said foot-chamber, a quantity of mercury capable of contacting said electrodes to form an electrical connection between them, said quantity of mercury having a volume less than the volume of the head chamber and being normally contained within said head chamber when the switch assembly is in normal horizontal position, said walls being so shaped that said quantity of mercury moves by gravity from said head chamber through said narrow throat passageway and into said foot chamber only when the switch assembly is tilted to incline said throat passageway to a predetermined degree, said head chamber having lateral extensions of substantial depth for continuously retaining said quantity of mercury in said head chamber during lateral turning movement of the switch assembly when the inclination of said throat passageway is less than said predetermined degree.



4,282,413

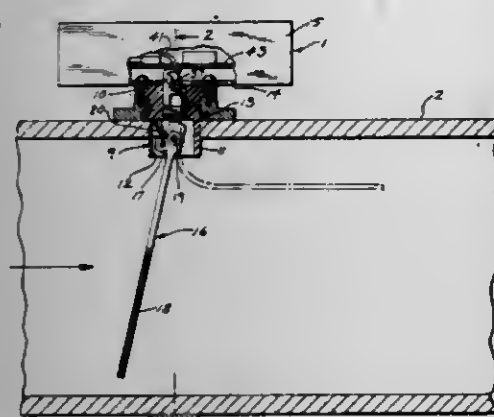
## LIQUID FLOW INDICATOR

John R. Simons, Greendale, and John W. Fenske, Wauwatosa, both of Wis., assignors to Grunau Company, Inc., Milwaukee, Wis.

Filed Jul. 2, 1979, Ser. No. 54,299  
Int. Cl.<sup>3</sup> H01H 35/40

U.S. Cl. 200—81.9 M

8 Claims



1. A water flow indicator for use in an automatic sprinkler system, comprising clamping means to be clamped to the outer surface of a water pipe having an aperture, said clamping means having an opening disposed in alignment with said aperture in said pipe, a vane retainer having a head disposed against the outer surface of the clamping member and having a generally cylindrical stem portion disposed within the aligned opening and aperture, said retainer having an inner axial recess and an outer axial well and a wall separating said recess and said well, a one-piece flexible plastic vane having a head disposed within the recess and pivotally connected to said stem portion and having a generally circular body portion disposed within said pipe, a magnet carried by the head of said vane and disposed on the inner side of said wall, a holder disposed within said well, a sensor carried by the holder and disposed within the well and in contact with said wall, said sensor being connected in an electrical circuit, biasing means for urging the vane to an upstream angular position under non-flow conditions, and a stop on said vane retainer and disposed to be engaged by said vane when said vane is in said upstream angular position, opening of said water pipe downstream causing flow within said pipe to pivot the vane in a downstream direction and thereby move the magnet into proximate relation with said sensor to thereby close the electrical circuit and generate a signal.

4,282,414

## CONVERTIBLE SWITCH OPERATOR

Robert J. Johnston, Patterson Hts.; Stephen G. Layciak, and George M. Cametti, both of Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

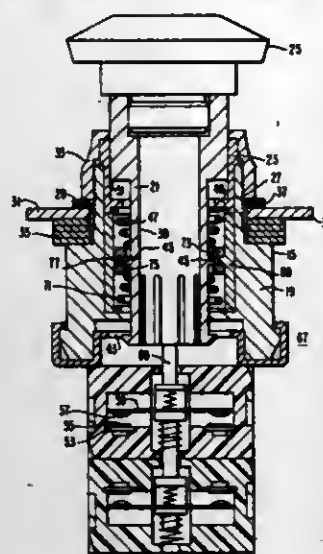
Filed Aug. 30, 1979, Ser. No. 70,958  
Int. Cl.<sup>3</sup> H01N 13/56; H01H 15/00

U.S. Cl. 200—160

4 Claims

1. A convertible switch operator for use by conversion as a pull momentary and a push-pull momentary operation, comprising separable switch contacts, a contact operating member for moving the contacts between open and closed positions, a housing, an actuator within the housing and movable longitudinally between first and second positions for reciprocally moving the member, first stop means within the housing for limiting movement of the actuator beyond the first position, first spring means for holding the actuator in the first position against said stop means, whereby the actuator may be pulled manually to the second position against the bias of the spring, means for converting the operator to a push-pull operation and comprising second spring means for holding the actuator in an intermediate position in combination with the first spring means, the means for converting the operator also comprises a

guide between the housing and the actuator, the guide having an intumed flange, the actuator having an outturned flange



aligned with the intumed flange when the actuator is disposed in the intermediate position, whereby the actuator may be pushed or pulled between the first and second positions.

4,282,415

## ROTARY PULSE SWITCH

Michio Shimizu, Yukio Iwasaki, Tadashi Wagatsuma, all of Furukawa, and Osamu Kasai, Miyagi, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

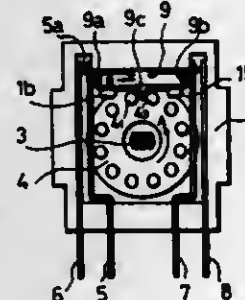
Filed Apr. 28, 1980, Ser. No. 144,335

Claims priority, application Japan, May 2, 1979, 54-59383[U]

Int. Cl.<sup>3</sup> H01H 19/60, 19/54

U.S. Cl. 200—336

4 Claims



1. A rotary pulse switch comprising:  
a rotor provided with a plurality of protrusions spaced at equal intervals on a peripheral edge of at least one surface thereof and having an operation rod fixed to a central part thereof;  
first and second contact member each consisting of a single fixed contact element and a single movable contact element;  
a slidable member made from a spring material and which comes into contact with said movable contact elements in said first and second contact members, said slidable member being formed with a bulge to engage said protrusions of said rotor;  
a first housing formed with a recess for receiving said rotor in a rotatable manner, said housing having a hole for rotatably holding said operation rod, holding portions for holding said first and second contact members at a right end and a left end of said housing respectively, and a holding portion for slidably holding said slidable member near free ends of said first and second contact members and in an intermediate position between both these members; and  
a second housing which abuts on said first housing to close up said recess of said first housing;  
whereby when said rotor is rotated clockwise or counter-clockwise, a protrusion of said rotor engages the bulge of

said slidable member and moves said slidable member rightwards or leftwards so as to cause said slidable piece to turn "on" said first or second contact member.

4,282,416

## UNITIZED STRUCTURE FOR A MICROWAVE OVEN

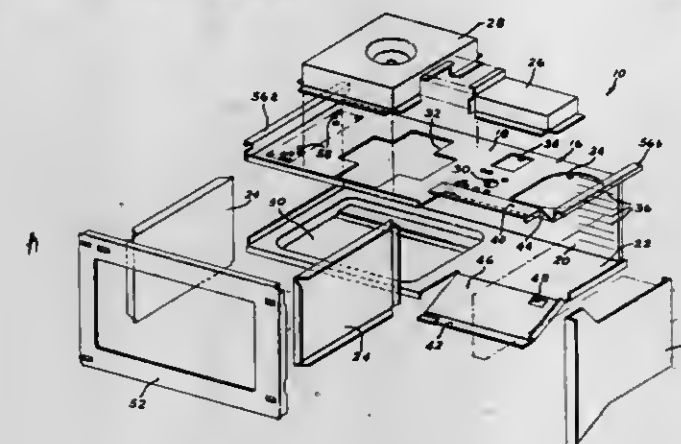
James A. White, Louisville, Ky., assignor to General Electric Co., Louisville, Ky.

Filed Aug. 21, 1978, Ser. No. 935,445

Int. Cl.<sup>3</sup> H05B 6/64

U.S. Cl. 219—10.55 R

6 Claims



1. A simplified structure for use in forming a microwave oven having a cooking chamber, a control compartment and an access door comprising  
a generally U-shaped in cross section main frame having integral top, rear and bottom surfaces and an open front, a partition wall carried by said surfaces and extending substantially at right angles thereto for subdividing the space intermediate said top, rear, and bottom surfaces, for separating the cooking chamber from the control compartment, and  
a door frame adapted for connecting the oven door thereto, said door frame attached to said top and bottom surfaces in front of said cooking chamber, said frame defining an opening therein for access to said chamber.

4,282,417

## METHOD FOR CONTROLLING MAGNETIZING CURRENT IN MULTIPULSE RESISTANT WELDING

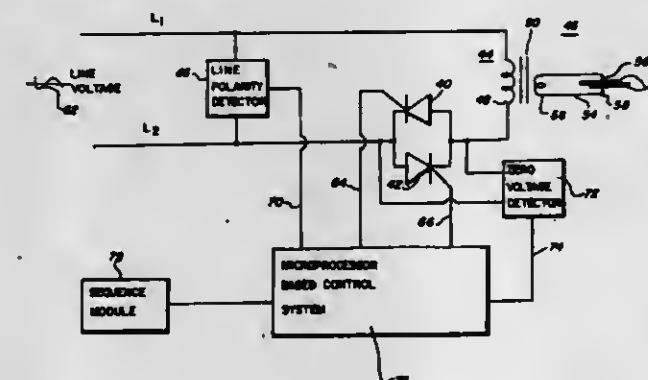
Dennis J. Jurek, Grafton, Wis., assignor to Square D Company, Palatine, Ill.

Filed Oct. 30, 1978, Ser. No. 956,138

Int. Cl.<sup>3</sup> B23K 11/24

U.S. Cl. 219—116

5 Claims



5. In a resistance welding system having a welding transformer with a primary and secondary winding operating in a multipulse sequence, each pulse consisting of a predetermined and equal number of positive and negative half cycles of current having a first and last half cycle, a microprocessor as its main control element, a method of eliminating the magnetizing current transients in the primary winding by reducing the residual currents, known to be proportional to the volt-second integral of an applied voltage on said transformer, in the sec-

ondary winding to zero at the end of each pulse comprising the steps of:

selecting a suitable delay angle to fire the first half cycle of current conduction in each pulse;  
utilizing the known cycling time of the microprocessor to execute a particular instruction to generate a time delay corresponding to the suitable delay angle;  
determining the last half cycle of current conduction in each pulse by having the microprocessor counting the initiated half cycles in each pulse;  
adjusting the delay angle of the current initiation of the last half cycle so that the algebraic sum of the volt-second integrals of each pulse is approximately equal to zero; and  
firing a control means responsive to the time delay and count of half cycles for initiating the last half cycle of current conduction.

4,282,418

## PLASMA TORCH FOR MICRO-PLASMA WELDING

Friedrich Wuestner, Wolfratshausen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

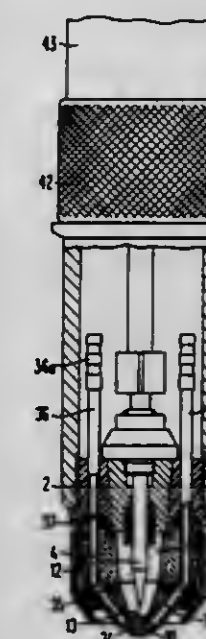
Filed Jul. 2, 1979, Ser. No. 53,686

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839485

Int. Cl.<sup>3</sup> B23K 9/00

U.S. Cl. 219—121 PP

7 Claims



1. In a plasma welding torch particularly adapted for micro-plasma welding, said torch having a hollow cylindrical torch housing; a pin-shaped electrode terminating in a point; means for mounting the electrode in the torch housing and insulating it therefrom; a plasma gas nozzle being disposed adjacent the point of the electrode and having a cooling chamber formed therein and a plasma channel for the plasma to pass there-through; an inert gas nozzle being arranged concentrically around the plasma nozzle on said housing; and separate means for supplying plasma gas to the plasma nozzle, inert gas to the inert gas nozzle, welding current to the electrodes, and a cooling agent to the cooling chamber the improvements comprising said pin-shaped electrode having an enlarged diameter cylindrical surface tapering to said point; the plasma channel of the plasma nozzle having a raised annular edge at an end facing toward the point of the electrode so that the closest proximity between the electrode and the nozzle is between the annular edge and the point; cooling means for cooling the electrode including means contacting a portion of the cylindrical surface of the electrode; and said means for mounting the electrode including a passage in a member for receiving the electrode, said passage having a conical portion expanding into a threaded portion, and means for sealing said electrode in said passage, said means for sealing including a conical metal ring



having small tolerances disposed in the conical passage, a threaded bushing threaded into said threaded portion to force the conical metal ring into sealing engagement with the conical portion and the cylindrical surface.

4,282,419

# CONSUMABLE ELECTRODE WELDING TORCH WITH POLYGONAL CONTOURED ELECTRODE GUIDE

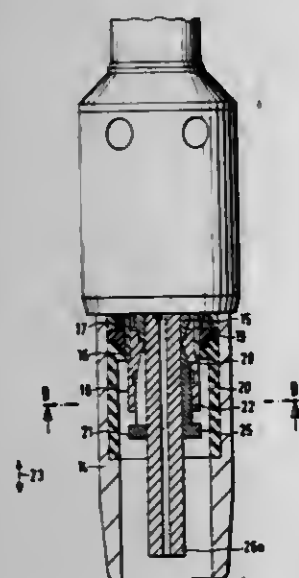
Rupert Auer, Echling, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany  
Filed Feb. 21, 1979, Ser. No. 13,516

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807686

Int. Cl.<sup>3</sup> B23K 9/28, 9/16

U.S. Cl. 219—137.44

2 Claims



1. A welding torch for arc welding, including a consumable electrode, comprising in combination:
  - a housing formed with a first thread on an interior portion thereof,
  - a threadless contact tube disposed in said housing and having an external polygonal contour, and
  - securing means, including
    - a first member formed with a second thread on an exterior portion thereof, said first thread mating with said second thread, said first member having a large surface in frictional engagement with said contact tube, and being steplessly adjustable therewith, and releasable therefrom, and having an internal contour matching the external polygonal contour of said contact tube,
    - a portion of said first member, being able to be wedged into a portion of said housing, whereby quick operative heat dissipation from the contact tube is promoted.

4,282,420

# WELDING ELECTRODE

Kenneth E. Banks, Littlestown, Pa., assignor to Chemetron Corporation, Chicago, Ill.

Filed Feb. 11, 1980, Ser. No. 120,449

Int. Cl.<sup>3</sup> B23K 35/30

U.S. Cl. 219—146.24

10 Claims

1. A welding electrode having a generally tubular ferrous metal sheath, and a core defined within the sheath for use in gas shield welding wherein the shielding gas is selected from the group consisting of carbon dioxide, inert gas, oxygen and inert gas mixtures, and mixtures thereof, said core comprising, by total weight of the electrode,

from about 5.0 to 9.0% titanium dioxide,  
from about 0.2 to 1.0% magnesium oxide,  
up to about 2.0% calcium fluoride,  
from about 0.1 to 1.0% sodium oxide,  
from about 0.2 to 2.0% silicon,

from about 0.5 to 3.5% manganese,  
from about 0.003 to 0.08% boron, and  
the balance consisting of an alloy powder selected from the group consisting of nickel, chrome, molybdenum, iron and mixtures thereof.

4,282,421

# DUAL COMPARTMENT ELECTRIC WATER HEATER

Arieh Hadar, 2 Hamaavak St., Givatayim, Israel

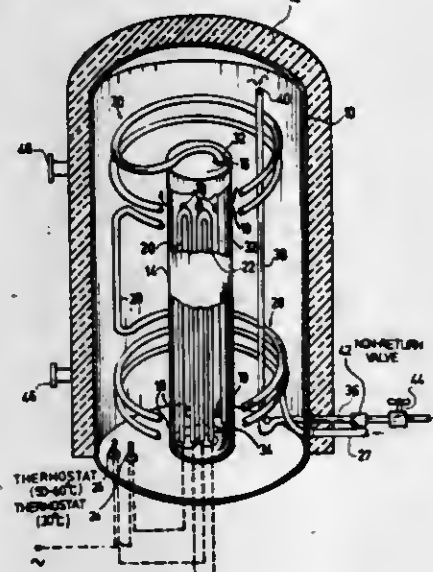
Filed Mar. 5, 1979, Ser. No. 16,958

Claims priority, application Israel, Apr. 2, 1978, 54416

Int. Cl.<sup>3</sup> H05B 1/02; F24H 1/22

U.S. Cl. 219—314

7 Claims



1. An electric water heater, particularly for domestic use, having a cold water inlet and a heated water outlet, comprising: first and second water heating compartments in thermal communication with each other and connected such as to permit a thermal circulation of water between them; at least first and second electric heating elements provided within the first compartment, each individually controlled by a separate thermostatic device responsive to the temperature in the second compartment; first and second heat exchanging circulation conduits in fluid flow communication with each other, provided at a lower and an upper portion of the second compartment, respectively, said cold water inlet being connected to said first circulation conduit; an intermediate water outlet in communication with said second conduit provided within said first compartment for supplying water flowing through said second circulation conduit to said first compartment; and an intermediate water inlet located at an upper portion of said second compartment and connected to said heated water outlet.

4,282,422

# POWER CONTROL FOR APPLIANCE USING MULTIPLE HIGH INRUSH CURRENT ELEMENTS

Thomas R. Payne, Louisville, Ky., and Alfred L. Baker, Longmont, Colo., assignors to General Electric Company, Louisville, Ky.

Filed Feb. 1, 1979, Ser. No. 8,452

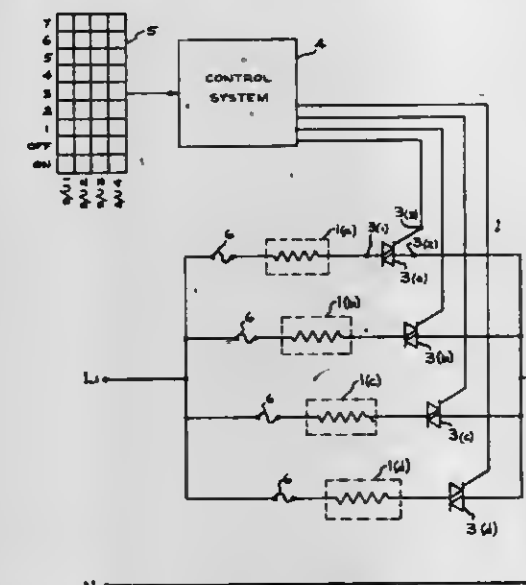
Int. Cl.<sup>3</sup> H05B 1/02

U.S. Cl. 219—486

25 Claims

1. A power control arrangement adapted for connection to a pulsating power supply for controlling the power output of a plurality of heater elements comprising:
  - an operator control including an OFF setting and means for selecting desired power levels for each element,
  - means for generating a pulse train, the time between pulses defining a control interval,
  - logic means responsive to said operator control for generating a binary control word representing a selected power

level for each heating element, each word including a plurality of bits, and  
means for controlling power to each of said elements during any given interval as a function of the state of a selected one of said bits in the control word associated with said element,  
detecting means associated with each element for detecting a transition from said OFF setting to a desired power level for its associated element,



means associated with each element responsive to said detecting means for defining a transition period of predetermined duration for its associated element, initiated by said detection of said transition, and  
means for inhibiting power to all other elements during those control intervals in which power is applied to a heating element operating in its transient period.

4,282,423

# DEEP FAT FRYER HAVING A SOLID-STATE CONTROL CIRCUIT

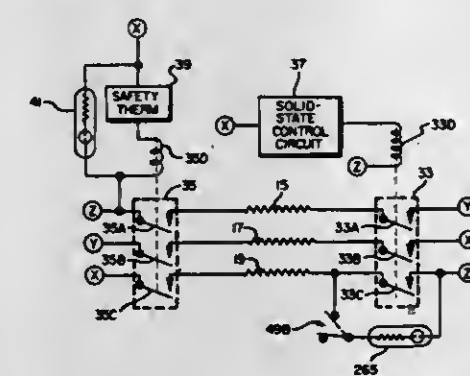
Kenneth C. Volz, Crystal Lake, Ill., assignor to International Foodservice Equipment Systems, Inc., Elgin, Ill.

Filed May 18, 1979, Ser. No. 40,096

Int. Cl.<sup>3</sup> H05B 1/02

U.S. Cl. 219—490

12 Claims



1. In a deep fat fryer having means for establishing a DC voltage differential between a DC power supply line and a reference power supply line and having means including at least two AC power supply lines and one or more heating elements coupled thereto for heating a reservoir of cooking fat, a solid-state control circuit comprising:
  - means coupled to said DC power supply line and said reference power supply line for developing a reference bias potential;
  - means including operating temperature control means for selecting the temperature at which said cooking fat is to be maintained and means for sensing the temperature of said cooking fat, said temperature control means and said temperature sensing means being coupled in series between said DC power supply line and said reference

power supply line and combining to develop an operating bias potential at the junction between said operating temperature control means and said temperature sensing means, the operating bias potential varying responsive to changes in the temperature of said cooking fat to correspond to the temperature of said cooking fat;  
means including a voltage comparator coupled to said reference bias means and said operating bias means for comparing the operating bias potential and the reference bias potential and developing an enabling signal whenever the level of the operating bias potential relative to the level of the reference bias potential indicates that the temperature of said cooking fat is below the temperature selected by said operating temperature control means;  
said comparator having positive and negative inputs and an output, the positive input of said comparator being coupled to said reference bias means and having the reference bias potential coupled thereto and the negative input of said comparator being coupled to the junction between said operating temperature control means and said temperature sensing means and having the operating bias potential coupled thereto, said comparator developing a low logic level enabling signal at said output whenever the operating bias potential exceeds the reference bias potential;  
said temperature sensing means comprises a negative temperature coefficient (NTC) resistive sensor coupled between said operating temperature control means and said reference power supply line, the resistance of said sensor varying inversely with respect to changes in the temperature of said cooking fat to increase the operating bias potential coupled to said comparator such that the operating bias potential exceeds the reference bias potential and said comparator develops a low logic level enabling signal when the temperature of said cooking fat is below the selected temperature level; and  
means coupled to said reference bias means and said operating temperature control means for switching said deep fat fryer to operation in a hold mode wherein said cooking fat is maintained at a reduced temperature independently of the temperature selected by said operating temperature control means, said hold mode means altering the reference bias potential and the operating bias potential coupled to said comparator to correspond to the reduced temperature and said comparator developing the enabling signal during operation in the hold mode whenever the level of the altered operating bias potential relative to the level of the altered reference bias potential corresponds to a cooking fat temperature that is below the reduced temperature level.

4,282,424

# AUTOMATIC CASH DISPENSING MACHINE

Minoru Hirose, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

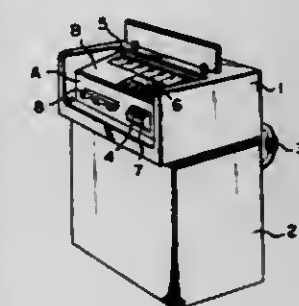
Filed Feb. 5, 1980, Ser. No. 118,852

Claims priority, application Japan, Mar. 28, 1979, 54-36733

Int. Cl.<sup>3</sup> G06F 15/30, 7/08

U.S. Cl. 235—379

6 Claims



1. An automatic cash dispensing machine delivering a speci-



fied amount of bank notes to a customer in accordance with the customer's operations, comprising:

- a casing having a substantially vertical front surface and a substantially horizontal top surface extending backward from the top edge of said front surface;
- an operation unit on said horizontal top surface of said casing for designating the amount to be paid, and a guide display unit for displaying instructions for the operations on said operation unit;
- inlet means in said vertical front surface of said casing into which an identification medium is to be inserted;
- cash outlet means in said vertical front surface of said casing through which cash is discharged; and
- a payment mechanism for delivering through said outlet means an amount of bank notes designated by means of said operation unit out of a stack of bank notes previously stored in said dispensing machine.

4,282,425

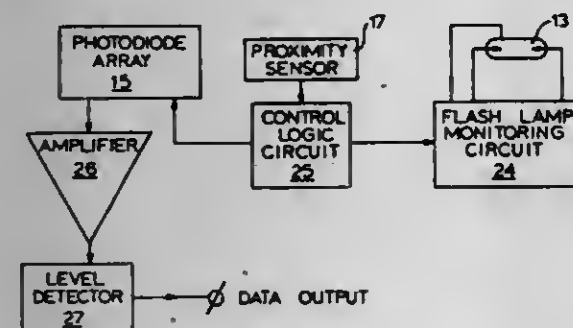
## INSTANT PORTABLE BAR CODE READER

George E. Chadima, Jr., Cedar Rapids, Iowa, and Vadim Laser, Cincinnati, Ohio, assignors to Norand Corporation, Cedar Rapids, Iowa

Filed Jul. 25, 1979, Ser. No. 60,413  
Int. Cl.<sup>3</sup> G06K 7/10

U.S. Cl. 235-462

12 Claims



1. A portable instant bar code reader comprising:

- a hand-held bar code reader unit, said hand-held bar code reader unit having a portion thereof defining at least in part an illumination window, a flashable illuminator disposed near said illumination window and means for producing a flash of light therethrough;
- said hand-held bar code reader unit having a portion thereof defining at least, in part, a light receiving window for receiving reflections of light emitted through said illumination window;
- a photodiode array positioned within said hand-held bar code reader in the path of light rays reflected into and through said light receiving window;
- a light gathering means positioned between said light receiving window and said photodiode array for receiving a light pattern from said light receiving window and focusing the same onto said photodiode array;
- electronic means for reading out the photodiode array; and
- means for producing logic signals which are indicative of the light pattern focused onto said photodiode array.

4,282,426

## SLOT SCANNING SYSTEM

Syed Naeem; Denis M. Blanford, and Gene L. Amacher, all of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed May 30, 1979, Ser. No. 43,928  
Int. Cl.<sup>3</sup> G04K 7/10

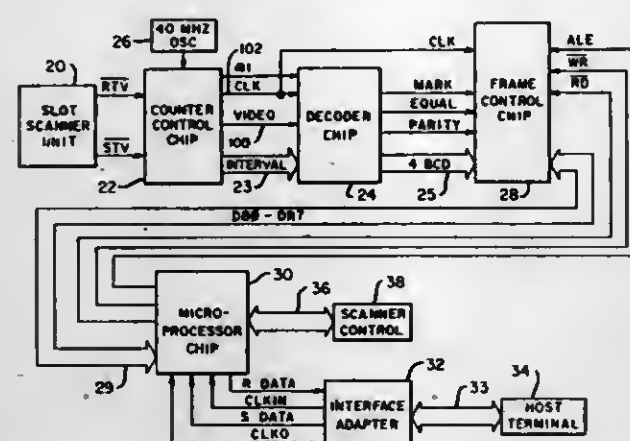
U.S. Cl. 235-463

17 Claims

1. A system for decoding a coded symbol consisting of a plurality of bars and spaces which represent characters comprising:
  - means for generating data representing the bars and spaces of the symbols;
  - a first large scale integrated circuit chip having circuits for

applying predetermined relationships to said data and for generating continuous valid and invalid characters in response to the generation of the data representing each consecutive bar and space whenever said relationships are satisfied;

a second large scale integrated circuit chip coupled to said



first integrated circuit chip for receiving said valid and invalid characters, said second circuit chip having circuits for distinguishing between the valid and invalid characters received from said first chip; and

a processor chip coupled to said second chip for processing said valid characters upon the distinguishing of said valid characters by said second chip.

4,282,427

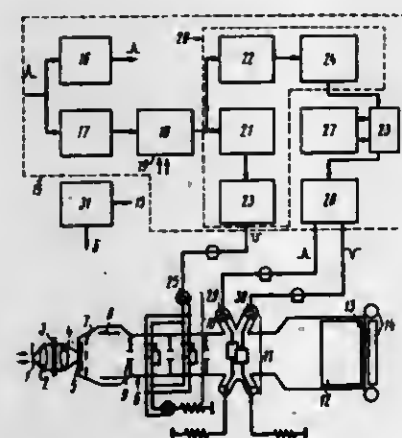
## ELECTROOPTICAL CAMERA FOR REGISTERING HIGH-SPEED PROCESSES

Gennady I. Brjukhnevich, prospekt Vernadskogo, 66, kv. 16; Anatoly F. Klepov, Nagatinskaya ulitsa, 29, korpus 3, kv. 26; Lidia I. Kondrashova, Profsojuznaya ulitsa, 115, kv. 39; Valery I. Lozovoi, Orekhovy bulvar, 37, korpus 2, kv. 312; Viktor A. Miller, Aviatsonnaya ulitsa, 74, korpus 4, kv. 80; Valdis E. Postovalov, ulitsa Krasnodarskaya, 57 korpus 1, kv. 61; Alexandr M. Prokhorov, Zvenigorodskaya ulitsa, 4, kv. 10; Jury N. Serdjuchenko, Yasenevo, 2 Mikrorajon, korpus 3, kv. 449; Boris M. Stepanov, Leninsky prospekt, 57, kv. 34, and Mikhail Y. Schelev, ulitsa Chkalova, 12/7, kv. 17, all of Moscow, U.S.S.R.

Filed Apr. 2, 1979, Ser. No. 26,244  
Claims priority, application U.S.S.R., May 16, 1978, 2615351  
Int. Cl.<sup>3</sup> H01J 31/50

U.S. Cl. 250-213 VT

8 Claims



1. An electrooptical camera for registering high-speed processes represented by beams of radiation, comprising:
  - an image intensifier; having an evacuated tube envelope, a gate system and a deflection system within said evacuated tube envelope to control the beam of radiation within said image intensifier;
  - control means connected to said gate and deflection systems for controlling said systems, said control means including

a trigger oscillator having input means for accepting an electric trigger pulse,

a master oscillator connected to said trigger oscillator and having an optical input to provide for direct triggering of said master oscillator by the beam of radiation being registered,

first amplification means including first inverter means and connected between said master oscillator and said gate system for driving said gate system responsive to output signals from said master oscillator,

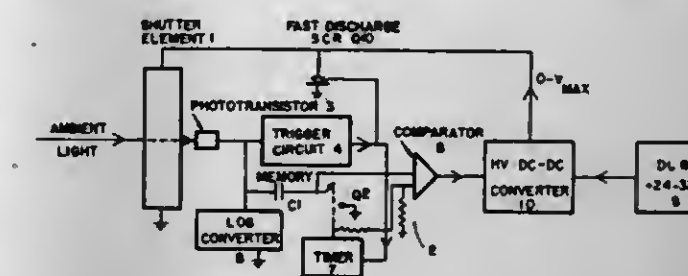
second amplification means including second inverter means and having an input connected to said master oscillator;

a transformer/shaper which serves as a load to said second amplifying means and is connected to said deflection system for providing positive and negative scan pulses to said deflection system;

integrators insertable between said second amplifying means and said transformer/shaper; and

a scanning time selector for selectively inserting said integrators between said second amplifying means and said transformer/shaper to provide desired scanning times for said deflection system.

age for the shutter; switch means for connecting the control voltage to a point of reference potential in response to the trigger signal; memory means responsive to the trigger signal



for storing a voltage indicative of pre-flash ambient light; and amplifier means for connecting the output of said memory means to said control means in response to said trigger signal.

4,282,428

## CHROMOSOME DETECTOR USING A SCANNING MICROSCOPE SYSTEM

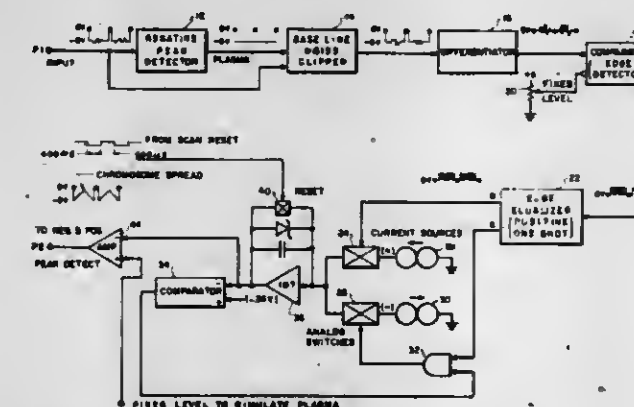
Gerald D. Hunter, Lino Lakes, Minn., and Gaston A. Palombo, Agoura, Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 17, 1979, Ser. No. 85,745  
Int. Cl.<sup>3</sup> G01J 1/20

U.S. Cl. 250-214 R

5 Claims U.S. Cl. 250-221

11 Claims



1. A chromosome detector comprising:

- input means for producing a signal representative of a scan of a predetermined incremental area of a prepared slide,
- amplitude analyzing means for analyzing the amplitude of said signal with respect to a threshold level and
- frequency analyzing means for analyzing the output of said amplitude analyzing means to produce an output signal having a frequency dependent amplitude.

4,282,429

## FLASH PROTECTION CONTROLLER

Lee K. Galbraith, Mountain View, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 7, 1979, Ser. No. 101,368  
Int. Cl.<sup>3</sup> G02F 1/01; H01J 40/14

U.S. Cl. 250-214 RC

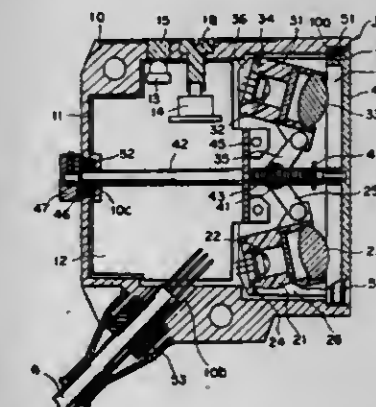
7 Claims

1. A controller for use with a flash protection device having an electro-optic shutter wherein the amount of light transmitted by the shutter is controlled by the magnitude of DC voltage, said controller comprising: a detecting means for generating an electrical signal proportional to the intensity of ambient light; trigger means, connected to said detecting means, for providing a trigger signal based on the rate of rise of intensity of ambient light; a low voltage power supply; control means, connected to said power supply, for providing a control volt-

4,282,430  
REFLECTION-TYPE PHOTOELECTRIC SWITCHING APPARATUS

Hideaki Hatten, Muko; Norio Onji, Kyoto; Koichi Tadjino, Kyoto, and Toshifumi Fukuyama, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jun. 11, 1979, Ser. No. 47,082  
Claims priority, application Japan, Jun. 19, 1978, 53-74032  
Int. Cl.<sup>3</sup> G01V 9/04



1. In a reflection-type photoelectric switching apparatus having a light projecting device for projecting a beam of light to an object, a light receiving photoelectric device arranged in side-by-side relation with said light projecting device for receiving a reflected light ray from said object, a circuit device operative in response to output signals from said light receiving device for generating a switching output signal, and a housing for enclosing said light projecting and receiving devices and circuit device,

the improvement comprising an optical axis adjusting means which is controllable from outside of said housing for adjusting the optical axis of at least one of said light projecting and receiving devices,

said circuit device being coupled to the receiving device and having a predetermined detection level,

said light projecting and receiving devices respectively having optical members which allow both the light beam from said projecting device and the light beam incident on said receiving device to pass within a predetermined light path having a predetermined effective zone so that said two light beams will be crossed in a desired detection field, and

the distance from said photoelectric switching apparatus to said desired detection field being continuously variable by said optical axis adjusting means.



4,282,431

## BAR CODE SCANNER

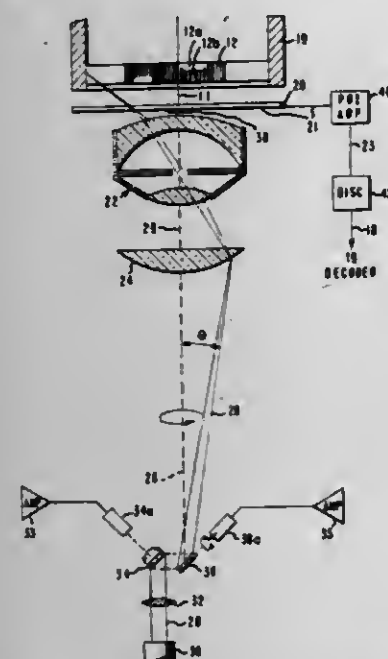
John D. Anthony, Jr.; John J. Keegan, Jr., both of Wilmington, Del., and Jerald D. Lee, Mendenhall, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 18, 1979, Ser. No. 86,044

Int. Cl.<sup>3</sup> H01J 3/14

U.S. Cl. 250—236

4 Claims



1. An apparatus for scanning light reflective bar-coded labels located on the internal surface of a tube and for providing coded signals, said apparatus comprising:
  - a wide angle lens having an optic axis, said lens being proximate said tube, said optic axis and the longitudinal axis of said tube being substantially coincident;
  - a field lens spaced from and coaxial with said wide angle lens;
  - means for generating a slightly convergent beam of light at a location spaced from said tube and said optic axis and for directing the beam into a path substantially parallel to said optic axis;
  - a first light beam deflector positioned in said path to receive the beam of light and deflect it away from said path toward said optic axis;
  - a second light beam deflector centrally positioned on said optic axis to receive the light from the first light beam deflector and reflect it toward said field lens so that all the light is received by said field lens;
  - means for substantially sinusoidally oscillating said first and second deflectors in a phase controlled relationship for mutually deflecting said beam along a second path which diverges from and rotates about said optic axis as it approaches said field lens; and
  - a light detector positioned between said wide angle lens and said tube on the optic axis to receive light reflected from the bar-coded labels located on the internal surface of the tube and to provide coded signals.

4,282,432

## X-RAY DIAGNOSTIC GENERATOR WITH AN MAS RELAY

Kurt Franke, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 17, 1979, Ser. No. 85,700

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1978, 2846531

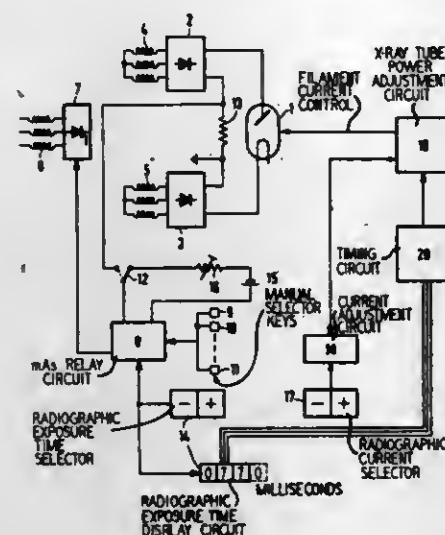
Int. Cl.<sup>3</sup> A61B 6/00; H05G 1/46

U.S. Cl. 250—322

4 Claims

1. An x-ray diagnostic generator comprising a mAs relay having organ keys for the organ-programmed selection of mAs products, characterized in that, for the purpose of individual adjustment of the exposure time, said mAs relay has an auxil-

iary current source (15), and an exposure time selector means (14), the input of the mAs relay (8) being capable of connection to said auxiliary current source (15) to receive a constant



auxiliary current independent of radiological current, such that the operating threshold of the mAs relay (8) is adjustable by the exposure time selector means (14) to provide any exposure time selected thereby.

4,282,433

## APPARATUS FOR MEASURING THE DENSITY OF A MULTIPHASE STREAM

Rudi Löffel, Karlsruhe, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

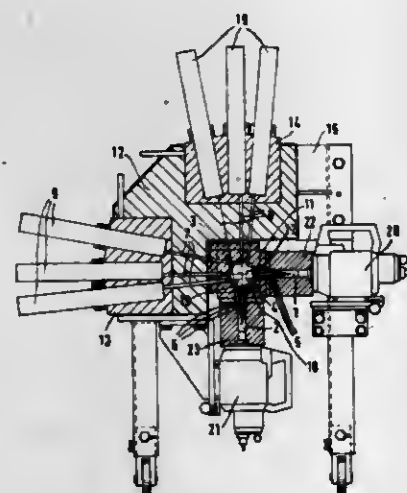
Filed Apr. 10, 1979, Ser. No. 28,671

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817018

Int. Cl.<sup>3</sup> G01F 1/00

U.S. Cl. 250—356

6 Claims



1. In a system for measuring the density of a two-phase, gas-liquid fluid stream by utilization of the gamma ray absorption method, including means defining a flow channel through which the stream is conducted, gamma radiation source means for directing gamma radiation through the channel, and gamma radiation detector means disposed for receiving gamma radiation after it passes through the channel, the improvement wherein said source means comprises at least two radiation sources disposed in a common plane perpendicular to the axis of said flow channel and angularly spaced about that axis and means defining at least one beam channel associated with each said source for forming the radiation from its said source into a collimated beam directed into said flow channel, said beam channels being oriented for causing collimated beams from each said source to intersect one another within said flow channel.

4,282,434

## RADIATION MEASUREMENTS ON MINERAL SLURRIES

Geoffrey J. Lyman, Taringa, Australia, assignor to The University of Queensland, St. Lucia, Australia

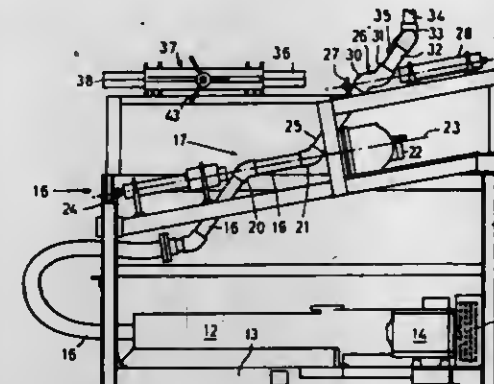
Filed Nov. 28, 1978, Ser. No. 964,307

Claims priority, application Australia, Nov. 28, 1977, PD2575

Int. Cl.<sup>3</sup> G01V 23/00; G01N 5/00; B01D 19/00

U.S. Cl. 250—359

14 Claims



1. A method of radiation measurements on continuously moving slurries including the steps of:
  - (a) raising the pressure of the moving slurry to reduce the volume of gas present as bubbles therein below a predetermined value;
  - (b) continuously moving the slurry under pressure through a measurement zone; and
  - (c) measuring the radiation characteristics of the slurry.

4,282,435

## MONO-ENERGETIC NEUTRON VOID METER

Frank Stern, Burlington, Canada, assignor to Westinghouse Canada Limited, Hamilton, Canada

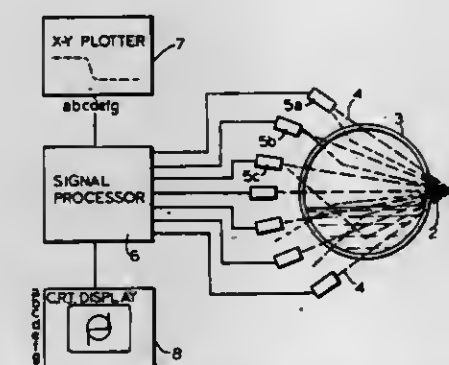
Filed Apr. 16, 1979, Ser. No. 30,478

Claims priority, application Canada, Aug. 22, 1978, 309772

Int. Cl.<sup>3</sup> G01T 3/00

U.S. Cl. 250—390

2 Claims



1. A method of measuring the steam/water ratio in a thermal generating system comprising:
  - subjecting a cross section of the steam/water mixture to radiation consisting of mono-energetic epithermal neutrons;
  - counting the number of neutrons which penetrate the medium without collision; and
  - displaying the resultant count on means calibrated as the steam/water ratio of the medium subjected to radiation.

4,282,436

## INTENSE ION BEAM GENERATION WITH AN INVERSE REFLEX TETRODE (IRT)

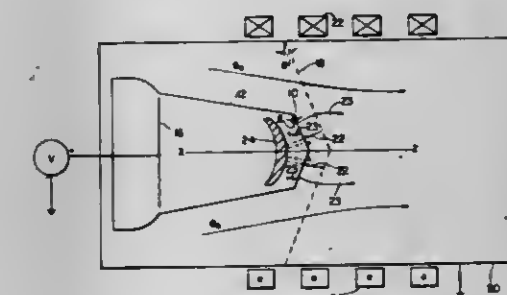
Christos A. Kapetanakis, Bethesda, Md.; John A. Pasour, Alexandria, Va.; Redge A. Mahaffey, Clinton, Md.; Jeffry Golden, Laurel, Md., and Spencer J. Marsh, Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 4, 1980, Ser. No. 156,441

Int. Cl.<sup>3</sup> H01J 23/08

U.S. Cl. 250—423 R

9 Claims



1. An inverse reflex tetrode receiving an electrical pulse from a pulse generator for producing and extracting a beam of ions comprising:
  - chamber means connected to said pulse generator for maintaining a vacuum;
  - a grounded cathode, coupled to said chamber means, said cathode having a curved surface and being formed from an electron-emitting material that is generally transparent to said ions;
  - means for supporting said cathode, said means being formed from an electrically-conducting material and being coupled to said pulse generator;
  - a first anode having a curved surface and being spaced apart from and approximately parallel to said cathode, said anode being formed from a generally electron-transparent, dielectric, foil material which forms a plasma that contains the ions when struck by said electrons;
  - a second anode spaced apart from said first anode, the first anode being disposed between said cathode and said second anode, said first and second anodes being at the same electrical potential; and
  - a hollow anode stalk, a first end of said anode stalk supporting said first anode, and a second end of said anode stalk supporting said second anode, the anode stalk being coaxially aligned with and closely spaced from and surrounded by said cathode supporting means for providing low electrical inductance operation, the distance between said first and second anodes being sufficient for forming a virtual cathode therebetween, said first and second anodes and said anode stalk being electrically connected and coupled to said generator and receiving a high-voltage positive pulse from said generator so that electrons are emitted from the cathode, said electrons generally passing through the first anode and forming a virtual cathode between the first and second anodes, the electrons generally reflexing between said cathode and virtual cathode until the electrons are absorbed in the first anode and form a plasma thereon, said plasma emitting ions which propagate through the cathode.



4,282,437

**CHARGED PARTICLE BEAM LITHOGRAPHY**

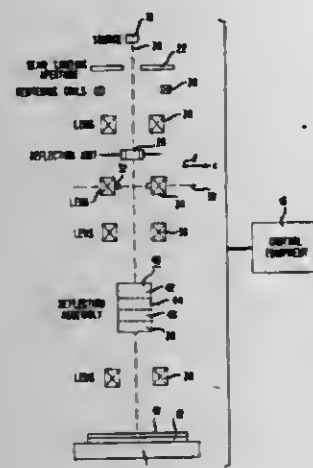
Robert A. Boie, Bellport, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 17, 1979, Ser. No. 104,377

Int. Cl.<sup>3</sup> A61K 27/02; G01K 1/08

U.S. Cl. 250—492 A

15 Claims



1. A charged particle beam exposure system for selectively irradiating the surface of a workpiece to be patterned, said system comprising

- a source of charged particles,
- a planar apertured plate,
- means interposed between said source and said plate for focusing said charged particles onto said plate to form a spot incident on the plane of said plate, the cross-sectional area of said incident spot being small relative to the cross-sectional area of said aperture,
- the aperture in said plate being characterized by opening dimensions parallel to one axis of said plate that vary as a function of location along a positional axis of said plate,
- deflection means interposed between said source and said plate for moving said incident spot to a prescribed position along said positional axis and for then scanning said incident spot across said aperture parallel to said one axis along an extent that exceeds the opening dimension of the aperture at said prescribed position,
- and means interposed in the path of spots propagated through said mask plate for focusing said spots onto said workpiece surface.

4,282,438

**COMPUTED TOMOGRAPHY APPARATUS AND METHOD USING PENETRATING RADIATION**

Susumu Nishida, Yokohama; Tamon Inouye, Kawasaki; Tadatoshi Yoshida, Tokyo, and Kiyoto Saito, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Feb. 14, 1978, Ser. No. 877,730

Claims priority, application Japan, Feb. 14, 1977, 52-14116

Int. Cl.<sup>3</sup> G01N 21/00

U.S. Cl. 250—445 T

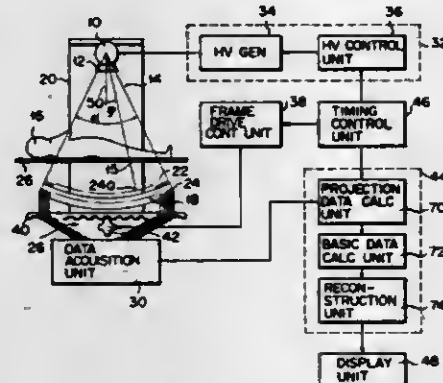
10 Claims

1. A computed tomography system using penetrating radiation comprising:

- a radiation source for emitting penetrating radiation in a diverging beam pattern subtending an angle into the interior of a thin sliced layer portion of a subject to be examined;
- a detector including detecting elements for dividing the radiation after passing through said sliced layer portion into a plurality of radiation beams penetrating said subject at various projection angles  $\theta$  within the range  $0 \leq \theta \leq \alpha$ ,  $\alpha < 180^\circ$ , thereby to detect the intensity of beam penetrating said sliced layer portion;
- scanning means for scanning said beam along a single substantially linear path in a direction parallel to the plane of said sliced layer portion, thereby obtaining intensity data equivalent to that obtained by radiating said sliced layer

portion with parallel beams of radiation orbitally scanned about said portion through the single  $\theta$ ;

- a data processing unit for producing data for reconstructing an image of said sliced layer portion, said data processing unit including, a projection data calculating unit for computing projection data for each of said parallel radiation beams on the basis of the detected intensity data delivered from said detector for each said set of parallel beams, and a basic data calculating unit for calculating one-dimensional Fourier transforms of said projection data for the respective radiation directions of said radiation beams



within the range  $0 \leq \theta \leq \alpha$ ,  $\alpha < 180^\circ$ , and one-dimensional Fourier expansion series on the basis of said one-dimensional Fourier transforms in order to obtain substantially one-dimensional Fourier transforms of the projection data over the full circumference of said sliced layer portion;

- an image reconstruction unit for calculating output data of said basic data calculating unit to reconstruct the image of said sliced layer portion; and
- a display unit for displaying the image of said sliced layer portion.

4,282,439

**X-RAY PHOTOGRAPHING MACHINE USING SHEET FILMS**

Tetsuo Matsuura, Otawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

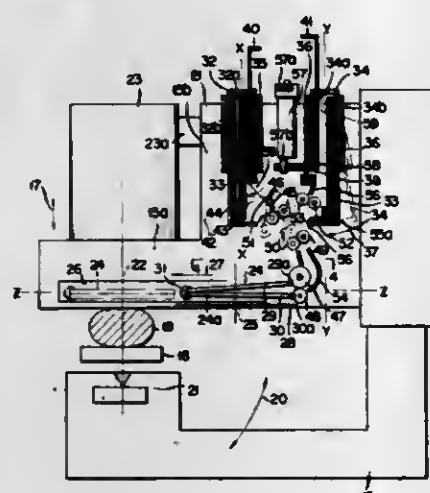
Filed Aug. 22, 1979, Ser. No. 68,684

Claims priority, application Japan, Aug. 25, 1978, 53-103690; Aug. 31, 1978, 53-106446; Aug. 31, 1978, 53-106448

Int. Cl.<sup>3</sup> G03B 41/16

U.S. Cl. 250—470

20 Claims



1. An x-ray photographing machine comprising:

- (a) an X-ray source;
- (b) a movable frame adjacent said X-ray source;
- (c) an elongated film supply magazine mounted on said movable frame and having top and bottom plates spaced from each other and containing unexposed sheet films, said film supply magazine being closed except for a film takeout opening formed in the top plate thereof;
- (d) an elongated film takeup magazine mounted on said

movable frame and having top and bottom plates spaced from each other and containing exposed sheet films, said film takeup magazine being closed except for a film intake opening formed in the top plate thereof and facing the film takeout opening of said film supply magazine;

- (e) a film carrier on said movable frame and reciprocable along a rectilinear path from a stand-by position adjacent said magazines to an X-ray exposure position adjacent said X-ray source, and
- (f) a film feed mechanism operable to transfer an unexposed sheet film from said film supply magazine to said carrier in said stand-by position and to transfer an exposed sheet film from said carrier returned to said stand-by position to said film takeup magazine, said feed mechanism including sucker means located near said takeout opening of the film supply magazine to draw an exposed sheet film out of said film supply magazine through said takeout opening;
- (g) said film supply magazine and film takeup magazine being spaced from each other along the rectilinear path of said film carrier, and the longitudinal axis of both said magazines extending substantially at right angles to said rectilinear path;
- (h) said film feed mechanism being disposed entirely in a space confined by the longitudinal axes of said magazines and said carrier path and wherein said film feed mechanism further includes:
  - (a) film advance means disposed in close proximity to said film supply magazine;
  - (b) film feed-takeout means disposed in close proximity to said carrier in said stand-by position and operable selectively in a forward direction to feed sheet films into said carrier and in a reverse direction to take the sheet films out of said carrier;
  - (c) film takeup means disposed in close proximity to said film takeup magazine and operable to transfer sheet films from said carrier to said takeup magazine; and
  - (d) film transport means operable selectively in a forward direction to transfer a sheet film from said advance means to said feed-takeout means and in a reverse direction to transfer the sheet film from said feed-takeout means to said takeup means.

4,282,440

**NEUTRON ACCELERATOR TUBE HAVING IMPROVED IONIZATION SECTION**

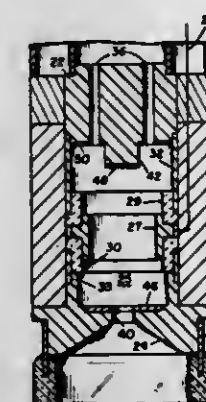
Wyatt W. Giveas, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 2, 1980, Ser. No. 145,935

Int. Cl.<sup>3</sup> C21G 4/02

U.S. Cl. 250—499

9 Claims



1. In a neutron accelerator tube having a target and a spaced replenisher section for supplying accelerator gas, an ionization section located between said target and said replenisher section comprising:

- (a) a means forming an ionization chamber in said tube adapted to receive accelerator gas from said replenisher section,
- (b) first and second cathodes spaced from one another and having opposed active surfaces exposed to the interior of

said chamber, the active surface of at least one of said cathodes being formulated of a  $\beta$ -ray emitting material, and

- (c) anode means located at a position intermediate of said first and second cathodes whereby in response to an applied positive voltage electrons are transmitted between the opposed active surfaces of said cathodes and produce the emission of secondary electrons upon impacting an active cathode surface.

4,282,441

**FILM SAFE**

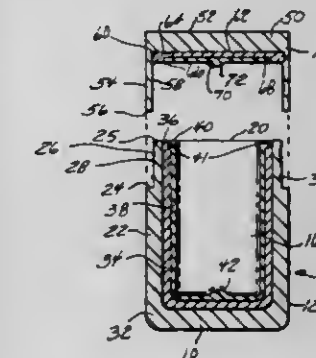
Richard F. Filoramo, 1330 Conge, Bloomfield Hills, Mich. 48013

Filed Jul. 2, 1979, Ser. No. 54,182

Int. Cl.<sup>3</sup> G21F 1/00

U.S. Cl. 250—515

15 Claims



- 1. A film safe for containing photographic film comprising:
  - a body portion; and
  - a cap portion;
 said body portion being open at one end and closed at the opposed end to form a hollow enclosure, said body portion comprising:
  - a first outer layer; and
  - a second layer disposed in registry with said first layer, said second layer being formed of a radiation impervious material;
 said second layer being adapted to receive in registry therewith a third innermost layer for holding a roll of photographic film;
  - said cap portion being open at one end and closed at the opposed end to form a hollow enclosure, said cap portion comprising:
    - a first outer layer;
    - a second layer of radiation impervious material disposed in registry with the first layer; and
    - a third layer of a non-metallic material disposed in registry with said second layer;
 said body and cap portions being engageable in a fluid-tight sealing relationship and, further, when said body and cap portions are engaged, said second layers of radiation impervious material in said body and cap portions form a continuous radiation impervious barrier around the interior of said film safe to prevent radiation from entering therein.

4,282,442

**DEVICE FOR CONVERTING RECIPROCAL LINEAR MOTION TO CONTINUOUS ROTARY MOTION**

Heinrich Manning, 76 South St., Danbury, Conn. 06810

Filed Jul. 11, 1979, Ser. No. 56,538

Int. Cl.<sup>3</sup> F16H 29/20; H02P 17/00

U.S. Cl. 290—1 C

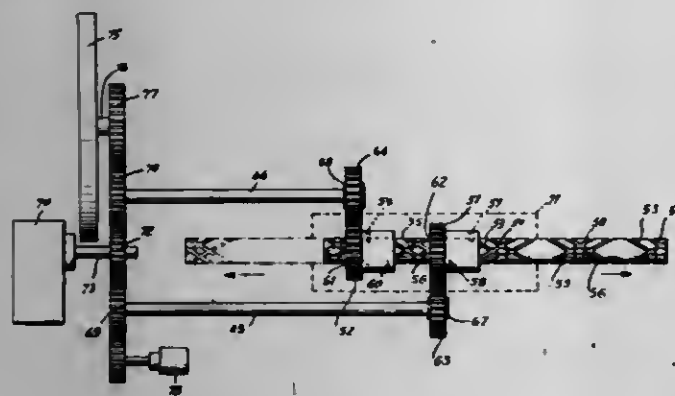
8 Claims

1. A device for converting reciprocal linear motion to continuous rotary motion of an output shaft, the device comprising:

- an input member movable in a reciprocal linear motion and



- having a forward stroke in a first linear direction and a backward stroke in a second linear direction opposite said first linear direction;
- a drive member rotatable in a first direction and a second direction opposite said first direction;
- linear motion converter means for rotating said drive member in an alternating rotary motion, said converter means rotating said drive member in said first direction in response to movement of said input member in said first linear direction and rotating said drive member in said second direction in response to movement of said input member in said linear direction opposite the first linear direction;
- a first gear coupled to said drive member by first one-way clutch means, said first clutch means engaging and rotating said first gear when the drive member is rotated in said first direction and disengaging and slipping with respect to said drive member when said drive member is rotated in said second direction;



- a second gear coupled to said drive member by second one-way clutch means, said second clutch means disengaging and slipping with respect to said drive member when said drive member is rotated in said first direction and engaging and rotating said second gear when said drive member is rotated in said second direction;
- driven shaft means rotatable in one direction, said driven shaft means having mounted thereon flywheel means for stabilizing the rotational speed of said driven shaft means and for storing energy;
- gearing means connecting both said first and said second gears to one of said driven shaft means and said output shaft, and connecting the other of said driven shaft means and said output shaft to only said first gear, to provide for rotation of said driven shaft means, said output shaft and said flywheel and for returning the stored energy from the flywheel to the output shaft thereby reducing the amount of input energy needed to rotate the output shaft.

4,282,443

## ENERGY CONVERSION APPARATUS

George H. Seidl, 203 Morris Ave., Trenton, N.J. 08611

Filed Oct. 26, 1979, Ser. No. 88,435

Int. Cl.<sup>3</sup> H02K 7/02

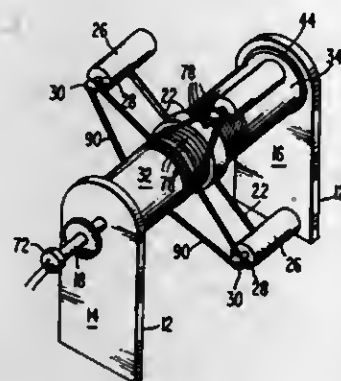
U.S. Cl. 290-1 R

14 Claims

1. An energy conversion apparatus, being usable to convert any type of mechanically rotatable energy into electricity, which comprises:

- a support means including a first strut means and a second strut means each extending upwardly;
- a drive shaft means being rotatably mounted within said support means between said first strut means and said second strut means, said drive shaft means being hollow to define a conduit therethrough axially;
- a plurality of arm means fixedly secured with respect to said drive shaft means and extending radially outward therefrom to be rotatable therewith;
- a plurality of generator means secured to said arm means, each of said generator means including a rotatable rotor

- shaft means extending outwardly therefrom and a pulling means mounted on said rotor shaft means;
- a first cylinder means rotatably positioned about said drive shaft means between said arm means and said first strut means;
  - a second cylinder means rotatably positioned about said drive shaft means between said arm means and said second strut means;
  - an inner cylinder guide means extending around the innermost edges of said first cylinder means and said second cylinder means and being secured to said arm means to maintain horizontal orientation of said first cylinder means and said second cylinder means during rotation thereof around said drive shaft means;
  - a first outer cylinder guide means extending around the outermost edge of said first cylinder means and being fixedly secured to said first strut means to maintain horizontal orientation of said first cylinder means in concert



with said inner cylinder guide means during rotation of said first cylinder means;

- a second outer cylinder guide means extending around the outermost edge of said second cylinder means and being fixedly secured to said second strut means to maintain horizontal orientation of said second cylinder means in concert with said inner cylinder guide means during rotation of said second cylinder means;
- a first gear assembly operably secured to said drive shaft means to be driven thereby and operably secured to said first cylinder means to rotate same in a direction opposite to the direction of rotation of said drive shaft means;
- a second gear assembly operably secured to said drive shaft means to be driven thereby and operably secured to said second cylinder means to rotate same in a direction opposite to the direction of rotation of said drive shaft means;
- a drive means in engagement with said drive shaft means to control rotational movement thereof.

4,282,444

## METHOD FOR DEEP SHAFT PUMPBACK ENERGY GENERATION

James L. Ramer, 1432 J Big Bend Rd., Waukesha, Wis. 53186

Filed Mar. 21, 1979, Ser. No. 22,560

Int. Cl.<sup>3</sup> F01D 15/10; H02K 7/18; B65G 5/00; E21F 17/16

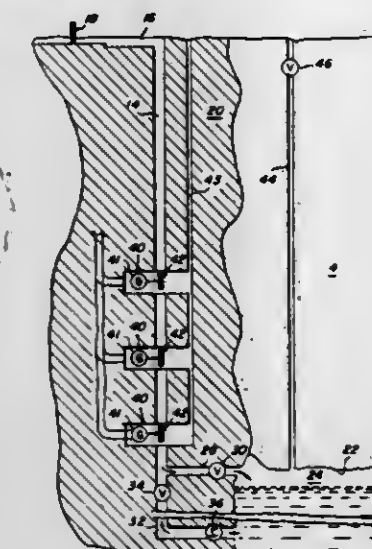
U.S. Cl. 290-52

1 Claim

1. The method of making a system for converting the potential energy stored in an upper reservoir of water into electric power during periods of high energy demand, use being made of a subterranean salt dome reservoir, which comprises the steps of:

- forming a generally vertical shaft through rocks surrounding the salt dome between the upper reservoir and the salt dome reservoir;
- arranging the drive means of a hydroelectric generator intermediate the ends of said shaft;
- supplying water from said upper reservoir, during a period of high energy demand, to said shaft, thereby

- causing the water to fall by gravity downwardly through said shaft;
- converting the kinetic energy of the falling water into electric energy by use of said hydroelectric generator;
  - introducing the water into the salt dome reservoir to dissolve the salt, thereby increasing the volume of the salt dome reservoir, whereby electrical power producing capacity is increased;



- electrically pumping the water from said salt dome reservoir to said upper reservoir during periods of electrical energy surplus; and
- repeating steps (c)-(f) above to progressively dissolve the salt and thereby progressively increase the volume of said salt dome reservoir to a specific size.

4,282,445

## CIRCUIT ARRANGEMENT FOR A WINDOW-CLEANING INSTALLATION OF MOTOR VEHICLES

Erich Ditzler, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

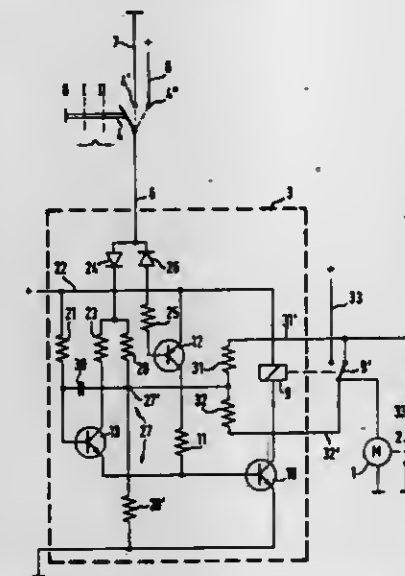
Filed Sep. 19, 1978, Ser. No. 943,697

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742888

Int. Cl.<sup>3</sup> B60S 1/08

U.S. Cl. 307-141

14 Claims



1. A circuit arrangement for a windshield cleaning installation of motor vehicles, comprising switch means, which in one engaging position operatively connects a program transmitter means for a first opening function of the cleaning installation by way of a control line means with one terminal of power supply, characterized in that the switch means, in a second engaging position, operatively connects the program transmitter means for a second operating function of the cleaning installation by way of the same control line means with the

other power supply terminal, and in that the program transmitter means includes switching means for carrying out said first and second operating functions corresponding to the application of the corresponding potential to the control line means.

4,282,446

## HIGH DENSITY FLOATING GATE EPROM PROGRAMMABLE BY CHARGE STORAGE

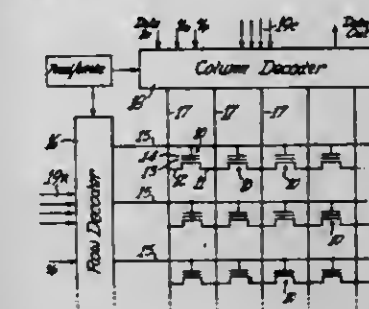
David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 1, 1979, Ser. No. 80,712

Int. Cl.<sup>3</sup> H03K 5/00; G11C 11/40; H01L 29/78, 27/02

U.S. Cl. 307-238.5

13 Claims



1. A method of programming a memory cell of the type having a source-drain path in a semiconductor substrate, and a floating gate and a control gate over said source-drain path, comprising the steps of applying a programming voltage to one end of the source-drain path and connecting the other end to reference potential for a sufficient time to charge the capacitance of said one end to substantially said programming voltage while the voltage on said control gate is substantially at said reference potential, and thereafter applying a high voltage to said control gate to render said source-drain path highly conductive and thereby charge the floating gate.

4,282,447

## SIGNAL BUFFER CIRCUIT ARRANGEMENT

Christopher P. Summers, London, and Donald G. Thompson, Wallington, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

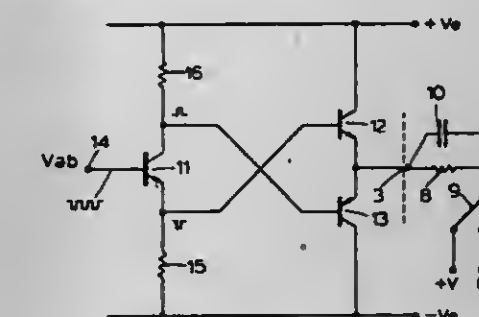
Filed Sep. 21, 1978, Ser. No. 944,333

Claims priority, application United Kingdom, Sep. 26, 1977, 40033/77; May 25, 1978, 40033/77

Int. Cl.<sup>3</sup> H03K 17/66, 17/76, 5/156

U.S. Cl. 307-255

2 Claims



1. A signal buffer circuit arrangement for providing an interface between an output terminal of an integrated circuit and an external circuit, said integrated circuit being provided internally with at least two current paths, one of said current paths including a first transistor of one conductivity type and the other current path including a second transistor of the opposite conductivity type, said first and second transistors having their emitter-collector paths connected in series between supply lines and their emitters connected to said output terminal so that each of said first and second transistors is rendered separately conductive at different bias voltage levels that inhibit the conductivity of the other of said first and second transistors, said arrangement further comprising an input



transistor having its base connected to receive an input signal, and its emitter and collector connected one each to the base of a respective one of said first and second transistors to feed thereto noninverted and inverted versions of said input signal, a load resistor external of said integrated circuit connected to said output terminal, and means external of said integrated circuit for connecting said load resistor selectively to one of at least two bias voltage sources providing said different bias voltage levels such that one of said first and second conductors is biased for conduction and the other is cut-off.

4,282,448

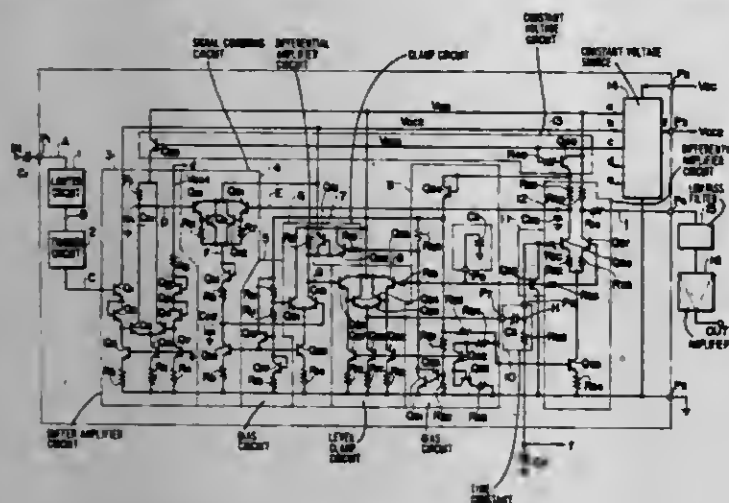
# MONOSTABLE MULTIVIBRATOR AND FM DETECTOR CIRCUIT EMPLOYING COMMON EMITTER TRANSISTOR AMPLIFIER WITH PLURAL EMITTER RESISTORS TO AVOID CIRCUIT OPERATION FROM SIGNAL NOISE

Takeshi Wada; Masanori Ienaka, both of Kodaira; Yasuo Kominami, Kokubunji; Yukihiko Miyamoto, and Tsuneo Yamada, both of Tokyo, all of Japan, assignors to Hitachi, Ltd. and Trio Kabushiki Kaisha, both of Tokyo, Japan  
Filed Dec. 13, 1978, Ser. No. 969,085

Claims priority, application Japan, Mar. 15, 1978, 53-28658  
Int. Cl.<sup>3</sup> H03K 3/033, 17/16

U.S. Cl. 307-273

5 Claims



1. In a monostable multivibrator comprising: a time constant circuit which includes a capacitor; an amplifier circuit which comprises a pair of transistors whose emitters are coupled in common with each other a base of one of the pair of transistors being supplied with an output from said time constant circuit while a base of the other of the pair of transistors being supplied with a reference voltage so that the pair of transistors performs switching operation between "on" state and "off" state, a positive feedback circuit which is connected between an output end of said amplifier circuit and an input end of said time constant circuit; and trigger means coupled to a circuit loop constructed of said time constant circuit, said amplifier circuit and said positive feedback circuit the improvement comprising emitter resistances for decreasing the gain of said amplifier circuit inserted between the junction of the common coupling and the respective emitters of said pair of transistors.

4,282,449

# COAL GASIFIER SUPPLYING MHD-STEAM POWER PLANT

Carl R. Bozzato, Enfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 3, 1979, Ser. No. 63,234

Int. Cl.<sup>3</sup> H02N 4/02

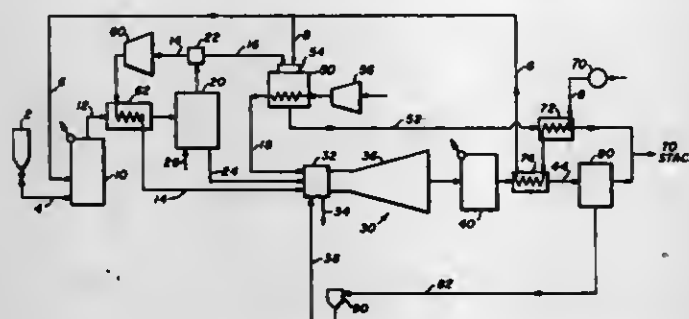
U.S. Cl. 310-11

7 Claims

1. A system for generating power from the combustion of coal and air comprising:
  - (a) a magnetohydrodynamic generator having a burner for producing a high temperature working gas and a genera-

tion channel for directly generating electric power from the high temperature working gas, the generation channel connected to the burner so as to receive the high temperature working gas;

- (b) an atmospheric coal gasifier for producing a combustible low BTU gas, a first portion of which is to be combusted in the burner of said magnetohydrodynamic burner;
- (c) a source of coal connected to said gasifier;
- (d) means for supplying preheated combustion air to said coal gasifier;
- (e) a gas cleaner disposed downstream with respect to gas flow of said coal gasifier for removing particulate matter, gaseous sulfur compounds, and unburned carbon from the combustible low BTU gas produced in said gasifier;
- (f) a first gas pass connected between said coal gasifier and said gas cleaner thereby providing a gas path for conveying the combustible low BTU gas discharging from said gasifier to said gas cleaner;
- (g) means interconnected between said gas cleaner and the burner of said magnetohydrodynamic generator for conveying the unburned carbon and particulate matter removed from the combustible low BTU gas in said gas cleaner to the burner of said magnetohydrodynamic generator for combustion therein;
- (h) means operatively associated with said gas cleaner for selectively splitting the clean combustible low BTU gas discharging therefrom into a first and a second portion;
- (i) a second gas pass connected between said splitting means and the burner of said magnetohydrodynamic generator thereby providing a gas path for conveying the first por-



tion of the clean combustible low BTU gas discharging from said splitting means to the burner of said magnetohydrodynamic generator to be combusted therein, said second gas pass being operatively associated with said first pass so as to direct the first portion of clean combustible low BTU gas in heat exchange relationship with the gas discharging from said gasifier;

- (j) a compressor disposed in said second gas pass for increasing the gas pressure of the first portion of the clean combustible low BTU gas discharging from said splitting means;
- (k) a direct-fired air heater having a burner wherein the second portion of the clean combustible low BTU gas is combusted to preheat high temperature combustion air to be supplied to the burner of said magnetohydrodynamic generator, and a flue for venting the combustion products formed therein to the atmosphere;
- (l) a third gas pass connected between said splitting means and the burner of said direct-fired air heater thereby providing a gas path for conveying the second portion of said clean combustible low BTU gas discharging from said splitting means to the burner of said direct-fired air heater; and
- (m) a vapor generator connected to the generation channel of said magnetohydrodynamic generator so as to receive the high temperature working gas passing out of the generation channel, said vapor generator having heat transfer surface whereby heat is transferred from the high temperature working gas to a liquid to generate a vapor as a

source of power, and a flue for venting the working gas passing therethrough to the atmosphere.

4,282,450

# DYNAELECTRIC MACHINE WITH CRYOSTABLE FIELD WINDING

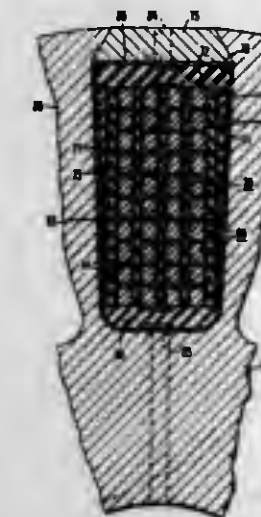
Phillip W. Eckels, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 25, 1979, Ser. No. 78,751

Int. Cl.<sup>3</sup> H02K 9/00

U.S. Cl. 310-52

13 Claims



1. In a superconductive cylindrical rotor for a dynaelectric machine said rotor, rotatable about an axis, having on its outer periphery a plurality of slots, each slot extending substantially along the length of the rotor, a slot assembly disposed within each of said slots, said assembly comprising:
  - a plurality of slot walls which extend in a generally radial direction relative to said rotor axis;
  - a plurality of conductor columns, each column having a plurality of superconductors, stacked one on top of another, in a generally radial direction relative to said rotor axis;

each superconductor having a generally rectangular cross section, with bare surfaces generally parallel to said side walls, and other surfaces generally perpendicular to said parallel surfaces, said other surfaces having insulating material thereon;

an insulative slot liner disposed about the slot assembly between the slot assembly and said slot walls;

a plurality of insulative separators, one on each radial side of each conductor column, said separators having surfaces parallel to said side walls, said parallel surfaces having a plurality of coolant channels thereon;

a plurality of side insulation panels, at least one of said side insulation panels being disposed on each side of the slot assembly and adjacent the slot liner, each of said side insulation panels having on at least one of its surfaces at least one coolant channel, said channel being tapered so as to be generally narrower nearer the rotor shaft;

means for introducing coolant into said channels; and

means for removing coolant from said channels.

4,282,451

# SOLID ROTOR FOR ASYNCHRONOUS ELECTRICAL MACHINES

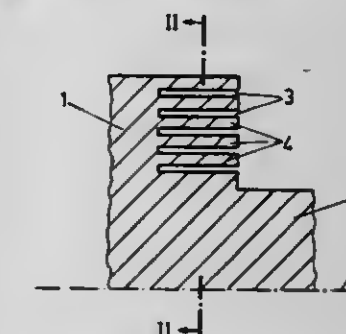
Tihomir Bratoljic, Wettingen, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland  
Continuation of Ser. No. 818,804, Jul. 25, 1977. This application Apr. 10, 1979, Ser. No. 28,660

Claims priority, application Switzerland, Aug. 9, 1976, 10129/76

Int. Cl.<sup>3</sup> H02K 1/22

U.S. Cl. 310-262

10 Claims



1. A solid rotor for an asynchronous electrical machine wherein annular rings separated by intervening grooves are provided on the rotor end faces and wherein the rings are formed between grooves bounded by conical surfaces.

4,282,452

# METHOD AND CIRCUIT ARRANGEMENT FOR ENERGIZING ULTRASONIC TRANSDUCERS WHICH ARE UTILIZED IN IMPULSE ECHO TECHNOLOGY

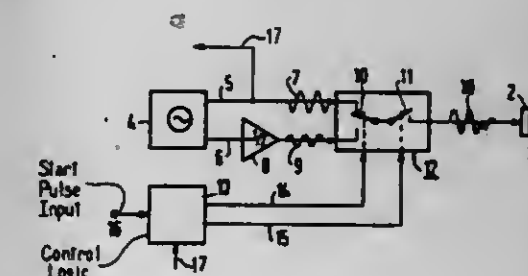
Dieter Hassler, Uttenreuth, and Robert Schwarz, Heselhof, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany  
Filed Mar. 15, 1979, Ser. No. 20,866

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813729

Int. Cl.<sup>3</sup> H01L 41/08

U.S. Cl. 310-317

15 Claims



1. A circuit arrangement for carrying out the method comprising:

generating an electric high frequency pulse in the form of a driving periodic oscillation of predetermined amplitude and of a driving frequency corresponding to a useful resonance frequency of an ultrasonic transducer, and having a first phase, generating a stop signal whose frequency is the same as said driving frequency but having a second phase offset by substantially 180° in relation to the first phase of said driving periodic oscillation, applying to said ultrasonic transducer a predetermined number of periods of said driving periodic oscillation (7) of said predetermined amplitude and of said driving frequency and of said first phase, and then applying to said ultrasonic transducer said stop signal (9) having the same frequency as said driving frequency, having said second phase offset by substantially 180° in relation to said first phase, and having a substantially smaller amplitude than said predetermined amplitude of said periodic oscillation (7), said circuit arrangement comprising



an ultrasonic transducer having the useful resonance frequency, oscillator means for generating a driving periodic oscillation of said predetermined amplitude and of said driving frequency corresponding to said useful resonance frequency and of said first phase, and for thereafter generating said stop signal of the same frequency as said driving frequency but having a second phase offset by substantially 180° relative to said first phase, and control means controlling said oscillator means to supply to said ultrasonic transducer first said predetermined number of periods of said driving periodic oscillation of said predetermined amplitude, and then said stop signal, such that said stop signal as applied to said ultrasonic transducer has a substantially smaller amplitude than said predetermined amplitude of said driving periodic oscillation, said oscillator means comprising first means (5) for supplying a first sinusoidal oscillation (7) as said driving periodic oscillation, and second means (6, 8) for supplying a second sinusoidal oscillation (9) as said stop signal with said second sinusoidal signal having about one-half the amplitude and a 180° phase shift in comparison to said first sinusoidal oscillation, and said control means comprising switching means (10, 11) between said first and second means and said ultrasonic transducer for first supplying said predetermined number of periods of said first sinusoidal oscillation (7) to said ultrasonic transducer and then supplying to said ultrasonic transducer a predetermined number of periods of said second sinusoidal oscillation (9), said second means comprising an output (6) supplying a sinusoidal oscillation corresponding to said first sinusoidal oscillation, and phase inversion and amplitude attenuation means (8) connected with said output (6) and with said switching means (10, 11) for supplying said second sinusoidal oscillation (9) to said switching means.

4,282,453

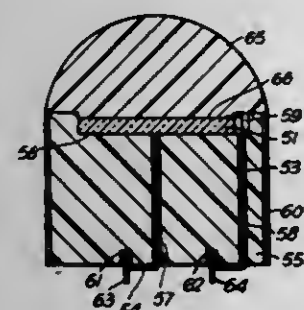
#### TRANSDUCER APPARATUS FOR DETECTING AIRBORNE PRESSURE PULSE

Lindsay C. Knight, Albury, Australia; David A. Cash, Camberley, England; Duncan Stewart, Farnham Common, England; Robert A. Cotta, Maidenhead, England; William H. Bowyer, Farnham, England; Robert C. Newham, Slough, England; Frederick J. Williams, Meppershall, England, and David W. Pardon, Bennington, England, assignors to Australasian Training Aids (Pty.) Ltd., Albury, Australia  
Division of Ser. No. 879,458, Feb. 21, 1978, abandoned. This application Jun. 22, 1979, Ser. No. 51,125  
Claims priority, application United Kingdom, Feb. 21, 1977, 7253/77

Int. Cl.<sup>3</sup> H01L 41/08

U.S. Cl. 310—335

32 Claims



1. A transducer apparatus for producing a timing signal in response to an airborne pressure pulse arriving from any direction substantially within a hemisphere and impinging on the apparatus, comprising:

- a element for producing an electrical signal when subjected to mechanical stress, said element having a predetermined acoustic impedance; and
- a solid member having a generally hemispherical dome-shaped upper surface exposed to said airborne pressure pulse and an opposing lower surface acoustically coupled

at a central area thereof to a surface of said signal producing element, said solid member being of a material which has an acoustic impedance intermediate the respective acoustic impedances of air and of said output signal element, wherein a radial length between a central point of said element and said exposed upper surface is substantially constant with angle, whereby, when an airborne pressure pulse impinges substantially tangentially at a point on said exposed upper surface, a resulting compression wave is propagated through said solid member at a velocity greater than the speed of sound in air, said compression wave subjecting said element to mechanical stress such that an electrical signal is produced, said electrical signal having a rise time and polarity which are substantially independent of where the airborne pressure pulse first impinges on said exposed upper surface.

4,282,454

#### PIEZOELECTRIC CRYSTAL MOUNTING AND CONNECTION ARRANGEMENT

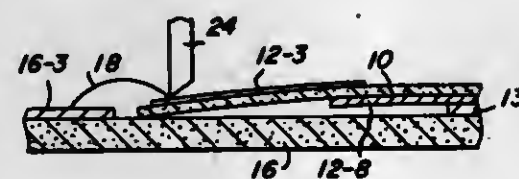
Emory Wakat, Jr., Plantation; Lawrence N. Dworsky, Coral Springs; Leo V. Krolak, Plantation; Jeffery A. Whalin, Palm Springs, all of Fla., and Harold W. Mech, Bloomington, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 27, 1979, Ser. No. 33,774

Int. Cl.<sup>3</sup> H01L 41/08

U.S. Cl. 310—348

6 Claims



1. A mounting and connecting arrangement for a crystal plate as for use in an electronic device and comprising in combination:

- a flexible crystal plate;
- at least one pair of conductive areas formed on the plate, one of each pair of areas being formed on a first surface of the plate, and one of each pair of areas being formed on a second surface, each pair of conductive areas including opposed, active portions and unopposed terminal portions, the opposed portions being spaced apart from the supported area of the plate and the terminal portions on the second surface positioned adjacent the edge of the plate;
- a base member;
- a relatively low pedestal having the lower side thereof fixedly attached to the base member, and the center of the first surface of the plate attached to the upper side of the pedestal;
- at least one conductive element formed on the pedestal and the base member for making contact to the terminal portion of one of the conductive areas on the first crystal surface;
- at least one conductive area formed on the base member beyond and adjacent the outer edge of the plate; and
- flexible wire bonds coupling respective ones of the terminal portions on the second surface of the plate to respective ones of the conductive areas formed on the base member beyond the edge of the plate.

4,282,455

#### MERCURY DISPENSER FOR ARC DISCHARGE LAMPS

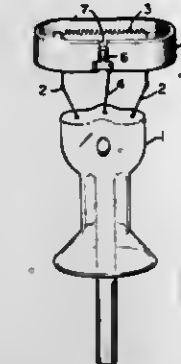
Frank M. Latassa, Magnolia; Roland L. Blenvenue; Lawrence; Charles H. Polrier, Topsfield, and John Wallace, Salem, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 7, 1979, Ser. No. 92,000

Int. Cl.<sup>3</sup> H01J 61/28

U.S. Cl. 313—177

2 Claims



1. In an arc discharge lamp having a glass mount at one end with a cathode supported on the mount, the improvement comprising: a disintegration shield encircling the cathode except for a narrow gap between the ends of the shield; and a mercury containing metal capsule disposed in the gap and electrically connected to the ends of the shield, the metal capsule having been formed from a cup having a larger diameter portion and a smaller diameter portion, the larger diameter portion having been flattened and sealed, the larger diameter being the part of the capsule that is electrically connected to the ends of the shield so that when an RF current is induced in the shield the current flow through the capsule primarily occurs through the flattened larger diameter portion.

4,282,456

#### FACEPLATE FOR AN ELECTROSTATIC PRINTING TUBE AND METHOD OF MAKING SAME

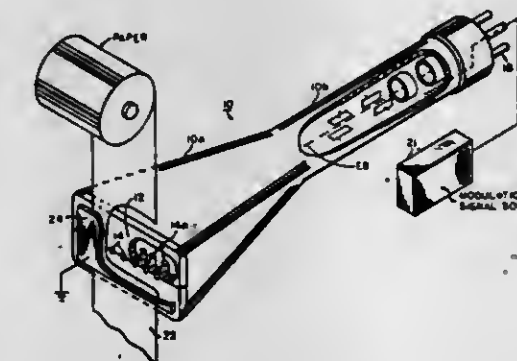
William W. Stein, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 8, 1978, Ser. No. 940,546

Int. Cl.<sup>3</sup> H01J 9/18, 31/02

U.S. Cl. 313—419

7 Claims



5. A faceplate for use in conjunction with a cathode ray tube comprising:

- two sheets of low dielectric constant glass having surfaces to be sealingly secured together thereby forming a single glass sheet;
- electrically conductive pins that are sealingly embedded within said surfaces when said sheets of glass are sealingly secured together; said conductive pins being spaced from each other along said single glass sheet and extending from one outside surface to the other outside surface of said single glass sheet with ends of said conductive pins being exposed and substantially coplanar with said outside surfaces; and
- planar electrically conductive pads engaging and extending

along one of said outer surfaces substantially at right angles with respect to said conductive pins, said conductive pads being spaced from each other and each of said conductive pads being electrically connected to an exposed end of a respective one of said conductive pins, said conductive pads being formed on said one of said outer surfaces by using said conductive pins to fix photoresist disposed on a transparent conductive layer by shining light through said single glass sheet which is tilted at an angle relative to said light source and removing the transparent conductive layer not covered with fixed photoresist thereby leaving said conductive pads on said one of said outer surfaces in electrical connection with their respective conductive pins.

4,282,457

#### BACKWARD WAVE SUPPRESSOR

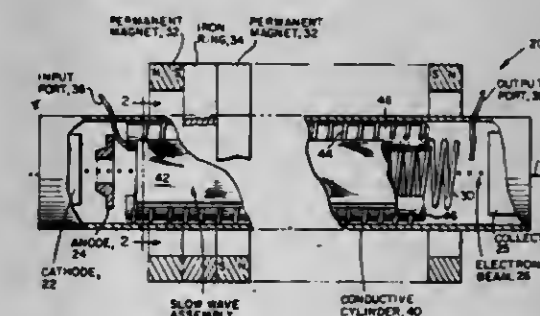
Robert Harper, Concord, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 18, 1979, Ser. No. 49,378

Int. Cl.<sup>3</sup> H01J 25/34

U.S. Cl. 315—3.6

15 Claims



1. A traveling wave tube comprising: a first slow wave low-loss structure having a longitudinal axis coincident with the longitudinal axis of said tube; a second slow wave non-lossy structure positioned outside the first slow wave structure and coaxial therewith; a set of insulating supports positioned between said first slow wave structure and said second slow wave structure for supporting said second slow wave structure at circumferentially spaced points; an outer conducting tube enclosing said second slow wave structure and electrically contacting said circumferentially spaced points of said second slow wave structure to form transverse segments of said second slow wave structure extending transversely to said axis between said spaced-apart points each segment being spaced from said outer conducting tube except where said segments and said tube are in electrical contact; and at least one electrically lossy dielectric slab; said slab being positioned in the space between said second slow wave structure segments and said conducting tube; the lossy slab being dissipative to the electromagnetic energy of the frequency to which said transverse segments of said second slow wave structure are responsive.

4,282,458

#### WAVEGUIDE MODE COUPLER FOR USE WITH GYROTRON TRAVELING-WAVE AMPLIFIERS

Larry R. Barnett, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 11, 1980, Ser. No. 129,301

Int. Cl.<sup>3</sup> H01J 25/00; H01P 1/163

U.S. Cl. 315—4

7 Claims

1. A waveguide coupler for gyrotron traveling-wave amplifiers comprising: a first section of hollow conductive waveguide; a reflective-plane conducting wall spaced apart from an end of the first waveguide section a given distance to form a

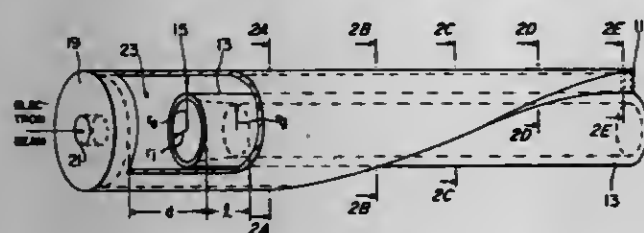


gap in the conductive boundary formed by the first waveguide section and the wall,

the wall having a hole for passage of an electron beam; the first waveguide section forming an output port of the coupler;

a second section of hollow conductive waveguide disposed external to and coaxial with at least a portion of the first waveguide section and extending to the wall to provide a conductive boundary surrounding the gap,

the region between the second and first waveguide sections forming an input port of the coupler; and



means for applying electromagnetic waves in a hollow pipe mode to the input port,

the second waveguide section having a cut-off determining dimension  $r_c$  proportioned to support first and second distinct hollow pipe modes in the region of the gap at the frequency of the applied waves, the first waveguide section having cut-off-determining dimensions  $r_1$  proportioned to support the first mode to the exclusion of the second mode at the frequency of the applied waves.

4,282,459

## MAGNETRON

Tomokatsu Oguro, 923-13, Nakanoshima, Mobara City, Chiba Prefecture, Japan

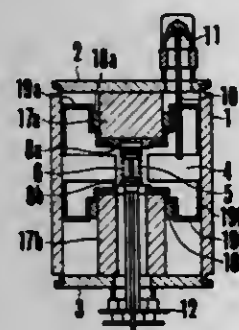
Filed Sep. 4, 1979, Ser. No. 72,006

Claims priority, application Japan, Sep. 6, 1978, 53-108656

Int. Cl.<sup>3</sup> H01J 25/50

U.S. Cl. 315—39.71

5 Claims



1. A magnetron comprising a cylindrical anode having a plurality of vanes arranged radially to surround a cathode, an interaction space defined by a space between the tip of said vanes and said cathode, a pair of permanent magnets being opposed to each other with the interaction space therebetween and magnetized axially, and a repulsive magnet arranged around the outer periphery of at least one of said pair of permanent magnets and at one end of the permanent magnet close to the interaction space, said repulsive magnet being magnetized in a direction substantially perpendicular to the magnetization direction of said permanent magnet with the polarity made identical with that of said permanent magnet in the proximity thereof.

# 4,282,460 DEFLECTION AND POWER SUPPLY CIRCUIT WITH REDUCED START-UP DRIVE

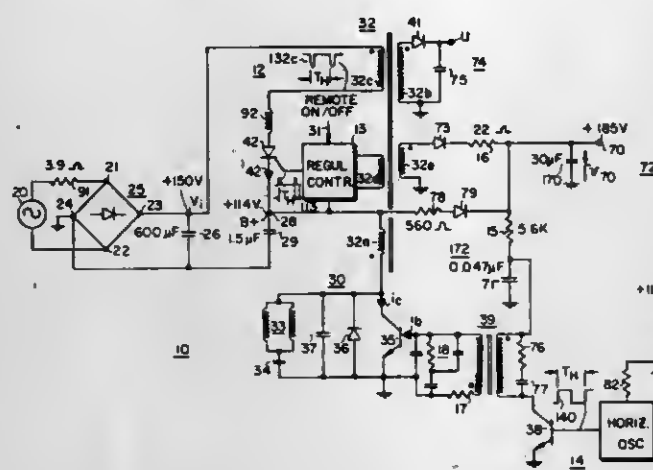
David W. Laz, and Donald H. Willis, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 19, 1979, Ser. No. 92,227

Int. Cl.<sup>3</sup> H01J 29/70, 29/76

U.S. Cl. 315—411

9 Claims



1. A deflection and power supply circuit, comprising:
  - a deflection winding;
  - a deflection generator including transistor switching means coupled to said deflection winding for generating scanning current in said deflection winding;
  - a source of DC supply voltage;
  - power supply means coupled to said deflection generator and responsive to the state of an on/off command signal for energizing said deflection generator;
  - means for applying said DC supply voltage to an input terminal of said power supply means during both states of said on/off command signal, said power supply means developing an operating voltage at an output terminal only during the on-state of said command signal;
  - a transformer including first and second windings, said first winding coupled to said power supply means and to said transistor switching means;
  - a load circuit;
  - a first auxiliary power supply coupled to said second winding and to said load circuit for providing power to said load circuit, with current drawn by said auxiliary power supply developing collector current in said transistor switching means, said auxiliary power supply drawing a transient load current during a start-up interval after initiation of said on-state that is greater than the steady-state load current;
  - a driver stage coupled to said transistor switching means and responsive to a deflection rate signal for periodically providing forward base current to turn on said transistor switching means each deflection cycle; and
  - means coupled to said driver stage for holding the peak magnitude of said forward base current each deflection cycle during said start-up interval to a magnitude less than that reached during said steady-state interval in order to limit said transistor switching means collector current when said auxiliary power supply draws said transient load current.

4,282,461

## TELEVISION RASTER CENTERING AID

Paul B. Simon, Lititz, and Robert L. Barbin, Lancaster, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,696

Int. Cl.<sup>3</sup> H01J 29/54

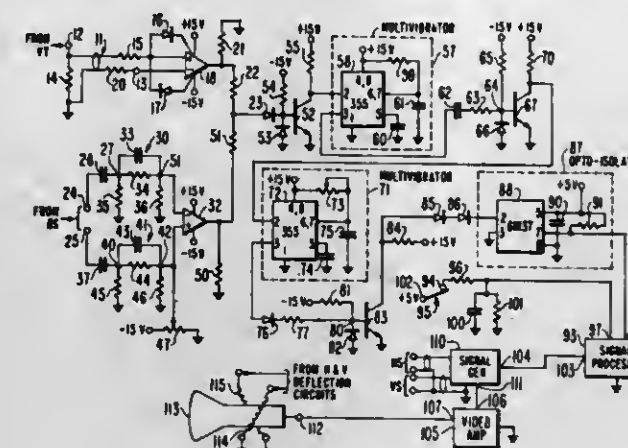
U.S. Cl. 315—398

8 Claims

1. A television raster centering aid comprising:
  - means for forming a flat-field raster on a television display

screen including means for deflecting an electron beam horizontally and vertically across said screen in a predetermined pattern;

means coupled to said deflecting means for detecting the time of occurrence of substantially minimum vertical



deflection of said electron beam and generating a signal as an indication thereof; and

means responsive to said signal for interrupting said flat-field raster formation by blanking a horizontal scan line of said raster.

4,282,462

# ARC LAMP LIGHTING UNIT WITH MEANS TO PREVENT PROLONGED APPLICATION OF STARTING POTENTIALS

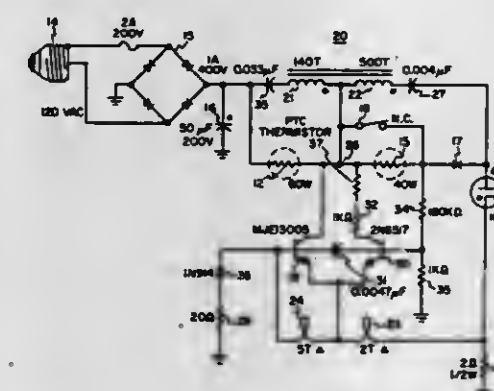
William Pell, North Syracuse, and Robert J. McFadyen, Syracuse, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Oct. 16, 1979, Ser. No. 85,441

Int. Cl.<sup>3</sup> H01J 7/44, 17/34, 19/78; H01K 1/62

U.S. Cl. 315—46

5 Claims



1. A lighting unit comprising:
  - A. a dc power supply having a first and a second output terminal,
  - B. a main arc lamp requiring energization dependent on its electrical state connected in a series path between a node and said second supply output terminal,
  - C. a filamentary resistance for providing standby illumination, said filamentary resistance being connected in a series path between said first supply output terminal and said node for normal energization and resistive ballasting of said main lamp,
  - D. an electrical transformer having a primary winding connected in a series path between said first supply output terminal and said node and a second winding connected in a series path between said node and one terminal of said main lamp for applying lamp starting potentials when an alternating potential is applied to the primary thereof,
  - E. a monostable, normally non-conductive, solid state switch comprising a first transistor connected in a series

path between said node and said second supply output terminal, intermittent operation thereof developing

(1) an alternating potential in said primary winding and a transformed alternating potential in said second winding for starting or restarting said main lamp, and

(2) a pulsating current in said filamentary resistance,

F. a trigger oscillator responsive to the electrical state of said main lamp for causing intermittent switch conduction for starting or restarting said main lamp, comprising a second transistor having base, emitter and collector electrodes, connected in an oscillatory configuration, and

G. means for latching said trigger oscillator in a non-oscillatory condition when said intermittent operation is excessively long, said latching means comprising a positive temperature coefficient resistor thermally coupled to a member experiencing a greater temperature rise during starting or restarting than during normal energization, and electrically connected in the current path to the collector of said second transistor, said resistor, when at a low temperature corresponding to normal operation permitting oscillation and when at an elevated temperature corresponding to abnormal operation, stopping oscillation at a current level providing sufficient self-heating in said resistor to prevent further oscillation until said lighting unit is de-energized and said resistor is allowed to cool.

4,282,463

# MAGNETRON WITH CONTINUOUS MAGNETIC CIRCUIT

Kaichiro Nakai, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

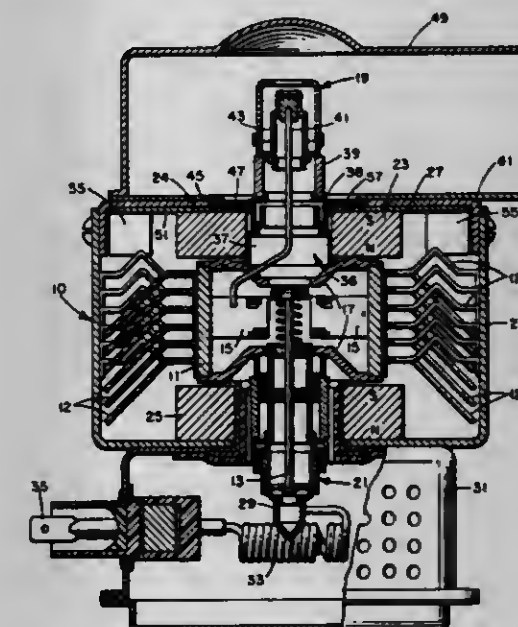
Filed Oct. 4, 1979, Ser. No. 81,788

Claims priority, application Japan, Oct. 16, 1978, 53/141702[U]

Int. Cl.<sup>3</sup> H01J 25/50

U.S. Cl. 315—39.71

9 Claims



1. In a magnetron comprising:
  - a cylindrical anode having a plurality of vanes forming anode cavities;
  - a cathode positioned coaxially in said anode;
  - an output portion including a metal cylinder coupled to said anode;
  - An annular permanent magnet;
  - a yoke adjacent said permanent magnet to form a magnetic circuit therewith, said yoke having an opening through which said output portion extends, the diameter of said opening being greater than or substantially equal to the center diameter of said magnet; and
  - a gasket positioned in said opening between said metal cylinder and said yoke, the improvement comprising a magnetic shim plate extending the entire length of said permanent magnet.



ment magnet and positioned between said permanent magnet and said yoke, said magnetic shim plate being in contact with said permanent magnet to form a continuing magnetic circuit without any gaps.

4,282,464

# REVERSIBLE DRIVE CIRCUIT FOR BRUSHLESS DC MOTOR

Mitsuo Uzuka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

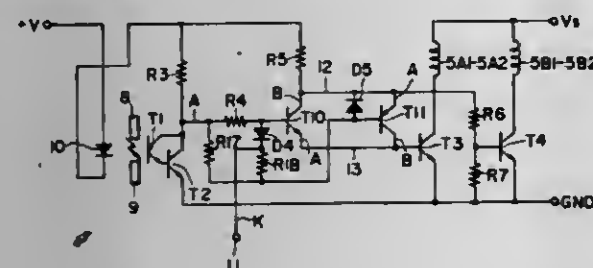
Filed Mar. 24, 1980, Ser. No. 133,415

Claims priority, application Japan, Mar. 24, 1979, 54/34941

Int. Cl.<sup>3</sup> H02P 6/02

U.S. Cl. 318-138

20 Claims



1. In a reversible drive circuit for a DC motor of the type having a rotor adapted to rotate about an axis, a stator, at least two coils included in one of said stator and said rotor, and flux generating means included in the other of said stator and rotor, said reversible drive circuit comprising:

first switching means for energizing one of said coils; second switching means for energizing another of said coils; means for generating a position signal corresponding to the rotational position of said rotor; means for producing a control signal corresponding to a desired rotational direction of said rotor; first switch control means including a first switch control transistor responsive to said control signal and said position signal for controlling the operation of said first and second switching means so as to rotate said rotor in one direction;

and

second switch control means including a second switch control transistor responsive to said control signal, said position signal and an output of said first switch control means for controlling the operation of said first and second switching means so as to rotate said rotor in the opposite direction, said second switch control transistor being connected in parallel with said first switch control transistor, wherein said first and second switch control transistors are alternately operative to rotate said rotor in said one direction and said opposite direction, respectively, and wherein current flows through each of said at least two coils in only one direction, regardless of the direction of rotation of said rotor.

4,282,465

# VEHICLE CONTROL SYSTEM

Frank E. Acker, Forest Hills, and Charles D. Rogers, Monroeville, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 874,079, Feb. 1, 1978, abandoned. This application Jun. 16, 1980, Ser. No. 159,544

Int. Cl.<sup>3</sup> H02P 5/06

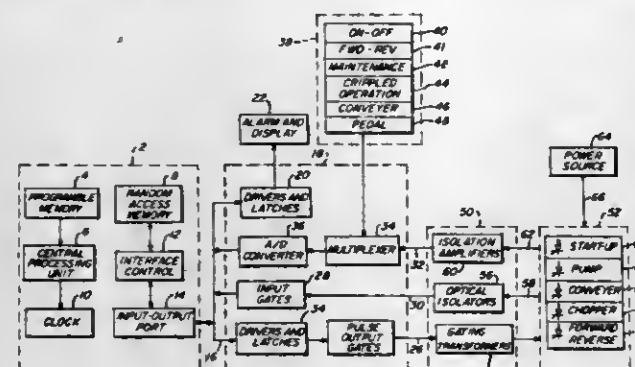
U.S. Cl. 318-139

21 Claims

11. A Control system for an electrically powered vehicle having an electronic circuit acting as a chopper in a power circuit connected between a power source and a traction motor comprising

a digital computer mounted on the vehicle, a plurality of means mounted on the vehicle for providing operator initiated control signals to the computer, a plurality of means mounted on the vehicle for providing

vehicle and power circuit condition signals to the computer, a random access memory in the computer for storing the operator initiated control signals and the vehicle and power circuit condition signals, a programable memory in the computer for programing the



computer to cyclically compare the values of the stored signals with desired values and to store the comparisons in the random access memory, and means responsive to selected stored signals and selected comparisons operating within a program stored in the programable memory for providing gating pulses to the electronic circuit.

4,282,466

# TRANSIT VEHICLE MOTOR EFFORT CONTROL APPARATUS AND METHOD

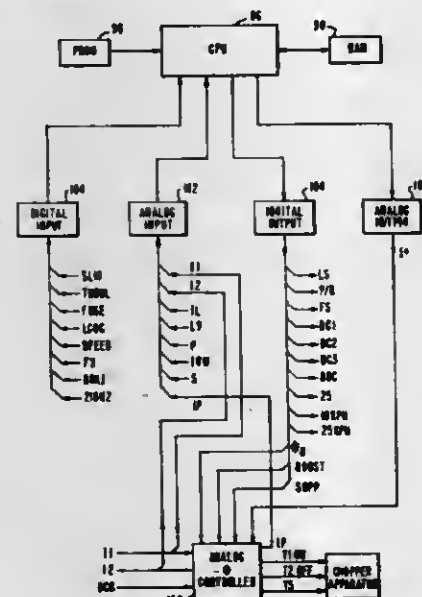
Thomas C. Matty, North Huntingdon Township, Irwin County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa. Continuation of Ser. No. 709,821, Jul. 29, 1976, abandoned. This

application Apr. 27, 1978, Ser. No. 902,001

Int. Cl.<sup>3</sup> H02P 7/00

U.S. Cl. 318-434

26 Claims



1. In an effort control apparatus for an electric motor having an armature and operative with an effort request signal and a power supply for supplying line current and line voltage to determine the operation of said motor, the combination of means for providing a retard effort control parameter for each of predetermined time intervals by determining for each said time interval the present value of said retard effort control parameter in response to each of said line voltage and said line current, means for subtracting from said effort request signal the present value of said retard effort control parameter for providing a current request for controlling the armature current of said motor for each said time interval, and means for supplying to said retard effort control parameter providing means the value of each of the line voltage and the line current for each said time interval.

4,282,467

# CONTROLLER SYSTEM FOR ROTARY ACTUATOR

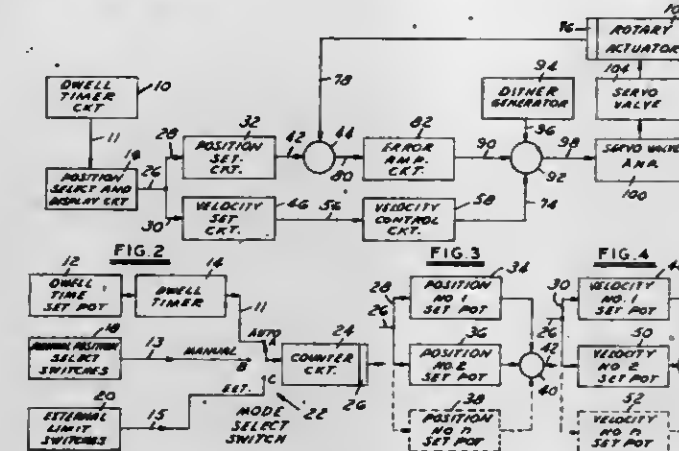
William G. Gruesbeck, Gettysburg, Ohio, assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Sep. 28, 1979, Ser. No. 79,666

Int. Cl.<sup>3</sup> G05B 13/00

U.S. Cl. 318-561

9 Claims



1. An actuator system comprising an actuator means having a position feedback means attached thereto, a servo valve means, a servo valve amplifier means, a first summing means having a position error input and a velocity control input, a position error amplifier feeding said first summing means, a second summing means feeding said position error amplifier means, and the improvement comprising an electrical controller means having means for selectively setting and continuously controlling a first position control signal, mixing said position control signal with a signal from said position feedback means in said second summing means and feeding this difference signal into said position error amplifier means, means for selectively setting and controlling a second position control signal, means for selectively setting and controlling a first velocity control signal and feeding said velocity control signal into said first summing means, means for selectively setting and controlling a second velocity control signal, mode selection and control means for simultaneously selecting said first position signal and said first velocity signal and automatically selecting said second position signal and said second velocity signal for moving from a first actuator position to a second actuator position and means to maintain said second actuator position.

4,282,468

# HIGH SPEED POSITION FEEDBACK AND COMPARATOR SYSTEM

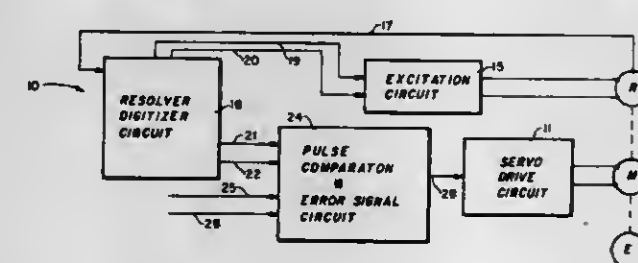
Thomas Barker, South Holland; Andrew L. Russel, Jr., Bridgeview; Gary Bricault, Oak Lawn, all of Ill., and Albert L. Van Wieren, Griffith, Ind., assignors to Hyper-Loop, Inc., Bridgeview, Ill.

Filed Apr. 16, 1979, Ser. No. 30,079

Int. Cl.<sup>3</sup> G05B 1/01

U.S. Cl. 318-608

20 Claims



1. In a digital control system for controlling movement of an element with respect to a reference position, feedback signal means for generating feedback signals in response to movement of said element with respect to said reference position with each feedback signal having a phase shift corresponding in direction and magnitude of the movement of the element since the next previous feedback signal, and pulse train gener-

ating means for operating in response to said feedback signals to generate output signals which indicate both the direction and magnitude of said phase shifts and which include sequential trains of pulses with the number of pulses in each train corresponding to the magnitude of the corresponding phase shift.

4,282,469

# POSITIONING CONTROL SYSTEM

Shigeo Moriyama, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

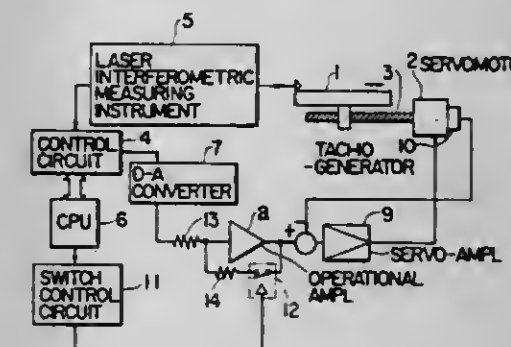
Filed Jan. 25, 1980, Ser. No. 115,410

Claims priority, application Japan, Feb. 7, 1979, 54-12273

Int. Cl.<sup>3</sup> G05B 5/01

U.S. Cl. 318-619

11 Claims



1. A positioning control system for positioning an object at a desired target position by use of a servo system comprising: means for measuring the present position of said object; means for calculating the position deviation between the present position and the desired target position of said object and for generating a control signal representing said position deviation including means for comparing the position deviation with a predetermined value; a servo system including variable gain servo means for moving said object to the desired target position in response to said control signal on the basis of a first value of position feedback gain, when the position deviation is greater than said predetermined value; and control means for initially increasing the gain of said servo means to a second value to provide a control signal greater than the control signal provided by said first value of position feedback gain when said position deviation is smaller than said predetermined value and for thereafter changing the gain of said servo means back to said first value to position said object at the desired target position.

4,282,470

# CLOSE LOOP CONTROL APPARATUS AND METHOD FOR A FORCE REBALANCE TRANSDUCER

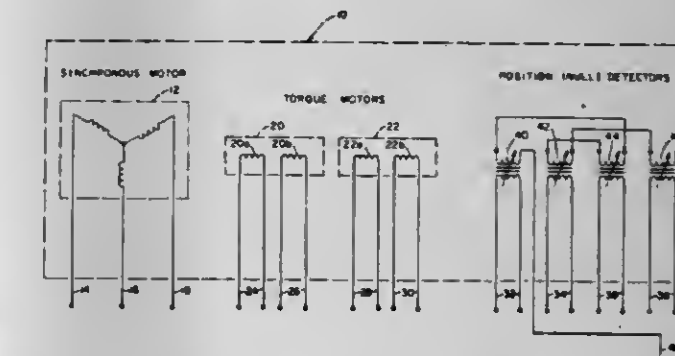
Christopher I. Reynolds, Walpole, Mass., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Apr. 30, 1979, Ser. No. 34,353

Int. Cl.<sup>3</sup> B64C 17/02

U.S. Cl. 318-648

19 Claims



1. In a closed loop control system for maintaining a force transducer assembly in a balanced position, said transducer assembly having a sensing element for providing an error signal representing a sensed perturbation from said balanced



position, said assembly having a rebalance transducer, and said system providing a force rebalance signal during each of a succession of time intervals to actuate said rebalance transducer to provide a restoring force to counteract a said sensed perturbation for maintaining said sensing element in said balanced position, the improvement comprising

a feedback loop control circuit having

means responsive to said error signal for providing a respective digital representation for the rebalance signal for each of said successive time intervals, and

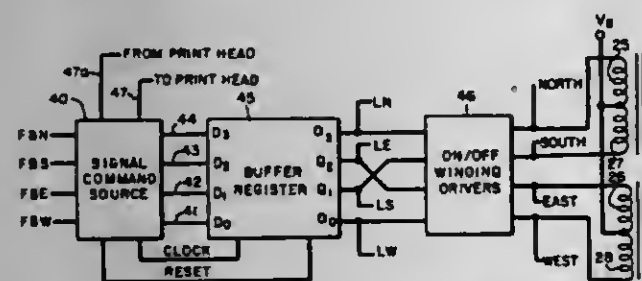
means responsive to said digital representations for providing said force rebalance signal to said rebalance transducer assembly during each time interval at one of a plurality of predetermined discrete amplitude values, said rebalance signal having a constant amplitude during each said interval.

4,282,471

**CONTROL SYSTEM FOR A MULTI-PHASE MOTOR**  
Mitchell S. Budniak, Skokie, and Donald P. Martin, Wheeling, both of Ill., assignors to Qwint Systems Inc., Northbrook, Ill.  
Filed May 14, 1979, Ser. No. 38,946  
Int. Cl.<sup>3</sup> G05B 19/40

U.S. Cl. 318—685

40 Claims



1. A control system for controlling a motor of the type having a plurality of electromagnetic field windings adapted to be separately energized to control rotation of a rotor in the motor, at least a pair of said plurality of electromagnetic field windings having mutual inductance therebetween, rotational movement of the rotor of said motor causing a back EMF to be induced into an unenergized one of said plurality of electromagnetic field windings, said back EMF superimposed upon another signal induced into said unenergized winding due to mutual inductance between said unenergized winding and an energized winding of said plurality of windings, said control system comprising:

electronic simulation means for simulating the signal induced into said unenergized winding due to mutual inductance with said energized winding;

back EMF detecting means responsive to said simulated signal and to the signal induced into said unenergized winding with the back EMF superimposed thereon to develop at least one feedback signal upon detecting said back EMF; and

motor energization control means responsive to said at least one feedback signal to control subsequent energization of said field windings whereby said control system controls rotational movement of said rotor.

4,282,472

**DIGITAL GENERATION AND CONTROL OF VARIABLE PHASE-ON MOTOR ENERGIZATION**  
Donald P. Martin, Wheeling, Ill., assignor to Qwint Systems, Inc., Northbrook, Ill.

Filed May 14, 1979, Ser. No. 38,922  
Int. Cl.<sup>3</sup> G05B 19/40

U.S. Cl. 318—696

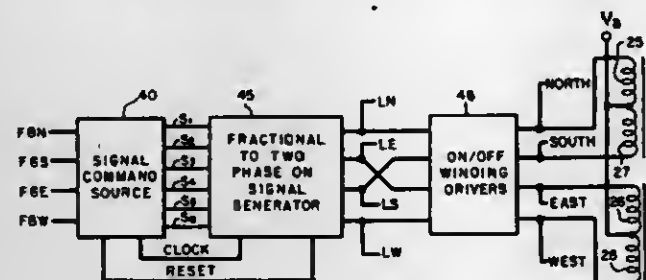
9 Claims

1. A control system for controlling a motor subject to variable load conditions and of the type having a plurality of electromagnetic field windings adapted to be separately ener-

gized to control rotation of a rotor in the motor, said control system comprising:

switching means for controlling energization of each of said electromagnetic field windings in response to an applied logic control signal;

signal generating means for simultaneously generating a first logic control signal adapted to cause said switching means to energize said field windings in a two-phase-on mode, a second logic control signal adapted to cause said switching means to energize said field windings in a one-phase-on mode and a third logic control signal adapted to cause



said switching means to energize said field windings in a fractional-phase-on mode;

means for detecting rotational movement of the rotor in said motor, said detecting means providing at least one feedback signal in response to movement of said rotor;

logic signal selecting means responsive to said feedback signal for selecting and applying one of said phase-on logic control signals to said switching means whereby said motor is selectively energized in a two-phase-on mode, a single-phase-on mode or a fractional-phase-on mode in response to changes in the load condition of the motor.

4,282,473

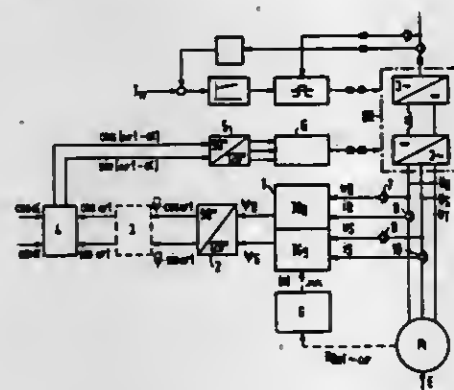
**ROTATING FIELD MACHINE DRIVE AND METHOD**  
Walter Dreiseitl; Dieter Köllensperger; Theodor Salzmann, all of Erlangen; Thomas Schlegel, Hemhofen, and Wolf-Dieter Weigel, Kleinsendelbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany  
Filed Jul. 18, 1979, Ser. No. 58,830

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833542

Int. Cl.<sup>3</sup> H02P 7/42

U.S. Cl. 318—803

14 Claims



1. In a device for a rotating-field machine, especially a synchronous machine supplied from a frequency converter comprising:

a control for the converter for self-controlled, field-oriented operation of the machine comprising two AC voltage integrators of identical design for forming two electric voltage signals each of which is proportional to a different flux component in the rotating field machine,

each integrator comprising a zero-controller having negative feedback for suppressing the DC component of the integrator output voltage, the input of each zero-controller being tied to the output of the integrator and the output of each zero-controller being coupled to a sum-

ming junction at the input of the integrator, and in which each integrator has, as input voltages, a voltage proportional to a phase voltage belonging to a flux component and a voltage proportional to the phase current in a supply lead, for compensating the ohmic stator voltage drop, and in which another phase current dependent voltage is processed for compensating the inductive stray voltage drop, the improvement comprising:

each zero controller having a proportional controller and an integrated controller, the output signals of which are fed to the summing junction, and the inputs of which are fed signals, compensated for the ohmic stator voltage drop and the inductive stray voltage drop and weighted, in the case of the proportional controller, by a weighting factor, proportional to the frequency of the rotation flux vector and in the case of the integrated controller by the square of the weighting factor, where the weighting factor has a maximum value of 1.

4,282,474

**LIFE-PROLONGING DEVICE FOR HEARING-AID BATTERIES**

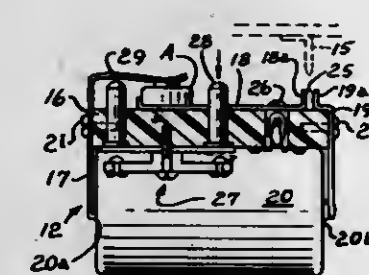
Andrew Wyzenbeek, Chicago, Ill., assignor to Laura May Usher, Cincinnati, Ohio

Filed Nov. 19, 1979, Ser. No. 95,607

Int. Cl.<sup>3</sup> H02J 7/00; H01M 10/46

U.S. Cl. 320—2

5 Claims



1. A life-prolonging device for ear level hearing aids and the like comprising:

a box-type housing having a lid hingedly mounted thereto, said lid having an actuating switch means;

a platform equipped with restoring battery means removably mounted in said housing, said restoring battery means having a positive and a negative end, said platform being further equipped with means for mounting a hearing aid battery for depolarizing the same;

an electrical circuit mounted on said platform having a first current flow circuit portion adapted to deliver electrical current to the negative end of said restoring battery means from the negative end of said hearing aid battery, a second current flow portion for delivering electrical current to the positive end of said hearing aid battery, a third current flow portion for receiving electrical current from the positive end of said restoring battery means, said second and third circuit portions being connectable through said actuating switch means when said box lid is in the closed position.

4,282,475

**AUTOMOTIVE CHARGER SYSTEM**

Russell E. Milton, 712 E. 4th St., Alturas, Calif. 96101

Filed Dec. 20, 1978, Ser. No. 971,489

Int. Cl.<sup>3</sup> H02J 7/00

U.S. Cl. 320—6

6 Claims

1. A motor vehicle battery charger circuit energized from an alternating current power source, said charger circuit comprising,

means for converting the current from said alternating power source to a direct current, said means having an

alternating current input side and a direct current output side,

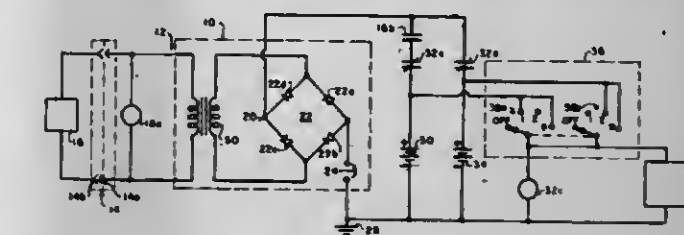
a tension releasable electrical connector electrically connecting said means for converting said alternating current to said alternating current power source,

a first battery,

a vehicle electrical system,

means for connecting said battery to said vehicle electrical system and disconnecting said battery from said vehicle electrical system,

means for connecting said direct current side of said means for converting said alternating current to said battery when said means for converting is connected to said alternating current power source and when said vehicle electrical system is disconnected from said battery, and



means for disconnecting said battery from said means for converting when said battery is connected to said vehicle electrical system, said means comprising

a first relay having an actuating coil and a set of normally closed contacts, said actuating coil connected in parallel with said vehicle electrical system and in series with said means for disconnecting said battery from said vehicle electrical system,

said normally closed contacts being connected in series between said battery and said direct current output side of said means for converting said alternating current, said motor vehicle battery charging circuit being attached to and carried on said vehicle.

4,282,476

**VARIABLE PRESSURE CONTROL SWITCH FOR BATTERY CHARGING CIRCUIT**

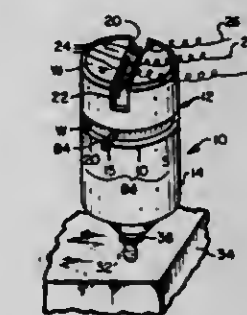
James Frezzolini, and James J. Crawford, both of Ringwood, N.J., assignors to Frezzolini Electronics, Inc., Hawthorne, N.J.

Filed Mar. 16, 1979, Ser. No. 21,216

Int. Cl.<sup>3</sup> H02J 7/04; H01H 35/40

U.S. Cl. 320—46

5 Claims



1. A variable pressure control switch for a battery charging circuit comprising, in combination:

a housing;

a first member in said housing;

a chamber in said first member;

a diaphragm extending across said chamber and dividing said chamber into first and second portions;

a first passage communicating with said chamber first portion and extending through said first member and adapted to connect with the interior of the battery to be charged whereby the interior pressure of the battery is applied to said diaphragm;



a second passage in said first member communicating with said chamber second portion;  
 a piston slidably received in said second passage;  
 said piston being movable by said diaphragm from a first to a second position;  
 variable force biasing means engaging said piston for preventing movement of said piston to said second position until a preset pressure has been exceeded;  
 and switch means operable by said piston when said piston is moved to said second position to control the associated charging circuit;  
 an elongated slot in said housing;  
 said biasing means comprising a spring having one end engagement with said piston head, and a second axially movable member engaging the other end of said spring to selectively compress said spring;  
 said second member comprising a projection extending through said elongated slot in said housing and accessible from the exterior thereof to axially move said second member to vary the force of said spring on said piston head, the ends of said elongated slot forming abutments for said projection to limit the axial movement of said second member;  
 and indicia on said housing cooperating with said projection to indicate the pressure of operation of said control switch.

4,282,477

# SERIES VOLTAGE REGULATORS FOR DEVELOPING TEMPERATURE-COMPENSATED VOLTAGES

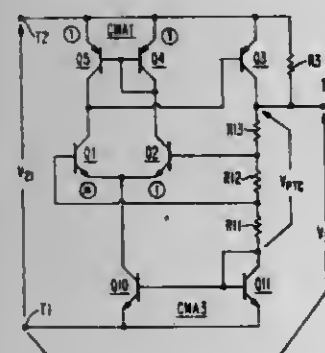
Adel A. A. Ahmed, Clinton Township, Hunterdon County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,471

Int. Cl.<sup>3</sup> G05F 3/04

U.S. Cl. 323—312

14 Claims



1. A series voltage regulator for responding to an unregulated voltage received between first and second terminals for supplying regulated voltage between said first terminal and a third terminal which regulated voltage is compensated against variations in a temperature T, said regulator comprising:

first and second transistors of a first conductivity type each having respective base, emitter and collector electrodes, exhibiting a logarithmic collector current response to its emitter-to-base voltage, and being arranged for operation at a respective temperature substantially equal to T;

a third, series regulator transistor, having the ends of a principal current conduction path thereof defined by first and second electrodes respectively connected to said second terminal and to said third terminal, and having a third control electrode, the potential between which and one of its said first and second electrodes controls the conductivity of its principal current conduction path between its first and second electrodes;

a potential divider network comprising a series connection of resistive means and of forward-biased semiconductor junction means between said first terminal and a point of connection to which at least a portion of the potential at said third terminal is applied;

means for applying potential developed across resistive means in said potential divider network in fixed portion

between the base electrodes of said first and second transistors;  
 means for providing a path for current of predetermined value between said first terminal and an interconnection between the emitter electrodes of said first and second transistors; and  
 means for differentially combining in fixed proportions currents received from the collector electrodes of said first and second transistor to develop an error signal applied to the third electrode of said series regulator transistor.

4,282,478

# REFERENCE CURRENT SUPPLY CIRCUITS

Arthur J. Leidich, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

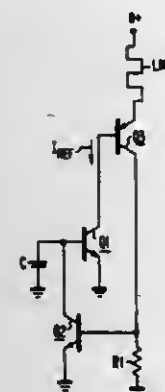
Continuation-in-part of Ser. No. 948,104, Oct. 3, 1978,

abandoned. This application Dec. 10, 1979, Ser. No. 101,848

Int. Cl.<sup>3</sup> G05F 1/56

U.S. Cl. 323—316

9 Claims



1. In a current supply having a first transistor of a first conductivity type, having emitter-base and collector-base junctions and having emitter and collector and base electrodes;  
 means for applying an operating potential between the emitter and collector electrodes of said first transistor to cause leakage current across its collector-base junction;  
 means arranging the emitter-base junction of said first transistor to be forward-biased by base current quintessentially derived solely from said leakage current, for conditioning said first transistor to conduct a reference current between its collector and emitter electrodes; and  
 means for applying said reference current to utilization means

an improvement for preventing said reference current for undesirably exceeding a prescribed value comprising:  
 threshold detector means having an input circuit; and having an output circuit connected for shunting a portion of said leakage current away from the emitter-base junction of said first transistor responsive to its input circuit having applied thereto an input voltage exceeding a prescribed threshold value; and

current-to-voltage converter means having an input circuit connected to receive said reference current, having an output circuit connected to the input circuit of said threshold detector means for supplying input voltage thereto, and providing a current-to-voltage conversion between its input and output circuits such that said threshold value of input voltage to said threshold detector means is reached at said prescribed value of reference current.

4,282,479

# TEST APPARATUS FOR LOCATING SHORTS DURING ASSEMBLY OF ELECTRICAL BUSES

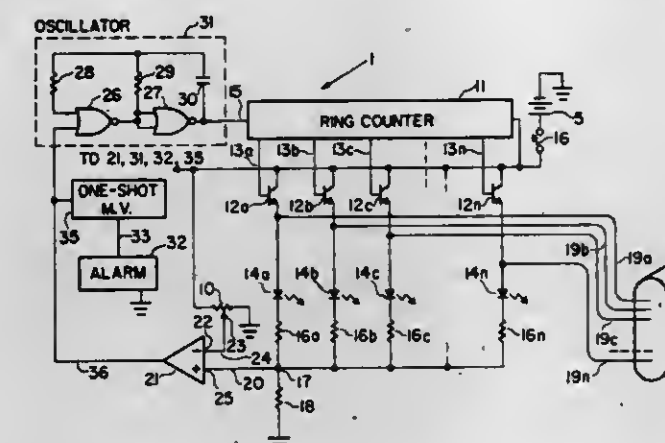
Gordon J. Deboo, Sunnyvale, and David J. Devine, San Jose, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 24, 1979, Ser. No. 69,485

Int. Cl.<sup>3</sup> G01R 31/02

U.S. Cl. 324—51

3 Claims



1. Test apparatus for locating shorts between electrical buses in a bus system having n buses, said apparatus comprising:  
 means for generating pulses at a predetermined rate;  
 means having n outputs and an input coupled to said pulse generating means for sequentially emitting pulses at said n outputs at said predetermined rate;  
 a resistor having first and second terminals, said first terminal being grounded;  
 n indicator circuits each including an electric lamp coupled between said resistor second terminal and a different output of said pulse emitting means, said output pulses from said pulse emitting means causing said lamps to be sequentially energized at said predetermined rate and a maximum voltage V to be produced across said resistor when no buses are shorted together;  
 a single conductor linking each indicator circuit lamp to a different bus;  
 a comparator having first and second inputs and an output, said first input being connected to said second terminal of said resistor;  
 means for producing a fixed voltage slightly greater than V and applying it to said second input of said comparator;  
 a sonic alarm;  
 means coupled to said output of said comparator for turning on said alarm, for a predetermined period and switching off said means for generating pulses when said voltage at said first comparator input exceeds said voltage at said second comparator input;  
 a short condition between two of said buses causing: said voltage across said resistor to exceed said voltage applied to said second comparator input; said means for generating pulses to stop generating pulses; and said electric lamps associated with said shorted buses to remain illuminated until said short condition is removed.

4,282,480

# APPARATUS FOR HUMIDITY DETECTION

Katsuyuki Fujito; Seiro Hasegawa; Takehiko Unoguchi; Atsushi Nishino, and Akihiko Yoshida, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 1, 1979, Ser. No. 35,331

Claims priority, application Japan, May 2, 1978, 53-53152; Jul. 17, 1978, 53-87443

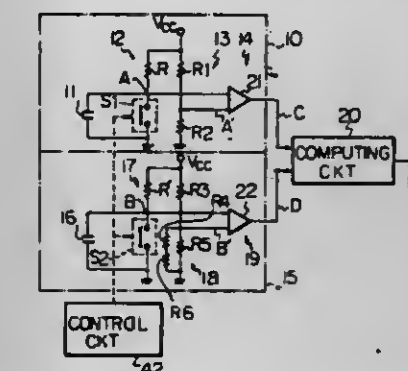
Int. Cl.<sup>3</sup> G01R 27/26

U.S. Cl. 324—61 R

27 Claims

1. A humidity sensor comprising:  
 (a) a first pulse generating circuit including a humidity sens-

ing element, an electrostatic capacitance of which varies in accordance with the ambient humidity, for producing a first pulse, the width of which indicates the capacitance of said sensing element, said first pulse generating circuit including a first charging-discharging circuit connected to said sensing element for charging said sensing element via a resistor, a reference voltage generating circuit, and a comparator responsive to the voltage across said sensing element and to said reference voltage;  
 (b) a second pulse generating circuit including a fixed capacitor for producing a second pulse, the width of which



indicates the capacitance of said fixed capacitor, said second pulse generating circuit including a second charging-discharging circuit connected to said fixed capacitor for charging said fixed capacitor, a variable reference voltage generating circuit for producing a reference voltage variable in accordance with the ambient temperature, and a comparator responsive to the voltage across said fixed capacitor and to said variable reference voltage; and  
 (c) a computing circuit responsive to said first and second pulses for producing a third pulse by detecting the difference between the widths of said first and second pulses.

4,282,481

# APPARATUS FOR MEASURING THE LOCAL VOID FRACTION IN A FLOWING LIQUID CONTAINING A GAS

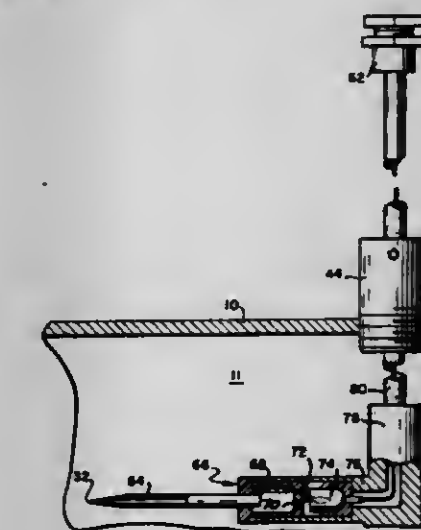
Patrick F. Dunn, Downers Grove, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 17, 1979, Ser. No. 58,339

Int. Cl.<sup>3</sup> G01R 27/02

U.S. Cl. 324—65 P

10 Claims



1. An apparatus for measuring a local void fraction in an electrically-conducting flowing liquid containing a gas, the apparatus comprising:  
 an impedance-variation probe having a conducting tip disposed in the flowing liquid;  
 means connected electrically to the probe and the flowing



liquid for applying a controlled first electrical parameter to the probe;  
 probe energization means disposed within said probe including an electrically conductive shield and circuit means for applying a first electrical parameter to the probe, and for applying an electrical signal to said shield;  
 a feedback amplifier connected electrically to the probe and the flowing liquid to respond to a second electrical parameter, said feedback amplifier providing an output signal comprising a first series of signals corresponding to the presence of the fluid at said conducting tip of said probe and a second series of signals interspersed with said first series of signals, corresponding to the presence of voids at said conducting tip of said probe, said output signal maintaining the relative time duration of each signal of said first and second series of signals; and  
 integrating means connected to said feedback amplifier to generate therefrom a time integral of the output signal of said feedback amplifier, which time integral is proportional to the local void fraction in the flowing liquid.

4,282,482

# METHOD AND APPARATUS FOR PHASE DETECTION HAVING A NARROW DEAD BAND AND A LINEAR OUTPUT

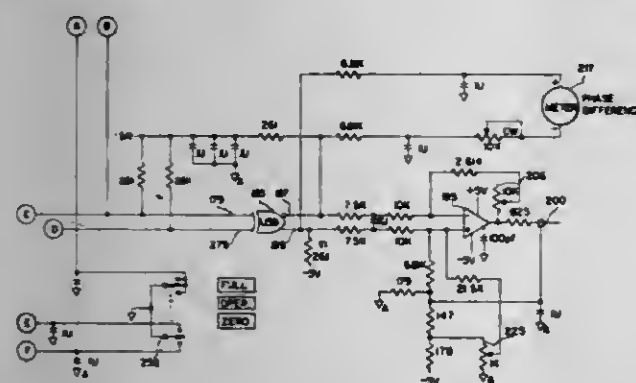
Michael C. Fischer, Santa Clara, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 18, 1979, Ser. No. 49,539

Int. Cl.<sup>3</sup> G01R 25/00

U.S. Cl. 324—83 A

3 Claims



1. Phase detection apparatus comprising:  
 first input channel means for providing a first logic signal in response to transitions of a first input signal above and below a first preselected amplitude level;  
 second input channel means for providing a second logic signal in response to transitions of a second input signal above and below a second preselected amplitude level;  
 digital circuit means coupled to said first and second input channel means for providing a digital signal having a duty cycle which corresponds to the relative phase relationship of said first and second input signals, said digital circuit means comprising first flip-flop means having a first data input, and a first data output; said clock input being coupled to said first input signal channel, said data input being coupled to said data output;  
 second flip-flop means coupled to said first flip-flop means and having a second clock input, a second data input, a second data output, said clock input being coupled to said second input channel for receiving said second logic signal, said data input coupled to said data output of said first flip-flop means;  
 filtering means coupled to said digital circuit means for providing a direct current (DC) output signal having an amplitude corresponding to said phase relationship of said first and second input signals in response to said digital signal; and  
 meter means for providing an indication of the relative phase of said first and second input signals in response to said DC output signal.

4,282,483

# PROBE FOR DETERMINING P OR N-TYPE CONDUCTIVITY OF SEMICONDUCTOR MATERIAL

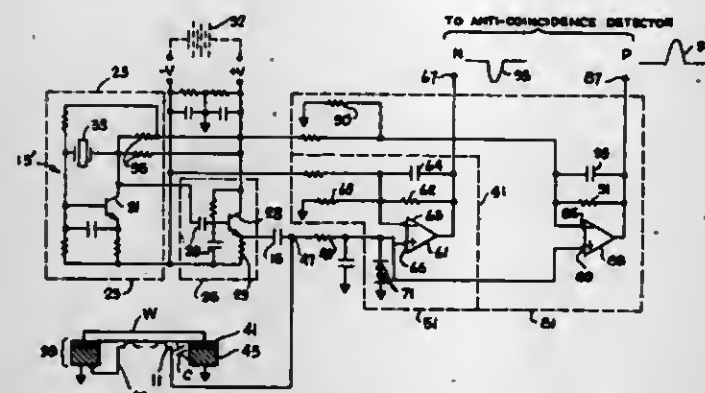
George J. Kren, Los Altos; Karel Urbanek, Atherton, and William R. Wheeler, Saratoga, all of Calif., assignors to Teacor Instruments, Mountain View, Calif.

Continuation-in-part of Ser. No. 39,303, May 15, 1979, which is a continuation-in-part of Ser. No. 941,233, Sep. 11, 1978, abandoned. This application Aug. 24, 1979, Ser. No. 69,272

Int. Cl.<sup>3</sup> G01R 31/26

U.S. Cl. 324—158 R

26 Claims



1. An apparatus for determining the p or n-type conductivity of semiconductor material comprising:  
 a conductive wire disposed to contact a semiconductor material having a p or n-type conductivity characteristic for forming a diode therewith, said wire electrically coupled to a radio frequency oscillator through a capacitor in a manner such that radio frequency electrical energy is delivered to said wire from the oscillator,  
 and a dielectric covered conductor means supporting said semiconductor material for completing an electrical path for said radio frequency electrical energy, said capacitor having charge direction sensing means connected thereto for sensing the polarity of said diode whereby the p or n-type of semiconductor material may be determined.

4,282,484

# COMBINATION SEISMIC/MAGNETIC TRANSDUCER WITH FLOATING MAGNET

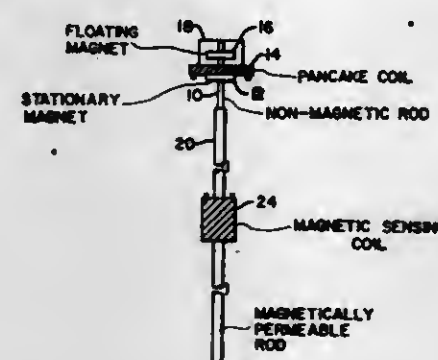
Robert D. Morrow, Baltimore, Md., assignor to Catalyst Research Corporation, Baltimore, Md.

Filed Apr. 30, 1979, Ser. No. 34,326

Int. Cl.<sup>3</sup> G01R 33/038; G01H 11/00; H04R 11/00

U.S. Cl. 324—207

5 Claims



1. A combination seismic/magnetic transducer comprising a first coil, a first fixed permanent magnet on one side of said coil and having north and south poles aligned with the axis of the coil, a floating permanent magnet on the other side of said coil and also having north and south poles aligned with the axis of the coil, said magnets having like poles facing each other whereby seismic disturbances will cause said floating magnet to move relative to said fixed magnet to induce an EMF in said first coil, means for guiding said floating magnet for movement

toward and away from said first coil, a rod of magnetically-permeable material connected through an insulator to said fixed magnet and said first coil, and a second coil surrounding said magnetically-permeable rod whereby a second EMF will be induced in said second coil when a magnetically-permeable body is in motion adjacent said rod.

4,282,485

# LINEAR VARIABLE PHASE TRANSFORMER WITH CONSTANT MAGNITUDE OUTPUT

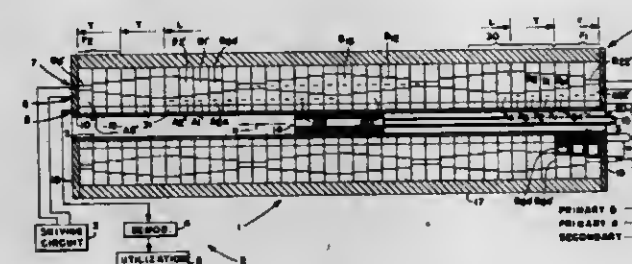
Michael A. Pauwels, Kalamazoo, and Dan O. Bauer, Portage, both of Mich., assignors to Pneumo Corporation, Boston, Mass.

Filed May 22, 1978, Ser. No. 907,932

Int. Cl.<sup>3</sup> G01R 33/00; G01B 7/00

U.S. Cl. 324—208

19 Claims



1. A displacement to phase transducer, comprising plural primary means for producing in response to alternating current excitation alternating magnetic fluxes, combining means for producing an output flux having a phase dependent on the relative positions of said combining means and said primary means, at least one of said combining means and primary means being movable relative to the other, and output means for producing an output AC electrical signal having a substantially constant magnitude and a phase corresponding to the phase of said output flux, and wherein each primary means includes plural axially displaced, coaxial segments and segments of one primary means overlap respective segments of a second primary means.

4,282,486

# DUAL FOCUSED RESISTIVITY LOGGING METHOD AND APPARATUS WITH DYNAMIC RANGE REDUCTION

Richard B. Culver, Houston, and Francis X. Bostick, Austin, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 4, 1978, Ser. No. 966,292

Int. Cl.<sup>3</sup> G01V 3/24

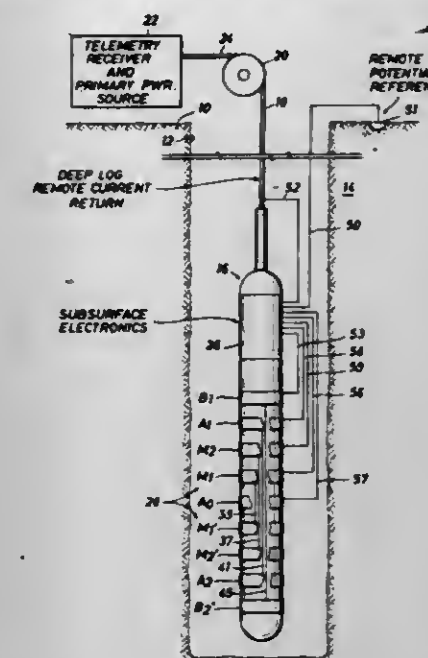
U.S. Cl. 324—371

8 Claims

1. A method for reducing the dynamic range of induced voltages and currents measured in an earth formation by a logging instrument traversing a borehole therethrough and which induced voltage and currents vary directly as the resistivity of the earth formation surrounding the borehole varies, with the measured voltages and currents thereafter utilized in deriving ratios for determining the apparent resistivity of the earth formations surrounding the borehole, comprising the steps of:

generating first and second excitation currents at first and second frequencies,  $f_1$  and  $f_2$ , respectively;  
 measuring the induced formation voltages and currents; and  
 controlling the magnitude of said generated first and second excitation currents producing said earth formation voltages and currents in response to a linear combination of one of said measured earth formation voltages or currents with first and second reference voltages, such that varia-

tions in said earth formation voltages and currents resulting from said variations in the resistivity of the earth



formation effect a reduction in the dynamic measurement ranges of said earth formation voltages and currents.

4,282,487

# SUBSEA HYDROCARBON SENSOR SYSTEM

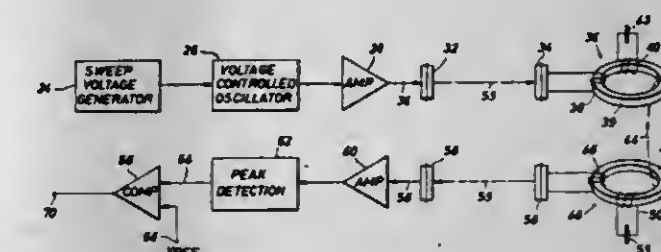
Walter B. Warren, Seabrook, and Ronald J. Marosko, Houston, both of Tex., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 26, 1979, Ser. No. 78,944

Int. Cl.<sup>3</sup> G01N 27/02

U.S. Cl. 324—445

17 Claims



1. In a subsea hydrocarbon production installation which includes at least first and second production tree assemblies spaced apart on the sea floor, at least one electro-hydraulic control module located at the sea floor at a substantial distance from at least said first tree assembly, and a plurality of elongated cables extending from said module to at least said first tree assembly for conducting tree-assembly condition indicative signals from said first tree assembly to said control module and other signals from said module to said first tree assembly and in which said cables are coupled to said control module by means of magnetic coupling devices which permit physical removal of said module from the sea floor without exposing current carrying conductors to the sea-water environment, a hydrocarbon-leak detecting and reporting subsystem comprising:

means contained within said control module for providing a frequency-modulated interrogation signal with the frequency of said signal varying as a function of time over a preselected frequency range;  
 means comprising at least one of said cables and at least one of said magnetic coupling devices for conducting said signal to said first tree assembly;  
 hydrocarbon-presence-responsive sensor means, located adjacent a portion of the hydrocarbon-containing equipment of said first tree assembly, for transmitting and attenuating said signal as a predetermined function of the amount of hydrocarbon compounds in an environmental medium adjacent said sensor means;



means comprising at least one of said cables and one of said magnetic coupling devices for conducting said attenuated signal to the interior of said control module;

a peak detector in said module responsive to said attenuated signal for producing a hydrocarbon-presence-indicative electrical signal whose amplitude is substantially independent of resonant frequency variations of said sensor means; and

means responsive to the signal produced by said peak detector for communicating hydrocarbon-presence-indicative intelligence signals to a sea-surface or land-based facility.

6. A hydrocarbon sensor system, comprising:

a transmitting inductive element responsive to an excitation signal for generating an electrical current in an environmental medium adjacent said element;

a receiving inductive element responsive to said electrical current in said medium for providing an output signal;

at least one of said inductive elements having a capacitive element coupled thereto for resonating said one inductive element at a frequency within a predetermined frequency range;

said excitation signal being frequency modulated over a frequency range substantially corresponding to said predetermined range; and

means for monitoring said output signal to indicate the presence of hydrocarbons in the vicinity of said inductive elements.

4,282,488

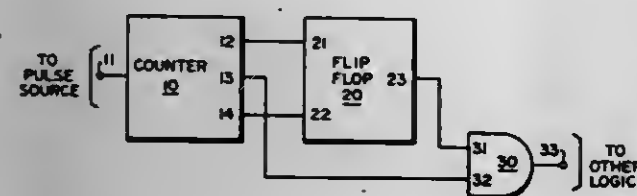
## NOISE ELIMINATOR CIRCUIT

Stanley R. C. Norman, and Kam B. Tin, both of Brockville, Canada, assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Sep. 17, 1979, Ser. No. 76,042  
Int. Cl.<sup>3</sup> H03K 5/22

U.S. Cl. 328—112

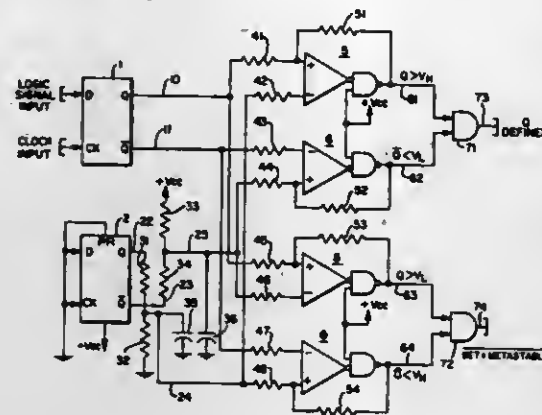
4 Claims



1. A noise eliminator circuit for use in a decoding circuit including a counter with at least first, second and third outputs, said counter operated in response to an external pulse source to generate at said first, second and third outputs respectively a first pulse train having a pulse width of a first characteristic, a second pulse train having a pulse width of a second characteristic and being greater than said first pulse train characteristic, and a third pulse train having a pulse width of a third characteristic and being greater than said second pulse train characteristic, and a gate circuit including first and second inputs connected to said second and third counter outputs, and an output, operated in response to coincident pulses from said second and third pulse trains to generate a gate signal at said output;

the improvement comprising the inclusion of a delay circuit connected between said third output and said gate circuit and including an input connected to said first counter output, operated in response to said first pulse train to delay said third pulse train by said pulse width of said first pulse train.

4,282,489  
METASTABLE DETECTOR  
William T. DeRienzo, Pompano Beach, Fla., assignor to Harris Data Communications Inc., Dallas, Tex.  
Filed May 14, 1979, Ser. No. 38,425  
Int. Cl.<sup>3</sup> H03K 5/153, 5/24, 19/003  
U.S. Cl. 328—206 14 Claims

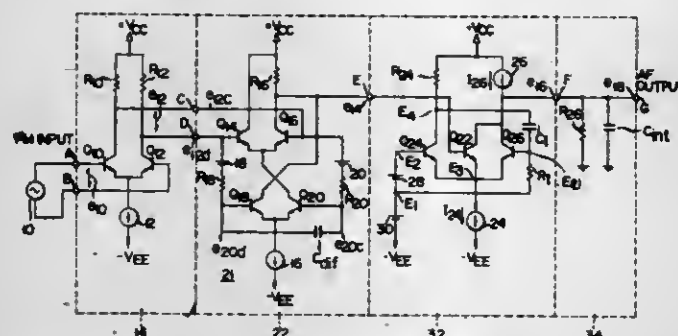


1. A circuit arrangement for detecting the metastable condition of a flip-flop comprising:

first means for supplying a set of reference voltages respectively related to prescribed state conditions of said flip-flop; and

second means, coupled to said first means and to said flip-flop, for comparing the respective Q and Q outputs of said flip-flop with said set of reference voltages and generating a first prescribed logical output during the period of time that said flip-flop is in a metastable condition and thereafter generating a second prescribed logical output upon the termination of said metastable condition and the return of said flip-flop to one of its bistable conditions.

4,282,490  
PULSE COUNT TYPE FM DEMODULATOR CIRCUIT  
Hiromi Kusakabe, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan  
Filed Jan. 24, 1979, Ser. No. 6,243  
Claims priority, application Japan, Jan. 27, 1978, 53/8099  
Int. Cl.<sup>3</sup> H03D 3/00; H03K 9/06  
U.S. Cl. 329—103 12 Claims



1. A demodulator circuit comprising:

a limiter circuit for providing a first signal corresponding only to the frequency component of an input signal,

a differentiation circuit for providing a trigger pulse synchronized with said first signal,

a vibrator circuit triggered by said trigger pulse for providing a second signal the duty of which is varied in accordance with the frequency of said trigger pulse, and

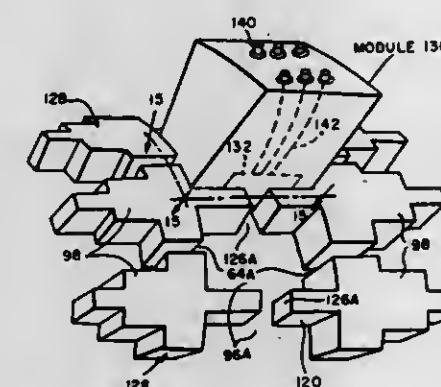
an integration circuit for providing an output signal having a level corresponding to the duty of said second signal;

said differentiation circuit including an AND gate circuit and a delay circuit;

said first signal being applied to a first input terminal of said AND gate circuit and to said delay circuit;

a second input terminal of said AND gate circuit being supplied with a third signal from said delay circuit; and said AND gate circuit providing said trigger pulse by detecting the logical sum of a first logic level of said first signal and a second logic level corresponding to the logic level of said third signal.

4,282,491  
AMPLIFIER WITH SEVERED TRANSMISSION LINES  
George H. MacMaster, Lexington, and Lawrence J. Nichols, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.  
Filed Dec. 13, 1979, Ser. No. 103,312  
Int. Cl.<sup>3</sup> H03F 3/60  
U.S. Cl. 330—286 11 Claims



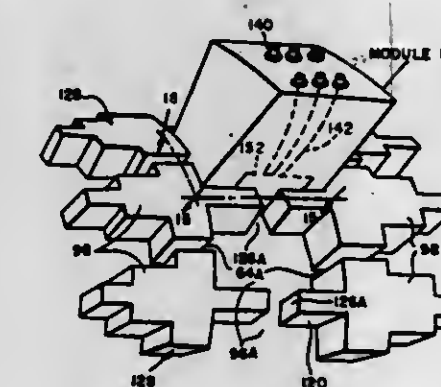
1. A system for processing radiant energy comprising:

a set of parallel bars, said bars being spaced apart to provide passages therebetween, said bars being configured to provide a pair of opposed parallel sides to each of said passages to admit the propagation of radiation along said passages;

means for coupling radiation to said passage, said coupling means being adapted for alternating the sense of a transverse field of said radiation between adjacent ones of said passages; and wherein

said bars are severed to provide isolation between terminals of an electrical circuit coupled to said bars.

4,282,492  
MODULAR MULTIPLE CHANNEL SIGNAL PROCESSOR  
George H. MacMaster, Lexington, and Lawrence J. Nichols, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.  
Filed Dec. 13, 1979, Ser. No. 103,029  
Int. Cl.<sup>3</sup> H03F 3/60  
U.S. Cl. 330—286 4 Claims



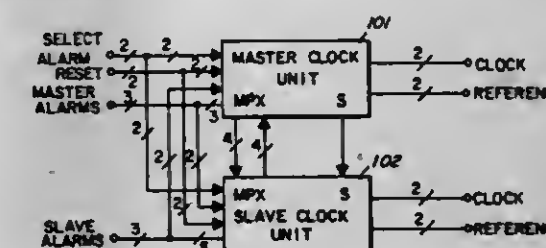
1. A system for processing radiant energy comprising:

a set of longitudinal members positioned along a cylindrical surface and having side walls directed normally to said surface, opposed walls of neighboring ones of said members defining parallel-walled transmission lines, said mem-

bers having depressions in their opposed walls to provide enlargements of said waveguides; and

insertable modules having amplifying elements on opposite sides thereof, said modules being inserted in said enlargements, said modules having sidewalls which, in combination with the opposed sidewalls of said depressions, produce a transmission line structure for guiding radiant energy to said amplifying elements.

4,282,493  
REDUNDANT CLOCK SIGNAL GENERATING CIRCUITRY  
Deborah L. Moreau, Barrington, Ill., assignor to Motorola, Inc., Schaumburg, Ill.  
Filed Jul. 2, 1979, Ser. No. 54,068  
Int. Cl.<sup>3</sup> H03L 7/00  
U.S. Cl. 331—2 17 Claims



1. Circuitry for redundantly generating a clock signal having a predetermined nominal frequency, said circuitry comprising:

first phase-locked loop (PLL) means for providing a first clock signal that is phase lockable to a second clock signal in response to a predetermined first state of a control signal and that free runs at the predetermined nominal frequency in response to a predetermined second state of the control signal;

second PLL means coupled to the first PLL means for phase locking to the first clock signal and providing an out-of-lock indication signal when the second PLL means is not phase locked to the first clock signal;

third PLL means for providing the second clock signal that is phase lockable to the first clock signal in response to the predetermined second state of the control signal and that free runs at the predetermined nominal frequency in response to the predetermined first state of the control signal;

fourth PLL means coupled to the third PLL means for phase locking to the second clock signal and providing an out-of-lock indication signal when the fourth PLL means is not phase locked to the second clock signal; and

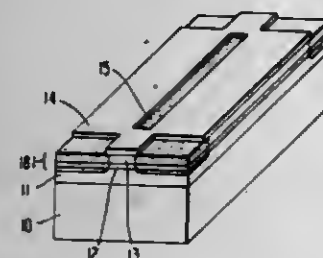
control means for providing the control signal having a predetermined first state in response to the out-of-lock indication signal from the second PLL means and providing the control signal having a predetermined second state in response to the out-of-lock indication signal from the fourth PLL means.

4,282,494  
STRIPE-GEOMETRY DOUBLE HETEROJUNCTION LASER ELEMENT  
Hiroyo Yonezu, and Masayasu Ueno, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan  
Filed Feb. 27, 1979, Ser. No. 15,839  
Claims priority, application Japan, Feb. 28, 1978, 53-23115  
Int. Cl.<sup>3</sup> H01S 3/19  
U.S. Cl. 331—94.5 H 6 Claims

1. A semiconductor laser comprising a semiconductor crystal having a pair of principal surfaces, a first, second, third and fourth side surfaces, said first and second side surfaces being optically reflective and constituting an optical resonator, said third and fourth side surfaces respectively crossing with said first and second side surfaces and being opposing to each other, and a pair of electrodes, said semiconductor crystal including



an active layer bounded by a pair of heterojunction interfaces and said first and second side surfaces, said active layer having an elongated exciting region between said first and second side surfaces in a stripe-geometry, one and the other ends of said exciting region being spaced apart from said first and second side surfaces, respectively, said pair of electrodes being provided on said pair of principal surfaces so as to supply injection current to said exciting region via said heterojunction interfaces to emit a light, said active layer further having non-exciting regions locating at least between said one end of said exciting region and said first side surface and between said other end of said exciting region and said second side surface and being transparent to said light emitted from said exciting region, the band gap of said exciting region being narrower than that of said non-exciting region, said crystal further including optical obstacles located at least between said non-exciting regions and said third side surface and between said non-exciting regions and said fourth side surface.



ing regions locating at least between said one end of said exciting region and said first side surface and between said other end of said exciting region and said second side surface and being transparent to said light emitted from said exciting region, the band gap of said exciting region being narrower than that of said non-exciting region, said crystal further including optical obstacles located at least between said non-exciting regions and said third side surface and between said non-exciting regions and said fourth side surface.

4,282,495

# HIGH EFFICIENCY CURRENT REGULATOR FOR RING LASER GYROSCOPE

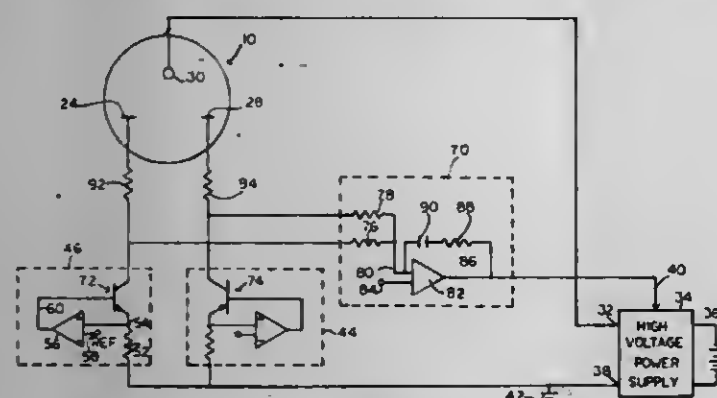
Bo H. G. Ljung, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed May 29, 1979, Ser. No. 43,585

Int. Cl.<sup>3</sup> H01S 3/083

U.S. Cl. 331-94.5 S

2 Claims



1. Control circuitry for a gas lasing system for a ring laser gyro having a cathode and having first and second anodes for providing the plasma or glow discharge, said control circuitry being adapted for controlling and maintaining the current of each said anode at a selected level and for reducing the power required to be dissipated by said circuitry comprising:

a power supply having first and second output means for providing an output voltage which voltage varies in response to a variable input reference voltage applied to a reference input port of said power supply, said first output means being connected to said lasing system cathode;

first and second current regulating circuits connected between said first and second lasing system anodes respectively and said second output means of said power supply, each said current regulating circuit being arranged for maintaining the current through its said anode at a selected level in response to an input reference voltage

which reference voltage itself in turn varies in response to the anode current level; and

a feedback loop connected between said first and second current regulating circuits and said power supply variable reference voltage input port for varying the output voltage of said power supply second output means in response to the voltage drop across said first and second regulating circuits whereby the voltage across said first and second current regulating circuits is maintained at a selected level, wherein

said first and second current regulating circuits each comprises an anode resistor having one end connected to its said anode, a transistor connected between the other end of said anode resistor and second output means, and a controlling means, said controlling means being connected to said transistor such that said transistor controls said anode current in response to a control voltage received by said controlling means, and wherein

said feedback loop includes an operational amplifier having a first input which is connected to said other end of each said anode resistor for sensing the voltage level across said first and second current regulating circuits, and wherein said feedback loop includes a reference input means for providing a selected reference voltage, said operational amplifier being connected to said reference input means for providing a variable output which varies in response to changes in said voltage across said first and second current regulating circuits when compared to said selected reference voltage.

4,282,496

# STARTING CIRCUIT FOR LOW POWER OSCILLATOR CIRCUIT

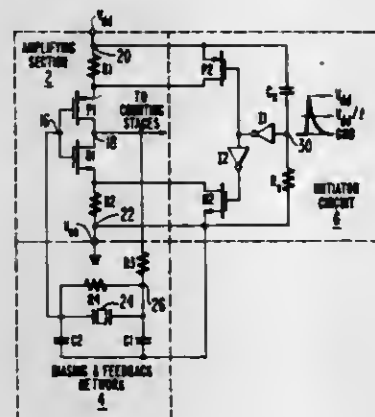
Robert C. Heuner, Bound Brook, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1979, Ser. No. 70,703

Int. Cl.<sup>3</sup> H03B 5/06, 5/36

U.S. Cl. 331-116 FE

9 Claims



1. The combination comprising:

first and second power terminals adapted to receive an operating potential;

amplifying means having first and second electrodes for the application therebetween of an operating potential and having an input and an output;

regenerative feedback means connected between said input and said output for causing oscillations to be produced when a sufficient voltage is present across said first and second electrodes;

impedance means connected in series with said first and second electrodes between said first and second power terminals;

switching means connected across said impedance means for providing a low impedance conduction path in parallel with said impedance means, when turned on; and

means responsive to the application of an operating potential across said first and second power terminals, said means including a differentiating circuit coupled across said first

and second power terminals for producing a relatively narrow pulse each time said operating potential is applied across said first and second power terminals, and means responsive to said relatively narrow pulse coupled to said switching means for turning on said switching means momentarily each time an operating potential is applied across said first and second terminals.

4,282,497

# FREQUENCY MODULATOR HAVING LINEARIZED OPERATION

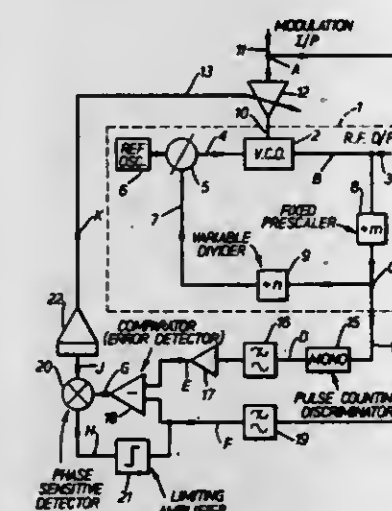
Anthony P. Hulbert, Southampton, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Jul. 5, 1979, Ser. No. 54,920

Int. Cl.<sup>3</sup> H03C 3/08

U.S. Cl. 332-19

7 Claims



1. A frequency modulator comprising:

an oscillator having an output frequency which is dependent upon the amplitude of a modulating signal, modulating signal control means for receiving a modulating signal and for gain-controlling or attenuating said modulating signal so as to provide an output to the oscillator and to produce a corresponding frequency modulation on the output signal from the oscillator,

discriminator means responsive to the frequency modulation for producing a corresponding amplitude varying signal, comparator means for comparing the amplitude varying signal from the discriminator means with the modulating signal to provide a comparison output, phase sensitive detector means for receiving said modulating signal and said comparison output, and responsive thereto for performing a phase detection operation so as to provide a control signal, and

integrator means for receiving and integrating said control signal so as to provide an integrated control signal, said integrated control signal being provided to said modulating signal control means so as to control the gain or attenuation provided by the modulation signal control means and so as to maintain constant the amplitude of the amplitude varying signal with respect to the modulating signal, whereby operation of the frequency modulator is linearized.

4,282,498

# CIRCUIT PACKAGE

Nobutsugu Iizawa, Minowa, Japan, assignor to Matsushita Kogyo Kabushiki Kaisha, Nagano, Japan

Filed Sep. 20, 1979, Ser. No. 77,519

Claims priority, application Japan, Sep. 22, 1978, 53/117137

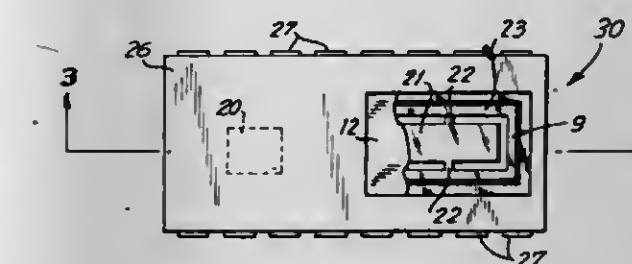
Int. Cl.<sup>3</sup> H03H 9/10, 9/125

U.S. Cl. 333-186

21 Claims

1. A circuit package for electronic circuits comprising: a body, said body having a concave recess formed in a first surface thereof, said recess tapering inwardly in at least

one step, said at least one step providing a first peripheral step surface within said body, said first step surface being spaced away from said first body surface; and



a resonator element, said resonator element including a peripheral frame portion, said peripheral frame portion resting on said first peripheral step surface.

4,282,499

# OPTICALLY TUNABLE RESONANT STRUCTURE

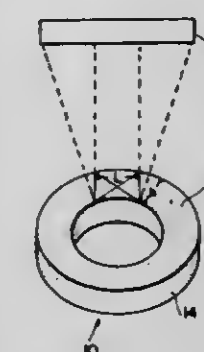
Alfred P. DeFonzo, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 24, 1979, Ser. No. 78,266

Int. Cl.<sup>3</sup> H01P 7/00

U.S. Cl. 333-231

23 Claims



1. A resonator, for supporting electromagnetic oscillations within the frequency range of approximately 10 GHz to 1000 GHz, having resonant properties which are controllable by light from a source of light comprising:

a resonant structure having an interaction material having an optical absorption edge not greater than the wavelength of said light, said material being of a type which forms a plasma of electron-hole pairs when illuminated by said source of light, said plasma having sufficient density to change the reactance and dielectric response of said resonant structure thereby shifting the frequency of said electromagnetic oscillations.

4,282,500

# GROUND FAULT CIRCUIT INTERRUPTING DEVICE

Jean-Louis Ducroquet, Eybens, and Michel Lazareth, Grenoble, both of France, assignors to Merlin Gerin, Grenoble, France

Filed Jun. 25, 1979, Ser. No. 51,388

Claims priority, application France, Jul. 3, 1978, 78 20135

Int. Cl.<sup>3</sup> H01H 83/02

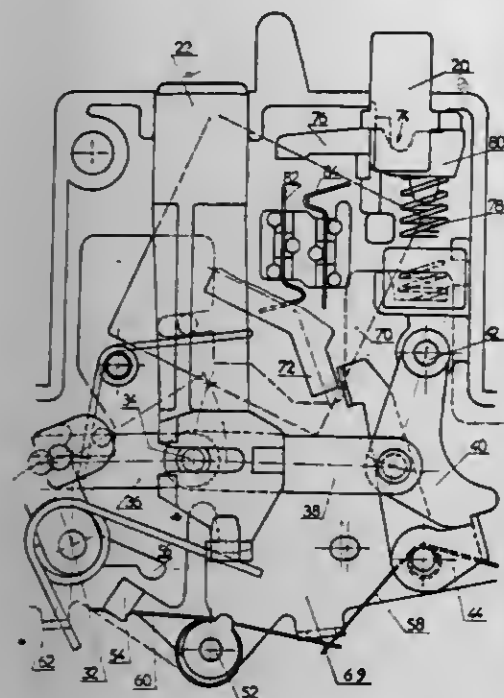
U.S. Cl. 335-18

2 Claims

1. A ground fault circuit interruption device including a circuit breaker module and a ground fault detector module mounted in side-by-side relationship, said circuit breaker module comprising a manual operating handle and an automatic tripping device, said ground fault detector module comprising a differential current transformer, an electromagnetic operator energized by said current transformer and a spring powered operating mechanism including a toggle means formed by first and second links pivotally connected at a knee, a reset push button linked to said knee to reset said toggle means into a



straight position, a latch means cooperating with said first link for maintaining said toggle means in an operating position, a rocker operatively connected to said second link and to said circuit breaker tripping device for opening said circuit breaker



responsive to the releasing of said latch means, a latching means for maintaining said reset push button in a reset position and thereby said toggle means in the straight position, said rocker having means for releasing said latching means of said push button when said rocker actuates said tripping device.

4,282,501

## BI-DIRECTIONAL LINEAR ACTUATOR

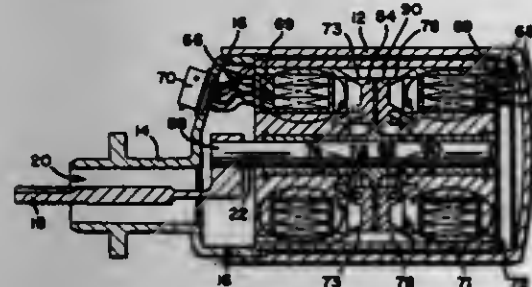
John L. Myers, Tipp City, Ohio, assignor to Ledex, Inc., Vandalia, Ohio

Filed Aug. 23, 1979, Ser. No. 69,038

Int. Cl.<sup>3</sup> H01F 7/08, 7/13

U.S. Cl. 335-258

11 Claims



1. An electromagnetic device, comprising: stator means comprising a closed flux-carrying path including a core having a plurality of concentric cylindrical pole surfaces and an air gap opening defined between a first outermost pole surface and a second next outermost pole surface, said second pole surface positioned inwardly of said first pole surface, said core having at least one further pole surface positioned inwardly of said second pole surface, coil means comprising means for generating electromagnetic flux in said closed flux carrying path, the direction of flux flow across said air gap being generally perpendicular to said pole surfaces, and armature means, defining a plurality of concentric cylindrical armature surfaces, mounted to be movable in a direction substantially parallel to said pole surfaces, each of said armature surfaces overlapping a corresponding one of said pole surfaces by an area dependent upon the position of said armature means.

4,282,502

## ELECTROMAGNETIC POSITIONER

Robert D. Nicholson, Birmingham, Mich., assignor to Koehring Company, Milwaukee, Wis.

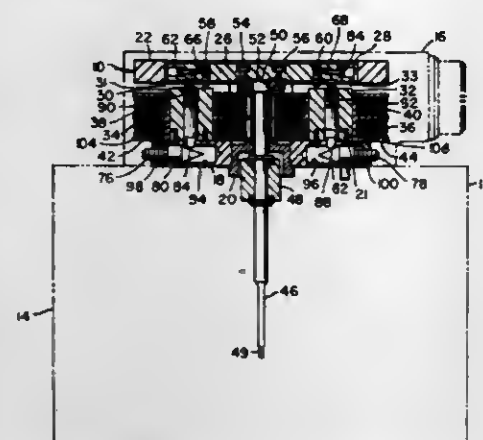
Filed Feb. 6, 1978, Ser. No. 875,303

The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> H01F 5/00, 7/08

U.S. Cl. 335-266

10 Claims



1. An electromagnetic positioner comprising a mounting plate having a top, a flexure tube secured at one end centrally to and extending perpendicularly from the top of the mounting plate, a drive arm supported partly within the flexure tube from the other end of the flexure tube for movement therewith, a top plate positioned in parallel spaced relation to the mounting plate having a central opening therethrough, permanent magnets extending between the top plate and the mounting plate, an armature positioned within the central opening in and in peripheral spaced relation to the top plate secured to the other end of the flexure tube for producing movement of the flexure tube in accordance with electromagnetic forces applied to the armature, a pair of pole pieces secured to the mounting plate on opposite sides of the flexure tube extending from the mounting plate toward the armature and terminated in spaced relation to the armature to provide an active air gap between each of the pole pieces and the armature whereby flux from the permanent magnets enters both pole pieces in the same direction across the air gaps, and control coils positioned around the pole pieces for receiving electrical signals therethrough to provide flux through the active air gaps to reinforce or oppose the flux from the permanent magnets in accordance with the electrical signal passed through the coils whereby the armature is caused to move to stress the flexure tube and provide movement of the drive arm in accordance with the signals received by the control coils.

4,282,503

## ELECTROMAGNETIC DEVICE

Masami Shimizu, Tokyo, and Hiroshi Aizawa, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,801

Claims priority, application Japan, Sep. 7, 1978, 53-109980

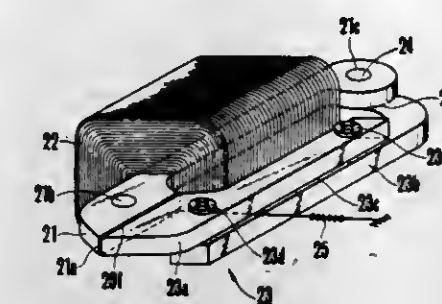
Int. Cl.<sup>3</sup> H01F 7/08

U.S. Cl. 335-276

4 Claims

1. An electromagnetic device comprising: (a) a support shaft; (b) a yoke having an adhesion surface and fixedly mounted on said support shaft; and (c) an armature consisting of a straight-extending first member having an upper surface in contact with the lower surface of said yoke and rotatably mounted on said support shaft and a straight-extending second member,

fixedly mounted on said first member, which can be detached from the first member and having an adhesion



surface provided at the free end thereof in a position opposite to said adhesion surface.

4,282,504

## FAULT LIMITER HAVING A ONE-PIECE ENCLOSURE OF GLASS-REINFORCED RESIN

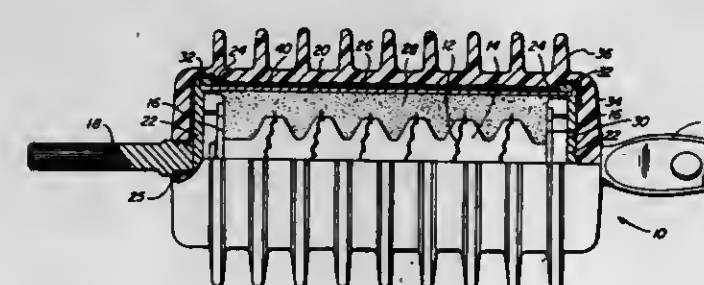
Thomas J. Tobin, Northbrook, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Sep. 10, 1979, Ser. No. 73,667

Int. Cl.<sup>3</sup> H01H 85/20

U.S. Cl. 337-186

12 Claims



1. An improved housing for a high-voltage device, the device being of the type wherein high pressures may be generated within the housing during operation of the device, wherein the improved housing comprises: a reinforcing layer surrounding internal elements of the device, the reinforcing layer having high tensile strength and interstitial spaces; and a molded, flexible enclosure formed around and impregnating the interstices of the reinforcing layer, high pressures generated by operation of the device deforming the enclosure to load the reinforcing layer in tension.

4,282,505

## FAN COOLANT THERMOSTATS

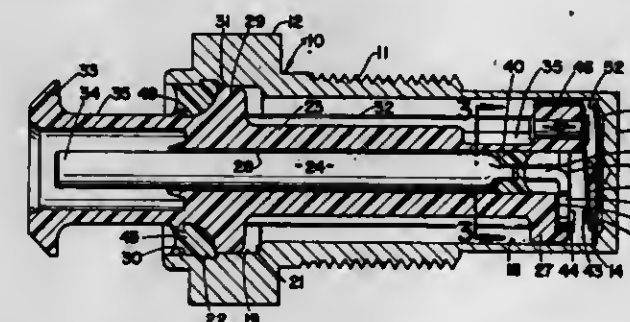
Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed May 29, 1979, Ser. No. 43,307

Int. Cl.<sup>3</sup> H01H 37/54

U.S. Cl. 337-365

9 Claims



1. A thermostat comprising a tubular heavy walled metallic housing closed at its inner end by an end wall providing a disc seat, said housing providing a cylindrical inner wall, a bimetal snap disc in said seat movable with snap action between two positions in response to two predetermined temperatures, a switch body assembly including a body formed of electrically

nonconductive material positioned within said housing and providing a rim engaging said inner wall with an interference fit, said housing being sufficiently thick to prevent any material enlargement thereof by said interference fit, a switch on said body assembly including at least one terminal extending through said body to provide an external terminal portion and a pair of contacts movable into and out of engagement in response to snap movement of said disc, an internal recess formed in said housing on the side of said interference fit remote from said disc, and potting material sealing with said housing and body and extending into said recess providing a mechanical interlock preventing movement between said body and housing, said switch including a cantilever arm mounted at one end on said switch body assembly and movably supporting one of said contacts at its free end, said terminal providing a lateral projection supporting the other of said contacts against movement, and said body including a recess adjacent to said one end of said cantilever arm and spaced from said rim in the direction toward the end wall providing access for mounting said cantilever arm, said cantilever arm being provided with a projection resiliently biased into contact with said housing to electrically connect said cantilever arm to said housing.

4,282,506

## DEVICE FOR SENSING OVERHEATING OF BEARINGS

Jesse D. Satterlee, 1021 S. Oak St., Hillsboro, Ill. 62049

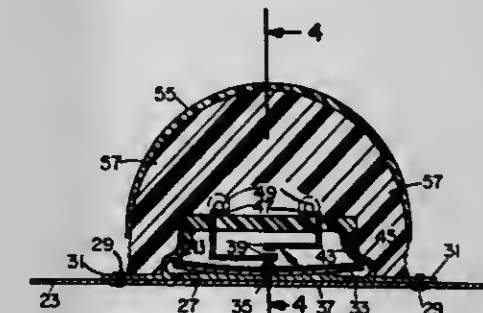
Continuation-in-part of Ser. No. 846,328, Oct. 28, 1977,

abandoned. This application Jun. 18, 1979, Ser. No. 49,215

Int. Cl.<sup>3</sup> H01H 37/04, 37/52

U.S. Cl. 337-380

4 Claims



1. A device for sensing overheating of a bearing assemblage having a heat-dissipating surface, said device comprising: a large-area heat-transfer lamina made of a pliable deformable and very-high-heat-conductive high-copper alloy and adapted for attachment in intimate shape-conforming face-contact with and to said heat-dissipating surface of said bearing assemblage, a normally downwardly convex snap-acting bimetallic-disc thermostat, means positioning said thermostat in good heat-transfer relation to said heat-transfer lamina, and a normally open electric switch means positioned for circuit-closing by said thermostat when it snaps to its upwardly convex circuit-closing position in response to its being heated to a preselected potentially bearing-damaging temperature, said means for positioning said thermostat being a thin round cup-shaped metallic element U-shaped in axial cross-section and having at least one disc-edge-embracing groove therein close to and parallel to the right portion of said metallic element, said thin metallic element having an integral coplanar flange surrounding said right portion and greatly increasing its area for heat-exchange contact with said heat-transfer lamina, and said heat-transfer lamina having a bearing-surface-engaging area at least double that of said thin metallic element plus its integral coplanar flange.



4,282,507

## MEASUREMENT OF TEMPERATURE

Richard F. Tindall, Newcastle; Eric R. Baddeley, Alsager, and Peter W. Rudd, Newcastle, all of England, assignors to Johnson, Matthey & Co., Limited, London, England

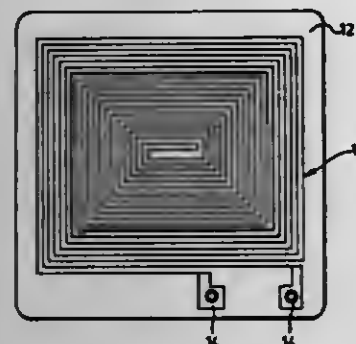
Filed Sep. 13, 1978, Ser. No. 942,130

Claims priority, application United Kingdom, Sep. 13, 1977, 38125/77

Int. Cl.<sup>3</sup> H01C 7/04

U.S. Cl. 338—25

9 Claims



1. A temperature sensitive element for use as part of a resistance thermometer which comprises a substrate made from an electrically non-conducting material and carrying an electrically conducting path comprising a vitreous phase loaded with electrically conducting particles, and a protective coating applied to the conducting path, the protective coating and the vitreous phase each containing a glass in which polyvalent metal ions are absent and which makes said coating and vitreous phase resistant to chemical reduction, the glass in said vitreous phase being one having the formula  $RO \cdot Al_2O_3 \cdot SiO_2$  where R is at least one of the elements Mg, Ca, Sr, Ba or Zn and the glass in said protective coating being one having the formula  $RO \cdot Al_2O_3 \cdot B_2O_3 \cdot SiO_2$  where R is at least one of the elements Mg, Ca, Sr, Ba or Zn.

4,282,508

## ELECTRICAL SIGNAL INTERCONNECTION COUPLER

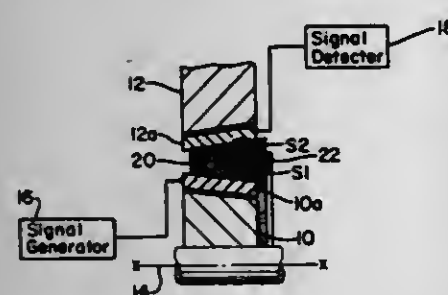
Bernard D. Raffel, Akron, and John M. Bowyer, Copley, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Apr. 28, 1980, Ser. No. 144,754

Int. Cl.<sup>3</sup> B60C 23/00

U.S. Cl. 340—52 R

8 Claims



1. A conductor for transmitting an electrical signal from generating means on a rotating member to detecting means on a relatively stationary member across the motion interface between the two members comprises at least one carbon graphite ring having an annular contact surface in intimate contact with a complimentary and mating annular conductive surface on the rotating member and a second annular surface in intimate contact with a complimentary and mating annular conductive surface on the stationary member said complimentary and mating annular conductive surfaces on the rotating and stationary members being electrically connected to the generating and detecting means respectively and said graphite ring functioning as an electrical interconnection between the two members.

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## SINGLE BRAKE LIGHT SWITCH FOR DUAL BRAKE PEDALS

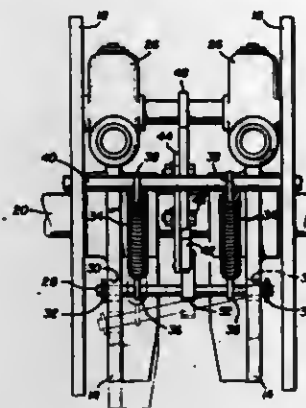
Richard A. Newman, West Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Nov. 30, 1979, Ser. No. 99,055

Int. Cl.<sup>3</sup> B60Q 1/44; H01H 3/14

U.S. Cl. 340—69

2 Claims



1. In a brake actuating assembly including a frame, a pair of brake arms pivotally secured to said frame, said brake arms being selectively depressed individually or jointly, the improvement comprising:

said brake arms being parallel and pivotally secured to said frame for vertical movement, each brake arm having a foot pad surface on one end thereof and an embossment at its opposite end for actuating a brake cylinder which is mounted to said frame;

a mechanism for actuating brake light means in response to the depression of either one or both of said brake arms, said mechanism for actuating brake light means including a control rod means, said control rod means being mounted to said pivotal brake arms, the longitudinal axis of said control rod means extending along a transverse axis in the space between said brake arms;

switch means supported on said frame adjacent to and spaced from said transversely mounted control rod means, said switch means including an actuator arm which engages said control rod means, said brake light means being actuated in response to the closing of said switch means, means for spring biasing said actuator arm to apply a continuous downward force on said actuator arm thereby keeping said actuator arm in contact with said transverse control rod means;

means for supporting said brake arms and control rod means in a normally raised position whereby the longitudinal axis of said control rod means extends along a first transverse horizontal axis which is substantially perpendicular to the longitudinal axes of said brake arms, said switch means being open when said brake arms are in their raised position, said control rod means being movable vertically downward upon simultaneous depression of both brake arms such that the axis of said control rod means assumes a second transverse horizontal position, said means for supporting said brake arms and control rod means including a pair of coil springs, one end of each coil spring being attached to said frame and the other end of each coil spring being attached to said control rod means adjacent a respective brake arm;

means for permitting said control rod means to be tilted downwardly from its first transverse horizontal position when either one of said brake arms is depressed, said means for permitting said control rod means to be tilted downwardly comprising enlarged openings in said brake arms, said control rod means including opposite ends which are mounted within said enlarged openings in said brake arms; and

said actuator arm being spring biased vertically downward in response to the tilting of said control rod means when

one of said brake arms is depressed or upon the movement of said control rod means to its second horizontal position when both brake arms are depressed simultaneously to thereby close said switch means for actuating said brake light means.

4,282,510

## APPARATUS FOR DISCERNING THE NOTICEABLE PRESENCE OF SPATIAL FLUCTUATIONS OF INTENSITY WITHIN A TWO-DIMENSIONAL VISUAL FIELD

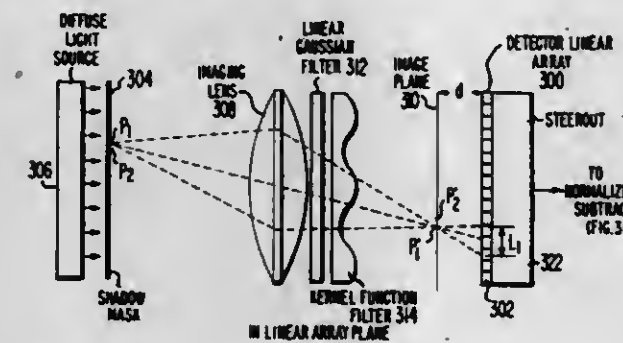
Peter D. Southgate, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 7, 1980, Ser. No. 110,244

Int. Cl.<sup>3</sup> G06K 9/00

U.S. Cl. 340—146.3 F

19 Claims



1. In an apparatus comprising signal processing means including detector means for sequentially convolving, with a given kernel function, the intensity values in each of uniformly-spaced segments aligned with a certain dimension of a two-dimensional spatial field of intensities, wherein said field is derived from an illuminated two-dimensional object that is scanned in a certain direction with respect to said detector means, each segment having a given length along said certain dimension that is greater than said uniform spacing and said given kernel function being characterized by (1) having a limited spatial extent along said certain dimension corresponding to said given length, (2) having an integrated value over its limited spatial extent substantially equal to zero and (3) exhibiting a limited spatial frequency passband, and wherein said field may include certain spatial frequencies substantially higher than the upper limit of the limited spatial frequency passband of said given kernel function, the improvement:

wherein said detector means comprises a linear array of contiguous detector elements oriented along given line of a given plane spaced from said object, said given line being in substantially skew relationship with said certain scan direction of said object,

wherein said signal processing means comprises optical processing means including an imaging lens and a linear Gaussian spatial filter oriented substantially perpendicular to said certain dimension of said field for imaging said object on an image plane displaced a selected distance, whereby each detector element is simultaneously illuminated by light originating from an extended linear region of said field, the length of said extended region being determined by the size of said selected distance, said optical processing means as a whole exhibiting a low spatial frequency passband that includes the limited passband of said kernel function but rejects said certain higher spatial frequencies of said field, whereby said certain high spatial frequencies are removed from the illumination of said array of detector elements, and

wherein said signal processing means further comprises electronic processing means including steerout means for deriving successive outputs from each of the respective detector elements of said array.

4,282,511

## APPARATUS FOR DISCERNING THE NOTICEABLE PRESENCE OF SPATIAL FLUCTUATIONS OF INTENSITY WITHIN A TWO-DIMENSIONAL VISUAL FIELD

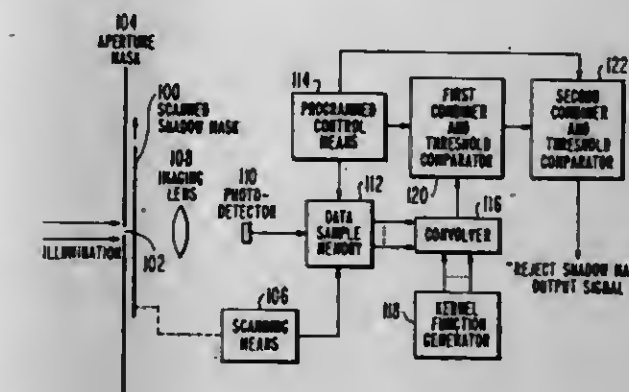
Peter D. Southgate, Princeton, N.J., and Horatio N. Crooks, Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 7, 1980, Ser. No. 110,243

Int. Cl.<sup>3</sup> G06K 9/00

U.S. Cl. 340—146.3 F

22 Claims



1. Apparatus for discerning, within at least a certain section of a two-dimensional spatial field of intensities, the noticeable presence, along a given field dimension, of intensity variations having spatial frequencies within a predetermined limited spatial frequency band, the given length of said certain section along said given field dimension being equal to more than one wavelength of the lower limit spatial frequency of said limited band; said apparatus comprising:

first means for sequentially convolving said spatial field at each of a plurality of uniformly-spaced intervals along said given field dimension of said certain section with at least one given kernel function, each given kernel function being characterized by (1) having a limited spatial extent along said given field dimension which is substantially smaller than said given length of said given field dimension of said certain section (2) having an integrated value over its limited spatial extent substantially equal to zero and (3) exhibiting a spatial frequency passband no greater than said predetermined limited spatial frequency band, and

second means for deriving an output signal equal to the value of the q'th root of the sum of the q'th power of each of the respective convolutions, and comparing this signal with a predetermined threshold value, where q is a given-valued number and where said predetermined threshold value corresponds to a just-noticeable presence of intensity variations having spatial frequencies within said kernel function spatial frequency band along the length of said given field of said certain section.

4,282,512

## DATA COMMUNICATION SYSTEM

David R. Boggs, and Robert M. Metcalfe, both of Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 4, 1980, Ser. No. 118,135

Int. Cl.<sup>3</sup> H04Q 9/00

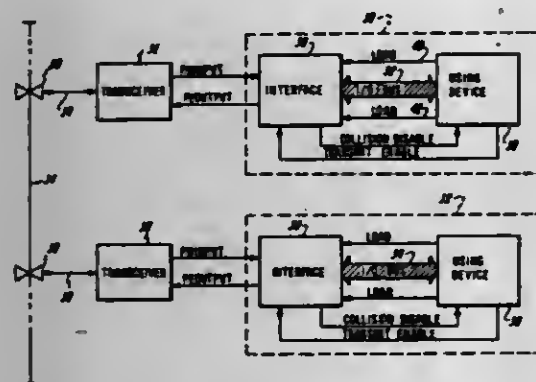
U.S. Cl. 340—147 LP

10 Claims

1. A data communication system comprising: a communicating medium; a plurality of transceivers connected to said medium, each transceiver including transmitting means for transmitting encoded data onto said medium, and receiving means for receiving encoded data communicated on said medium by another transceiver; decoder means coupled to the receiving means of each transceiver for decoding data received by said receiving means and applying at its output a decode signal represent-



tative of the character of the received data, said decode signal being at a predetermined value whenever data communicated on said medium by another transceiver is received by said receiving means during the time said transmitting means is transmitting data onto said medium; and



means coupled to the output of said decoder means for interrupting the transmission of data onto said medium by said transmitting means whenever the decode signal is at said predetermined value.

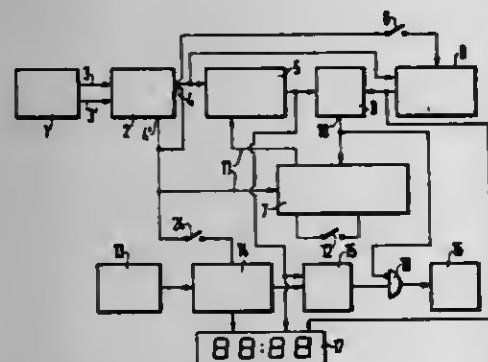
#### 4,282,513 PROCESS AND ARRANGEMENT FOR THE ELECTRONIC CONTROL OF THE INPUT PULSES OF A MANUALLY ROTATABLE PULSE GENERATOR INTO AN ELECTRONIC COUNTER

Alfred Meisner, Nuremberg, Hans Grasser, Ekcental, and Peter Glasmacher, Munich, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany  
Filed Oct. 5, 1979, Ser. No. 82,165

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843353

Int. Cl.<sup>3</sup> G04C 3/00; H04Q 9/00  
U.S. Cl. 340—149 R

4 Claims



1. In a process for the electronic interruption and cancellation of the interruption of input pulses of a manually rotatable pulse generator to an electronic counter to maintain the count stored therein, comprising the steps of:

- introducing the pulses of the manually rotatable pulse generator into an electronic circuit arrangement;
- detecting the direction of rotation of the pulse generator about its axis from the emitted pulses of the pulse generator, and activating with the emitted pulses the input of an up-down counter in dependence upon the detected direction of rotation;
- comparing the count in said counter with a preset count of a further counter in said circuit arrangement;
- reading the pulses, upon actuation of the pulse generator and of an input switch coacting with the electronic circuit arrangement into said up-down counter until a coincidence is achieved of the count in said up-down counter with the preset count of the other counter, and maintaining the count of the up-down counter to interrupt the

further input of pulses from the pulse generator into the up-down counter; and

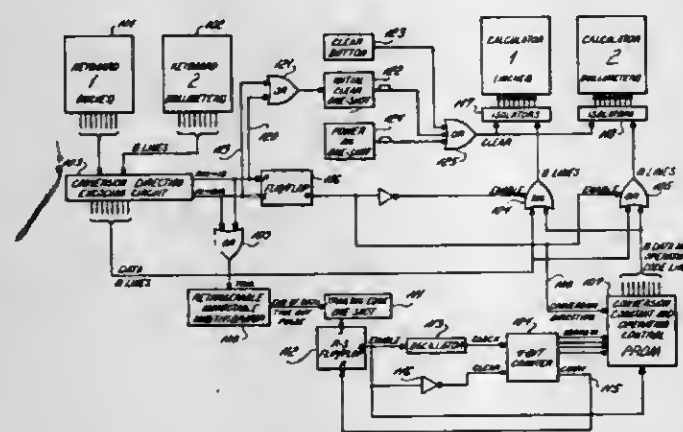
- cancelling the interruption of the input pulses into the up-down counter at the coincidence of the count of the up-down counter with the preset count of the further counter, the input switch being opened in the interim.

#### 4,282,514 ELECTRONIC CONVERTER Bernard P. Elkin, 364 Arlington Ave., Brooklyn, N.J. 11208, and John Mickowski, 127 Main St., Franklin, N.J. 07416 Continuation-in-part of Ser. No. 974,211, Dec. 29, 1978, abandoned, which is a continuation of Ser. No. 751,645, Dec. 17, 1976, abandoned. This application Dec. 28, 1979, Ser. No. 108,285

Int. Cl.<sup>2</sup> H03K 13/24

U.S. Cl. 235—310

8 Claims



1. An electronic converter system for converting numbers from a first to a second numeric system comprising:

- A first and second keyboard with each dedicated to a separate one of said numeric systems and adapted to generate digital data representative of each keyboard digit entry; means for generating a conversion direction signal from each keyboard digit entry, with each direction signal having a logical state corresponding to the selected keyboard through which a digit has been entered; first and second calculating means responsive to the digital data generated from said first and second keyboard for storing each keyboard digit in a serial fashion; first and second display means coupled to said first and second calculating means respectively with said first display means exhibiting the stored number in said first numeric system and with said second display means exhibiting the stored number in said second numeric system; memory means containing in storage at a first group of predetermined address locations the conversion algorithm instructions for performing a conversion operation of a digit from said first to said second numeric system and containing at a second group of predetermined address locations the conversion algorithm instructions for performing a conversion operation of a digit from said second to said first numeric system; means for accessing information from said first or second group of address locations in said memory means in response to each conversion direction signal; and means responsive to each conversion direction signal for steering said accessed information from said memory means to the corresponding first or second calculating means for performing a conversion operation on the number stored therein.

#### 4,282,515 ANALOG TO DIGITAL ENCODING SYSTEM WITH AN ENCODER STRUCTURE INCORPORATING INSTRUMENTATION AMPLIFIER, SAMPLE AND HOLD, OFFSET CORRECTION AND GAIN CORRECTION FUNCTIONS

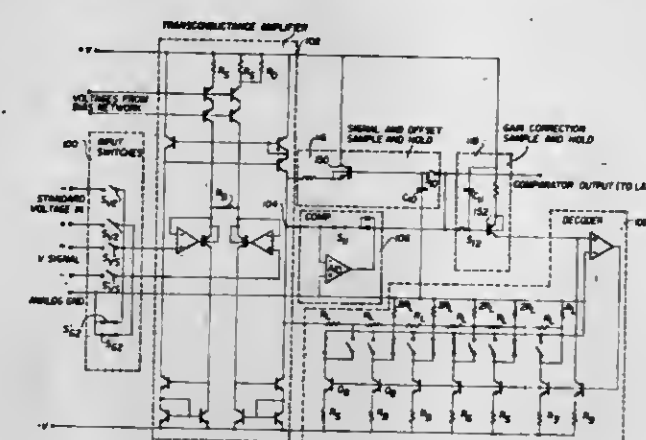
Raymond B. Patterson, III, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 20, 1979, Ser. No. 59,422

Int. Cl.<sup>3</sup> H03K 13/02

U.S. Cl. 340—347 CC

6 Claims



1. In an analog to digital conversion system operating to receive an analog input signal in the form of a differential voltage and convert said input signal into a digital representation thereof, said system performing said conversion over a multi-part cycle by first accomplishing offset correction during the first part of the cycle, converting said differential voltage to a single ended analog signal, sampling said single ended signal and storing said sampled signal during another part of said cycle and subsequently encoding the stored analog signal sample during the final part of the cycle, said system including a transconductance amplifier to convert the differential voltage to a single ended current signal, circuitry for sampling and storing the single ended current signal and circuitry for digitally encoding the stored single ended current signal, the improvement comprising:

an amplifier having at least one input and an output, and feedback means for connecting the amplifier output to said amplifier input, the feedback means including feedback switch means for selectively interrupting the feedback path from the amplifier output to its input, said transconductance amplifier being coupled to said amplifier input, signal sample and hold means for sampling and storing sampled values of the single ended analog input signal, said signal sample and hold means having an input connected to the output of said amplifier and an output connected to an input of said amplifier,

said signal sample and hold means including sample and hold switch means for selectively interrupting the connection between the output of the amplifier and the input to the signal sample and hold means, and

switch drive logic means for controlling the states of said feedback switch means and said sample and hold switch means during each part of the multi-part encoding cycle such that said feedback switch means interrupts the feedback path in said amplifier and said sample and hold switch means completes the connection between the amplifier output and the sample and hold input when said input signal is to be sampled and stored, and such that said feedback switch means completes the feedback path between said amplifier output and input while said sample and hold switch means operates to complete the connection between said amplifier output and sample and hold means input during the encoding portion of the encoding cycle;

whereby said amplifier operates as a transimpedance device during the signal sample and hold operation and as a comparator during the encoding operation.

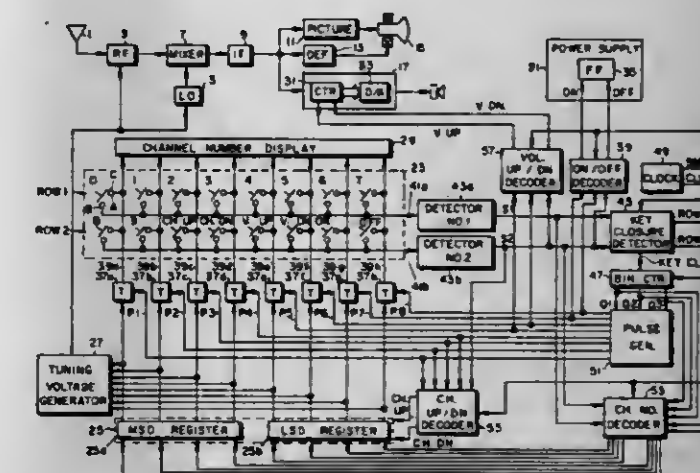
#### 4,282,516 KEYBOARD ENCODING ARRANGEMENT Juri Tufts, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 13, 1979, Ser. No. 48,311

Int. Cl.<sup>3</sup> H04B 1/16; G06F 3/02

U.S. Cl. 340—365 S

9 Claims



1. In a system, apparatus comprising:  
control means for controlling at least one function of said system;  
a plurality of switches for selectively controlling said function;  
register means for storing binary signals;  
detecting means for generating a sense signal representing the presence and absence of one of said binary signals;  
a source of clock signals;  
counting means responsive to said sense signal for selectively counting said clock signals and generating count-representative signals;  
selective coupling means for selectively coupling said binary signals stored in said register means to respective ones of said plurality of said switches in response to said count-representative signals;  
said switches being coupled between said selective coupling means and said detector means for coupling said binary signals coupled to them from said register means by said selective coupling means to said detecting means when said switches are operated; and  
decoder means responsive to at least said count-representative signals for generating control signals associated with the operation of respective ones of said switches for said control means to effect the control of said function.

#### 4,282,517 AUTOMATIC RINGBACK FOR DIRECT CURRENT MONITORING SYSTEM

Stanley Wilson, Jr., St. Charles, and Robert M. Berger, Overland, both of Mo., assignors to Potter Electric Signal Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 859,019, Dec. 9, 1977, abandoned. This application Jan. 25, 1979, Ser. No. 6,357

Int. Cl.<sup>3</sup> G08B 23/00

U.S. Cl. 340—503

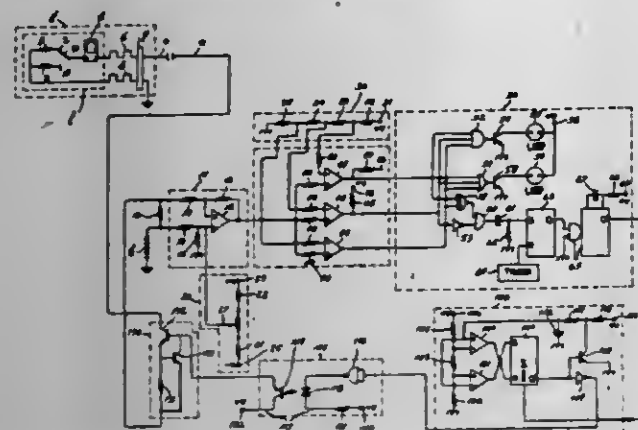
9 Claims

1. In a monitoring system having a communications line from a central station to remote premises and a source of direct current therefor, the remote premises having selector switch means for producing a plurality of normal current levels in the communications line and signal means of a type which responds to oscillations in the current in the communications line,

central station apparatus comprising  
means for sensing the level of the current in the communications line,  
means for identifying a change between normal current



levels produced by change of the selector switch means, and means, responsive to said identification, to provide an alternating interruption of the level of the direct current in the communications line, including an oscillating voltage source, and



a current limiter in the communications line responsive thereto, whereby when the current changes from one normal current level to another, said current limiter produces oscillations in the current in the communications line to which said signal means responds.

4,282,518

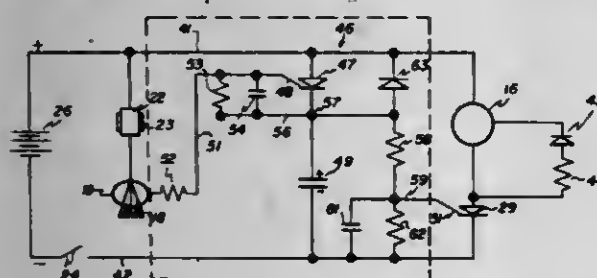
## VIBRATION RESPONSIVE DOOR ALARM

Edgar L. Bonner, Rte. 4, Box 101-B, Taylorsville, N.C. 28681  
Filed Jul. 9, 1979, Ser. No. 56,132

Int. Cl.<sup>3</sup> G08B 13/08

U.S. Cl. 340-566

3 Claims



1. An alarm device comprising, in combination, a housing, means for attaching said housing to a supporting structure, an audible alarm in said housing, a battery in said housing, an SCR having a gate for connecting said audible alarm to said battery, vibration responsive switch means connected to said SCR gate for activating said SCR when said housing is subjected to vibration to connect said signaling means to said associated source of power for indication by said signaling means of the vibration on said housing, said vibration responsive switch means comprising a pendulum of tapered configuration and a ring assembly, means for supporting said pendulum in said housing within said ring for swinging movement from an inoperative position in spaced-apart relationship with said ring in the absence of vibration on said housing and an operative position in contact making engagement with said ring in the presence of vibration on said housing for activating said SCR, said pendulum supporting means including means for adjusting the axial position of said pendulum within said ring to thereby predetermine the magnitude of the vibration for moving said pendulum into said operative position, said adjusting means including a retainer on said housing, a slide member mounted on said retainer for movement into a selected vertical position, a strand of predetermined length connected between said slide member and said pendulum to provide a constant frequency of sensitivity, said slide member being movable into said selected vertical position for adjusting the sensitivity of said vibration responsive switch means at said constant frequency of sensitivity, said SCR being connected in series with said audible

alarm, the positive terminal of said battery being connected to one side of said audible alarm and the negative terminal of said battery being connected to the cathode of said SCR, means for connecting said ring to the gate of said SCR and means for connecting said pendulum to one side of said audible alarm.

4,282,519

## INTERCONNECTION OF ALARMS OF SMOKE DETECTORS WITH DISTINGUISHABLE ALARMS

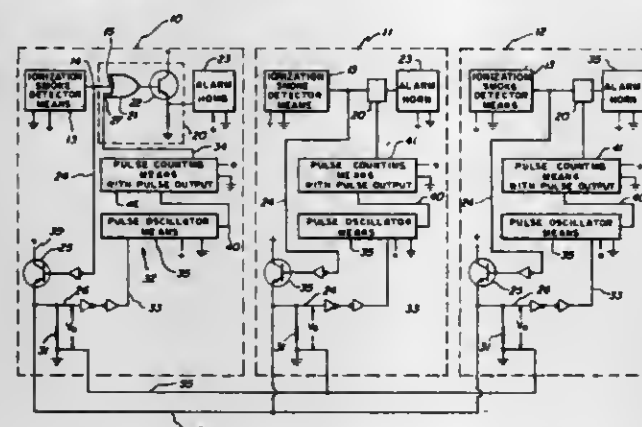
Stephen A. Haglund, Mianetonga, and Robert L. Payne, Crystal, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 6, 1977, Ser. No. 839,874

Int. Cl.<sup>3</sup> G08B 17/10, 21/00

U.S. Cl. 340-628

4 Claims



3. In a circuit for a plurality of abnormal condition detector alarm devices each comprising;

an abnormal condition responsive means having a first output upon the presence of an abnormal condition, an annunciator means energized in a first type of operation upon the presence of said first output, switch means controlled by said first output, first circuit means producing a second output when said switch means is operated upon the presence of an abnormal condition, annunciator circuit control means connected to said annunciator means and having an input circuit responsive to said second output for energizing said annunciator means in a second type of operation which would be dominated by said first type of operation, and second circuit means interconnecting said first circuit means of all of said plurality of said devices whereby upon one of said devices sensing an abnormal condition and having said first output, said annunciator means of said one device is operated with a first type of operation and said second output of said one device is connected to said annunciator circuit control means of the other of said plurality of devices to energize their annunciator means with a second type of operation to indicate that the abnormal condition is at said one of said devices.

4,282,520

## PIEZOELECTRIC HORN AND A SMOKE DETECTOR CONTAINING SAME

John I. Shipp, and Charlie C. Rogers, III, both of 212 N. Jackson, Tullahoma, Tenn. 37388

Filed Oct. 25, 1978, Ser. No. 954,475

Int. Cl.<sup>3</sup> G08B 17/10, 3/00; G01T 1/18

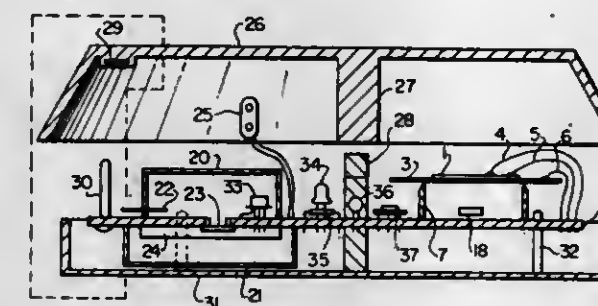
U.S. Cl. 340-629

14 Claims

4. A smoke detector, comprising: a radioactive source enclosed in an ionization chamber wherein a voltage change is produced in response to the presence of smoke particles and wherein the voltage change activates a piezoelectric horn of the detector,

the piezoelectric horn comprising a power source connected to an oscillator circuit and a tone transducer, wherein the

tone transducer forms a surface of at least one resonant chamber having at least one air passage opposite the trans-



ducer and wherein the tone transducer is attached to the resonant chamber at the nodal circle of the transducer.

4,282,521

## REGULATING CIRCUIT FOR GASEOUS IMPURITY DETECTOR

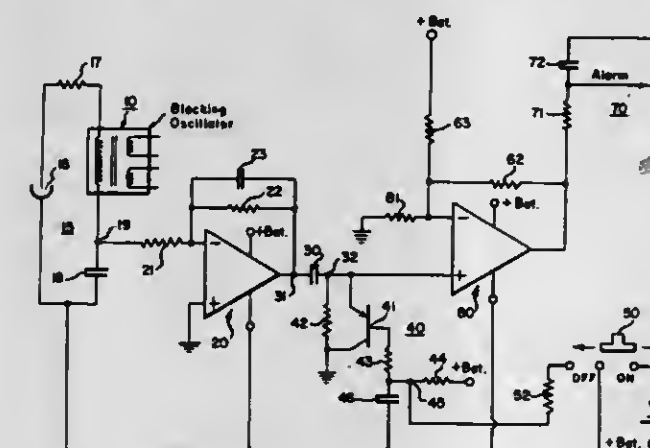
Leonard N. Lieberman, La Jolla, Calif., assignor to TIF Instruments, Inc., Miami, Fla.

Filed Nov. 13, 1979, Ser. No. 93,543

Int. Cl.<sup>3</sup> G08B 17/10; G01M 3/04

U.S. Cl. 340-632

16 Claims



1. Apparatus for detecting gaseous impurities in an atmosphere comprising: an asymmetrical electrode pair disposable in said atmosphere; means for forming a corona discharge across said electrode pair in the continuous corona region; means for forming a first signal representative of the mean corona current of said discharge, said signal being representative of the concentration of the gaseous impurity; means for forming a second signal which is a function of said first signal; means for storing said second signal relatively rapidly, whereby there is recorded a representation of said mean corona current at the time said second signal is stored, and for updating relatively slowly the signal that is stored; switching means having at least two operative states, said second signal being stored relatively rapidly when said switching means is in a first state and said stored signal being updated relatively slowly when said switching means is in a second state; and means for sensing a change in the mean corona current relative to said stored signal and for producing an output signal when said change in the mean corona current is greater than a predetermined amount.

4,282,522

## DISPLAY/MEMORY/CONTROL SYSTEM FOR FORWARD OBSERVER SOURCE DATA

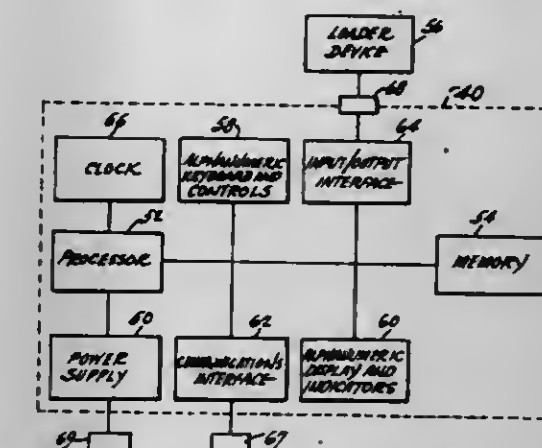
Seth L. Everett, Jr., Lincroft, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 761,145, Jan. 21, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,677

Int. Cl.<sup>3</sup> G08B 5/36

U.S. Cl. 340-711

5 Claims



1. A message terminal device comprising: a housing, a photographic film strip having a plurality of frames of prerecorded selective alphanumeric messages and coded position indicating markings associated with respective frames having said messages, a window in said housing for visually displaying said film strip frames of selective alphanumeric messages, means in said housing for holding and transporting said film strip across said window, photosensing means in said housing adjacent said film strip for sensing said coded markings of said associated respective frames to control the position of said respective frames having said selective messages at said window, first memory means for controlling the sequence of movement of said film in accordance with said coded markings to display said selective alphanumeric messages, second memory means for storing information related to said selective alphanumeric messages for subsequent transmission, means for manually selecting from said first memory means prerecorded alphanumeric messages to be displayed at said window and for inserting said information related to said selective messages into said second memory means, means for displaying alphanumeric information related to said selective messages, and means for communicating said stored information to another location.

4,282,523

## METHOD AND APPARATUS FOR LOGGING INCLINED EARTH BOREHOLES

Arthur H. Youmans, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 847,962, Nov. 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 838,686, Oct. 3, 1977, Pat. No. 4,109,521. This application Apr. 18, 1979, Ser. No. 31,245

Int. Cl.<sup>3</sup> G01V 1/40

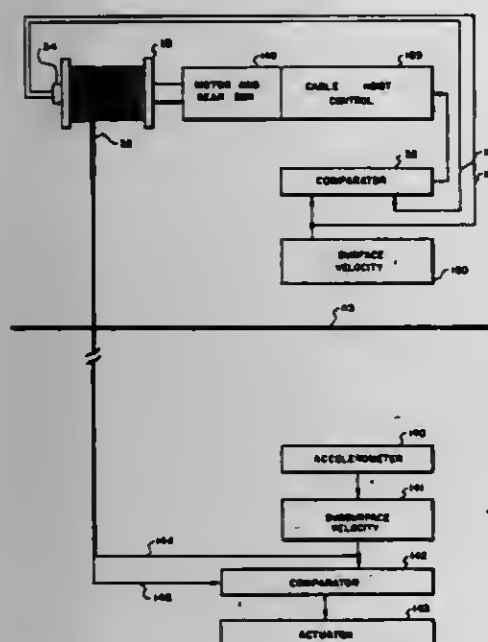
U.S. Cl. 340-860

2 Claims

1. A method for logging the formations surrounding an earth borehole, comprising the steps of: traversing an earth borehole with a well logging instrument connected to a well logging cable wound around a rotatable cable hoist drum at the earth's surface; generating a signal functionally related to the velocity of said cable at the earth's surface;



generating a signal functionally related to the velocity of said well logging instrument;  
 comparing said cable velocity signal with said instrument velocity signal and generating a differential signal indicative of the comparison; and  
 controlling the rotation of said cable hoist drum in response to said differential signal for matching said cable velocity to said instrument velocity,  
 generating a signal functionally related to the tension on said well logging cable;



comparing said tension signal with said instrument velocity signal and generating a second differential signal indicative of the comparison,  
 comparing said second differential signal with a preselected threshold signal; and  
 generating a drive signal for initiating motive means contained in said well logging instrument upon the occurrence of said second differential signal exceeding said preselected threshold level in order to assist with displacing a well logging instrument through an earth borehole.

4,282,524

## LINEAR BESSEL RANGING RADAR

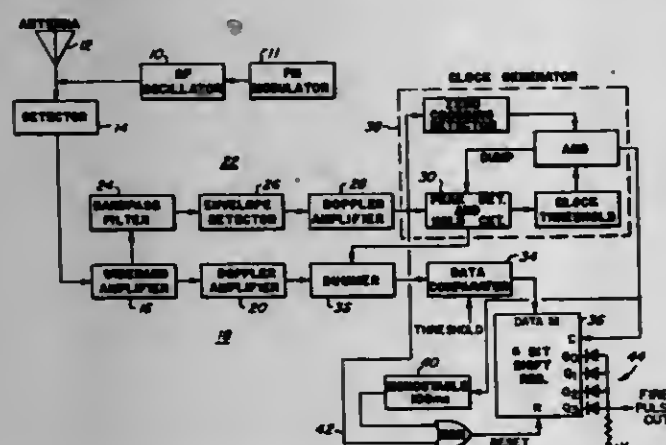
Steven W. Eymann, Tempe; Mark A. Fried, and Thomas L. Harris, both of Scottsdale, all of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Dec. 20, 1978, Ser. No. 971,160

Int. Cl.<sup>3</sup> G01S 13/32

U.S. Cl. 343—14

7 Claims



1. In a continuous wave frequency modulated radar for fixed short distance ranging wherein a demodulated signal thereof comprises at least  $J_0$  and  $J_1$  Bessel function signal terms, a signal processing system comprising:

first channel means for filtering and amplifying one of the  $J_0$  and  $J_1$  terms;  
 second channel means for filtering and amplifying another of the  $J_0$  and  $J_1$  terms, the amplification factor of said second channel means exceeding the amplification factor of said first channel means by a ratio corresponding to an amplitude ratio between said Bessel function terms at a preselected ranging distance;  
 means for sensing and holding a peak value of said another of the  $J_0$  and  $J_1$  terms to correspond in time to the time at which said one of the  $J_0$  and  $J_1$  terms reaches a peak value; and  
 comparing means for determining when said peak value of said another of the  $J_0$  and  $J_1$  terms is at least equal to said peak value of said one of the  $J_0$  and  $J_1$  terms and for generating an output signal responsive to said at least equal relationship.

4,282,525

## MICROWAVE LIMB SOUNDER

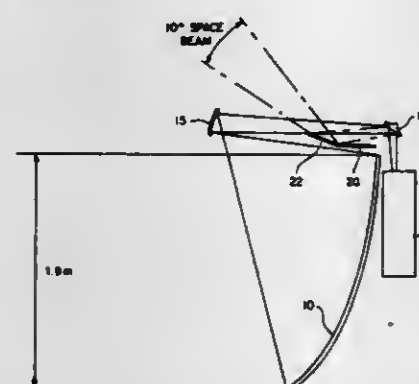
Jacob J. Gustincic, deceased, late of Marina Del Rey, Calif. (by Ruthann Gustincic, administratrix), and Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Jacob J. Gustincic, deceased

Filed Sep. 24, 1979, Ser. No. 78,612

Int. Cl.<sup>3</sup> H04B 7/00

U.S. Cl. 343—100 ME

17 Claims



1. In a microwave limb sounder, an antenna system and a plurality of radiometer heads, said antenna system comprising a singly curved parabolic main reflector fed by individual subreflectors disposed along a horizontal line, one subreflector for each of said radiometer heads, said radiometer heads being secured behind said main reflector, said main reflector being parabolic in the vertical direction and linear in the horizontal direction, and tiltable mirror means disposed above and behind the upper edge of the main reflector for receiving limb radiation while in a first position, whereby each subreflector which collects and focuses radiation from a portion of the main reflector directs it into a separate radiometer head, said antenna system further comprising a target plate in front of the main reflector in a position between reflected radiation from the main reflector to the subreflectors and radiation from the subreflectors to the tiltable mirror means, said target position being selected for directing radiation therefrom to said radiometer head for calibration while said tiltable mirror means is tilted down from the first position to a second position, and means for directing radiation from cold space above the horizon into said radiometer heads while said tiltable mirror means is tilted to a third position.

4,282,526

## ROD ANTENNA SUPPORT

Reinhard Alf, and Kort Klinkwitz, both of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

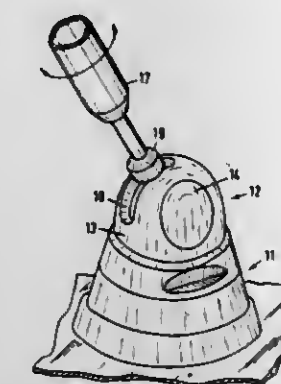
Filed Jan. 23, 1980, Ser. No. 114,671

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906403

Int. Cl.<sup>3</sup> H01Q 1/32

U.S. Cl. 343—715

3 Claims



1. In a rod antenna support including a foot portion adapted to be affixed to a base and having a longitudinal axis generally perpendicular to the base when the foot portion is mounted thereon; a pivotal joint mounted in the foot portion and having a socket provided with a slot and a cylindrical body received in the socket for rotary motion in a direction transverse to the longitudinal axis of the foot portion; the cylindrical body having a diametral threaded bore; and a terminal screw forming an end portion of a rod antenna; the terminal screw projecting through the slot of the socket and threadably engaging the threaded bore of the cylindrical body; and clamping means for immobilizing the cylindrical body in a desired angular position when the terminal screw is threaded into the bore; the improvement wherein said socket comprises means defining a throughgoing cylindrical passage having an axis which is transverse to said longitudinal axis of said foot portion; said cylindrical body being rotatably received in said throughgoing passage; and further wherein said clamping means comprises a flange-like stop affixed to said terminal screw outside said socket; said stop engaging an external face of said socket when said terminal screw is threaded into said bore.

4,282,527

## MULTI-SPECTRAL DETECTION SYSTEM WITH COMMON COLLECTING MEANS

Jay B. Winderman, Claremont, and Fernand B. Kuffer, Brea, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jun. 11, 1979, Ser. No. 47,452

Int. Cl.<sup>3</sup> H01Q 21/28; G02B 5/16

U.S. Cl. 343—725

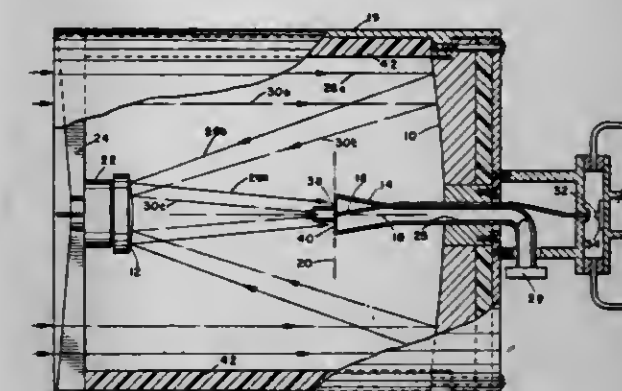
2 Claims

1. A multi-spectral detection system for detecting radiation within frequency bands that are in diverse portions of the electromagnetic spectrum, a first band being in the radio frequency portion, and a second band being in the ultraviolet-through-infrared portion, comprising:

common radiant energy collection means having a boresight axis for collecting radiant energy in said diverse portions of the electromagnetic spectrum and focusing said collected energy in a common focal plane about said axis;  
 first means coaxially positioned at said common focal plane for transferring said collected radiant energy in said first band from said focal plane to a detector of said radiant energy in said first band; and  
 second means coaxially positioned at said common focal plane for transferring said collected radiant energy in said second band from said focal plane to a detector of said radiant energy in said second band;  
 wherein the collection means comprise:

a Cassegrain primary reflector for reflecting radiant energy

in said predetermined diverse portions of the electromagnetic spectrum; and  
 a Cassegrain subreflector positioned along the axis of the primary reflector for re-reflecting radiant energy reflected from the primary reflector along said boresight axis and focusing said re-reflected radiant energy in a common focal plane about said axis;



wherein the first means comprises a feed horn having an entrance in said common focal plane about said axis; wherein the second means comprises optical fibers having openings in said common focal plane about said axis; and wherein the system further comprises:  
 a baffle coaxially positioned for blocking light other than said re-reflected radiation from being received and transferred by the optical fibers.

4,282,528

## PLURAL ANTENNAS HAVING A SLEEVE DIPOLE

John F. Aspinwall, Purley, England, assignor to Communications Patents Limited, London, England

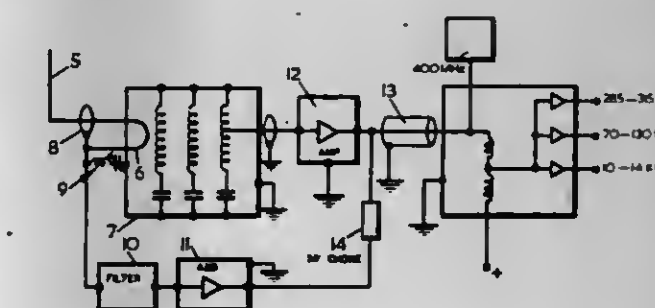
Filed May 3, 1979, Ser. No. 35,547

Claims priority, application United Kingdom, May 9, 1978, 18580/78

Int. Cl.<sup>3</sup> G06F 3/14

U.S. Cl. 343—727

9 Claims



1. A dual frequency band antenna arrangement with a single lead cable comprising in combination, a first antenna consisting of a vertically disposed sleeve dipole antenna having an electrical length related to the wavelength of a first higher frequency band mounted on an elongate support, a mounting assembly for said support, and a feeder cable incorporating screened and screening conductors and consisting of said single lead cable extending longitudinally of the support from the first antenna to the mounting assembly and having a vertically disposed dimension providing an aperiodic whip antenna for a second lower frequency band, the screened conductor being connected within said mounting assembly to means for processing signals in said first higher frequency band received by the first



antenna, the screening conductor forming a second antenna connected to the means processing signals in the first band within said mounting assembly by filter means grounding that conductor only for the frequency band of the first band and further connected within said mounting means to means for processing signals in at least said second lower frequency band received by the screening conductor as an ungrounded vertically disposed antenna member for the lower frequency band.

4,282,529

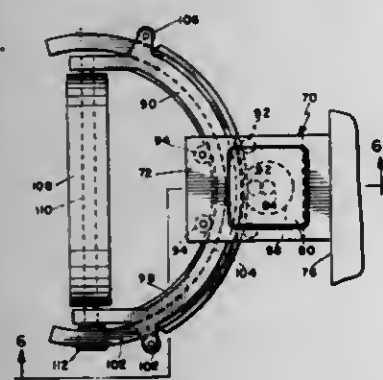
**DIFFERENTIAL DRIVE ROLLING ARC GIMBAL**

John M. Spelcher, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.  
Division of Ser. No. 970,284, Dec. 18, 1978, Pat. No. 4,238,802.  
This application Feb. 28, 1980, Ser. No. 125,803

Int. Cl.<sup>3</sup> H01Q 3/08

U.S. Cl. 343—765

2 Claims



1. A differential drive rolling arc gimbal, comprising: a mounting having means for attachment to a supporting structure; an arcuate, substantial semi-circular yoke supported in said mounting for rotation about its center of radius; a platform having a supporting shaft pivotally mounted in said yoke for rotation about an axis orthogonal to the axis of rotation of the yoke; a pair of motors on said mounting with drive means connected to said yoke and said platform for selective independent and combined rotary motions of the yoke and platform; said drive means including a drive wheel on each of said motors, a pair of axially spaced ring members mounted on said yoke for rotation about the center of radius of the yoke, each of said ring members being drivingly engaged by one of said drive wheels; and a pinion fixed on one end of said supporting shaft, said ring members straddling said pinion and having opposed toothed rack portions meshed with the pinion.

4,282,530

**CYLINDRICAL PARABOLOID WEATHER COVER FOR A HORN REFLECTOR ANTENNA WITH WAVE ABSORBING MEANS**

Ralph A. Semplak, Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1979, Ser. No. 106,466

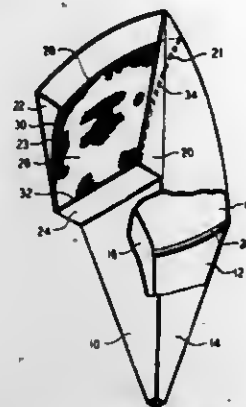
Int. Cl.<sup>3</sup> H01Q 13/00

U.S. Cl. 343—784

4 Claims

1. A horn reflector antenna comprising an offset main reflector (18) including a reflecting surface and a focal point associated therewith; absorbing material (36) disposed on the edge of said reflecting surface closest to said focal point; a feed arrangement (10, 12, 14, 16) disposed at said focal point and in relation to said reflector so as to create an antenna aperture, said feed arrangement capable of transmitting and receiving microwave radiation; and a weather cover (26) disposed at said aperture capable of reflecting a portion of said microwave radiation emanat-

ing from said feed arrangement and impinging the surface thereof;

**CHARACTERIZED IN THAT**

the weather cover further comprises a cylindrical paraboloid shape, said weather cover disposed to be capable of focusing the impinging radiation onto the edge of the reflecting surface containing the absorbing material.

4,282,531

**VERTICAL ANTENNA WITH UPWARDLY FLARING BASE MOUNTED CONDUCTORS**

Herbert R. Blaese, Chicago, Ill., assignor to Avanti Research & Development, Inc., Addison, Ill.

Filed Jan. 4, 1980, Ser. No. 109,494

Int. Cl.<sup>3</sup> H01Q 9/32

U.S. Cl. 343—791

19 Claims



1. A two-way communications antenna comprising: an elongated radiating element having an electrical length of about three-quarters wave length; and diverging element means connected at one end to said radiating element adjacent an end thereof and extending therefrom towards the other end of said radiating element and at an acute angle thereto, said diverging element means having an effective electrical length of about one-quarter wave length.

4,282,532

**INK JET METHOD AND APPARATUS USING A THIN FILM PIEZOELECTRIC EXCITOR FOR DROP GENERATION**

Roger G. Markham, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 4, 1979, Ser. No. 45,045

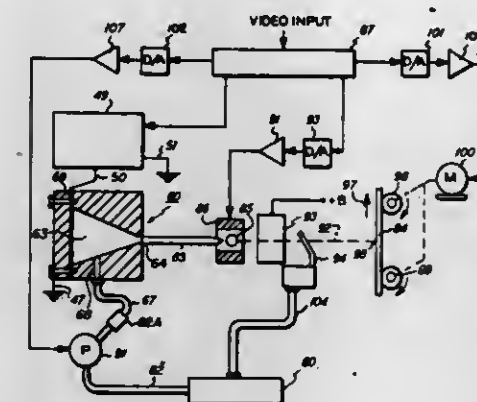
Int. Cl.<sup>3</sup> G01D 15/18

U.S. Cl. 346—75

39 Claims

1. Apparatus for generating liquid drops at a desired drop generation frequency comprising

a body including a liquid chamber defining an acoustic resonant frequency for a liquid in the chamber near the drop generation frequency, inlet means for coupling the chamber to a source of liquid under pressure, at least one nozzle means coupled to the chamber for emitting a continuous stream of liquid due to liquid pressure from which drops are formed and



thin, non-bending excitation means coupled to the chamber for stimulating pressure variations in a liquid in the chamber at a frequency near the drop generation frequency but itself having an acoustic resonant frequency substantially higher than the drop generation frequency including a piezoelectric material and electrode means for coupling to the piezoelectric material an AC electrical energy source having a frequency near the drop generation frequency for creating dimensional changes in the excitation means whereby drops are formed from a continuous stream near the desired drop generation frequency.

4,282,533

**PRECISION ORIFICE NOZZLE DEVICES FOR INK JET PRINTING APPARATUS AND THE PROCESS FOR THEIR MANUFACTURE**

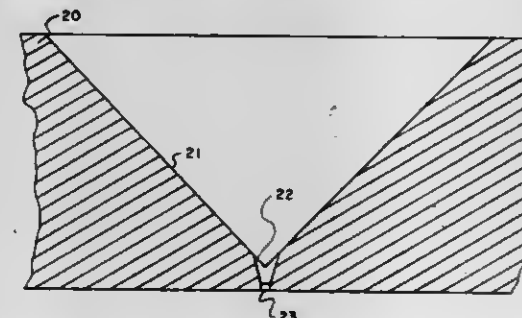
Kenneth Brooks, Charlotte, N.C.; Paul R. Smith, Princeton, W. Va., and Thomas E. Morris, Concord, N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 22, 1980, Ser. No. 123,629

Int. Cl.<sup>3</sup> G01D 15/18

U.S. Cl. 346—75

13 Claims



1. In an ink jet printing system of the type wherein ink is delivered to a nozzle member and caused to break into droplets after issuing from the nozzle, a charging electrode is positioned in the region in which the ink jet breaks into droplets and the charging electrode is adapted to respond to data signals selectively to charge the droplets as they are formed, the improvement comprising: a metallic nozzle member less than about 1000 microns thick provided with an orifice extending there-through, said orifice including a cylindrical portion adjacent the outlet face of said nozzle having a height ranging from about 0.25 to 5 times its diameter and at least one frustoconical section divergent toward the face opposite said outlet face and communicating with said cylindrical portion, said frustoconical section and said cylindrical portion having a meeting angle of less than about 60 degrees.

4,282,534

**THERMAL RECORDING ELEMENTS**

Fumiaki Shinozaki; Tomizo Namiki; Masao Kitajima; Tomoaki Ikeda, and Yuzo Mizobuchi, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

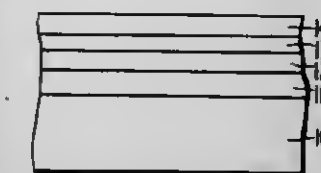
Filed Jun. 26, 1979, Ser. No. 52,511

Claims priority, application Japan, Jun. 26, 1978, 53/77268

Int. Cl.<sup>3</sup> G01D 15/34; B32B 3/00

U.S. Cl. 346—135.1

14 Claims



1. A thermal recording element comprising a support having formed thereon directly or indirectly a recording layer, a first protective layer comprising a compound selected from a halogenated polyolefin, polystyrene, a polystyrene derivative, halogenated rubber, and a styrenevinyltoluene copolymer formed on the recording layer, and a second protective layer comprising a polymer having high surface strength formed on the first protective layer, wherein the thickness of the second protective layer is about 0.1 μm to 20 μm.

4,282,535

**CIRCUIT ARRANGEMENT FOR THE OPERATION OF RECORDING NOZZLES IN INK MOSAIC RECORDING DEVICES**

Hans Kern, Munich, and Rainer Lichti, Germering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

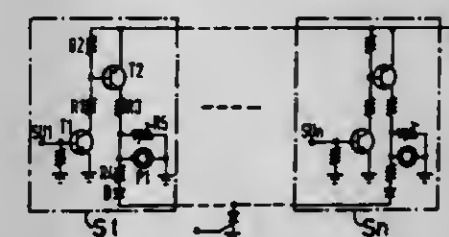
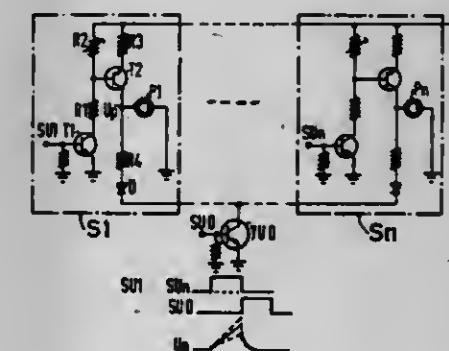
Filed Oct. 24, 1979, Ser. No. 87,677

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1978, 2850016

Int. Cl.<sup>3</sup> G01D 15/18; H01L 41/10

U.S. Cl. 346—140 R

19 Claims



1. In a circuit arrangement for the operation of recording nozzles in ink mosaic recording devices employing a plurality of tubular drive elements containing recording fluid to be expelled thereby consisting of electromechanical transducers having a diameter and internal volume which vary in the presence of different voltage potentials applied to the transduc-



ers, the combination of a first electronic switch for each of the electromechanical transducers, for selectively supplying to the respective electromechanical transducers in sequence a first voltage potential for respectively expanding said transducers, and a second electronic switch common to all of said electromechanical transducers for supplying in common a second voltage potential to all of said electronic transducers for contracting said transducers for expelling said fluid.

4,282,536

# PROCESS AND APPARATUS FOR AUTOMATIC DRAFTING DEVICES

Rolf Paschen, Elmaborn, and Rolf Martens, Hamburg, both of Fed. Rep. of Germany, assignors to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

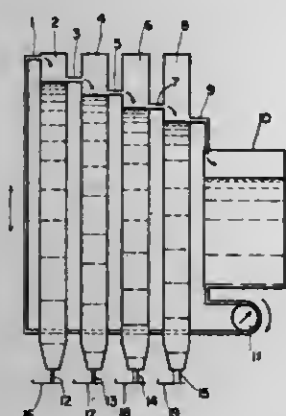
Filed Feb. 13, 1980, Ser. No. 121,336

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1979, 2916118

Int. Cl.<sup>3</sup> G01D 15/16; B43L 13/00; B43K 8/00

U.S. Cl. 346—140 R

6 Claims



1. In a process for drawing with a plurality of tube pens, which can be selectively brought into contact with a drawing surface, the improvement comprising a writing fluid delivery mechanism which maintains the writing fluid in the tube pens at predetermined values, characterized by the steps of a writing fluid delivery mechanism which initially feeds writing fluid to the tube pen with the smallest line width, so that excess writing fluid flows therefrom by means of an overflow, located at a first predetermined height, and then to at least one additional tube pen, with a progressively greater line width and an overflow at a second height, which is lower than said first height, said ink ultimately overflowing from the pen with the greatest line width and through a storage container and ultimately back to said initial feeding step.

4,282,537

# SILICON MOS INDUCTOR

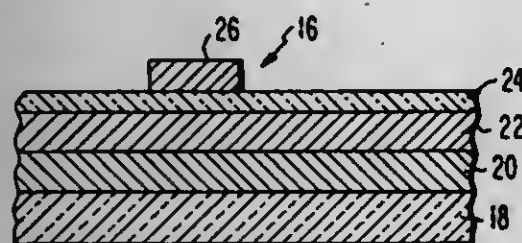
Isaac Balberg, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,013

Int. Cl.<sup>3</sup> H01L 49/02

U.S. Cl. 357—6

8 Claims



1. An MOS inductor comprising:

- (a) an insulating substrate;
- (b) a conductive metal layer on a surface of said insulating substrate;

- (c) an amorphous silicon layer on the surface of said metal layer;
- (d) an insulating layer on the surface of said amorphous silicon layer; and
- (e) a metal contact on the surface of said insulating layer.

4,282,538

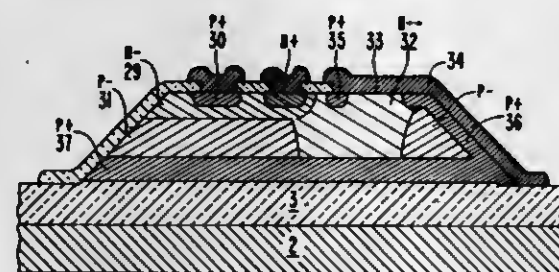
# METHOD OF INTEGRATING SEMICONDUCTOR COMPONENTS

Howard R. Beelitz, Gillett, Pa., and Donald R. Preslar, Somerville, N.J., assignors to RCA Corporation, New York, N.Y. Division of Ser. No. 850,672, Nov. 11, 1977, Pat. No. 4,199,860. This application Aug. 6, 1979, Ser. No. 64,279

Int. Cl.<sup>3</sup> H01L 29/48

U.S. Cl. 357—15

7 Claims



1. A PNP bipolar transistor and a Schottky diode in a single mesa form comprising:
  - a substrate for the mesa,
  - a base region having N— and N— portions both extending to a free surface of said mesa,
  - a P type collector region at least a portion of which contacts said N— base portion between said N— base portion and said substrate,
  - a terminal metallization at said free surface to said N— base portion forming a Schottky barrier, and
  - a separate termination at said free surface to said N-base portion.

4,282,539

# FIELD EFFECT TRANSISTOR WITH DECREASED SUBSTRATE CONTROL OF THE CHANNEL WIDTH

Lothar Schrader, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

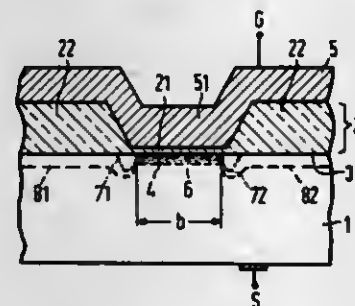
Filed Sep. 10, 1979, Ser. No. 73,899

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842589

Int. Cl.<sup>3</sup> H01L 29/78

U.S. Cl. 357—23

6 Claims



1. An insulated gate field effect transistor comprised of a semiconductor body of a first conductivity type having a first doping level, a source region and a drain region of the opposite conduction type in the semiconductor body, an insulating layer covering an upper surface of the semiconductor body, said insulating layer having thick film regions surrounding a thin film region, said thin film region disposed above an area of the semiconductor body between the source and drain regions to define a channel region in the semiconductor body, and a pair

of narrow strip zones in the semiconductor body parallel to a source-to-drain direction and disposed at the edges of said channel region, said strip zones having additional doping of a conductivity type opposite to the first conductivity type.

4,282,540

# FET CONTAINING STACKED GATES

Tak H. Ning, Yorktown Heights; Carlton M. Osburn, Croton-on-Hudson, and Hwa N. Yu, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

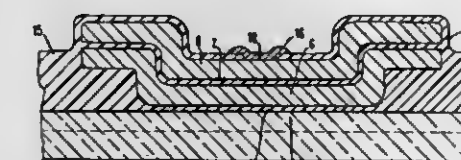
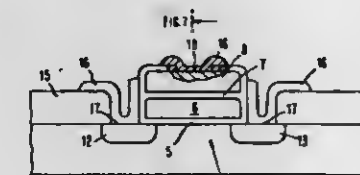
Division of Ser. No. 864,074, Dec. 23, 1977. This application

Oct. 19, 1979, Ser. No. 86,608

Int. Cl.<sup>3</sup> H01L 29/78

U.S. Cl. 357—23

18 Claims



1. A field effect transistor (FET) which comprises a floating gate, a control gate above said floating gate, insulator between said floating gate and control gate; said floating gate and said control gate being self-aligned in both the width and length dimensions with respect to each other; source and drain regions wherein the floating gate and control gate are self-aligned with respect to said source and drain regions.

4,282,541

# PLANAR P-I-N PHOTODETECTORS

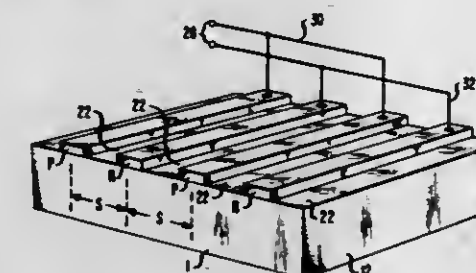
Won-Tien Tsang, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1979, Ser. No. 106,704

Int. Cl.<sup>3</sup> H01L 27/14

U.S. Cl. 357—30

7 Claims



1. A light responsive device comprising a body of light-absorbing semiconductor material and first and second opposite conductivity type zones contiguous with said body for collecting holes and electrons generated by the absorption of light in said body, characterized in that said body comprises single crystal, semi-insulating material having a major surface on which light is made incident, said first zone comprises single crystal, p-type semiconductor material which intersects a localized portion of said surface, and said second zone comprises single crystal, n-type semiconductor material which intersects a different localized portion of said same surface so that light absorbed be-

tween said zones generates holes and electrons which are able to diffuse and/or drift to opposite ones of said zones.

4,282,542

# INTERFERENCE-POTENTIAL-COMPENSATED THYRISTOR COMPRISING AT LEAST FOUR ZONES OF DIFFERENT TYPE OF CONDUCTIVITY

Dieter Silber, Obertshausen; Marius Füllmann, Neu-Isenburg, and Wolfgang Winter, Eschborn, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Fed. Rep. of Germany

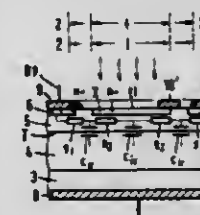
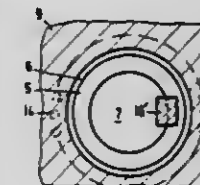
Filed Dec. 4, 1979, Ser. No. 81,805

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1978, 2843960

Int. Cl.<sup>3</sup> H01L 29/74

U.S. Cl. 357—38

3 Claims



1. An interference potential compensated thyristor comprising:

a semi-conductor body having; a common emitter zone of one conductivity type, a common main base zone of an opposite conductivity type in contact with said common emitter zone, a common control base zone of said one conductivity type in contact with said common main base zone defining one surface of said semiconductor body, at least first and second outer emitter zones of said opposite conductivity type in contact with said common control base, said outer emitter zones formed at said one surface of said semiconductor body with said common control base zone extending to said one surface between and around said outer emitter zones; a common metallized electrode layer in ohmic contact with said common emitter zone, a first opposite metallized electrode layer in ohmic contact with an edge portion of said first outer emitter zone and a portion of said common control base zone at said semiconductor body surface and over a junction between said common control base zone and said first outer emitter zone to ohmically connect said edge portion of said outer emitter zone and said common control base zone; a second opposite metallized electrode layer in contact with said second outer emitter zone, said first outer emitter zone forming part of a pilot thyristor part and said second outer emitter zone forming a part of a sequential thyristor part; wherein a substantially maximum value for the interference potential in said common control base zone adjacent said first outer emitter zone is applied to said edge portion of said first outer emitter zone in contact with said first opposite metallized electrode layer; only said edge portion of said first outer emitter zone being ohmically connected to said common control base zone; the size of said portion of said common control base zone in contact with said first opposite metallized electrode layer being dimensioned so











defining a particular thyristor holding current that exceeds the value of maximum direct current that flows when said input connections are shorted.

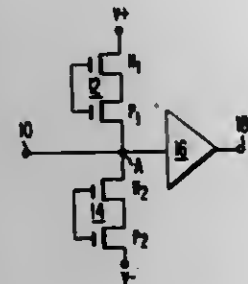
#### 4,282,556 INPUT PROTECTION DEVICE FOR INSULATED GATE FIELD EFFECT TRANSISTOR

Alfred C. Ipri, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 21, 1979, Ser. No. 41,085  
Int. Cl.<sup>3</sup> H02H 3/22

U.S. Cl. 361-56

6 Claims



1. An overvoltage protection circuit for the input of a field effect device to be protected, comprising:
  - a pair of insulated gate transistors consisting of an N channel transistor and a P channel transistor, each transistor of the pair having a conduction path and a gate electrode;
  - a source of operating potential;
  - the N channel transistor connected to the source of operating potential;
  - the P channel transistor connected to the input of the device to be protected;
  - the conduction paths of each of the transistors connected in series between the source of operating potential and the input to the device to be protected; and
  - means connecting the gate electrodes of each of the transistors to each other.

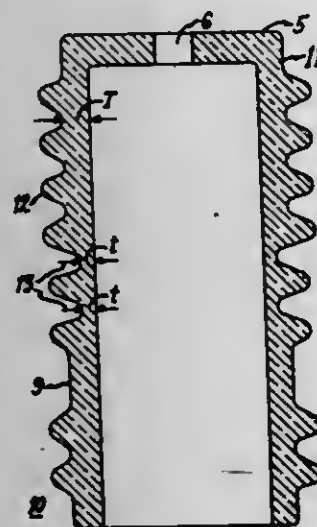
#### 4,282,557 SURGE VOLTAGE ARRESTER HOUSING HAVING A FRAGILE SECTION

Earl W. Stetson, Pittsfield, Mass., assignor to General Electric Company

Filed Oct. 29, 1979, Ser. No. 89,149  
Int. Cl.<sup>3</sup> H02H 3/22

U.S. Cl. 361-117

7 Claims



1. A voltage surge arrester housing comprising:
  - an electrically insulating closure open at least at one end and having a first wall thickness for providing break resistant properties to the housing; and
  - at least one frangible wall section for providing a preferred breaking portion to said housing, said frangible wall sec-

tion comprising a first separate portion and a second separate portion of said closure cemented together to form a joint.

#### 4,282,558 MULTILAMP PHOTOFLASH UNIT WITH CIRCUIT CROSSOVER

John W. Shaffer; William T. Colville, and David W. Mecone, all of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 10, 1979, Ser. No. 74,194  
Int. Cl.<sup>3</sup> G03B 15/02

U.S. Cl. 362-15

10 Claims



1. In a multilamp photoflash unit comprising, in combination, a printed circuit board in the form of an elongated strip and having lamp-firing circuitry on a surface thereof, an array of electrically ignitable flashlamps divided into first and second groups of two or more lamps each disposed on respectively opposite halves of said printed circuit strip over said surface thereof, each of said flashlamps having a pair of lead-in wires connected to said circuitry, said circuitry including first and second common circuit conductor runs which are spaced apart from each other on said surface of the printed circuit strip, said first common circuit run being connected electrically to one lead-in wire of each of said first group of lamps and said second common circuit run being connected electrically to one lead-in wire of each of said second group of lamps, and an elongated housing member having a longitudinal channel within which said printed circuit strip is located and having reflective surfaces adjacent said flashlamps, means for electrically interconnecting said first and second common circuit conductor runs comprising: a continuous coating of electrically conductive reflective material covering the walls of said channel for providing said reflective surfaces, and first and second means electrically connecting said reflective surfaces to said first and second common circuit conductor runs, respectively, whereby said conductive reflective material functions as an interconnecting jumper therebetween.

#### 4,282,559 PHOTOFLASH UNIT HAVING FLASHLAMPS USING LOOPED LEAD-IN WIRES FOR RETENTION

Emery G. Andesse, Beverly, Mass.; Boyd G. Brower; Donald H. Pfefferle, both of Williamsport, Pa., and James L. Holmes, Montoursville, Pa., assignors to GTE Products Corporation, Stamford, Conn.

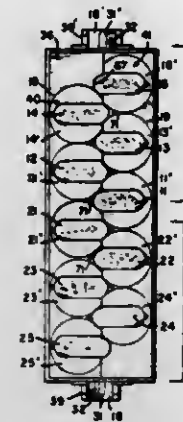
Filed Sep. 24, 1979, Ser. No. 78,353  
Int. Cl.<sup>3</sup> G03B 15/02

U.S. Cl. 362-15

11 Claims

1. A photoflash unit comprising:
  - a circuit board including an electrically insulative substrate member and lamp-firing circuitry on at least one surface of said substrate member, said substrate member including an opening therein located relative to said lamp-firing circuitry; and
  - at least one electrically-activated flashlamp including a light-

transmitting envelope and a pair of electrically conductive lead-in wires projecting from said envelope, at least one of said lead-in wires electrically connected to said lamp-fir-



ing circuitry and including a looped portion frictionally positioned within said opening within said substrate member and projecting therefrom to secure said flashlamp to said substrate member.

#### 4,282,560

##### LIGHT DISTRIBUTOR

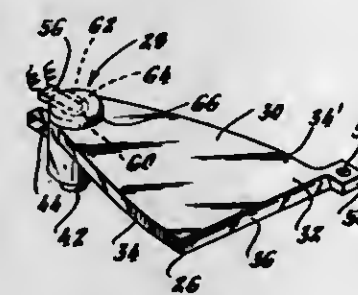
George N. Kringel, Westport, and Nicholas E. Sachuk, Stamford, both of Conn., assignors to A.C.A. Products, Inc., Riverside, Conn.

Continuation of Ser. No. 3,214, Jan. 15, 1979, abandoned. This application Jun. 23, 1980, Ser. No. 162,204

Int. Cl.<sup>3</sup> G01D 11/28

U.S. Cl. 362-26

25 Claims



1. A light distributor to provide a desired distribution of light from a lamp comprising:
  - a lamp supporting segment, said lamp supporting segment including a light source region in which said lamp can be placed with said light source region having a predetermined dimension along a light guiding direction; and
  - a generally planar light guide extending along the light guiding direction to intercept and guide light from the lamp supporting segment to a longitudinal guide edge, said light guide having planar faces bounded by sides at least one of which sides, commencing in the vicinity of the lamp supporting segment, diverges from the lamp supporting segment along a predetermined curve, said curve being selected so that light intercepted by the light guide from the light source region in the lamp supporting segment and incident upon said at least one side is reflected from said at least one side in a generally uniform manner across the longitudinal guide edge to establish at and emit from said edge at even distribution of light emanating from the light source region of said lamp supporting segment.

#### 4,282,561 AUTOMOBILE HEADLIGHT LIGHTING APPARATUS

Haruto Yano, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

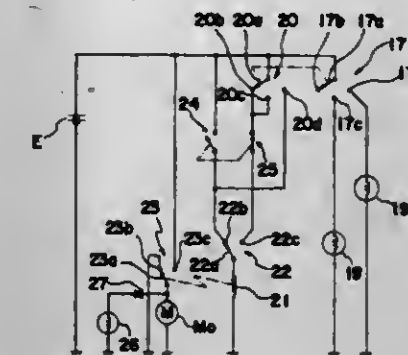
Filed Mar. 1, 1979, Ser. No. 16,612

Claims priority, application Japan, Mar. 7, 1978, 53-29153[U]

Int. Cl.<sup>3</sup> B60Q 1/06

U.S. Cl. 362-65

10 Claims



1. In an automobile concealable headlight apparatus comprising at least one light unit including at least one lamp element and a concealing means operable to selectively conceal and expose the light unit, the improvement comprising:
  - a manually operable light switch means operatively connected electrically to said concealing means for providing electrical power to operate said concealing means to selectively conceal and expose the light unit and providing power to said at least one lamp element to illuminate said lamp element;
  - an additional manually operable switch means operatively connected electrically to said concealing means to selectively conceal and expose the light unit; wherein the operation of said additional switch to expose the light unit is independent of the operation of said light switch.

#### 4,282,562 COMBINATION RECHARGEABLE FLASHLIGHT AND CHARGER BASE

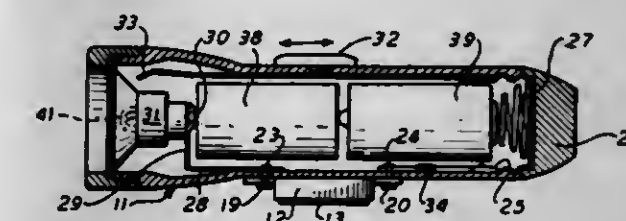
James Marino, R.D. #1, Box 192A, Asbury, N.J. 08802

Filed Oct. 29, 1979, Ser. No. 89,560

Int. Cl.<sup>3</sup> F21L 7/00

U.S. Cl. 362-183

7 Claims



1. A combination rechargeable flashlight and flashlight battery recharger base comprising:
  - (a) a flashlight,
  - (b) a shaped enlargement thereon,
  - (c) a magnet on the shaped enlargement for affirmatively engaging the flashlight with a socket,
  - (d) a charger base,
  - (e) a shaped socket on the charger base,
  - (f) the shaped enlargement on the flashlight and the shaped socket in the charger base interfitting closely with each other,
  - (g) a magnetic piece in the shaped socket magnetically engageable with the magnet on the enlargement when the enlargement and the socket are interfitted with each other.



4,282,563

## FLUORESCENT LAMP UNIT

Shigenori Ohta, and Katsuyuki Hosoya, both of Ohme, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

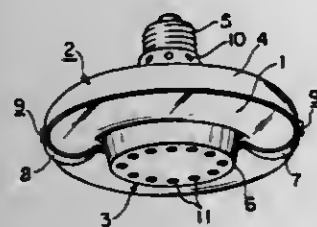
Filed Jan. 18, 1979, Ser. No. 49,169

Claims priority, application Japan, Jan. 16, 1978, 53/72159

Int. Cl.<sup>3</sup> F21S 3/00

U.S. Cl. 362-216

15 Claims



1. A fluorescent lamp unit comprising a circular fluorescent tube; an upper cover which overlies said circular fluorescent tube, which has, at one end, an edge cover member covering substantially an upper half surface of said circular fluorescent tube and which is provided with a screw base at the other end for insertion into threaded electrical sockets; a lower cover which underlies said circular fluorescent tube in a manner to oppose said upper cover and which comprises a protective cover member for covering a central portion of said upper cover surrounded by said fluorescent tube and holder members extending from said protective cover member to said edge cover member of said upper cover in order to partially support substantially a lower half surface of said circular fluorescent tube; and connection means for holding said upper cover and said lower cover in engagement.

4,282,564

## TRIANGULAR ENCLOSURE FOR TUBULAR LIGHT SOURCE

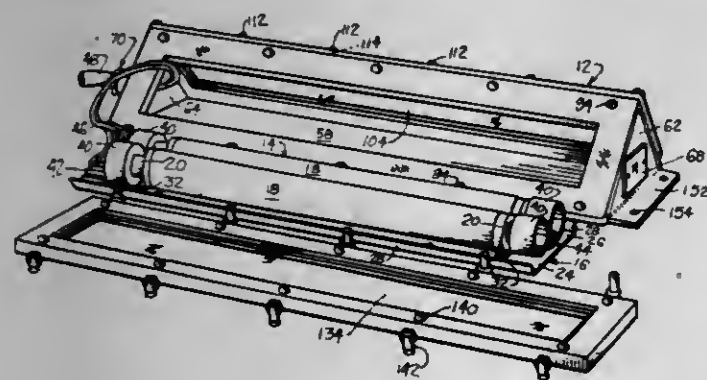
Howard P. McJunkin Jr., Charleston, and Larry W. Rowley, Sissonville, both of W. Va., assignors to McJunkin Corporation, Charleston, W. Va.

Filed Jul. 24, 1978, Ser. No. 927,735

Int. Cl.<sup>3</sup> F21S 3/00

U.S. Cl. 362-217

8 Claims



1. A triangular enclosure for a tubular light source, comprising:

- a unitary housing of generally isosceles right triangular transverse cross-sectional shape, thus having two sides which meet along a common border at generally a 90° angle, and each of which has a respective outer border where it is joined to the respective outer edge of a base plate; said housing further including two opposed generally triangular end walls securely located at opposite ends of said sides and base plate;
- gland fitting means being provided in one of said end walls for communicating an electrical cable through the housing to and from the inside of the housing;
- means defining an aperture through each said side;
- two light transmitting lenses;

means mounting a respective said lens covering each said aperture;

said mounting means in respect to one of said apertures removably mounting the lens to the respective side, in order to permit access to with the housing through the respective aperture

a light source mounting assembly which is insertable into said unitary housing and withdrawable therefrom, via said one aperture upon removal of said removably mounted lens, said light source mounting assembly comprising:

a tray having two axially spaced, transversally extending, upstanding webs secured thereon;

each web mounting at least one electrical socket provided in pairs of such sockets in axial alignment between the two webs;

terminal post means on the web;

electrical wiring from the respective electrical sockets to the terminal post means; and

means for removably securing the tray to the housing for use when the light source mounting assembly is positioned within the housing.

4,282,565

## SEALED, PREFOCUSED MOUNT FOR PLASTIC PAR LAMP

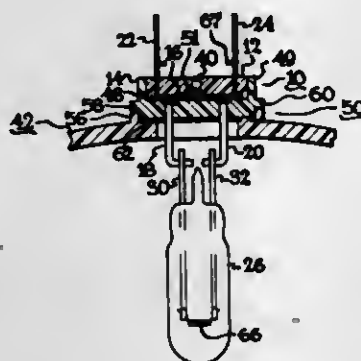
James M. Hanson, Euclid, and Irving Bradley, Novelty, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 16, 1979, Ser. No. 58,061

Int. Cl.<sup>3</sup> F21V 29/00

U.S. Cl. 362-267

8 Claims



1. In a prefocused light source mount for a reflector lamp to position the light source at the focus point of the reflector comprising at least two lead wires, at least two electrical connecting means joined one each to said lead wires, a plastic block having mating parts defining a cavity for receiving said joined lead wires, an elastomeric polymer in the cavity of said block, and a light source connected to the ends of said lead wires outside said block, the improved sealing means wherein the mating parts of said block comprise an inner container member defining said cavity and fitted into an outer housing member, said inner and outer members being sealed together after assembly to form a leak-proof enclosure, and with said cavity thereafter being filled with said elastomeric polymer to further provide a leak-proof seal around the lead wires.

4,282,566

## SHOCK MOUNTING BRACKET FOR LAMP BULB

Charles J. Newman, Madison, Ind., assignor to The Grote Manufacturing Company, Inc., Madison, Ind.

Filed Apr. 16, 1979, Ser. No. 30,001

Int. Cl.<sup>3</sup> F21V 21/00

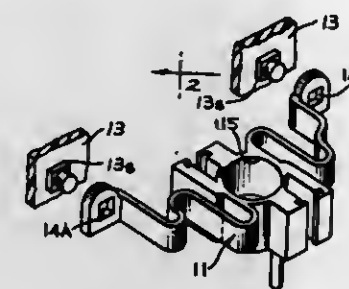
U.S. Cl. 362-369

10 Claims

1. A novel bracket for shock mounting a bulb within a housing for a lamp, comprising:

- a serpentine strip means for mounting said strip within the housing, said means for mounting comprising polygonal apertures provided at opposite ends of said strip and po-

lygonal fastener means extending through said aperture, said fastener means having a cross-sectional size and shape complementary to said apertures, said fastener means and said apertures constituting means for preventing pivoting



of said strip about said fastener means; and a bulb-receiving socket generally centrally located in said strip, with said socket having its radial center offset from a long central axis that extends between said apertures of said strip.

4,282,568

## ELECTRIC POWER CONVERTING APPARATUS

Samio Kobayashi, Yokohama, and Tetsushi Matsushita, Fuchu, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

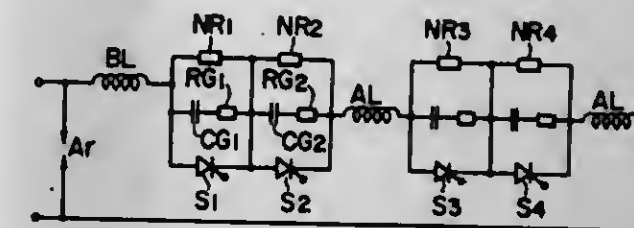
Continuation-in-part of Ser. No. 872,008, Jan. 24, 1978, abandoned. This application Apr. 18, 1980, Ser. No. 141,366

Claims priority, application Japan, Jan. 26, 1977, 52-7571

Int. Cl.<sup>3</sup> H02H 7/125

U.S. Cl. 363-54

7 Claims



1. An electric power converting apparatus comprising: a plurality of parallel connected branches, a plurality of linear reactors each connected in series with one of said branches, and a plurality of arrestors each connected in parallel with a series connection of a linear reactor and a branch, each branch including a plurality of serially connected semiconductor switching elements, a plurality of non-linear resistors each connected in parallel with one or more of said semiconductor switching elements, a voltage division element including a serially connected capacitor and resistor connected in parallel with each semiconductor switching element and anode reactors connected in series with said semiconductor switching elements, each of the non-linear resistors of a branch providing a limiting voltage, and the sum of the limiting voltages being lower than the protective level of an arrestor connected in parallel with a serially connected linear reactor and a branch.

4,282,567

## MODIFIED POWER TRANSFORMER FOR SELF-OSCILLATING CONVERTER REGULATOR POWER SUPPLY

William C. Voigt, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

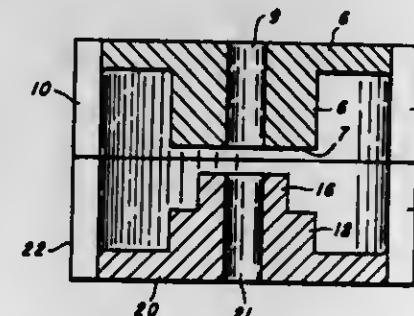
Continuation of Ser. No. 735,341, Oct. 26, 1976, abandoned.

This application Jun. 28, 1976, Ser. No. 920,106

Int. Cl.<sup>3</sup> H02P 13/18; H01F 17/04

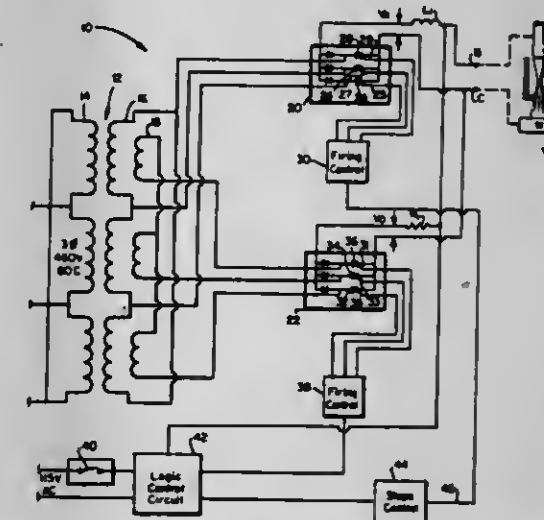
U.S. Cl. 363-15

3 Claims



1. In a self-oscillating switching regulator power supply of the type wherein an improved transformer alternately stores energy in a primary winding and then transfers energy into at least one secondary winding, the improved transformer having a ferromagnetic core comprising:

- (a) a first ferromagnetic mass having a first face comprising a mesa; and
- (b) a second ferromagnetic mass having a second face comprising a second mesa, the second face having a varied contour comprising a third mesa axially disposed on the second mesa, the first and second faces juxtaposed to provide an effective air gap therebetween, whereby a magnetic path passing through the core provides successive saturation varying inductance automatically in dependence on the current level in the windings and the contour of the second face, effectively limiting the frequency range.



1. A constant current SCR welding power supply in which current is supplied through SCR rectifier means to a welding load including an electrode to workpiece comprising: a transformer having a primary winding adapted to be connected to a source of AC line voltage and a first and second secondary winding;



first DC power supply output means for providing across said welding load a high open circuit voltage at relatively low current, said first DC power output means including a first bridge rectifier having first SCR circuit means connected to said first secondary winding and first firing means for energizing said first SCR circuit means during each cycle of applied line voltage;

second DC power output means for providing an arc working voltage across said output welding load, said second DC power output means including a second bridge rectifier having second SCR circuit means connected to said second secondary winding of said transformer and second firing means for energizing said second SCR circuit means in synchronism with each cycle of applied line voltage;

constant current control means for controlling said second firing means so as to maintain a constant welding current; detection means responsive to the presence of an arc across the welding load for disabling said second DC power supply output means until said arc is detected;

slope control means responsive to said detection means for applying a varying input signal to said constant current control means such that the current supplied by said second DC power output means is controllably increased from the detection of said arc at a predetermined rate until a predetermined level is reached; and

time delay means responsive to said detection means for disabling said first DC power supply output means after a predetermined time period following detection of an arc.

4,282,570

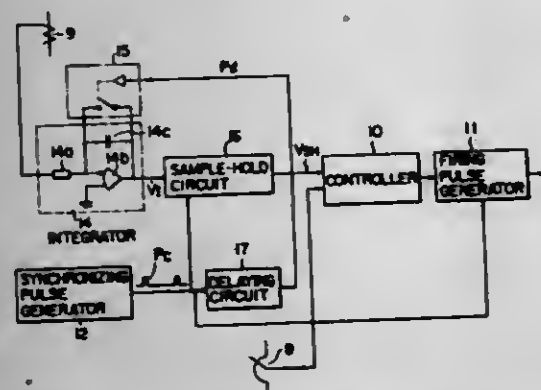
**METHOD AND APPARATUS FOR CONTROLLING AN OUTPUT CURRENT OF A CONTROLLED RECTIFIER**  
Ryoichi Kurosawa, Tokyo, and Toshiaki Kador, Inagi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Apr. 21, 1980, Ser. No. 142,458

Claims priority, application Japan, Apr. 26, 1979, 54-51620  
Int. Cl.<sup>3</sup> H02P 13/26

U.S. Cl. 363-87

11 Claims



1. A method for controlling an output current of a controlled rectifier connected to an AC power supply, by firing angle control of the controlled rectifier in accordance with the result of comparison of a value corresponding to the rectifier output current with a predetermined reference value, comprising the steps of:

detecting the rectifier output current,

calculating an average value of the rectifier output current over a period having a length equal to an integer multiple of the average period of the firing angle control,

comparing the average value of the rectifier output current with the reference value, and

producing a signal for firing the controlled rectifier at an angle determined in accordance with the result of the comparison.

# 4,282,571 ELECTRONIC DISTANCE MEASUREMENT AND DISPLAYING APPARATUS

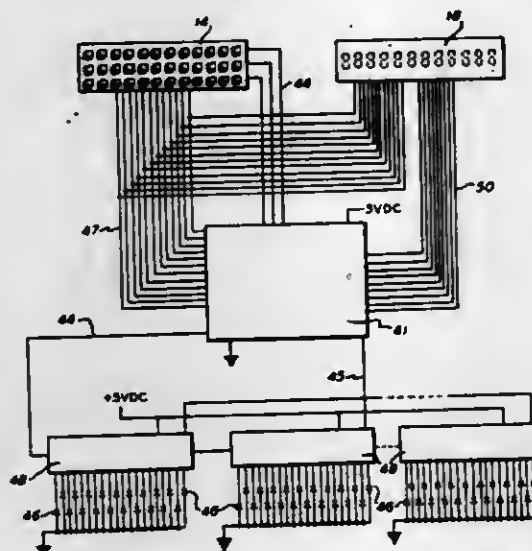
Joseph Giovannoli, 93 Wyckoff Ave., Waldwick, N.J. 07463, and Leon Charash, 240 Mt. Vernon Pl., Newark, N.J. 07106

Filed Jan. 22, 1979, Ser. No. 5,201

Int. Cl.<sup>3</sup> G01C 3/00; G01B 11/02

U.S. Cl. 364-562

7 Claims



1. An electronic measuring apparatus comprising:

(a) a plurality of light controlling elements arranged and spaced apart and forming a high density zone and a low density zone said high density zone and said low density zone being contiguous to one another with the high density zone having a greater number of light controlling elements than the low density zone per unit length;

(b) measuring means for energizing said light controlling elements in each of said zones respectively to define the beginning and end of a distance to be measured;

(c) measuring input means providing selectability of at least one of said light controlling elements contiguous to the endpoint of the distance to be measured; and

(d) electronic control means responsive to said measuring input means for controlling said measuring means and for generating electronic data which is a function of the distance to be measured.

4,282,572

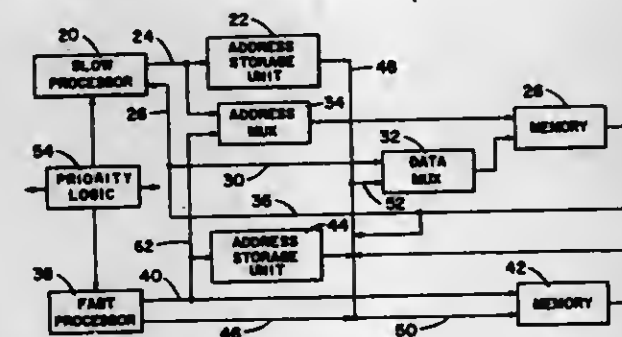
**MULTIPROCESSOR MEMORY ACCESS SYSTEM**  
Harry W. Moore, III, Watkins Glen, N.Y., and Steven M. Quack, Warsaw, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Jan. 15, 1979, Ser. No. 3,692

Int. Cl.<sup>3</sup> G06F 15/16

U.S. Cl. 364-200

8 Claims



1. A data processing system comprising:

a first memory unit;

a second memory unit;

a first processor having priority of access only to said first memory unit for writing data into said first memory unit;

a second processor having a higher operational speed than

said first processor for writing data simultaneously into said first and second memory unit;

priority selecting means for disabling said second processor from writing into said first memory unit in response to the occurrence of a write operation by said first processor after the start of a write operation by said second processor;

a first storage unit coupled to said second processor and operated in response to the occurrence of a write operation by said first processor to store the addresses of the data written into said second memory unit by said second processor, said storage unit outputting a control signal upon the storing of said addresses;

means coupled to said second processor for storing said control signal and operated by said second processor at the completion of the operation of said first processor to output said control signal to said second processor wherein said second processor is enabled to initiate a write operation in said first memory in response to receiving said control signal;

and switching means coupled between said first and second memory units and operated by said priority selecting means enabling said second processor to transfer the data written into the second memory unit by said second processor into said first memory unit and the data written into said first memory unit by said first processor into said second memory unit thereby balancing the data stored in said first and second memory unit.

4,282,573

**PROCESSOR INTERRUPT DEVICE FOR AN ELECTRONIC ENGINE CONTROL APPARATUS**  
Masumi Imai, Kotaro Hirasawa, both of Hitachi; Seijo Sada, Mito, and Yukio Kawamoto, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

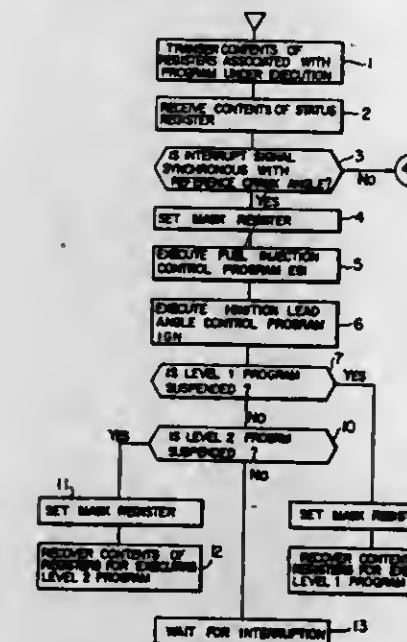
Filed Oct. 18, 1978, Ser. No. 952,533

Claims priority, application Japan, Oct. 19, 1977, 52-125974

Int. Cl.<sup>3</sup> G06F 15/20; G05B 15/02; F02P 5/04

U.S. Cl. 364-431

31 Claims



1. For use in a processor-controlled apparatus for controlling the operation of an internal combustion engine for which sensor means monitor operating conditions of the engine and produce output signals representative thereof and having actuator means for controlling respective energy conversion functions of the engine in response to control signals applied thereto; and having output control signal generating means, responsive to processor-generated signals for generating control signals to be applied to said actuator means;

a control apparatus comprising, in combination:

a status register for storing interrupt data to be coupled to said processor, in response to which said processor selec-

tively initiates the carrying out of prescribed data processing operations,

a mask register, adapted to be coupled to said processor for storing interrupt inhibiting data selectively coupled thereto from said processor,

means, coupled to said status register and to said mask register, for producing at least one interrupt signal in accordance with the data stored in said status and mask register; and

means, coupled to said status register, for selectively controlling the value of interrupt data stored by said status register and thereby the production of said, at least one interrupt signal.

4,282,574

**APPARATUS FOR INITIALIZING A VEHICLE CONTROLLING DIGITAL COMPUTER**  
Matuja Yoshida, Bissai, and Shukichi Hayashi, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

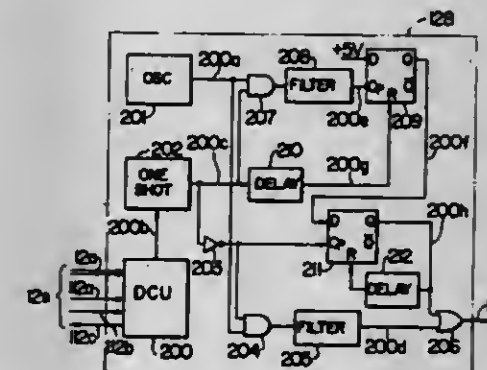
Filed Dec. 7, 1978, Ser. No. 967,498

Claims priority, application Japan, Jan. 19, 1978, 53-4871

Int. Cl.<sup>3</sup> H03K 5/13; G06F 15/20

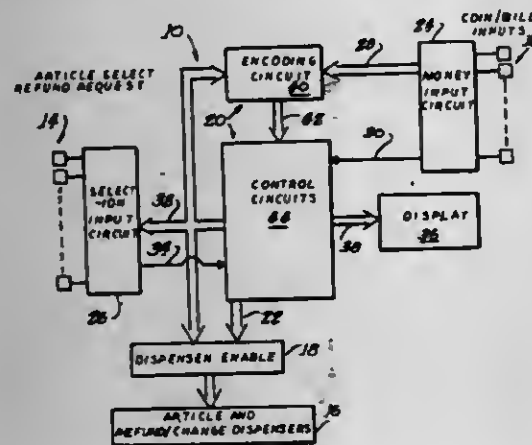
U.S. Cl. 364-431

4 Claims





tary unit for producing a monetary unit input signal corresponding to the acceptance of said monetary unit, selection input circuit means coupled to said article selecting means and to said refund requesting means and responsive both to selection of each article and to each refund request for producing a corresponding selection and refund request input signal indicating either that an article has been selected or a refund requested, encoding circuit means responsive respectively to said monetary input circuit means and to said selection input circuit means for producing respective encoded signals representing respectively the values of the monetary units accepted and the prices of articles selected, control circuit means responsive to



said monetary unit input signal, to said encoded signals and to said selection and request input signal for identifying each article selected or refund requested, for determining the amount of credit initially available or remaining for selection of a first article or further articles or for refund and for producing a plurality of control signals and circuit means interposed between said control circuit means and said dispensing means and responsive to said control signals for dispensing as many articles as selected and for dispensing requested refunds so long as said initial or remaining credit is sufficient, and wherein said control circuit means comprises a special purpose computer.

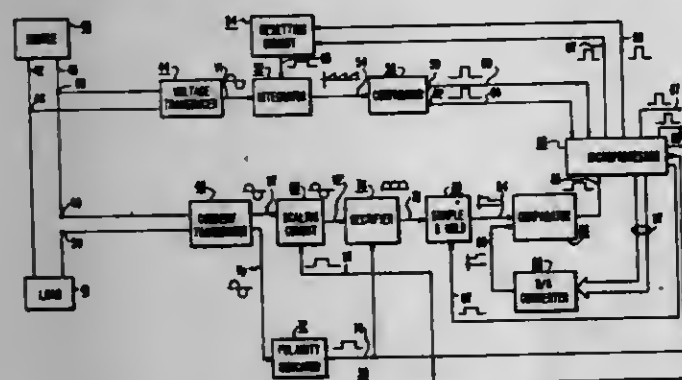
4,282,576

# INDICATOR DIAGRAM BASED AC ELECTRIC ENERGY METER

Robert T. Elms, Monroeville, and Leonard C. Vercellotti, Oakmont, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.  
Continuation of Ser. No. 41,446, May 22, 1979, abandoned. This application Feb. 8, 1980, Ser. No. 119,686  
Int. Cl.<sup>3</sup> G01R 21/06

U.S. Cl. 364-483

21 Claims



1. A meter apparatus computing the area of an indicator diagram for determining the value of an AC electric energy quantity defined by a voltage and a current component, comprising:

input means for producing a first input signal representative of said voltage component;

means for integrating said first input signal for producing an integral signal;  
means for comparing the instantaneous magnitude of said integral signal to the magnitude of fixed and predetermined reference potentials;  
processing means for producing, in response to said means for comparing, signals composed of variable width pulses;  
a constant current source for resetting, in response to said width of said pulses of said signals, said means for integrating;  
a second input means producing a second input signal representative of said current component;  
means for sampling, in response to said pulses of said signals, said second input signal for producing sample values, said sample values input to said processing means, said processing means accumulating successive sample values thereby producing totalized values representative of the time integral of the product of said current component times the time integral of said voltage component, said processing means further producing, in response to said totalized values, an output signal representative of said AC electric energy quantity.

4,282,577

# PROCESS AND APPARATUS FOR AUTOMATICALLY ADJUSTING ULTRASONIC TEST HEADS

Klaus Abend, AM Kirschberg 1, 6470 Badungen, and Raimund Lang, Friedensstrasse 29, 8755 Wasserlos, both of Fed. Rep. of Germany

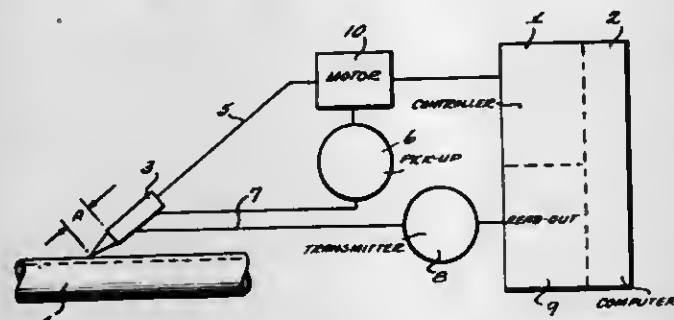
Filed Jun. 28, 1979, Ser. No. 52,786

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2828273

Int. Cl.<sup>3</sup> G01N 29/04; G06F 15/46

U.S. Cl. 364-507

5 Claims



1. An apparatus for regulating the angle of inclination and the focus distance of an ultrasonic test head in relation to a test piece of a device for the non-destructive testing of a work piece comprising in combination:  
a test head;  
a computer for executing a test program, said computer providing an instruction signal for controlling the angle of inclination and focus distance of the head;  
a step motor coupled to said computer and adapted to receive an instruction signal therefrom,  
a first absolutely coded angular transmitter connected to the test head via the stepping motor for indicating the actual position of the test head, and  
a second absolutely coded angular transmitter, mechanically independent from the first angular transmitter, for controlling the position of the test head.

4,282,578

# SYSTEM FOR LINEARIZING NON-LINEAR TRANSDUCER SIGNALS

F. Leland Payne, and Jeffrey L. Taylor, both of Tucson, Ariz., assignors to Burr-Brown Research Corporation, Tucson, Ariz.

Filed Mar. 17, 1980, Ser. No. 131,031

Int. Cl.<sup>3</sup> G06F 15/353

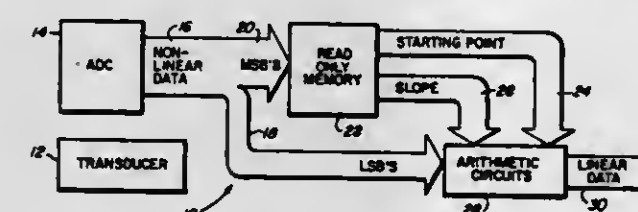
U.S. Cl. 364-573

10 Claims

1. A system for linearizing unlinearized data in the form of a

plurality of unlinearized data words, including a first unlinearized data word, to product linearized data in the form of a plurality of linearized data words, said first unlinearized data word including first and second groups of bits, said system comprising in combination:

a. memory means for storing a plurality of words, including a first stored word, said first stored word including first and second groups of bits, said memory means being responsive to said first group of bits of said first unlinearized



ized data word to effect accessing of said first stored word;  
b. multiplier means for multiplying said second group of bits of said first unlinearized data word by said second group of bits of said first stored word to produce a first product word; and  
c. summing means for algebraically summing a predetermined number of bits of said first product word with said first group of bits of said first stored word to produce a first one of said linearized data words.

4,282,579

# DISCRETE FOURIER TRANSFORM SYSTEM USING THE DUAL CHIRP-Z TRANSFORM

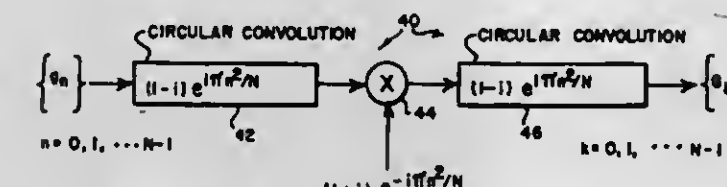
Jeffrey M. Speiser, and Harper J. Whitehouse, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 22, 1979, Ser. No. 86,967

Int. Cl.<sup>3</sup> G06F 15/332; G06G 7/12

U.S. Cl. 364-726

7 Claims



NOTE: THE EMBODIMENT MAY BE SIMPLIFIED BY NOTING THAT  
(a)  $(1-i)(1-i) = 2$  and (b)  $(p+iq)(1-i) = (p+q) + (q-p)i$

DUAL C2T of FIG. 2B, WITH THE VARIOUS PARAMETERS SPECIFIED.

1. A system for performing the discrete Fourier transform (DFT) of a discrete input signal  $g_n$ ,  $n=0, 1, \dots, N-1$ , where  $N$  is an even integer, using the dual chirp-Z transform, comprising:

an input means for circularly convolving the input signal  $g_n$  with a reference function  $(1-i) e^{i\pi n^2/N}$ ;  
means for generating the chirp signal  $(1+i) \times e^{-i\pi n^2/N}$ ; and  
means for multiplying the output signal from the input means for circularly convolving and the output signal from the means for generating the signal  $(1+i) \times e^{-i\pi n^2/N}$ ; and

an output means, whose input is connected to the output of the multiplying means, for circularly convolving its input signal with the reference function  $(1-i) e^{i\pi n^2/N}$ , the output signal of the output means for circularly convolving being the signal  $G_k$ ,  $k=0, 1, \dots, N-1$ ,  $G_k$  being proportional to the discrete Fourier transform of the input signal  $g_n$ .

1009 O.G.-13

4,282,580

# POCKET CALCULATOR WITH GRADE AVERAGING FUNCTION

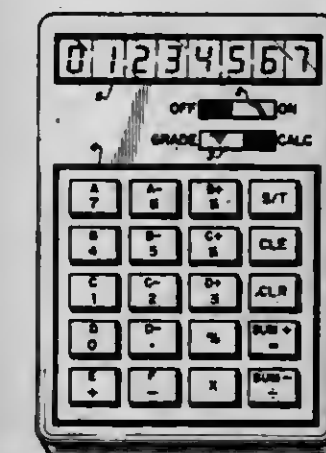
Susan McGuire, 8170 La Riviera Dr., Sacramento, Calif. 95825, and Michael Cannon, 1440 29th Ave., Oakland, Calif. 94601

Filed Sep. 10, 1979, Ser. No. 73,868

Int. Cl.<sup>3</sup> G06F 15/02, 15/20

U.S. Cl. 364-734

11 Claims



1. An electronic calculator comprising:  
a. a microprocessor for processing digital input information and generating digital output information, and for controlling the operation of the calculator;  
b. a keyboard having a plurality of grade keys, one key for each letter grade, all connected to said microprocessor;  
c. visual display means connected to said microprocessor for reading digital output information generated by said microprocessor, and  
d. a power supply for furnishing electrical power to operate said microprocessor, input means and visual display means,  
said microprocessor including registers for performing two separate totals of results,  
such that when a particular grade key is manually stroked, the particular grade of that key is both displayed on the visual display, and entered into each register for accumulation in each total result; and  
switch means connected to said visual display means for switching back and forth between the two results to be displayed on the display at any point in time.

4,282,581

# AUTOMATIC OVERFLOW/IMMINENT OVERFLOW DETECTOR

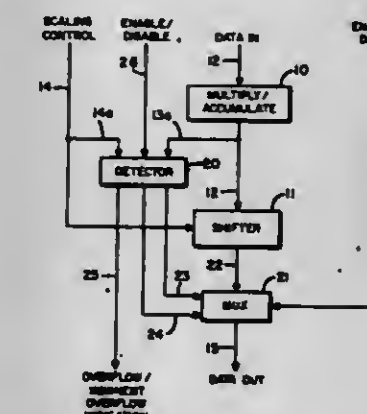
David W. Bondurant, Eden Prairie, and Richard J. Martin, Rosemont, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 15, 1979, Ser. No. 85,165

Int. Cl.<sup>3</sup> G06F 11/00

U.S. Cl. 364-737

4 Claims



1. In a digital processor, having an arithmetic unit, and



having means for supplying a scale factor for scaling a resultant produced by said arithmetic unit, an apparatus for post-scaling said resultant comprising:

- a shifter means responsively coupled to said arithmetic unit and said supplying means for shifting said resultant a number of radix places corresponding to said scale factor supplied by said supplying means;
- a detector means responsively coupled to said supplying means and said arithmetic unit for generating an overflow signal whenever said scale factor causes said shifter to shift said resultant a number of radix places causing an overflow condition; and
- means responsively coupled to said shifter means and said detector means for forcing the output of said shifter means to a predetermined value whenever said detector means detects an overflow condition.

4,282,582

# FLOATING POINT PROCESSOR ARCHITECTURE WHICH PERFORMS SUBTRACTION WITH REDUCED NUMBER OF GUARD BITS

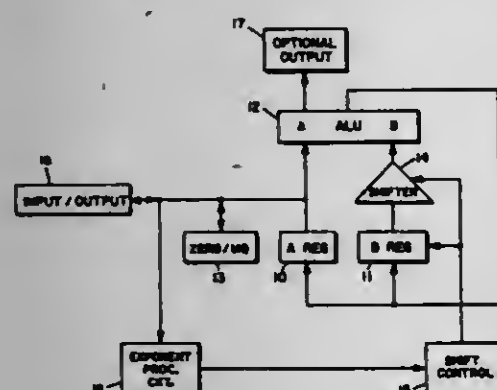
Wilson T. Wong, Anaheim, Calif., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 4, 1979, Ser. No. 45,218

Int. Cl.<sup>3</sup> G06F 7/50

U.S. Cl. 364-748

18 Claims



1. A floating point processor circuit for operating a floating point numbers each of which comprises an exponent and a number, comprising:

- first register means for storing a first number;
- second register means for storing a second number;
- third register means for storing a third number;
- arithmetic logic means, the outputs of said arithmetic logic means connected to the inputs of at least two of said first, second and third register means, the inputs of said arithmetic logic means connected to the outputs of each of said first, second and third register means such that said arithmetic logic means is operative for selectively receiving the respective number stored in any selected two of said first, second and third register means and performing an operation thereon to produce a resultant number and returning the resultant number of said operation to said first register means for storage therein as said first number, and
- shift control means connected to said first register means to selectively shift the resultant number stored in said first register means in accordance with the difference between the exponents associated with said first and second numbers.

## 4,282,583 MICROPROGRAMMABLE PROCESSOR CONTROL PRINTER SYSTEM

Sultan W. Khan, Westlake; John K. Ham, Simi, and Richard A. Strissel, Simi Valley, all of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

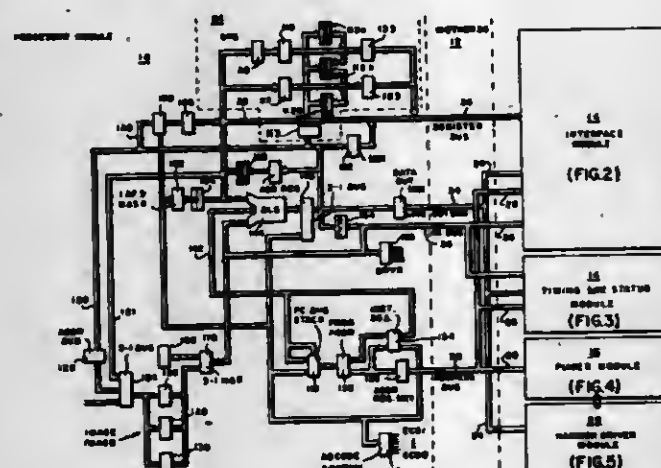
Division of Ser. No. 805,527, Jun. 10, 1977, Pat. No. 4,179,732.

This application May 7, 1979, Ser. No. 36,822

Int. Cl.<sup>3</sup> G06F 3/00, 3/12

U.S. Cl. 364-900

12 Claims



1. A printer of the type used to print data from an external data source onto a printing medium, said printer having stepper means for vertically advancing the medium, said printer including a processor controlled vertical format unit comprising:

- format memory means for receiving momentary input signals and storing information from the input signals establishing a first vertical format for printing onto said medium,
- vertical advance control means, connected to said stepper means and to said format memory means, for accessing the first vertical format information from said format memory one or more times and for causing said stepper means to advance said medium vertically by a distance established by said accessed information each time the information is accessed, and
- direct access means for causing new momentary input signals to be supplied to the format memory means to thereby load into said format memory means new information establishing a second vertical format.

4,282,584

## MINI-PROGRAMMABLE CONTROLLER

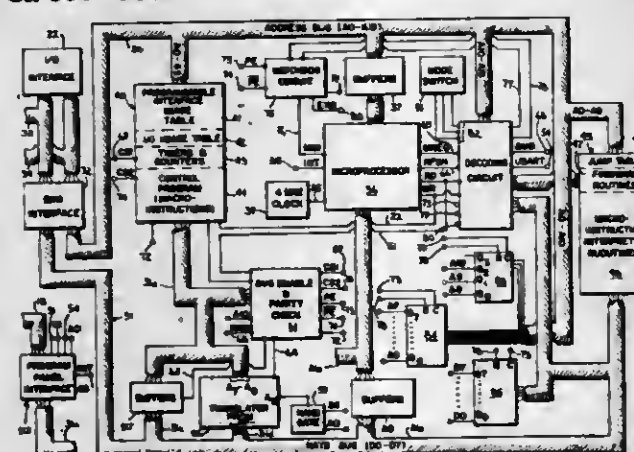
Ronald A. Brown, Willowick; Sung C. Hu, Lyndhurst, and Odo J. Strager, Chagrin Falls, all of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed May 30, 1979, Ser. No. 43,897

Int. Cl.<sup>3</sup> G05B 19/02; G06F 11/00

U.S. Cl. 364-900

17 Claims



1. An improved digital controller of the type having an I/O

interface for connection to a plurality of control devices, a first memory means that stores operands of status data, and means electrically connected between the first memory means and the I/O interface for coupling the status data therebetween to monitor and control the I/O devices, wherein the improvement comprises:

- second memory means for storing a group of bit-oriented program instructions, each instruction from the group including a group operation code, a selected bit pointer code, and the address of a selected operand;
- third memory means for storing machine instructions organized in a set of interpreter routines associated with the group of bit-oriented program instructions, each interpreter routine for performing an operation directed by the group operation code on a bit of operand data specified by the selected bit pointer code, the third memory means also storing machine instructions to couple each bit-oriented program instruction to its respective interpreter routine; and
- processor means coupled to the first, second and third memory means, and responsive to the machine coupling instructions in the third memory means, to read a bit-oriented program instruction from the second memory means and to execute a respective interpreter routine in the third memory means according to the bit pointer code of the program instruction, to read the selected operand from the first memory means and to manipulate a bit of data in the selected operand.

4,282,585

## SITE OCCUPANCY DETECTOR

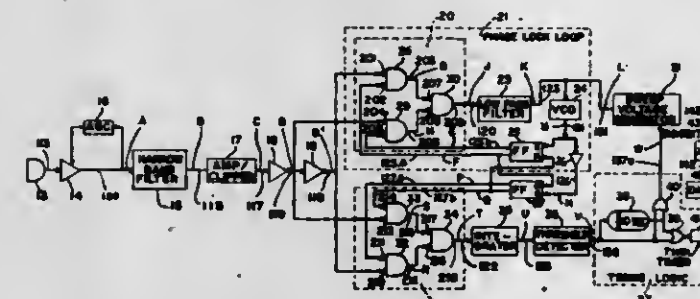
Steve F. Torok, Southampton; Vincent A. Formica, Holland, and George P. Lange, Churchville, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 25, 1973, Ser. No. 408,970

Int. Cl.<sup>3</sup> H04B 1/59

U.S. Cl. 367-2

7 Claims



1. A system for detecting and indicating an acoustic energy source comprising, in combination:

- detection means adapted to receive acoustic energy for providing a signal indicative thereof;
- first filter means operatively connected to said detection means for receiving the detection means signal and passing a signal within a predetermined frequency range indicative of the energy source;
- signal processing means operatively connected to receive the first filter means signal for acquiring and continuously tracking the filter means signal within the predetermined frequency range and producing a signal indicative of tracking;
- timing logic means connected to receive the signal processing means signal for selectively providing a first output signal indicative of the received signal for a first predetermined duration with interruptions not exceeding a second predetermined duration, and a second output signal indicative of an interruption in the received signal exceeding the second predetermined duration within the first predetermined duration, wherein said timing logic means includes,
- delay means connected to receive the signal processing

- means signal for providing a signal indicative thereof after the second predetermined duration;
- first and second gating means each having a first input connected to receive the delay means signal and a second input connected to receive the signal processing means signal, each providing a respective output signal when either of the input signals are present, the second gating means signal being the timing logic means second output signal; and
- timing means connected to receive the first gating means signal for providing an output signal after the first predetermined duration, the timing means output signal being the timing logic means first output signal.

4,282,586

## DOPPLER LOG

Horst Helms, Bremen, Fed. Rep. Germany, assignor to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

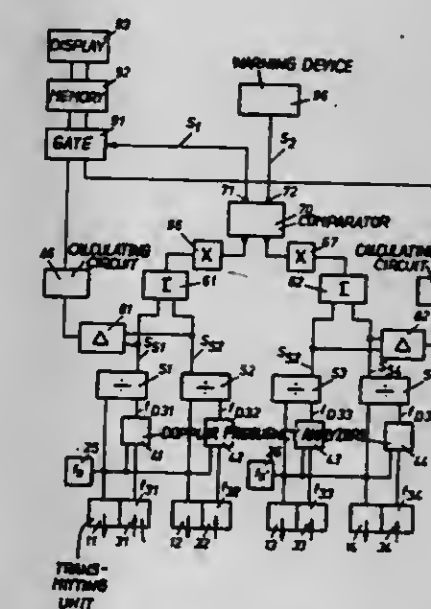
Filed Dec. 28, 1979, Ser. No. 108,167

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1979, 2901293

Int. Cl.<sup>3</sup> G01S 15/88

U.S. Cl. 367-13

3 Claims



1. In a Doppler log for a vehicle equipped with transmitting and receiving units associated with two mutually transverse measuring axes which are parallel to a plane defined by the longitudinal and transverse axes of the vehicle, for the emission of directed beams of sound energy in directions which extend along the measuring axes, each beam being inclined with respect to the plane by a known emission angle such that all of the beams are symmetrical to the normal to the measuring axes, the transmitting units operating at selected, known transmitting frequencies, and each receiving unit being connected for receiving the reflected components of the sound energy from a respective emission direction, the log further including a Doppler frequency analyzer connected to the output of each receiving unit for producing a representation of the Doppler frequency component of the sound signal received by that receiving unit, and a ratio former connected to the output of each analyzer and the associated transmitting and receiving unit for producing an output signal representing the quotient of the respective Doppler frequency with the corresponding transmitting frequency, the improvement comprising: summing means connected to said units for forming representations of the sum of the ratio former output signals associated with each measuring axis; multiplying means connected to said summing means for multiplying each sum representation by a representation of the cosecant of the associated emission angle; and testing means connected to said multiplying means for comparing the multiplication results and emitting a signal



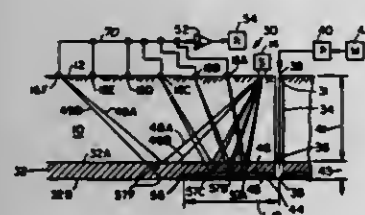
indicating proper Doppler log operation whenever such multiplication results are substantially identical.

**4,282,587**  
**METHOD FOR MONITORING THE RECOVERY OF MINERALS FROM SHALLOW GEOLOGICAL FORMATIONS**

Daniel Silverman, 5969 S. Birmingham St., Tulsa, Okla. 74105  
 Filed May 21, 1979, Ser. No. 41,061  
 Int. Cl.<sup>3</sup> G01V 1/28

U.S. Cl. 367—37

26 Claims



1. In a mineral recovery operation including a shallow substantially horizontal geological formation containing said minerals a first borehole drilled to said formation, a substantially horizontal fracture in said formation resulting from the prior application of pressurized fracture fluid to said formation through said first borehole, a second borehole drilled to said formation at a selected radius from said first borehole less than the radius of the outer perimeter of said fracture, said mineral adapted to be removed from said formation by flowing a selected recovery fluid downwardly through said first borehole, outwardly through said fracture to said second borehole and upwardly to the surface; where said minerals are recovered; the method of mapping at a plurality of points at different radii, the shape and size of the zone in said formation, surrounding said first borehole, from which said mineral has been removed after said recovery fluid has been flowing for a first selected time interval T1, comprising the steps of:

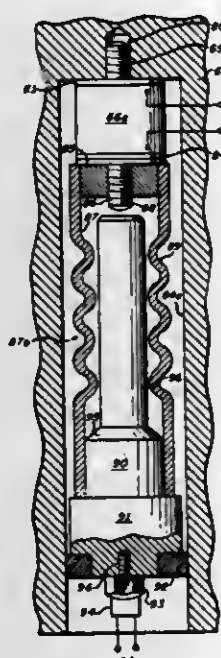
- providing a first source of seismic waves at or near the surface at at least one point above said fracture;
- positioning at or near the surface of the earth a plurality of seismic sensors, such as geophones, at selected known positions, said sensors adapted to receive the upward reflection of downwardly directed seismic waves generated by said source, and to convert them to electrical signals;
- pressurizing said previously prepared fracture with a selected pressurizing fluid to a condition P, where the overburden is lifted and the roof of said fracture is out of contact with the base of said fracture, and at least a thin layer of said pressurizing fluid fills said fracture and said cavity;
- operating said first source and receiving said seismic waves reflected from the roof of said fracture and said zone and recording a first electrical signal from each of said sensors; and
- comparing said first electrical signal from at least two of said sensors.

**4,282,588**  
**RESONANT ACOUSTIC TRANSDUCER AND DRIVER SYSTEM FOR A WELL DRILLING STRING COMMUNICATION SYSTEM**  
 Gary J. Chanson, Weston, and Alexander M. Nicolson, Concord, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 114,040  
 Int. Cl.<sup>3</sup> G01V 1/40

U.S. Cl. 367—82

8 Claims



1. A system for the acoustic propagation of a data bearing carrier signal along a bore-hole drilling string including coupled hollow pipe sections, at least one of said hollow pipe sections having a first axis and a closed cavity in the wall thereof, said closed cavity having a second axis parallel to and offset from said first axis, said system comprising:

- a piezoelectric transmitter adapted for compression and elongation along said second axis when subjected to an electric field parallel to said second axis, said piezoelectric transmitter being affixed to a surface of said closed cavity,
- a cylindrical spring affixed to said piezoelectric transmitter opposite said surface,
- an elongate mass having an axis collinear with said second axis and affixed to said cylindrical spring opposite said piezoelectric transmitter,
- an accelerometer fixedly coupled to said elongate mass, and
- an amplifier responsive to said accelerometer for driving said piezoelectric transmitter.

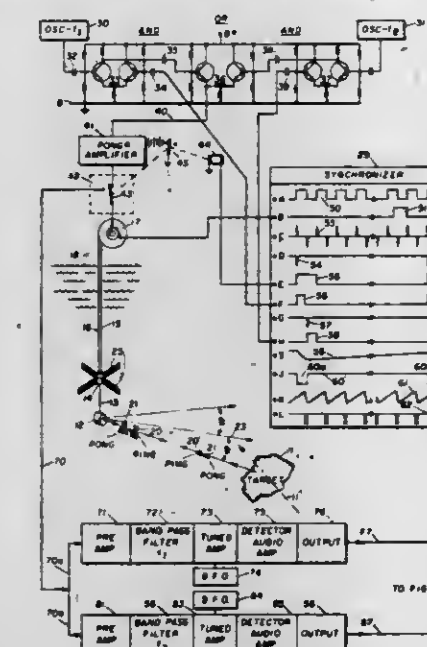
**4,282,589**  
**CORRELATION RANGING**  
 Samuel G. Evetts, Dallas; John D. Lawson, Carrollton, and William D. Penn, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.  
 Filed Nov. 16, 1961, Ser. No. 153,780  
 Int. Cl.<sup>3</sup> G01S 15/58

U.S. Cl. 367—90

6 Claims

1. In sonic ranging the method which comprises transmitting a first sonic pulse having a predominant frequency in the upper sonic range, transmitting a second sonic pulse after a time delay substantially less than the length of said first sonic pulse where said second sonic pulse has a frequency in the upper sonic range but substantially different than the frequency of said first sonic pulse, separately sensing the return echoes of the sonic pulses in two frequency bands to produce a pair of received signals, a first of which includes components representative of echoes of said first sonic pulse and the second of which includes components representative of echoes of said second sonic pulse with the frequencies of the echo components modified relative to the frequencies of said sonic pulses in

dependence upon the relative velocities between the point of transmission thereof and the object producing echoes, separately recording said pair of received signals, reproducing the recorded signals to generate a pair of high frequency signals respectively representative of the first and second received signals with the first high frequency signal shifted in time relative to the second high frequency signal by an amount representative of said time delay to bring like components thereof into time coincidence, generating a timing function which varies monotonically from a predetermined level occurring in known time relative to the instant of transmission of the second



of said sonic pulses, generating a pair of reference signals which vary in frequency in dependence upon said timing function, separately mixing said reference signals and the first and second of said high frequency signals to produce side band components, filtering said side band components to generate a pair of output signals of narrow band width centered at frequencies respectively representative of the frequencies of said sonic pulses, separately detecting said output signals to produce a pair of demodulated signals, and from the product of said demodulated signals generating a signal appearing along a time scale dependent upon said timing function.

**4,282,590**  
**ADJUSTABLE POSITION SONAR TRANSDUCER DEPTH FINDER**

Kenneth G. Wingate, 1027 Algonquin Trail, Frankfort, Ky. 40601

Filed Aug. 13, 1979, Ser. No. 66,473

Int. Cl.<sup>3</sup> H04R 1/44

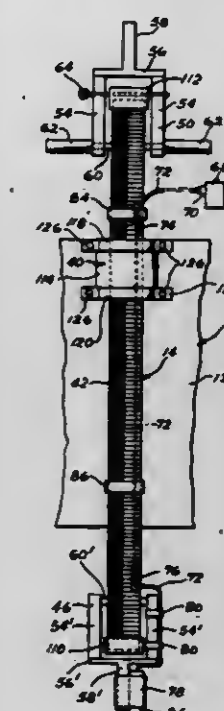
U.S. Cl. 367—104

9 Claims

1. An electronic depth finder apparatus for use in a fluid medium including a combined impulse control means and read-out as well as a remote cooperating transducer that is joined by connecting means therebetween, said apparatus comprising:

- fixed mounting means for assembling the apparatus to a supporting structure;
- a vertical shaft adjustably mounted to the said fixed mounting means both vertically and rotationally;
- a first movable support lever pivoted to the bottom portion of the said shaft and capable of movement in a vertical plane through a wide angle, whereby a transducer may be mounted solely to this first support lever for transmitting and receiving controlled sound wave energy at a variety of directional angles with respect to the shaft as well as at a variety of vertical elevations relative to the said fixed mounting means;
- a second movable operating lever pivoted to the top portion of the said shaft and capable of movement in a vertical plane through a wide angle;
- the said shaft including motion transmitting means inter-

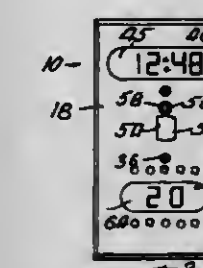
nally of the shaft for joining the top and bottom levers so that the two levers generally move in unison; f. whereby the transducer is capable of at least two out of a possible three planes of movement; first, angular movement in a vertical plane along with the movement of the



bottom support lever relative to the shaft; second, unlimited rotational movement in a horizontal plane about the longitudinal axis of the shaft as the shaft is turned; and third, vertical elevational movement due to the vertical movement of the shaft relative to the said fixed mounting means.

**4,282,591**  
**LIGHT CONTROL AND INDICATING DEVICE**  
 Ilio A. Andreuccetti, 216 E. Grantley Ave., Elmhurst, Ill. 60126  
 Filed Mar. 22, 1979, Ser. No. 22,695  
 Int. Cl.<sup>3</sup> G04B 47/06; G01K 13/00  
 U.S. Cl. 368—10

3 Claims



1. A unitary and self-contained device, for mounting in a cavity in the wall of a subject room, the wall having a surface exposed to the room and the cavity opening through that wall surface to the room substantially through its own full transverse area, and the wall having an interior structure defining the surface of the cavity, and the cavity being dimensioned and constructed for mounting therein of a conventional light switch, said device comprising, a main component and a cover plate, the main component including, (a) a frame forming a box extending into and positioned in the cavity and including lugs fitted to the wall adjacent said exposed surface and secured to the wall, (b) a plurality of sub-components mounted in said frame, the sub-components including, (1) a light switch having a manually actuating element



disposed closely adjacent the plane of said exposed surface of the wall,

(2) a block disposing the cavity, composed of heat insulating material continuously on all sides except an open front side, forming a cell opening through said open front side, the block being positioned with its open front side closely adjacent the plane of said exposed surface of the wall, a thermometer in the cell with a sensing element extending into and disposed entirely in the cell and a visual indicating element disposed closely adjacent the plane of said surface of the wall, the cover plate having apertures communicating with the cell at vertically spaced positions respectively adjacent the top and bottom of the cell to enable flow of air from the room through the cell in sensing engagement with the sensing element and to facilitate the free flow of such air,

the cover plate being mounted to said frame over the cavity and secured to the frame, and being flat and essentially of planar form and lying close to said surface of the wall and blending into that surface, the cover plate having openings receiving the actuating element of the light switch, and the indicating element of the thermometer, and those elements thereby being exposed through those openings, and the elements substantially filling those openings and terminating closely adjacent the outer surface of the cover plate, the cover plate, except for said apertures, otherwise completely covering the cavity.

4,282,592

## INDICATING MEMBER ADVANCING MECHANISM

Mamoru Miyasaka, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyn, Japan

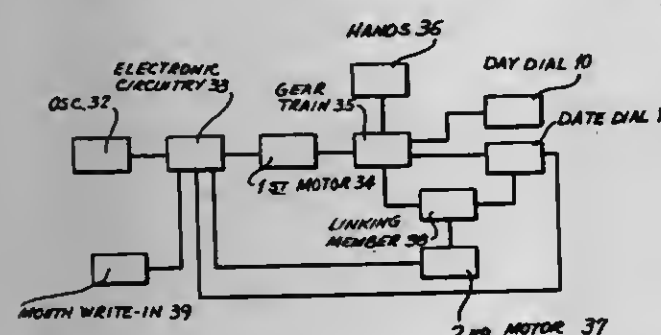
Filed Mar. 30, 1979, Ser. No. 25,687

Claims priority, application Japan, Mar. 30, 1978, 53-37111

Int. Cl.<sup>3</sup> G04B 19/24, 19/20, 27/00, 19/00

U.S. Cl. 368-37

24 Claims



1. An electronic analog timepiece comprising: electronic circuitry including means for providing timekeeping signals; analog display means for visibly indicating timekeeping functions; electro-mechanical means operating in response to said timekeeping signals to advance said analog display means, whereby visible indicia of said timekeeping functions are changed at regular prescribed intervals, said electro-mechanical means including first motor-means for advancing said display means at said regular intervals; means for enabling the change of at least one of said timekeeping functions at an irregular interval, said means for enabling including second motor means and linking means, means for actuation of said second motor means, actuation of said second motor means causing said linking means to engage with said electro-mechanical means, said engagement enabling the change of said at least one timekeeping function, said first motor means changing said at least one timekeeping function whenever said linking means are engaged.

# 4,282,593 ELECTRONIC CLOCK CIRCUITRY FOR A CLOCK HAVING CHIMES OR AN ALARM

Hans Flaig, Schramberg; Jurgen Allgaier, Lauterback, and Friedrich Assmus, Schramberg, all of Fed. Rep. of Germany, assignors to Gebrüder Junghans, GmbH, Schramberg, Fed. Rep. of Germany

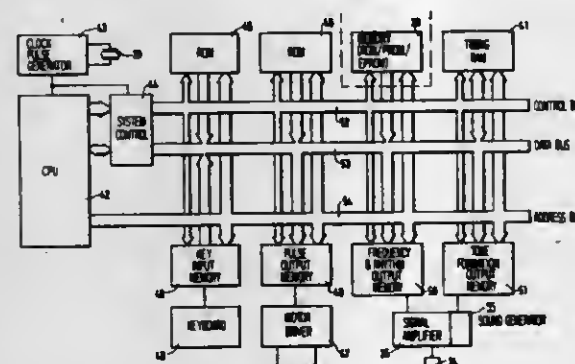
Filed May 15, 1979, Ser. No. 39,135

Claims priority, application Fed. Rep. of Germany, May 18, 1978, 2821660

Int. Cl.<sup>3</sup> G04B 21/08; G04C 21/14

U.S. Cl. 368-63

9 Claims



1. An electronic clock with chimes or an alarm, comprising: a clockwork mechanism for providing an indication of the time of day; a memory unit having the sequences of tone frequencies of a plurality of different melodies stored in digital form; manually actuatable means for selecting one of said stored melodies and the time of day the selected melody is to be played; program control means for controlling the operation of said clockwork mechanism and for reading the information relating to the sequence of tone frequencies of the selected melody from said memory unit at the selected time of day; and an electro-acoustic transducer for transforming the information read from said memory unit into an audible melody.

4,282,594

## ELECTRONIC TIMEPIECE

Singo Ichikawa, Tanashi, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

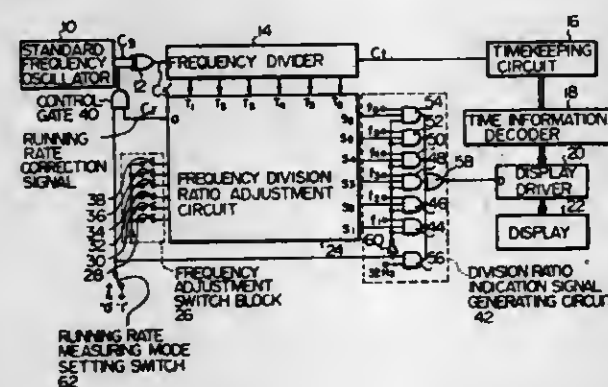
Filed Dec. 3, 1979, Ser. No. 99,881

Claims priority, application Japan, Dec. 27, 1978, 53-160064; Jan. 8, 1979, 54-1163

Int. Cl.<sup>3</sup> G04C 19/00; G04B 17/12

U.S. Cl. 368-82

7 Claims



1. An electronic timepiece having a source of a standard frequency signal, a frequency divider circuit for dividing the frequency of said standard frequency signal to provide a unit time signal, timekeeping means responsive to said unit time signal for producing time information, display means for displaying said time information, and means for controlling the effective frequency division ratio of said frequency divider by

aperiodic frequency algebraical addition of a running rate correction signal to said standard frequency signal, the improvement comprising:

mode setting means for selectively setting said electronic timepiece in a normal timekeeping mode in which said aperiodic frequency algebraical addition is performed and in a running rate measuring mode in which said aperiodic frequency algebraical addition is inhibited; and circuit means for generating an electrical signal in said running rate measuring mode indicative of said effective frequency division ratio of the frequency divider in said normal timekeeping mode.

4,282,596

## ALARM CLOCK CASE SHUT-OFF DEVICE

Roland Siefert, Bad Durrheim, and Roland Santer, Schwenningen, both of Fed. Rep. of Germany, assignors to Kienzle Uhrenfabriken GmbH, Schwenningen, Fed. Rep. of Germany

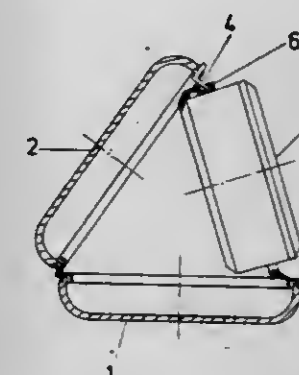
Filed Feb. 4, 1980, Ser. No. 117,995

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1979, 7903198[U]

Int. Cl.<sup>3</sup> G04B 23/00

U.S. Cl. 368-262

3 Claims



1. A switching off apparatus for an alarm clock including a casing having a rear wall, comprising a slide which projects beyond the upper contour of the clock in one position in which the alarm is operated, a switching off mechanism associated with the slide and operated when pressure is exerted on the slide, a guide recess in the slide for engaging a portion of said rear wall, a part of the inner wall of the guide recess forming a resilient hook, a locking member on said portion of the rear wall, the hook and locking member cooperating to define said one and a second position of said slide.

4,282,595

## METHOD FOR DIGITAL FREQUENCY TRIMMING AN OSCILLATOR IN AN ELECTRONIC TIMEPIECE

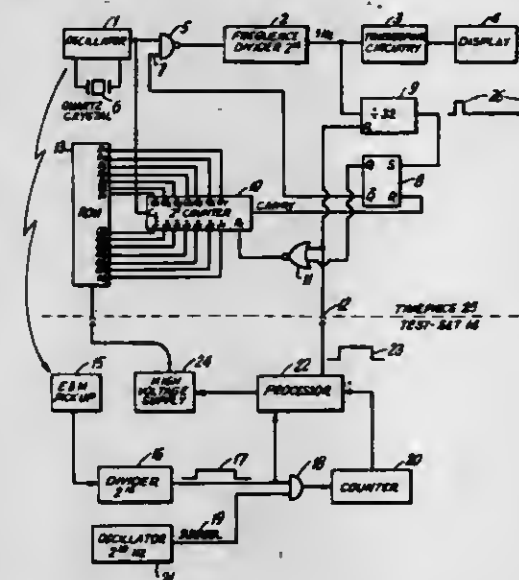
John Lowdenslager, Norwalk, and Norman C. Zatsky, Southbury, both of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Dec. 21, 1979, Ser. No. 106,173

Int. Cl.<sup>3</sup> G04B 17/12, 17/00

U.S. Cl. 368-200

5 Claims



1. A method for trimming the frequency of a piezoelectric crystal oscillator in a timepiece having a count-down circuit coupled to the oscillator to receive an input signal therefrom and provide a lower frequency output signal, time indicating means coupled to the count-down circuit to be activated thereby, the piezoelectric crystal oscillator having a nominal frequency above a desired frequency, and an inhibit circuit means to periodically start blocking of oscillator pulses and preset a counter to a first count number stored in a nonvolatile memory circuit, said counter being responsive to the output of the oscillator for increasing the count preset therein to a second predetermined count, said inhibit circuit means stopping the blocking of oscillator pulses in response to the second predetermined count of said counter,

wherein said first count number is determined and written into said nonvolatile memory circuit, including the steps of:

detecting signals externally indicating untrimmed oscillator frequency generated by the untrimmed oscillator; determining the first count number such that the difference count between the first and second count equals the frequency difference between the untrimmed oscillator and the desired frequency; permanently writing the first count into said memory circuit.

4,282,597

## METAL-COATED PLASTIC HOUSING FOR ELECTRONIC COMPONENTS AND THE METHOD OF MAKING SAME

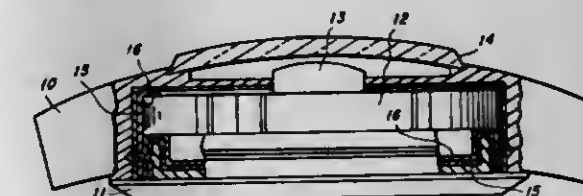
David L. Yenawine, Richardson; Richard K. Lowder, Carrollton; Delwin L. Power, Howe, and Tommy L. Summers, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 28, 1977, Ser. No. 855,513

Int. Cl.<sup>3</sup> G04B 37/00; G02G 13/08

U.S. Cl. 368-280

12 Claims



1. A plastic container for an electronic component, said container including an interior floor surface and at least one interior wall surface upstanding from said floor surface, each of said interior floor surface and said interior wall surface having a continuous metallic coating thereon comprising a relatively thick layer of a first conductive metal next adjacent to said surface, said relatively thick layer of conductive metal grading into a relatively thin overlayer of a second corrosion resistant metal.



4,282,598

## VIDEO DISC READ BACK SCANNER

James E. Elliott, San Pedro, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

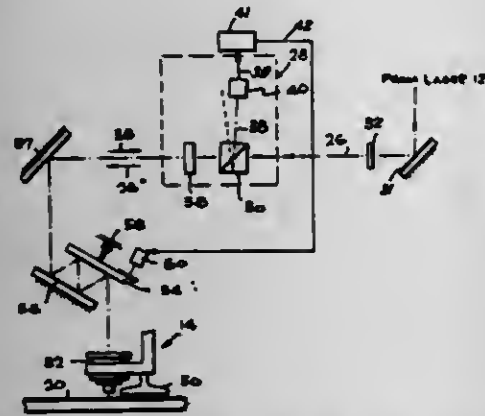
Continuation-in-part of Ser. No. 812,180, Feb. 1, 1977, abandoned, which is a continuation of Ser. No. 662,238, Feb. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 465,823, May 1, 1974, Pat. No. 3,944,727, which is a division of Ser. No. 299,893, Oct. 24, 1972, Pat. No. 3,829,622. This application Jul. 14, 1978, Ser. No. 924,538

The portion of the term of this patent subsequent to Mar. 16, 1993, has been disclaimed.

Int. Cl.<sup>3</sup> H04N 5/76; G11B 7/00

U.S. Cl. 369-44

7 Claims



1. A method of controlling a radiant beam in an apparatus for optically reading information from a plurality of substantially concentric information tracks formed in a rotating disc-shaped information storage medium, said apparatus including radiant beam means for producing a source beam of radiant energy and transducer means for receiving a modulated beam of radiant energy produced by impinging said source beam at a selected location upon said storage medium, said method comprising the steps of:

steering said source beam in a radial direction relative to said storage medium to said selected location for following said information tracks;

monitoring the radial location of said source beam relative to said storage medium, and providing a control signal indicative of radial deviations in the location of said source beam from a precisely defined path;

shifting the phase of said control signal by an amount equal to one-quarter revolution of said storage medium; and moving said source beam in a tangential direction relative to said storage medium to said selected location under the control of said phase-shifted control signal.

4,282,599

## PHONOGRAPHIC RECORD SPINDLE ADAPTOR

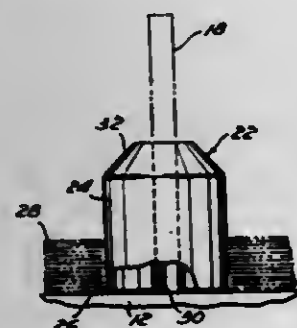
Antonio M. Lopez, 420 S. Jordan, Ventura, Calif. 93003

Filed Dec. 31, 1979, Ser. No. 108,354

Int. Cl.<sup>3</sup> G11B 17/04

U.S. Cl. 369-262

4 Claims



1. In combination with a phonograph having a record centering spindle, said spindle being of a small diameter to accommodate a small diameter center opening within a first type of record, an adaptor to be located on said spindle, said adaptor to

be located within the large diameter center opening of a second type of record, a stacked plurality of the second type of records to be located about said adaptor, said adaptor comprising:

an elongated housing having an exterior cylindrical surface terminating in a lower end and an upper end, said lower end including a thin protruding flange which is adapted to be located against the phonograph record turntable and in continuous contact with a said second type of record, said upper end including guide means to guidingly locate said second type of record about said housing; and a centrally located cylindrical opening formed within said housing, said opening being constant in diameter and extending from said upper end to said lower end, said opening to closely conform in size to said spindle, said opening having a side wall, said side wall being parallel to said cylindrical exterior surface of said housing, whereby a stack of records on said adaptor and located on said spindle may be physically removed in mass by physically grabbing said upper end and removing said adaptor and the stack of records from said spindle.

4,282,600

## METHOD FOR SYNCHRONIZING SENDING AND RECEIVING DEVICES

Josef Zemanek, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

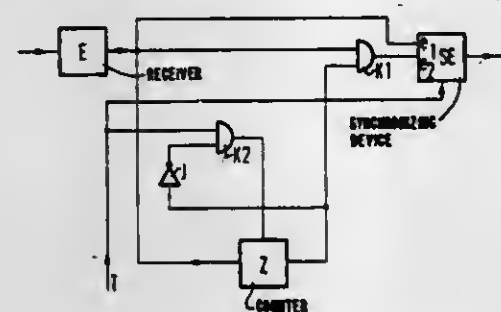
Filed Sep. 10, 1979, Ser. No. 73,900

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842371

Int. Cl.<sup>3</sup> H04J 3/06; H04L 7/00

U.S. Cl. 370-100

3 Claims



1. A method for synchronizing sending and receiving devices of a PCM telecommunication network, employing synchronizing words contained within spaced message signal blocks, comprising the steps of:

counting a plurality of clock pulses produced at the receiving unit with a counter,

resetting the counter to its initial position upon receipt of each bit corresponding to the first bit of a synchronizing word,

effecting a synchronization upon receipt of the first such bit following the counter reaching its end count, and

preventing further counting of the counter when it reaches its end count, until a bit is received corresponding to the first bit of a synchronizing word.

4,282,601

## THREE LEVEL DATA TRANSMISSION SYSTEM HAVING MEANS FOR SEEKING A CONSTANT AVERAGE VALUE FOR THE TRANSMITTED SIGNALS

Laurence P. Flora, Covina, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 16,976, Mar. 2, 1979, abandoned. This application Jun. 5, 1979, Ser. No. 45,804

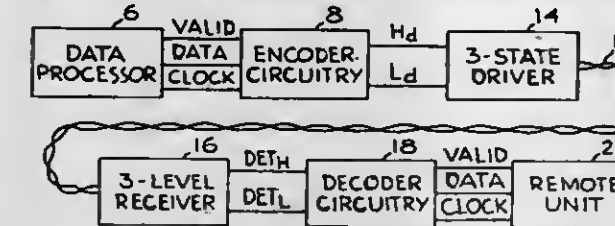
Int. Cl.<sup>3</sup> H04L 25/40

U.S. Cl. 375-20

8 Claims

1. In a digital data transmission system, the improvement comprising:

encoding means for encoding an input digital signal having a predetermined number of possible values into a plural-level digital transmission signal, said encoding means being operable to encode said input digital signal in a manner so that at least one value of said input digital signal is selectively transmittable as either a first transmitted digital signal having an average level of one polarity relative to a predetermined intermediate average DC level



or as a second transmitted digital signal having an average level of an opposite polarity relative to said intermediate DC level;

said encoding means including control means for controlling selection of said first and second transmitted digital signals in response to the average level of previously encoded signals so as to continually seek maintenance of said intermediate average level for the transmitted digital signal.

4,282,602

## CHANNEL SIGNAL DETECTION CIRCUIT FOR SCANNING RECEIVERS

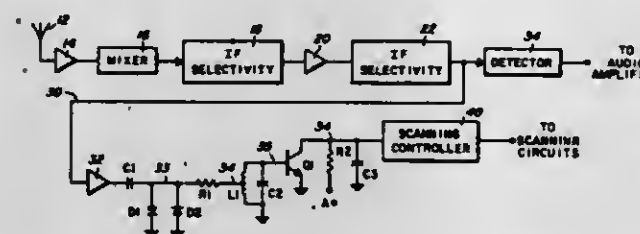
Daniel R. Schroeder, Glen Ellyn, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 20, 1979, Ser. No. 59,408

Int. Cl.<sup>3</sup> H03J 7/18

U.S. Cl. 455-169

5 Claims



1. An on channel signal detection system for use in scanning receivers for preventing a strong adjacent channel or station from causing a desired channel or station from being skipped during scanning comprising:

scanning control means for controlling scanning of the receiver over a selected frequency range including a plurality of channels or stations;

amplifying means for receiving IF signals of normally varying amplitude, said amplifying means providing amplification to said variable amplitude IF signals at an output of said amplifying means;

signal limiting means coupled to the output of said amplifying means to produce a constant voltage level output signal in response to said amplified and variable amplitude IF signals when said signals are above a predetermined magnitude;

impedance isolation means coupled to an output of said signal limiting means;

tank circuit means coupled to said impedance isolation means, said tank circuit means having sufficiently high Q to provide attenuation of any signals which vary from a predetermined frequency associated with said tank circuit means, and at which predetermined frequency scanning is to be stopped; and

switching means coupled to the output of said tank circuit means and to said scanning control means, the switching means switching state in response to the presence of a voltage at the predetermined frequency from the output of said tank circuit means to deactivate said scanning control

means only when the desired channel or station associated with the predetermined frequency is received.

4,282,603

## SYNTHESIZER TUNER

Tetsuo Sato, Fussa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

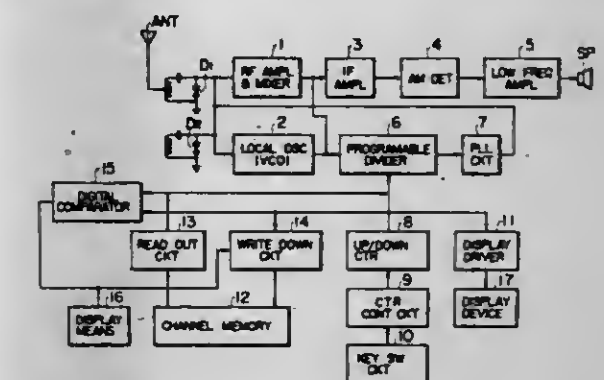
Filed Jul. 12, 1979, Ser. No. 56,851

Claims priority, application Japan, Jul. 24, 1978, 53-89456

Int. Cl.<sup>3</sup> H04B 1/26; H03L 7/18

U.S. Cl. 455-183

2 Claims



1. A synthesizer tuner, comprising:

a radio-frequency amplifier and mixer;

A PLL circuit consisting of a voltage controlled oscillator which works as a local oscillating circuit, a programmable divider the input of which is supplied with the oscillating output signal of said voltage controlled oscillator, a reference frequency oscillator, a phase detector a first and the second input of which are supplied with an output signal of said programmable divider and the output signal of said reference frequency oscillator and a low-pass filter connected between an output of said phase detector and said voltage controlled oscillator;

an intermediate-frequency amplifier the input of which is supplied with the output signal of said mixer;

a detector the input of which is supplied with the output signal of said intermediate-frequency amplifier;

a digital circuit for generating a binary information which controls the frequency-dividing ratio of said programmable divider;

a memory which stores a plurality of binary informations generated from said digital circuit;

a read-out circuit which sequentially reads out whole binary informations already stored in said memory in response to a write-down command signal;

a digital comparator circuit coupled to said readout circuit and said digital circuit for comparing the whole binary informations already stored in said memory with a binary information generated from said digital circuit; and

a write-down circuit which starts writing down said binary information from said digital circuit into said memory in response to an output signal of said digital comparator circuit when said whole binary informations already stored in said memory are not in agreement with said binary information generated from said digital circuit.

4,282,604

## OPTICAL ISOLATION CIRCUIT FOR BIDIRECTIONAL COMMUNICATION LINES

William T. Jefferson, 113 Taylor St., Chapel Hill, N.C. 27514

Filed Apr. 4, 1979, Ser. No. 27,169

Int. Cl.<sup>3</sup> H04B 9/00

U.S. Cl. 455-602

10 Claims

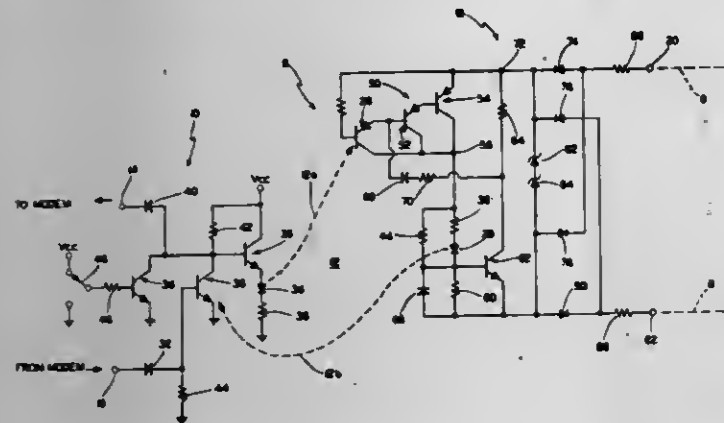
1. An isolation circuit for interfacing a data transceiver and a set of bidirectional communication lines, comprising:

a first light emitting device responsive to electrical signals generated by said transceiver;

a first light responsive transistor having a control terminal



electrically coupled to said communication lines, a first optical path being established between said first light emitting device and said first light responsive transistor; a second light emitting device responsive to incoming signals on said communication lines and to said first light responsive transistor; and



a second light responsive transistor having a control terminal electrically coupled to said transceiver, said first light emitting device being further responsive to said second light responsive transistor; each one of said optical paths carrying negative feedback derived from data signals in the other one of said optical paths.

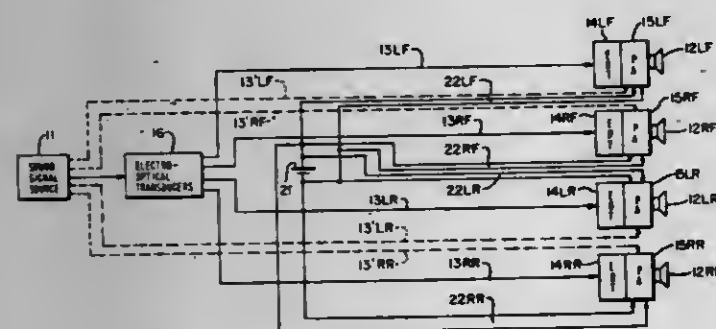
#### 4,282,605 SOUND REPRODUCING WITH REMOTE AMPLIFYING TRANSDUCER

Amar G. Bose, Wayland, Mass., assignor to Bose Corporation, Framingham, Mass.

Filed Oct. 5, 1979, Ser. No. 82,300  
Int. Cl.<sup>3</sup> H04B 9/00

U.S. Cl. 455-617

7 Claims



1. Vehicle sound reproducing apparatus comprising, a sound signal source for providing a sound electrical signal representative of sound at a source location in a vehicle, source electro-optical transducing means at said source

location for transducing said sound electrical signal into a corresponding light signal, receiving electro-optical transducing means at a receiving location in said vehicle remote from said source location for converting a received light signal into a corresponding received sound electrical signal, power amplifying means for amplifying said received sound electrical signal to provide an amplified sound signal, electro-acoustical transducing means for transducing said amplified sound signal into a corresponding sound signal, and light pipe means for intercoupling said source and receiving electro-optical transducing means.

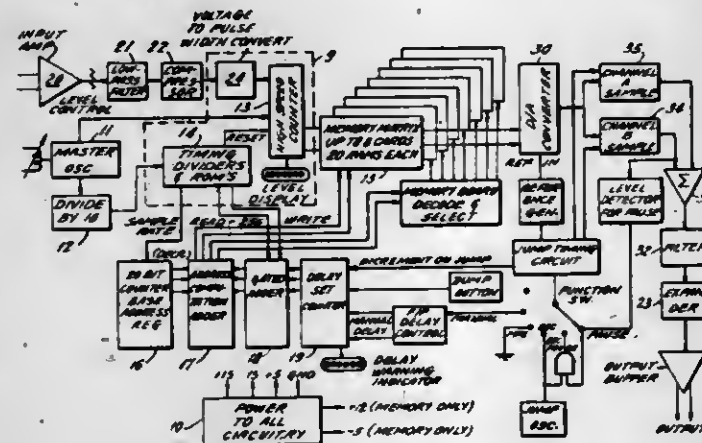
#### 4,282,606 BROADCAST DELAY LINE

Richard Factor, New York, N.Y., assignor to Eventide Clockworks, Inc., New York, N.Y.

Filed Apr. 12, 1979, Ser. No. 29,213  
Int. Cl.<sup>3</sup> H04H 7/04

U.S. Cl. 455-620

2 Claims



1. A broadcasting delay line for delaying audible signals for up to several seconds or more, comprising an analogue to digital converter for sampling and converting audible signals to a digital number capable of being stored, a random access memory adapted to store a series of digital numbers corresponding to the longest delay period, means to retrieve said digital numbers in the order in which they were stored after a delay of up to several seconds, a digital to analogue converter adapted to convert the numbers retrieved from the random access memory to provide the original analog value, amplifier means to amplify the received analog signals and provide the output, manually controlled means adapted to switch the retrieval of signals stored in said memory from the said delay time to real time and means to switch the retrieval of signals stored in said memory back again to the delay time in a series of jumps, each of said jumps being a fraction of the total delay time.

## DESIGNS

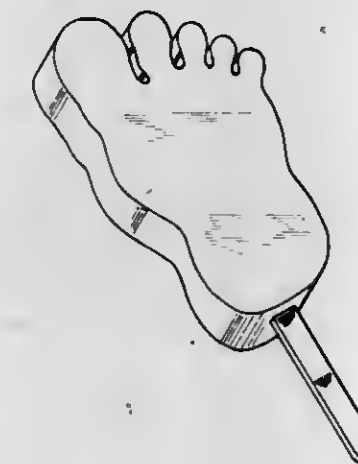
AUGUST 4, 1981

#### 260,045 FROZEN CONFECTION OR SIMILAR ARTICLE

David Frankel, 19 Reimar Rd., Apt. 2B; Collin Craig, 4 Wilburton Rd., and Richard Green, 143 Everden Rd., all of Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 768,734, Feb. 15, 1977, abandoned. This application May 14, 1979, Ser. No. 38,904  
Claims priority, application Canada, Feb. 14, 1977, 140277  
Term of patent 14 years  
Int. Cl. D01-01

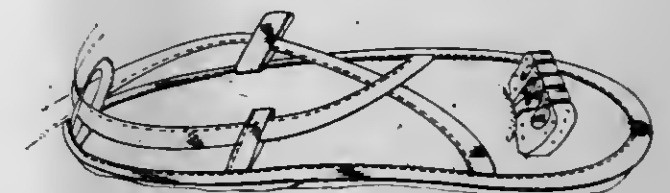
U.S. Cl. D1-18



#### 260,047 PEDICURE SANDAL

Leonor W. Heinz, 1921 J. J. Pearce, Richardson, Tex. 75081  
Filed Jun. 18, 1979, Ser. No. 49,100  
Term of patent 14 years  
Int. Cl. D2-04

U.S. Cl. D2-270

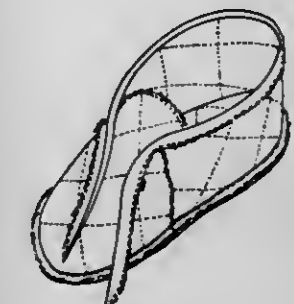


#### 260,048 SLIPPER

Maria T. Bruno, 7243 S. Pebblecreek, West Bloomfield, Mich. 48033

Filed May 14, 1979, Ser. No. 38,491  
Term of patent 14 years  
Int. Cl. D2-04

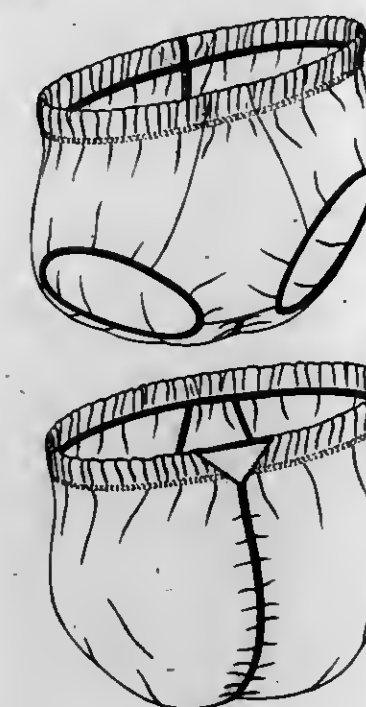
U.S. Cl. D2-278



#### 260,046 UNDERWEAR BRIEF

Eugene R. Burkard, 1115 Moana Dr., San Diego, Calif. 92107  
Filed Jun. 29, 1979, Ser. No. 53,526  
Term of patent 7 years  
Int. Cl. D2-01

U.S. Cl. D2-10



#### 260,049 BELT BUCKLE

Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.  
Filed Aug. 7, 1979, Ser. No. 64,417  
Term of patent 14 years  
Int. Cl. D2-07

U.S. Cl. D2-440





260,050

STORAGE CONTAINER FOR REMOVABLE  
AUTOMOBILE ROOFSRichard S. Dunchock, Farmington Hills, Mich., assignor to  
Myco Industries, Inc., Davison, Mich.

Filed Sep. 5, 1978, Ser. No. 939,407

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D3-30



260,051

## CONTAINER FOR TAPE CASSETTES

Peter Ackeret, Küssnacht, Switzerland, assignor to IDN Inven-  
tions and Development of Novelties AG, Chur, Switzerland

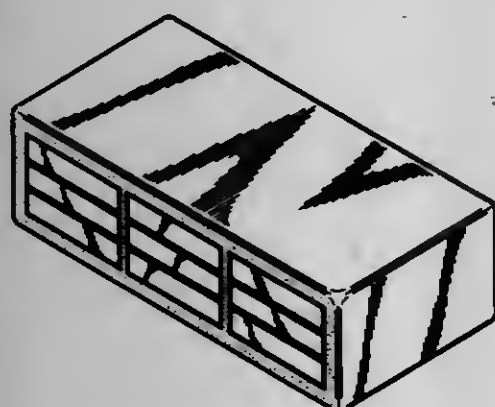
Filed Apr. 26, 1979, Ser. No. 33,821

Claims priority, application Fed. Rep. of Germany, Nov. 20,  
1978, 1156

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D3-35



260,052

## RACQUET DISPLAY CASE

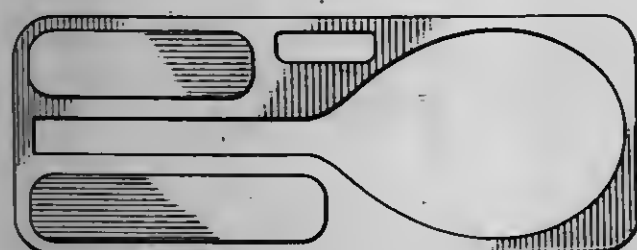
Franklin S. Intengan, 666 W. 81 St., Apt. W-122, Hialeah, Fla.  
33014

Filed May 7, 1979, Ser. No. 36,432

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D3-36



260,053

## HANDBAG

Milton I. Siegel, Martinsville, N.J., assignor to Amba Market-  
ing Systems, Inc., Tempe, Ariz.

Filed May 29, 1979, Ser. No. 42,782

Term of patent 14 years

Int. Cl. D3-01

U.S. Cl. D3-52



260,054

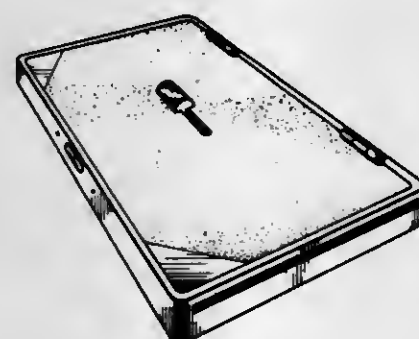
COMBINED CARRIER AND DISPENSER FOR BUSINESS  
CARDSRobert L. Morgan, 2631 Naylor Rd., SE., Washington, D.C.  
20020

Filed Jun. 26, 1979, Ser. No. 52,220

Term of patent 14 years

Int. Cl. D3-01

U.S. Cl. D3-56



260,055

## DESIGN FOR A SIGN PANEL FOR LUGGAGE

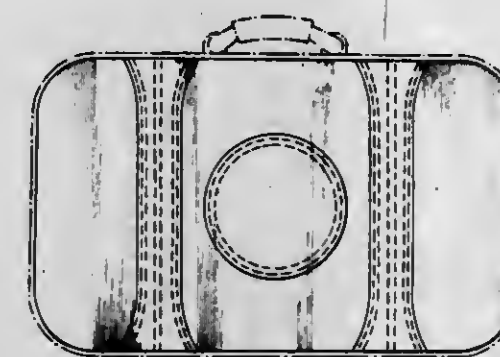
Sol Koffler, Providence, R.I., assignor to American Tourister,  
Inc., Warren, R.I.Division of Ser. No. 709,888, Jul. 29, 1976, abandoned, which is  
a continuation of Ser. No. 552,373, Feb. 24, 1975, abandoned.

This application Oct. 28, 1977, Ser. No. 846,600

Term of patent 14 years

Int. Cl. D3-01

U.S. Cl. D3-77



260,057

## CHAISE

Donald B. Colby, Los Angeles, Calif., assignor to Brown Jordan  
Company, Philadelphia, Pa.

Filed Oct. 2, 1978, Ser. No. 947,937

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-38



260,058

COMBINED TABLE, STORAGE CONSOLE AND  
MULTIPLE SEATING UNITGiulio Ponzellini, Bologna, Italy, assignor to Anonima Castelli,  
S.p.A., Bologna, Italy

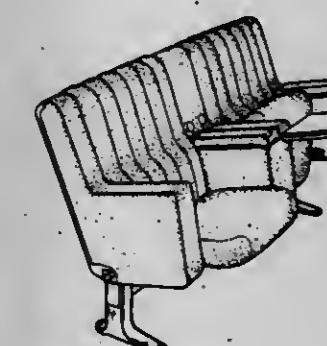
Filed Nov. 30, 1976, Ser. No. 746,079

Claims priority, application Italy, May 31, 1976, 35821-B/76

Term of patent 14 years

Int. Cl. D6-05

U.S. Cl. D6-41



260,056

## ARM-CHAIR

Richard Sapper, Stuttgart, Fed. Rep. of Germany, assignor to  
Knoll International, Inc., New York, N.Y.

Filed Mar. 1, 1978, Ser. No. 882,552

Claims priority, application Italy, Sep. 5, 1977, 22105 A/77

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-31



260,059

## COMBINED GLIDER AND COVER THEREFOR

Thomas R. Vorwerk, 3521 Valencia St., Dayton, Ohio 45404

Filed Oct. 13, 1978, Ser. No. 951,356

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-54





260,060  
CHAIR

Mike T. Claman, New York, N.Y., assignor to Lewittes Furniture Enterprises, Inc., New York, N.Y.

Filed Nov. 9, 1978, Ser. No. 959,436

Term of patent 3½ years

Int. Cl. D6—01

U.S. Cl. D6—57



260,062  
STORAGE CABINET OR SIMILAR ARTICLE

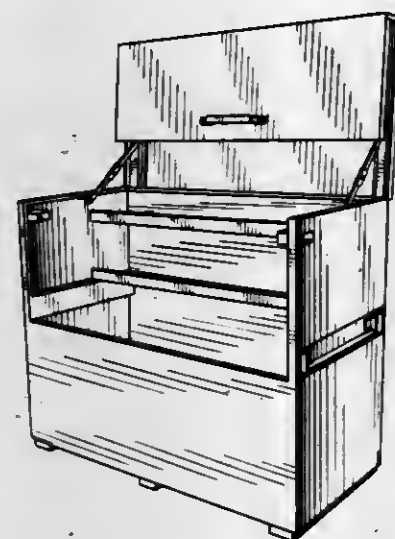
Howard L. Knaack, and Kenneth F. Weger, Jr., both of Cary, Ill., assignors to Knaack Manufacturing Company, Crystal Lake, Ill.

Filed Aug. 8, 1980, Ser. No. 176,341

Term of patent 14 years

Int. Cl. D06—04

U.S. Cl. D6—167



260,063  
RECORD ALBUM HOLDER

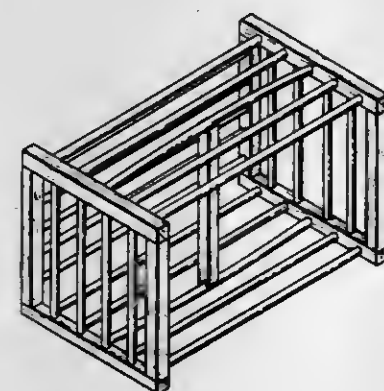
Eugene W. Aylor, Brightwood, Va. 22715

Filed Feb. 9, 1979, Ser. No. 12,219

Term of patent 14 years

Int. Cl. D06—04

U.S. Cl. D6—185



260,061  
VERTICAL TOWEL RACK

Woody Smith, 17020 Apt. No. 1 Sonset Blvd., Pacific Palisades, Calif. 90272

Filed Apr. 25, 1980, Ser. No. 143,720

Term of patent 14 years

Int. Cl. D23—02; D7—99

U.S. Cl. D6—96



260,064  
CASTER

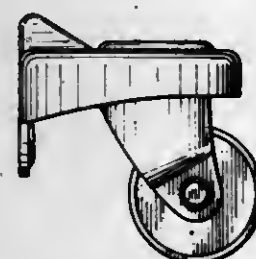
Kiyooki Kameda, 2635 Omiya, Fujinomiya-shi, Japan

Filed Oct. 12, 1978, Ser. No. 950,668

Term of patent 14 years

Int. Cl. D6—99

U.S. Cl. D6—191



260,065  
COMBINED SEAT AND BACKREST UNIT

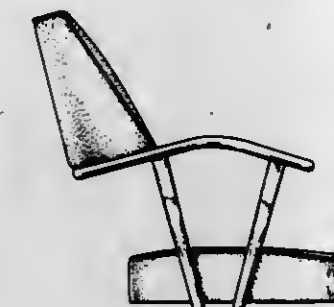
Warren D. Petersen, St. Charles, Ill., assignor to Bord, Inc., Bannockburn, Ill.

Filed May 11, 1979, Ser. No. 38,074

Term of patent 14 years

Int. Cl. D6—06

U.S. Cl. D6—197



260,068  
KITCHEN UTENSIL HOLDER

Walter Mandel, Forest Hills, N.Y., assignor to Manral Imports, Inc., Fairfield, N.J.

Filed Jan. 11, 1980, Ser. No. 158,477

Term of patent 14 years

Int. Cl. D07—06

U.S. Cl. D7—74



260,066  
COMBINED WINE BUCKET AND TABLE ATTACHMENT BRACKET

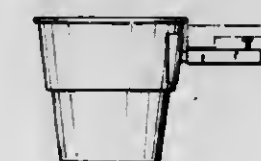
Ralph A. Dark, 27619 Summerfield, San Juan Capistrano, Calif. 92675

Filed Aug. 10, 1978, Ser. No. 932,753

Term of patent 14 years

Int. Cl. D07—06, 07

U.S. Cl. D7—70



260,067  
COMBINED WINE BUCKET AND TABLE ATTACHMENT BRACKET

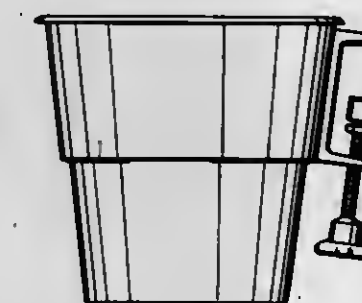
Ralph A. Dark, 27619 Summerfield, San Juan Capistrano, Calif. 92675

Continuation-in-part of Ser. No. 932,573, Aug. 10, 1978. This application Aug. 17, 1979, Ser. No. 67,373

Term of patent 14 years

Int. Cl. D7—06

U.S. Cl. D7—70



260,069  
BARBEQUE

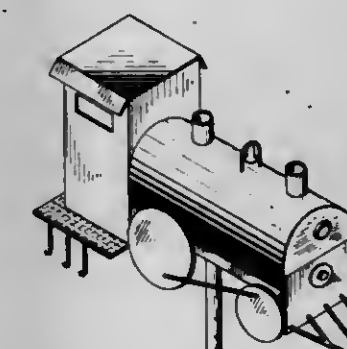
Thomas A. Birmingham, 6497 W. 3860 South, Hunter, Utah 84120

Filed Jun. 25, 1979, Ser. No. 51,381

Term of patent 14 years

Int. Cl. D7—02

U.S. Cl. D7—109





260,070

## SURFACE PROTECTOR STAND

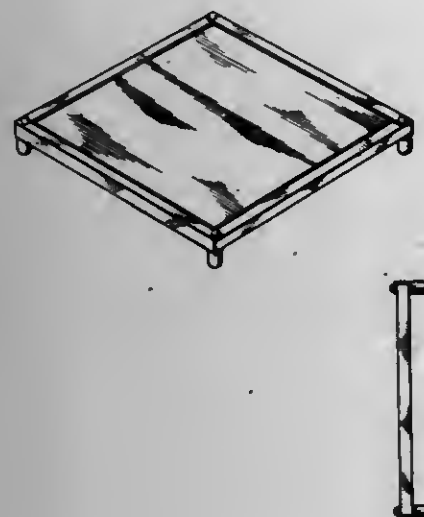
Harold F. Haverland, and Florence M. Haverland, both of 9414 Aldea Ave., Northridge, Calif. 91325

Filed Nov. 13, 1978, Ser. No. 959,660

Term of patent 14 years

Int. Cl. D7-06

U.S. Cl. D7-130



260,073

## CORD WINDER

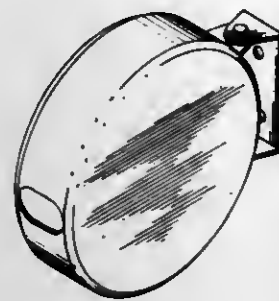
Sid Wells, P.O. Box 4575, Scottsdale, Ariz. 85258

Filed Nov. 27, 1979, Ser. No. 97,824

Term of patent 14 years

Int. Cl. D8-08

U.S. Cl. D8-358



260,074

## COMBINED ADJUSTABLE CURTAIN ROD HOLDER AND ROD

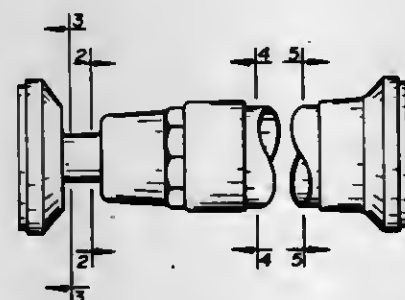
Robert H. Lewis, Marysville, Ohio, assignor to Ray Lewis & Son, Inc., Marysville, Ohio

Filed Sep. 26, 1979, Ser. No. 79,023

Term of patent 14 years

Int. Cl. D8-08

U.S. Cl. D8-376



260,071

## KNIFE HANDLE

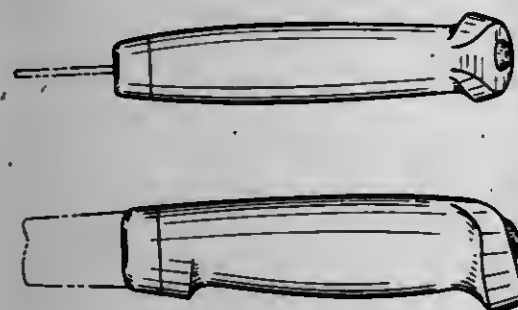
Ronald W. Weber, Edina, Minn., assignor to Normark Corporation, Minneapolis, Minn.

Filed Jan. 12, 1979, Ser. No. 3,015

Term of patent 14 years

Int. Cl. D07-03

U.S. Cl. D7-151



260,075

## DRAPERY CHANNEL

George H. Baker, Sr., 4211 W. Simpson Dr., Meadowood, Dunlap, Ill. 61525

Filed Feb. 28, 1979, Ser. No. 16,283

Term of patent 14 years

Int. Cl. D8-08

U.S. Cl. D8-377



260,072

## BACK SAW

Laird F. Covey, Easton, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Sep. 23, 1978, Ser. No. 945,534

Term of patent 14 years

Int. Cl. D08-03

U.S. Cl. D8-97



260,076

## GLASSWARE CARRIER CARTON BLANK

Joseph F. Schillinger, Palo Hills, Ill., assignor to Champion International Corporation, Stamford, Conn.

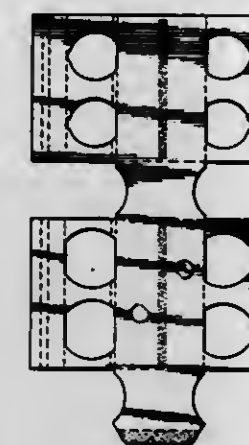
Filed May 24, 1978, Ser. No. 908,997

The portion of the term of this patent subsequent to Jul. 26, 1994, has been disclaimed.

Term of patent 14 years

Int. Cl. D9-99

U.S. Cl. D9-346



260,079

## MIXING CAN

Arne P. Darnell, Karlshamn, Sweden, assignor to Perstorp AB, Perstorp, Sweden

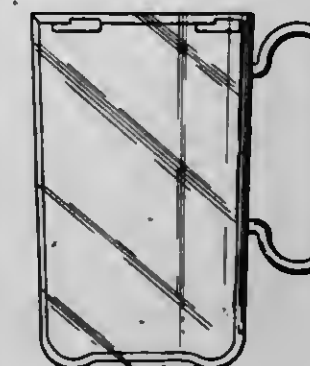
Filed Dec. 5, 1977, Ser. No. 857,457

Claims priority, application Sweden, Jun. 22, 1977, 771369

Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D9-383



260,080

## CARTON

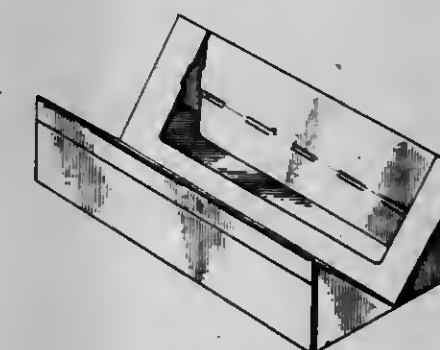
Richard A. Ravotto, West Milford, N.J., and Charles W. Rosenberg, Jr., Tonawanda, N.Y., assignors to J. C. Penney Company, Inc., New York and F. N. Burt Co., Inc., Buffalo, both of, N.Y., a part interest to each

Filed Sep. 23, 1977, Ser. No. 835,975

Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D9-418



260,077

## RESTRAINT PACKAGE

John E. Burns, Seaford, and Martin J. Van Lith, Kew, both of Australia, assignors to Alfred Hospital, Prahran, Australia

Filed Nov. 29, 1977, Ser. No. 855,914

Term of patent 14 years

Int. Cl. D9-05

U.S. Cl. D9-416



260,078

## COMBINED BOTTLE AND CUP

Mario Casoni, Finale Emilia, Italy, assignor to Compagnia Fabbrica Liwuori s.a.s. di Mario Casoni & C., Modena, Italy

Filed Nov. 13, 1978, Ser. No. 959,472

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-337



260,081

## PACKAGING CONTAINER FOR A PAINT BRUSH

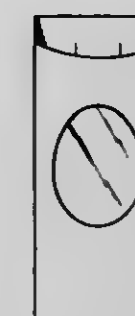
Jerome Kronfeld, Washington Crossing, Pa., and Garry Furst, West Newton, Mass., assignors to American Brush Company, Inc., Stoughton, Mass.

Filed Dec. 8, 1978, Ser. No. 967,707

Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D9-418





260,082

**BLANK FOR FORMING A BOX WITH REINFORCED CORNERS**

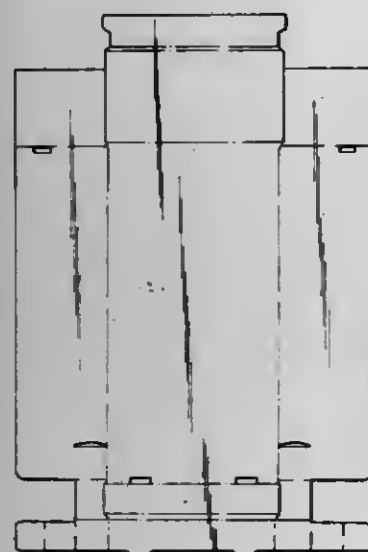
Ronald V. Johnson, Port Washington, Wis., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 21, 1978, Ser. No. 971,954

Term of patent 14 years

Int. Cl. D9—03

U.S. Cl. D9—433



260,084

**FOOD TEMPERATURE SENSING PROBE ASSEMBLY**

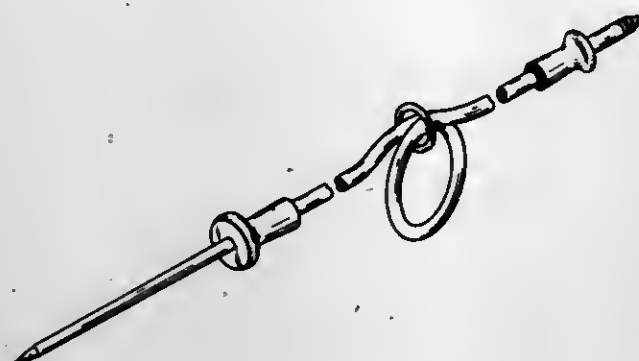
Yoshiro Asano, Saitama, Japan, assignor to Sharp Corporation, Osaka, Japan

Filed Oct. 13, 1978, Ser. No. 951,089

Term of patent 14 years

Int. Cl. D10—04

U.S. Cl. D10—60



260,085

**AUTOMOTIVE PORTABLE ELECTRICAL TEST SET**

Philip H. Mitchell, Yukon, Okla., assignor to JMJ Electronics Corp., Oklahoma City, Okla.

Filed Dec. 5, 1978, Ser. No. 966,762

Term of patent 14 years

Int. Cl. D10—04

U.S. Cl. D10—78



260,083

**COMBINED BOX SEALING CLIP AND HANDLE**

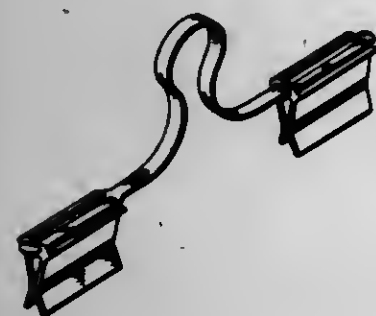
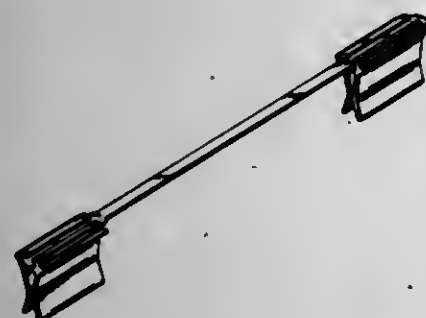
Robert E. Strickland, Los Angeles, Calif., assignor to David Hersh & Associates, Los Angeles, Calif.

Filed Oct. 19, 1978, Ser. No. 952,940

Term of patent 14 years

Int. Cl. D09—99

U.S. Cl. D9—443



260,086

**NECKLACE**

Richard R. Lambert, 2503 Diamond Hill Rd., Apt. #16, Woonsocket, R.I. 02895

Filed Jan. 8, 1979, Ser. No. 46,857

Term of patent 14 years

Int. Cl. D11—01

U.S. Cl. D11—8



260,087

**RING**

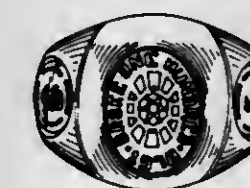
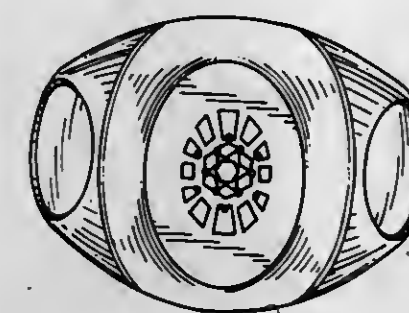
Patrick S. Solon, 2525 Thorn, Fullerton, Calif. 92635

Filed Oct. 18, 1978, Ser. No. 952,237

Term of patent 14 years

Int. Cl. D11—01

U.S. Cl. D11—35



260,089

**FRONT AUTO MAT**

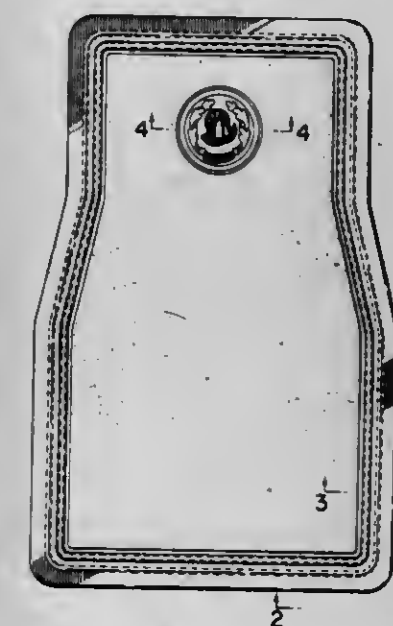
Dwight N. Wooters, LaGrange, Ga., assignor to Rubbermaid Specialty Products Inc., LaGrange, Ga.

Filed Mar. 7, 1979, Ser. No. 18,347

Term of patent 14 years

Int. Cl. D12—16

U.S. Cl. D12—203



260,088

**BUD VASE**

Richard W. Murphy, 17846 San Clemente St., Fountain Valley, Calif. 92708

Filed Apr. 6, 1979, Ser. No. 27,747

Term of patent 14 years

Int. Cl. D11—02; D7—01

U.S. Cl. D11—146



260,090

**ELECTRICAL JUNCTION BOX**

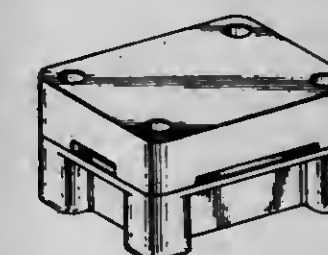
Robert T. Hughes, Thomasville; Gordon S. Servert, Kernersville, and Thomas R. Marsh, High Point, all of N.C., assignors to The Hughes Supply Company of Thomasville, Incorporated, Thomasville, N.C.

Filed May 7, 1979, Ser. No. 36,433

Term of patent 14 years

Int. Cl. D13—03

U.S. Cl. D13—40





260,091

## SEMICONDUCTOR

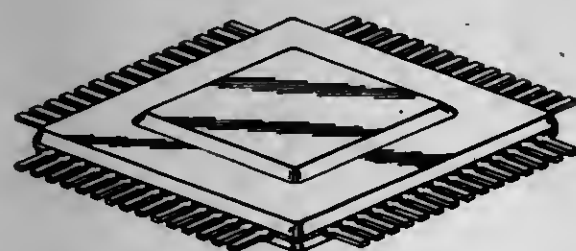
Hidetoshi Mochizuki, Fuchu; Keizo Otsuki, Higashiyamayo; Hideki Koenka, Kodaira, and Gen Murakami, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 26, 1979, Ser. No. 15,216

Claims priority, application Japan, Aug. 25, 1978, 53-35723; Aug. 25, 1978, 53-35730; Aug. 25, 1978, 53-35734; Aug. 25, 1978, 53-35738

Term of patent 14 years  
Int. Cl. D13—03

U.S. Cl. D13—99



260,093

## COMBINED AUTOMOBILE CARTRIDGE PLAYER AND RADIO

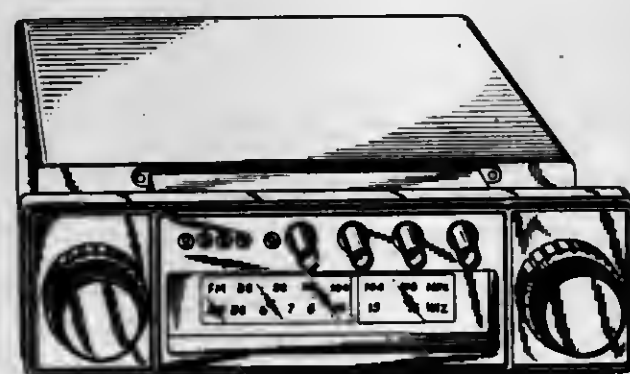
Jack Katz, Far Rockaway, N.Y., assignor to Mark Tatsuta, Dobbs Ferry, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,761

Term of patent 14 years

Int. Cl. D14—01, 03

U.S. Cl. D14—5



260,094

## VACUUM CLEANER FOR SPAS OR THE LIKE

Jonathan Watkins, San Marcos, Calif., assignor to Watkins Manufacturing Company, Calif.

Filed Jan. 8, 1979, Ser. No. 2,011

Term of patent 14 years

Int. Cl. D15—05

U.S. Cl. D15—52

260,092

## TIME LAPSE VIDEO CASSETTE RECORDER

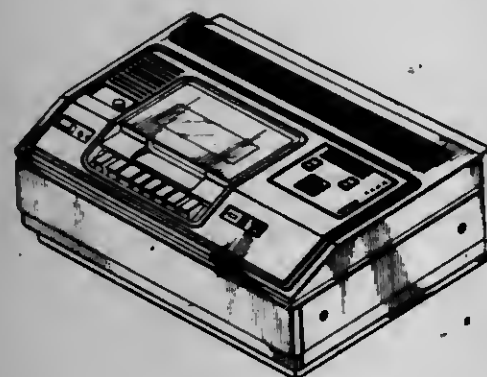
W. Craig Bullock; Francis J. Reid, both of San Dimas; Oliver T. Tetrick, and Robert R. Tripp, both of Orange, all of Calif., assignors to Odetics, Inc., Anaheim, Calif.

Filed Mar. 5, 1979, Ser. No. 17,128

Term of patent 14 years

Int. Cl. D14—01

U.S. Cl. D14—2



260,095

## SLUSH DISPENSER

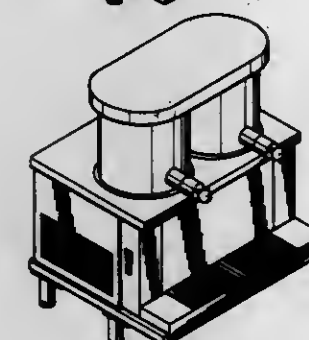
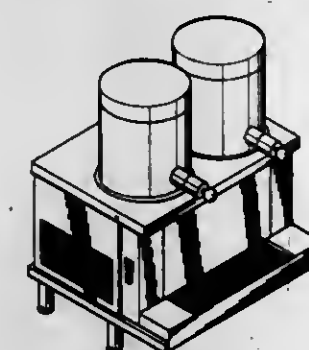
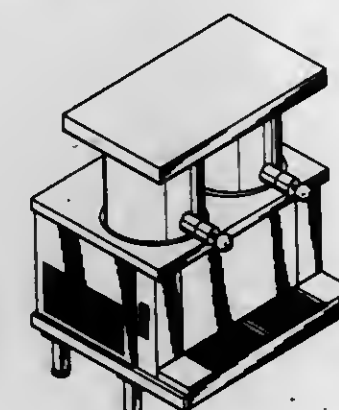
Henry C. Bischoff, Lahaska, and David C. Johnson, Ambler, both of Pa., assignors to Refreshment Machinery Incorporated, Warminster, Pa.

Filed Jul. 18, 1979, Ser. No. 58,575

Term of patent 14 years

Int. Cl. D15—08

U.S. Cl. D15—115



260,096

## MICROFILM READER

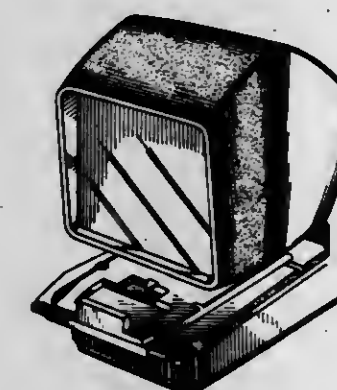
John W. Overman, Phoenix, Ariz.; Michael V. Polinsky, Iron Ridge, and John R. Zellner, Hartford, both of Wis., assignors to Bell & Howell Company, Chicago, Ill.

Filed Aug. 21, 1978, Ser. No. 935,283

Term of patent 14 years

Int. Cl. D16—03

U.S. Cl. D16—14



260,097

## ELECTRIC PIANO OR SIMILAR ARTICLE

Luciano Antonelli, Osimo, Italy, assignor to F.lli Antonelli s.n.c. del Cav. Luigi Antonelli & C., Osimo, Italy

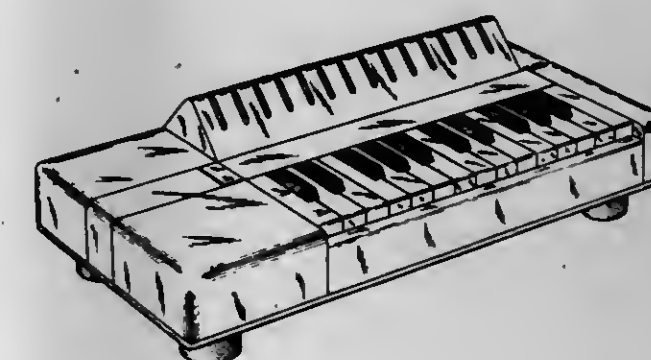
Filed May 15, 1978, Ser. No. 906,130

Claims priority, application Italy, Nov. 15, 1977, 22725/77[U]

Term of patent 14 years

Int. Cl. D17—01

U.S. Cl. D17—7



260,098

## ELECTRIC PIANO OR SIMILAR ARTICLE

Luciano Antonelli, Osimo, Italy, assignor to F.lli Antonelli s.n.c. del Cav. Luigi Antonelli & C., Osimo, Italy

Filed May 15, 1978, Ser. No. 907,250

Claims priority, application Italy, Nov. 15, 1977, 22724/77[U]

Term of patent 14 years

Int. Cl. D17—01

U.S. Cl. D17—7





260,099

**CASH REGISTER**

Junichi Sakamoto, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

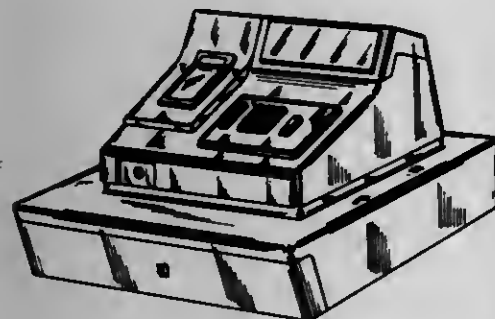
Filed Dec. 4, 1978, Ser. No. 965,730

Claims priority, application Japan, Jun. 8, 1978, 53-23930

Term of patent 14 years

Int. Cl. D18-01

U.S. Cl. D18-4



260,101

**PEN**

Francine Gomez, Paris, France, assignor to Waterman S.A., Paris, France

Filed Jun. 5, 1979, Ser. No. 45,741

Claims priority, application France, Dec. 6, 1978, 78 77096

Term of patent 14 years

Int. Cl. D19-06

U.S. Cl. D19-51



260,100

**CASH REGISTER**

Junichi Sakamoto, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan

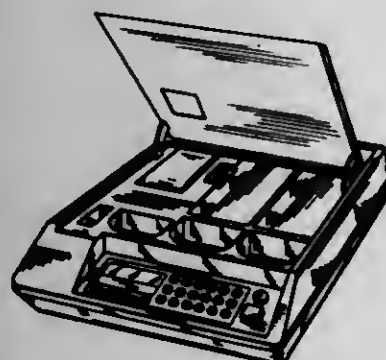
Filed May 25, 1979, Ser. No. 42,284

Claims priority, application Japan, Dec. 4, 1978, 53-51513

Term of patent 14 years

Int. Cl. D18-01

U.S. Cl. D18-4



260,102

**STACKING TRAY**

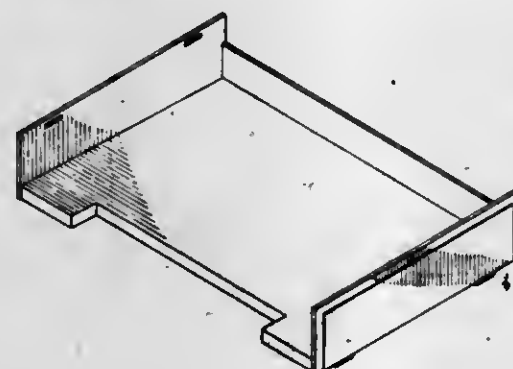
Donald L. Evans, DeForest, Wis., assignor to Don Evans, Inc., DeForest, Wis.

Filed Dec. 11, 1978, Ser. No. 968,394

Term of patent 14 years

Int. Cl. D19-02

U.S. Cl. D19-92



260,103

**TOY FASTENER**

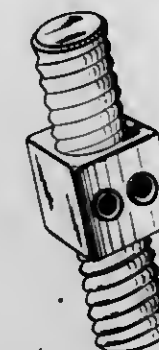
Mel Appel, 9 Nottingham Rd., Livingston, N.J. 07039, and Paul B. Means, Basking Ridge, N.J., assignors to Mel Appel, Livingston, N.J.

Filed Feb. 23, 1979, Ser. No. 14,600

Term of patent 14 years

Int. Cl. D21-01; D8-08

U.S. Cl. D21-109



260,106

**PLURAL MAN SURFBOAT**

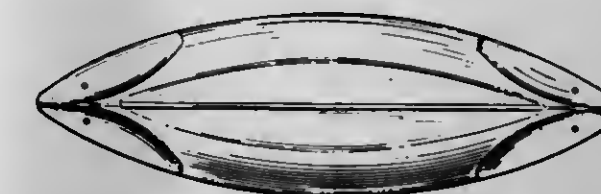
Richard C. Peritz, 2501 NE. 19th Ave., Wilton Manors, Fla. 33305

Filed Jul. 9, 1979, Ser. No. 55,979

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-228



260,107

**ARTIFICIAL SKI SURFACE UNIT**

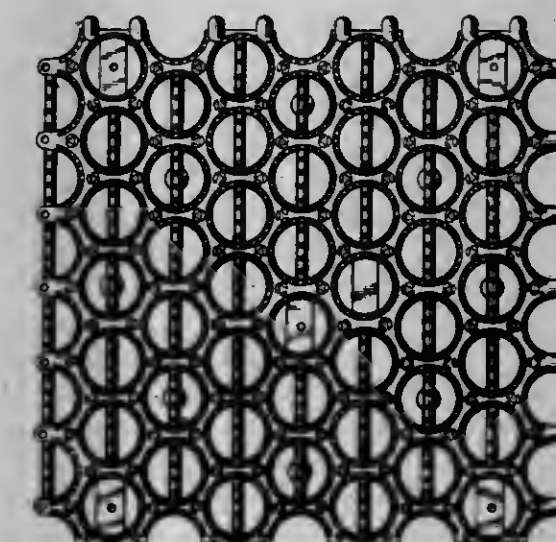
Gerald E. Mittmann, Anaheim, Calif., assignor to Port-a-Slope Corporation, Anaheim, Calif.

Filed May 24, 1979, Ser. No. 42,095

Term of patent 14 years

Int. Cl. D21-03

U.S. Cl. D21-244



260,104

**TOY OVEN**

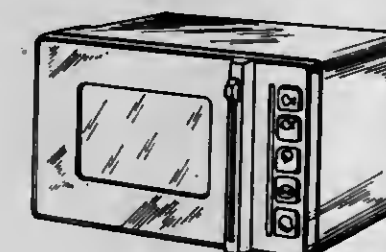
Ronald R. Klawitter, Gasconade County, Mo., assignor to Steven Manufacturing Company, Hermann, Mo.

Filed Apr. 17, 1978, Ser. No. 896,818

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-122



260,105

**TOY TRACKWAY**

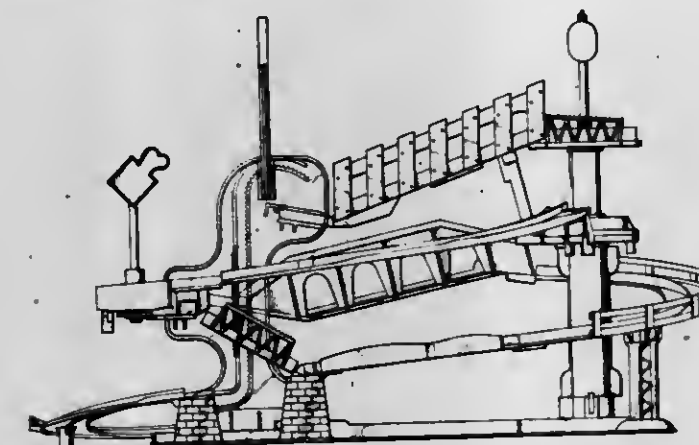
Hajime Matsumoto, Chiba, Japan, assignor to Toybox Corporation, Japan

Filed Jan. 26, 1979, Ser. No. 7,015

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-143



260,108

**PLAYGROUND CLIMBER**

Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa

Filed Sep. 20, 1979, Ser. No. 77,355

Term of patent 14 years

Int. Cl. D21-03

U.S. Cl. D21-245

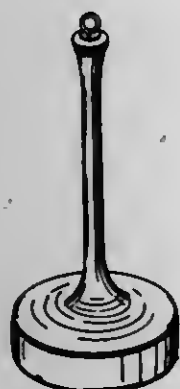




260,109  
SWING

Paul W. Ahrens, Grinnell, Iowa, assignor to Miracle Recreation Equipment Company, Grinnell, Iowa  
Filed Sep. 24, 1979, Ser. No. 78,823  
Term of patent 14 years  
Int. Cl. D21-03

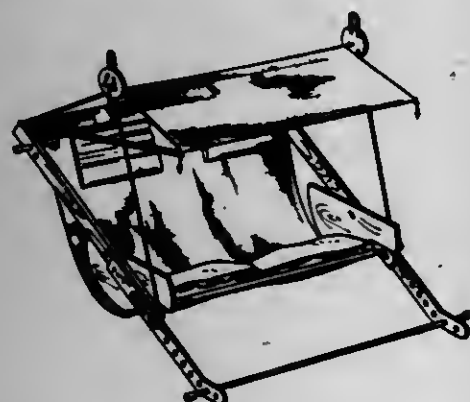
U.S. Cl. D21-246

260,110  
SWING

Daniel Gomes, 104 1/2 E. Kirkwood, No. 8, Bloomington, Ind. 47401

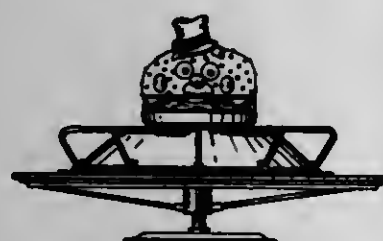
Filed Oct. 9, 1979, Ser. No. 82,817  
Term of patent 14 years  
Int. Cl. D21-03

U.S. Cl. D21-246

260,111  
PLAYGROUND MERRY-GO-ROUND

Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa  
Filed Sep. 20, 1979, Ser. No. 77,354  
Term of patent 14 years  
Int. Cl. D21-03

U.S. Cl. D21-249



## 260,112

## PLAYGROUND SEATING TRAIN

Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa  
Filed Sep. 20, 1979, Ser. No. 77,364  
Term of patent 14 years  
Int. Cl. D21-03

U.S. Cl. D21-250



## 260,113

## OPTICAL GUN SIGHT MOUNT

Cecil J. Ross, El Paso, Tex., assignor to W. R. Weaver Company, El Paso, Tex.  
Filed Oct. 22, 1979, Ser. No. 86,882  
Term of patent 14 years  
Int. Cl. D22-01

U.S. Cl. D22-7



## 260,114

## FISHING ROD HOLDER

Alfred E. Cecchetti, 1623 Leishman Ave., Arnold, Pa. 15068  
Filed Aug. 2, 1979, Ser. No. 63,067  
Term of patent 14 years  
Int. Cl. D22-05

U.S. Cl. D22-13



## 260,115

## FISHING LURE

William T. Neavin, 3736 Berry Dr., Studio City, Calif. 91604  
Filed Sep. 20, 1979, Ser. No. 77,167  
Term of patent 14 years  
Int. Cl. D22-05

U.S. Cl. D22-28



## 260,117

## VENTILATOR SECTION

Elwin E. Peirce, 3890 Monroe Ave. Northeast, and Arthur L. Waltz, 4415 - 75th Ave. Southeast, both of Salem, Oreg. 97301  
Filed Dec. 4, 1978, Ser. No. 966,150  
Term of patent 14 years  
Int. Cl. D23-04

U.S. Cl. D23-163

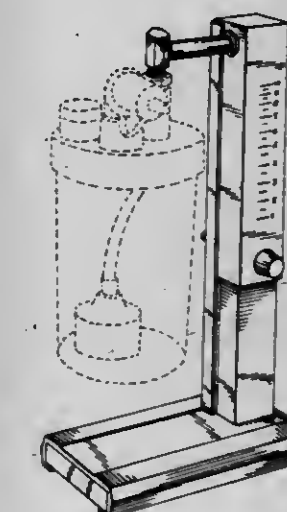


## 260,118

## PORTABLE OXYGEN EXTENDER STATION

Charles C. Hill, La Jolla, Calif., assignor to Marx Medical, Inc., La Jolla, Calif.  
Filed Feb. 9, 1979, Ser. No. 10,896  
Term of patent 14 years  
Int. Cl. D24-01, 02

U.S. Cl. D24-8



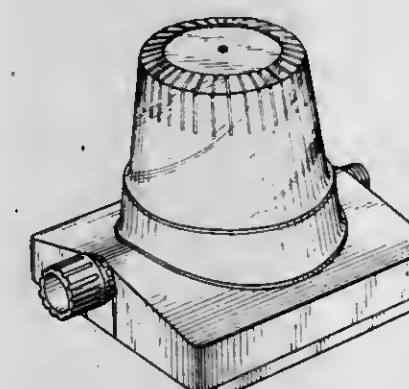
## 260,116

## LAWN FERTILIZER FEEDER

Kenneth M. Hattori, Bensenville, and Sigmar E. Sobczak, Waukegan, both of Ill., assignors to Acme Burgess, Inc., Graylake, Ill.

Filed Dec. 7, 1979, Ser. No. 100,968  
Term of patent 14 years  
Int. Cl. D23-01

U.S. Cl. D23-3

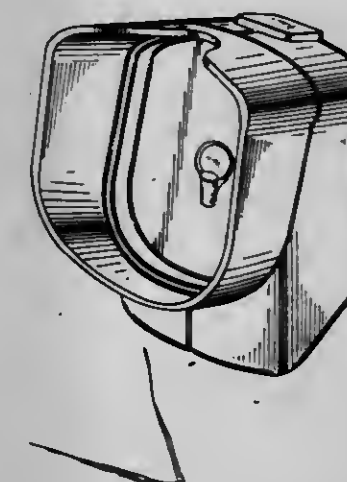


## 260,119

## ULTRASONIC NEBULIZER

Ernst Relchl, Munich, Fed. Rep. of Germany, assignor to Bosch Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany  
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# LIST OF PATENTEEES

TO WHOM

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- Beales, John H., to Beales Steel Products Ltd. Bulldozer blade. 4,281,721, Cl. 172-821.000.
- Beales Steel Products Ltd.: See—  
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- Becker, Carl; Mahler, Georges; and Erzinger, Paul, to Ciba-Geigy Corporation. Aqueous dye preparations of dyes difficultly soluble in water. 4,281,999, Cl. 8-527.000.
- Beecham Group Limited: See—  
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- Behrens, Hermann W.: See—  
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- Belden Corporation: See—  
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- Bell Telephone Laboratories, Incorporated: See—  
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- Benedyk, Joseph C., to Brunswick Corporation. Woven fabric made of low modulus, large diameter fibers. 4,281,689, Cl. 139-420.00A.
- Bennett, Timothy J., Sr. Teaching aid for keyed musical instruments. 4,281,579, Cl. 84-478.000.
- Bentley Laboratories, Inc.: See—  
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- Bergen, Richard F., to Xerox Corporation. Development method and apparatus. 4,282,303, Cl. 430-120.000.
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- Berney, Daniel, to Sandoz Ltd. Trans-n-cinnamyl-n-methyl-(1-naphthylmethyl)amine. 4,282,251, Cl. 424-316.000.
- Bernstein, Seymour; and Poletto, John F., to American Cyanamid Company. Halogenated-naphthalenetriyltris(sulfonylimino)-aryl multicarboxylic acids and salts thereof. 4,282,375, Cl. 562-427.000.
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- Betz Laboratories, Inc.: See—  
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- Bird, Robert D.; and Vance, Harry R., to Reynolds Metals Company. Zinc removal from aluminate solutions. 4,282,191, Cl. 423-119.000.
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- Black, Ronald M. F. Dartboard safety surround. 4,281,836, Cl. 273-408.000.
- Blackwell, Thomas D. Anti-friction slide valve support for screw compressor. 4,281,975, Cl. 418-201.000.
- Blaise, Herbert R., to Avanti Research & Development, Inc. Vertical antenna with upwardly flaring base mounted conductors. 4,282,531, Cl. 343-791.000.
- Blake, Jon R., to General Mills, Inc. Dairy based mixes for frozen desserts and method of preparation. 4,282,262, Cl. 426-565.000.
- Blakeslee, Theodore R., III: See—  
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- Blaupunkt-Werke GmbH: See—  
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- Boegli, Serge; and Lebet, Jean-Pierre, to F. J. Burrus & Cie; and Baumgartner Papier SA. Production of cigarette filter units. 4,281,591, Cl. 493-45.000.
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- Boeing Company, The: See—  
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- Boggs, David R.; and Metcalfe, Robert M., to Xerox Corporation. Data communication system. 4,282,512, Cl. 340-147.0LP.
- Boie, Robert A., to Bell Telephone Laboratories, Incorporated. Charged particle beam lithography. 4,282,437, Cl. 250-492.00A.
- Boily, Robert L.: See—  
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- Boiten, Ebbe: See—  
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- Bondurant, David W.; and Martin, Richard J., to Sperry Corporation. Automatic overflow/imminent overflow detector. 4,282,581, Cl. 364-737.000.
- Bonkowski, Lorne. Clean pack carrier. 4,281,502, Cl. 53-398.000.
- Bonner, Edgar L. Vibration responsive door alarm. 4,282,518, Cl. 340-566.000.
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- Borger, Robert M.: See—  
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- Bornmann, Dieter; Durckheimer, Walter; and Schrinner, Elmar, to Hoechst Aktiengesellschaft. Cephem derivatives. 4,282,220, Cl. 424-246.000.
- Bose, Amar G., to Bose Corporation. Sound reproducing with remote amplifying transducer. 4,282,605, Cl. 455-617.000.
- Bose Corporation: See—  
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- Bosits, Gyula: See—  
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- Bosse, Frank; and Zemella, Horst, to Windmoller & Holscher. Apparatus for applying adhesive rider strips to the flattened end edges of tube sections or sacks. 4,282,055, Cl. 156-464.000.
- Boeshard, Ernst, to Sulzer Brothers Limited. Apparatus for irradiation of piece goods. 4,281,954, Cl. 414-287.000.
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- Bourne, Henry A., Jr.: See—  
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- Bousquet, Gilles; Egraz, Jean-Bernard; Rambert, Andre; and Ravet, Georges, to Societe d'Exploitation des Procédés Coatex. Acrylic cement applicable in bone surgery and in stomatology. 4,282,140, Cl. 260-42.520.
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- Bowe Maschinenfabrik GmbH: See—  
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- Bowen, James H., to DBS, Inc. Imprinter and method of making same. 4,281,596, Cl. 101-269.000.
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- Bowmar/Alti, Inc.: See—  
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- Bowyer, John M.: See—  
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- Bowyer, Michael L., to Baker International Corporation. Selectively bridged expansion joint. 4,281,858, Cl. 285-39.000.
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- Boynton, Donald E., to Hercules Incorporated. Method of visbreaking polypropylene. 4,282,076, Cl. 204-159.200.
- Bozik, John E.: See—  
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- Bozzuto, Carl R., to Combustion Engineering, Inc. Coal gasifier supplying MHD-steam power plant. 4,282,449, Cl. 310-11.000.
- Braddick, Britt O.; and Lindsey, Hiram E., to Texas Iron Works, Inc. Apparatus for positioning a liner on a tubular member in a well bore with a retrievable pack off bushing therebetween. 4,281,711, Cl. 166-118.000.
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- Bragas, Peter, to Blaupunkt-Werke GmbH. Method and apparatus for playing back color video records through television receiver operating at a different color standard. 4,282,545, Cl. 358-4.000.
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- Brandt, Vernon, to Brandt Manufacturing, Inc. Spring suspension. 4,281,851, Cl. 280-718.000.
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- Brazell, Charles R.; and Villanueva, Joseph A., to Geosource Inc. Article-detect signal separating network. 4,281,765, Cl. 209-576.000.
- Bredeweg, Roger L.; O'Brien, Larry S.; and Vellance, Charles B., to Leco Corporation. Combustion system. 4,282,183, Cl. 422-78.000.
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- Brenner, L. Martin, to SmithKline Corporation. Renal vasodilating 3,4-dihydroxyphenyltetrahydrothienopyridines. 4,282,227, Cl. 424-256.000.
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- Theuer, Richard C., 4,282,265, Cl. 426-607.000.
- Britz, Jeffrey E. Belt buckle construction. 4,281,440, Cl. 24-191.000.
- Brjukhnevich, Gennady I.; Klepov, Anatoly F.; Kondrakhova, Lidia I.; Lozovoi, Valery I.; Miller, Viktor A.; Postovalov, Valdis E.; Prokhorov, Alexandr M.; Serdjuchenko, Jury N.; Stepanov, Boris M.; and

- Schelev, Mikhail Y. Electrooptical camera for registering high-speed processes. 4,282,427, Cl. 250-213.0VT.
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- Brooks, Alden W., to Dayco Corporation. Stapling apparatus and method and thermoplastic staples used therewith. 4,281,785, Cl. 227-120.000.
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- Brooks, Kenneth; Smith, Paul R.; and Morris, Thomas E., to Celanese Corporation. Precision orifice nozzle devices for ink jet printing apparatus and the process for their manufacture. 4,282,533, Cl. 346-75.000.
- Broom, Nigel J. P., to Beecham Group Limited.  $\beta$ -Lactam antibacterial agents, their use in pharmaceutical compositions, and intermediates. 4,282,236, Cl. 424-270.000.
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- Brown, Lawrence G. Drive system for bicycles and other apparatus. 4,281,845, Cl. 280-236.000.
- Brown, Ronald A.; Hu, Sung C.; and Struger, Odo J., to Allen-Bradley Company. Mini-programmable controller. 4,282,584, Cl. 364-900.000.
- Bruder, Alan H., to Polaroid Corporation. Method for forming noble metal silver precipitating nuclei. 4,282,307, Cl. 430-232.000.
- Brubmann, Werner; Schwartz, Reinhard; and Hummel, Darsten, to Robert Bosch GmbH. Centrifugal rpm governor for internal combustion engines. 4,281,630, Cl. 123-373.000.
- Bruno, Carlo L., to Alisydro S.a.s. di Bruno & C. Distributing conveyor installation and control method therefor. 4,281,756, Cl. 198-356.000.
- Brunson, Amber N., to Brunson Instrument Company. Optical transit square with focusable crossing telescopes. 4,281,928, Cl. 356-140.000.
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- Brunswick Corporation: See—  
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- Brusasco, Enzo, to Roltra S.p.A. Speed reduction unit. 4,281,566, Cl. 74-800.000.
- Brust, David P.; Hamilton, Lewis R.; and Wilkes, Glenn R., to Eastman Kodak Company. Receiving elements for image transfer film units. 4,282,305, Cl. 430-213.000.
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- Buchholz, Jeffrey C.: See—  
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- Buchner, Heinrich; and Horn, Hannes S., to Klockner-Humboldt-Deutz AG. Apparatus for the conveyance and/or treatment of hot gases. 4,281,963, Cl. 415-178.000.
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- Budniak, Mitchell S.; and Martin, Donald P., to Qwint Systems Inc. Control system for a multi-phase motor. 4,282,471, Cl. 318-685.000.
- Buehler, Oscar R.; and Porter, Harold F., to Du Pont de Nemours, E. I., and Company. Process for purifying hexamethylenediamine. 4,282,381, Cl. 564-498.000.
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- Bullough, Vaughn L., to Reynolds Metals Company. Carbon ramming mix. 4,282,039, Cl. 106-278.000.
- Bunyan, Thomas W., to Pilgrim Engineering Development Ltd. Tensioning devices. 4,281,580, Cl. 411-548.000.
- Burbank, John E., III, to McNab, Incorporated. Strain meter. 4,281,537, Cl. 73-862.330.
- Burkert, Rudolf, to Didier Engineering GmbH. Tar separating device. 4,282,096, Cl. 210-182.000.
- Burley, William G., to T.I.C. Enterprises, Limited. Thermal ice cap. 4,281,802, Cl. 242-55.000.
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- Burris, Michael V. Gilsonite emulsion compositions. 4,282,037, Cl. 106-202.000.
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- Busse, Claus A. O., to European Atomic Energy Community-EURATOM. Thermal heat pump. 4,281,709, Cl. 165-104.220.
- Bussjager, Rudy C., to Carrier Corporation. Makeup air preconditioner for use with an air conditioning unit. 4,281,522, Cl. 62-409.000.
- Butterfield, John L.: See—  
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- Caccamisi, Michael V. Apparatus for filling lamps. 4,281,692, Cl. 141-370.000.
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- Cale, Albert D., Jr.; and Leonard, Charles A., to A. H. Robins Company, Inc. Optical isomers of 4-amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methylbenzamide. 4,282,243, Cl. 424-274.000.
- Cale, Albert D., Jr.; and Leonard, Charles A., to A. H. Robins Company, Inc. Optical isomers of 4-amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methylbenzamide. 4,282,244, Cl. 424-274.000.
- Calgon Corporation: See—  
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- Canada-Cities Service, Ltd.: See—  
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- Shimizu, Masami; and Aizawa, Hiroshi, 4,282,503, Cl. 335-276.000.
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- Morris, Hugh C., 4,281,676, Cl. 137-102.000.



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- Child, Francis W., to Child Laboratories, Inc. Dilator, 4,281,658, Cl. 128-341.000.
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- Citrone, Anthony M.; and Pontin, Stephen B., to Reckitt & Colman Products Limited. Aqueous hypochlorite solutions, 4,282,109, Cl. 232-102.000.
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- Coalex, Inc.: See—  
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- Coates, Clarence A., Jr.: See—  
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- Comfort Products, Inc.: See—  
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- Cominco Ltd.: See—  
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- Communications Patents Limited: See—  
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- Compagnie Europeenne pour l'Equipelement Menager "CEPEM": See—  
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- Condenser Cleaners Mfg. Co., Inc.: See—  
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- Constructions de Clichy: See—  
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- Coors Container Company: See—  
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- Covington, Fred D., to Portaframe, Inc. Portable apparatus for straightening automobile bodies, 4,281,532, Cl. 72-457.000.
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- Cragoe, Edward J., Jr.: See—  
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- Crooks, Horatio N.: See—  
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- Dan River Incorporated: See—  
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- Dataproducs Corporation: See—  
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- Davidson, Thomas A.; and Griffith, Ronald C., to Pennwalt Corporation. Preparation of 1,2,4,5-tetrahydro-7-alkoxy-(and 7,8-dialkoxy)-3H,3-benzazepines and 3-substituted derivatives thereof from the corresponding phenethylamines, 4,282,146, Cl. 260-239.00B.
- Davies, Pamela M., to Le Carbone (Great Britain) Limited. Pipe joints, 4,281,859, Cl. 285-55.000.
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- DBS, Inc.: See—  
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- Delany, John J., to Research Products Corporation. Damper for solar heating systems and the like, 4,281,638, Cl. 126-428.000.
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- Dell, Harold R.; Holsman, William L.; Lamaney, Michael V.; and Mortimer, Charles P. L., to Singer Company, The. Aircraft simulator digital audio system, 4,281,994, Cl. 434-49.000.
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Wagener, Dietrich; Fach, Horst; and Ergun, Hayri. 4,282,066, Cl. 201-6.000.

Diehl GmbH & Co.: See—

Meisner, Alfred; Grasser, Hans; and Glasmacher, Peter. 4,282,513, Cl. 340-149.00R.

Weber, Adolf; and Rhuau, Siegfried. 4,281,599, Cl. 102-364.000.

Diesel Kiki Co., Ltd.: See—

Sato, Ynji. 4,281,682, Cl. 137-596.170.

Dieterich, Dieter, to Bayer Aktiengesellschaft. Dispersion of aromatic isocyanatosulfonic acid uretidiones in organic polyisocyanates and a process for their preparation. 4,282,147, Cl. 260-239.00A.

Dikstein, Shabtay: See—

Mechoulam, Raphael; Lander, Naphtali; and Dikstein, Shabtay. 4,282,248, Cl. 424-299.000.

Dillon, Robert H.: See—

Hirt, Theodore A.; and Dillon, Robert H. 4,282,073, Cl. 204-28.000.

Dimino, William. Fountain system including a plurality of wooden barrels. 4,281,794, Cl. 239-20.000.

Dinardo, Joseph R., Jr., to RCA Corporation. Method for fabricating flyleads for video disc styli. 4,282,311, Cl. 430-318.000.

Dinella, Donald; and Wong, Ching-Ping, to Western Electric Co., Inc. Mask for selectively transmitting therethrough a desired light radiant energy. 4,282,314, Cl. 430-413.000.

Discovision Associates: See—

Elliott, James E. 4,282,598, Cl. 369-44.000.

Distillers Company (Carbon Dioxide) Limited, The: See—

Wheldon, Alfred O.; and Cockerill, Peter E. 4,282,259, Cl. 426-231.000.

Ditzler, Erich, to Bayerische Motoren Werke Aktiengesellschaft. Circuit arrangement for a window-cleaning installation of motor vehicles. 4,282,445, Cl. 307-141.000.

Dixon, Richard B.; and Carr, Peter, to Wilkinson Sword Limited. Razor with removably mounted pivotal cartridge. 4,281,455, Cl. 30-47.000.

Dobson, Robert L., to Goodyear Tire & Rubber Company, The. Method of preparing a self-sealing pneumatic tire. 4,282,052, Cl. 156-79.000.

Doherty, Thomas E.; and Herzog, William F., to Owens-Illinois, Inc. Apparatus to form a flat-topped rim on a thin-walled foam plastic container. 4,281,979, Cl. 425-391.000.

Domoto, Kazushige: See—

Hayashi, Kiyozumi; and Domoto, Kazushige. 4,282,064, Cl. 176-73.000.

Donaldson, Charles R.; and Stiles, Claude J., to National Distillers and Chemical Corp. Dual reactor process and apparatus for polymerizing ethylene. 4,282,339, Cl. 526-64.000.

Donate, Felipe A.; and Cutie, Zonia G., to Dow Chemical Company, The. Alkyl, cycloalkyl diethers of (poly)alkylene glycols. 4,282,386, Cl. 568-606.000.

Dornier GmbH: See—

Zimmer, Herbert. 4,281,812, Cl. 244-219.000.

Dory, Jacques, to C. G. R.-Ultrasonic. Medical echo sounding apparatus with a wide sector scanning angle. 4,281,661, Cl. 128-660.000.

Doryokuro Kakuneryo Kaihatsu Jigyodan: See—

Hayashi, Kiyozumi; and Domoto, Kazushige. 4,282,064, Cl. 176-73.000.

Doub, Ernest L., Jr. Thermal pumping device. 4,281,969, Cl. 417-52.000.

Douglas, Peter H.: See—

Glover, Douglas L.; Rubenstein, Roger H.; Douglas, Peter H.; and Bridges, Lee R. 4,281,989, Cl. 433-130.000.

Douglass, Paul W.; and Trotta, Robert A., to Gillette Company, The. Razor handle with a pivotal connection means for an element of a blade cartridge mounted thereon. 4,281,456, Cl. 30-89.000.

Doundoulakis, George J. High efficiency tri-rotor ballistic engine. 4,281,628, Cl. 123-245.000.

Dow Chemical Company, The: See—

Donate, Felipe A.; and Cutie, Zonia G. 4,282,386, Cl. 568-606.000.

Olstowski, Franciszek; and Nafziger, John L. 4,282,387, Cl. 568-618.000.

Sherrod, Fred A. 4,282,071, Cl. 203-38.000.

Dowrick, John S., to Beecham Group Limited. Intramammary compositions. 4,282,202, Cl. 424-23.000.

Draber, Wilfried; Reiser, Wolf; Schmidt, Thomas; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Cyclic 1,2-diol benzyl ether compounds. 4,282,388, Cl. 568-660.000.

Dreiseidl, Walter; Kollensperger, Dieter; Salzmann, Theodor; Schlegel, Thomas; and Weigel, Wolf-Dieter, to Siemens Aktiengesellschaft. Rotating field machine drive and method. 4,282,473, Cl. 318-803.000.

Dresser Industries, Inc.: See—

Calver, Richard B.; and Bostick, Francis X. 4,282,486, Cl. 324-371.000.

Youmans, Arthur H. 4,282,523, Cl. 340-860.000.

Dressler, Friedrich K., to Harris Corporation. Inking mechanism. 4,281,597, Cl. 101-365.000.

Droste, Wilhelm; and Obenaus, Fritz, to Chemische Werke Huls A.G. Process for the simultaneous manufacture of pure MTBE and a substantially isobutene-free mixture of C<sub>4</sub>-hydrocarbons. 4,282,389, Cl. 568-697.000.

Du Bois, Donald W., to PPG Industries, Inc. Electrolytic process utilizing a transition metal-graphite intercalation compound cathode. 4,282,074, Cl. 204-98.000.

Dubro, Inc.: See—

Broeg, Helmut. 4,281,684, Cl. 137-625.210.

Ducroquet, Jean-Louis; and Lazareth, Michel, to Merlin Gerin. Ground fault circuit interrupting device. 4,282,500, Cl. 335-18.000.

Dudek, Edmund C., to Thor Power Tool Company. Transducer for indicating torque. 4,281,538, Cl. 73-862.210.

Dudzinski, John R.; and Schmidt, William K., to Du Pont de Nemours, E. I., and Company. Analgesic mixture of nalbuphine and acetylsalicylic acid, derivative or salt thereof. 4,282,215, Cl. 424-232.000.

Duggan, Stephen R., to Medtronic, Inc. Implantable telemetry transmission system for analog and digital data. 4,281,664, Cl. 128-696.000.

Duke University, Inc.: See—

Jobais, Frans F. 4,281,645, Cl. 128-633.000.

Dunn, Charles S.; and Propster, Mark A., to Owens-Corning Fiberglass Corporation. Glass manufacturing process with in-situ colemanite calcination and pollution abatement features. 4,282,019, Cl. 65-27.000.

Dunn, Howard J.: See—

Evich, Vince J.; Brown, Gerald C.; and Dunn, Howard J. 4,282,256, Cl. 426-7.000.

Dunn, Patrick F., to United States of America, Energy. Apparatus for measuring the local void fraction in a flowing liquid containing a gas. 4,282,481, Cl. 324-65.00P.

Du Pont de Nemours, E. I., and Company: See—

Anthony, John D., Jr.; Keegan, John J., Jr.; and Lee, Jerald D. 4,282,431, Cl. 250-236.000.

Buehler, Oscar R.; and Porter, Harold F. 4,282,381, Cl. 564-498.000.

Caruso, Paul P. 4,282,344, Cl. 528-51.000.

Cohen, Abraham B.; and Fan, Roxy N. 4,282,308, Cl. 430-271.000.

Cramer, Gregory D.; King, Irvin B.; Sauerbrunn, Robert D.; and Strand, Albert T. 4,281,935, Cl. 366-174.000.

Demo, Joseph J., Jr. 4,282,291, Cl. 428-683.000.

Dudzinski, John R.; and Schmidt, William K. 4,282,215, Cl. 424-232.000.

McLaughlin, Joseph E. 4,282,124, Cl. 260-22.00A.

Reeves, James W.; Sylvester, Robert W.; and Wells, David F. 4,282,185, Cl. 422-142.000.

Tucker, Stanley. 4,282,209, Cl. 424-81.000.

Yates, Richard A. 4,282,323, Cl. 435-140.000.

Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, to Smith Kline & French Laboratories Limited. Amidino and guanidino phosphonates. 4,282,213, Cl. 424-200.000.

Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., to Smith Kline & French Laboratories Limited. Pharmacologically active compounds to inhibit H-2 histamine receptors. 4,282,221, Cl. 424-249.000.

Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., to Smith Kline & French Laboratories Limited. Alkoxy-pyridyl substituted alkanes. 4,282,224, Cl. 424-250.000.

Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. Certain heterocyclic-methylthioalkyl guanidine derivatives. 4,282,234, Cl. 424-269.000.

Durekheimer, Walter: See—

Bormann, Dieter; Durckheimer, Walter; and Schrinner, Elmar. 4,282,220, Cl. 424-246.000.

Duret, Maurice L.; Lamarche, Bernard L. J.; Declercq, Marc A.; and Martin, Robert D., to Societe Nationale Industrielle Aerospatiale. Multi-blade propellers. 4,281,966, Cl. 416-134.00A.

Durr, Helmut E.: See—

Beyers, Robert C.; Durr, Helmut E.; and Mock, George E. 4,281,617, Cl. 118-68.000.

Dworsky, Lawrence N.: See—

Wakal, Emory, Jr.; Dworsky, Lawrence N.; Krolak, Leo V.; Whalin, Jeffery A.; and Mech, Harold W. 4,282,434, Cl. 310-348.000.

Dyckerhoff & Widmann Aktiengesellschaft: See—

Finsterwalder, Ulrich; Finsterwalder, Klemens; Koch, Kurt; and Puls, Hans. 4,282,036, Cl. 106-97.000.

Dzuban, Louis. Apparatus for indicating maximum resolution for projected images. 4,281,927, Cl. 356-124.000.

E. C. H. Will (GmbH & Co.): See—

Lemburg, Jörn-Uwe. 4,281,690, Cl. 140-71.00R.

E. R. Squibb & Sons, Inc.: See—

Hoeft, Hans. 4,282,230, Cl. 424-258.000.

Ondetti, Miguel A. 4,282,235, Cl. 424-270.000.

Vogt, B. Richard; and Magbanua, Ligaya G. 4,282,226, Cl. 424-251.000.

Earing, Mason H., to General Electric Company. Coil impregnated with modified asphaltite base. 4,282,038, Cl. 106-273.00N.

Easterly, Donald O., to Eastman Kodak Company. Web transport apparatus. 4,281,807, Cl. 242-206.000.

Eastman Kodak Company: See—

Brust, David P.; Hamilton, Lewis R.; and Wilkes, Glenn R. 4,282,305, Cl. 430-213.000.

Chang, Jack C.; and Sandifer, James R. 4,282,079, Cl. 204-195.00G.

Easterly, Donald O. 4,281,807, Cl. 242-206.000.

Sloan, Cephas H. 4,281,998, Cl. 8-129.000.

Van Allan, James A.; Rossi, Louis J.; Bloom, Melvin S.; Regan, Michael T.; Wright, Hal E.; and Kaukinen, Joseph Y. 4,282,354, Cl. 542-441.000.

Weaver, Max A.; Coates, Clarence A., Jr.; and Fleischer, Jean C. 4,282,144, Cl. 260-152.000.

Eaton Corporation: See—

Clancey, Stephen M. 4,281,750, Cl. 192-58.00B.

Ebauches S.A.: See—

Gharadjedaghi, Fereydoun. 4,281,903, Cl. 350-349.000.

Eberly, Paul E., Jr., to Exxon Research & Engineering Co. Reforming with multimetallic catalysts. 4,282,086, Cl. 208-139.000.

Echte, Adolf: See—

Walter, Manfred; Stein, Dieter; Fahrbach, Gerhard; Jung, Rudolf; and Echte, Adolf. 4,282,334, Cl. 525-53.000.

Eckels, Phillip W., to Westinghouse Electric Corp. Dynamoelectric machine with cryostable field winding. 4,282,450, Cl. 310-52.000.

Edelman, Leonard E.; and Runk, Robert H., to Westinghouse Electric Corp. Liquid modified epoxy resins. 4,282,122, Cl. 260-18.0EP.

Edlund, Ronald D., to American Photo-Graphics Corporation. Method of making pressure-sensitive transfer sheets. 4,282,310, Cl. 430-309.000.

Edmond, Tibor O.; and Bourne, Henry A., Jr., to Conoco, Inc. Control system for a drilling apparatus. 4,281,723, Cl. 175-76.000.

Edo-Aire Mitchell: See—

Nixon, John M. 4,281,811, Cl. 244-178.000.

Easley, Gary L.; DeMaggio, Gregory B.; and Buchholz, Jeffrey C., to General Motors Corporation. Apparatus for measuring soot concentration in engine oil. 4,281,533, Cl. 73-15.00R.

Egerer, Paul K. Apparatus for the production of energy and method for utilizing the pressure and/or temperature conditions in deep waters. 4,281,514, Cl. 60-641.00R.

Egosi, Dan. Energy conversion method with water recovery. 4,282,070, Cl. 203-11.000.

Egraz, Jean-Bernard: See—

Bousquet, Gilles; Egraz, Jean-Bernard; Rambert, Andre; and Ravet, Georges. 4,282,140, Cl. 260-42.520.

Ehmann, Hans; Bieher, Walter; and Baier, Hans, to Gesipa Blindniet-technik GmbH. Blind riveter with pneumatic rivet-core disposal. 4,281,531, Cl. 72-391.000.

Ehrlich, Donald J.; and Blout, Bennett O., to Evans Products Company. Vehicle convertible double deck system. 4,281,870, Cl. 296-24.00R.

Ehrmann, Wolfgang: See—

Winter, Claus; and Ehrmann, Wolfgang. 4,281,435, Cl. 16-94.00R.

Eibofner, Eugen, to Kaltenbach & Voigt GmbH & Co. Dental hand-piece. 4,281,988, Cl. 433-129.000.

Eifrid, Walter E.: See—

Miller, James; Eifrid, Walter E.; and Hacker, Jay P. 4,281,733, Cl. 180-69.00C.

Eiting, Hermann: See—

Wentzel, Peter; and Eiting, Hermann. 4,282,553, Cl. 360-75.000.

ELF France: See—

Barbelet, Michel; Caujolle, Jean-Pierre; Scramoncin, Claude; and Thibault, Edmond. 4,282,072, Cl. 204-1.00T.

Eli Lilly and Company: See—

Bach, Nicholas J.; and Kornfeld, Edmund C. 4,282,362, Cl. 546-84.000.

Krumkalns, Eriks V. 4,282,030, Cl. 71-90.000.

Lavagano, Edward R.; Pike, Andrew J.; and Campbell, Jack B. 4,282,170, Cl. 260-465.00D.

Eliott Industries: See—

Wegener, Howard W. 4,282,300, Cl. 430-146.000.

El Khadem, Hassan S.; Audichya, Thakur D.; and Kloas, John, to Michigan Technological University. Board of Control of Crystalline ribofuranosyl halides and other derivatives and methods for producing same. 4,282,349, Cl. 536-4.000.

Elkin, Bernard P.; and Mickowski, John. Electronic converter. 4,282,514, Cl. 235-310.000.

Elliott, James E., to Discovision Associates. Video disc read back scanner. 4,282,598, Cl. 369-44.000.

Elms, Robert T.; and Vercellotti, Leonard C., to Westinghouse Electric Corp. Indicator diagram based AC electric energy meter. 4,282,576, Cl. 364-483.000.

Emalfarb, Mark A.; Emalfarb, Sy; and Reum, Donald J. Landscaping bed divider. 4,281,473, Cl. 47-33.000.

Emalfarb, Sy: See—

Emalfarb, Mark A.; Emalfarb, Sy; and Reum, Donald J. 4,281,473, Cl. 47-33.000.

Emery Industries, Inc.: See—

Sharkey, Hubert J. 4,282,346, Cl. 528-338.000.

Emmett, John C.: See—

Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R. 4,282,221, Cl. 424-249.000.

Emmett, Robert C., Jr.: See—

Cook, Robert D.; Emmett, Robert C., Jr.; Wojcik, Bruce C.; and Baczek, Frank A. 4,282,082, Cl. 204-237.000.

Energy Wise, Inc.: See—

Ferreira, Cress R. 4,281,515, Cl. 62-2.000.

Engelbach, Heinz; and Sprague, Michael J., to BASF Aktiengesellschaft. Preparation of glyoxal from ethylene glycol. 4,282,374, Cl. 568-471.000.

Engelsmann, Dieter; Nicko, Reinhard; Lippl, Leo; and Maas, Dieter, to Agfa-Gevaert AG. Motorized film-transporting mechanism. 4,281,911, Cl. 354-173.000.

Enkner, Bernhard; Berger, Rupert; Eym, Manfred; Haslehner, Hermann; Smejkal, Helmut; and Sattler, Michael, to Voest-Alpine Aktiengesellschaft. Tiltable converter arrangement. 4,281,823, Cl. 266-246.000.

Enloe, Kenneth M.: See—

Frick, Richard H.; and Enloe, Kenneth M. 4,281,619, Cl. 118-325.000.

Ennis, Robert E., to Linatex Corporation of America. Process for cleaning fine coal. 4,282,088, Cl. 209-17.000.

Entreprise d'Equipement Mecaniques Hydrauliques E.M.H.: See—

Vilain, Robert. 4,281,611, Cl. 114-230.000.

Envirotech Corporation: See—

Cook, Robert D.; Emmett, Robert C., Jr.; Wojcik, Bruce C.; and Baczek, Frank A. 4,282,082, Cl. 204-237.000.

Erckel, Rudiger; and Jurgas, Peter, to Hoechst Aktiengesellschaft. Process for the manufacture of bis-benzoxazoyl-stilbene compounds. 4,282,355, Cl. 342-459.000.

Ergun, Hayri: See—

Wagener, Dietrich; Fach, Horst; and Ergun, Hayri. 4,282,066, Cl. 201-6.000.

Erickson, John W., to Kobe, Inc. High pressure centrifugal pump. 4,281,962, Cl. 415-89.000.

Erickson, Norman R. Dental appliance. 4,281,986, Cl. 433-93.000.

Erikson, Kenneth R., to North American Philips Corporation. Curved array of sequenced ultrasound transducers. 4,281,550, Cl. 73-626.000.

Erzinger, Paul: See—

Becker, Carl; Mahler, Georges; and Erzinger, Paul. 4,281,999, Cl. 8-527.000.

Esso Resources Canada Ltd.: See—

Fuhr, Bryan J.; and Liu, Joseph K. 4,282,103, Cl. 210-709.000.

Etablissements A. Voisin: See—

Leleu, Jean. 4,281,707, Cl. 164-292.000.

Ethen, John L., to Minnesota Mining and Manufacturing Company. Long-lived heavy-duty pavement marking. 4,282,281, Cl. 428-149.000.

Eudy, William W., to International Paper Company. Organosilicon quaternary ammonium antimicrobial compounds. 4,282,366, Cl. 556-413.000.

Eue, Ludwig: See—

Draber, Wilfried; Reiser, Wolf; Schmidt, Thomas; Eue, Ludwig; and Schmidt, Robert R. 4,282,388, Cl. 568-660.000.

European Atomic Energy Community-EURATOM: See—

Busse, Claus A. O. 4,281,709, Cl. 165-104.220.

Evans Products Company: See—

Ehrlich, Donald J.; and Blout, Bennett O. 4,281,870, Cl. 296-24.00R.

Eventide Clockworks, Inc.: See—

Factor, Richard. 4,282,606, Cl. 455-620.000.

Everett, Seth L., Jr., to United States of America, Army. Display/memory/control system for forward observer source data. 4,282,522, Cl. 340-711.000.

Everts & van der Weyden Exploitiemaatschappij Ewem N.V.: See—

Lubbers, Marius H. 4,281,529, Cl. 72-215.000.

Evetts, Samuel G.; Lawson, John D.; and Penn, William D., to Texas Instruments Incorporated. Correlation ranging. 4,282,589, Cl. 367-90.000.

Evich, Vince J.; Brown, Gerald C.; and Dunn, Howard J., to Star-Kist Foods, Inc. Preparation of an animal feed supplement from fish cannery process waste water. 4,282,256, Cl. 426-7.000.

Ex-Cell-O Corporation: See—

Gruesbeck, William G. 4,282,467, Cl. 318-561.000.

Hensley, Warren R. 4,281,787, Cl. 229-17.00G.

Exxon Research & Engineering Co.: See—

Deen, Harold E.; Winans, Esther D.; Ryer, Jack; and O'Halloran, Rosemary. 4,282,108, Cl. 252-51.50R.

Eberly, Paul E., Jr. 4,282,086, Cl. 208-139.000.

Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S.; and Klein, Robert R. 4,282,130, Cl. 260-29.6SQ.

Melchior, Michael T.; Milliman, George E.; Kim, Chang J.; and Chludzinski, George R. 4,282,193, Cl. 423-223.000.

Say, Geoffrey R.; Hays, James R., Sr.; Iyengar, Jagannathan N.; and Hacker, Barbara A. 4,282,194, Cl. 423-223.000.

Eymann, Steven W.; Fried, Mark A.; and Harris, Thomas L., to Motorola Inc. Linear Bessel ranging radar. 4,282,524, Cl. 343-14.000.



- Eym, Manfred: See—  
Eckner, Bernhard; Berger, Rupert; Eym, Manfred; Haslehner, Hermann; Smejkal, Helmut; and Sattler, Michael, 4,281,823, Cl. 266-246.000.
- F. J. Burrus & Cie.: See—  
Boegli, Serge; and Lebet, Jean-Pierre, 4,281,591, Cl. 493-45.000.
- Fach, Horst: See—  
Wagener, Dietrich; Fach, Horst; and Ergun, Hayri, 4,282,066, Cl. 201-6.000.
- Factor, Richard, to Eventide Clockworks, Inc. Broadcast delay line, 4,282,606, Cl. 455-620.000.
- Fahrbach, Gerhard: See—  
Walter, Manfred; Stein, Dieter; Fahrbach, Gerhard; Jung, Rudolf; and Echte, Adolf, 4,282,334, Cl. 525-53.000.
- Faile, Samuel P., to Purdue Research Foundation. Vapor growth of mercury iodide for use as high energy detectors, 4,282,057, Cl. 156-614.000.
- Fajt, Ludvik: See—  
Didek, Stanislav; Fajt, Ludvik; Storek, Jaroslav; Andres, Jiri; Cada, Frantisek; and Markova, Marie, 4,281,507, Cl. 57-58.890.
- Fan, Rosy N.: See—  
Cohen, Abraham B.; and Fan, Rosy N., 4,282,308, Cl. 430-271.000.
- Farley, David L., to Halliburton Company. Bypass valve, 4,281,715, Cl. 166-317.000.
- Farley, James E.; and Scarborough, Irvin R. Material weighing and bucket charging apparatus, 4,281,729, Cl. 177-139.000.
- Farmer, Peter H.: See—  
Hoogland, John C.; Farmer, Peter H.; and Carabetta, Rocco M., Jr., 4,281,980, Cl. 425-461.000.
- Farrar, Alfred O.; and Hochberg, Howard M., to Roche Medical Electronics Inc. Applying and securing percutaneous or transcutaneous probes to the skin especially for fetal monitoring, 4,281,659, Cl. 128-635.000.
- Farrell, Robert E., to Package Machinery Company. Apparatus for setting a clamping load, 4,281,977, Cl. 425-149.000.
- Farrell, Robert E., to Package Machinery Company. Injection molding machine with regenerative feed system, 4,282,176, Cl. 264-328.130.
- Favrot, Paul, to Constructions de Clichy. Device for eliminating residual unbalance from a rotating element, 4,281,563, Cl. 74-573.00F.
- Fearing, Ralph B.; and Weil, Edward D., to Stauffer Chemical Company. Filled unsaturated polyester resin compositions, 4,282,133, Cl. 260-30.60R.
- Feibelman, Jeffrey A., to A & H Mfg. Co. Removable identification panel for carrying cards, 4,281,469, Cl. 40-16.400.
- Feldman, Daniel W., to Standard Oil Company (Ohio). Die assembly providing uniform pressure and flow, 4,281,981, Cl. 425-467.000.
- Feldstein, Nathan. Dispersions for activating non-conductors for electroless plating, 4,282,271, Cl. 427-98.000.
- Felix, Raymond A., to Stauffer Chemical Company. Biocidal mercaptopyridine halocrylonitrile compounds, 4,282,231, Cl. 424-263.000.
- Fender, C. Leo. Bridge for stinging instruments, 4,281,576, Cl. 84-298.000.
- Fenimore, David C. Apparatus for transferring sample on flexible sheet to chromatographic plate, 4,281,618, Cl. 118-202.000.
- Fenn, Gordon W., to Chrysler Corporation. Throttle body and mixing tube, 4,281,632, Cl. 123-590.000.
- Fenske, John W.: See—  
Simons, John R.; and Fenske, John W., 4,282,413, Cl. 200-81.90M.
- Fernicola, Robert C.: See—  
Hardwick, Steven F.; and Fernicola, Robert C., 4,282,569, Cl. 363-87.000.
- Ferretti, Romeo, to PRO SAC S.p.A. Polymer composition with a polyester basis and utilization thereof for the production of transparent flexible laminates with inert and/or fibrous filling materials, 4,282,125, Cl. 260-22.0CB.
- Ferri, Joseph E.; Gunderen, Allan A.; and Seelig, Oliver N., to SKG Industries, Inc. Mixer, 4,281,937, Cl. 366-303.000.
- Ferreira, Cress R., to Energy Wise, Inc. Solar powered cooling device, 4,281,515, Cl. 62-2.000.
- Fett, Kurt: See—  
Schirmer, Ulrich; Rohr, Wolfgang; Wuerzer, Bruno; and Fett, Kurt, 4,282,369, Cl. 560-25.000.
- Fiell, George; and Torbet, Walter, to Siltec Corporation. Continuous replenishment of molten semiconductor in a Czochralski-process, single-crystal-growing furnace, 4,282,184, Cl. 422-106.000.
- Filoramo, Richard F. Film safe, 4,282,441, Cl. 250-515.000.
- Filter Specialists, Inc.: See—  
Morgan, Howard W., Jr., 4,282,098, Cl. 210-238.000.
- Finsterwalder, Klemens: See—  
Finsterwalder, Ulrich; Finsterwalder, Klemens; Koch, Kurt; and Puls, Hans, 4,282,036, Cl. 106-97.000.
- Finsterwalder, Ulrich; Finsterwalder, Klemens; Koch, Kurt; and Puls, Hans, to Dyckerhoff & Widmann Aktiengesellschaft. Flowable concrete mixture, 4,282,036, Cl. 106-97.000.
- Fisch, Michael H.: See—  
Lissau, Koen-Liang; and Fisch, Michael H., 4,282,165, Cl. 260-429.700.
- Fisch, Michael H.; and Fisch, Michael H., 4,282,166, Cl. 260-429.700.
- Fischer, Michael C., to Hewlett-Packard Company. Method and apparatus for phase detection having a narrow dead band and a linear output, 4,282,482, Cl. 324-83.00A.
- Fischer & Porter Company, Inc.: See—  
Nissen, Peter; Kiene, Wilfried; and Appel, Eggert, 4,281,552, Cl. 73-861.120.
- Fishe, Gerald R. A. Vaporizable liquid injection system and method for internal combustion engine, 4,281,626, Cl. 123-25.00C.
- Fisher, Albert W., to RCA Corporation. Method for determining silicon content in layers of aluminum and silicon, 4,282,266, Cl. 427-9.000.
- Fitoussi, Richard; Lours, Sylvie; and Musikas, Claude, to Commissariat a l'Energie Atomique. Ruthenium recovery process by solvent extraction, 4,282,112, Cl. 252-301.10W.
- Flaherty, Robert: See—  
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- Flaig, Hans; Allgaier, Jurgen; and Assmus, Friedrich, to Gebruder Junghans, GmbH. Electronic clock circuitry for a clock having chimes or an alarm, 4,282,593, Cl. 368-63.000.
- Flavel, Malcolm D., to Allis-Chalmers Corporation. Operation of associated crushing plant and mill, 4,281,800, Cl. 241-24.000.
- Fleischer, Jean C.: See—  
Weaver, Max A.; Coates, Clarence A., Jr.; and Fleischer, Jean C., 4,282,144, Cl. 260-152.000.
- Fletcher, Taylor C. Photometric system including a time-division optical attenuator, 4,281,897, Cl. 350-274.000.
- Flockenhaus, Claus; Galow, Manfred; Meckel, Joachim F.; and Joseph, Horst G., to Didier Engineering GmbH. Apparatus for the transfer and quenching of coke, 4,282,068, Cl. 202-227.000.
- Flora, Laurence P., to Burroughs Corporation. Three level data transmission system having means for seeking a constant average value for the transmitted signals, 4,282,601, Cl. 375-20.000.
- Flora, Lawrence; and Francis, Marion D., to Procter & Gamble Company. The Phenylacetate anti-inflammatory composition, 4,282,214, Cl. 424-204.000.
- Florin, Robert E. Mercury switch for monitoring position of patient, 4,282,412, Cl. 200-52.00R.
- FMC Corporation: See—  
Fowler, William E., Jr., 4,281,764, Cl. 209-557.000.
- Guiliano, Basil A.; Pfeffer, Henry A.; and Kurtz, Andrew D., 4,282,359, Cl. 544-192.000.
- Houston, Robert K.; and Meador, James, 4,281,933, Cl. 356-425.000.
- Jadlocki, Joseph F., Jr.; and Thompson, John S., 4,282,260, Cl. 426-264.000.
- Fogel, Sidney J.: See—  
Katz, Jerome; and Fogel, Sidney J., 4,282,067, Cl. 202-180.000.
- Fogelberg, Mark J., to Borg-Warner Corporation. Automatic locking clutch, 4,281,749, Cl. 192-36.000.
- Foley, James W., to Polaroid Corporation. Novel triarylmethane compounds, 4,282,160, Cl. 260-388.000.
- Foody, Patrick. Silo, 4,281,490, Cl. 52-236.100.
- Forberg, Horst; and Radelow, Wolfgang, to Krone GmbH. Line telecommunications cable end system, 4,281,885, Cl. 339-14.00R.
- Ford Aerospace & Communications Corp.: See—  
Lewis, I. Earl, Jr., 4,281,900, Cl. 350-292.000.
- Ford Motor Company: See—  
Gritner, Heinz; and Giese, Ralf, 4,281,871, Cl. 296-65.00R.
- Forenade Fabriksverken: See—  
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- Forest Engineering Research Institute of Canada: See—  
Moulton, Donald C., 4,281,693, Cl. 144-34.00R.
- Forkner, John H. Method and apparatus for the manufacture of formed edible products and products resulting therefrom, 4,282,258, Cl. 426-100.000.
- Formica, Vincent A.: See—  
Torok, Steve F.; Formica, Vincent A.; and Lange, George P., 4,282,585, Cl. 367-2.000.
- Forrest, John W.; and Livingstone, Robert D., to Bowmar/Alti, Inc. Fiber optic attenuation simulator, 4,281,925, Cl. 356-73.100.
- Forsyth, Bruce A.: See—  
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- Fortmann, Hermann, to Olympia Werke AG. Electrophotographic copier permitting a toner dispensing cassette to be subsequently employed as a residual toner receptacle, 4,281,918, Cl. 355-3.00R.
- Fossi, Paolo: See—  
Demarthe, Jean-Michel; Fossi, Paolo; and Guery, Dominique, 4,282,188, Cl. 423-10.000.
- Fotland, Richard A., to Dennison Manufacturing Company. Charge transfer imaging, 4,282,297, Cl. 430-48.000.
- Four Star Corporation: See—  
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- Fowler, William E., Jr., to FMC Corporation. Sorting apparatus for potatoes and the like, 4,281,764, Cl. 209-557.000.
- FRAC, Inc.: See—  
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- Frakeigh, M. Foster. Variable volume sample cutter and method of use, 4,281,546, Cl. 73-864.440.
- Francis, Marion D.: See—  
Flora, Lawrence; and Francis, Marion D., 4,282,214, Cl. 424-204.000.
- Francois, Abel: See—  
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- Frank, Lothar: See—  
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- Frank, Kurt, to Siemens Aktiengesellschaft. X-Ray diagnostic generator with an mAs relay, 4,282,432, Cl. 250-322.000.
- Franklin, Frederick C.; and Paradis, Stephen G., to Chevron Research Company. Vacuum pump operation in a maleic anhydride recovery system, 4,282,013, Cl. 55-48.000.

- Franzen, Roger W.; Greber, Gerald; and Rieken, William C., to General Foods Corporation. Dog food of improved acceptability, 4,282,254, Cl. 426-2.000.
- Freitag, Herbert; Schnitzler, Klaus; Muller, Martin; and Schafer, Willi, to Stabius GmbH. Electrically conductive pneumatic spring, 4,281,884, Cl. 339-9.00R.
- Frentzel-Beyme, Johannes, to Palitex Project Company GmbH. Yarn brake mechanism, 4,281,508, Cl. 57-279.000.
- Frezzolini Electronics, Inc.: See—  
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- Frezzolini, James; and Crawford, James J., to Frezzolini Electronics, Inc. Variable pressure control switch for battery charging circuit, 4,282,476, Cl. 320-46.000.
- Frick, Richard H.; and Enloe, Kenneth M., to Kimberly-Clark Corporation. Method for applying viscous fluid to stock and rotary valve for use in same, 4,281,619, Cl. 118-325.000.
- Fried, Krupp Gesellschaft mit beschränkter Haftung: See—  
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- Fried, Mark A.: See—  
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- Fried, Peter: See—  
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- Friedman, S. Jack, to O.M.I. Corporation of America. Interconnected, adjustable zoom lens and reticle utilized in lens systems for stereoplotter, 4,281,923, Cl. 356-2.000.
- Friese, Karl-Hermann: See—  
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- Frischmann, Peter G.; Luborsky, Fred E.; and Tompkins, Russell E., to General Electric Company. Method of making permanent magnets and product, 4,282,046, Cl. 148-121.000.
- Frischmann, Peter G.: See—  
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- Fritsche, Joel L.: See—  
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- Fritz, Walter: See—  
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- Froberg, Magnus L., to Owens-Corning Fiberglass Corporation. Glass manufacturing process with in-situ colemanite calcination, 4,282,018, Cl. 65-27.000.
- Froberg, Gunther: See—  
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- Frommer, Werner; and Schmidt, Delf, to Bayer Aktiengesellschaft. Production of 1-desosynojiramicin, 4,282,320, Cl. 435-84.000.
- Frosch, Robert A.: See—  
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- Fuchs, Werner: See—  
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- Fuelling, William, Jr.; and Seyerle, Carl E., to Outboard Marine Corporation. Filament mower with filament advancing mechanism, 4,281,505, Cl. 56-12.700.
- Fugent, Elmer G.; Fugent, Ruby M.; Kraus, Shirley; and Kraus, Wolfgang. Bathroom mixing device, 4,281,796, Cl. 239-310.000.
- Fugent, Ruby M.: See—  
Fugent, Elmer G.; Fugent, Ruby M.; Kraus, Shirley; and Kraus, Wolfgang, 4,281,796, Cl. 239-310.000.
- Fuhr, Bryan J.; and Liu, Joseph K., to Petro-Canada Exploration Inc.; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Synchrude Equity; PanCanadian Petroleum Limited; Esso Resources Canada Ltd.; Canada-Cities Service, Ltd.; and Gulf Canada Resources Inc. Method for controlling flocculant addition to tar sand tailings, 4,282,103, Cl. 210-709.000.
- Fuji Photo Film Co., Ltd.: See—  
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- Matsumoto, Nobuo, 4,281,922, Cl. 355-99.000.
- Noguchi, Masaru, 4,281,889, Cl. 350-6.800.
- Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,282,534, Cl. 346-135.100.
- Watanabe, Toshiyuki; Hirose, Takeshi; Yagihara, Morio; and Yokota, Yukio, 4,282,312, Cl. 430-384.000.
- Fujimoto, Takuaki: See—  
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- Fujimoto, Yasuo; and Yamabe, Shigeru, to Nippon Chemiphar Co., Ltd. Dibenzothiepin derivatives and a process for producing the same, 4,282,245, Cl. 424-275.000.
- Fujihiro, Yuji, to Kabushiki Kaisha Tokyo Kikai Seisakusho. Multiple-purpose offset rotary printing press, 4,281,595, Cl. 101-177.000.
- Fujita, Kazunori; Uno, Shigeo; Takeuchi, Seizi; and Yamashita, Hisao, to Hitachi, Ltd. Process for preparing inorganic particulate adsorbent and process for treating nuclear reactor core-circulating water, 4,282,092, Cl. 210-682.000.
- Fujito, Katsuyuki; Hasegawa, Seiro; Unoguchi, Takehiko; Nishino, Atsushi; and Yoshida, Akihiko, to Matsushita Electric Industrial Co., Ltd. Apparatus for humidity detection, 4,282,480, Cl. 324-61.00R.
- Fujitsu Limited: See—  
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- Nozaki, Takao; and Ito, Takashi, 4,282,270, Cl. 427-93.000.
- Fujiwara, Tugumasa. Method for fixing perovskite electrode in atrial pacing and device therefor, 4,281,660, Cl. 128-642.000.
- Fukuda, Hideki; Shiotani, Takeshi; and Okada, Wataru, to Kanagafuchi Kagaku Kogyo Kabushiki Kaisha. Apparatus for cultivating aerobic microorganisms and process for cultivation using the same, 4,282,328, Cl. 435-255.000.
- Fukunaga, Masao; Niino, Fusao; and Nonoguchi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Foam bathing apparatus, 4,281,423, Cl. 4-537.000.
- Fukunaga, Shoichi: See—  
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- Fukuyama, Toshifumi: See—  
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- Fuller, George C. Insulating enclosure for disappearing stairway, 4,281,743, Cl. 182-46.000.
- Fullmann, Marius: See—  
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- Funk, James E., to Alfred University Research Foundation Inc. Coal-water slurry and method for its preparation, 4,282,006, Cl. 44-51.000.
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- Furukawa, Hisao: See—  
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- G. D. Searle & Co.: See—  
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- Gaeckle, Fred J.; and Butterfield, John L., to General Electric Company. Lubrication system for high speed spline connection and bearing, 4,281,942, Cl. 403-38.000.
- Gaiser, Robert F.; and Stone, Samuel E., to Bendix Corporation. The Back-to-back proportioning valve, 4,281,880, Cl. 303-6.00C.
- Galbraith, Lee K., to United States of America, Energy. Flash protection controller, 4,282,429, Cl. 250-214.00C.
- Galbraith, Lyle D.: See—  
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- Gale, Robert M.: See—  
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- Gall, Rudi: See—  
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- Gallo, Joseph S. Fresh flower holder, 4,281,474, Cl. 47-58.000.
- Galow, Manfred: See—  
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- Ganellin, Charon R.: See—  
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- Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,282,224, Cl. 424-250.000.
- Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., 4,282,234, Cl. 424-269.000.
- Garcia-Crespo, Jose T. Hydraulic apparatus for producing impacts, 4,281,587, Cl. 91-290.000.
- Garrett Corporation, The: See—  
La Grone, Charles H., 4,281,509, Cl. 60-19.020.
- Garrett, William R., to Smith International, Inc. Drilling head, 4,281,724, Cl. 175-195.000.
- Garrett, William R., to Smith International, Inc. Drill string splined resilient tubular telescopic joint for balanced load drilling of deep holes, 4,281,726, Cl. 175-321.000.
- Garrity, John J. Bag holder, 4,281,813, Cl. 248-97.000.
- Gaudriot, Lionel; and Mercusot, Michel, to Societe pour la Mesure et le Traitement des Vibrations et du Bruit-Metravib. Apparatus for far-field directional pressure evaluation, 4,281,551, Cl. 73-647.000.
- Gauthier, John A.; and Shaver, David M., to GTE Automatic Electric Labs Inc. Ringing signal generator, 4,282,410, Cl. 179-84.00R.
- Gauthier, Michel: See—  
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- Gaylord, Edson C., to Gaylord Industries, Inc. Kitchen ventilator with inlet throat choke attachments, 4,281,635, Cl. 126-299.00D.
- Gaylord Industries, Inc.: See—  
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- Gaylord, Norman G.: See—  
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- Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,282,208, Cl. 424-78.000.
- Gebruder Adams Armaturen u. Apparate GmbH & Co. K.G.: See—  
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- Gebruder Junghans, GmbH: See—  
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Peil, William; and McFadyen, Robert J., 4,282,462, Cl. 315-46.000.  
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Glen, Alasdair T.; and Bayles, Richard W., to Imperial Chemical Industries Limited. Amides, 4,282,218, Cl. 424-240.000.

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Glover, Douglas L.; Rubenstein, Roger H.; Douglas, Peter H.; and Bridges, Lee R., to Idea Syndicate, Inc. The. Articulated dental hand piece, 4,281,989, Cl. 433-130.000.

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Goetz, Norbert; Steimmig, Anna; Zech, Bernd; and Adolph, Heinrich, to BASF Aktiengesellschaft. Insecticidal process, 4,282,238, Cl. 424-273.00R.

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Goldstein, David; and Hoover, Scott, to United States of America, Navy. Melting method for high-homogeneity precise-composition nickel-titanium alloys, 4,282,033, Cl. 75-170.000.

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Goodyear Tire & Rubber Company, The: See—  
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Gorman, Thomas E. Cutting guide for a router or similar tool, 4,281,694, Cl. 144-134.00D.

Goutard, Rene; and Levardon, Raymond, to Commissariat à l'Energie Atomique. Device for transferring and packaging contaminants such as radioactive products within a leak-tight sheath, 4,281,691, Cl. 141-1.000.

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Graphic Resources, Incorporated: See—  
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Davidson, Robert S.; and Grieger-Block, Richard A., 4,282,159, Cl. 260-348.210.

Griffith, Ronald C.: See—  
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Grigat, Ernst: See—  
Niederleimann, Georg; Roemer, Norbert; and Grigat, Ernst, 4,282,367, Cl. 260-2.300.

Grim, George B.: See—  
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Grittner, Heinz; and Giese, Ralf, to Ford Motor Company. Motor vehicle seat mounted with longitudinal sliding mobility, 4,281,871, Cl. 296-65.00R.

Groll, Manfred; and Müller, Friedhelm, to Bayer Aktiengesellschaft. Dyestuff solutions, their preparation and their use for dyeing paper, 4,282,000, Cl. 8-527.000.

Grosch, Karl A.; Moitzheim, Paul H.; Schloesser, Gert; and Hensgens, Daniel J. M., to Uniroyal Engelbert Reifen GmbH. Pneumatic tire, 4,281,702, Cl. 152-209.00R.

Groskopf, Ernest, to Spar Aerospace Limited. Three axes controller, 4,281,561, Cl. 74-471.0XY.

Gross, Alexander L.: See—  
Giese, Erik O.; Rinehart, Dixie L.; and Gross, Alexander L., 4,281,468, Cl. 36-121.000.

Gross, Benjamin; and Lee, Woonyung, to Mobil Oil Corporation. Catalytic cracking process, 4,282,084, Cl. 208-113.000.

Grote Manufacturing Company, Inc.: See—  
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Grove Valve and Regulator Company: See—  
Ripert, Roger L., 4,281,680, Cl. 137-527.400.

Grube, William L., to MacLean-Fogg Company. Locking fastener with resilient and rigid flange segments, 4,281,699, Cl. 411-176.000.

Gruesbeck, William G., to Ex-Cell-O Corporation. Controller system for rotary actuator, 4,282,467, Cl. 318-561.000.

Grumman Aerospace Corporation: See—  
Corbett, Marshall J.; and Salina, Salvatore C., 4,282,187, Cl. 422-190.000.

Grunau Company, Inc.: See—  
Simons, John R.; and Fenske, John W., 4,282,413, Cl. 200-81.90M.

Grueter, Johann; and Markl, Heinz, to Luwa AG. Apparatus for thermal treatment of flowable materials, 4,282,058, Cl. 159-13.00R.

GTE Automatic Electric Labs Inc.: See—  
Gauthier, John A.; and Shaver, David M., 4,282,410, Cl. 179-84.00R.

Kippenhan, Herbert A., Jr.; Nelson, Eugene E.; and Ricker, George T., Jr., 4,282,399, Cl. 178-4.000.

Norman, Stanley R. C.; and Tin, Kam B., 4,282,488, Cl. 328-112.000.

GTE Laboratories Incorporated: See—  
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GTE Products Corporation: See—  
Audesse, Emery G.; Brower, Boyd G.; Pfeifferle, Donald H.; and Holmes, James L., 4,282,559, Cl. 362-15.000.  
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Mengen, Gary L., 4,281,773, Cl. 220-3.200.  
Shaffer, John W.; Colville, William T.; and Mecone, David W., 4,282,558, Cl. 362-15.000.

Guery, Dominique: See—  
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Guest, Angela W.; Taylor, Andrew W.; and Ramage, Robert, to Beecham Group Limited. Process for preparation of thiophenes, 4,282,373, Cl. 560-181.000.

Guha, Jayanta K., to Perkin-Elmer Corporation. The. Very low absorption, low efficiency laser beamsampler, 4,281,894, Cl. 350-162.00R.

Guiliano, Basil A.; Pfeiffer, Henry A.; and Kurtz, Andrew D., to FMC Corporation. Purification of cyanuric acid, 4,282,359, Cl. 544-192.000.

Guillemette, Armand; and Francois, Abel. Novel purification process, 4,282,161, Cl. 260-397.100.

Gulf Canada Resources Inc.: See—  
Fuhr, Bryan J.; and Liu, Joseph K., 4,282,103, Cl. 210-709.000.

Gulf Oil Corporation: See—  
Rutter, Jerry L.; and Ahle, James L., 4,282,031, Cl. 71-99.000.

Gulf Research & Development Company: See—  
Cupples, Barrett L.; and Heilman, William J., 4,282,392, Cl. 585-10.000.

Wu, Ching-Yong; Swift, Harold E.; and Bozik, John E., 4,282,384, Cl. 568-574.000.

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Gunther, Donald A., to American Sterilizer Company. Disinfection with isopropanol vapor, 4,282,179, Cl. 422-27.000.

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Gutierrez, Eddie N., to Lever Brothers Company. Method for the production of novel anhydride polycarboxylates, 4,282,156, Cl. 260-343.600.

Hacker, Barbara A.: See—  
Say, Geoffrey R.; Hays, James R., Sr.; Iyengar, Jagannathan N.; and Hacker, Barbara A., 4,282,194, Cl. 423-223.000.

Hacker, Jay P.: See—  
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Hackett, Charles F.: See—  
Smith, Michael; Hackett, Charles F.; and Radler, Richard W., 4,282,298, Cl. 430-58.000.

Hadar, Arieh. Dual compartment electric water heater, 4,282,421, Cl. 219-314.000.

Hadlock, Fred, to FRAC, Inc. Heat exchanger, 4,281,710, Cl. 165-142.000.

Haga, Teturo; and Ikeguchi, Takashi, to Hitachi, Ltd. Apparatus for detecting coagulation effect, 4,282,093, Cl. 210-90.000.

Hagemann, Josef, to Patent-Treuhand-Gesellschaft für Elektrische Glühlampen mbH. High melting point glass-to-metal seal and melt connection, particularly for tungsten supply wires for high-pressure discharge lamps, 4,282,395, Cl. 174-50.610.

Haglund, Stephen A.; and Payne, Robert L., to Honeywell Inc. Interconnection of alarms of smoke detectors with distinguishable alarms, 4,282,519, Cl. 340-628.000.

Hake, Kenneth A.; and Palen, Nelson J., to Kent Manufacturing Co., Inc. Spring loaded field cultivator tool support, 4,281,719, Cl. 172-710.000.

Hall, Alan N.: See—  
Phillips, Glyn G.; Hall, Alan N.; and Hogg, Stephen D., 4,282,204, Cl. 424-49.000.

Hall, John F., to Chrysler Corporation. Exhaust tube clamp, 4,281,863, Cl. 285-382.200.

Hall, John E., to Standard Oil Company (Indiana). Flexible workover riser system, 4,281,716, Cl. 166-339.000.

Hall, Kenneth A. Anti-jackknife mechanism, 4,281,846, Cl. 280-432.000.

Haller, Klaus: See—  
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Whittington, Lawrence E.; and Haltmar, Warren C., 4,281,714, Cl. 166-274.000.

Ham, John K.: See—  
Khan, Sultan W.; Ham, John K.; and Strissel, Richard A., 4,282,583, Cl. 364-900.000.

Hamilton, Lewis R.: See—  
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Hammel, Joseph J.; and Mackenzie, John D., to PPG Industries, Inc. Glass melting enhancement by toroidal batch shaping, 4,282,023, Cl. 65-134.000.

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Wilson, John H.; and Hammett, Dillard S., 4,281,615, Cl. 114-265.000.

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O'Connell, Lawrence E.; and Hanisco, Raymond L., 4,281,815, Cl. 248-479.000.

Hanka, Ladislav J.; and Wiley, Paul F., to Upjohn Company. The. Biologically pure culture of *Paeclomyces abruptus*, 4,282,327, Cl. 435-254.000.

Hannah, John, to Merck & Co., Inc. 7-N-Heterocyclyl cephalosporins and antibiotic pharmaceutical compositions containing them, 4,282,219, Cl. 424-246.000.

Hansel, William B., to Sun Oil Company of Pennsylvania. Sensor for measuring leakage, 4,281,534, Cl. 73-49.200.

Hanson, James M.; and Bradley, Irving, to General Electric Company. Sealed, prefocused mount for plastic PAR lamp, 4,282,565, Cl. 362-267.000.

Hardwick, Steven F.; and Fernicola, Robert C., to Union Carbide Corporation. Constant current welding power supply with an up-slope starting current, 4,282,569, Cl. 363-87.000.

Harper, Robert, to Raytheon Company. Backward wave suppressor, 4,282,457, Cl. 315-3.600.

Harris, Allen E., to Halliburton Company. High temperature packer element for well bores, 4,281,840, Cl. 277-117.000.

Harris Corporation: See—  
Dressler, Friedrich K., 4,281,597, Cl. 101-365.000.  
Patterson, Raymond B., III, 4,282,515, Cl. 340-347.00C.  
Portis, Kenneth A.; and St. Clair, Thomas R., 4,281,449, Cl. 29-593.000.

Harris Data Communications Inc.: See—  
DeRienzo, William T., 4,282,489, Cl. 328-206.000.

Harris, David P. Kitchen utensil, 4,281,460, Cl. 30-278.000.

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Schaap, Luke A.; Udelhofen, John H.; and Harris, Samuel W., 4,282,106, Cl. 252-32.70E.

Harris, Thomas L.: See—  
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Harrison, Gregory K.: See—  
Runkle, Dean E.; Tang, Louis S.; and Harrison, Gregory K., 4,281,585, Cl. 91-5.000.

Harvey, William A.; and Torok, Ernest J., to Sperry Corporation. Magneto-optic light deflector beam recombination apparatus, 4,281,905, Cl. 350-377.000.

Hasegawa, Seiro: See—  
Fujito, Katsuyuki; Hasegawa, Seiro; Unoguchi, Takehiko; Nishino, Atsushi; and Yoshida, Akihiko, 4,282,480, Cl. 324-61.00R.

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Hashimoto, Teiji: See—  
Tezuka, Nobuo; Hashimoto, Teiji; Senuma, Mitio; and Iwata, Yutaka, 4,281,914, Cl. 354-244.000.

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Hasler, Dieter; and Schwarz, Robert, to Siemens Aktiengesellschaft. Method and circuit arrangement for energizing ultrasonic transducers which are utilized in impulse echo technology. 4,282,452, Cl. 310-317.000.

Hasuno, Sadao: See—  
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Hattner, James C., to Graphic Resources, Incorporated. In-store coupon and methods. 4,281,762, Cl. 206-390.000.

Hatten, Hidesaki; Onji, Norio; Tsujino, Koichi; and Fukuyama, Toshifumi, to Omron Tateisi Electronics Co. Reflection-type photoelectric switching apparatus. 4,282,430, Cl. 250-221.000.

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Heitmann, Uwe; Buchegger, Joachim; and Hinz, Werner, 4,281,670, Cl. 131-281.000.

Hayakawa, Kimiaki: See—  
Nomura, Akihiro; Hayakawa, Kimiaki; Yoshimura, Shigeru; Masuda, Shunichi; Shimizu, Katsuchi; and Yagasaki, Toshiaki, 4,281,919, Cl. 355-50.000.

Hayashi, Kiyozumi; and Domoto, Kazushige, to Doryokuro Kakunoryo Kaihatsu Jigyodan. Nuclear fuel element. 4,282,064, Cl. 176-73.000.

Hayashi, Shukichi: See—  
Yoshida, Matuju; and Hayashi, Shukichi, 4,282,574, Cl. 364-431.000.

Hayes, Ernest B.: See—  
Byrne, Stanley W.; Tompkins, Barry J.; and Hayes, Ernest B., 4,281,671, Cl. 131-335.000.

Hays, James R., Sr.: See—  
Say, Geoffrey R.; Hays, James R., Sr.; Iyengar, Jagannathan N.; and Hacker, Barbara A., 4,282,194, Cl. 423-223.000.

Hebert, Gayle P.: See—  
Zoleski, Benjamin H.; Sung, Rodney L.; Schierberg, Gordon R.; and Hebert, Gayle P., 4,282,107, Cl. 252-42.700.

Hebold, Gottfried: See—  
Berger, Herbert; Gall, Rudi; Kampe, Wolfgang; Bicker, Uwe; and Hebold, Gottfried, 4,282,212, Cl. 424-200.000.

Hecht, Sidney M.; and Jordis, Ulrich, to Massachusetts Institute of Technology. Synthesis for 7-alkylamino-3-methylpyrazolo [4,3-d]pyrimidines. 4,282,361, Cl. 544-262.000.

Heikinheimo, Olli, to Plan-Shell Oy. Method and system of aligning lumber, especially blocks from which the first pair of cants has been removed. 4,281,695, Cl. 144-312.000.

Heikinen, Leo L.; and Lundborg, Charles L., to LaFont Corporation. Firewood systems. 4,281,697, Cl. 144-326.000.

Heilman, William J.: See—  
Cupples, Barrett L.; and Heilman, William J., 4,282,392, Cl. 585-10.000.

Heinis, Robert P.: See—  
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Heinrich, William P.: See—  
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Heitmann, Uwe; Buchegger, Joachim; and Hinz, Werner, to Hauni-Werke Korber & Co. KG. Apparatus for increasing the permeability of wrapping material for rod-shaped smokers products. 4,281,670, Cl. 131-281.000.

Heliotrop Engineering Corp.: See—  
Devore, Clyde W., 4,281,641, Cl. 126-438.000.

Hellnick, Dieter H., to Jo-Way Tool Company, Inc. Method and apparatus for machining pipe collars. 4,281,430, Cl. 10-101.000.

Helms, Horst, to Fried. Krupp Gesellschaft mit beschränkter Haftung. Doppler log. 4,282,586, Cl. 367-13.000.

Henkel Corporation: See—  
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Hensley, Warren R., to Ex-Cell-O Corporation. Container and blank for constructing same. 4,281,787, Cl. 229-17.00G.

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Malanka, William W.; and Spence, Gavin G., 4,282,060, Cl. 162-162.000.

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Hession Industries, Inc.: See—  
Hession, Rodney J.; and Hession, Brent M., 4,281,464, Cl. 33-408.000.

Hession, Rodney J.; and Hession, Brent M., to Hession Industries, Inc. Device to facilitate the laying of masonry units. 4,281,464, Cl. 33-408.000.

Hetherington, Robert D.; and Goetz, David W., to Poly-Olas Systems. Modular multiple-fluid component selection and delivery system. 4,281,683, Cl. 137-606.000.

Heuner, Robert C., to RCA Corporation. Starting circuit for low power oscillator circuit. 4,282,496, Cl. 331-116.0FE.

Hewlett-Packard Company: See—  
Fischer, Michael C., 4,282,482, Cl. 324-83.00A.

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Hill, Dennis R. Finger toy. 4,281,472, Cl. 46-53.000.

Hill, Gwendolyn K.: See—  
Hill, John W., deceased, 4,281,564, Cl. 74-665.00D.

Hill, Gwendolyn K., administrator: See—  
Hill, John W., deceased, 4,281,564, Cl. 74-665.00D.

Hill, Jay L. Rotary blade power saw attachment. 4,281,570, Cl. 83-477.200.

Hill, John W., deceased (by Hill, Gwendolyn K., administrator), to Hill, Gwendolyn K. Power train or transmission. 4,281,564, Cl. 74-665.00D.

Hine, Jean P. M.: See—  
Watine, Didier J. M. M.; Hine, Jean P. M.; Catabelle, Jean M. H.; and Delamotte, Jean C. C., 4,282,396, Cl. 174-84.00R.

Hinshaw, Stanley E.; and Cole, Charles F., Jr., to Conoco, Inc. (formerly Continental Oil Company). Electronic mine roof bolt tester. 4,281,547, Cl. 73-579.000.

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Hirada Stechikai Ipai Kutato Intezet: See—  
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Kanazawa, Yasunori; Arai, Takao; Yokozawa, Norio; and Takasugi, Waseo, 4,282,551, Cl. 360-32.000.

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Ho, Bin L.; and Bibby, Stephen, to Priam. Enclosed disc drive with improved air flow. 4,282,554, Cl. 360-97.000.

Hoagland, John C.; Farmer, Peter H.; and Carabetta, Rocco M., Jr., to Monsanto Company. Expansion deformable extrusion die blade. 4,281,980, Cl. 425-461.000.

Hoch, John J., to Deere & Company. Two-stage deadman control for walk-behind mower. 4,281,732, Cl. 180-19.00H.

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Hoechst Aktiengesellschaft: See—  
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Hoehn, Hans, to E. R. Squibb & Sons, Inc. Imidazolethoxy derivatives of quinoline-2- or 4-methanols, antimicrobial compositions

containing them and method for treating bacterial or fungal infections with them. 4,282,230, Cl. 424-258.000.

Hoekje, Howard H., to PPG Industries, Inc. Submicron titanium boride powder and method for preparing same. 4,282,195, Cl. 423-289.000.

Hoernchemeyer, August B.; Zinser, Alan L.; and Myra, John F., to St. Louis Conveyor Company Inc. Rotary sifting device. 4,282,090, Cl. 209-291.000.

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Holland, Gerald F., to Pfizer Inc. Antidiabetic furancarboxylic and thiophenecarboxylic acids. 4,282,246, Cl. 424-275.000.

Holland, Judith J., to Tarn Textiles Limited. Furniture unit. 4,281,873, Cl. 297-118.000.

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Honjo Chemical Corporation, The: See—  
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Hoover, Scott: See—  
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Hori, Masayoshi: See—  
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Horn, Hannes S.: See—  
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Horowitz, Alexandre; van der Hoorn, Rudolf J. G. A.; and Kummeling, Jozef W. M., to Volvo Car B.V. Method of curving supporting surfaces of driving belt elements. 4,281,483, Cl. 51-328.000.

Horwath, Gary W. Miter boxes. 4,281,827, Cl. 269-189.000.

Hoskinson, William R.; and Machanian, William V., to Wurflitzer Company. The Control system for vending machine. 4,282,575, Cl. 364-479.000.

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Humphries, Darral V.: See—  
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Hunt, Earl R.; Rosler, Robert K.; and Peterson, James O. Flame retardant epoxy molding compound method and encapsulated device. 4,282,136, Cl. 260-38.000.

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Hwang, Mei H., to Calgon Corporation. Electroconductive polymer composition. 4,282,118, Cl. 252-518.000.

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von Bonin, Wulf; Vehlwald, Peter; and Illger, Hans-Walter, 4,282,329, Cl. 521-99.000.

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Imperial Chemical Industries Limited: See—  
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Instrumentation Laboratory Inc.: See—  
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- MacDonald, Timothy; and Lieberman, Arthur L., 4,282,274, Cl. 427-402.000.
- Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinal, Joaquin F.; and Kiwala, Jacob, 4,282,205, Cl. 424-49.000.
- International Foodservice Equipment Systems, Inc.: See—  
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- International Harvester Company: See—  
Miller, James; Elfrid, Walter E.; and Hacker, Jay P., 4,281,733, Cl. 180-69.000.
- Molzahn, Herbert W., 4,281,737, Cl. 180-307.000.
- International Paper Company: See—  
Eudy, William W., 4,282,366, Cl. 556-413.000.
- International Telephone & Telegraph Corporation: See—  
Mohiuddin, Gulam, 4,282,285, Cl. 428-315.000.
- Siabkhan, Mansur N., 4,281,892, Cl. 350-96.210.
- Invento AG: See—  
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- IPM Corporation: See—  
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- Ipri, Alfred C., to RCA Corporation. Input protection device for insulated gate field effect transistor. 4,282,556, Cl. 361-56.000.
- Irie, Shin-ichi; Uesugi, Kenji; and Kimura, Hitoshi, to Furukawa Electric Co., Ltd., The Polyolefin series resin composition for water-tree retardant electric insulation. 4,282,333, Cl. 525-6.000.
- Irwin, Michael R., to American Cyanamid Co. Method for the control of shipping fever pneumonia in cattle. 4,282,210, Cl. 424-89.000.
- Ishibashi, Takao; and Oono, Kenjiro, to Osawa Precision Industries, Ltd. Modular camera system. 4,281,909, Cl. 352-25.000.
- Ishida, Nobuyuki: See—  
Muramoto, Makoto; Ishida, Nobuyuki; and Matsushita, Fujio, 4,282,117, Cl. 252-508.000.
- Ishigami, Hikoichi: See—  
Yato, Fumihiko; Kitayama, Seiichi; Tamura, Junao; Ishigami, Hikoichi; and Kurematsu, Akira, 4,282,406, Cl. 179-1.05C.
- Isola Fabrikker A/S: See—  
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- Isolite Insulating Product Company Limited (Isolite Kogyo K.K.): See—  
Ochiai, Tsunemi; Saiki, Goro; Shima, Teruo; Saito, Toshitaro; Nakamishi, Shizuo; and Saeki, Takeo, 4,282,173, Cl. 264-59.000.
- Italfarmaco S.p.A.: See—  
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- Ito, Akira; Sasaki, Heizo; Osawa, Masanori; Kouno, Masahiro; and Iwata, Kenji, to Mitsui Toatsu Chemicals, Inc. Catalyst for polymerizing  $\alpha$ -olefins. 4,282,114, Cl. 252-429.00B.
- Ito, Takashi: See—  
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- Iwano, Robert C.; Brennan, Edward J.; and Weik, Kirby B., to Kochler-Dayton, Inc. Aircraft seat with cantilevered tray table. 4,281,874, Cl. 297-163.000.
- Iwasa, Masakazu: See—  
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- Iwasaki, Yukio: See—  
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- Iwata, Kenji: See—  
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- Iwata, Yutaka: See—  
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- Iyengar, Jagannathan N.: See—  
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- J. I. Case Company: See—  
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- Youngers, Stephen A., 4,281,848, Cl. 280-494.000.
- J. M. Huber Corporation: See—  
Lamond, Trevor G.; and Aboytes, Peter, 4,282,199, Cl. 423-641.000.
- Oder, Robin R., 4,281,799, Cl. 241-24.000.
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Crowe, William D., 4,282,105, Cl. 210-798.000.
- Jackman, Thomas R.; and Stonebanks, Trevor J., to Shendale Ltd. Steerable castored vehicle. 4,281,844, Cl. 280-87.010.
- Jackson, Liam R.; and Taylor, Allan H. High-strength blind rivet. 4,281,581, Cl. 411-19.000.
- Jackson, Michael. Spherical loudspeaker enclosure. 4,281,738, Cl. 181-151.000.
- Jacobs, Annella E. Neonatal flotation pad. 4,281,425, Cl. 5-455.000.
- Jacobs, John J., to Carrier Corporation. Apparatus for controlling the performance of a motor compressor. 4,281,972, Cl. 417-415.000.
- Jacquet, Bernard; Papantonio, Christo; Vanlerberghe, Guy; Mahieu, Claude; and Zorayan, Vahan, to L'Oreal. Hair lacquer and hair lotion compositions containing a copolymer having units of a vinyl allyl or methallyl ester of an  $\alpha$ - or  $\beta$ -cyclic carboxylic acid. 4,282,203, Cl. 424-47.000.
- Jadlocki, Joseph F., Jr.; and Thompson, John S., to FMC Corporation. Method for inhibiting the growth of *Clostridium botulinum* and the formation of enterotoxin in smoked meat products. 4,282,260, Cl. 426-264.000.
- Jaeger, Kurt S.: See—  
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- Jaqua, Vance W., to United States of America, Air Force. Control piston for liquid propellant gun injector. 4,281,582, Cl. 89-7.000.
- Jaake, Robert F., to Sprague Devices, Inc. Reciprocating piston fluid powered motor. 4,281,588, Cl. 91-290.000.
- Jefferson, William T. Optical isolation circuit for bidirectional communication lines. 4,282,604, Cl. 455-602.000.
- Jeney, Tibor, to NOVEX Talalmanyfejlesztés és Ertekesítő Kulker. Rt. Process for casting objects having complicated shapes. 4,281,705, Cl. 164-10.000.
- Jenkins, David L.; and Gibson, James A., to Check Fumigation and Pest Control Limited. Rodent control devices. 4,281,471, Cl. 43-131.000.
- Jensen, James D.; and Schooler, Richard B., to United States of America, Navy. Pb<sub>1</sub>-WCDW/S Epitaxial thin film. 4,282,045, Cl. 148-33.300.
- Jifuku, Masayuki: See—  
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- Jinkins, Danny R., to Black & Decker Inc. Turbine housing and method for making the same. 4,281,964, Cl. 415-203.000.
- Jo-Way Tool Company, Inc.: See—  
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- Jobais, Frans F., to Duke University, Inc. Method and apparatus for monitoring metabolism in body organs. 4,281,645, Cl. 128-633.000.
- John Zink Company: See—  
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- Johnson, Alfred D.; and Kirkpatrick, Paul F. Field effect memory alloy heat engine. 4,281,513, Cl. 60-527.000.
- Johnson, Frank; Gordon, Donald; and Schick, George, to Slater Steel Industries, Limited. Tool carrier. 4,281,843, Cl. 280-47.260.
- Johnson & Johnson: See—  
Rovee, D. Thomas; Marvel, John R.; and Mezick, James A., 4,282,216, Cl. 424-240.000.
- Johnson, Matthey & Co., Limited: See—  
Tindall, Richard F.; Baddeley, Eric R.; and Rudd, Peter W., 4,282,507, Cl. 338-25.000.
- Johnson, Richard V.: See—  
Sprague, Robert A.; and Johnson, Richard V., 4,281,904, Cl. 350-336.000.
- Johnston, Gary D. Multi-function control system. 4,281,734, Cl. 180-167.000.
- Johnston, Robert J.; Layciak, Stephen G.; and Cametti, George M., to Westinghouse Electric Corp. Convertible switch operator. 4,282,414, Cl. 200-160.000.
- Jones, Aaron U.: See—  
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- Jones, Frank G., Jr.: See—  
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- Jones, James H.: See—  
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- Jones, John L. Integral partitioned hemodialysis unit. 4,282,099, Cl. 210-247.000.
- Jordis, Ulrich: See—  
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- Joseph, Horst G.: See—  
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- Jung, Johann: See—  
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- Jung, Rudolf: See—  
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- Jurek, Dennis J., to Square D Company. Method for controlling magnetizing current in multipulse resistant welding. 4,282,417, Cl. 219-116.000.
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- Kabushiki Kaisha Mitokako: See—  
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- Kabushiki Kaisha Daini Seikoshu: See—  
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- Kabushiki Kaisha Ricoh: See—  
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- Kabushiki Kaisha Suwa Seikoshu: See—  
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- Kagabu, Hiroshi: See—  
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- Kahan, Frederick M.: See—  
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- Kahan, Jean S.; and Kahan, Frederick M., to Merck & Co., Inc. Process for enzymatic deacylation of antibiotics. 4,282,322, Cl. 435-119.000.
- Kaiser, Robert A.: See—  
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- Kajimoto, Noboru: See—  
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- Kallstad, Daniel R.; and Barr, David F., to Continental Agri-Services, Inc. Floor support for grain drying and storage bin. 4,281,489, Cl. 52-192.000.
- Kaltenbach & Voigt GmbH & Co.: See—  
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- Kamata, Shigeru, to Canon Kabushiki Kaisha. Arrangement for adjusting a member in a lens barrel for effecting a zooming function zoom lenses. 4,281,907, Cl. 350-427.000.
- Kaminaga, Hiromitsu, to Yoshida Kogyo K.K. Roller-supported closure having a closure retainer. 4,281,477, Cl. 49-453.000.
- Kampe, Wolfgang: See—  
Berger, Herbert; Gall, Rudi; Kampe, Wolfgang; Bicker, Uwe; and Hebold, Gottfried, 4,282,212, Cl. 424-200.000.
- Kanazawa, Yasunori; Arai, Takao; Yokozawa, Norio; and Takasugi, Wasao, to Hitachi, Ltd. PCM Recording and reproducing apparatus. 4,282,551, Cl. 360-32.000.
- Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: See—  
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- Yonezawa, Kazuya; Furukawa, Hisao; and Azuma, Masaaki, 4,282,336, Cl. 525-102.000.
- Kaneko, Isao: See—  
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- Kaneko, Masatoshi: See—  
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- Kaneko, Noboru, to Kabushiki Kaisha Daini Seikoshu. Temperature detecting device. 4,281,544, Cl. 73-362.05C.
- Kanics, Andras, to Buhler-Miag; and Metallgesellschaft Aktiengesellschaft. Pneumatic conveyance device and conveying method employing percolation of gas into flowable bulk material in a feed pipe. 4,281,946, Cl. 406-95.000.
- Kao Soap Co., Ltd.: See—  
Koike, Mamoru, 4,282,110, Cl. 252-107.000.
- Kapetanakis, Christos A.; Pasour, John A.; Mahaffey, Redge A.; Golden, Jeffrey; and Marsh, Spencer J., to United States of America, Navy. Intense ion beam generation with an inverse reflex tetrode (IRT). 4,282,436, Cl. 250-423.00R.
- Kaplan, Jonathan L., to Polaroid Corporation. Electric wire terminal connecting structure. 4,281,886, Cl. 339-97.00R.
- Karady, Sandor: See—  
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- Karasinski, Frederick: See—  
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- Kardas, Alan, to Institute of Gas Technology. Method and apparatus of heat-pulsed recuperation of energy. 4,281,982, Cl. 431-1.000.
- Kariagin, Nikolai, to Whittaker Corporation. Disengaging apparatus. 4,281,867, Cl. 294-83.00R.
- Kasai, Nobuharu. Automatic water supply device. 4,281,625, Cl. 119-77.000.
- Kasai, Osamu: See—  
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- Kato, Hiroshi; and Morita, Yasuhiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Mechanical clutch release system. 4,281,752, Cl. 192-99.00R.
- Kato, Hisashi: See—  
Kudo, Yoshio; Iwasa, Masakazu; and Kato, Hisashi, 4,281,622, Cl. 118-653.000.
- Kato, Toshiharu: See—  
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- Kato, Tutomu; and Houjiyo, Susumu, to Sharp Kabushiki Kaisha. Sheet stripping members for fixing device for fixing images of an original document on sheets of copy materials. 4,281,623, Cl. 118-668.000.
- Katz, Jerome; and Fogel, Sidney J. Apparatus for high volume distillation of liquids. 4,282,067, Cl. 202-180.000.
- Katz, Lawrence E.: See—  
Rothgery, Eugene F.; and Katz, Lawrence E., 4,282,169, Cl. 260-455.00A.
- Kaukenen, Joseph Y.: See—  
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- Kawai Musical Instrument Mfg. Co. Ltd.: See—  
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- Kawamoto, Yukio: See—  
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- Yamagata, Mitsukuni; Takitani, Keiichi; Hasuno, Sadao; and Motoda, Kuniaki, 4,282,047, Cl. 148-143.000.
- Kawazoe, Masayuki; Tomoda, Yasuro; Sasaki, Atsuo; and Kaneko, Isao, to Sumitomo Metal Mining Co., Ltd. Method of controlling the suction gas pressure of a sulfuric acid plant for treatment of smelter exhaust gas. 4,281,821, Cl. 266-44.000.
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- Keegan, Richard E.: See—  
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- Keen, Ronald W.: See—  
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- Keiser, Emil, to Inventio AG. Damping body for machine support arrangements. 4,281,739, Cl. 181-207.000.
- Keller, Donald E.: See—  
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- Kemlite Corporation: See—  
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- Kensen Co., Ltd.: See—  
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- Kent Manufacturing Co., Inc.: See—  
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- Kerey, Gyorgy: See—  
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- Kermarrec, Jean-Claude: See—  
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- Kiley, Leo R., to Teledyne Industries, Inc. Black smoke generator. 4,282,113, Cl. 252-359.00G.
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- Kitko, David J.: See—  
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- Kleesattel, Claus, to Cavitron Corporation. Ultrasonically driven low-speed rotary motor, 4,281,987, Cl. 433-103.000.
- Klein, Keith W. Self-cleaning rope holder, 4,281,439, Cl. 24-130.000.
- Klein, Robert R.: See—  
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- Klepov, Anatoly F.: See—  
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- Klier, Donald F.: See—  
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- Klinkwitz, Kurt: See—  
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- Kloekner-Humboldt-Deutz AG: See—  
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- Kobayashi, Zenjiro; Aihara, Masaki; and Sato, Kuniaki, to Kawasaki Steel Corporation. Method of heating a side-burner type heating furnace for slab, 4,281,984, Cl. 432-9.000.
- Kobe, Inc.: See—  
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- Kober, Hans, to Kugelfischer Georg Schafer & Co. Method of testing rotationally symmetrical bodies, especially balls, for defects, 4,281,548, Cl. 73-593.000.
- Koch, Kurt: See—  
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- Kockums Construction AB: See—  
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- Kochler-Dayton, Inc.: See—  
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- Kochring Company: See—  
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- Koike, Mamoru, to Kao Soap Co., Ltd. Antibacterial soap, 4,282,110, Cl. 252-107.000.
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- Kolind-Andersen, Hans: See—  
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- Koller, Karl S. Energy absorbing load carrying strut and method of providing such a strut capable of withstanding cyclical loads exceeding its yield strength, 4,281,487, Cl. 52-167.000.
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- Kometani, Thomas Y.; and Wood, Darwin L., to Bell Telephone Laboratories, Incorporated. Method of preparing optical fibers of silica, 4,282,196, Cl. 423-337.000.
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- Konoshima, Katunaga: See—  
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- Koster, Richard A.: See—  
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- Kouns, Herbert H., to ABEX Corporation. Inlet inducer-impeller for piston pump, 4,281,971, Cl. 417-203.000.
- Kowal, Samuel J.: See—  
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- Krieg, Adrian H., to Widdier Corporation. Nibbling tool, 4,281,459, Cl. 30-228.000.
- Kringel, George N.; and Sachuk, Nicholas E., to A.C.A. Products, Inc. Light distributor, 4,282,560, Cl. 362-26.000.
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- Krone GmbH: See—  
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- Knibatowicz, James F., to Custom Concepts, Incorporated. Clay cutting lathe and method, 4,281,369, Cl. 82-1.00C.
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- Kuehn, Erich, to ICI Americas Inc. Esters of tetracarboxylic acids and resins derived therefrom, 4,282,138, Cl. 260-40.00R.
- Kuepper, Theodore A.; and Chapler, Robert S. Dynamic oil surface coalescer, 4,282,097, Cl. 210-200.000.
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- Kullendorff, Anders: See—  
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- Kummeling, Jozef W. M.: See—  
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- Kurematsu, Akira: See—  
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- La Grone, Charles H., to Garrett Corporation, The. Fuel control system, 4,281,509, Cl. 60-39.020.
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- Lang-Ree, Nils: See—  
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- Lange, George P.: See—  
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- Lange, Gerd, to Gebrüder Thonet AG. Molded objects such as tables, chairs and the like, 4,281,602, Cl. 108-161.000.
- Lansberry, John B., to Coalex, Inc. Televised remote control system of a continuous mining machine, 4,281,876, Cl. 299-1.000.
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- Larson, Harold V., to Olin Corporation. Process for producing a calcium sulfate product containing low amounts of radium, 4,282,192, Cl. 423-166.000.
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- Latassa, Frank M.; Bienvenue, Roland L.; Poirier, Charles H.; and Wallace, John, to GTE Products Corporation. Mercury dispenser for arc discharge lamps, 4,282,455, Cl. 313-177.000.
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- Le Carbone (Great Britain) Limited: See—  
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- Ledex, Inc.: See—  
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Maxson, Dale E.; and Ober, David, to Barber-Colman Company. Double induction unit. 4,281,592, Cl. 98-38.00R.

Mayer, Jerome F.: See—

O'Rear, Dennis J.; and Mayer, Jerome F., 4,282,085, Cl. 208-120.000.

Mazeau, Jean P.; and Seward, Thomas P., III, to Corning Glass Works. Method of making photochromic glasses suitable for simultaneous heat treatment and shaping. 4,282,021, Cl. 65-30.00R.

McAlpine, James B.; and Carney, Ronald E., to Abbott Laboratories. 1-Epi-2-deoxyfortimicin B and derivatives. 4,282,211, Cl. 424-180.000.

McAuliffe, Donald C.: See—

Robertson, King G.; and McAuliffe, Donald C., 4,282,044, Cl. 148-2.000.

McCall, John M.: See—

DeGeeter, Melvin J.; and McCall, John M., 4,282,228, Cl. 424-251.000.

McCarthy, Jeremiah P.: See—

Berry, Vincent J.; and McCarthy, Jeremiah P., 4,281,448, Cl. 29-577.00C.

McChesney, John L.; Tackland, Thomas A.; and Turner, Ian, to Xerox Corporation. Liquid developer spear head access mechanism. 4,281,620, Cl. 118-410.000.

McDonald, Hugh C.: See—

Luderer, Albert A.; and McDonald, Hugh C., 4,282,315, Cl. 435-5.000.

McDonald, James A.; and Stachel, Earl F., to Union Carbide Corporation. Plastic bag handling system. 4,281,828, Cl. 493-12.000.

McDonnell Douglas Corporation: See—

Miller, George J.; and Sutter, George W., 4,281,447, Cl. 29-568.000.

McElhaney, William G., to Anvil Corporation. Apparatus for cutting and forming tubing. 4,281,530, Cl. 72-294.000.

McElroy, David J., to Texas Instruments Incorporated. High density floating gate EPROM programmable by charge storage. 4,282,446, Cl. 307-238.300.

McFadyen, Robert J.: See—

Pell, William; and McFadyen, Robert J., 4,282,462, Cl. 315-46.000.

McGarry, Errol J.; and Forryth, Bruce A., to ICI Australia Limited. 2,6-Benzyl substituted phenols. 4,282,390, Cl. 568-720.000.

McGinnis, Merrill F. Safety shower head. 4,281,790, Cl. 236-93.00B.

McGuire, Susan; and Cannon, Michael. Pocket calculator with grade averaging function. 4,282,580, Cl. 364-734.000.

McJunkin Corporation: See—

McJunkin Jr., Howard P.; and Rowley, Larry W., 4,282,564, Cl. 362-217.000.

McJunkin Jr., Howard P.; and Rowley, Larry W., to McJunkin Corporation. Triangular enclosure for tubular light source. 4,282,564, Cl. 362-217.000.

McKnight, William J., to Howe-Baker Engineers, Inc. Gas to liquid diffuser. 4,282,172, Cl. 261-76.000.

McLaughlin, Joseph E., to Du Pont de Nemours, E. I., and Company. Diethyl fumarate reactive diluent for air dry coatings. 4,282,124, Cl. 260-22.00A.

McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S. Apparatus for bending and tempering glass. 4,282,026, Cl. 65-273.000.

McMullen, Edward D. Fishing leader storage reel. 4,281,806, Cl. 242-125.100.

McMullen, James W. Magnetic strip separator. 4,281,784, Cl. 226-118.000.

McNab, Incorporated: See—

Burbank, John E., III, 4,281,537, Cl. 73-862.330.

McNary, James F.; and Person, Abraham, to Global Marine, Inc. Connection of the upper end of an ocean upwelling pipe to a floating structure. 4,281,614, Cl. 114-264.000.

McWilliams, Joseph E. Method and apparatus for unloading bulk mail vans. 4,281,955, Cl. 414-398.000.

Mead Corporation, The: See—

Werner, Charles E., 4,282,275, Cl. 427-428.000.

Meador, James: See—

Houston, Robert K.; and Meador, James, 4,281,933, Cl. 356-425.000.

Meador, James W.: See—

Kraft, Thomas L.; Vick, Howard A.; and Meador, James W., 4,281,536, Cl. 73-53.000.

Mech, Harold W.: See—

Wakat, Emory, Jr.; Dworsky, Lawrence N.; Krolak, Leo V.; Whalin, Jeffery A.; and Mech, Harold W., 4,282,454, Cl. 310-348.000.

Mechoulam, Raphael; Lander, Naphtali; and Dikstein, Shabtay. Pinene derivatives and pharmaceutical compositions containing the same. 4,282,248, Cl. 424-299.000.

Meckel, Joachim F.: See—

Floekenhaus, Claus; Galow, Manfred; Meckel, Joachim F.; and Joseph, Horst G., 4,282,068, Cl. 202-227.000.

Mecone, David W.: See—

Shaffer, John W.; Colville, William T.; and Mecone, David W., 4,282,558, Cl. 362-15.000.

Medtronic, Inc.: See—

Duggan, Stephen R., 4,281,664, Cl. 128-696.000.

Mee, David K.; and Stephens, Albert E., to United States of America, Energy. Automatic thermocouple positioner for use in vacuum furnaces. 4,281,985, Cl. 432-205.000.

Meeks, Fredrick T., to General Electric Company. Electronic scale and battery support. 4,281,727, Cl. 177-128.000.

Meibaum, Raymond K.: See—

Barnes, J. Ray; Holdegraver, Robert E.; and Meibaum, Raymond K., 4,282,263, Cl. 426-572.000.

Meiri, Toshimi: See—

Yamada, Ryozi; Okamoto, Naomichi; and Meiri, Toshimi, 4,281,893, Cl. 350-96.310.

Meisner, Alfred; Grasser, Hans; and Glasmacher, Peter, to Diehl GmbH & Co. Process and arrangement for the electronic control of the input pulses of a manually rotatable pulse generator into an electronic counter. 4,282,513, Cl. 340-149.00R.

Mekosh, George, Jr.; and Hulise, David O., to Budd Company, The. Anti-locking mechanism. 4,281,881, Cl. 303-99.000.

Melchior, Michael T.; Millman, George E.; Kim, Chang J.; and Chludzinski, George R., to Exxon Research & Engineering Co. Process for converting cyclic urea to corresponding diamine in a gas treating system. 4,282,193, Cl. 423-223.000.

Melillo, David G.: See—

Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Slettinger, Meyer, 4,282,148, Cl. 260-239.00A.

Menard, Marcel; and Martel, Alain, to Bristol-Myers Company. 2,6-Disubstituted penem compounds. 4,282,150, Cl. 260-245.20R.

Meneghello, Gaetano. Case structure for rotary machines. 4,281,973, Cl. 417-424.000.

Mengue, Gary L., to GTE Products Corporation. Electrical wiring box. 4,281,773, Cl. 220-3.200.

Merck & Co., Inc.: See—

Amato, Joseph S.; Karady, Sandor; and Weinstock, Leonard M., 4,282,364, Cl. 548-202.000.

Baldwin, John J.; Jones, James H.; and Lundell, George F., 4,282,240, Cl. 424-274.000.

Hannah, John, 4,282,219, Cl. 424-246.000.

Kahan, Jean S.; and Kahan, Frederick M., 4,282,322, Cl. 435-119.000.

Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Slettinger, Meyer, 4,282,148, Cl. 260-239.00A.

Rokach, Joshua; Cragoe, Edward J., Jr.; and Rooney, Clarence S., 4,282,365, Cl. 548-252.000.

Smith, Robert L.; and Lee, Ta-jyh, 4,282,155, Cl. 260-343.500.

Mercusot, Michel: See—

Gaudriot, Lionel; and Mercusot, Michel, 4,281,551, Cl. 73-647.000.

Merger, Franz; and Nestler, Gerhard, to BASF Aktiengesellschaft. Preparation of p-substituted aromatic carbamic acid esters. 4,282,368, Cl. 560-24.000.

Merger, Franz; and Nestler, Gerhard, to BASF Aktiengesellschaft. Preparation of methylene-bis-phenylcarbamic acid esters and of polymethylene-polyphenylcarbamic acid esters. 4,282,370, Cl. 560-25.000.

Merlin Gerin: See—

Ducroquet, Jean-Louis; and Lazareth, Michel, 4,282,500, Cl. 335-18.000.

Messer Griesheim GmbH: See—

Auer, Rupert, 4,282,419, Cl. 219-137.440.

Bucker, Werner; and Rademacher, Christian, 4,282,273, Cl. 427-398.300.

Moller, Karlheinz, 4,281,822, Cl. 266-50.000.

Messerschmitt-Bolkow-Blohm GmbH: See—

Muller, Martin; Seidel, Albert; Schmidt, Gunther; Schubert-Klempnauer, Holm; Malburg, Werner; and Brand, Rolf A., 4,281,518, Cl. 62-12.000.

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Metalgesellschaft Aktiengesellschaft: See—

Kanics, Andras, 4,281,946, Cl. 406-95.000.

Metals, Inc.: See—

Clarke, Beresford N.; and Shedd, Wilfred G., 4,281,824, Cl. 266-251.000.

Metcalfe, Robert M.: See—

Boggs, David R.; and Metcalfe, Robert M., 4,282,512, Cl. 340-147.01P.

Methanol Chemie Nederland V.O.F.: See—

Tinkelenberg, Arie; Vaessen, Henricus W. L. M.; Suen, Kwai W.; and Van Doorn, Antoo J., 4,282,119, Cl. 260-6.000.

Metz, Ulrich; and Michaud, Horst, to SKW Trostberg Aktiengesellschaft. Hyperacidic solid metal lactates, process for producing same. 4,282,385, Cl. 562-589.000.

Mezick, James A.: See—

Rovee, D. Thomas; Marvel, John R.; and Mezick, James A., 4,282,216, Cl. 424-240.000.

Michaud, Horst: See—

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Michigan Technological University, Board of Control of: See—

El Khadem, Hassan S.; Audichya, Thakur D.; and Kloss, John, 4,282,349, Cl. 536-4.000.

Michl, Rudy; and Wollwage, Peter, to Perdent, GmbH. Dental prostheses. 4,281,991, Cl. 433-202.000.

Mickowski, John: See—

Elkin, Bernard P.; and Mickowski, John, 4,282,514, Cl. 235-310.000.

Middleton, Peter. Electronic tuning device. 4,281,577, Cl. 84-454.000.

Midwest Silo Company: See—

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Kullander, Gregor H.; Chatfield, Christopher G.; Mikus, Marian; and Westergren, Bo K., 4,282,289, Cl. 428-457.000.

Mill-Craft Housing Corp.: See—

Rehbein, Erwin G., 4,281,830, Cl. 272-1.00E.

Miller, Alvin W. Hair curler. 4,281,673, Cl. 132-39.000.

Miller, Donald M. Control member for anaesthesia apparatus. 4,281,652, Cl. 128-204.250.

Miller, George J.; and Sutter, George W., to McDonnell Douglas Corporation. Detachable tool interface system for a robot. 4,281,447, Cl. 29-568.000.

Miller, James; Eifrid, Walter E.; and Hacker, Jay P., to International Harvester Company. Motor truck hood opening damper restraint. 4,281,733, Cl. 180-69.00C.

Miller, Viktor A.: See—

Brjkhneevich, Gennady I.; Klepov, Anatoly F.; Kondrashova, Lidia I.; Lozovoi, Valery I.; Miller, Viktor A.; Postovalov, Valdis E.; Prokhorov, Alexandr M.; Serdjuchenko, Jury N.; Stepanov, Boris M.; and Schelev, Mikhail Y., 4,282,427, Cl. 250-213.0VT.

Millman, George E.: See—

Melchior, Michael T.; Millman, George E.; Kim, Chang J.; and Chludzinski, George R., 4,282,193, Cl. 423-223.000.

Mills, King L., to Phillips Petroleum Company. Apparatus for reducing non-gaseous pollutants. 4,281,512, Cl. 60-311.000.

Milton, Russell E. Automotive charger system. 4,282,475, Cl. 320-6.000.

Minagawa, Motonobu; Nakahara, Yutaka; and Kitsuikawa, Kazumi, to Argus Chemical Corporation. Ortho-substituted phenyl phosphite additive composition. 4,282,141, Cl. 260-45.70R.

Minasov, Alexandr N.; Likhoguh, Evgeny P.; and Kononenko, Vasily S. Coke dry quenching apparatus. 4,282,069, Cl. 202-228.000.

Minemet Recherche: See—

Demarthe, Jean-Michel; Fossi, Paolo; and Guery, Dominique, 4,282,188, Cl. 423-10.000.

Minn, James, to Boots Hercules Agrochemicals Co. Process for preparing esters of G,O-dialkyl dithiophosphoric acid. 4,282,153, Cl. 260-340.600.

Minnesota Mining and Manufacturing Company: See—

Ethen, John L., 4,282,281, Cl. 428-149.000.

Minnetti, Federico, to Officine Minnetti di Ornella Raveggi & C. S.A.S. Hank transfer apparatus. 4,281,959, Cl. 414-668.000.

Minolta Camera Kabushiki Kaisha: See—

Yamaguchi, Tamikazu, 4,281,908, Cl. 350-476.000.

Miro Manufacturing Company: See—

Chandick, Michael D.; Chandick, Robert M.; and Ricchio, Pasquale, 4,281,849, Cl. 280-655.000.

Mr. Transmission, Inc.: See—

Venuto, Ralph A., 4,281,562, Cl. 74-473.00R.

Mitani, Hiroshi; and Uozumi, Kenichi, to Yoshida Kogyo K.K. Cantilevered braking guide for attaching slide fastener chains. 4,281,608, Cl. 112-150.000.

Mitchell, Edson, to Betz, Charles F. Filtering apparatus. 4,282,094, Cl. 210-167.000.

Mitchell Equipment Corp.: See—

Lovitt, Estel L., 4,281,868, Cl. 294-106.000.

Mitsubishi Denki Kabushiki Kaisha: See—

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Mitsubishi Gas Chemical Company, Inc.: See—

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Sugio, Akitoshi; Masu, Masanobu; Sasaki, Yukio; and Mizutani, Zenpei, 4,282,335, Cl. 525-68.000.

Mitsubishi Jukogyo Kabushiki Kaisha: See—

Atsukawa, Masumi; Nishimoto, Yoshihiko; Yokoyama, Naruo; and Sera, Toshikuni, 4,282,115, Cl. 252-440.000.

Mitsui Toatsu Chemicals, Inc.: See—

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Mitsuya, Yoshihide. Mechanical pencil. 4,281,939, Cl. 401-54.000.

Miyamoto, Yukihiko: See—

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Miyasaka, Mamoru, to Kabushiki Kaisha Suwa Seikosha. Indicating member advancing mechanism. 4,282,592, Cl. 368-37.000.

Mizobuchi, Yuzo: See—

Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,282,534, Cl. 346-135.100.

Mizutani, Zenpei: See—

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Mobay Chemical Corporation: See—

Phillips, Barry A.; Spiller, Keith G.; and Keegan, Richard E., 4,282,332, Cl. 521-171.000.

Mobil Oil Corporation: See—

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Gross, Benjamin; and Lee, Wooyoung, 4,282,084, Cl. 208-113.000.

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Mobius, Werner. Pencil sharpener. 4,281,698, Cl. 145-3.310.

Mock, George E.: See—

Beyers, Robert C.; Durr, Helmut E.; and Mock, George E., 4,281,617, Cl. 118-68.000.

Modrovich, Ivan E. Stabilized enzymic solutions for determining urea. 4,282,316, Cl. 435-12.000.

Moeser, Denis S., to Leisure Products, Inc. Boat seat mounting unit. 4,281,426, Cl. 9-7.000.

Mohiuddin, Gulam, to International Telephone & Telegraph Corporation. Process for preparing polyurethane molded part. 4,282,285, Cl. 428-315.000.

Mohr, Siegfried H., to Quantor Corporation. Quick change lens mount. 4,281,895, Cl. 350-257.000.

Moitzheim, Paul H.: See—

Grosch, Karl A.; Moitzheim, Paul H.; Schloesser, Gert; and Hensgens, Daniel J. M., 4,281,702, Cl. 152-209.00R.

Moldenhauer, Jeanne. Cell culture medium supplement. 4,282,326, Cl. 435-240.000.

Molins Machine Company, Inc.: See—

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Moller, Karlheinz, to Messer Griesheim GmbH. Device for cutting a work piece manufactured in a continuous casting plant. 4,281,822, Cl. 266-50.000.

Molski, Bernard E. Wheel chair hoist assembly for vehicles. 4,281,958, Cl. 414-542.000.

Molzahn, Herbert W., to International Harvester Company. Braking and speed control system. 4,281,737, Cl. 180-307.000.

Monhemius, Andrew J.: See—

Thorsen, Gunnar; and Monhemius, Andrew J., 4,282,189, Cl. 423-24.000.

Monnier, Milton H.: See—

Pellicori, Samuel F.; and Monnier, Milton H., 4,282,290, Cl. 428-472.000.

Monsanto Company: See—

D'Amico, John J., 4,282,029, Cl. 71-90.000.

Hoagland, John C.; Farmer, Peter H.; and Carabatta, Rocco M., Jr., 4,281,980, Cl. 425-461.000.

Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Lucarelli, Domenico, Jr.; Schmitt, Frederick L.; Stork, Gilbert; MacDonald, Timothy; and Lieberman, Arthur L., to International Fla-



vors & Fragrances Inc. Organoleptic uses of 2- and 3-cyclotetradecan-1-ones. 4,282,274, Cl. 427-402.000.

Moore, Brian, to Pennwalt Corporation. Automatic safety clutch device for flexible drives. 4,281,504, Cl. 56-10.300.

Moore, Harry W., III; and Quack, Steven M., to NCR Corporation. Multiprocessor memory access system. 4,282,572, Cl. 364-200.000.

Moracz, Donald J.: See—  
Spiegelberg, William D.; Moracz, Donald J.; and Lake, Frank N., 4,281,521, Cl. 72-46.000.

Moreau, Deborah L., to Motorola, Inc. Redundant clock signal generating circuitry. 4,282,493, Cl. 331-2.000.

Morgan, Howard W., Jr., to Filter Specialists, Inc. Filter top hinge. 4,282,098, Cl. 210-238.000.

Morishita, Masanobu, to Nippon Electric Co., Ltd. Color image pick-up apparatus. 4,282,547, Cl. 358-44.000.

Morita, Yasuhiro: See—  
Kato, Hiroshi; and Morita, Yasuhiro, 4,281,752, Cl. 192-99.00R.

Moriyama, Shigeo, to Hitachi, Ltd. Positioning control system. 4,282,469, Cl. 318-619.000.

Morris, Hugh C., to Caterpillar Tractor Co. Pressure modulating selector valve. 4,281,676, Cl. 137-102.000.

Morris, Thomas E.: See—  
Brooks, Kenneth; Smith, Paul R.; and Morris, Thomas E., 4,282,533, Cl. 346-75.000.

Morrow, Robert D., to Catalyst Research Corporation. Combination seismic/magnetic transducer with floating magnet. 4,282,484, Cl. 324-207.000.

Morse, Donald B., to Kemite Corporation. Method for making resin pencils. 4,282,049, Cl. 156-62.200.

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Dell, Harold R.; Holtsman, William L.; Lamasney, Michael V.; and Mortimer, Charles P. L., 4,281,994, Cl. 434-49.000.

Morton, David C., to Baker Perkins Holdings Limited. Apparatus for feeding articles to packaging machines. 4,281,757, Cl. 198-358.000.

Motoda, Kuniaki: See—  
Yamagata, Mitsukuni; Takitani, Keiichi; Hasuno, Sadao; and Motoda, Kuniaki, 4,282,047, Cl. 148-143.000.

Motorola Inc.: See—  
Eymann, Steven W.; Fried, Mark A.; and Harris, Thomas L., 4,282,524, Cl. 343-14.000.

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Nowak, Robert A., 4,282,544, Cl. 357-72.000.

Schroeder, Daniel R., 4,282,602, Cl. 455-169.000.

Wakat, Emory, Jr.; Dworsky, Lawrence N.; Krolak, Leo V.; Whalin, Jeffery A.; and Mech, Harold W., 4,282,454, Cl. 310-348.000.

Mouille, Rene L.; Genoux, Gerard C. L.; Declercq, Marc A.; Leman, Jean-Luc M.; and Suzzi, Robert J., to Societe Nationale Industrielle Aerospatiale. Resonator device for damping the vibrations of a rotor of a rotary-wing aircraft. 4,281,967, Cl. 416-145.000.

Moulson, Donald C., to Forest Engineering Research Institute of Canada. Feller director. 4,281,693, Cl. 144-34.00R.

Mourret, Michel. Propeller with a water-jet for crafts. 4,281,996, Cl. 440-89.000.

MTU Motoren-und-Turbinen-Union Munchen GmbH: See—  
Schweikl, Ludwig, 4,281,795, Cl. 239-265.350.

Mueller, George P.; Urban, Urban A.; Muenster, Kermit J.; and Ludwig, Donald A., to Wisconsin Tissue Mills Inc. Wrapping apparatus and method. 4,281,500, Cl. 53-211.000.

Mueller, Richard A., to G. D. Searle & Co. Process for producing  $\alpha,\beta$ -unsaturated ketones. 4,282,158, Cl. 260-347.800.

Muenster, Kermit J.: See—  
Mueller, George P.; Urban, Urban A.; Muenster, Kermit J.; and Ludwig, Donald A., 4,281,500, Cl. 53-211.000.

Muller, Friedrich: See—  
Groll, Manfred; and Muller, Friedrich, 4,282,000, Cl. 8-527.000.

Muller, Hugo S. Slat conveyor belt for slat conveyors. 4,281,760, Cl. 198-846.000.

Muller, Klaus; Linder, Ernst; Mauer, Helmut; Friese, Karl-Hermann; Rieger, Franz; and Geier, Heinz, to Robert Bosch GmbH. Electrochemical sensor, particularly for oxygen determination in combustion gases. 4,282,080, Cl. 204-195.00S.

Muller, Klaus: See—  
Kmetz, Allan R.; and Muller, Klaus, 4,281,902, Cl. 350-336.000.

Muller, Martin; Seidel, Albert; Schmidt, Gunther; Schubert-Klempauer, Holm; Malburg, Werner; and Brand, Rolf A., to Messerschmitt-Bolkow-Blohm GmbH. Method and apparatus for separating particular components of a gas mixture. 4,281,518, Cl. 62-12.000.

Muller, Martin: See—  
Freitag, Herbert; Schnitzius, Klaus; Muller, Martin; and Schafer, Willi, 4,281,884, Cl. 339-9.00R.

Muller, Wolfgang; and Witzke, Lothar, to Th. Goldschmidt AG. Process for the manufacture of iron and aluminum-free zinc chloride solutions. 4,282,190, Cl. 423-104.000.

Mumford, George V., to Owens-Illinois, Inc. Tamper proof snap cap. 4,281,774, Cl. 220-306.000.

Murai, Kosuke: See—  
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Murakami Kaimeido Co., Ltd.: See—  
Ochiai, Akio; Iida, Noriyuki; and Yoshimura, Yasumasa, 4,281,898, Cl. 350-281.000.

Muramoto, Makoto; Ishida, Nobuyuki; and Matsushita, Fujio, to Honjo Chemical Corporation. The Method for producing electrically conductive zinc oxide. 4,282,117, Cl. 252-508.000.

Murphy, Cornelius B.; and Sypula, Donald S., to Xerox Corporation. High speed magnetographic imaging process. 4,282,296, Cl. 430-39.000.

Murphy, Robert P.; and Jones, Frank O., Jr., to Standard Oil Company (Indiana). Minimizing clay and shale damage in a log-inject-log procedure. 4,281,712, Cl. 166-250.000.

Musikas, Claude: See—  
Fitoussi, Richard; Lour, Sylvie; and Musikas, Claude, 4,282,112, Cl. 252-301.10W.

Muzzarelli, Riccardo, to Anic, S.p.A. Chitosan-glucan complex, method for its production and end uses. 4,282,351, Cl. 536-20.000.

Myers, John F.: See—  
Hochmeyer, August B.; Zinser, Alan L.; and Myers, John F., 4,282,090, Cl. 209-291.000.

Myers, John L., to Ledex, Inc. Bi-directional linear actuator. 4,282,501, Cl. 335-258.000.

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Nagoya, Yoshihide; Murai, Kosuke; Amano, Hirota; and Soga, Yoshihisa, to Pacific Metals Co., Ltd. Direct method for production of high-grade, high-purity ferromanganese. 4,282,032, Cl. 75-80.000.

Nakahara, Yutaka: See—  
Minagawa, Motonobu; Nakahara, Yutaka; and Kutsukawa, Kazumi, 4,282,141, Cl. 260-45.70R.

Nakai, Kaichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnet with continuous magnetic circuit. 4,282,463, Cl. 315-39.710.

Nakamura, Shiro: See—  
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Nakamura, Yoshifumi, to Nanbu Industrial Co., Ltd. Toy including a music playing device therein. 4,281,575, Cl. 84-1.280.

Nakanishi, Shizuo: See—  
Ochiai, Tsunemi; Saiki, Goro; Shimao, Teruo; Saito, Toshitaro; Nakanishi, Shizuo; and Saeki, Takeo, 4,282,173, Cl. 264-59.000.

Nakano Vinegar Co., Ltd.: See—  
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Namiki, Tomizo: See—  
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,282,534, Cl. 346-135.100.

Nanbu Industrial Co., Ltd.: See—  
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MacMaster, George H.; and Nichols, Lawrence J., 4,282,492, Cl. 330-286.000.

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Kobayashi, Yuzi; and Nishikatsu, Hiroshi, 4,281,463, Cl. 33-29.000.

Nishikawa, Yasuo; Yanagida, Hiroaki; Shimizu, Tadao; Hori, Masayoshi; and Yoshida, Tetsuro, to Kyushu Refractories Co., Ltd. Processes for the preparation of fibrous titanic acid metal salts. 4,282,200, Cl. 423-598.000.

Nishimoto, Yoshihiko: See—  
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Nissan Motor Company Limited: See—  
Inami, Sumio, 4,281,478, Cl. 49-503.000.

Suga, Masaki; Kobayashi, Chiaki; and Tohizima, Hisaaki, 4,281,751, Cl. 192-0.092.

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McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S., 4,282,026, Cl. 65-273.000.

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Noguchi, Masaru, to Fuji Photo Film Co., Ltd. Light beam scanning system. 4,281,889, Cl. 350-6.800.

Nolan, Daniel A.: See—  
Lo, Kuang-Hsin K.; and Nolan, Daniel A., 4,282,022, Cl. 65-85.000.

Nomura, Akihiro; Hayakawa, Kimiaki; Yoshimura, Shigeru; Masuda, Shunichi; Shimizu, Katsuchi; and Yagasaki, Toshiaki, to Canon Kabushiki Kaisha. Copying apparatus provided with an automatic original feeding device. 4,281,919, Cl. 355-50.000.

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Norand Corporation: See—  
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Baker, Edward D.; and Lang-Ree, Nils, 4,281,594, Cl. 99-386.000.

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Kimata, Kei; Kaneko, Masatoshi; Fukunaga, Shoichi; Kato, Toshiharu; Ikeda, Takeshi; and Suzuki, Atsuo, 4,281,797, Cl. 239-533.120.

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O.M.I. Corporation of America: See—  
Friedman, S. Jack, 4,281,923, Cl. 356-2.000.

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Ober, David: See—  
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Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S.; and Klein, Robert R., 4,282,130, Cl. 260-29.65Q.

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Ricketts, Thomas E., 4,281,878, Cl. 299-2.000.

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O'Connell, Lawrence E.; and Hanisco, Raymond L., to Delbar Products, Inc. Mirror mounting bracket. 4,281,815, Cl. 248-479.000.

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Ray, Donald R.; and Steddum, Riddle E., 4,281,613, Cl. 114-230.000.

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- Ohta, Shigenori; and Hosoya, Katsuyuki, to Hitachi, Ltd. Fluorescent lamp unit. 4,282,563, Cl. 362-216.000.
- Ohta, Takatoshi, to Okamoto Chemical Industry Corporation. Photosensitive diazo coating compositions and plates. 4,282,301, Cl. 430-175.000.
- Okada Kogyo Kabushiki Kaisha: See—
- Okada, Yoshio, 4,281,458, Cl. 30-162.000.
- Okada, Wataru: See—
- Fukuda, Hideki; Shiotani, Takeshi; and Okada, Wataru, 4,282,328, Cl. 435-255.000.
- Okada, Yoshio, to Okada Kogyo Kabushiki Kaisha. Compact safety knife. 4,281,458, Cl. 30-162.000.
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- Okamoto, Naomichi: See—
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- Okui, Tokujiro. Both-surface adhesive tape producing apparatus. 4,282,056, Cl. 156-519.000.
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- Okuno, Yoshitaka: See—
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- Fortmann, Hermann, 4,281,918, Cl. 355-3.00R.
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- Kinoshita, Kunio, 4,281,646, Cl. 128-6.000.
- Kitagawa, Masahiro; and Saito, Michiharu, 4,281,917, Cl. 354-289.000.
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- Tanaka, Masahiro; and Konoshima, Katunaga, 4,281,674, Cl. 134-95.000.
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- Osawa Precision Industries, Ltd.: See—
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- Fuelling, William, Jr.; and Seyerle, Carl E., 4,281,505, Cl. 56-12.700.
- Overman, David L., to United States of America, Army. Non-slip turning joint for fuses. 4,281,601, Cl. 102-276.000.
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- Dunn, Charles S.; and Propster, Mark A., 4,282,019, Cl. 65-27.000.
- Froberg, Magnus L., 4,282,018, Cl. 65-27.000.
- Williamson, Michael, 4,282,393, Cl. 13-6.000.
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- Adamaki, Richard T.; and Kowal, Samuel J., 4,281,758, Cl. 198-398.000.
- Doherty, Thomas E.; and Herzog, William F., 4,281,979, Cl. 425-391.000.
- Mumford, George V., 4,281,774, Cl. 220-306.000.
- Rapp, James E., 4,282,282, Cl. 428-220.000.
- Pace, Joseph A. Two-piece hardshell, soluble and digestible liquid containing gelatin capsule. 4,281,763, Cl. 206-530.000.
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- Nagoya, Yoshihige; Murai, Kosuke; Amano, Hirota; and Soga, Yoshimasa, 4,282,032, Cl. 75-80.000.
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- Palitex Project Company GmbH: See—
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- Palombo, Gaston A.: See—
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- Pampouchidis, Georgios; and Honig, Helmut, to Vianova Kunstharz, A.G. Thermosetting binders for cathodic deposition in electrodeposition paints. 4,282,128, Cl. 260-29.2TN.
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- Panzer, Hans P.: See—
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- Papantoniou, Christos: See—
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- Franklin, Frederick C.; and Paradis, Stephen G., 4,282,013, Cl. 55-48.000.
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- Hagemann, Josef, 4,282,395, Cl. 174-50.610.
- Patterson, Raymond B., III, to Harris Corporation. Analog to digital encoding system with an encoder structure incorporating instrumentation amplifier, sample and hold, offset correction and gain correction functions. 4,282,515, Cl. 340-347.00C.
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- Payne, Thomas R.; and Baker, Alfred L., to General Electric Company. Power control for appliance using multiple high inrush current elements. 4,282,422, Cl. 219-486.000.
- Pedrazzoli, Andrea; and Boveri, Sergio, to CM Industries. 5-(2-Hydroxy-3-thiopropoxy) chromone-2-carboxylic acids chemical process and pharmaceutical compositions. 4,282,247, Cl. 424-283.000.
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- Evett, Samuel G.; Lawson, John D.; and Penn, William D., 4,282,589, Cl. 367-90.000.
- Pennevis, Horst: See—
- Benda, Rainer; Knoell, Helmut; Neudoerfl, Peter; and Pennewiss, Horst, 4,282,132, Cl. 260-30.200.

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- Perdent, GmbH: See—
- Michl, Rudy; and Wollwage, Peter, 4,281,991, Cl. 433-202.000.
- Perepezko, John H.: See—
- Smith, Jeffery S.; Perepezko, John H.; Rasmussen, Don H.; and Loper, Carl R., Jr., 4,282,034, Cl. 75-232.000.
- Perfection Corporation: See—
- Volgstadt, Frank R.; and Passerelli, David P., 4,282,175, Cl. 264-248.000.
- Perkin-Elmer Corporation, The: See—
- Guha, Jayanta K., 4,281,894, Cl. 350-162.00R.
- Person, Abraham: See—
- McNary, James P.; and Person, Abraham, 4,281,614, Cl. 114-264.000.
- Pernon, Stig, to Aktiebolaget SKF. Seal. 4,281,838, Cl. 277-53.000.
- Peterson, James O.: See—
- Hunt, Earl R.; Roaler, Robert K.; and Peterson, James O., 4,282,136, Cl. 260-38.000.
- Petitpierre, Jean C., to Ciba-Geigy Corporation. Pressure-sensitive or heat-sensitive recording material and novel 2,2-diarylcromeno compounds used therein. 4,281,855, Cl. 282-27.500.
- Petrini, Richard R.: See—
- Lord, David E.; Petrini, Richard R.; and Carter, Gary W., 4,281,929, Cl. 356-241.000.
- Petro-Canada Exploration Inc.: See—
- Fuhr, Bryan J.; and Liu, Joseph K., 4,282,103, Cl. 210-709.000.
- Petters, Claus, to Messerschmitt-Bolkow-Blohm GmbH. Warning and signalling device, especially for maritime purposes. 4,281,427, Cl. 9-9.000.
- Pfaff, Werner: See—
- Oeding, Volker; Pfaff, Werner; Vertesy, Laszlo; and Weidenmüller, Hans-Ludwig, 4,282,318, Cl. 435-68.000.
- Pfeffer, George B.: See—
- Barber, Donald T.; Pfeffer, George B.; and Olson, Esther E., 4,281,445, Cl. 29-426.500.
- Pfeffer, Henry A.: See—
- Guiliano, Basil A.; Pfeffer, Henry A.; and Kurtz, Andrew D., 4,282,359, Cl. 544-192.000.
- Pfefferle, Donald H.: See—
- Audese, Emery G.; Brower, Boyd G.; Pfefferle, Donald H.; and Holmes, James L., 4,282,559, Cl. 362-15.000.
- Pfizer Inc.: See—
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- Wernau, William C., 4,282,321, Cl. 435-104.000.
- PH Thermal Products Limited: See—
- Lupton, Donald B.; and Lawrence, Kenneth, 4,282,053, Cl. 156-264.000.
- Phillips, Barry A.; Spitzer, Keith G.; and Keegan, Richard E., to Mobay Chemical Corporation. Polyols derived from 4,4,4-trichloro-1,2-epoxybutane and/or epichlorohydrin for use in the production of heat sealable foams. 4,282,332, Cl. 521-171.000.
- Phillips, Glyn O.; Hall, Alan N.; and Hogg, Stephen D., to Nicholas Proprietary Limited. Anti-carries preparations. 4,282,204, Cl. 424-49.000.
- Phillips Petroleum Co.: See—
- Goins, Robert R., 4,281,776, Cl. 222-132.000.
- Mills, King L., 4,281,512, Cl. 60-311.000.
- Stewart, William S.; and Spurgeon, Virgil R., 4,281,970, Cl. 417-53.000.
- Tieszen, Dale O.; and Scoggins, Lacey E., 4,282,347, Cl. 528-388.000.
- Wu, Yulin, 4,282,382, Cl. 568-570.000.
- Phillips, Stephen R. Automatic print wheel element changing mechanism for a serial printer. 4,281,938, Cl. 400-171.000.
- Pickands Mather & Co.: See—
- Thomas, Wallace N., 4,281,746, Cl. 192-3.00R.
- Pickrell, John W. Container handling mechanism for trash collecting vehicles. 4,281,956, Cl. 414-409.000.
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- Pierce, Danny A., to IPM Corporation. Accelerated corrosion test apparatus. 4,282,181, Cl. 422-53.000.
- Pike, Andrew J.: See—
- Lavagnino, Edward R.; Pike, Andrew J.; and Campbell, Jack B., 4,282,170, Cl. 260-465.00D.
- Pilgrim Engineering Development Ltd.: See—
- Bunyan, Thomas W., 4,281,580, Cl. 411-548.000.
- Pitcraft Summit Limited: See—
- Pentith, Gerald R. O., 4,281,759, Cl. 198-725.000.
- Pitt, William V. Atmospheric resistant doors. 4,281,493, Cl. 52-309.110.
- Place, Donald E., to Therm-O-Disc, Incorporated. Fan coolant thermostats. 4,282,503, Cl. 337-365.000.
- Plan-Shell Oy: See—
- Heikinheimo, Olli, 4,281,695, Cl. 144-312.000.
- Platt, James L., Jr., to Chevron Research Company. Poly(alpha-alkoxyacrylamide and poly(alpha-alkoxy)acrylamide complexes. 4,282,343, Cl. 523-336.000.
- Platz, Rolf; Puchs, Werner; Rieber, Norbert; Samel, Ulf-Rainer; Jung, Johann; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Tri/pen-
- ta/aza-tetracyclo-dodeca/enes/dienes or diecaenes. 4,282,027, Cl. 71-76.000.
- Plessey Handel und Investments AG: See—
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- Plotkin, Jeffrey S.: See—
- Shore, Sheldon G.; Plotkin, Jeffrey S.; and Alway, Donna G., 4,282,197, Cl. 423-417.000.
- Plummer, William T., to Polaroid Corporation. Method and apparatus for measuring and/or setting lens focus distance. 4,282,548, Cl. 358-107.000.
- Pneumo Corporation: See—
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- Poirier, Charles H.: See—
- Latassa, Frank M.; Bienvenue, Roland L.; Poirier, Charles H.; and Wallace, John, 4,282,455, Cl. 313-177.000.
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- Polaroid Corporation: See—
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- Foley, James W., 4,282,160, Cl. 260-388.000.
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- Plummer, William T., 4,282,548, Cl. 358-107.000.
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- Pollock, Stephen F.; and Benedict, Charles E., to Wayne H. Colony Company, Inc. Ammunition supply system. 4,281,583, Cl. 89-33.00B.
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- Polythetics, Inc.: See—
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- Pontin, Stephen B.: See—
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- Pope, William H. Hose everting method and apparatus therefor. 4,281,781, Cl. 223-39.000.
- Portafame, Inc.: See—
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- Porter, Harold F.: See—
- Buehler, Oscar R.; and Porter, Harold F., 4,282,381, Cl. 564-498.000.
- Portis, Kenneth A.; and St. Clair, Thomas R., to Harris Corporation. Method for qualifying biased burn-in integrated circuits on a wafer level. 4,281,449, Cl. 29-593.000.
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- Potter Electric Signal Company: See—
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- Yenawine, David L.; Lowder, Richard K.; Power, Delwin L.; and Summers, Tommy L., 4,282,597, Cl. 368-280.000.
- Power Engineering and Manufacturing, Ltd.: See—
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- PPG Industries, Inc.: See—
- Du Bois, Donald W., 4,282,074, Cl. 204-98.000.
- Hammel, Joseph J.; and Mackenzie, John D., 4,282,023, Cl. 65-134.000.
- Hockje, Howard H., 4,282,195, Cl. 423-289.000.
- Rinehart, Jay K., 4,282,168, Cl. 260-455.00A.
- President Shizuoka University: See—
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- Priam: See—
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- Mattor, John A.; and Price, Lawrence, 4,282,054, Cl. 156-289.000.
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- Pringle, Robert D. Physical fitness indicator. 4,281,663, Cl. 128-689.000.
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- Probeder, Josef. Means for feeding solid combustible waste material to a furnace. 4,281,603, Cl. 110-196.000.
- Procter & Gamble Company, The: See—
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- Logan, Ted J.; and King, Richard M., 4,282,164, Cl. 260-428.500.



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Rodgers, Stephen D.; and Appleman, Bernard R., to United States of America, Navy. Polyisobutylene rubber antifouling paint, 4,282,126, Cl. 260-27.00R.

Roe, Nathaniel R. Letter scale, 4,281,461, Cl. 33-138.000.

Roemer, Norbert: See—  
Niederdelmann, Georg; Roemer, Norbert; and Grigat, Ernst, 4,282,367, Cl. 260-2.300.

Rogers, Charles D.: See—  
Acker, Frank E.; and Rogers, Charles D., 4,282,465, Cl. 318-139.000.

Rogers, Charlie C., III: See—  
Shipp, John I.; and Rogers, Charlie C., III, 4,282,520, Cl. 340-629.000.

Rogers, M. Maurice. Inflatable condom, 4,281,648, Cl. 128-79.000.

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Roggero, Arnaldo; and Zotteri, Luciano, to Anic S.p.A. Process for the preparation of grafted polymers of  $\alpha$ -substituted- $\beta$ -propiolactone on amorphous base polymers, 4,282,338, Cl. 525-153.000.

Rohm GmbH: See—  
Benda, Rainer; Knoell, Helmut; Neudoerfl, Peter; and Pennewiss, Horst, 4,282,132, Cl. 260-30.200.

Rohr, Wolfgang: See—  
Schirmer, Ulrich; Rohr, Wolfgang; Wuerzer, Bruno; and Fett, Kurt, 4,282,369, Cl. 560-25.000.

Rokach, Joshua; Cragoe, Edward J., Jr.; and Rooney, Clarence S., to Merck & Co., Inc. Dibenz[b,e]azepin compounds, 4,282,365, Cl. 548-252.000.

Rolls-Royce Limited: See—  
Cork, Frank, 4,282,041, Cl. 134-3.000.

Roltra S.p.A.: See—  
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Roman, Steven A.; and Soloway, Samuel B., to Shell Oil Company. Oxymino-substituted (1R, cis)-cyclopropanecarboxylate pesticides, 4,282,249, Cl. 424-304.000.

Rooney, Clarence S.: See—  
Rokach, Joshua; Cragoe, Edward J., Jr.; and Rooney, Clarence S., 4,282,365, Cl. 548-252.000.

Rooney, Thomas C., to Rexnord Inc. Activated sludge wastewater treatment having suspended inert media for biota growth, 4,282,102, Cl. 210-616.000.

Rosaen, Borje O. Fluid flow meter, 4,281,554, Cl. 73-861.710.

Rosenberry, George M., Jr.: See—  
Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., 4,281,706, Cl. 164-463.000.

Rosenbusch, Kurt; and Schlingmann, Merten, to Hoechst Aktiengesellschaft. Process for the greasing of leather and fur skins, 4,281,997, Cl. 8-94.10P.

Rosler, Robert K.: See—  
Hunt, Earl R.; Rosler, Robert K.; and Peterson, James O., 4,282,136, Cl. 260-38.000.

Ross, William C., to W. R. Grace & Co. Run-flat vehicle tire, 4,281,700, Cl. 152-158.000.

Ross, William C., to W. R. Grace & Co. Vehicle tire having run flat insert, 4,281,701, Cl. 152-158.000.

Rossi, Louis J.: See—  
Van Allan, James A.; Rossi, Louis J.; Bloom, Melvin S.; Regan, Michael T.; Wright, Hal E.; and Kaukenen, Joseph Y., 4,282,354, Cl. 542-441.000.

Roth, Jonathan N. Pectin culture media and method, 4,282,317, Cl. 435-34.000.

Roth, Mario; Pagel, Werner; and Schmidt, Gunther, to Saint Gobain Industries. Carriage for transporting sheets of glass and for placing them in a press for imparting a convex shape, 4,282,025, Cl. 65-273.000.

Rothbuhr, Lothar; Sroka, Werner; and Fritz, Walter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of high quality carbon black, 4,282,198, Cl. 423-445.000.

Rothgery, Eugene F.; and Katz, Lawrence E., to Olin Corporation. Selected 2-acyl- or 2-thioacyl-1-trichloroacetimidoylhydrazines and their use as fungicides, 4,282,169, Cl. 260-455.00A.

Rothgery, Eugene F., to Olin Corporation. Selected aminoester derivatives of trichloroacetoneitrile, 4,282,371, Cl. 560-35.000.

Rottenkolber, Paul, to Volkswagenwerk Aktiengesellschaft. Device for high thermal stress connection between a part made of a ceramic material and a part made of a metallic material, 4,281,941, Cl. 403-29.000.

Rovee, D. Thomas; Marvel, John R.; and Mezick, James A., to Johnson & Johnson. Topical anti-inflammatory drug therapy, 4,282,216, Cl. 424-240.000.

Rowley, Larry W.: See—  
McJunkin Jr., Howard P.; and Rowley, Larry W., 4,282,564, Cl. 362-217.000.

Rubenstein, Kenneth E.; and Ullman, Edwin F., to Syva Company. Enzyme bound corticosteroids, 4,282,325, Cl. 435-188.000.

Rubenstein, Roger H.: See—  
Glover, Douglas L.; Rubenstein, Roger H.; Douglas, Peter H.; and Bridges, Lee R., 4,281,989, Cl. 433-130.000.

Rudd, Peter W.: See—  
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Rumold, Gerhard: See—  
Winkler, Heinrich; Rumold, Gerhard; and Schummer, Helmut, 4,282,014, Cl. 55-105.000.

Rump, Bjorn S., to Subliscatic Holding S.A. Wide width printing process, 4,281,598, Cl. 101-470.000.

Runk, Robert H.: See—  
Edelman, Leonard E.; and Runk, Robert H., 4,282,122, Cl. 260-18.0EP.

Runk, Terry M., to Longyear Company. Knuckle joint spearhead core drilling apparatus, 4,281,725, Cl. 175-246.000.

Runkle, Dean E.; Tang, Louis S.; and Harrison, Gregory K., to Bendix Corporation. The Hydraulic brake booster and valve member, 4,281,585, Cl. 91-5.000.

Rushforth, Roy W. E.: See—  
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- Russel, Andrew L., Jr.: See—  
Barker, Thomas; Russel, Andrew L., Jr.; Bricault, Gary; and Van Wieren, Albert L., 4,282,468, Cl. 318-608.000.
- Russell, John X.: to Babcock & Wilcox Company, The. Automatic broach machine/loader. 4,281,960, Cl. 414-750.000.
- Rutter, Harold T.: to Sannen Products Company. Spindle nose for machine tools. 4,281,482, Cl. 51-168.000.
- Rutter, Jerry L.; and Ahle, James L.: to Gulf Oil Corporation. Substituted thiosemicarbazides, their manufacture and use as plant growth regulants. 4,282,031, Cl. 71-99.000.
- Ryan, Kenneth M.: See—  
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Slettinger, Meyer, 4,282,148, Cl. 260-239.00A.
- Rydell, Adam Z.: Finger mounting apparatus for loading grid. 4,281,501, Cl. 53-248.000.
- Ryer, Jack: See—  
Deen, Harold E.; Winans, Esther D.; Ryer, Jack; and O'Halloran, Rosemary, 4,282,108, Cl. 252-51.50R.
- S&C Electric Company: See—  
Tobin, Thomas J., 4,282,504, Cl. 337-186.000.
- S.U.B. Societa Utilizzazione Brevetti S.R.L.: See—  
Cisterni, Leandro, 4,282,120, Cl. 260-17.40R.
- Sach, George S.: See—  
Duraant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,282,224, Cl. 424-250.000.
- Sachuk, Nicholas E.: See—  
Kringel, George N.; and Sachuk, Nicholas E., 4,282,560, Cl. 362-26.000.
- Sacki, Takeo: See—  
Ochiai, Tsunemi; Saiki, Goro; Shimao, Teruo; Saito, Toshitaro; Nakanishi, Shizuo; and Sacki, Takeo, 4,282,173, Cl. 264-59.000.
- Safonov, Vladimir G.: See—  
Lobachev, Viktor A.; Safonov, Vladimir G.; Danilova, Faina B.; and Lvov, Vladimir N., 4,282,012, Cl. 51-309.000.
- Sahara, Masao: to Nippon Carbide Kogyo Kabushiki Kaisha. Process for making destructible marking film and method for marking. 4,282,286, Cl. 428-339.000.
- Saiki, Goro: See—  
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- St. Clair, Thomas R.: See—  
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- Saint-Gobain Industries: See—  
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- Roth, Mario; Pagel, Werner; and Schmidt, Gunther, 4,282,025, Cl. 65-273.000.
- Saint, Joseph D.: Air spoiler. 4,281,869, Cl. 296-1.00S.
- St. Louis Conveyor Company Inc.: See—  
Hoernschemeyer, August B.; Zinser, Alan L.; and Myers, John F., 4,282,090, Cl. 209-291.000.
- Saito, Kiyoto: See—  
Nishida, Susumu; Inouye, Tamon; Yoshida, Tadatoshi; and Saito, Kiyoto, 4,282,438, Cl. 250-445.00T.
- Saito, Michiharu: See—  
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- Saito, Toshitaro: See—  
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- Sakoe, Hiroaki: to Nippon Electric Co., Ltd. Pattern recognition with a wiring function decided for each reference pattern by the use of feature vector components of a few channels. 4,282,403, Cl. 179-1.05D.
- Sakurai, Mikio; Yoshimoto, Yuichiro; and Nakamura, Shiro: to Hitachi, Ltd. System for preventing erroneous operation of control rods. 4,282,061, Cl. 176-20.00R.
- Sakurai, Toshiyuki: to Mitsubishi Denki Kabushiki Kaisha. Ventilator of distributor for ignition of engine. 4,281,627, Cl. 123-146.50A.
- Salina, Salvatore C.: See—  
Corbett, Marshall J.; and Salina, Salvatore C., 4,282,187, Cl. 422-190.000.
- Salvador, Louis A.: See—  
Cherish, Peter; and Salvador, Louis A., 4,282,010, Cl. 48-77.000.
- Salzmanna, Theodor: See—  
Dreisselt, Walter; Kollensperger, Dieter; Salzmann, Theodor; Schlegel, Thomas; and Weigel, Wolf-Dieter, 4,282,473, Cl. 318-803.000.
- Samel, Ulf-Rainer: See—  
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Samel, Ulf-Rainer; Jung, Johann; and Wuerzer, Bruno, 4,282,027, Cl. 71-76.000.
- Sandifer, James R.: See—  
Chang, Jack C.; and Sandifer, James R., 4,282,079, Cl. 204-195.00G.
- Sandine, William E.; and Ayres, James W.: to State of Oregon, by and through the Oregon State Board of Higher Education on behalf of Oregon State University. Method and starter compositions for the growth of acid producing bacteria and bacterial compositions produced thereby. 4,282,255, Cl. 426-7.000.
- Sandler, Michael E.; and Aiani, Richard L.: to Sound Games, Inc. Audio racquet ball. 4,281,833, Cl. 273-85.00G.
- Sandoz Ltd.: See—  
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- Sandvik Aktiebolag: See—  
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- Sanko Steamship Co., Ltd.: See—  
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- Sansui Electric Company: See—  
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- Sarantakis, Dimitrios: to American Home Products Corporation. Octapeptides lowering growth hormone. 4,282,143, Cl. 260-112.50S.
- Sarsas, Reinhard: to Pfizer Inc. Hydantoin derivatives as therapeutic agents. 4,282,229, Cl. 424-258.000.
- Sartorius GmbH: See—  
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- Sasaki, Atsuo: See—  
Kawazoe, Masayuki; Tomoda, Yasuro; Sasaki, Atsuo; and Kaneko, Isao, 4,281,821, Cl. 266-44.000.
- Sasaki, Heizo: See—  
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- Sasaki, Yukio: See—  
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- Sass, Allan: to Occidental Oil Shale, Inc. Rock bolting techniques for forming an in situ oil shale retort. 4,281,877, Cl. 299-2.000.
- Sato, Kuniaki: See—  
Kobayashi, Zenjiro; Aihara, Masaki; and Sato, Kuniaki, 4,281,984, Cl. 432-9.000.
- Sato, Masaharu; and Sugiura, Michio: to Kensen Co., Ltd. Body warmer for heating by exothermic heat. 4,282,005, Cl. 44-3.00R.
- Sato, Tetsuo: to Hitachi, Ltd. Synthesizer tuner. 4,282,603, Cl. 455-183.000.
- Sato, Yuji: to Diesel Kiki Co., Ltd. Proportional control type remote-control direction switching control valve device. 4,281,682, Cl. 137-596.170.
- Satterlee, Jesse D.: Device for sensing overheating of bearings. 4,282,506, Cl. 337-380.000.
- Sattler, Michael: See—  
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- Sauerbrunn, Robert D.: See—  
Cramer, Gregory D.; King, Irvin B.; Sauerbrunn, Robert D.; and Strand, Albert T., 4,281,935, Cl. 366-174.000.
- Sauter, Roland: See—  
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- Savich, Peter P.: to Smyth Manufacturing Company, The. Integrated book lining. 4,281,854, Cl. 281-21.00R.
- Saxon, George E.: to Condenser Cleaners Mfg. Co., Inc. Tube cleaner. 4,281,432, Cl. 15-104.06R.
- Say, Geoffrey R.; Hays, James R., Sr.; Iyengar, Jagannathan N.; and Hacker, Barbara A.: to Exxon Research & Engineering Co. Process for converting cyclic urea to corresponding diamine in a gas treating system. 4,282,194, Cl. 423-223.000.
- Scapa Dryers (Canada) Ltd.: See—  
Kelly, Brendan W.; and Boily, Robert L., 4,281,688, Cl. 139-383.00A.
- Scarborough, Irvin R.: See—  
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- Scarola, Leonard S.: See—  
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- Schaaf, Cecil F.; and Schaaf, Craig R.: Traction aid device. 4,281,791, Cl. 238-14.000.
- Schaaf, Craig R.: See—  
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- Schaap, Luke A.; Udelhofen, John H.; and Harris, Samuel W.: to Standard Oil Company (Indiana). Low viscosity oils. 4,282,106, Cl. 252-32.70E.
- Schaefer, Walter R.: See—  
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- Schaffer, Willi: See—  
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- Schaller, Frederick C.: See—  
Carroll, Charles B.; Schaller, Frederick C.; and Beres, Ernest A., 4,281,816, Cl. 249-82.000.
- Schelev, Mikhail Y.: See—  
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- Schering Corporation: See—  
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- Wright, John J., 4,282,350, Cl. 536-10.000.
- Scheuermann, Albert; and Adickes, Henning: to Deere & Company. Silencer for exhaust gases. 4,281,742, Cl. 181-257.000.
- Schick, George: See—  
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- Schierberg, Gordon R.: See—  
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- Schimko, Reinhold: to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG. Electrically controlled selecting device for the needles of a flat knitting machine. 4,281,523, Cl. 66-232.000.
- Schirmer, Ulrich; Rohr, Wolfgang; Wuerzer, Bruno; and Fett, Kurt: to BASF Aktiengesellschaft. Diurethanes. 4,282,369, Cl. 560-25.000.
- Schlegel, Thomas: See—  
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- Schlingmann, Merten: See—  
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- Schloesser, Gert: See—  
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- Schlumberger, Helmut: See—  
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- Schluntz, Roy A.; and Stemmiski, John R.: to Charles Stark Draper Laboratory, Inc. The. Molded inertial sensor. 4,281,555, Cl. 74-5.00R.
- Schmidt, Delf: See—  
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- Schmidt, Gunther: See—  
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- Roth, Mario; Pagel, Werner; and Schmidt, Gunther, 4,282,025, Cl. 65-273.000.
- Schmidt, Robert R.: See—  
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- Schmidt, Thomas: See—  
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- Schmidt, William K.: See—  
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- Schmitt, Frederick L.: See—  
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- Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,282,205, Cl. 424-49.000.
- Schneider, Ronald A.: to Chevron Research Company. Monoolefinic plasticized sulfur. 4,282,040, Cl. 106-287.320.
- Schnitzius, Klaus: See—  
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- Schock & Co.: See—  
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- Schock, Karl; and Frank, Lothar: to Schock & Co. Sectional construction strip, e.g. for the production of window frames. 4,281,492, Cl. 52-309.900.
- Schoenmeyr, Ivar L.: to Porex Corporation. Rotary face sealing apparatus. 4,281,839, Cl. 277-93.05D.
- Scholz, Hans-Joachim: See—  
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- Schon, Stur: See—  
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- Schoert, Ernest A.: Modular wall framing. 4,281,491, Cl. 52-281.000.
- Schoolar, Richard B.: See—  
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- Schotter, Richard D.; and Heinis, Robert P.: to Red Devil, Inc. Paint mixing and conditioning machine. 4,281,936, Cl. 366-209.000.
- Schrader, Lothar: to Siemens Aktiengesellschaft. Field effect transistor with decreased substrate control of the channel width. 4,282,539, Cl. 357-23.000.
- Schrinner, Elmar: See—  
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- Schroeder, Daniel R.: to Motorola, Inc. Channel signal detection circuit for scanning receivers. 4,282,602, Cl. 455-169.000.
- Schubert-Klempnauer, Holm: See—  
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- Schummer, Helmut: See—  
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- Schwartz, Reinhard: See—  
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- Schwarz, Robert: See—  
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- Schweikl, Ludwig: to MTU Motoren-und-Turbinen-Union Munchen GmbH. Jet pipe arrangement for aircraft propulsion and control. 4,281,795, Cl. 239-265.350.
- Schwerzler, Davis S.: See—  
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- Scoggins, Lacey E.: See—  
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- Scott Paper Company: See—  
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- Scramoncin, Claude: See—  
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- Seaman, Gary G.: to Western Electric Company, Inc. Apparatus for testing leads of fuse holders. 4,281,888, Cl. 339-151.00B.
- Seay, Nicholas J.: to Midwest Silo Company. Silo unloading chute. 4,281,754, Cl. 193-34.000.
- Sedco, Inc.: See—  
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- Seelig, Oliver N.: See—  
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- Seibel, Robert R.: See—  
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- Seidel, Albert: See—  
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- Seiden, Nat. Arithmetic card game method. 4,281,835, Cl. 273-299.000.
- Seidl, George H.: Energy conversion apparatus. 4,282,443, Cl. 290-1.00R.
- Selman, Gordon J.: See—  
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- Semplak, Ralph A.: to Bell Telephone Laboratories, Incorporated. Cylindrical paraboloid weather cover for a horn reflector antenna with wave absorbing means. 4,282,530, Cl. 343-784.000.
- Sempliner, Arthur T.: See—  
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- Sendoykas, Jack J.: Compound tool. 4,281,433, Cl. 15-105.000.
- Senior, Robert B.; and Karasinaki, Frederick: to Cooper Industries, Inc. Apparatus for applying connectors to multiconductor flat cable. 4,281,442, Cl. 29-33.00M.
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- Sera, Toshikuni: See—  
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- Serdjuchenko, Jury N.: See—  
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- Sergeant, Richard J.: See—  
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- Seward, Thomas P., III: See—  
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- Seyerle, Carl E.: See—  
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- Sharkey, Hubert J.: to Emery Industries, Inc. Preparation of copolyamide from dicarboxylic acid mixture, piperazine and polyoxyalkylene diamine. 4,282,346, Cl. 528-338.000.
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- Shaw, Bon F.: to United States of America, Navy. Semiconductor laser alignment device. 4,281,993, Cl. 434-22.000.
- Shedd, Wilfred G.: See—  
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- Shell, John W.; and Gale, Robert M.: to ALZA Corporation. Drug delivery system for controlled ocular therapy. 4,281,654, Cl. 128-260.000.
- Shell Oil Company: See—  
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- van der Voort, Henricus O. P., 4,282,157, Cl. 260-346.740.
- Shendale Ltd.: See—  
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- Shepard, John S. Dispensing valve. 4,281,779, Cl. 222-501.000.
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- Shibuya Kogyo Co., Ltd.: See—  
Koshishiba, Soichi; and Okazaki, Gosei, 4,281,499, Cl. 53-445.000.
- Shigematsu, Shozo, to Kabushiki Kaisha Mitokako. Surface coating device of core body. 4,281,978, Cl. 425-376.00B.
- Shimano Industrial Company, Limited: See—  
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- Shimao, Teruo: See—  
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- Shimizu, Katsuchi: See—  
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- Shimizu, Michio; Iwasaki, Yukio; Wagatsuma, Tadashi; and Kasai, Osamu, to Alps Electric Co., Ltd. Rotary pulse switch. 4,282,415, Cl. 200-336.000.
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- Shin-Etsu Chemical Co., Ltd.: See—  
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- Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, to Fuji Photo Film Co., Ltd. Thermal recording elements. 4,282,534, Cl. 346-135.100.
- Shiotani, Takeshi: See—  
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- Shipp, John I.; and Rogers, Charlie C., III. Piezoelectric horn and a smoke detector containing same. 4,282,520, Cl. 340-629.000.
- Shirai, Kenichi: See—  
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- Shono, Tetsuji; and Kobayashi, Takumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera capable of commonly using standard film and 70 mm. 4,281,913, Cl. 354-203.000.
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- Siegel, Craig S. Child-resistant/non-child-resistant closure. 4,281,771, Cl. 215-220.000.
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- Frank, Kurt, 4,282,432, Cl. 250-322.000.
- Hammer, Dieter; and Schwarz, Robert, 4,282,452, Cl. 310-317.000.
- Kern, Hans; and Licht, Reiner, 4,282,535, Cl. 346-140.00R.
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- Wuestner, Friedrich, 4,282,418, Cl. 219-121.00P.
- Zemann, Josef, 4,282,600, Cl. 370-100.000.
- Sih, John C., to Upjohn Company, The. 13,14-Dihydro-11-deoxy-9-deoxy-9-methylene-19-oxo-PGF<sub>2</sub> compounds. 4,282,376, Cl. 562-503.000.
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- Siltec Corporation: See—  
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- Silverman, Daniel. Method for monitoring the recovery of minerals from shallow geological formations. 4,282,587, Cl. 367-37.000.
- Silverman, Daniel: See—  
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- Simmonds Precision Products, Inc.: See—  
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- Simon, Paul B.; and Barbin, Robert L., to RCA Corporation. Television raster centering aid. 4,282,461, Cl. 315-398.000.
- Simionelli, Louis R. Swimming pool winterizing disconnect unit. 4,281,422, Cl. 4-496.000.
- Simonich, Walter: See—  
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- Simons, John R.; and Fenske, John W., to Grunau Company, Inc. Liquid flow indicator. 4,282,413, Cl. 200-81.90M.
- Singer Company, The: See—  
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- Ljung, Bo H. G., 4,282,495, Cl. 331-94.50S.
- Marsh, Walter H. W.; and Brienza, Michael J., 4,281,782, Cl. 223-102.000.
- Zocher, Josef, 4,281,609, Cl. 112-184.000.
- Singer, Richard A.; and Welton, Gerry D., to Berkshire Furniture Co., Inc. Bed frame. 4,281,424, Cl. 5-282.00R.
- Sinkkonen, Matti S. Roller assembly for refuse crushers. 4,281,945, Cl. 404-121.000.
- Sisson, Albert E.; and Lewis, Donald J., to Bendix Corporation, The. Single solenoid unit injector. 4,281,792, Cl. 239-5.000.
- Sitabkhan, Mansur N., to International Telephone and Telegraph Corporation. Fiber optic connector. 4,281,892, Cl. 350-96.210.
- SKG Industries, Inc.: See—  
Ferri, Joseph E.; Gundersen, Allan A.; and Seelig, Oliver N., 4,281,937, Cl. 366-303.000.
- Skogen, John D.: See—  
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- SKW Trostberg Aktiengesellschaft: See—  
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- Slater Steel Industries, Limited: See—  
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- Slettinger, Meyer: See—  
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- Sloan, Cephas H., to Eastman Kodak Company. Solvent-resistant alkylated melamine cross-linked cellulose ester articles. 4,281,998, Cl. 8-129.000.
- Sloma, Greg T. Apparatus and method for converting a full-time four-wheel drive transfer case for part-time operation. 4,281,735, Cl. 180-247.000.
- Smejkal, Helmut: See—  
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- Smith International, Inc.: See—  
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- Smith Kline & French Laboratories Limited: See—  
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- Durant, Graham J.; Emmett, John C.; and Oanellin, Charon R., 4,282,221, Cl. 424-249.000.
- Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,282,224, Cl. 424-250.000.
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- Smith, Robert L.; and Lee, Te-jyh, to Merck & Co., Inc. Antihypercholesterolemic compounds. 4,282,155, Cl. 260-343.500.
- Smith, Stuart B. Thermal insulation packet. 4,282,276, Cl. 428-35.000.
- Smith, William G., to Belden Corporation. Wire stripper. 4,281,444, Cl. 29-426.500.
- SmithKline Corporation: See—  
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- Smyth Manufacturing Company, The: See—  
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- Sneyers, Hendrik H.: See—  
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- Societe d'Assistance Technique Pour Produits Nestle S.A.: See—  
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- Societe d'Exploitation des Procédés Coates: See—  
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- Mouille, Rene L.; Genoux, Gerard C. L.; Declercq, Marc A.; Leman, Jean-Luc M.; and Suzzi, Robert J., 4,281,967, Cl. 416-145.000.
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- Soga, Yoshiada: See—  
Nagoya, Yoshihide; Murai, Kosuke; Amano, Hirota; and Soga, Yoshiada, 4,282,032, Cl. 75-80.000.
- Solar Bar-B-Que Corporation: See—  
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- Solomon, John H. Anti-holiday cable armor. 4,282,398, Cl. 174-106.00R.
- Soloway, Samuel B.: See—  
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- Sommers, Philip B. Assay tube rack. 4,281,768, Cl. 211-74.000.
- Sony Corporation: See—  
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- Uzuka, Mitsuo, 4,282,464, Cl. 318-138.000.
- Sorensen, Ralph T. Door. 4,281,704, Cl. 160-340.000.
- Sound Games, Inc.: See—  
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- Southgate, Peter D., to RCA Corporation. Apparatus for discerning the noticeable presence of spatial fluctuations of intensity within a two-dimensional visual field. 4,282,510, Cl. 340-146.30F.
- Southgate, Peter D.; and Crooks, Horatio N., to RCA Corporation. Apparatus for discerning the noticeable presence of spatial fluctuations of intensity within a two-dimensional visual field. 4,282,511, Cl. 340-146.30F.
- Sowers, Dennis A.: See—  
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- Spar Aerospace Limited: See—  
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- Spath, Herbert J.; and Raymond, Glendon A., to Carrier Corporation. Refrigeration circuit heel reclaim method and apparatus. 4,281,519, Cl. 62-79.000.
- Specht, Eduard: See—  
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- Speicher, John M., to General Dynamics, Pomona Division. Differential drive rolling arc gimbal. 4,282,529, Cl. 343-765.000.
- Speiser, Jeffrey M.; and Whitehouse, Harper J., to United States of America, Navy. Discrete Fourier transform system using the dual chirp-Z transform. 4,282,579, Cl. 364-726.000.
- Spence, Gavin G.: See—  
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- Sperry Corporation: See—  
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- Chanson, Gary J.; and Nicholson, Alexander M., 4,282,588, Cl. 367-82.000.
- Harvey, William A.; and Torok, Ernest J., 4,281,905, Cl. 350-377.000.
- Sperry Rand Corporation: See—  
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- Spiegelberg, Hans, to Cederroths AB. Hermetically sealed compress medical dressing. 4,281,650, Cl. 128-156.000.
- Spiegelberg, William D.; Moracz, Donald J.; and Lake, Frank N., to TRW Inc. Process for isothermally shaping a titanium-containing metal workpiece. 4,281,528, Cl. 72-46.000.
- Spitler, Keith G.: See—  
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- Sportoletti, Giancarlo: See—  
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- Sprague Devices, Inc.: See—  
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- Sprague Electric Company: See—  
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- Sprague, Michael J.: See—  
Engelbach, Heinz; and Sprague, Michael J., 4,282,374, Cl. 568-471.000.
- Sprague, Robert A.; and Johnson, Richard V., to Xerox Corporation. TIR Electro-optic modulator with individually addressed electrodes. 4,281,904, Cl. 350-356.000.
- Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. 2,4,6-Trimethylcyclohexanemethanol and derivatives, process for preparing same and organoleptic uses thereof. 4,282,205, Cl. 424-49.000.
- Spurgeon, Virgil R.: See—  
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- Square D Company: See—  
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- Sroka, Werner: See—  
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- Stabilus GmbH: See—  
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- Stachel, Earl F.: See—  
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- Staiger, Gerhard: See—  
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- Stal-Laval Turbin AB: See—  
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- Standard Oil Company (Indiana): See—  
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- Murphy, Robert P.; and Jones, Frank O., Jr., 4,281,712, Cl. 166-250.000.
- Schaap, Luke A.; Udelhofen, John H.; and Harris, Samuel W., 4,282,106, Cl. 252-32.700.
- Standard Oil Company (Ohio): See—  
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- Star-Kist Foods, Inc.: See—  
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- State of Oregon, by and through the Oregon State Board of Higher Education on behalf of Oregon State University: See—  
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- Stauers, Olgerta, to Western Electric Company, Inc. On-hook/off-hook detector circuit. 4,282,408, Cl. 179-18.0FA.
- Stauffer Chemical Company: See—  
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- Felix, Raymond A., 4,282,231, Cl. 424-263.000.
- Stearns, Stanley D. Flow control means for use in an adaptor assembly. 4,281,679, Cl. 137-515.500.
- Steck, Edgar A., to United States of America, Army. Topical prophylaxis against schistosomiasis. 4,282,253, Cl. 424-330.000.
- Steckler, Steven A.: See—  
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- Steddum, Riddle E.: See—  
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- Steinmig, Anna: See—  
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- Stein, Dieter: See—  
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- Stein, William W., to Tektronix, Inc. Faceplate for an electrostatic printing tube and method of making same. 4,282,456, Cl. 313-419.000.
- Steinberg, Hyman A. Solar collector construction. 4,281,642, Cl. 126-447.000.
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- Stemniaki, John R.: See—  
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- Stephens, Albert E.: See—  
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- Stern, Frank, to Westinghouse Canada Limited. Mono-energetic neutron void meter. 4,282,435, Cl. 250-390.000.
- Stetson, Earl W., to General Electric Company. Surge voltage arrester housing having a fragile section. 4,282,557, Cl. 361-117.000.
- Stewart, Duncan: See—  
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- Stewart, Hudson: See—  
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- Stewart, Jimmy L., to General Battery Corporation. Open and short circuit test method. 4,282,292, Cl. 429-93.000.
- Stewart, Robert C., to Tellabs, Inc. Residual echo suppressor for echo canceller. 4,282,411, Cl. 179-170.200.
- Stewart, William S.; and Spurgeon, Virgil R., to Phillips Petroleum Company. Turbo-expander control. 4,281,970, Cl. 417-53.000.
- Stiefel, Kenneth E., to Bell Telephone Laboratories, Incorporated. Telephone loop resistance detector. 4,282,407, Cl. 179-18.0FA.



- Stiefel, Max; and Wolfbeis, Erich, to Babcock-Brown Boveri Reaktor GmbH. Procedure and equipment for injecting gas into liquids. 4,282,062, Cl. 176-37.000.
- Stiles, Claude J.: See—  
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- Stjernholm, Dale T. Cantilever mounted wind turbine. 4,281,965, Cl. 416-227.00A.
- Stoll, Kurt. Working cylinder for pneumatic or hydraulic pressure media. 4,281,589, Cl. 92-109.000.
- Stone, Samuel E.: See—  
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- Stonebanks, Trevor J.: See—  
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- Stoneleigh Trust, The: See—  
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- Storek, Jaroslav: See—  
Didek, Stanislav; Fajt, Ludvik; Storek, Jaroslav; Andres, Jiri; Cada, Frantisek; and Markova, Marie, 4,281,507, Cl. 57-58.890.
- Stork, Gilbert: See—  
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenico, Jr.; Schmitt, Frederick L.; Stork, Gilbert; MacDonald, Timothy; and Lieberman, Arthur L., 4,282,274, Cl. 427-402.000.
- Stovall, Marvion S. Saw guide for angle cuts. 4,281,572, Cl. 83-745.000.
- Stradling, Richard F., Jr.: See—  
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- Strand, Albert T.: See—  
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- Streit, Kenneth F., to Tecboplastics, Inc. Key coupled plastic conduits. 4,281,860, Cl. 285-137.00R.
- Strengowski, Stanley S., to Textron, Inc. Gas meter with composite iron center casting. 4,281,541, Cl. 73-264.000.
- Strickland, Robert D., to Rip's Rap, Inc. Formable removable insulating enclosure for a container. 4,282,279, Cl. 428-101.000.
- Strissel, Richard A.: See—  
Khan, Sultan W.; Ham, John K.; and Strissel, Richard A., 4,282,583, Cl. 364-900.000.
- Strode, James P.: See—  
Litman, Alan L.; and Strode, James P., 4,281,856, Cl. 285-15.000.
- Struger, Odo J.: See—  
Brown, Ronald A.; Hu, Sung C.; and Struger, Odo J., 4,282,584, Cl. 364-900.000.
- Stuber, Fred A.: See—  
Dai, Sheng-Hong A.; Lin, Chung-Yuan; and Stuber, Fred A., 4,282,383, Cl. 568-573.000.
- Studer, Frank G. Anti-sway apparatus. 4,281,850, Cl. 280-689.000.
- Stull, Morton. Locking closure cap. 4,281,778, Cl. 222-153.000.
- Sublatic Holding S.A.: See—  
Rump, Bjorn S., 4,281,598, Cl. 101-470.000.
- Suda, Seijo: See—  
Imai, Masumi; Hirasawa, Kotaro; Suda, Seijo; and Kawamoto, Yukio, 4,282,573, Cl. 364-431.000.
- Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG: See—  
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- Suen, Kwai W.: See—  
Tinkelenberg, Arie; Vaessen, Henricus W. L. M.; Suen, Kwai W.; and Van Doorn, Anton J., 4,282,119, Cl. 260-6.000.
- Suga, Masaaki; Kobayashi, Chiaki; and Tohizima, Hisaaki, to Nissan Motor Company, Limited. Automatic gear shifting method. 4,281,751, Cl. 192-0.092.
- Sugio, Akitoshi; Masu, Masanobu; and Matunaga, Masatugu, to Mitsubishi Gas Chemical Company, Inc. Fiber-reinforced resin composition containing polyphenylene ether resin. 4,282,139, Cl. 260-42.170.
- Sugio, Akitoshi; Masu, Masanobu; Sasaki, Yukio; and Mizutani, Zenpei, to Mitsubishi Gas Chemical Company, Inc. High molecular resin composition. 4,282,335, Cl. 525-68.000.
- Sugiura, Michio: See—  
Sato, Masaharu; and Sugiura, Michio, 4,282,005, Cl. 44-3.00R.
- Sullivan, Donald B.: See—  
Zimmerman, James E.; and Sullivan, Donald B., 4,281,517, Cl. 62-6.000.
- Sullivan, Lawrence G., to Crosrol Limited. Apparatus for cleaning the surface of a rotating roller. 4,281,434, Cl. 15-256.510.
- Sulzer Brothers Limited: See—  
Boeshard, Ernst, 4,281,954, Cl. 414-287.000.
- Suma, Miki: See—  
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Suma, Miki, 4,282,288, Cl. 428-408.000.
- Sumitomo Chemical Company, Limited: See—  
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- Sumitomo Metal Mining Co., Ltd.: See—  
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- Summers, Christopher P.; and Thompson, Donald O., to U.S. Philips Corporation. Signal buffer circuit arrangement. 4,282,447, Cl. 307-255.000.
- Summers, Tommy L.: See—  
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- Sun Oil Company of Pennsylvania: See—  
Hansel, William B., 4,281,534, Cl. 73-49.200.
- Sung, Rodney L., to Texaco Inc. Novel fuel composition containing alcohol. 4,282,007, Cl. 44-53.000.
- Sung, Rodney L., to Texaco Inc. Novel fuel composition containing alcohol. 4,282,008, Cl. 44-53.000.
- Sung, Rodney L.: See—  
Zoleski, Benjamin H.; Sung, Rodney L.; Schierberg, Gordon R.; and Hebert, Gayle P., 4,282,107, Cl. 252-42.700.
- Sunmark, Inc.: See—  
Barnes, J. Ray; Holdegraver, Robert E.; and Meibaum, Raymond K., 4,282,263, Cl. 426-572.000.
- Sunnen Products Company: See—  
Rutter, Harold T., 4,281,482, Cl. 51-168.000.
- Sutter, George W.: See—  
Miller, George J.; and Sutter, George W., 4,281,447, Cl. 29-568.000.
- Suys, Andre R.; and Sneyers, Hendrik H., to Agfa-Gevaert N.V. Photoconductive recording material containing a zinc oxide particle and a metallic mercapto compound. 4,282,299, Cl. 430-89.000.
- Suzuki, Atsuo: See—  
Kimata, Kei; Kaneko, Masatoshi; Fukunaga, Shoichi; Kato, Toshiharu; Ikeda, Takeshi; and Suzuki, Atsuo, 4,281,797, Cl. 239-533.120.
- Suzuki, Masao; Matsuo, Takeshi; and Yamada, Naomichi, to Nippon Oil and Fats Co., Ltd. Method of producing hydrogenated fatty acids. 4,282,163, Cl. 260-409.000.
- Suzzi, Robert J.: See—  
Mouille, Rene L.; Genoux, Gerard C. L.; Declercq, Marc A.; Leman, Jean-Luc M.; and Suzzi, Robert J., 4,281,967, Cl. 416-145.000.
- Svedberg, Per, to ASEA Aktiebolag. Overvoltage protection means for protecting low power semiconductor components. 4,282,555, Cl. 361-56.000.
- Swersey, Burt L.; and Fried, Peter. Scale. 4,281,730, Cl. 177-144.000.
- Swift, Harold E.: See—  
Wu, Ching-Yong; Swift, Harold E.; and Botzik, John E., 4,282,384, Cl. 568-574.000.
- Sy, Anita O.; and Raksia, Joseph W., to W. R. Grace & Co. Conversion of amides to isocyanates via phase transfer catalysis. 4,282,167, Cl. 260-453.00P.
- Sylvester, Robert W.: See—  
Reeves, James W.; Sylvester, Robert W.; and Wells, David F., 4,282,185, Cl. 422-142.000.
- Synthelabo: See—  
Bigg, Dennis C. H., 4,282,225, Cl. 424-251.000.
- Sypula, Donald S.: See—  
Murphy, Cornelius B.; and Sypula, Donald S., 4,282,296, Cl. 430-39.000.
- Syva Company: See—  
Rubenstein, Kenneth E.; and Ullman, Edwin F., 4,282,325, Cl. 435-188.000.
- Szilagyi, Dezzo: See—  
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- T.I.C. Enterprises, Limited: See—  
Burley, William G., 4,281,802, Cl. 242-55.000.
- Techi, Katsuchi; Ninomiya, Ichiro; and Takayama, Jun, to Sony Corporation. Apparatus for reproducing a video signal including an address signal when the video tape moves at various speeds. 4,282,552, Cl. 360-70.000.
- Tacke, Kenneth L.; Galbraith, Lyle D.; and Stewart, Hudson, to Rockcor, Inc. Tire sealant applicator. 4,281,621, Cl. 118-500.000.
- Tackland, Thomas A.: See—  
McChesney, John L.; Tackland, Thomas A.; and Turner, Ian, 4,281,620, Cl. 118-410.000.
- Taguchi, Tetsu, to Nippon Electric Co., Ltd. Speech analyzer comprising circuits for calculating autocorrelation coefficients forwardly and backwardly. 4,282,405, Cl. 179-1.05C.
- Takacs, Istvan; Bosits, Gyula; Vereczkey, Endre; and Kerey, Gyorgy, to Richter Gedeon Vegyeszeti Gyar Rt. Filtering apparatus. 4,282,101, Cl. 210-403.000.
- Takahashi, Susumu, to Sansui Electric Company. System for transmission and reception of discrete four channel stereo. 4,282,401, Cl. 179-1.0GH.
- Takasugi, Wasao: See—  
Kanazawa, Yasunori; Arai, Takao; Yokozawa, Norio; and Takasugi, Wasao, 4,282,551, Cl. 360-32.000.
- Takayama, Jun: See—  
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- Takayama, Syuichi, to Olympus Optical Co., Ltd. Camera apparatus for endoscope. 4,281,910, Cl. 354-62.000.
- Takemoto, Kazuhiko; Ninomiya, Toshiyuki; Yamada, Shigemichi; and Yukiyasu, Minoru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vibration damping device for a mechanical clutch release system for a motor vehicle. 4,281,753, Cl. 192-99.00S.
- Takeuchi, Seizi: See—  
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- Takezi, Hiroyuki: See—  
Kunishio, Misao; Shirai, Kenshi; and Takezi, Hiroyuki, 4,282,100, Cl. 210-384.000.
- Takitani, Keiichiro: See—  
Yamagata, Mitsukuni; Takitani, Keiichiro; Hasuno, Sadao; and Motoda, Kuniaki, 4,282,047, Cl. 148-143.000.

- Tamura, Junso: See—  
Yato, Fumihiko; Kitayama, Seishi; Tamura, Junso; Ishigami, Hikochi; and Kurematsu, Akira, 4,282,406, Cl. 179-1.05C.
- Tan, Hong S.: See—  
Verwey, Jan; and Tan, Hong S., 4,282,145, Cl. 260-239.00A.
- Tanaka, Kazuo, to Canon Kabushiki Kaisha. Zoom lens. 4,281,906, Cl. 350-427.000.
- Tanaka, Masahiro; and Konoshima, Katunaga, to Olympus Optical Company, Ltd. Apparatus for cleaning endoscope. 4,281,674, Cl. 134-95.000.
- Tang, Louis S.: See—  
Runkle, Dean E.; Tang, Louis S.; and Harrison, Gregory K., 4,281,585, Cl. 91-5.000.
- Tani, Tatsuo: See—  
Ohta, Sakae; and Tani, Tatsuo, 4,281,557, Cl. 74-89.220.
- Tanimoto, Akira; and Inoue, Tomohiro, to Sharp Kabushiki Kaisha. Clef and scale indicator for music instruments. 4,281,578, Cl. 84-470.00R.
- Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, to Sharp Kabushiki Kaisha. Synthetic-speech calculators. 4,282,404, Cl. 179-1.05M.
- Tam Textiles Limited: See—  
Holland, Judith J., 4,281,873, Cl. 297-118.000.
- Tashma, Zev: See—  
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- Tauber, Thomas E.; and Chapman, George E., to Technical Development Co. Gas and failure particle separator system. 4,282,016, Cl. 55-204.000.
- Taylor, Allan H.: See—  
Jackson, Liam R.; and Taylor, Allan H., 4,281,581, Cl. 411-19.000.
- Taylor, Andrew W.: See—  
Guest, Angela W.; Taylor, Andrew W.; and Ramage, Robert, 4,282,373, Cl. 560-181.000.
- Taylor, Jeffrey L.: See—  
Payne, F. Leland; and Taylor, Jeffrey L., 4,282,578, Cl. 364-573.000.
- Taylor, Raymond G., to Western Electric Company, Inc. Speech networks for telephone sets. 4,282,409, Cl. 179-81.00R.
- TDK Electronics, Ltd.: See—  
Makino, Motohiko; Imamura, Kenji; and Kurosawa, Yoshinori, 4,282,302, Cl. 430-107.000.
- Teague, Walter D., Jr.; and Sempliner, Arthur T. Diverter attachment for water-powered appliance. 4,281,681, Cl. 137-562.000.
- Technical Development Co.: See—  
Tauber, Thomas E.; and Chapman, George E., 4,282,016, Cl. 55-204.000.
- Techplastics, Inc.: See—  
Streit, Kenneth F., 4,281,860, Cl. 285-137.00R.
- Teel, Kenneth D. Safety stirrup. 4,281,503, Cl. 54-49.000.
- Tektronix, Inc.: See—  
Stein, William W., 4,282,456, Cl. 313-419.000.
- Teledyne Industries, Inc.: See—  
Kiley, Leo R., 4,282,113, Cl. 252-359.00C.
- Tellabs, Inc.: See—  
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- Tencor Instruments: See—  
Kren, George J.; Urbanek, Karel; and Wheeler, William R., 4,282,483, Cl. 324-158.00R.
- Tennessee Valley Authority: See—  
Hsieh, Shuang-Shii; and Brooks, Dennis G., 4,282,089, Cl. 209-166.000.
- Terauchi, Ryugo. Automatic urine collecting apparatus. 4,281,655, Cl. 128-278.000.
- Terpay, John M., to Dan River Incorporated. Woven fabrics containing glass fibers and abrasive belts made from same. 4,282,011, Cl. 51-298.000.
- Terpay, John M. Pressure-sensitive flocked fastener and method of making same. 4,282,051, Cl. 156-71.000.
- Tersteegen, Johannes: See—  
Onken, Reiner; Mansfeld, Gunter; and Tersteegen, Johannes, 4,281,584, Cl. 91-1.000.
- Teruyama, Hideo, to Kaysbakogyokabushikikaisha. Seal mechanism in gear pumps or motors. 4,281,974, Cl. 418-132.000.
- Tetra Pak Development SA: See—  
Ignell, Rolf L., 4,281,769, Cl. 215-12.00R.
- Texaco Inc.: See—  
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- Sung, Rodney L., 4,282,007, Cl. 44-53.000.
- Sung, Rodney L., 4,282,008, Cl. 44-53.000.
- Whittington, Lawrence E.; and Haltmar, Warren C., 4,281,714, Cl. 166-274.000.
- Zoleski, Benjamin H.; Sung, Rodney L.; Schierberg, Gordon R.; and Hebert, Gayle P., 4,282,107, Cl. 252-42.700.
- Texas Instruments Incorporated: See—  
Evetts, Samuel G.; Lawson, John D.; and Penn, William D., 4,282,589, Cl. 367-90.000.
- McElroy, David J., 4,282,446, Cl. 307-238.500.
- Voigt, William C., 4,282,567, Cl. 363-15.000.
- Yashin, Michael A.; and Rebelo, Lucilio A., 4,282,003, Cl. 29-619.000.
- Yenawine, David L.; Lowder, Richard K.; Power, Delwin L.; and Summers, Tommy L., 4,282,597, Cl. 368-280.000.
- Texas Iron Works, Inc.: See—  
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- Textron, Inc.: See—  
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- Textured Products, Inc.: See—  
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- George, Stephen, 4,282,284, Cl. 428-251.000.
- Tezuka, Nobuo; Hashimoto, Teiji; Senuma, Mituo; and Iwata, Yutaka, to Canon Kabushiki Kaisha. Focal plane shutter. 4,281,914, Cl. 354-244.000.
- Th. Goldschmidt AG: See—  
Muller, Wolfgang; and Witzke, Lothar, 4,282,190, Cl. 423-104.000.
- Therm-O-Disc, Incorporated: See—  
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- Theuer, Richard C., to Bristol-Myers Company. Fat compositions for infant formulas. 4,282,265, Cl. 426-607.000.
- Thibault, Edmond: See—  
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- Thiis-Evensen, Harald, to Isola Fabrikker A/S. Procedure for covering roofs. 4,282,050, Cl. 156-71.000.
- Thomas Jefferson University: See—  
Lefer, Allan M., 4,282,252, Cl. 424-317.000.
- Thomas Steel Strip Corporation: See—  
Hirt, Theodore A.; and Dillon, Robert H., 4,282,073, Cl. 204-28.000.
- Thomas, Wallace N., to Pickands Mather & Co. Inching device. 4,281,746, Cl. 192-3.00R.
- Thomas, Wilbur E. Method and apparatus for ejecting single sheets from a stack of sheets in a tray. 4,281,829, Cl. 271-10.000.
- Thompson, Donald G.: See—  
Summers, Christopher P.; and Thompson, Donald G., 4,282,447, Cl. 307-255.000.
- Thompson, John S.: See—  
Jadlocki, Joseph F., Jr.; and Thompson, John S., 4,282,260, Cl. 426-264.000.
- Thor Power Tool Company: See—  
Dudek, Edmund C., 4,281,538, Cl. 73-862.210.
- Thorsen, Gunnar; and Monhemius, Andrew J. Precipitation of metal values from organic media. 4,282,189, Cl. 423-24.000.
- Threlfall, James. Position maintaining tool. 4,281,443, Cl. 29-271.000.
- Tieszen, Dale O.; and Scoggins, Lacey E., to Phillips Petroleum Company. Preparation of branched polymers of arylene sulfide. 4,282,347, Cl. 528-388.000.
- TIF Instruments, Inc.: See—  
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- Timex Corporation: See—  
Lowdenslager, John; and Zatsky, Norman C., 4,282,595, Cl. 368-200.000.
- Tin, Kam B.: See—  
Norman, Stanley R. C.; and Tin, Kam B., 4,282,488, Cl. 328-112.000.
- Tindall, Richard F.; Baddeley, Eric R.; and Rudd, Peter W., to Johnson, Matthey & Co., Limited. Measurement of temperature. 4,282,507, Cl. 338-25.000.
- Tinkelenberg, Arie; Vaessen, Henricus W. L. M.; Suen, Kwai W.; and Van Doorn, Anton J., to Methanol Chemie Nederland V.o.F. Manufacture of chipboard having high strength and reduced formaldehyde emission, using a minor amount of protein in combination with low formaldehyde urea resins. 4,282,119, Cl. 260-6.000.
- Tobin, Thomas J., to S&C Electric Company. Fault limiter having a one-piece enclosure of glass-reinforced resin. 4,282,504, Cl. 337-186.000.
- Tocker, Stanley, to Du Pont de Nemours, E. I., and Company. Process for preparing insecticidal compositions. 4,282,209, Cl. 424-81.000.
- Tohizima, Hisaaki: See—  
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- Tokico Ltd.: See—  
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- Tokyo Kogaku Kikai Kabushiki Kaisha: See—  
Kobayashi, Yuzi; and Nishikatsu, Hiroshi, 4,281,463, Cl. 33-299.000.
- Tokyo Shibaura Denki Kabushiki Kaisha: See—  
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- Kobayashi, Sumio; and Matsushita, Tetsushi, 4,282,568, Cl. 363-54.000.
- Kurosawa, Ryoichi; and Kudor, Tohiaki, 4,282,570, Cl. 363-87.000.
- Kusakabe, Hiromi, 4,282,490, Cl. 329-103.000.
- Matsura, Tetsuo, 4,282,439, Cl. 250-470.000.
- Nakai, Kaichiro, 4,282,463, Cl. 315-39.710.
- Tokyo Shibaura Electric Co., Ltd.: See—  
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- Tolonen, Yrjo: See—  
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- Tomasch, Hellmut; Bacher, Robert; Konrath, Karl; Koster, Claus; and Nothdurft, Heinz, to Robert Bosch GmbH. Fuel injection pump control lever construction. 4,281,558, Cl. 74-99.00R.
- Tomita, Kosuke: See—  
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- Tomoda, Yasuro: See—  
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Tompkins, Russell E.: See—  
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Torok, Steve P.; Formica, Vincent A.; and Lange, George P., to United States of America, Navy. Site occupancy detector. 4,282,585, Cl. 367-2.000.

Torre, Giancarlo D., to Rockwell-Rimoldi S.p.A. Cutting apparatus for sewing machines. 4,281,607, Cl. 112-130.000.

Toshia Seiko Kabushiki Kaisha: See—  
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Toyota Jidosha Kogyo Kabushiki Kaisha: See—  
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Treace, Harry T., to Richards Manufacturing Company, Inc. Middle ear ossicular replacement prosthesis having a movable joint. 4,281,419, Cl. 3-1.900.

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Trio Kabushiki Kaisha: See—  
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Trotta, Robert A., to Gillette Company, The. Shaving system. 4,281,454, Cl. 30-47.000.

Trotta, Robert A.: See—  
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Trounill, Edward G., to Chapman Enterprises Corp. Car undercoating composition. 4,282,131, Cl. 260-29.70R.

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TRW Inc.: See—  
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Warren, Walter B.; and Marosko, Ronald J., 4,282,487, Cl. 324-445.000.

Tsang, Won-Tien, to Bell Telephone Laboratories, Incorporated. Planar P-I-N photodetectors. 4,282,541, Cl. 357-30.000.

Tsang, Shin-Shyong; and Rauhut, Michael M., to American Cyanamid Company. Aqueous chemiluminescent systems. 4,282,357, Cl. 544-83.000.

Tsuhako, Parker I. Aquarium filtering system. 4,282,095, Cl. 210-169.000.

Tsujino, Koichi: See—  
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Tsukamoto, Kotoru. Wire rod steeping equipment. 4,282,042, Cl. 134-140.000.

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Tucker, John D.; Cozad, Ronald E.; and Kaiser, Robert A., to Long Year Company. Retractable bit system. 4,281,722, Cl. 175-57.000.

Tufts, Juri, to RCA Corporation. Keyboard encoding arrangement. 4,282,516, Cl. 340-365.00S.

Turner, Frank J. Can tapping valve apparatus. 4,281,775, Cl. 222-82.000.

Turner, Ian: See—  
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Tusing, Arthur. Lift mechanism mounted within hollow main tool bar and auxiliary tool bar moved thereby. 4,281,720, Cl. 172-776.000.

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Uemura, Toshio; Kagabu, Hiroshi; Arisaki, Kenji; Kajimoto, Noboru; Akatsuka, Shinshi; and Fujimoto, Takuaki, to Babcock-Hitachi Kabushiki Kaisha. Apparatus for regenerating fluidizing medium. 4,281,605, Cl. 110-245.000.

Ueno, Masayasu: See—  
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Wada, Norinobu; and Okuno, Yoshitaka, to Shin-Etsu Chemical Co., Ltd. Method for removing unreacted monomer from the aqueous dispersion of polymerizable vinyl chloride and apparatus therefor. 4,282,348, Cl. 528-500.000.

Wada, Takeshi; Ienaka, Masanori; Kominami, Yasuo; Miyamoto, Yukihiro; and Yamada, Tsuneo, to Hitachi, Ltd.; and Trio Kabushiki Kaisha. Monostable multivibrator and FM detector circuit employing common emitter transistor amplifier with plural emitter resistors to avoid circuit operation from signal noise. 4,282,448, Cl. 307-273.000.

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Wakat, Emory, Jr.; Dwornik, Lawrence N.; Krolak, Leo V.; Whalin, Jeffery A.; and Mech, Harold W., to Motorola, Inc. Piezoelectric crystal mounting and connection arrangement. 4,282,454, Cl. 310-348.000.

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Walter, Manfred; Stein, Dieter; Fahrbach, Gerhard; Jung, Rudolf; and Echte, Adolf, to BASF Aktiengesellschaft. Manufacture of high impact and translucent styrene polymers. 4,282,334, Cl. 525-53.000.

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Wayne H. Coloney Company, Inc.: See—  
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Weaver, Joe T. Piston construction for reciprocating pumps. 4,281,590, Cl. 92-244.000.

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Weishew, Joseph F. Dual carriage reciprocator with continuously moving chain. 4,281,556, Cl. 74-37.000.

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Werrtes, Lothar, to Kraftwerk Union Aktiengesellschaft. Device for core container-crash protection and coolant guidance in a nuclear reactor pressure vessel. 4,282,063, Cl. 176-38.000.

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Wheldon, Alfred G.; and Cockerill, Peter E., to Distillers Company (Carbon Dioxide) Limited. The Process for preparing an extract of hops. 4,282,259, Cl. 426-231.000.

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Lackey, James A.; Nordwall, Harold L.; and Whitney, Charlie B., 4,282,394, Cl. 136-245.000.

Whittaker Corporation: See—  
Kariagin, Nikolai, 4,281,867, Cl. 294-83.00R.

Whittington, Lawrence E.; and Haltmar, Warren C., to Texaco Inc. Lithium salts as additives in petroleum recovery processes. 4,281,714, Cl. 166-274.000.

Widder Corporation: See—  
Krieg, Adrian H., 4,281,459, Cl. 30-228.000.

Wiechert, Edelbert, to Siemens Aktiengesellschaft. Locking device for a transport container of an electrically driven, rail-bound transport car with a contact device actuable by a transport container cover for monitoring the locking state. 4,281,864, Cl. 292-229.000.

Wiemann, Gunter: See—  
Batz, Hans-Georg; Linke, Hans-Ralf; Stellner, Klaus; and Wiemann, Gunter, 4,282,151, Cl. 260-326.00A.

Wigdahl, Arthur G. Domestic boiler. 4,281,604, Cl. 110-234.000.

Wijma, Willem S.: See—  
Bakker, Eppo; Boiten, Ebb; Kingma, Eildert; Lenting, Gerard J.; and Wijma, Willem S., 4,281,453, Cl. 30-43.600.

Wikner, Jan: See—  
Borjesgard, Pehr; Cetrelli, Renzo; Kullendorff, Anders; Schon, Stur; and Wikner, Jan, 4,281,510, Cl. 60-39.320.

Wiley, Paul F.: See—  
Hanks, Ladislav J.; and Wiley, Paul F., 4,282,327, Cl. 435-254.000.

Wilkes, Glenn R.: See—  
Brust, David P.; Hamilton, Lewis R.; and Wilkes, Glenn R., 4,282,305, Cl. 430-213.000.

Wilkinson Sword Limited: See—  
Dixon, Richard B.; and Carr, Peter, 4,281,455, Cl. 30-47.000.

Williams, Frederick J.: See—  
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,282,453, Cl. 310-335.000.

Williams, Robert M. Explosion suppression system for fire or explosion susceptible enclosures. 4,281,717, Cl. 169-20.000.

Williamson, Michael, to Owens-Corning Fiberglass Corporation. Electrode melting-Z type electrode firing with continuous zones. 4,282,393, Cl. 13-6.000.

Willis, Donald H.: See—  
Luz, David W.; and Willis, Donald H., 4,282,460, Cl. 315-411.000.

Wilson, Charles A., II: See—  
Quinn, Clayton B.; and Wilson, Charles A., II, 4,282,391, Cl. 568-726.000.

Wilson, John H.; and Hammett, Dillard S., to Sedco, Inc. Self-propelled semi-submersible service vessel. 4,281,615, Cl. 114-265.000.

Wilson, Phillip S.: See—  
Mark, Victor; and Wilson, Phillip S., 4,282,134, Cl. 260-30.80R.

Wilson, Pryce. Concentrating vacuum isolated solar energy collection apparatus employing reflector. 4,281,637, Cl. 126-422.000.

Wilson, Stanley, Jr.; and Borger, Robert M., to Potter Electric Signal Company. Automatic ringback for direct current monitoring system. 4,282,517, Cl. 340-503.000.

Winans, Esther D.: See—  
Deen, Harold E.; Winans, Esther D.; Ryer, Jack; and O'Halloran, Rosemary, 4,282,108, Cl. 252-51.50R.

Winderman, Jay B.; and Kuffer, Fernand B., to General Dynamics, Pomona Division. Multi-spectral detection system with common collecting means. 4,282,527, Cl. 343-725.000.

Windmoller & Holscher: See—  
Boose, Frank; and Zemella, Horst, 4,282,055, Cl. 156-464.000.

Wing, Lawrence D.; and Cunningham, Joseph W., to United States of America, National Aeronautics and Space Administration. Automatic thermal switch. 4,281,708, Cl. 165-32.000.

Wingate, Kenneth G. Adjustable position sonar transducer depth finder. 4,282,590, Cl. 367-104.000.

Winiasz, Michael E. Indexing and synchronizing clutch mechanism. 4,281,748, Cl. 192-28.000.

Winkler, Heinrich; Rumold, Gerhard; and Schummer, Helmut, to Siemens Aktiengesellschaft. Detector for detecting voltage breakdowns on the high-voltage side of an electric precipitator. 4,282,014, Cl. 55-105.000.

Winter, Claus; and Ehrmann, Wolfgang, to Inbauprodukt Innenausbauysteme GmbH & Co. KG. Sliding door closet. 4,281,435, Cl. 16-94.00R.

Winter, Wolfgang: See—  
Silber, Dieter; Fullmann, Marius; and Winter, Wolfgang, 4,282,542, Cl. 357-38.000.

Wirth, Friedrich: See—  
Reuter, Peter; Blechschmitt, Kurt; and Wirth, Friedrich, 4,282,116, Cl. 252-461.000.

Wirth, Xaver, to Knorr-Bremse GmbH. Brake disk for disk brakes on a rail vehicle. 4,281,745, Cl. 188-218.0XL.

Wisconsin Alumni Research Foundation: See—  
Davidson, Robert S.; and Grieger-Bloch, Richard A., 4,282,159, Cl. 260-348.210.

Smith, Jeffery S.; Perepezko, John H.; Rasmussen, Don H.; and Loper, Carl R., Jr., 4,282,034, Cl. 75-232.000.

Wisconsin Tissue Mills Inc.: See—  
Mueller, George P.; Urban, Urban A.; Muenster, Kermit J.; and Ludwig, Donald A., 4,281,500, Cl. 53-211.000.

Witzke, Lothar: See—  
Muller, Wolfgang; and Witzke, Lothar, 4,282,190, Cl. 423-104.000.

Wojcik, Bruce C.: See—  
Cook, Robert D.; Emmett, Robert C., Jr.; Wojcik, Bruce C.; and Baczek, Frank A., 4,282,082, Cl. 204-237.000.

Wolfbeiss, Erich: See—  
Stiefel, Max; and Wolfbeiss, Erich, 4,282,062, Cl. 176-37.000.

Wollwage, Peter: See—  
Michl, Rudy; and Wollwage, Peter, 4,281,991, Cl. 433-202.000.

Wong, Ching-Ping: See—  
Dinella, Donald; and Wong, Ching-Ping, 4,282,314, Cl. 430-413.000.

Wong, Wilson T., to Sperry Rand Corporation. Floating point processor architecture which performs subtraction with reduced number of guard bits. 4,282,582, Cl. 364-748.000.

Wood, Darwin L.: See—  
Kometani, Thomas Y.; and Wood, Darwin L., 4,282,196, Cl. 423-337.000.

Wood, Milton D.; and Silverman, Daniel, to M. D. Wood, Inc. Method and apparatus for monitoring the position and movement progress of the flame front in an underground combustion. 4,281,713, Cl. 166-251.000.

Wright, Hal E.: See—  
Van Allan, James A.; Rossi, Louis J.; Bloom, Melvin S.; Regan, Michael T.; Wright, Hal E.; and Kaukenen, Joseph Y., 4,282,354, Cl. 542-441.000.

Wright, John J., to Schering Corporation. Selective 3'-N-acylation of 1,3'-di-N-unprotected-poly-N-protected-4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitols. 4,282,350, Cl. 536-10.000.

Wu, Ching-Yong; Swift, Harold E.; and Bozik, John E., to Gulf Research & Development Company. Preparation of diisopropylbenzene hydroperoxide. 4,282,384, Cl. 568-574.000.

Wu, Yulin, to Phillips Petroleum Company. Production of cyclohexylbenzene hydroperoxide. 4,282,382, Cl. 568-570.000.

Wuerzer, Bruno: See—  
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Samel, Ulf-Rainer; Jung, Johann; and Wuerzer, Bruno, 4,282,027, Cl. 71-76.000.

Schirmer, Ulrich; Rohr, Wolfgang; Wuerzer, Bruno; and Fett, Kurt, 4,282,369, Cl. 560-25.000.

Wuestner, Friedrich, to Siemens Aktiengesellschaft. Plasma torch for micro-plasma welding. 4,282,418, Cl. 219-121.0PP.

Wurlitzer Company, The: See—  
Hoskinson, William R.; and Machanian, William V., 4,282,575, Cl. 364-479.000.

Wuster, Walter L.: See—  
Oglesby, Frank P.; and Wuster, Walter L., 4,281,809, Cl. 244-3.160.

Wyzenbeek, Andrew, to Usher, Laura May. Life-prolonging device for hearing-aid batteries. 4,282,474, Cl. 320-2.000.

Xerox Corporation: See—  
Bayley, Robert D., 4,282,304, Cl. 430-137.000.

Bergen, Richard F., 4,282,303, Cl. 430-120.000.

Boggs, David R.; and Metcalfe, Robert M., 4,282,512, Cl. 340-147.0LP.

Cross, Thomas R., 4,281,920, Cl. 355-75.000.

Markham, Roger G., 4,282,532, Cl. 346-75.000.

McChesney, John L.; Tackland, Thomas A.; and Turner, Ian, 4,281,620, Cl. 118-410.000.

Murphy, Cornelius B.; and Sypula, Donald S., 4,282,296, Cl. 430-39.000.

Smith, Michael; Hackett, Charles F.; and Radler, Richard W., 4,282,298, Cl. 430-58.000.

Sprague, Robert A.; and Johnson, Richard V., 4,281,904, Cl. 350-356.000.

Yagasaki, Toshiaki: See—  
Nomura, Akihiro; Hayakawa, Kimiaki; Yoshimura, Shigeru; Masuda, Shunichi; Shimizu, Katsuichi; and Yagasaki, Toshiaki, 4,281,919, Cl. 355-50.000.

Yagihara, Morio: See—  
Watanabe, Toshiyuki; Hirose, Takeshi; Yagihara, Morio; and Yokota, Yukio, 4,282,312, Cl. 430-384.000.

Yamabe, Shigeru: See—  
Fujimoto, Yasuo; and Yamabe, Shigeru, 4,282,245, Cl. 424-275.000.

Yamada, Koki: See—  
Kunimatsu, Yoshio; Okumura, Hajime; Masai, Hiroshi; Yamada, Koki; and Yamada, Mikio, 4,282,257, Cl. 426-17.000.

Yamada, Mikio: See—  
Kunimatsu, Yoshio; Okumura, Hajime; Masai, Hiroshi; Yamada, Koki; and Yamada, Mikio, 4,282,257, Cl. 426-17.000.

Yamada, Naomichi: See—  
Suzuki, Masao; Matsuo, Takeshi; and Yamada, Naomichi, 4,282,163, Cl. 260-409.000.

Yamada, Ryojo; Okamoto, Naomichi; and Meiri, Toshimi, to President Shizuoka University. Super wide band light transmitting system. 4,281,893, Cl. 350-96.310.

Yamada, Shigemichi: See—  
Takemoto, Kazuhiko; Ninomiya, Toshiyuki; Yamada, Shigemichi; and Yukiyasu, Minoru, 4,281,753, Cl. 192-99.00S.

Yamada, Tsuneo: See—  
Wada, Takeshi; Ienaka, Masanori; Kominami, Yasuo; Miyamoto, Yukihiko; and Yamada, Tsuneo, 4,282,448, Cl. 307-273.000.

Yamagata, Mitsukuni; Takitani, Keiichi; Hasuno, Sadao; and Motoda, Kuniki, to Kawasaki Steel Corporation. Method of producing steel pipe material for oil well. 4,282,047, Cl. 148-143.000.

Yamaguchi, Hiroshi, to Nissan Motor Company, Limited. Exhaust gas recirculation and idle speed control device. 4,281,631, Cl. 123-571.000.

Yamaguchi, Tamikazu, to Minolta Camera Kabushiki Kaisha. Tesser type objective lens system having a rear aperture stop. 4,281,908, Cl. 350-476.000.

Yamashita, Hisao: See—  
Fujita, Kazunori; Uno, Shigeo; Takeuchi, Seizi; and Yamashita, Hisao, 4,282,092, Cl. 210-682.000.

Yanagida, Hiroaki: See—  
Nishikawa, Yasuo; Yanagida, Hiroaki; Shimizu, Tadao; Hori, Masayoshi; and Yoshida, Tetsuro, 4,282,200, Cl. 423-598.000.

Yang, Yin-Lung: See—  
Chiang, Nei-Ho, 4,281,825, Cl. 269-29.000.

Yano, Haruto, to Toyo Kogyo Co., Ltd. Automobile headlight lighting apparatus. 4,282,561, Cl. 362-65.000.

Yarema, Dennis W. Manual volume control device for guitar or the like. 4,281,573, Cl. 84-1.160.

Yashin, Michael A.; and Rebelo, Lucilio A., to Texas Instruments Incorporated. Method for constructing a self-regulating electric heater. 4,282,003, Cl. 29-619.000.

Yates, Richard A., to Du Pont de Nemours, E. I., and Company. Removal and concentration of lower molecular weight organic acids from dilute solutions. 4,282,323, Cl. 435-140.000.

Yates, Rowland K. Paper cutter assembly. 4,281,571, Cl. 83-542.000.

Yato, Fumihiko; Kitayama, Seishi; Tamura, Junso; Ishigami, Hikoichi; and Kurematsu, Akira, to Kokusai Denshin Denwa Kabushiki Kaisha. Adaptive pitch detection system for voice signal. 4,282,406, Cl. 179-1.0SC.

Yenawine, David L.; Lowder, Richard K.; Power, Delwin L.; and Summers, Tommy L., to Texas Instruments Incorporated. Metal-coated plastic housing for electronic components and the method of making same. 4,282,597, Cl. 368-280.000.

Yokota, Yukio: See—  
Watanabe, Toshiyuki; Hirose, Takeshi; Yagihara, Morio; and Yokota, Yukio, 4,282,312, Cl. 430-384.000.

Yokoyama, Naruo: See—  
Atsukawa, Masumi; Nishimoto, Yoshihiko; Yokoyama, Naruo; and Sera, Toshikuni, 4,282,115, Cl. 252-440.000.

Yokozawa, Norio: See—  
Kanazawa, Yasunori; Arai, Takao; Yokozawa, Norio; and Takasugi, Wasao, 4,282,551, Cl. 360-32.000.

Yonezawa, Kazuya; Furukawa, Hisao; and Azuma, Masaaki, to Kanagafuchi Kagaku Kogyo Kabushiki Kaisha. Curable diallyl phthalate compounds and process for producing same. 4,282,336, Cl. 525-102.000.

Yonezu, Hiroo; and Ueno, Masayasu, to Nippon Electric Co., Ltd. Stripe-geometry double heterojunction laser element. 4,282,494, Cl. 331-94.50H.



- Yonezu, Hiroo: See—  
Shinohara, Tsuneo; and Yonezu, Hiroo, 4,281,891, Cl. 350-96.180.
- Yoshida, Akihiko: See—  
Fujito, Katsuyuki; Hasegawa, Seiro; Unoguchi, Takehiko; Nishino, Atsushi; and Yoshida, Akihiko, 4,282,480, Cl. 324-61.00R.
- Yoshida Kogyo K.K.: See—  
Kaminaga, Hiromitsu, 4,281,477, Cl. 49-453.000.
- Mitani, Hiroshi; and Uozumi, Kenichi, 4,281,608, Cl. 112-150.000.
- Yoshida, Matuju; and Hayashi, Shukichi, to Nippondenso Co., Ltd. Apparatus for initializing a vehicle controlling digital computer. 4,282,574, Cl. 364-431.000.
- Yoshida, Tadatoshi: See—  
Nishida, Susumu; Inouye, Tamon; Yoshida, Tadatoshi; and Saito, Kiyoto, 4,282,438, Cl. 250-445.00T.
- Yoshida, Tetsuro: See—  
Nishikawa, Yasuo; Yanagida, Hiroaki; Shimizu, Tadao; Hori, Masayosi; and Yoshida, Tetsuro, 4,282,200, Cl. 423-598.000.
- Yoshimoto, Yuichiro: See—  
Sakurai, Mikio; Yoshimoto, Yuichiro; and Nakamura, Shiro, 4,282,061, Cl. 176-20.00R.
- Yoshimura, Shigeru: See—  
Nomura, Akihiro; Hayakawa, Kimiaki; Yoshimura, Shigeru; Masuda, Shunichi; Shimizu, Katsuchi; and Yagasaki, Toshiaki, 4,281,919, Cl. 355-50.000.
- Yoshimura, Yasumasa: See—  
Ochiai, Akio; Iida, Noriyuki; and Yoshimura, Yasumasa, 4,281,898, Cl. 350-281.000.
- Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Suma, Miki, to Shinagawa Shirorenga Kabushiki Kaisha; and Toshin Seiko Kabushiki Kaisha. Graphite refractory article having dense structure with low porosity. 4,282,288, Cl. 428-408.000.
- Yousmans, Arthur H., to Dresser Industries, Inc. Method and apparatus for logging inclined earth boreholes. 4,282,523, Cl. 340-860.000.
- Young, Melvin R. Marine fender and method of making the same. 4,281,610, Cl. 114-219.000.
- Young, Prussin, MGK, J.V.: See—  
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,282,207, Cl. 424-78.000.
- Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,282,208, Cl. 424-78.000.
- Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., to Young, Prussin, MGK, J.V. Adherent controlled release pesticides. 4,282,207, Cl. 424-78.000.
- Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., to Young, Prussin, MGK, J.V. Adherent controlled release pesticides. 4,282,208, Cl. 424-78.000.
- Young, Rodney C.: See—  
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, 4,282,213, Cl. 424-200.000.
- Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., 4,282,234, Cl. 424-269.000.
- Young, Thomas A. Light absorptivity measuring device. 4,281,932, Cl. 356-416.000.
- Youngers, Stephen A., to J. I. Case Company. Joint for articulated vehicles. 4,281,848, Cl. 280-494.000.
- Yu, Hwa N.: See—  
Ning, Tak H.; Osburn, Carlton M.; and Yu, Hwa N., 4,282,540, Cl. 357-23.000.
- Yukiyasu, Minoru: See—  
Takemoto, Kazuhiko; Ninomiya, Toshiyuki; Yamada, Shigemichi; and Yukiyasu, Minoru, 4,281,753, Cl. 192-99.00S.
- Zacky, Ralf G. Panel molding support structure. 4,281,883, Cl. 312-140.000.
- Zatsky, Norman C.: See—  
Lowdenslager, John; and Zatsky, Norman C., 4,282,595, Cl. 368-200.000.
- Zeeh, Bernd: See—  
Goetz, Norbert; Steimmig, Anna; Zeeh, Bernd; and Adolphi, Heinrich, 4,282,238, Cl. 424-273.00R.
- Zemanek, Josef, to Siemens Aktiengesellschaft. Method for synchronizing sending and receiving devices. 4,282,600, Cl. 370-100.000.
- Zemella, Horst: See—  
Bosse, Frank; and Zemella, Horst, 4,282,055, Cl. 156-464.000.
- Zenbutsu, Tadashi: See—  
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Suma, Miki, 4,282,288, Cl. 428-408.000.
- Zentner, John W. Method for cooling hot-rolled shapes. 4,282,048, Cl. 148-155.000.
- Ziman, Stephen D., to Chevron Research Company. Herbicidal and plant-growth-regulating N-substituted-N-(2,5-dialkylpyrrol-1-yl) haloacetamides. 4,282,028, Cl. 71-90.000.
- Zimmer, Herbert, to Dornier GmbH. Transverse driving bodies, particularly airplane wings. 4,281,812, Cl. 244-219.000.
- Zimmerman, James E.; and Sullivan, Donald B., to United States of America, Navy. Single stage twin piston cryogenic refrigerator. 4,281,517, Cl. 62-6.000.
- Zimmermann, Martin R.; and Oettli, Walter, to AMEG Verfahrens- und Umweltschutz-Technik AG. Method and apparatus for the recovering of solvents in dry cleaning units. 4,281,465, Cl. 34-26.000.
- Zinser, Alan L.: See—  
Hoernschemeyer, August B.; Zinser, Alan L.; and Myers, John F., 4,282,090, Cl. 209-291.000.
- Zocher, Josef, to Singer Company, The. Lockstitch sewing by needle looper. 4,281,609, Cl. 112-184.000.
- Zoleski, Benjamin H.; Sung, Rodney L.; Schierberg, Gordon R.; and Hebert, Gayle P., to Texaco Inc. Diesel crankcase lubricant composition. 4,282,107, Cl. 252-42.700.
- Zorayan, Vahan: See—  
Jacquet, Bernard; Papanitiou, Christos; Vanlerberghe, Guy; Mahieu, Claude; and Zorayan, Vahan, 4,282,203, Cl. 424-47.000.
- Zotteri, Luciano: See—  
Roggero, Arnaldo; and Zotteri, Luciano, 4,282,338, Cl. 525-153.000.
- Zusi, F. Christopher: See—  
Warner, Paul L., Jr.; and Zusi, F. Christopher, 4,282,206, Cl. 424-59.000.
- Zusman, Bertram. Cantilevered cross truss construction. 4,281,486, Cl. 52-73.000.

## LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF AUGUST, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Albrecht, Konrad: See—  
Frensch, Heinz; Albrecht, Konrad; and Bock, Klaus-Detlev, Re. 30,700, Cl. 424-276.000.
- Arbib, Gordon F.; and Rubin, Wallace, to Multicore Solders Limited. Soldering flux composition. Re. 30,696, Cl. 148-23.000.
- Askew, Herbert F.: See—  
Elliott, John S.; Jayne, Gerald J. J.; Askew, Herbert F.; and Harrington, Colin J., Re. 30,698, Cl. 252-78.300.
- Bock, Klaus-Detlev: See—  
Frensch, Heinz; Albrecht, Konrad; and Bock, Klaus-Detlev, Re. 30,700, Cl. 424-276.000.
- Castrol Limited: See—  
Elliott, John S.; Jayne, Gerald J. J.; Askew, Herbert F.; and Harrington, Colin J., Re. 30,698, Cl. 252-78.300.
- Elliott, John S.; Jayne, Gerald J. J.; Askew, Herbert F.; and Harrington, Colin J., to Castrol Limited. Hydraulic fluids comprising orthosilicate esters. Re. 30,698, Cl. 252-78.300.
- Fredrickson, James D., to Reynolds Leasing Corporation. Process for increasing the filling capacity of tobacco. Re. 30,693, Cl. 131-296.000.
- Frensch, Heinz; Albrecht, Konrad; and Bock, Klaus-Detlev, to Hoechst Aktiengesellschaft. Insecticidal compositions for ultra low volume application. Re. 30,700, Cl. 424-276.000.
- Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Hand-held labeler. Re. 30,697, Cl. 156-384.000.
- Harrington, Colin J.: See—  
Elliott, John S.; Jayne, Gerald J. J.; Askew, Herbert F.; and Harrington, Colin J., Re. 30,698, Cl. 252-78.300.
- Hoechst Aktiengesellschaft: See—  
Frensch, Heinz; Albrecht, Konrad; and Bock, Klaus-Detlev, Re. 30,700, Cl. 424-276.000.
- Iannicelli, Joseph, to J. M. Huber Corporation. Polyurethanes containing amino organosilane modified clay. Re. 30,699, Cl. 260-37.00N.
- J. M. Huber Corporation: See—  
Iannicelli, Joseph, Re. 30,699, Cl. 260-37.00N.
- Jayne, Gerald J. J.: See—  
Elliott, John S.; Jayne, Gerald J. J.; Askew, Herbert F.; and Harrington, Colin J., Re. 30,698, Cl. 252-78.300.
- Monarch Marking Systems, Inc.: See—  
Hamisch, Paul H., Jr., Re. 30,697, Cl. 156-384.000.
- Multicore Solders Limited: See—  
Arbib, Gordon F.; and Rubin, Wallace, Re. 30,696, Cl. 148-23.000.
- Reynolds Leasing Corporation: See—  
Fredrickson, James D., Re. 30,693, Cl. 131-296.000.
- Riddle, Lavis A. H., to Westland Aircraft Limited. Flexible skirt components for air cushion vehicles. Re. 30,694, Cl. 180-128.000.
- Rubin, Wallace: See—  
Arbib, Gordon F.; and Rubin, Wallace, Re. 30,696, Cl. 148-23.000.
- Transport, Felix. Collapsible easel support. Re. 30,695, Cl. 206-45.240.
- Westland Aircraft Limited: See—  
Riddle, Lavis A. H., Re. 30,694, Cl. 180-128.000.

## LIST OF DESIGN PATENTEEES

- Ackeret, Peter, to IDN Inventions and Development of Novelties AG. Container for tape cassettes. 260,051, 8-4-81, Cl. D3-35.000.
- Acme Burgess, Inc.: See—  
Hattori, Kenneth M.; and Sobczak, Sigmar E., 260,116, Cl. D23-3.000.
- Ahrens, Paul W., to Miracle Recreation Equipment Company. Swing. 260,109, 8-4-81, Cl. D21-246.000.
- Alfred Hospital: See—  
Burns, John E.; and Van Lith, Martin J., 260,077, Cl. D9-416.000.
- Amba Marketing Systems, Inc.: See—  
Siegel, Milton I., 260,053, Cl. D3-52.000.
- Ament, Donald S.; and Ament, Duane S., to Miracle Recreation Equipment Company. Playground climber. 260,108, 8-4-81, Cl. D21-245.000.
- Ament, Donald S.; and Ament, Duane S., to Miracle Recreation Equipment Company. Playground merry-go-round. 260,111, 8-4-81, Cl. D21-249.000.
- Ament, Donald S.; and Ament, Duane S., to Miracle Recreation Equipment Company. Playground seating train. 260,112, 8-4-81, Cl. D21-250.000.
- Ament, Duane S.: See—  
Ament, Donald S.; and Ament, Duane S., 260,108, Cl. D21-245.000.
- Ament, Donald S.; and Ament, Duane S., 260,111, Cl. D21-249.000.
- Ament, Donald S.; and Ament, Duane S., 260,112, Cl. D21-250.000.
- American Brush Company, Inc.: See—  
Kronfeld, Jerome; and Furst, Garry, 260,081, Cl. D9-418.000.
- American Tourister, Inc.: See—  
Koffler, Sol, 260,055, Cl. D3-77.000.
- Anonima Castelli, S.p.A.: See—  
Ponzellini, Giulio, 260,058, Cl. D6-41.000.
- Antonelli, Luciano, to F.lli Antonelli s.n.c. del Cav. Luigi Antonelli & C. Electric piano or similar article. 260,097, 8-4-81, Cl. D17-7.000.
- Antonelli, Luciano, to F.lli Antonelli s.n.c. del Cav. Luigi Antonelli & C. Electric piano or similar article. 260,098, 8-4-81, Cl. D17-7.000.
- Appel, Mel; and Means, Paul B., to Appel, Mel. Toy fastener. 260,103, 8-4-81, Cl. D21-109.000.
- Asano, Yoshiro, to Sharp Corporation. Food temperature sensing probe assembly. 260,084, 8-4-81, Cl. D10-60.000.
- Aylor, Eugene W. Record album holder. 260,063, 8-4-81, Cl. D6-185.000.
- Baker, George H., Sr. Drapery channel. 260,075, 8-4-81, Cl. D8-377.000.
- Bell & Howell Company: See—  
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- Birmingham, Thomas A. Barbeque. 260,069, 8-4-81, Cl. D7-109.000.
- Bischoff, Henry C.; and Johnson, David C., to Refreshment Machinery Incorporated. Slush dispenser. 260,095, 8-4-81, Cl. D15-115.000.
- Bosch Siemens Hausgerate GmbH: See—  
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- Bullock, W. Craig; Reid, Francis J.; Tetrick, Oliver T.; and Tripp, Robert R., to Odetics, Inc. Time lapse video cassette recorder. 260,092, 8-4-81, Cl. D14-2.000.
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- Cecchetti, Alfred E. Fishing rod holder. 260,114, 8-4-81, Cl. D22-13.000.
- Champion International Corporation: See—  
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- Schillinger, Joseph F., 260,076, Cl. D9-346.000.
- Claman, Mike T., to Lewittes Furniture Enterprises, Inc. Chair. 260,060, 8-4-81, Cl. D6-57.000.
- Colby, Donald B., to Brown Jordan Company. Chaise. 260,057, 8-4-81, Cl. D6-38.000.
- Compagnia Fabbirazione Liwuori s.a.s. di Mario Casoni & C.: See—  
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- Dark, Ralph A. Combined wine bucket and table attachment bracket. 260,067, 8-4-81, Cl. D7-70.000.
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- David Hersh & Associates: See—  
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- Ament, Donald S.; and Ament, Duane S., 260,111, Cl. D21-249.000.
- Ament, Donald S.; and Ament, Duane S., 260,112, Cl. D21-250.000.
- Mitchell, Philip H., to JMJ Electronics Corp. Automotive portable electrical test set. 260,085, 8-4-81, Cl. D10-78.000.
- Mittmann, Gerald E., to Port-a-Slope Corporation. Artificial ski surface unit. 260,107, 8-4-81, Cl. D21-244.000.
- Mochizuki, Hidetoshi; Otsuki, Keizo; Kosaka, Hideki; and Murakami, Gen, to Hitachi, Ltd. Semiconductor. 260,091, 8-4-81, Cl. D13-99.000.
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- Otsuki, Keizo: See—  
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- Peirce, Elwin E.; and Waltz, Arthur L. Ventilator section. 260,117, 8-4-81, Cl. D23-163.000.
- Peritz, Richard C. Plural man surfboat. 260,106, 8-4-81, Cl. D21-228.000.
- Perstorp AB: See—  
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- Petersen, Warren D., to Burd, Inc. Combined seat and backrest unit. 260,065, 8-4-81, Cl. D6-197.000.
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- Ponzellini, Giulio, to Anonima Castelli, S.p.A. Combined table, storage console and multiple seating unit. 260,058, 8-4-81, Cl. D6-41.000.
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- Ravotto, Richard A.; and Rosenberg, Charles W., Jr., to J. C. Penney Company, Inc.; and F. N. Burt Co., Inc., a part interest to each. Carton. 260,080, 8-4-81, Cl. D9-418.000.
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- Refreshment Machinery Incorporated: See—  
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- Reichl, Ernst, to Bosch Siemens Hausgerate GmbH. Ultrasonic nebulizer. 260,119, 8-4-81, Cl. D24-62.000.
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- Ross, Cecil J., to W. R. Weaver Company. Optical gun sight mount. 260,113, 8-4-81, Cl. D22-7.000.
- Rubbermaid Specialty Products Inc.: See—  
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- Sakamoto, Junichi, to Sharp Corporation. Cash register. 260,100, 8-4-81, Cl. D18-4.000.
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- Sakamoto, Junichi, 260,100, Cl. D18-4.000.
- Siegel, Milton I., to Amba Marketing Systems, Inc. Handbag. 260,053, 8-4-81, Cl. D3-52.000.
- Smith, Woody. Vertical towel holder. 260,061, 8-4-81, Cl. D6-96.000.
- Sobczak, Sigmar E.: See—  
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- Solow, Patrick S. Ring. 260,087, 8-4-81, Cl. D11-35.000.
- Stanley Works, The: See—  
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- Steven Manufacturing Company: See—  
Klawitter, Ronald R., 260,104, Cl. D21-122.000.
- Strickland, Robert E., to David Hersh & Associates. Combined box sealing clip and handle. 260,083, 8-4-81, Cl. D9-443.000.

- Tatsuta, Mark: See—  
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- Tetrick, Oliver T.: See—  
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- Toybox Corporation: See—  
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- Tripp, Robert R.: See—  
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- Van Brouwer, Ryk, to Raintree Buckle & Jewelry, Inc. Belt buckle. 260,049, 8-4-81, Cl. D2-440.000.
- Van Lith, Martin J.: See—  
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- W. R. Weaver Company: See—  
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- Waltz, Arthur L.: See—  
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- Watkins Manufacturing Company: See—  
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- Weber, Ronald W., to Normark Corporation. Knife handle. 260,071, 8-4-81, Cl. D7-151.000.
- Weger, Kenneth F., Jr.: See—  
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- Wells, Sid. Cord winder. 260,073, 8-4-81, Cl. D8-358.000.
- Wooters, Dwight N., to Rubbermaid Specialty Products Inc. Front auto mat. 260,089, 8-4-81, Cl. D12-203.000.
- Zellner, John R.: See—  
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American Garden Cole, Inc.: See—  
Collins, William H., 4,756, Cl. 51.000.

Collins, William H., to American Garden Cole, Inc. White ash. 4,756, 8-4-81, Cl. 51.000.

## LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 4TH DAY OF  
AUGUST, 1981

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

- Gajjar, Bharat J. Single-bar warp-knit fabrics. T100,901, 8-4-81, Cl. 66-195.000.
- Hauser, Edward R. Uses for microfiber-based webs. T100,902, 8-4-81, Cl. 210-348.000.
- Kawamura, Siyoutaro. Plunger type electromagnetic relay. T100,904, 8-4-81, Cl. 335-131.000.
- Radel, Robert J.; and Sullivan, Jack M. Preparation of nitrogen fertilizers from oxalate esters prepared by the oxidative carbonylation of alcohols over noble metal catalysts utilizing regenerable 2,5-cyclohexadiene-1,4-dione oxidants. T100,903, 8-4-81, Cl. 260-396.00R.
- Sullivan, Jack M.: See—  
Radel, Robert J.; and Sullivan, Jack M., T100,903, Cl. 260-396.00R.



# CLASSIFICATION OF PATENTS

ISSUED AUGUST 4, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

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43.6		179	4,282,016	200	4,281,559	265	4,281,614	596.17	4,281,682	84 R	4,282,396
47		204	4,282,017	414	4,281,560	CLASS 118		625.21	4,281,683	92	4,282,397
89		247	4,282,018	471 XY	4,281,561	31.3	4,281,616	628	4,281,684	106 R	4,282,398
124		CLASS 56	4,281,504	473 R	4,281,562	68	4,281,617	887	4,281,686	CLASS 175	
162		10.3	4,281,505	573 F	4,281,563	68	4,281,618	CLASS 138		57	4,281,722
228		12.7	4,281,506	665 D	4,281,564	202	4,281,619	28	4,281,687	76	4,281,723
278		370	4,281,507	800	4,281,565	325	4,281,620	CLASS 139		195	4,281,724
	CLASS 33		4,281,508	866	4,281,567	410	4,281,621	383 A	4,281,688	246	4,281,725
138		58.89	4,281,509	CLASS 75		500	4,281,622	420 A	4,281,689	321	4,281,726
191		279	4,281,510	80	4,282,032	633	4,281,623	CLASS 140		CLASS 176	
299		CLASS 40	4,281,511	170	4,282,033	668	4,281,624	71 R	4,281,690	20 R	4,282,061
408		39.02	4,281,512	232	4,282,034	CLASS 119		1	4,281,691	37	4,282,062
	CLASS 34	39.33	4,281,513	134	4,281,568	52 R	4,281,624	370	4,281,692	38	4,282,063
26		311	4,281,514	CLASS 82		77	4,281,625	CLASS 141		73	4,282,064
	CLASS 36	527	4,281,515	1 C	4,281,569	CLASS 123		1	4,281,693	78	4,282,065
7.1 R		641 R	4,281,516	CLASS 83		25 C	4,281,626	34 R	4,281,694	128	4,281,727
		2	4,281,517	477.2	4,281,570	146.5 A	4,281,627	134 D	4,281,695	134	4,281,728
		3	4,281,518	542	4,281,571	245	4,281,628	312	4,281,696	139	4,281,729
						279	4,281,629	326 R	4,281,697	144	4,281,730
						373	4,281,630			212	4,281,731
						571	4,281,631				



## PI 47

54	4,282,543			201	4,281,975	283	4,282,247	218	4,282,306		
72	4,282,544		CLASS 369			299	4,282,248	232	4,282,307		CLASS 524
		44	4,282,598		CLASS 422	304	4,282,249	271	4,282,308	64	4,282,339
	CLASS 398	262	4,282,599	13	4,282,178	311	4,282,250	281	4,282,309	93	4,282,340
4	4,282,545			27	4,282,179	316	4,282,251	309	4,282,310	124	4,282,341
22	4,282,546		CLASS 370	46	4,282,180	317	4,282,252	318	4,282,311	272	4,282,342
44	4,282,547	100	4,282,600	53	4,282,181	330	4,282,253	364	4,282,312		
107	4,282,548			68	4,282,182			407	4,282,313		CLASS 520
150	4,282,549		CLASS 375	78	4,282,183		CLASS 425	413	4,282,314	51	4,282,344
160	4,282,550	20	4,282,601	106	4,282,184	62	4,281,976			68	4,282,345
				142	4,282,185	149	4,281,977		CLASS 431	338	4,282,346
	CLASS 360	171	4,281,938	180	4,282,186	376 B	4,281,978	1	4,281,982	368	4,282,347
32	4,282,551			190	4,282,187	391	4,281,979	161	4,281,983	500	4,282,348
70	4,282,552					461	4,281,980				
75	4,282,553		CLASS 401		CLASS 423	467	4,281,981				CLASS 536
97	4,282,554	54	4,281,939	10	4,282,188			9	4,281,984	4	4,282,349
				24	4,282,189		CLASS 426	205	4,281,985	10	4,282,350
36	4,282,555	38	4,281,940	104	4,282,190	2	4,282,254			20	4,282,351
	4,282,556			119	4,282,191	7	4,282,255		CLASS 433	27	4,282,352
117	4,282,557		CLASS 403	166	4,282,192		4,282,256	93	4,281,986		CLASS 542
		29	4,281,941	223	4,282,193	17	4,282,257	103	4,281,987	438	4,282,353
	CLASS 342	38	4,281,942		4,282,194	100	4,282,258	129	4,281,988	441	4,282,354
15	4,282,558	267	4,281,943	289	4,282,195	231	4,282,259	130	4,281,989	459	4,282,355
	4,282,559			337	4,282,196	264	4,282,260	144	4,281,990		
26	4,282,560		CLASS 404	417	4,282,197	330.4	4,282,261	202	4,281,991		CLASS 544
65	4,282,561	26	4,281,944	443	4,282,198	565	4,282,262	212	4,281,992	33	4,282,356
183	4,282,562	121	4,281,945	461	4,282,199	572	4,282,263			85	4,282,357
216	4,282,563		CLASS 406	598	4,282,200	599	4,282,264		CLASS 434	101	4,282,358
217	4,282,564				CLASS 424	607	4,282,265	22	4,281,993	192	4,282,359
267	4,282,565	95	4,281,946	14	4,282,201			49	4,281,994	250	4,282,360
369	4,282,566		CLASS 408	23	4,282,202		CLASS 427		CLASS 435	262	4,282,361
		1 R	4,281,947	47	4,282,203	9	4,282,266				CLASS 546
15	4,282,567	3	4,281,948	49	4,282,204	38	4,282,267	5	4,282,315		
54	4,282,568	241 R	4,281,949	59	4,282,205	39	4,282,268	12	4,282,316	84	4,282,362
87	4,282,569			78	4,282,206	54.1	4,282,269	34	4,282,317	332	4,282,363
	4,282,570	3	4,281,950	81	4,282,207	98	4,282,270	68	4,282,318		CLASS 548
	CLASS 364	70	4,281,951	89	4,282,208	126.3	4,282,271	69	4,282,319	202	4,282,364
200	4,282,572			180	4,282,209	398.3	4,282,272	84	4,282,320	252	4,282,365
431	4,282,573		CLASS 411	200	4,282,210	402	4,282,273	104	4,282,321		CLASS 556
	4,282,574	19	4,281,951		4,282,211	428	4,282,274	119	4,282,322	413	4,282,366
479	4,282,575	176	4,281,999	204	4,282,212			140	4,282,323		
483	4,282,576	548	4,281,980	232	4,282,213	35	4,282,275	168	4,282,324		CLASS 560
507	4,282,577			240	4,282,214	36	4,282,276	188	4,282,325	24	4,282,368
562	4,282,578		CLASS 414		4,282,215	90	4,282,277	240	4,282,326	25	4,282,369
573	4,282,579	82	4,281,952	246	4,282,216	101	4,282,278	254	4,282,327		4,282,370
726	4,282,580	268	4,281,953		4,282,217	116	4,282,279	255	4,282,328	33	4,282,371
734	4,282,581	287	4,281,954	249	4,282,218	149	4,282,280		CLASS 440	121	4,282,372
737	4,282,582	398	4,281,955	250	4,282,219	220	4,282,281	38	4,281,995	181	4,282,373
748	4,282,583	409	4,281,956		4,282,220	228	4,282,282	89	4,281,996		CLASS 562
900	4,282,584	457	4,281,957	251	4,282,221	251	4,282,283			427	4,282,375
		542	4,281,958		4,282,222	313	4,282,284		CLASS 445	503	4,282,376
	CLASS 366	668	4,281,959	251	4,282,223	339	4,282,285	169	4,282,602	427	4,282,377
30	4,281,934	730	4,281,960	256	4,282,224	407	4,282,286	183	4,282,603	589	4,282,378
174	4,281,935	751	4,281,961	258	4,282,225	408	4,282,287	602	4,282,604		4,282,379
209	4,281,936			263	4,282,226	457	4,282,288	617	4,282,605		4,282,385
303	4,281,937	89	4,281,962	267	4,282,227	472	4,282,289	620	4,282,606		CLASS 564
	CLASS 367	178	4,281,963	269	4,282,228	683	4,282,290		CLASS 493	398	4,282,380
2	4,282,385	203	4,281,964	270	4,282,229		4,282,291			498	4,282,381
13	4,282,386				4,282,230				CLASS 521		CLASS 568
37	4,282,387	154 A	4,281,966		4,282,231	93	4,282,292	12	4,281,828		
82	4,282,388	143	4,281,967		4,282,232	183	4,282,293	43	4,281,591		
90	4,282,389	227 A	4,281,965		4,282,233			99	4,282,329	471	4,282,374
104	4,282,390			269	4,282,234			118	4,282,330	570	4,282,382
			CLASS 417	270	4,282,235			137	4,282,331	573	4,282,383
10	4,282,591	2	4,281,968		4,282,236	1	4,282,294	171	4,282,332	574	4,282,384
37	4,282,592	52	4,281,969	273 N	4,282,237	2	4,282,295			606	4,282,386
63	4,282,593	53	4,281,970	274	4,282,238	39	4,282,296		CLASS 525	618	4,282,387
82	4,282,594	203	4,281,971		4,282,239	48	4,282,297	6	4,282,333	660	4,282,388
200	4,282,595	413	4,281,972		4,282,240	58	4,282,298	33	4,282,334	697	4,282,389
262	4,282,596	424	4,281,973		4,282,241	89	4,282,299	68	4,282,335	720	4,282,390
280	4,282,597			275	4,282,242	107	4,282,302	102	4,282,336	726	4,282,391
			CLASS 418		4,282,243	120	4,282,303	153	4,282,337		CLASS 588
		132	4,281,974	278	4,282,244	137	4,282,304			10	4,282,392
					4,282,245	146	4,282,305	336	4,282,343		
					4,282,246	175	4,282,306				
					Re 30,700	213	4,282,307				

D1—	18	260,043	41	260,058	151	260,071	D10—	60	260,084	D16—	14	260,096	245	260,106		
D2—	10	260,046	54	260,039	97	260,072		78	260,085	D17—	7	260,097	246	260,109		
	270	260,047	37	260,060	338	260,073	D11—	8	260,086			260,098		260,110		
	278	260,048	96	260,061	376	260,074		33	260,087	D18—	4	260,099	249	260,111		
	440	260,049	167	260,062	377	260,075		146	260,088			260,100	250	260,112		
D3—	30	260,050	185	260,063	337	260,076	D12—	203	260,089	D19—	51	260,101	D22—	7	260,113	
	35	260,051	191	260,064	346	260,077	D13—	40	260,090		92	260,102		13	260,114	
	36	260,052	197	260,065	383	260,079		99	260,091	D21—	109	260,103		28	260,115	
	52	260,053	D7—	70	260,066	416	260,077		2	260,092		122	260,104	D23—	3	260,116
	56	260,054			418	260,080		5	260,093		J	143	260,105		163	260,117
	77	260,055		74	260,068	260,081	D14—	2	260,094			228	260,106	D24—	8	260,118
D6—	31	260,056		109	260,069	433	260,082	D15—	52	260,095		244	260,107		62	260,119
	38	260,057		130	260,070	443	260,083		113							

P. 51	4,736				
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66- 195 T100,901	210- 348 T100,902	260- 396 R T100,903	335- 131 T100,904		
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66—	193 T100,901	210—	348 T100,902	260—	396 R T100,903	335—	131 T100,904		
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# GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

## PATENTS

6 : 4,281,644	4,281,867	4,282,475	4,282,344	4,281,982	4,282,178
8 : 4,282,044	4,281,869	4,282,479	4,282,381	4,282,009	4,281,847
01 : 4,282,039	4,281,877	4,282,482	4,282,431	4,282,038	4,281,879
4,282,089	4,281,883	4,282,483	4,282,523	4,282,049	4,282,416
04 : 4,281,443	4,281,890	4,282,512	4,281,436	4,282,106	4,282,422
4,281,509	4,281,894	4,282,521	4,281,449	4,282,138	4,282,500
4,281,637	4,281,895	4,282,527	4,281,468	4,282,211	4,281,462
4,281,738	4,281,897	4,282,529	4,281,468	4,282,310	4,281,464
4,281,790	4,281,900	4,282,534	4,281,583	4,282,326	4,282,441
4,281,956	4,281,904	4,282,579	4,281,610	4,282,399	4,282,086
4,281,989	4,281,926	4,282,580	4,281,626	4,282,411	4,282,194
4,282,324	4,281,929	4,282,582	4,281,642	4,282,423	4,282,232
4,282,344	4,281,930	4,282,583	4,281,813	4,282,468	4,282,471
4,282,378	4,281,933	4,282,598	4,281,921	4,282,471	4,282,472
05 : 4,281,624	4,281,938	4,282,601	4,281,993	4,282,474	4,281,524
4,281,720	4,281,940	4,282,601	4,281,517	4,282,481	4,281,540
4,281,741	4,281,949	4,282,601	4,282,454	4,282,493	4,281,601
4,281,446	4,281,962	4,282,601	4,282,489	4,282,504	4,281,634
4,281,485	4,281,969	4,282,601	4,282,513	4,282,506	4,281,640
4,281,487	4,281,971	4,282,601	4,282,531	4,282,531	4,281,708
4,281,491	4,281,986	4,282,601	4,282,575	4,282,575	4,281,827
4,281,496	4,281,990	4,282,601	4,282,591	4,282,591	4,281,964
4,281,498	4,281,994	4,282,601	4,282,602	4,282,602	4,282,033
4,281,502	4,281,995	4,282,601	4,281,764	4,281,565	4,282,045
4,281,511	4,282,013	4,282,601	4,281,947	4,281,585	4,282,126
4,281,513	4,282,024	4,282,601	4,281,968	4,281,588	4,282,167
4,281,513	4,282,028	4,282,601	4,282,091	4,281,733	4,282,233
4,281,520	4,282,040	4,282,601	4,282,276	4,281,749	4,282,436
4,281,530	4,282,077	4,282,601	4,281,824	4,281,809	4,282,484
4,281,573	4,282,081	4,282,601	4,281,845	4,281,824	4,282,530
4,281,574	4,282,085	4,282,601	4,281,976	4,281,870	4,281,448
4,281,576	4,282,094	4,282,601	4,281,424	4,282,030	4,281,454
4,281,582	4,282,095	4,282,601	4,281,444	4,282,098	4,281,456
4,281,594	4,282,097	4,282,601	4,281,473	4,282,134	4,281,474
4,281,614	4,282,099	4,282,601	4,281,480	4,282,170	4,281,484
4,281,616	4,282,105	4,282,601	4,281,481	4,282,292	4,281,535
4,281,620	4,282,129	4,282,601	4,281,505	4,282,317	4,281,596
4,281,654	4,282,180	4,282,601	4,281,527	4,282,362	4,281,641
4,281,673	4,282,184	4,282,601	4,281,538	4,282,391	4,281,666
4,281,680	4,282,231	4,282,601	4,281,564	4,282,460	4,281,667
4,281,683	4,282,249	4,282,601	4,281,577	4,282,516	4,281,687
4,281,684	4,282,256	4,282,601	4,281,592	4,282,566	4,281,694
4,281,713	4,282,258	4,282,601	4,281,633	4,281,472	4,281,700
4,281,740	4,282,279	4,282,601	4,281,676	4,281,560	4,281,701
4,281,794	4,282,290	4,282,601	4,282,442	4,281,722	4,281,854
4,281,796	4,282,316	4,282,601	4,282,449	4,281,699	4,281,886
4,281,799	4,282,324	4,282,601	4,282,495	4,281,781	4,281,896
4,281,806	4,282,325	4,282,601	4,282,595	4,281,793	4,281,925
4,281,831	4,282,343	4,282,601	4,282,597	4,281,828	4,281,961
4,281,833	4,282,397	4,282,601	4,282,599	4,281,849	4,281,977
4,281,839	4,282,398	4,282,601	4,282,599	4,281,848	4,281,980
4,281,851	4,282,412	4,282,601	4,282,599	4,281,848	4,282,003
4,281,865	4,282,429	4,282,601	4,282,599	4,281,848	

## GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

4,282,149		4,282,581		4,282,496		4,281,612		4,281,633		4,281,553
4,282,160	28 :	4,282,153		4,282,510		4,281,645		4,281,696		4,281,570
4,282,176	29 :	4,281,426		4,282,511		4,281,727		4,281,704		4,281,590
4,282,182		4,281,447		4,282,522		4,281,820		4,281,710		4,281,613
4,282,269		4,281,482		4,282,530		4,282,004		4,281,767		4,281,613
4,282,287		4,281,717		4,282,537		4,282,185		4,281,890		4,281,618
4,282,297		4,281,785		4,282,541		4,282,331		4,282,255		4,281,672
4,282,306		4,281,928		4,282,546		4,282,518		4,282,456		4,281,678
4,282,307		4,281,951		4,282,549		4,282,533	42 :	4,281,418		4,281,679
4,282,345		4,281,992		4,282,556		4,282,604		4,281,432		4,281,692
4,282,361		4,282,029		4,282,562	39 :	Re.30,697		4,281,534		4,281,711
4,282,435		4,282,090		4,282,571		4,281,421		4,281,556		4,281,714
4,282,457		4,282,263	35 :	4,281,503		4,281,466		4,281,647		4,281,716
4,282,470		4,282,517		4,281,532		4,281,528		4,281,675		4,281,724
4,282,491	31 :	4,281,733		4,281,734		4,281,579		4,281,763		4,281,726
4,282,492	32 :	4,281,423	36 :	Re.30,695		4,281,636		4,281,802		4,281,763
4,282,348		4,281,568		4,281,429		4,281,677		4,281,815		4,281,775
4,282,557		4,282,037		4,281,440		4,281,703		4,281,856		4,281,801
4,282,559	33 :	4,282,300		4,281,461		4,281,729		4,281,857		4,281,811
4,282,588	34 :	4,281,417		4,281,494		4,281,744		4,281,876		4,281,819
4,282,605		4,281,325		4,281,519		4,281,746		4,281,881		4,281,861
4,281,428		4,281,562		4,281,522		4,281,748		4,281,937		4,281,866
4,281,433		4,281,659		4,281,628		4,281,762		4,281,942		4,282,071
4,281,442		4,281,770		4,281,662		4,281,774		4,281,950		4,282,074
4,281,450		4,281,771		4,281,681		4,281,777		4,281,957		4,282,172
4,281,451		4,281,778		4,281,706		4,281,784		4,281,975		4,282,191
4,281,533		4,281,780		4,281,730		4,281,862		4,282,010		4,282,192
4,281,554		4,281,782		4,281,755		4,281,868		4,282,016		4,282,195
4,281,632		4,281,786		4,281,807		4,281,892		4,282,023		4,282,199
4,281,686		4,281,803		4,281,887		4,281,944		4,282,060		4,282,330
4,281,736		4,281,816		4,281,920		4,281,952		4,282,076		4,282,387
4,281,741		4,281,829		4,281,972		4,281,981		4,282,118		4,282,440
4,281,750		4,281,835		4,281,979		4,282,018		4,282,122	49 :	4,282,446
4,281,758		4,281,927		4,281,987		4,282,019		4,282,124	30 :	4,282,486
4,281,783		4,281,936		4,282,006		4,282,026		4,282,133		4,282,487
4,281,787		4,282,002		4,282,007		4,282,034		4,282,155	51 :	4,282,523
4,281,791		4,282,020		4,282,008		4,282,048		4,282,179		4,282,567
4,281,792		4,282,064		4,282,022		4,282,052		4,282,226		4,282,589
4,281,814		4,282,108		4,282,033		4,282,057		4,282,227		4,282,597
4,281,842		4,282,123		4,282,043		4,282,073		4,282,240	49 :	4,282,602
4,281,846		4,282,130		4,282,046		4,282,136		4,282,252	30 :	4,281,542
4,281,863		4,282,142		4,282,067		4,282,164		4,282,277		4,281,832
4,281,880		4,282,148		4,282,079		4,282,168		4,282,311	51 :	4,281,581
4,281,938		4,282,156		4,282,107		4,282,171		4,282,332		4,281,690
4,281,960		4,282,165		4,282,133		4,282,175		4,282,384		4,281,923
4,282,113		4,282,166		4,282,146		4,282,181		4,282,392		4,282,011
4,282,132		4,282,177		4,282,187		4,282,197		4,282,414		4,282,051
4,282,183		4,282,193		4,282,206		4,282,214		4,282,420		4,282,243
4,282,228		4,282,196		4,282,207		4,282,275		4,282,450		4,282,244
4,282,285		4,282,205		4,282,208		4,282,282		4,282,461		4,282,458
4,282,327		4,282,216		4,282,210		4,282,293		4,282,465		4,282,499
4,282,340		4,282,219		4,282,215		4,282,339		4,282,466	53 :	4,281,621
4,282,349		4,282,233		4,282,234		4,282,346		4,282,538		4,281,728
4,282,376		4,282,235		4,282,283		4,282,393		4,282,558		4,282,280
4,282,377		4,282,260		4,282,284		4,282,426		4,282,576		4,282,394
4,282,378		4,282,266		4,282,296		4,282,467		4,282,583	54 :	4,281,773
4,282,379		4,282,267		4,282,298		4,282,501		4,281,761		4,281,932
4,282,386		4,282,288		4,282,303		4,282,505	43 :	4,281,469		4,282,564
4,282,441		4,282,271		4,282,304		4,282,508	44 :	4,281,818		4,281,500
4,282,485		4,282,274		4,282,305		4,282,565		4,282,569	55 :	4,281,604
4,282,502		4,282,308		4,282,315		4,282,584	45 :	4,281,419		4,281,619
4,281,489		4,282,314		4,282,354	40 :	4,281,512	47 :	4,281,466		4,281,638
4,281,569		4,282,322		4,282,363		4,281,547		4,281,479		4,281,697
4,281,658		4,282,350		4,282,364		4,281,571		4,281,841		4,281,732
4,281,664		4,282,357		4,282,366		4,281,712		4,281,983		4,281,754
4,281,725		4,282,359		4,282,375		4,281,715		4,281,998		4,281,789
4,281,905		4,282,360		4,282,402		4,281,723		4,282,144		4,281,800
4,282,111		4,282,380		4,282,437		4,281,776	48 :	4,282,320		4,281,830
4,282,121		4,282,400		4,282,462		4,281,970		4,281,430		4,282,102
4,282,262		4,282,407		4,282,514		4,281,983		4,281,493		4,282,159
4,282,281		4,282,443		4,282,532		4,282,347		4,281,521		4,282,413
4,282,294		4,282,476		4,282,540		4,282,382		4,281,530		4,282,417
4,282,295		4,282,477		4,282,572		4,282,387		4,281,535		4,282,434
4,282,428		4,282,478		4,282,606		4,281,572		4,281,536	56 :	4,281,834
4,282,519		4,282,495	37 :	Re.30,693	41 :	4,281,572				



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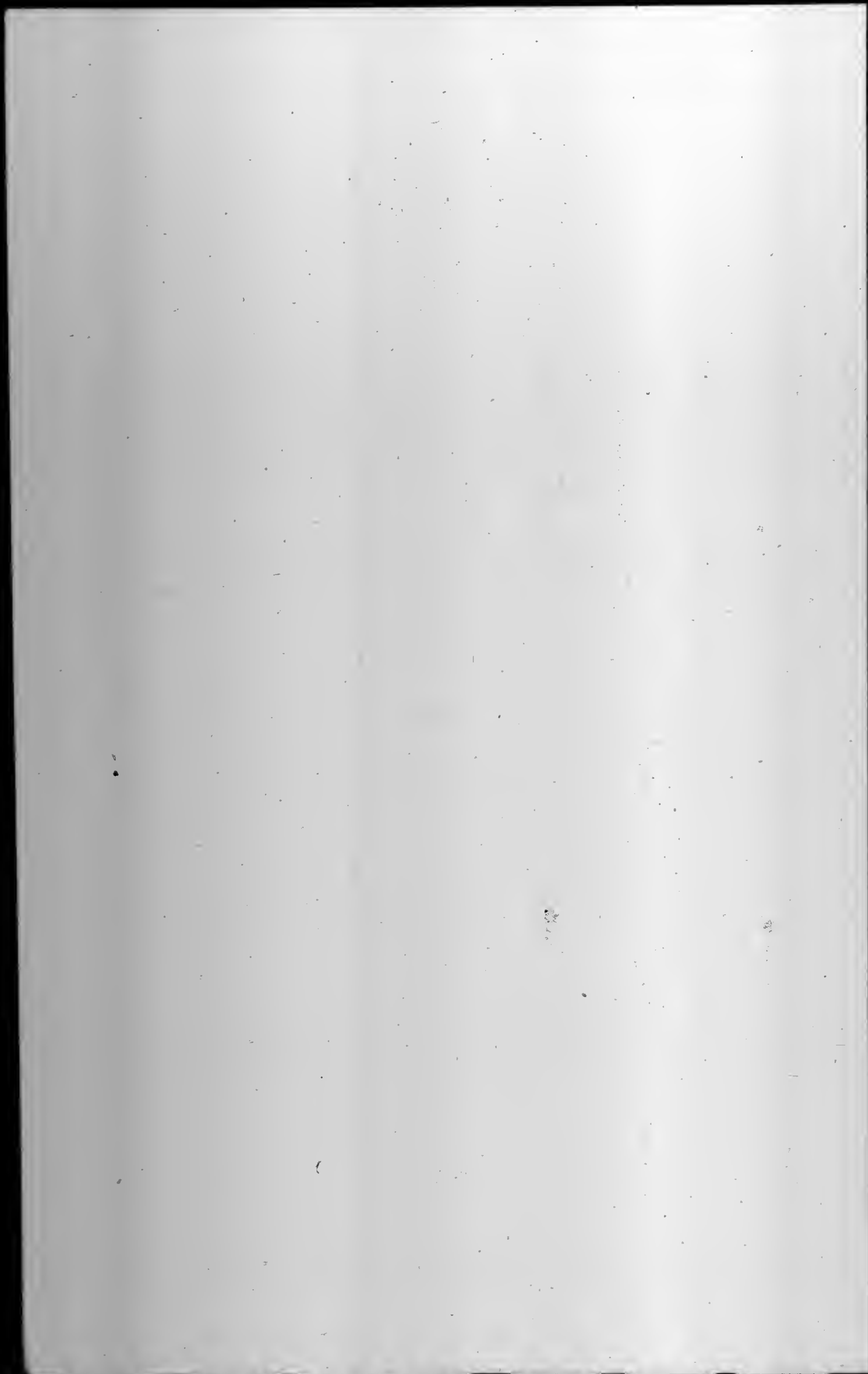
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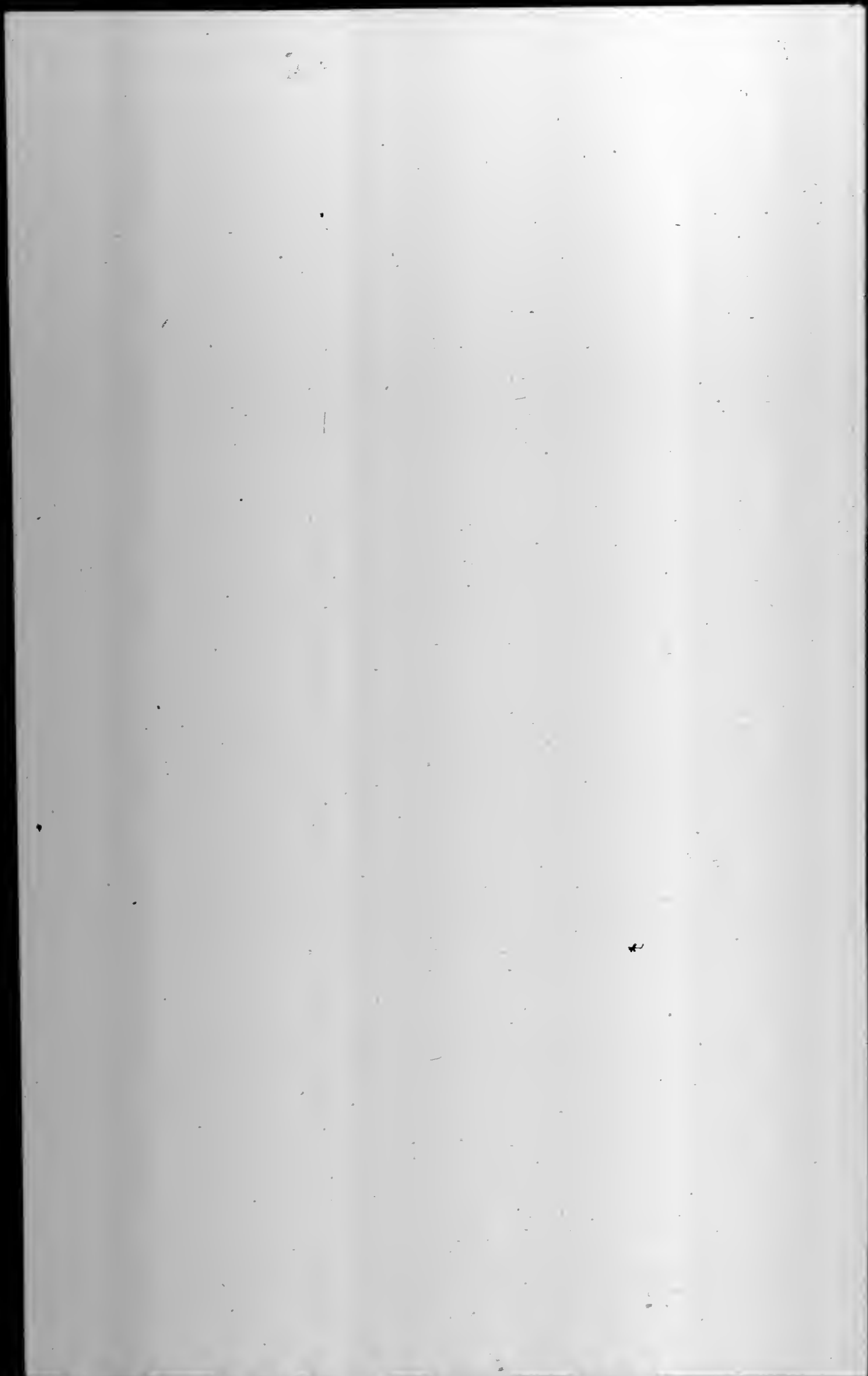
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## ERRATA SHEET

The contents page below should have been printed in the issue of August 4, 1981 (Vol. 1009, Number 1). Please remove this page and place in that book.

# OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

August 4, 1981

Volume 1009

Number 1

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# OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

August 11, 1981

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## PATENT AND TRADEMARK OFFICE NOTICES

### Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90-95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	\$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,  
Assistant Commissioner  
for Patents

### REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,155,488, Re. S.N. 247,651, Filed Mar. 26, 1981, Cl. 222/305, SHOT-FEEDING METERING VALVE, James R. Ware, Owner of Record: *National Petro Chemicals Corp.*, New York, N.Y., Attorney or Agent: None Ex. Gp.: 311

4,159,252, Re. S.N. 258,448, Filed Apr. 28, 1981, Cl. 252/25, LUBRICANT COMPOSITIONS, Paul Wainwright, et al., Owner of Record: *Rocol Ltd.*, Swillington, England, Attorney or Agent: Robert B. Larson, et al., Ex. Gp.: 116

### REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 29,582, Reexam. No. 90/000,026, Requested: July 10, 1981, Cl. 188/73.3, DISC BRAKES AND MOUNTING STRUCTURE THEREFOR, Peter William Brown, Owner of Record: *Girling Ltd.*, Attorney or Agent: Scrivener, Parker, et al., Ex. Gp.: 315, Requester: Armstrong, Nikaido, Marmelstein & Kubovcik, Washington, D.C.

3,367,320, Reexam. No. 90/000,027 Requested: July 14, 1981, Cl. 126/300, SELF-VENTILATING COOKING RANGE, Louis J. Jenn, et al., Owner of Record: *Jenn-Air Corp.*, Attorney or Agent: Gerald L. Price, Ex. Gp.: 345, Requester: Jenn-Air Corp., Indianapolis, Ind.

3,553,638, Reexam. No. 90/000,025, Requested: July 13, 1981, Cl. 367/12, SONAR SCANNING MECHANISM, Kenneth L. Sublett, Owner of Record: *Western Marine Electronics Co.*, Attorney or Agent: Seed, Berry,

et al., Ex. Gp.: 222, Requester: Eckhoff, Hoppe, Slick, Mitchell & Anderson, San Francisco, Calif.

3,703,718, Reexam. No. 90/000,021, Requested: July 9, 1981, Cl. 340/567, INFRARED INTRUSION DETECTOR SYSTEM, Herbert L. Berman, Owner of Record: *Hoermann Corp., U.S.A.*, Attorney or Agent: Flehr, Hohbach, et al., Ex. Gp.: 234, Requester: Solfan Systems, Inc., Mountain View, Calif.

3,716,264, Reexam. No. 90/000,020, Requested: July 2, 1981, Cl. 294/63, INFLATABLE GRIPPERS FOR BRICK MAKING OR THE LIKE, Florentine J. Pearne, et al., Owner of Record: *Aircraft Mechanics, Inc.*, Attorney or Agent: McNenny, Farrington, Pearne & Gordon, Ex. Gp.: 313, Requester: EA Industries, Inc., Ashville, N.C.

3,733,438, Reexam. No. 90/000,022, Requested: July 10, 1981, Cl. 370/69, CARRIER SUPPLY FOR FREQUENCY DIVISION MULTIPLEXED SYSTEMS, Thomas John Haley, et al., Owner of Record: *Bell Telephone Laboratories, Inc.*, Attorney or Agent: E. W. Keefauver, Jr., W. L. Keefauver, Ex. Gp.: 236, Requester: Anthony C. Palatinus, Glen Cove, N.Y.

3,887,450, Reexam. No. 90/000,017, Requested: July 2, 1981, Cl. 204/159.15, PHOTOPOLYMERIZABLE COMPOSITIONS CONTAINING POLYMERIC BINDING AGENTS, Michael Gilano, et al., Owner of Record: *Dynochem Corp.*, Attorney or Agent: Bert J. Lewen, Ex. Gp.: 142, Requester: Kalle Niederlassung der Hoechst AG, Federal Republic of Germany

3,953,309, Reexam. No. 90/000,018, Requested: July 2, 1981, Cl. 204/159.16, POLYMERIZATION COMPOSITIONS AND PROCESSES HAVING POLYMERIC BINDING AGENTS, Michael Gilano, et al., Owner of Record: *Dynochem Corp.*, Attorney or Agent: Arthur, Dry & Kalish, Ex. Gp.: 142, Requester: Kalle Niederlassung der Hoechst AG, Federal Republic of Germany

3,987,719, Reexam. No. 90/000,023, Requested: July 10, 1981, Cl. 99/422, COOKING UTENSIL, Leonard Kian, Owner of Record: *Leonard Kian*, Attorney or Agent: Peter P. Price, Ex. Gp.: 240, Requester: Roy E. Hofer, Chicago, Ill.

### Current Membership of Performance Review Board

This notice announces the current membership of the Performance Review Board for the Patent and Trademark Office. The original membership was announced in the Federal Register of Feb. 6, 1980 (45 FR 8083). Changes in membership were announced in the Federal Register of Aug. 5, 1980 (45 FR 51867) and Oct. 24, 1980 (45 FR 70537). Three of the persons whose appointments were previously announced are no longer serving as members of the PRB and two new members have been appointed. The current membership, excluding the three persons who no longer are members and including the two new members, is as follows:

Rene D. Tegtmeier, Member, Assistant Commissioner for Patents, U.S. Patent and Trademark Office, Washington, D.C. 20231. Term—permanent.

Margaret M. Laurence, Member, Assistant Commissioner for Trademarks, U.S. Patent and Trademark Office, Washington, D.C. 20231. Term—permanent.

Richard J. Shakman, Member, Assistant Commissioner for Administration, U.S. Patent and Trademark Office, Washington, D.C. 20231. Term—permanent.

James O. Thomas, Jr., Member, Director, Patent Examining Group 140, U.S. Patent and Trademark Office, Washington, D.C. 20231. Term—expires Jan. 31, 1983.

Herbert C. Wamsley, Member, Director, Trademark Examining Operation, U.S. Patent and Trademark Office, Washington, D.C. 20231. Term—expires Jan. 31, 1983.

William Feldman, Member, Deputy Assistant Commissioner for Patents, U.S. Patent and Trademark Office, Washington, D.C. 20231. Term—expires Jan. 31, 1982.

Jere W. Sears, Member, Deputy Solicitor, U.S. Patent and Trademark Office, Washington, D.C. 20231. Term—expires Jan. 31, 1982.

Richard J. Wieland, (Outside) Member, Assistant General Counsel for Litigation, HQ National Aeronautics and Space Administration, Washington, D.C. 20546. Term—expires July 12, 1984.

The three persons who are no longer members of the PRB are:

Mr. Lutrelle F. Parker, former Deputy Commissioner, U.S. Patent and Trademark Office, Washington, D.C. 20231.

Mr. S. William Yost, former Assistant Commissioner for Finance and Planning, U.S. Patent and Trademark Office, Washington, D.C. 20231.

Mr. James R. Wright, National Bureau of Standards, Washington, D.C. 20234.

The new members of the PRB who have been appointed are:

Mrs. Margaret M. Laurence, Assistant Commissioner for Trademarks, U.S. Patent and Trademark Office, Washington, D.C. 20231.

Mr. Richard J. Wieland, Assistant General Counsel for Litigation, HQ National Aeronautics and Space Administration, Washington, D.C. 20546.

Persons desiring any further information about the membership of the PRB may contact Mr. Aaron W. Deitch, Personnel Officer, U.S. Patent and Trademark Office, Washington, D.C. 20231. Telephone (703) 557-2662.

July 16, 1981

GERALD J. MOSSINGHOFF,  
Commissioner of Patents  
and Trademarks

### Service by Publication

A notice of opposition against the registration of the application serial number identified below having been filed, and the notice of such proceeding sent by mail to the applicant at the last known address having been returned by the Post Office as undeliverable, notice is hereby given that unless the applicant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the opposition will be proceeded with as in the case of default.

Giriz, Portland, O., Serial No. 230,977, Op. No. 64,339.

ERMA S. BROWN,  
Deputy Clerk, Trademark  
Trial and Appeal Board.  
For MARGARET M. LAURENCE,  
Assistant Commissioner  
for Trademarks.



## PATENT NOTICES

### Certificates of Correction for the Week of Aug. 11, 1981

PP. 04,676	4,242,711	4,257,643	4,264,278
D. 258,519	4,244,743	4,257,673	4,264,421
3,544,980	4,244,897	4,257,901	4,264,562
3,665,434	4,246,152	4,257,994	4,264,672
3,733,592	4,246,347	4,258,009	4,264,737
3,923,439	4,247,099	4,258,077	4,264,824
3,931,318	4,248,938	4,258,078	4,264,991
4,023,065	4,249,006	4,258,231	4,264,998
4,069,462	4,249,159	4,258,286	4,265,619
4,071,554	4,249,165	4,258,764	4,265,735
4,118,584	4,249,516	4,258,836	4,265,745
4,122,282	4,250,100	4,258,858	4,265,818
4,124,601	4,250,139	4,258,923	4,265,874
4,126,754	4,250,394	4,258,985	4,265,919
4,151,351	4,250,547	4,259,281	4,265,974
4,156,090	4,250,725	4,259,297	4,266,461
4,157,441	4,250,763	4,259,644	4,266,480
4,200,845	4,251,572	4,259,727	4,266,730
4,207,725	4,251,652	4,260,218	4,266,842
4,213,733	4,251,735	4,260,420	4,267,074
4,213,862	4,253,149	4,260,546	4,267,168
4,216,141	4,253,774	4,260,783	4,267,748
4,220,117	4,254,113	4,261,144	4,267,778
4,220,561	4,254,248	4,261,540	4,268,422
4,223,157	4,254,663	4,261,855	4,268,491
4,224,562	4,255,180	4,262,073	4,268,515
4,229,409	4,255,650	4,262,131	4,269,172
4,230,038	4,255,783	4,262,256	4,269,387
4,230,463	4,256,113	4,262,785	4,269,535
4,230,751	4,256,267	4,263,126	4,269,541
4,230,978	4,256,400	4,263,158	4,269,713
4,231,758	4,256,749	4,263,282	4,270,196
4,233,082	4,256,872	4,263,330	4,271,169
4,235,822	4,257,137	4,263,626	4,271,278
4,236,025	4,257,175	4,263,633	4,271,526
4,237,315	4,257,529	4,263,970	4,271,949
4,239,667	4,257,552	4,264,244	
4,240,990	4,257,553	4,264,262	

### Disclaimers

3,765,548.—Charles C. Shivers, Corydon, Iowa. SWEEP AUGER STRUCTURE. Patent dated Oct. 16, 1973. Disclaimer filed June 15, 1981; by the inventor.

Hereby enters this disclaimer to claim 1 of said patent.

3,932,731.—Glenn Ellis Moore, Jr., Murray Hill, N.J. CODE CONVERTER. Patent dated Jan. 13, 1976. Disclaimer filed June 15, 1981, by the assignee, Bell Telephone Laboratories, Inc.

Hereby enters this disclaimer to claims 1 and 13 of said patent.

4,058,769.—Robert J. Alderman, Ruskin, Fla. MODULATION SYSTEM WITH CARRIER CONTROL. Patent dated Nov. 15, 1977. Disclaimer filed June 10, 1981, by the inventor.

Hereby enters this disclaimer to claims 1-15 of said patent.

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Hereby enters this disclaimer to claims 1-8 of said patent.

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### National Technical Information Service

#### U.S. GOVERNMENT-OWNED INVENTIONS

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U.S. Department of Commerce  
P.O. Box 1423  
Springfield, Va. 22151

DOUGLAS J. CAMPION,  
Program Coordinator,

Office of Government Inventions and Patents  
National Technical Information Service  
U.S. Department of Commerce.

#### U.S. DEPARTMENT OF THE AIR FORCE

##### AF/JACP

1900 Half St., S.W.  
Washington, D.C. 20324

Patent 4,249,823. Windscreen Angular Deviation Measurement Device. Filed Oct. 16, 1979. Patented Feb. 10, 1981. Not available NTIS.

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Patent 4,251,765. Aircraft Electrical System Tester. Filed Feb. 7, 1979. Patented Feb. 17, 1981. Not available NTIS.

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#### U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch  
Administrative Service Division Federal Building  
Science & Education Administration  
Hyattsville, Md. 20782

Patent 4,259,362. Process for Improving Baking Properties of Unbleached Flour. Filed Jan. 19, 1979. Patented Mar. 31, 1981. Not available NTIS.

#### U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents (GC-42)  
1000 Independence Ave., NW.  
Washington, D.C. 20585

Patent application 6-129,299. Drift Tube Suspension for High Intensity Linear Accelerators. Filed Mar. 11, 1980.

AUGUST 11, 1981

U.S. PATENT AND TRADEMARK OFFICE

1009 OG 11

Patent 4,220,856. Method of Analysis of Asbestiform Minerals by Thermoluminescence. Filed Nov. 3, 1978. Patented Sept. 2, 1980. Not available NTIS.

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#### U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health  
Chief, Patent Branch  
Westwood Building  
Bethesda, Md. 20205

Patent application 6-227,166. Tick Cell Lines. Filed Jan. 22, 1981.

#### U.S. DEPARTMENT OF THE NAVY

Director, Navy Patent Program/  
Patent Counsel for the Navy  
Office of Naval Research  
Code 302  
Arlington, Va. 22217

Patent application 6-203,012. Louvre Buffer Fire Prevention System. Filed Nov. 3, 1980.

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Patent 4,244,350. Solar Energy Heat-Storage Tank. Filed Mar. 26, 1979. Patented Jan. 13, 1981. Not available NTIS.

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#### NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters  
NASA Code GP-4  
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Patent 4,236,383. Solar Energy Receiver for a Stirling Engine. Filed Apr. 6, 1979. Patented Dec. 2, 1980. Not available NTIS.

Patent 4,239,057. Pressure Control Valve. Filed July 13, 1979. Patented Dec. 16, 1980. Not available NTIS.

Patent 4,240,256. Phase-Angle Controller for Stirling Engines. Filed Jan. 31, 1979. Patented Dec. 23, 1980. Not available NTIS.

Patent 4,240,601. Method for Observing the Features Characterizing the Surface of a Land Mass. Filed May 30, 1979. Patented Dec. 23, 1980. Not available NTIS.

Patent 4,241,308. Digital Numerically Controlled Oscillator. Filed Dec. 29, 1978. Patented Dec. 23, 1980. Not available NTIS.

Patent 4,242,498. Process for the Preparation of Fluorine Containing Crosslinked Elastomeric Polytriazine and Product So Produced. Filed Apr. 9, 1979. Patented Dec. 30, 1980. Not available NTIS.

Patent 4,244,857. Curing Agent for Polyepoxides and Epoxy Resins and Composites Cured Therewith. Filed Aug. 30, 1979. Patented Jan. 13, 1981. Not available NTIS.

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Patent 4,246,001. Molten Salt Pyrolysis of Latex. Filed Apr. 27, 1978. Patented Jan. 20, 1981. Not available NTIS.

### Patents Available for Licensing or Sale

D. 259,156. A ROCKABLE FOOTSTOOL. Frank A. Massow. Correspondence to Hollis C. Hodson, P.O. Box 114, Amo, Ind. 46103.

4,059,995. LEVEL INDICATORS FOR LIQUIDS. Raul Calderon De Palacio. Correspondence to Jesse D. Reingold, Jacobs & Jacobs, P.C., 521 Fifth Ave., New York, N.Y. 10175.

4,136,764. MOTHER ALICE'S BREAD VENDING MACHINE. Alice Johnson, 8650 Belford Ave., #1, Los Angeles, Calif. 90045.

4,169,580. HYDRAULIC WINCH FOR SHIP-BOARD USE, Hatlapa Uetersener Maschinenfabrik GMBH, Germany. Correspondence to: Michael Striker, 360 Lexington Ave., New York, N.Y. 10017.

4,236,194. LIGHT APPARATUS FOR A PIVOTAL BOOM, Raymond M. Norman, Floodwood, Minn. 55736.

4,241,674. SUB-SOIL PLANTER. Mellinger Mfg. Co., Michael R. Swartz, R.D. #2 Willow St., Pittsburgh, Pa. 15235.

4,243,260. CONVERTIBLE BED FOR STANDARD PICK-UP TRUCK CAMPERS. Darrell Gieseking, P.O. Box 10963, St. Louis, Mo. 63135.

4,253,407. BURNER FOR COMBUSTING PARTICULATE FUELS. Arnold Larson, Box 595, Pagosa Springs, Colo. 81147.



4,255,872. AUDIOVISUAL INTERVIEW PORTFOLIO. Eugene Williams, Sr., 6545 Quiet Hours T1, Columbia, Md. 21046.

4,268,612. METHOD FOR MAKING RELIEF DEEPENING IN PRINTINT PLATE MATERIALS. Vaclav Misk, 8515 Colonial Dr., Stockton, Calif. 95209.

4,278,067. FURNACE. Clinton Badger Pike, Correspondence to: Marshall C. Gregory, 2211 Park Blvd., P.O. Box 11398A, Palo Alto, Calif. 94386.

The following patents are offered by James D. Davidson, P.O. Box 1293, Pontiac, Mich. 48056.

4,267,666. SHUTTER SHIELDS.

4,254,999. DIE SHOES.

4,204,373. INSULATION TAPE.

3,137,258. DIE GAUGES.

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed: Patent Counsel, General Electric Co., Re-Entry Systems Division, 3198 Chestnut St., Philadelphia, Pa. 19101.

4,193,866. FERRITE FLOCCULATING SYSTEM.

Applications for license may be addressed to Patent Counsel, Gas Turbine Division, General Electric Co., 1 River Rd., Bldg. 500, Room 218, Schenectady, N.Y. 12345.

4,246,757. COMBUSTOR INCLUDING A CYCLONE PREVAPORIZER AND COMBUSTION PROCESS FOR GAS TURBINES FIRED WITH LIQUID FUEL.

4,259,837. WATER AND STEAM INJECTION SYSTEM FOR EMISSION CONTROL OF GAS TURBINES.

4,245,959. WINDAGE NUT.

Applications for license may be addressed to Patent Counsel, Large Steam Turbine-Generator Division, General Electric Co., 1 River Rd., Schenectady, N.Y. 12345.

4,214,182. SUPPORT STRUCTURE FOR ARMATURE CONDUCTORS.

4,218,007. METHOD OF DIFFUSION BONDING DUPLEX SHEET CLADDING TO SUPERALLOY SUBSTRATES.

4,223,529. COMBINED CYCLE POWER PLANT WITH PRESSURIZED FLUIDIZED BED COMBUSTOR.

4,223,722. CONTROLLABLE INLET HEADER PARTITIONING.

4,224,461. UNGROUNDED THREE WIRE THERMOCOUPLE.

4,251,328. GALLIUM PLATING.

4,214,182. SUPPORT STRUCTURE FOR ARMATURE CONDUCTORS.

4,218,007. METHOD OF DIFFUSION BONDING DUPLEX SHEET CLADDING TO SUPERALLOY SUBSTRATES.

4,223,529. COMBINED CYCLE POWER PLANT WITH PRESSURIZED FLUIDIZED BED COMBUSTOR.

4,223,722. CONTROLLABLE INLET HEADER PARTITIONING.

4,224,461. UNGROUNDED THREE WIRE THERMOCOUPLE.

4,251,328. GALLIUM PLATING.

Application for license may be addressed to the General Electric Co., Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602.

D. 250,690. STAND OR SIMILAR ARTICLE.

D. 245,060. GRANULAR COFFEE DISPENSER ATTACHMENT FOR A BEVERAGE MAKER OR SIMILAR ARTICLE.

D. 243,041. LOOKING GLASS OR SIMILAR ARTICLE.

D. 242,975. ELECTRIC BROILER GRILL OR SIMILAR ARTICLE.

D. 242,891. ELECTRIC COFFEEMAKER OR SIMILAR ARTICLE.

D. 239,906. COFFEEMAKER LID OR SIMILAR ARTICLE.

D. 238,138. COFFEEMAKER SPOUT OR SIMILAR ARTICLE.

D. 227,571. PORTABLE ELECTRIC HEATER.

D. 222,862. DENTAL IRRIGATOR.

D. 221,826. HOLDER FOR AN ELECTRIC TOOTHBRUSH.

4,260,928. ELECTRO-ACOUSTIC TRANSDUCER WITH HORN AND REFLECTOR.

4,187,993. FOOD GRINDER.

4,190,762. ELECTROLYTIC IRON.

4,196,340. ELECTROLYTIC IRON.

4,210,068. BAG SEALER LID ASSEMBLY.

4,213,258. STEAM IRON WATER GAUGE.

4,225,775. HAIR DRYER.

4,239,322. POLARITY PROTECTOR.

4,101,089. INTEGRAL STORAGE ASSEMBLY FOR DETACHABLE POWER CORDS.

4,164,735. PIEZOELECTRIC AUDIBLE INDICATOR CIRCUIT.

4,196,406. ULTRASONIC CONTROL DEVICE.

4,197,524. TAP-ACTUATED LOCK AND METHOD OF ACTUATING THE LOCK.

3,475,899. RADIO AND ALARM CONTROL MECHANISM.

3,859,903. ELECTRIC OVEN TOASTER TOAST SERVER MECHANISM.

3,497,734. ELECTRO-MECHANICAL OSCILLATOR.

3,454,856. OSCILLATOR FOR A BATTERY OPERATED CLOCK.

3,460,188. VACUUM CLEANER.

3,365,743. VACUUM CLEANER LID LATCH CONSTRUCTION.

3,355,562. VACUUM CLEANER OPERATING SWITCH CONSTRUCTION.

3,344,588. VACUUM CLEANER.

3,334,372. SUCTION CLEANER HAVING IMPROVED HANDLE AND FILTER BAG MOUNTING.

3,308,247. AUTOMATIC CORD RETRACTOR FOR UPRIGHT FLOOR APPLIANCE.

3,291,540. LATCH FOR FLOOR POLISHER HANDLE.

3,257,680. ACCESSORY-HOLDING ARRANGEMENT FOR PORTABLE VACUUM CLEANERS.

Applications for license may be addressed to: Group Patent Counsel Major Appliance Business Group, General Electric Co., Appliance Park, Louisville, Ky. 40225.

3,627,442. BLOWER HOUSING.

3,990,272. WASHING MACHINE WITH IMPROVED ADDITIVE DISPENSING MEANS.

4,227,382. SPLIT SYSTEM AIR CONDITIONER ADAPTED TO RECEIVE A WATER PREHEATER.

4,229,945. HOUSEHOLD REFRIGERATOR AIR FLOW CONTROL AND METHOD.

4,233,498. POWER CONTROL FOR APPLIANCE USING HIGH INRUSH CURRENT ELEMENT.

4,233,819. AUTOMATIC ICEMAKER WITH SIMPLIFIED ICE PIECE EJECTION.

4,237,368. TEMPERATURE SENSOR FOR GLASS-CERAMIC COOKTOP.

4,237,919. DISHWASHER INLET AIR GAP.

4,241,289. HEAT SENSING APPARATUS FOR AN ELECTRIC RANGE AUTOMATIC SURFACE UNIT CONTROL.

4,241,337. APPLIANCE DOOR POSITION SENSOR ARRANGEMENT.

4,242,554. EFFECTIVE TIME RATIO BROWNING IN A MICROWAVE OVEN EMPLOYING HIGH THERMAL MASS BROWNING UNIT.

4,249,090. AUTOMATIC RESETTING POWER SAVER SWITCH FOR DISHWASHER.

4,250,719. HOUSEHOLD REFRIGERATOR HUMIDITY CONTROLLED PAN ASSEMBLY.

4,251,716. SELF-CLEANING GLASS-CERAMIC SURFACE COOKING UNIT.

4,254,450. LAMP ASSEMBLY FOR COMBINATION MICROWAVE OVEN AND EXHAUST VENT.

4,256,136. MECHANICALLY OPERATED LEVEL CONTROL FOR DISHWASHERS.

4,260,278. FASTENING ASSEMBLY.

Texasgulf, Inc. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms. Please direct all correspondence to: Patent Counsel Texasgulf, Inc., High Ridge Park, Stamford, Conn. 06904.

3,191,783. GRANULAR PRODUCT STORAGE.

3,199,955. PROCESS OF REDUCING SULFUR DIOXIDE TO ELEMENTAL SULFUR.

3,332,744. RADIOMETRIC METHOD FOR PLANT STEAM CONTROL IN POTASH AND PHOSPHATE RECOVERY PROCESS.

4,427,145. METHOD FOR AGGLOMERATING POTASSIUM CHLORIDE USING HYDROFLUORIC ACID OR METALLIC FLUORIDE.

3,442,553. SLURRY MINING OF CARNALLITE.

3,455,647. PROCESS FOR PRODUCING SODIUM SESQUICARBONATE AND SODA ASH FROM TRONA.

3,512,941. APPARATUS FOR PRODUCING NORMAL SUPERPHOSPHATE.

3,537,589. OUTSIDE DRIVE FOR A TILTING PAN FILTER.

3,595,624. METHOD AND APPARATUS FOR WASHING CRYSTALLIZERS.

3,655,538. PROCESS FOR ELECTROWINNING ZINC FROM SULFIDE CONCENTRATES.

3,674,442. CONTROL OF ORGANIC DEPOSITION IN SLURRY HEATERS IN POTASH CRYSTALLIZER CIRCUIT.

3,807,141. APPARATUS FOR REDUCING THE HYDROGEN SULPHIDE AND HYDROGEN POLYSULFIDE CONTENT OF LIQUID SULFUR.

3,810,542. PROCESS FOR REMOVING CHROMIUM FROM COOLING TOWER BLOWDOWN STREAMS.

3,920,424. LIQUID SULFUR GAS SCHUBBER APPARATUS.

3,989,607. SOLVENT EXTRACTION AND ELECTROWINNING OF ZINC AND COPPER FROM SULFATE SOLUTION.

4,049,514. ZINC HYDROMETALLURGICAL PROCESS.

4,063,933. PROCESS FOR THE TREATMENT OF COMPLEX LEAD-ZINC CONCENTRATES.

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4,158,043. PROCESS FOR PRODUCING SODA ASH FROM NATURAL ALKALI METAL CARBONATE-CONTAINING ORES.

4,177,067. RECOVERY OF SILVER, COPPER AND ZINC FROM PARTIALLY ROASTED PYRITE CONCENTRATE BY FERRIC SULFATE LEACHING.

4,202,667. IMPROVED PROCESS FOR THE SEPARATION OF INSOLUBLE MATERIALS IN THE PRODUCTION OF SODA ASH.

4,209,379. CATHODE STRIPPING SYSTEM.

4,225,342. TREATMENT OF ZINC PLANT LEACH RESIDUES FOR RECOVERY OF THE CONTAINED METAL VALUES.

4,240,826. PROCESS FOR THE RECOVERY OF ARSENIC AS A ZINC ARSENATE AND ITS UTILIZATION IN THE PURIFICATION OF ZINC PLANT ELECTROLYTES.

4,252,622. CONTINUOUS PROCESS FOR THE PURIFICATION OF ZINC PLANTS ELECTROLYTES USING COPPER ARSENATES.

4,268,088. SHORTWALL MINING OF TRONA.

4,269,867. METALLIZING OF A CORRODIBLE METAL WITH A PROTECTIVE METAL.

The RCA Corp. offers to grant nonexclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patent should be addressed to RCA Corp., Sr. Vice President, Licensing, 30 Rockefeller Plz., New York, N.Y. 10020.

4,265,524. OPTICAL SCANNER WITH VARIABLE SCAN LINE ANGLE.

4,265,699. ETCHING OF OPTICAL FIBERS.

4,266,159. ELECTRON CURRENT COLLECTOR FOR FLAT PANEL DISPLAY DEVICES.

4,266,197. REMOTE CONTROL TV SUBCARRIER PHASE SHIFTER SYSTEM.

4,266,245. DIFFERENTIAL AMPLIFIER CURRENT REPEATER.

4,266,333. METHOD OF MAKING A SCHOTTKY BARRIER FIELD EFFECT TRANSISTOR.

4,266,334. MANUFACTURE OF THINNED SUBSTRATE IMAGERS.

4,266,784. VIDEO DISC CADDY HAVING DISC ENTRAPMENT.

4,266,785. STYLUS LIFTING/LOWERING ACTUATOR WITH IMPROVED ELECTRO MAGNETIC MOTOR.



- 4,267,257. METHOD FOR FORMING A SHALLOW SURFACE RELIEF PATTERN IN A POLY(OLEFIN SULFONE) LAYER.
- 4,267,487. REGULATED FILAMENT SUPPLY FOR HIGH-POWER TUBES.
- 4,267,519. OPERATIONAL TRANSDUCANCE AMPLIFIERS WITH NON-LINEAR COMPONENT CURRENT AMPLIFIERS.
- 4,267,527. RELAXATION OSCILLATOR.
- 4,267,528. RADIO FREQUENCY INTERFERENCE SUPPRESSION APPARATUS.
- 4,267,640. SYSTEM FOR ASCERTAINING MAGNETIC FIELD DIRECTION.
- 4,268,537. METHOD FOR MANUFACTURING A SELF-ALIGNED CONTACT IN A GROOVED SEMICONDUCTOR SURFACE.
- 4,268,866. PEAK-RESPONSE CONTROLLER FOR AVERAGE-RESPONDING AUTOMATIC IRIS.
- 4,269,616. TEMPERATURE INSENSITIVE FILTER FOR KINESCOPE ENVELOPES.
- 4,269,654. SILICON NITRIDE AND SILICON OXIDE ETCHANT.
- 4,270,101. RELAXATION OSCILLATOR HAVING SWITCHED CURRENT SOURCE.
- 4,270,104. PHASE EQUALIZER IN MICROWAVE TRANSMISSION LINE.
- 4,270,125. DISPLAY SYSTEM.
- 4,270,132. INFORMATION RECORD.
- 4,270,190. SMALL SIGNAL MEMORY SYSTEM WITH REFERENCE SIGNAL.
- 4,270,221. PHASELOCKED RECEIVER WITH ORDERWIRE CHANNEL.

Otis Engineering Corp. is prepared to grant licenses under the following patents upon reasonable terms. Address inquires to: Patent Attorney, Otis Engineering Corp., P.O. Box 34380, Dallas, Tex. 75234, Telephone (214) 323-3882.

- 3,454,029. SHUTTLE VALVE.
- 3,533,430. SHUTTLE VALVE.
- 3,654,962. CROSS-OVER VALVE.
- 3,756,260. VALVES (CROSS-OVER).
- 4,095,424. VARIABLE HYDRAULIC PUMP NON-LINEAR CONTROL WITH CAM-ACTUATED, ADJUSTABLY-SEQUENCED SECONDARY CONTROL.
- 4,142,597. MECHANICAL DETENT JARS.
- 4,162,713. PLANETARY TRANSMISSION WITH HYDRAULIC ENGAGEMENT AND DISENGAGEMENT.
- 4,166,475. SAFETY COUPLING.
- 4,175,987. LOW ALLOY TEMPERED MARTENSITIC STEEL.

## Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the

table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

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State	Name of Library	Telephone Contact
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	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Louisiana	Baton Rouge: Troy H. Middleton Library Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(404) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
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	University Park: The Pennsylvania State Libraries	(814) 865-4861
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

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**RENE D. TEGMEYER, Assistant Commissioner**  
**WILLIAM FELDMAN, Deputy Assistant Commissioner**  
**CONDITION OF PATENT APPLICATIONS AS OF June 27, 1981**

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director . . . . .	4-29-80
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal- lurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director . . . . .	10-11-79
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director . . . . .	6-25-80
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthetics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director . . . . .	7-01-80
Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170— R. F. WHITE, Director . . . . .	1-15-80
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufac- ture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director . . . . .	1-03-80
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director . . . . .	10-01-79
Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Op- tics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Composi- tions; Thermal and Photoelectric Batteries.	
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT . . . . .	1-23-80
Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240— A. L. SMITH, Director . . . . .	6-08-79
Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director . . . . .	3-28-79
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGN, GROUP 290—KENNETH L. CAGE, Director . . . . .	9-24-79
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director . . . . .	1-09-80
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprin- kling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Apparatuses; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director . . . . .	3-05-80
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330— R. E. AEGERTER, Director . . . . .	9-13-79
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Infor- mation Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director . . . . .	10-22-79
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Gener- ation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350— G. M. FORLENZA, Director . . . . .	3-19-79
Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscel- laneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	

**Expiration of patents:** The patents within the range of numbers indicated below expire during June 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,134,981 to 3,139,621, inclusive  
Plant Patents . . . . . Numbers 2,407 to 2,415, inclusive

1009 OG 16

## REISSUES

AUGUST 11, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in *italics* indicates additions made by reissue.

Re. 30,701

### BUTTON LOCKING DEVICE

Ben Williams, and George H. Miller, both of 3955 N. Murray Ave., Shorewood, Wis. 53211

Original No. 4,043,006, dated Aug. 23, 1977, Ser. No. 553,158, Mar. 17, 1975. Application for reissue May 15, 1978, Ser. No. 905,928

Int. Cl.<sup>2</sup> A44B 1/00, 1/18

U.S. Cl. 24—90 R

13 Claims

11. *In the combination of a first fabric with a button permanently fastened thereto and a second fabric with a button hole for receiving said button therethrough and to expose such button beyond said second fabric whereby to releasably button the two fabrics together, the improvement for locking the two fabrics together notwithstanding release of the button from the button hole and comprising a flexible link, anchor means anchoring one end of the flexible link to one of said fabrics, the other end of the flexible link comprising a loop encircling the exposed button whereby to be retained by the button in the event that the button slips through the button hole and to link the two fabrics together notwithstanding release of the button from the button hole, said second fabric having an edge adjacent the button hole, said flexible link being looped over the edge of the second fabric from its connection to said anchor means to its loop encircling the exposed button.*

Re. 30,702

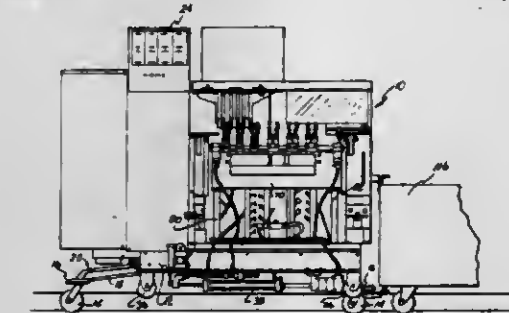
### DOFFER WITH PNEUMATIC CONTROL SYSTEM

Alex J. Keller, 75 Ridgeport Rd., River Hills Plantation, Clover, S.C. 29710; Keith S. Dellinger, 1801 Hollandale; James L. Ray, 2235 Shaw Ave., both of Gastonia, N.C. 28052; Thomas A. Cherry, Rte. 5, Box 188, Mooresville, N.C. 28115, and Erhard A. Fechner, 3000 Whitson Rd., Gastonia, N.C. 28052  
Original No. 4,081,949, dated Apr. 4, 1978, Ser. No. 763,662, Jan. 28, 1977. Application for reissue Oct. 29, 1979, Ser. No. 88,780

Int. Cl.<sup>3</sup> D01H 9/10

U.S. Cl. 57—268

13 Claims



1. Apparatus for donning and doffing bobbins onto and off of the spindles of a spinning frame, said apparatus including:
  - (a) carriage means having transport means movable to a first position for causing said carriage to move along said spinning frame;
  - (b) bobbin donning and doffing means carried by said carriage means and arranged for initial movement to a first position at which at least one empty bobbin is donned onto a spindle and released, and for subsequent movement to a second position at which at least one full bobbin is doffed from a spindle;
  - (c) pneumatic sensor means disposed to emit a stream of air into the paths of movement of said transport means and said bobbin donning and doffing means, said sensor means generating first, second and third pneumatic signals each time said stream of air is interrupted by said transport means moving to said first position thereof, by said donning and doffing means moving to said first position

- thereof, and by said donning and doffing means moving to said second position thereof, respectively; and
- (d) control means receiving said pneumatic signals and operable:
    - (i) to move said donning and doffing means to said first position thereof only after said first pneumatic signal has been received;
    - (ii) to move said donning and doffing means to said second position thereof only after said second pneumatic signal has been received; and
    - (iii) to move said transport means to said first position thereof only after said third pneumatic signal has been received.

Re. 30,703

### BALL THROWING DEVICE WITH ROTARY WHEEL, AND PAD MEANS FOR COMPRESSING A BALL AGAINST THE WHEEL

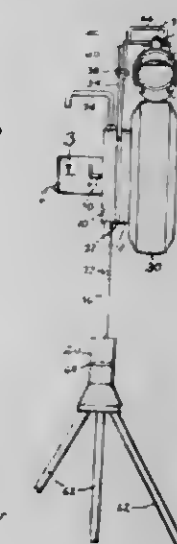
John K. Paulson, Lake Oswego, and Walter J. Steffan, Portland, both of Oreg., assignors to JoPaul Industries, Inc., Tualatin, Oreg.

Original No. 4,080,950, dated Mar. 28, 1978, Ser. No. 724,022, Sep. 16, 1976. Continuation-in-part of Ser. No. 554,920, Mar. 3, 1975, abandoned. Application for reissue May 29, 1979, Ser. No. 43,480

Int. Cl.<sup>3</sup> F41B 15/00

U.S. Cl. 124—1

8 Claims



1. A ball throwing device, comprising:
  - a. a support assembly including a base member, and a support member mounted on the base member for rotation and about a horizontal axis and having at least one portion thereof [projection] projecting radially outward from the base member for 180° selective rotational adjustment about said horizontal axis to opposite vertical sides of said axis;
  - b. a rotary wheel having a ball-engaging surface, the wheel being mounted on the support assembly for rotation about an axis parallel to the said horizontal axis of rotational adjustment of the support member;
  - c. drive means engaging the wheel for rotating the ball-engaging surface thereof in a ball throwing direction at a speed predetermined to project a ball therefrom at a selected velocity;
  - d. a pad means mounted on the support member for rotation therewith about said horizontal axis, the pad means having a ball-engaging surface spaced radially from the ball-engaging surface of the wheel a distance slightly less than



the diameter of a ball to be thrown for compressing a ball against the wheel, and  
 e. means for supporting the base member for rotation about a vertical axis whereby to accommodate throwing of a ball in the same direction when the pad means is positioned above the wheel and when the pad means is positioned below the wheel  
 f. said rotary wheel [on] or pad means being mounted on said at least one radially projecting portion of the support member for adjustment to opposite vertical sides of said horizontal axis of rotation.

Re. 30,704

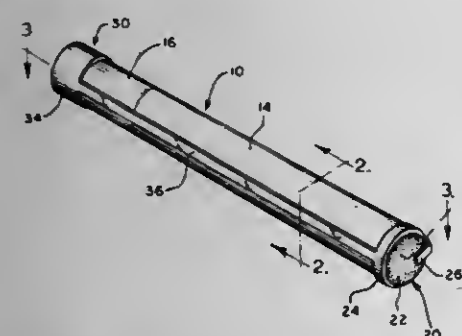
**SELF-LIGHTING CIGARETTE HAVING A PROTECTIVE CAP**

Lloyd M. Hughes, Chicago, Ill., assignor to Lloyd M. Hughes Enterprises, Inc., Chicago, Ill.  
 Original No. 3,994,305, dated Nov. 30, 1976, Ser. No. 599,367, Jul. 28, 1975. Application for reissue Jul. 29, 1977, Ser. No. 820,359

Int. Cl.<sup>3</sup> A24D 1/08

U.S. Cl. 131—351

19 Claims



1. A self-lighting cigarette, which comprises:  
 a cigarette having a tobacco filler surrounded by a wrapper;  
 means located at one end of the cigarette for igniting the cigarette by striking it on a surface; and  
 means located at the opposite, lip end of the cigarette for enclosing the lip end during ignition to prevent inhalation of the irritating fumes produced when the cigarette is ignited, said means being removable from the cigarette after ignition to permit normal inhalation during smoking of the cigarette.

Re. 30,705

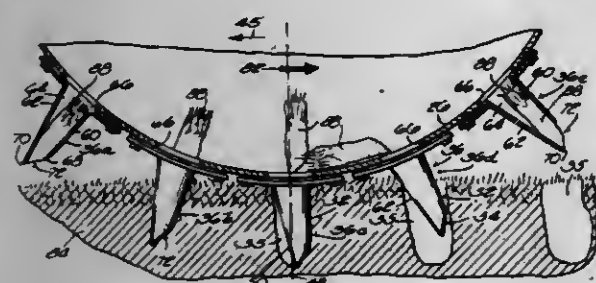
**SOIL AERATING DEVICE**

Charles E. Hines, Lincoln, Neb., assignor to Outboard Marine Corporation, Waukegan, Ill.  
 Original No. 4,081,034, dated Mar. 28, 1978, Ser. No. 772,531, Feb. 28, 1977. Application for reissue Mar. 25, 1980, Ser. No. 133,800

Int. Cl.<sup>3</sup> A01B 45/02

U.S. Cl. 172—22

33 Claims



17. A core-forming tine for a soil aerating device including a hollow cylindrical drum supported for rotation about a horizontally extending axis and for rolling travel along the surface of the ground or turf to be aerated and an outer wall including at least one aperture, said tine being adapted to be fixedly mounted on the exterior of the drum and to extend radially outwardly therefrom, said tine including a pair of generally V-shaped opposed and

parallel side walls, each of said side walls having an apex, a trailing end portion, and a leading end portion having, adjacent said apex, a first part which terminates in a cutting edge segment, and a transverse trailing end wall connecting said trailing end portions of said side walls and cooperating with said side walls to define a hollow interior adapted to communicate with the drum aperture when said tine is mounted in the drum, said trailing end wall having a radially outermost end portion terminating in a cutting end segment which cooperates with said side wall cutting edge segments to form a generally U-shaped cutting edge having a bight located adjacent said side wall apices.

Re. 30,706

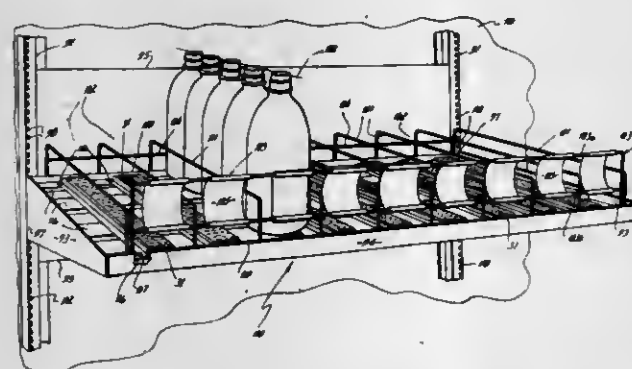
**DISPLAY RACK WITH IMPROVED SHELF ASSEMBLY**

Rafael T. Bustos, Clarkston, Ga., assignor to Leggett & Platt, Incorporated, Carthage, Mo.  
 Original No. 4,128,177, dated Dec. 5, 1978, Ser. No. 844,202, Oct. 21, 1977. Application for reissue Jun. 13, 1979, Ser. No. 48,276

Int. Cl.<sup>3</sup> A47F 5/00

U.S. Cl. 211—49 D

9 Claims



1. A display rack with an improved shelf assembly that gravity feeds a column of containers one after another to the front edge of a shelf as that column's lead containers are successively removed by a customer, said display rack comprising a conveyor belt disposed at an angle relative to the horizontal, said conveyor belt sloping generally upward from the front edge of said shelf, each container in said column being positioned in generally vertical fashion on said belt during use of said rack,

a support floor disposed beneath said conveyor belt, said conveyor belt and said support floor cooperating to support said containers in said column on the upper surface of said belt,

the upper surface of said conveyor belt having a friction relation with said containers that inhibits movement on said belt of said containers relative one to the other, and said support floor and the under surface of said conveyor belt having a friction relation with one another that allows movement of said belt over said support floor when said belt is at least partially loaded with containers and when not restrained against movement, said friction relationships being such that said belt can slide over said support floor while said containers remain generally stationary relative one to the other on said conveyor belt after removal of the column's lead container during use of said rack, and

a bumper rail disposed adjacent the front edge of said shelf, said conveyor belt conveying all of said containers in said column forward together toward said bumper in response to gravity on the remaining containers in said column after removal of the lead containers from said column, said conveyor belt and said container column being stopped by contact of the container in back of the lead container with said bumper rail, thereby positioning a new lead container adjacent the front edge of said shelf.

Re. 30,707

**SAFETY BELT CLAMPING DEVICE**

Heinz-Dieter Adomeit, Grolmanstrasse 16, 1 Berlin 12, Fed. Rep. of Germany

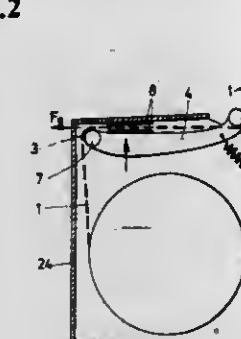
Original No. 4,120,466, dated Oct. 17, 1978, Ser. No. 789,607, Apr. 21, 1977. Continuation of Ser. No. 593,710, Jul. 7, 1975, abandoned. Application for reissue Jun. 22, 1979, Ser. No. 51,257

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1974, 2432956

Int. Cl.<sup>3</sup> A62B 35/00; B65H 75/48

U.S. Cl. 242—107.2

8 Claims



5. A seat belt clamp apparatus comprising:  
 a housing;

a lever pivotably mounted in said housing, said lever having a clamping position and a non-clamping position with respect to a seat belt which is movable through said clamp apparatus; means biasing said lever to its non-clamping position;

means responsive to a force above a predetermined amount applied to said belt in a first direction to move said lever toward said belt to its clamping position against the force of said biasing means;

clamping means provided on said lever for clamping said belt to resist movement of said belt in said first direction in response to said force above a predetermined amount;

first and second opposite surfaces on said clamping means; means on said first surface of said clamping means defining a

planar contact area for contacting said belt, said first surface normally being out of contact with said belt; and means for pivotably mounting said second surface of said clamping means on said lever, said second surface of said clamping means being pivotable with respect to said lever about a pivot axis directly opposite to said contact area, whereby said contact area is moved into substantially parallel engagement with the major plane of said seat belt in response to said force above a predetermined amount, thereby resisting movement of said belt in said first direction.

Re. 30,708

**TELEPHOTO OBJECTIVE**

Kikuo Momiyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Original No. 4,045,128, dated Aug. 30, 1977, Ser. No. 570,958, Apr. 22, 1975. Application for reissue Feb. 27, 1979, Ser. No. 15,754

Claims priority, application Japan, Apr. 25, 1974, 49-46920; Jun. 28, 1974, 49-74168

Int. Cl.<sup>3</sup> G02B 9/60

U.S. Cl. 350—465

25 Claims



23. A telephoto objective of high speed adjustable focus comprising: a front lens group which has a positive power and remains stationary during focusing, and a rear lens group which is positioned on the image side of said front lens group and has a negative power, said rear lens group consisting of at least one stationary sub-group and a movable sub-group, said movable sub-group having a negative power and being axially movable to focus, wherein the absolute focal length of said stationary sub-group is larger than that of said movable sub-group.



## PLANT PATENTS

GRANTED AUGUST 11, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,757

### EUONYMUS PLANT—CORMAST VARIETY

Clifford D. Corliss, Ipswich, Mass., assignor to The Conard-Pyle Company, West Grove, Pa.

Filed May 19, 1980, Ser. No. 150,962

Int. Cl.<sup>3</sup> A01H 5/12

U.S. Cl. Plt.—63

1 Claim

1. A new and distinct variety of *Euonymus fortunei* which is a branch mutation of the Emerald'N Gold variety, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of:

- (a) a distinctly dwarf habit of growth rendering the plant suitable for use as a semi-prostrate ground cover,
- (b) smaller variegated leaves which when mature are dark green with light to medium yellow margins,
- (c) vigorous growth characteristics,
- (d) the ability to thrive under a wide range of climatic conditions, and
- (e) the ability to be sheared within prescribed limits or shaped to a specific form.



# PATENTS

GRANTED AUG. 11, 1981

## ERRATA

For CLASS	See PATENT NO
411-303 .....	4,282,913
210-448 .....	4,283,289
210-643 .....	4,283,290
564-189 .....	4,283,350
564-189 .....	4,283,351
568-311 .....	4,283,352
369-032 .....	4,283,777



# PATENTS

GRANTED AUGUST 11, 1981

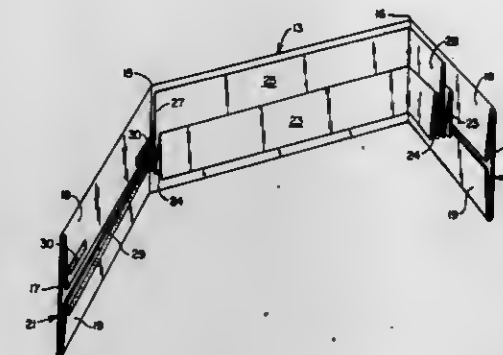
## GENERAL AND MECHANICAL

**4,282,607**  
**DISPOSABLE-TYPE CAP WITH PULL-OUT CROWN**  
 James E. Randall, Worthington, Ohio, assignor to Kap & Kor, Inc., Cleveland, Ohio

Filed Feb. 20, 1980, Ser. No. 122,874  
 Int. Cl.<sup>3</sup> A42B 1/22

U.S. Cl. 2—197

2 Claims



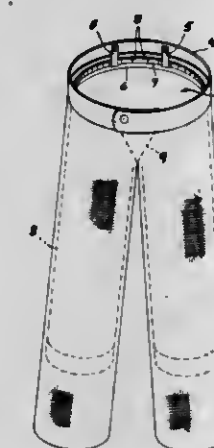
1. In a disposable cap having a headband formed with inner and outer side surfaces, that improvement which comprises a crown consisting of a rectangular, flexible sheet having opposite side and end edges and folded longitudinally on itself to define a pair of outer side panels, a plurality of intermediate pleats and a pair of peak-forming panels, the outer side panels of said crown being secured to the inner side surfaces of said headband and the intermediate pleats and peak-forming panels of said crown being adjustable between relatively elevated and retracted positions with respect to said headband to vary the crown style of the cap; and means securing the end edges of the peak-forming panels only of said sheet to one another.

**4,282,608**  
**LINER FOR TROUSERS OR SKIRT**  
 Eduard Amberg, Birsigstr. 107, 4054 Basel, Switzerland  
 Filed Sep. 18, 1979, Ser. No. 76,563  
 Claims priority, application Fed. Rep. of Germany, Sep. 19, 1978, 2840639

Int. Cl.<sup>3</sup> A41D 1/06

U.S. Cl. 2—227

3 Claims



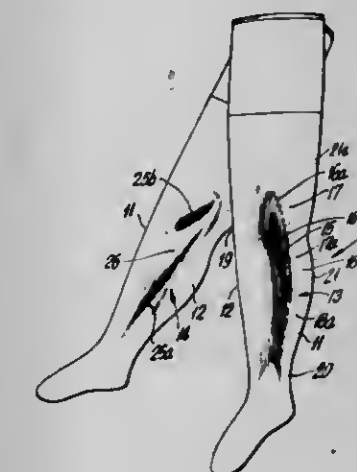
1. In a garment for the lower body provided with a liner removably fitted thereto, said liner having a trunk portion including a waistband provided with substantially coextensive ribbon means internally attached thereto at peripherally spaced locations to form a multiplicity of intervening loops, said garment being internally provided at waist level with a plurality of generally vertical flexible straps having a free end engageable with its opposite end for holding said liner in position by closing said straps upon themselves, the improvement wherein said straps are attached to said garment at points above the upper edge of said waistband

and overhang said upper edge on engaging said loops, said straps having a width less than the peripheral length of said loops, the number of said loops being substantially greater than that of said straps for facilitating selective peripheral adjustment of said liner relatively to said garment.

**4,282,609**  
**APPEARANCE MODIFYING PANTY HOSE**  
 Betty Freedman, and Anne M. Blevins, both of New York, N.Y., assignors to Concepts for Women, Inc., New York, N.Y.  
 Filed Oct. 25, 1977, Ser. No. 844,530  
 Int. Cl.<sup>3</sup> A41B 11/00; A43B 17/00

U.S. Cl. 2—239

13 Claims



1. A hose comprising a fabric formed so as to closely fit the leg of the wearer, said fabric having a first shaded area and a second shaded area circumscribing the first shaded area, said shaded areas being differently shaded from each other, and wherein the first shaded area is in the calf region between the front and rear, wherein the first shaded area is on the fabric portion covering the outside of the leg and further comprising a third shaded area, and a fourth shaded area circumscribing the third shaded area, said third and fourth shaded areas being differently shaded from each other, and wherein the third shaded area is in the calf region between the front and rear and being disposed on the portion covering the inside of the leg, and whereas the first area is spacedly disposed from said third area, and wherein said areas are differently contoured along the length of the hose, whereby the combination of areas provides an appearance of modifying the shape to the legs.

**4,282,610**  
**PROTECTIVE HEADGEAR**  
 Carl J. Steigerwald, Waucooda, and Frank K. Villari, Oak Park, both of Ill., assignors to The Kendall Company, Boston, Mass.  
 Continuation of Ser. No. 869,568, Jan. 16, 1978, abandoned. This application Dec. 4, 1978, Ser. No. 966,534  
 Int. Cl.<sup>3</sup> A42B 3/00

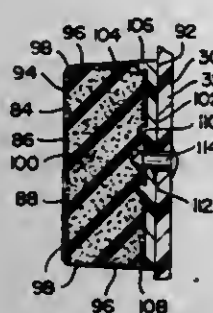
U.S. Cl. 2—414

9 Claims

1. A protective headgear, comprising:  
 a helmet; and  
 a pad assembly having a back surface, a front surface, and side surfaces connecting said back and front surfaces, said pad assembly comprising a pad of foam material having an integral molded densified layer defining said front surface and at least a substantial part of said side surfaces, said layer being of one-piece construction with the remainder of the pad and forming a tear-resistant cover for the front and sides of said pad assembly, and a relatively rigid uniplanar attachment plate bonded by molding to said pad



adjacent the back surface of the pad assembly and having means for securing the plate to the helmet, said plate being



embedded in and encased by the pad, said means for securing the plate to the helmet extending through the pad, between the plate and the helmet.

4,282,611

# SANITARY URINAL

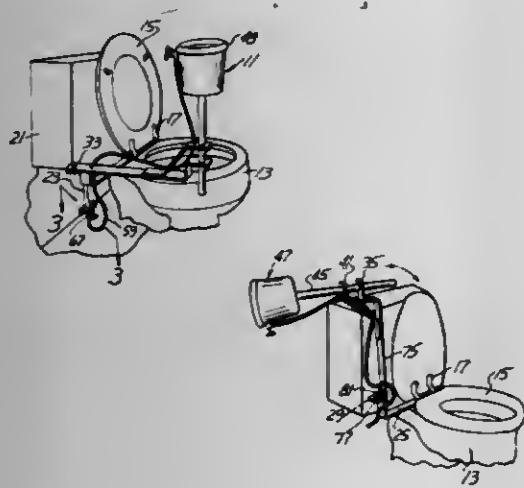
Gerald L. O'Day, 24160 McDonald, Dearborn Heights, Mich. 48125

Filed Jul. 11, 1980, Ser. No. 167,616

Int. Cl.<sup>3</sup> A47K 11/00

U.S. Cl. 4-144.1

13 Claims



1. A sanitary urinal adapted for attachment to a toilet bowl having a pair of seat anchor bolts; a bracket arm apertured at one end to receive said bolts for securing said arm to said bowl, with its other end extending laterally thereof; a swing arm at one end pivotally connected to and supported upon said other end of said bracket arm; a funnel having an elongated depending drain stem overlying said arm with its stem adjustably secured to the other end of said swing arm; said swing arm and funnel having a non-use position and adapted for movement relative to said bracket arm for registry of said drain stem with said bowl.

4,282,612

# ADJUSTABLE SHOWER AND MASSAGE APPARATUS

Joseph L. King, 452 Bay Wood Dr., Newport Beach, Calif. 92660

Filed Apr. 28, 1980, Ser. No. 144,774

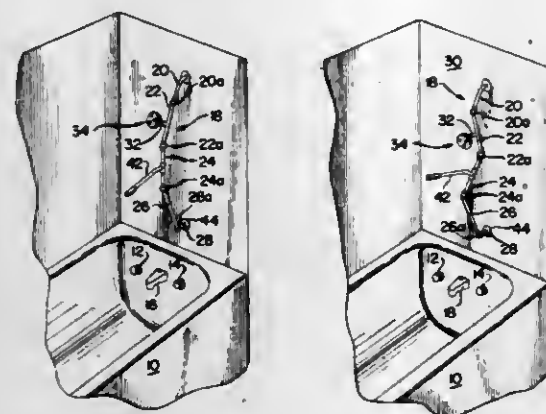
Int. Cl.<sup>3</sup> A47K 3/22

U.S. Cl. 4-601

6 Claims

1. In combination, an adjustable shower and massage apparatus adapted to be attached to a suitable water system having a discharge end, the apparatus comprising: a plurality of pipe members adapted to be flexibly interconnected, and wherein there is a leading pipe member connected to the discharge end of said water system and a

trailing pipe member affixed to a stationary structure such as a wall; geniculating means provided for interconnecting said pipe members to allow each respective pipe member to be individually positioned with respect to its adjoining pipe member;



- a water-spray means mounted to at least one of said pipe members; and means secured to at least one of said pipe members to position and arrange said pipe members and said water-spray means, in order to provide a selective angular discharge of water through said water-spray means.

4,282,613

# CONVERTIBLE INVALID BED

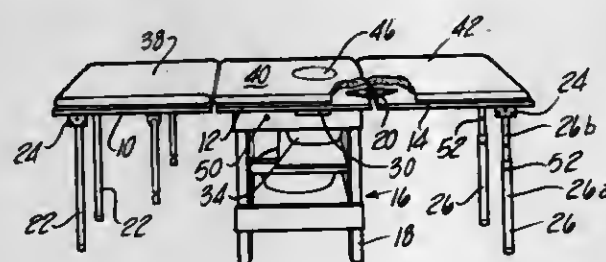
Anthony E. Violante, 5058 Chatsworth Ave., Detroit, Mich. 48224

Filed Dec. 31, 1979, Ser. No. 108,520

Int. Cl.<sup>3</sup> A61G 7/02

U.S. Cl. 5-90

7 Claims



1. An invalid bed adapted to be converted into an upright commode seat comprising, three mattress supporting sections which include a rear head section, an intermediate seat section and a front foot section; said head section being connected at its front end to the rear end of the seat section for pivotal movement from a horizontal position to a position extending generally vertically upwardly from the rear end of the seat section, said foot section being connected at its rear end to the front end of the seat section for pivotal movement from a horizontal position to a position extending downwardly from the front end of the seat section in a substantially vertical plane, a rigid frame for said seat section having legs fixed to the front and rear ends thereof for supporting the seat section in a stable horizontal position at a predetermined height above the floor surface, a first pair of laterally spaced support legs pivotally connected at their upper ends adjacent the rear end of the head section, said last-mentioned legs when in upright position supporting the head section in horizontal alignment with the seat section and being pivotable from said upright position to a collapsed position underlying and nested against the underside of the head section when the head section is pivoted to said vertically upwardly extending position, a second pair of supporting legs pivotally connected at their upper ends adjacent the front end of the foot section, said second pair of legs when in an upright position supporting the foot section in horizontal

alignment with the seat section and being pivotable from said upright position to a collapsed position underlying and nested against the underside of the foot section when the foot section is pivoted to said vertically downwardly extending position, said foot section having a length no greater than the length of the legs supporting the seat section to enable pivoting said foot section to said vertically downwardly extending position, said head and foot sections being of generally the same length and said seat section being of shorter length so that, when the head section is pivoted to said upwardly extending position and said foot section to said downwardly extending position, the head section forms a backrest for an invalid seated in an upright position on said seat section with his legs overhanging the front end of the seat section, said seat section having a commode opening therein disposed to generally underlie the buttocks of an invalid lying in the bed and said frame having means for supporting a receptacle directly below said opening, a closure member for said opening disposed on the underside of said seat section and slideable transversely thereof to open and close said opening, the pivot axis of said second pair of legs extending transversely of said foot section so that, when the foot section is pivoted to said downwardly extending position, the last-mentioned legs extend vertically upwardly from the lower front end of the foot section and including means for foreshortening the length of said second pair of legs to enable them to be pivoted to said collapsed position when the foot section is pivoted to said vertically downwardly extending position.

4,282,614

# TABLE FOR USE WITH END-FOR-END ROTATABLE HOSPITAL BED

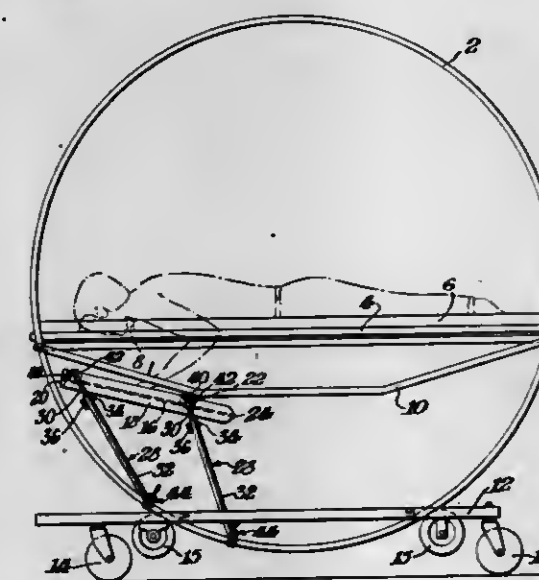
Howard B. Hurst, 122 Carlie Rd., Lynnfield, Wilmington, Del. 19803

Filed Nov. 16, 1979, Ser. No. 94,829

Int. Cl.<sup>3</sup> A61G 7/10

U.S. Cl. 5-507

8 Claims



1. A versatile table for use in conjunction with an end-to-end rotatable hospital bed and being adjustable to virtually any position above, below or adjacent to a patient using said bed, said table comprising:

- (a) a table surface, generally rectangular or square, having adjustably affixed near each corner thereof,
- (b) a telescoping support member, each telescoping support member having means for adjusting its length and for fixing its length at a desired position, each such support member having at its end opposite said table,
- (c) adjustable clamping means which can be affixed to the rails or other support bars of said rotatable bed, and having
- (d) side and back boards affixed to said table surface substantially perpendicular to said surface and extending along the sides and back of said table surface and extending

above and below said table surface to keep objects from falling therefrom, and (e) at least one ledge on at least one side thereof to support a book and the like, thereby providing an infinitely adjustable table for use by a patient on said bed.

4,282,615

# CARPENTER'S SURFACE PROTECTING TOOL

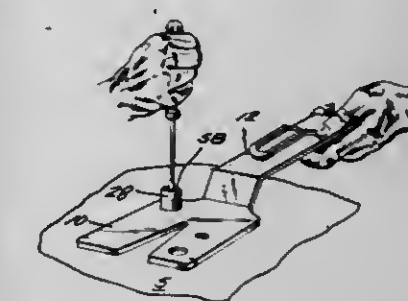
Dale M. Tom, Rte. 1, Norwich, Ohio 43767

Filed Mar. 13, 1979, Ser. No. 20,959

Int. Cl.<sup>3</sup> B25F 1/00; B25C 3/00

U.S. Cl. 7-164

7 Claims



1. Apparatus for protecting a surface into which fasteners are driven, comprising an integral piece of impact-resistant plastic including:

- a shield portion having a flat under-surface adapted to be disposed on the surface to be protected;
- a handle portion operatively connected to said shield portion;
- means defining at least one opening in said shield portion that is large enough to accommodate the head of a nail;
- means defining a screw-receiving opening in said shield portion, and including a tubular member upstanding from said shield portion and said screw-receiving opening and surrounded by said shield portion, said tubular member having interior dimensions great enough to receive a screwdriver blade therein to guide a screwdriver as it drives a screw into a surface on which said shield portion is disposed;
- said shield portion having an upper-surface opposite said under-surface, said upper-surface being flat except for said tubular member; and
- an intermediate portion interconnecting said handle portion and said shield portion, said intermediate portion making a positive acute angle with both said shield and said handle portions, and so that a plane containing said handle portion is closer to said shield portion upper-surface than under-surface, and so that said handle portion makes a small positive angle with respect to a plane extending parallel to said shield portion.

4,282,616

# RIGID COLLAPSIBLE BOAT

Ronald Battershill, 4248 Palo Verde, Lakewood, Calif. 90713

Filed May 23, 1979, Ser. No. 41,549

Int. Cl.<sup>3</sup> B63B 7/00

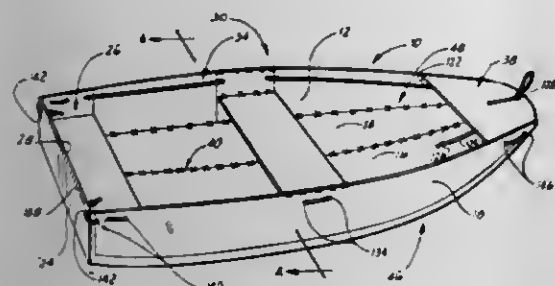
U.S. Cl. 9-2 C

6 Claims

1. A collapsible boat comprising: a plurality of rigid hull sections hinged together along edges which meet in mating curves to form a hull prow and which extend longitudinally throughout the hull length and which are hinged together by means of flexible cord laced through mating apertures therein, flexible, water tight sealing strips that extend along said hinged edges, a flexible water tight stern panel that is fastened to stern ends of said hull sections in watertight engagement therewith, a stern thwart having a transom reinforcing back for positioning against said flexible stern panel,



a mid thwart having an upright panel for positioning in contact with said hull sections,  
a bow thwart extending across bow ends of said hull sections,



and a single length of flexible cord that passes along one side of said hull to the other, laced to hold said stern thwart, said mid thwart, and said bow thwart to said hull sections.

4,282,617

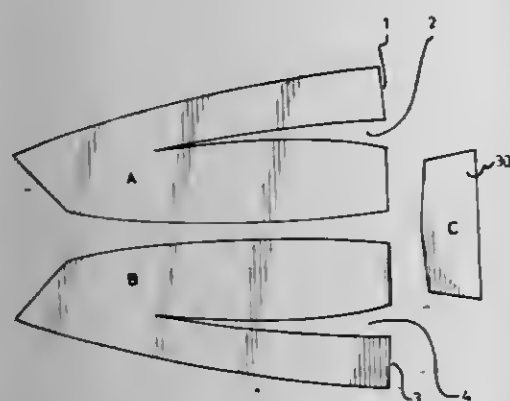
# BOAT HULL, MATERIAL OR BLANK FOR A BOAT HULL, AND A METHOD OF PRODUCING A BOAT HULL

Claes Ö. S. Lundström, Järvstigen 9, S-17177, Solna, Sweden  
Filed Jun. 16, 1978, Ser. No. 916,061

Int. Cl.<sup>3</sup> B63B 3/00, 5/00

U.S. Cl. 9-6 R

27 Claims



1. In a boat hull which comprises at least one relatively stiff but flexible sheet which is bent to form the body or shell and the bottom of the hull and which also forms the broadest part of the hull after being bent and formed, the improvement wherein:

said at least one sheet has at least one first slot extending from one outer edge of the sheet towards the center-line of the boat hull, said at least one first slot having opposing first edges and being in the part of said at least one sheet forming the broadest part of the hull;  
said at least one sheet has elongated second slots generally extending in the direction of or parallel to said center-line, the opposing edges of said second slots being joined together along the lengths thereof to form respective ends of said second slots;  
said first edges of said at least one first slot merge, at a distance from said outer edges of said at least one sheet, into at least one of said elongated second slots; and  
said elongated second slots are provided, at their ends, with enlargements or holes (25) to remove stress concentrations when the sheet is bent, which enlargements or holes are filled in after forming of said hull.

## DIE FOR CUTTING SCREW-THREADS

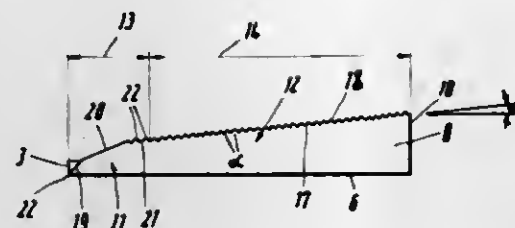
Rudolf Wagner, Stuttgart, Fed. Rep. of Germany, assignor to Rems-Werk Christian Föll und Söhne GmbH & Co., Waiblingen, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,507

Int. Cl.<sup>3</sup> B23G 5/08

U.S. Cl. 10-111

13 Claims



1. A die for cutting external taper screw threads into tapered ends of externally ribbed steel for reinforcing concrete with an external thread-cutting machine to which the die is operatively connectible, said die comprising:

a cutting portion of finite length and having a plurality of first cutting teeth arranged in a cutting plane, said cutting plane having a finite length measured in the longitudinal direction of said die, said first cutting teeth having a tooth depth increasing within said cutting plane rearwardly to final depth; and  
a guide portion adjacent said cutting portion, said guide portion having a predetermined length measured in the longitudinal direction of said die and having a plurality of second cutting teeth arranged in a guide plane, said predetermined length of said guide portion corresponding to about 3 to about 6 times the magnitude of said infinite length of said cutting portion, and said predetermined length of said guide portion being of from about ten to about twenty times the magnitude of said finite length of said cutting plane, said second cutting teeth in said guide portion having a constant tooth depth corresponding to the final tooth depth in said cutting portion.

4,282,619

## TRUSS STRUCTURE

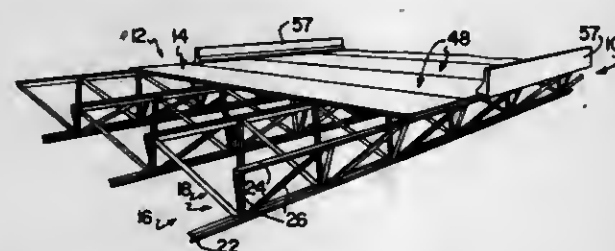
Craig E. Rooney, Prairie Village, Kans., assignor to Havens Steel Company, Kansas City, Mo.

Filed Nov. 16, 1979, Ser. No. 94,955

Int. Cl.<sup>3</sup> E01D 9/00; E04C 3/02

U.S. Cl. 14-6

13 Claims



1. In a bridge structure:

an elongated, spanning deck including a reinforced concrete layer;  
at least four individual carrier truss structures, each including  
an elongated lower chord element formed of metallic angle and presenting a pair of elongated, generally planar, interconnected flanges;  
a plurality of individual, upwardly extending metallic web members;  
means including first weld joints joining said web members to said lower chord element at spaced locations along the element, respective adjacent web members converging and meeting at points above said lower chord element; and

means including second weld joints at said points coupling respective pairs of converged web members and defining a plurality of spaced apart panel points along the length of the carrier truss structure;

means operably interconnecting respective pairs of said truss structures to present at least two generally V-shaped in cross-section truss assemblies each having the lower chord elements of two truss structures in juxtaposed relationship, and the web members joined to each lower chord element extending obliquely upwardly therefrom, said interconnecting means including bolt means coupling each pair of juxtaposed lower chord elements at spaced locations therealong to form a composite lower chord for each truss assembly,

said V-shaped truss assemblies being oriented beneath said deck in side-by-side relationship with the composite lower chord of each assembly extending along the direction of span of the bridge structure and with said web members extending upwardly toward said deck;

means compositing said deck and truss assemblies, including a plurality of metallic force-transmitting elements embedded in said concrete layer and having mechanical interlock structure above the lower surface of said concrete and embedded therein; and  
means operably coupling said force-transmitting elements and web members therebeneath, including force-transmitting third weld joints at the regions of at least certain of said panel points.

4,282,620

## JOINT BRIDGING CONSTRUCTION FOR BRIDGES OR LIKE STRUCTURES

Alfred Hartkorn, Kolpingstrasse 25, 8068 Pfaffenhofen-Ilm, Fed. Rep. of Germany

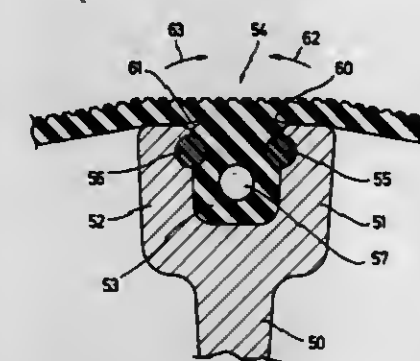
Filed Jul. 30, 1979, Ser. No. 61,681

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834361

Int. Cl.<sup>3</sup> E01D 19/06; E01C 11/02

U.S. Cl. 14-16.5

6 Claims



1. In a joint bridging construction for bridges or like structures where sealing bodies which are flush with the upper side of the roadway and are attached into recesses between upwardly extending walls in edge beams, the improvement comprising a longitudinal recess along at least one of said upwardly extending walls; a mirror image and facing longitudinal recess extending along said sealing body; a dowel part sized to snugly fit into both of said longitudinal recesses; and a longitudinal cut in said sealing body above said sealing body longitudinal recess, and adjacent the top edge of said upwardly extending wall.

4,282,621

## RELEASABLE LOCKING DEVICE

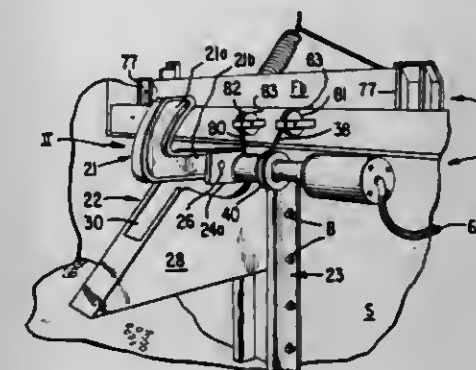
Charles Anthony, Milwaukee, and Charles A. Portz, Wauwatosa, both of Wis., assignors to Rite-Hite Corporation, Cudahy, Wis.

Filed Dec. 11, 1978, Ser. No. 967,899

Int. Cl.<sup>3</sup> E01D 1/00

U.S. Cl. 14-71.1

15 Claims



1. A device for releasably securing a parked vehicle to an adjacent structure, said device comprising a first means hingedly mounted for movement between an operative mode and an inoperative mode and adapted to normally assume an inoperative mode, said first means, when in an operative mode, having a distal portion thereof adapted to interlockingly engage the vehicle and substantially restrain movement thereof away from the adjacent structure and, when in an inoperative mode, having said distal portion assume a vehicle-release position; second means operatively connected to said first means for controlled movement thereof from an inoperative mode to an operative mode; third means for automatically locking said first means in an operative mode, said third means including an adjustable assembly for effecting controlled unlocking of said first means; and a carriage having a first section on which said first means and said third means are mounted and a second section mountable on the adjacent structure.

4,282,622

## FLOOR SWEEPER WITH INTEGRAL HOUSING

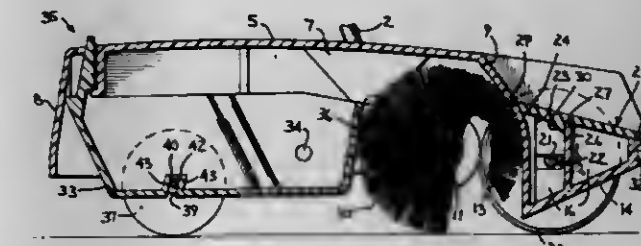
Henry J. Rosendall, and Arlan J. Shaffer, both of Grand Rapids, Mich., assignors to Bissell, Inc., Grand Rapids, Mich.

Filed Dec. 13, 1979, Ser. No. 99,555

Int. Cl.<sup>3</sup> A47L 11/00

U.S. Cl. 15-41 R

12 Claims



1. In a floor sweeper having a handle and a bail attached to said handle, a lower sweeping unit attached to said bail and comprising:

(a) housing of integrally molded relatively rigid plastic material and with said housing having a top and downwardly depending peripheral end and rear walls,  
(b) a cylindrical rotary brush extending transversely between said end walls,  
(c) a housing front wall depending downwardly from the front edge of said top and with said front wall being set back from the front end of the lower unit,  
(d) said front wall being at least partially curved to form a dust deflector disposed just forwardly of said brush,  
(e) a platform integral with the lower end of said front wall and extending forwardly therefrom to form an edge at the



front of the housing, said edge being disposed substantially below the plane of said top,  
 (f) said front wall and platform forming a transversely extending upwardly facing channel,  
 (g) running wheels disposed at the front end of said housing,  
 (h) a transverse axle joining said wheels and extending through said channel,  
 (i) and a removable protective channel cover of resilient material disposed below said top and extending generally horizontally between said front wall and the said front edge of said platform.

4,282,623

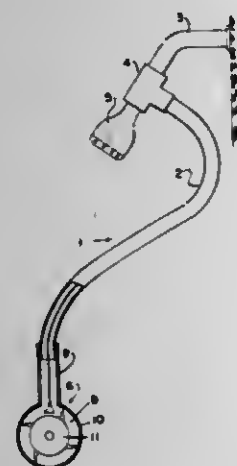
## SCRUBBER APPARATUS

Delancey J. Gacuzana, 1310 Punahou St., Honolulu, Hi. 96826

Filed Apr. 3, 1979, Ser. No. 26,518  
 Int. Cl.<sup>3</sup> A46B 13/06; A61H 33/00

U.S. Cl. 15-97 R

13 Claims



1. Scrubber apparatus, comprising  
 a scrubber head having a portion formed for manual grasping and a rotatable scrubbing element,  
 inlet and outlet hoses connected at one end to said scrubber head,  
 an adaptor having means for connecting same between a water supply pipe and a shower head and said adaptor being connected to said inlet and outlet hoses and formed for channelling water from said supply pipe through said outlet hose and thence to said shower head,  
 control valve means in said scrubber head for controlling the flow of water entering through said inlet hose,  
 said scrubber head comprising:  
 a housing formed to provide an inlet passage from said inlet hose,  
 and an impeller disc positioned in said housing for receiving water from said inlet passage and formed for rotation by such water,  
 said housing being formed to provide an outlet passage from said impeller disc to said outlet hose,  
 said control valve means comprising:  
 a multiple position valve formed for selectively communicating said inlet hose which said inlet passage and with said outlet hose directly, whereby in a first position of said multiple position valve the flow of water rotates said impeller disc and in a second position of said multiple position valve the flow of water bypasses said impeller disc.

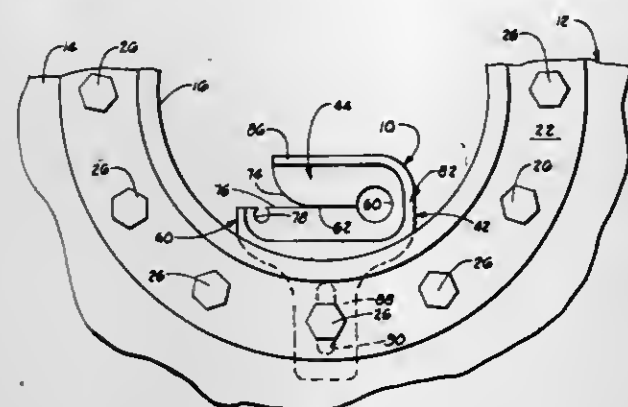
4,282,624  
 OIL FIELD STORAGE TANK ATTACHMENT FOR CLEANING

James R. Cobb, 1449 Williams Cir., Oklahoma City, Okla. 73119

Filed Oct. 22, 1979, Ser. No. 87,407  
 Int. Cl.<sup>3</sup> B08B 11/00

U.S. Cl. 15-210 B

4 Claims



1. A measuring tape cleaning apparatus for a tank used for storing a liquid, said tank having an aperture formed through the top thereof for admitting a plumb bob attached to one end of a measuring tape into the tank for measuring the depth of liquid in the tank, comprising:  
 a wiper constructed of an elastomeric material, said wiper having opposed top and bottom surfaces and a cut, communicating with one side of the wiper, formed through the wiper to intersect the top and bottom surfaces thereof, whereby abutting first and second wiper faces accessible from said one side of the wiper are formed internally of the wiper and extend between the top and bottom surfaces of the wiper, wherein the cut formed through the wiper terminates within the wiper at a circular aperture formed through the wiper to intersect the top and bottom surfaces thereof;  
 a wiper support secured to the wiper, the wiper support adapted for mounting on portions of the tank adjacent the aperture formed through the top thereof so as to align the cut in the wiper with portions of said aperture at one side of said aperture and so as to orient the wiper faces substantially vertically; and  
 a brush assembly adjacent the top of the wiper, said brush assembly comprising:  
 a circular tube having a slit formed in the wall thereof, said slit extending between the ends of the tube, wherein the tube is disposed coaxially with the circular aperture through the wiper and has an inner diameter greater than the diameter of said circular aperture, and wherein the slit in the circular tube is aligned with the cut formed through the wiper; and  
 a plurality of bristles attached to the inner periphery of said circular tube and extending radially inwardly therefrom.

4,282,625

## SCRAPING TOOL FOR CLEANING COOKING GRILLS

Robert L. Hulett, 901 Tenlynn Ct., St. Louis, Mo. 63124

Filed Mar. 10, 1980, Ser. No. 129,028

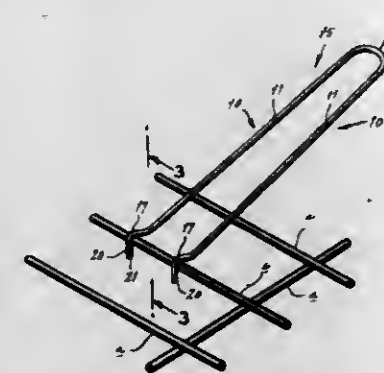
Int. Cl.<sup>3</sup> A47L 14/00

U.S. Cl. 15-236 R

6 Claims

1. A cooking grill scraper, comprising  
 a pair of normally substantially parallel rod members of generally circular cross-section,  
 the pair of rod members extending aft in a plane, and further comprising means to join the aft portions of the rod members,  
 whereby to form a handle,  
 each of said pair of rod members having, forward of the

handle, a scraper portion projecting angularly in a plane substantially perpendicular to the plane of the handle, each scraper portion characterized by having a flat inner face on its side opposed to the other scraper portion, and having



a flat aft face on its side adjacent to the handle, the flat inner and aft faces of each scraper portion intersecting in a cutting edge.

4,282,626

## CLEANING DEVICES

Horst W. Schneider, West Covina, Calif., assignor to California Institute of Technology, Pasadena, Calif.

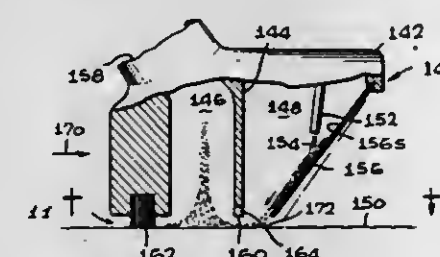
Division of Ser. No. 842,417, Oct. 17, 1977, Pat. No. 4,197,610.

This application Aug. 6, 1979, Ser. No. 64,137

Int. Cl.<sup>3</sup> A47L 7/00

U.S. Cl. 15-320

3 Claims



1. Apparatus for applying a liquid to a surface comprising:  
 a housing having walls forming a hollow space and a wall dividing said space into two hollow regions with open lower ends for facing the surface;  
 means for applying a vacuum to a first of said regions;  
 means for slightly spacing at least a lower end of said dividing wall slightly from the surface when the housing assumes a predetermined upright position with respect to the surface; and  
 means for applying a fluid to a predetermined wall of a second of said hollow regions which is spaced from said dividing wall, said predetermined wall being inclined so that progressively lower portions thereof are progressively closer to said dividing wall, and said dividing wall being easily deflected and resilient so it can vibrate.

4,282,627

## LARGE CLEARANCE FAIRLEAD GROMMET

James W. Downing, Buena Park, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 18, 1978, Ser. No. 970,356

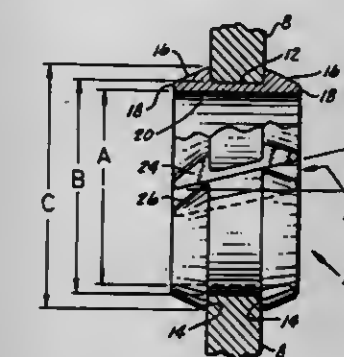
Int. Cl.<sup>2</sup> B65D 7/48; F16L 5/00

U.S. Cl. 16-2

9 Claims

1. A fairlead grommet for an aircraft control cable comprising:  
 a generally cylindrical body with frusto conically shaped flanges disposed longitudinally at the distal ends of said cylindrical body, oriented with the smaller diameter at the distal end and said cylindrical body having a longitudinal

through-bore, centrally disposed with respect to the cylindrical body;  
 a through-slot generally longitudinally formed through said cylindrical body and extending the length thereof between said distal ends from the outer diameter of said flanges into communication with said bore, said through-slot, when viewed in a plane perpendicular to the horizontal axis of said bore, forms an angle with a radius line drawn from the center of said through-bore and said slot



is further oriented to form an angle with the horizontal axis of said through-bore when viewed in a plane parallel to the horizontal axis of said bore; and  
 said grommet being made from a comparatively stiff, shape retaining material, with sufficient spring and a low coefficient of friction in sliding against itself to permit said cylindrical body to spiral with the application of axial pressure on the frusto-conical surface of said flanges of said grommet and springs back to said cylindrical shape when the pressure is released.

4,282,628

## TILTED AXLE CASTER

Raymond A. McCarroll, Grosse Pointe Woods, Mich., assignor to Herder N.V., Netherlands Antilles

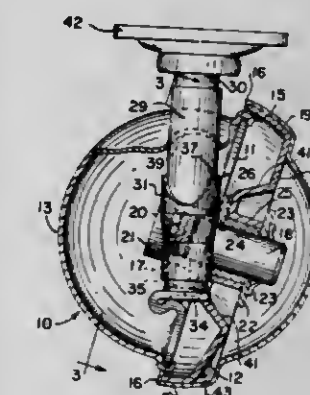
Division of Ser. No. 845,427, Oct. 25, 1977, Pat. No. 4,144,617, which is a continuation-in-part of Ser. No. 748,165, Dec. 7, 1976, abandoned.

This application May 17, 1978, Ser. No. 906,365

Int. Cl.<sup>2</sup> B60B 33/00

U.S. Cl. 16-18 A

14 Claims



1. A caster comprised of two basic parts including a substantially flat body frame and a separate wheel rotatable relative to the body frame, said body frame being fabricated from a metal stamping and having a vertical swivel tube socket separately formed and mounted thereon, means securing said swivel socket to the body frame, a cantilever axle mounted on the body frame, said wheel being fabricated from a metal stamping and rotatable on said axle, a pair of enclosing covers secured respectively to said body frame and to said wheel, said swivel tube socket extending at an angle to the plane of said body frame and at least a portion of said socket extends through the body frame, and a cut-out in the body frame for the passage of said socket.



4,282,629

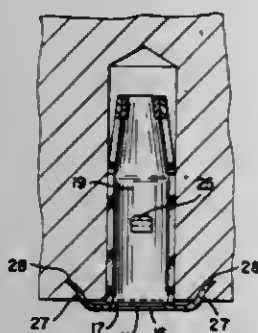
## SOCKET FOR CASTER MOUNTING

Carl J. Demrick, Birmingham, and Frederick C. Greene, St. Joseph, both of Mich., assignors to Herder N.V., Antilles, Netherlands

Continuation of Ser. No. 7,484, Jan. 29, 1979, abandoned. This application Jul. 18, 1980, Ser. No. 170,066

Int. Cl.<sup>3</sup> A47B 91/00

U.S. Cl. 16—43



1. A caster mounting socket comprised of a base plate and an upstanding socket, a plurality of upstanding teeth arranged on a radius around said base plate and disposed concentrically about the perimeter thereof, said teeth each having a generally vertical outer surface and an inner surface extending vertically for at least part of the height of the teeth, and a sloping wedge shaped face on said inner surface immediately above said vertical part of the inner surface adjacent the upper edge of each of said teeth, said wedge shaped face being disposed at an upwardly and outwardly extending angle from said inner vertical surface of the respective teeth to provide teeth disposed concentrically around said perimeter each of which tapers upwardly and outwardly above said vertical inner surface as defined by said wedge shaped face.

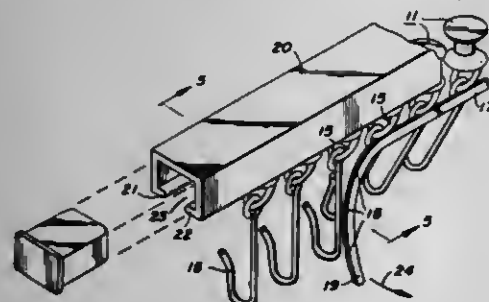
4,282,630

## DRAPERY CARRIER ASSEMBLY

Ellis I. Toder, 341 Militia Hill Rd., Fort Washington, Pa. 19034  
Filed Aug. 23, 1979, Ser. No. 69,333

Int. Cl.<sup>3</sup> A47H 13/12, 15/02

U.S. Cl. 16—93 D



1. A drapery carrier assembly comprising in combinations, (a) a plurality of individual drapery carriers each of which is formed at least in part of molded plastic, and each of which includes a part carryable by a drapery track and means for securing the carrier to a drapery, all of said carriers in said assembly being positioned with respect to one another so that the said parts carryable by a drapery track are in alignment for sequential insertion into the drapery track, and

(b) detachable means connected to all of said individual drapery carriers and effective until detached to maintain said drapery carriers in said alignment, said detachable means being connected to said molded plastic of each carrier by a rupturable molded plastic connection and is in the form of a tear strip having graspable means for tearing the strip from the carriers.

4,282,631

## TILTABLE ROLLER ASSEMBLY

Takeo Uehara, Uozu, and Haruo Hori, Kurobe, both of Japan, assignors to Yosbida Kogyo K.K., Tokyo, Japan

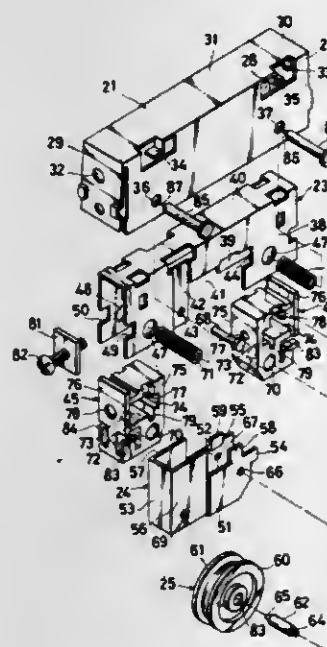
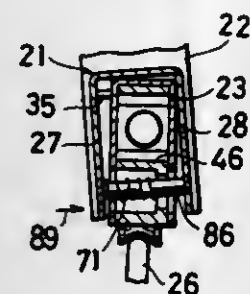
Filed Apr. 2, 1979, Ser. No. 25,914

Claims priority, application Japan, Apr. 3, 1978, 53/43532[U]; Apr. 17, 1978, 53/50450[U]

Int. Cl.<sup>3</sup> E05D 13/02

6 Claims U.S. Cl. 16—102

14 Claims



1. A tiltable roller assembly for attachment to movable closure means, comprising:

- (a) a first frame mountable on the movable closure means;
- (b) a second frame loosely mounted in said first frame and tiltable therein in a first direction;
- (c) a third frame pivotally mounted on said second frame;
- (d) means on said second frame for positionally adjusting the position of said third frame relatively to said second frame in a second direction transverse to said first direction; and
- (e) a roller rotatably supported on said third frame.

4,282,632

## POULTRY PINNING AND DE-HAIRING MACHINE

Everett T. Conaway, Rte. 78, Belfast, Seaford, Del. 19973

Filed Nov. 9, 1979, Ser. No. 92,889

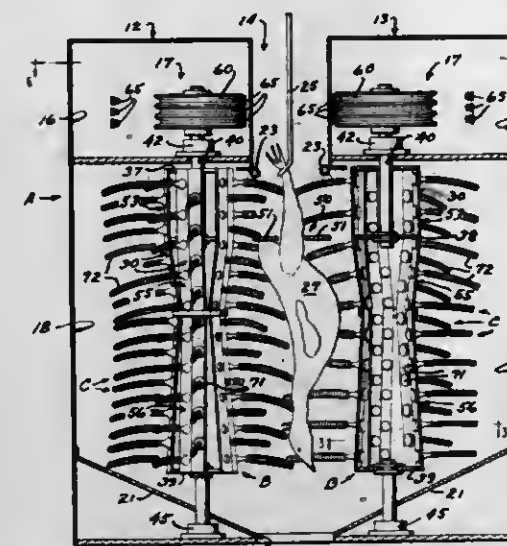
Int. Cl.<sup>3</sup> A22C 21/02

U.S. Cl. 17—11.1 R

8 Claims

1. An elongated columnar member for supporting a plurality of poultry pinning and de-hairing flexible fingers, said elongated columnar member having a plurality of attaching means for receiving said flexible fingers in spaced apart relation therealong and extendant outwardly from the periphery thereof and including a generally cylindrical upper portion for mounting of said fingers thereon in juxtaposition for free form inflect engagement with the leg area of a poultry carcass, a central portion extendant from said upper portion, said central portion being generally of an inverted frusto-conical configuration for mounting of said fingers thereon for free form inflect engagement with the breast, back and flanks of a poultry carcass

adjacent the hock area thereof, and a lower portion extendant from said central portion, said lower portion being generally of a right frusto-conical configuration for mounting of said fingers thereon for free form inflect engagement with the neck, wings, breast, back and flank of a poultry carcass in the shoulder area thereof, said elongated columnar member comprising



a plurality of elongated plate members, each of said plate members having elongated side portions at an angle to each other along the center line of said plate members, and substantially cylindrical sub-frame means, said plate members being attached about the periphery of said substantially cylindrical sub-frame members to define the periphery of said elongated columnar member.

4,282,633

## LINE DIVIDER

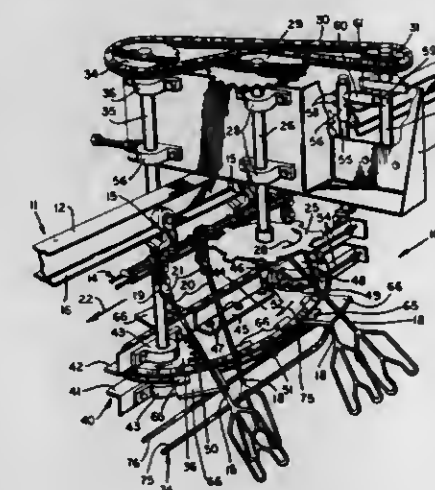
Kenneth Z. Graham, Rt. 2, Dawsonville, Ga. 30534, and Johnny R. Graham, Rt. 8, Gainesville, Ga. 30501

Filed Nov. 13, 1979, Ser. No. 93,747

Int. Cl.<sup>3</sup> A22C 21/00

U.S. Cl. 17—45

9 Claims



1. A method of dividing a line of poultry or the like supported on hangers with the hangers suspended downwardly from a conveyor and moving in alignment in series along a path through a processing plant comprising the steps of initially engaging one hanger of each of a multiple number of the hangers with an engaging surface oriented approximately parallel to the path of movement of the hangers along the conveyor line and moving the engaging surface along a path which diverges from the path of movement of the unengaged hangers while maintaining the engaging surface oriented substantially parallel to the path of movement of the unengaged hangers to urge the engaged hangers laterally with respect to the direction of movement of the hangers along the conveyor line substantially without causing the hangers or the poultry

4,282,634

## BUCKLE

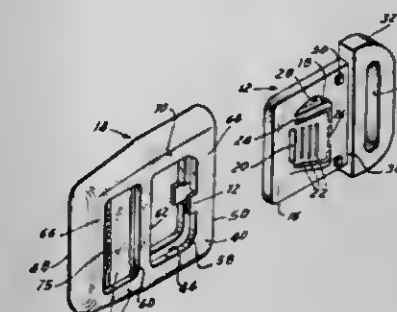
Jack Krauss, 14 Tanglewood La., Freeport, N.Y. 11520

Filed Dec. 21, 1979, Ser. No. 106,279

Int. Cl.<sup>3</sup> A44B 11/25, 17/00

U.S. Cl. 24—230 R

6 Claims



1. A buckle comprising:

a female member having an upper wall, a lower wall, side walls interconnecting said upper and lower walls, and a slot defined by said walls and extending longitudinally through said member, said slot having an entrance at one end of said female member;

first and second openings within said upper wall, first and second openings in said lower wall registrable, respectively, with said first and second openings in said upper wall, one pair of registrable openings located nearer to said slot entrance than said other pair of registrable openings, and said pairs of registrable openings extending substantially perpendicular to said slot;

a lip member extending from a portion of said lower wall over part of said opening nearer said slot entrance, said lip extending in a direction away from said slot entrance, said lower wall having a surface extending further within said slot than any part of said lip, to form an abutment;

said slot entrance being defined by ends of said upper, lower, and side walls, and including a plurality of notches extending within said side walls and perpendicular to said slot; a column positioned within and movable along said slot, said column positioned between said other pair of registrable openings which are further from said slot entrance than said one pair of registrable openings;

a male member having a portion thereof positioned within said slot, said male member including a plate-like portion having dimensions similar to those of said slot and inserted within said slot, and a slotted member connected to said plate-like portion positioned outside of said slot;

a projection extending at an acute angle from said plate-like portion, said projection having one end resiliently connected to said plate-like portion and a distal end positioned adjacent said lip in such a manner that it cannot emerge from said opening near the slot entrance, said distal end also being located in proximity to said abutment formed by said lower wall such that the male member cannot be moved longitudinally from said slot without contacting said abutment; and

a plurality of stops protruding perpendicularly from said plate-like portion, said stops being positioned within said notches and having outer structural configurations corresponding to the inner structural configurations of said notches.



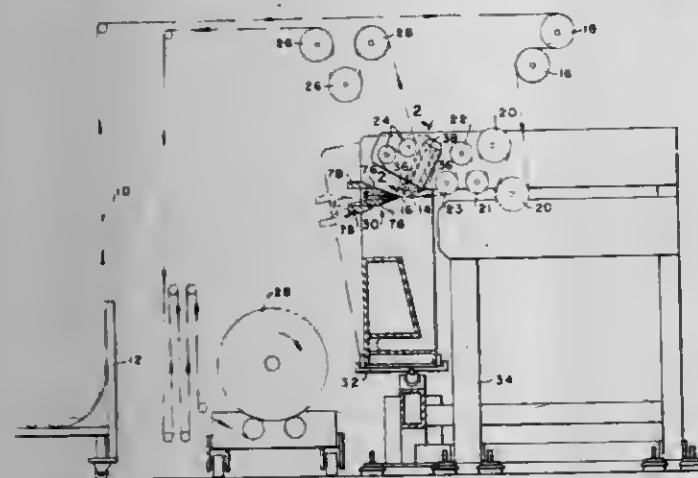
4,282,635

## PILE FABRIC SCULPTURING APPARATUS

Walter Engels, Tryon, N.C., assignor to Milliken Research Corporation, Spartanburg, S.C.  
Division of Ser. No. 53,987, Jul. 2, 1979, Pat. No. 4,222,158, which is a division of Ser. No. 904,111, May 8, 1978, Pat. No. 4,218,810. This application Dec. 3, 1979, Ser. No. 99,216  
Int. Cl.<sup>3</sup> D06C 23/00, 13/00

U.S. Cl. 26—16

1 Claim



1. An apparatus for trimming the pile of a fabric having areas of fibers stiffened by an adhesive and areas of unstiffened fibers comprising: a frame, blade cutter means comprising an endless flexible band pivotally mounted on said frame, means to supply pile fabric to be trimmed into cutting relationship to said cutting means and a second means mounted adjacent to said cutting means to maintain the fabric into contact with said cutting means, said second means including a substantially cylindrical elongated support member having a body portion with gripping means thereon to counteract the drag of the blade of said cutting means on the pile fabric being trimmed, and means for matching the curvature of said support member to the curvature of said endless flexible band, said means including a plurality of means for supporting and twisting said support member, each said means for supporting and twisting said support member including: a pillow block; at least two rollers rotatably mounted on said pillow block, at least one of said rollers having a length which is more than about three times the diameter of said support member, said rollers being rotatable about parallel axes of rotation; and means for extending and withdrawing said pillow block relative to said blade means; for elevating and lowering said pillow block relative to said blade means; and for aligning the axis of rotation of said rollers with the curvature of said blade whereby when said pile fabric is tensioned, the curvature of said support member is matched to the curvature of said blade, said means including a plurality of set screws operably associated with each pillow block on opposite sides thereof.

4,282,636

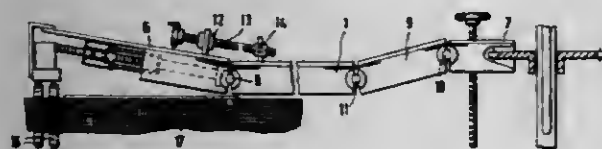
## CHAIN GUIDE FOR A STENTER

Hans Cramer, Aachen, Fed. Rep. of Germany, assignor to H. Krantz GmbH & Co., Aachen, Fed. Rep. of Germany  
Filed Jul. 25, 1979, Ser. No. 60,336  
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834007

Int. Cl.<sup>3</sup> D06C 3/02

U.S. Cl. 26—91

2 Claims



1. In a stenter, a chain guide comprising a pair of guide rail assemblies, each said guide rail assembly including a pair of

return wheels, a chain mounted on said wheels and arrayed for vertical reversal, one said wheel being carried by a head piece and the other said wheel being carried by an end piece, first pivot means connecting said head piece to said guide rail assembly for pivotal movement in an outward angular direction relative to said guide rail assembly, second pivot means interposed between said end piece and said guide rail assembly for enabling said end piece to be shifted outwardly while remaining parallel to said guide rails, a threaded nut secured to said head piece, a threaded spindle extending through said nut, a mounting member pivotally secured to said guide rail assembly, said spindle including a free end secured to said mounting member whereby the angle of said head piece relative to said guide rail assembly may be varied by rotation of said spindle.

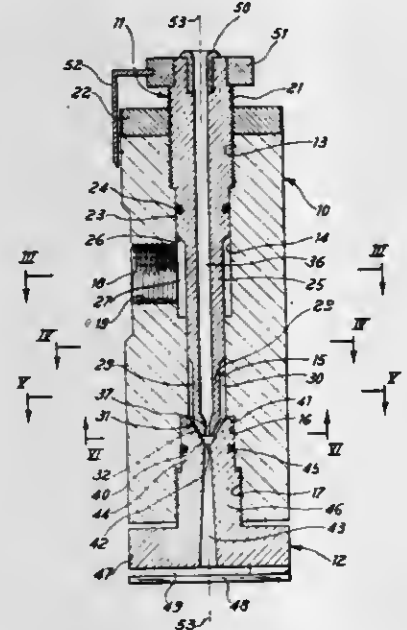
4,282,637

## NOZZLE FOR THE TEXTURIZATION OF YARNS

Giuseppe Mosseri, Monza, and Enrico Lucioni, Cesano Maderno, both of Italy, assignors to Sna Viscosa Societa' Nazionale Industrie Applicazioni Viscosa S.p.A., Milan, Italy  
Filed Sep. 21, 1978, Ser. No. 944,320  
Claims priority, application Italy, Sep. 21, 1977, 27748 A/77  
Int. Cl.<sup>3</sup> D02G 1/16

U.S. Cl. 28—254

11 Claims



1. A Venturi type nozzle for texturizing yarns, said nozzle comprising:  
a hollow body having therein an axial cavity;  
an elongated needle extending into said cavity, said needle having therethrough an axial bore for the passage of yarn, said needle having a head end having an inner orifice and an outer surface including a first convergent frustoconical surface;  
a plug connected to said body, said plug having there-through a convergent-divergent Venturi passage including a second convergent frusto-conical surface facing said first frusto-conical surface and spaced therefrom to define a substantially frusto-conical chamber, a downstream divergent frusto-conical surface, and a minimum cross-section separating said convergent and divergent frusto-conical surfaces;  
the conicities of said first and second frusto-conical surfaces being equal;  
a lateral passage extending into said body for supplying thereto a gas;  
passage means, between the interior of said body and the exterior of said needle, for directing gas supplied through said lateral passage to and through said frusto-conical chamber and through said minimum cross-section and said divergent frusto-conical surface, to thereby withdraw yarn from said orifice of said needle, said passage means

4,282,639

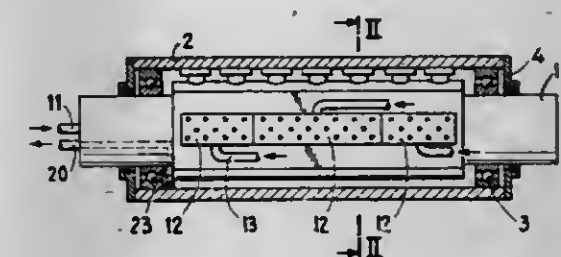
## HEATED CONTROLLED DEFLECTION ROLL

Alfred Christ, Zurich, and Rolf Lehmann, Rudolfstetten, both of Switzerland, assignors to Escher Wyss Limited, Zurich, Switzerland  
Filed Dec. 26, 1979, Ser. No. 107,135  
Claims priority, application Switzerland, Jan. 23, 1979, 640/79

Int. Cl.<sup>3</sup> B21B 13/02

U.S. Cl. 29—116 AD

10 Claims



1. A heated controlled deflection roll comprising:  
a stationary support;  
a rotatable roll shell;  
means for mounting said rotatable roll shell to be rotatable about said stationary support;  
at least one pressure element for supporting the roll shell;  
a pump device;  
pressure line means for connecting the pump device with the pressure element for the infed of a hydraulic pressurized fluid medium to the pressure element for supporting the roll shell;  
return flow line means for the fluid medium connected between the controlled deflection roll and said pump device;  
heat exchanger means for operatively connecting said return flow line means with said pressure line means and for transmitting heat from the return flow line means to the pressure line means; and  
cooler means arranged in the return flow line means after the heat exchanger means.

4,282,638

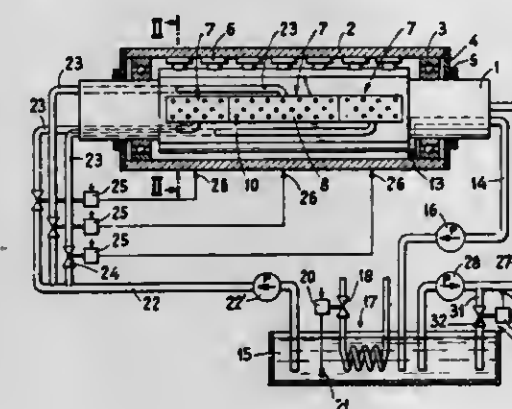
## CONTROLLED DEFLECTION ROLL

Alfred Christ, Zürich, and Rolf Lehmann, Rudolfstetten, both of Switzerland, assignors to Escher Wyss Limited, Zürich, Switzerland  
Filed Dec. 26, 1979, Ser. No. 107,134  
Claims priority, application Switzerland, Jan. 22, 1979, 603/79

Int. Cl.<sup>3</sup> B21B 13/02

U.S. Cl. 29—116 AD

17 Claims



1. A controlled deflection roll comprising:  
a stationary roll support;  
a roll shell rotatable about said stationary roll support;  
means for rotatably mounting said roll shell for rotation about said stationary roll support;  
said stationary roll support and said rotatable roll shell co-acting with one another so as to form therebetween an intermediate compartment;  
at least one spray device arranged at the stationary roll support for spraying an inner surface of the roll shell with jets of a heat carrier-liquid at a regulated temperature;  
said spray device being provided with openings distributed in accordance with a substantially uniform pattern;  
said openings serving for forming compact liquid jets extending at least in part in parallelism to one another and directed towards the inner surface of the roll shell; and  
said liquid jets deviating with respect to a normal taken at the inner surface of the roll shell by at most through an angle of 30°.

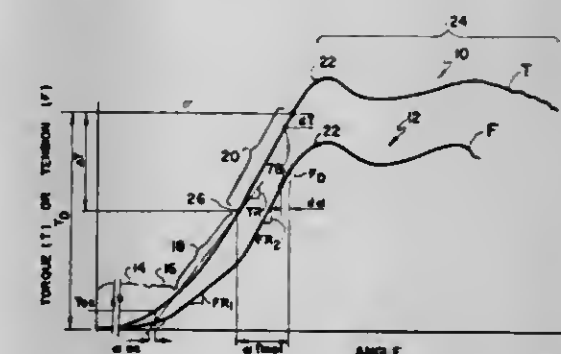
4,282,640

## TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.  
Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570, and Ser. No. 712,554, Aug. 9, 1976, abandoned. This application Apr. 19, 1979, Ser. No. 31,354  
Int. Cl.<sup>3</sup> B23P 19/06

U.S. Cl. 29—240

5 Claims



1. Apparatus for tightening a multiplicity of substantially identical joints including at least one threaded fastener through a region of relatively free rotation and no fastener stress at least partially into a region of increasing fastener stress, comprising means for applying torque to the fastener;  
means for determining a value of applied torque, variable



from joint to joint, in the region of relatively free rotation; and  
means for terminating tightening of the fastener in the region of increasing stress in response to a tightening parameter compensated by the value of applied torque in the region of relatively free rotation.

4,282,641

**METHOD OF CONVERTING MOTOR CAR**

Charles W. Phillips, Pompano Beach, Fla., assignor to Grandeur Motorcar Corp., Pompano Beach, Fla.

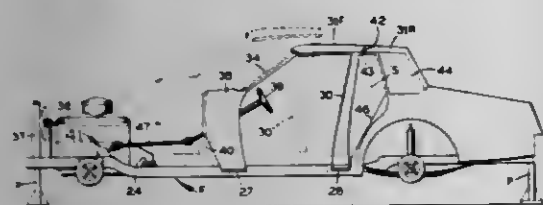
Filed Apr. 2, 1979, Ser. No. 26,750

The portion of the term of this patent subsequent to Jul. 11, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> B23P 15/00; B60P 3/42, 3/00

U.S. Cl. 29—416

5 Claims



1. A method of converting a passenger car, which has a four-door body bolted to the frame, to provide a shortened body at the back and a lengthened engine compartment at the front without structurally modifying the frame, which method comprises the steps of:

removing, by cutting the body without cutting the frame, a longitudinal segment of the roof and a longitudinal section of the floor of the car body immediately behind the door posts to sever the car body into front and rear sections; disconnecting the steering shaft from the steering gear for the front wheels;

with the front fenders and the engine compartment hood removed, unbolting the front section of the car body from the frame and displacing said front section of the car body and the steering shaft as a unit rearwardly away from the front wheels along the frame to bring the severed front and rear sections of the roof into aligned, abutting juxtaposition;

bolting the front section of the car body to the frame in its rearwardly displaced position along the frame, and joining said front and rear sections of the car body to each other at the roof and floor to provide a converted unitary car body which has been shortened immediately behind the door posts;

operatively coupling an extension shaft between the steering shaft and the steering gear for the front wheels; and attaching to the car body an engine compartment hood and front fenders which are longer than the original hood and fenders by an amount substantially equal to the length of the segment removed from the roof.

4,282,642

**METHOD OF MAKING COMPOSITE RACQUET CONSTRUCTION**

Robert E. Rodgers, Jr., 5455 Loch Lomond, Houston, Tex. 77096

Filed Nov. 1, 1979, Ser. No. 90,291

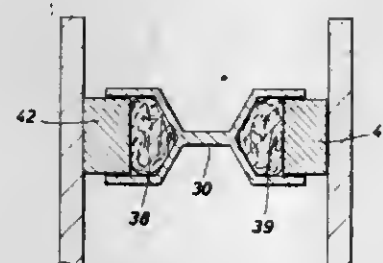
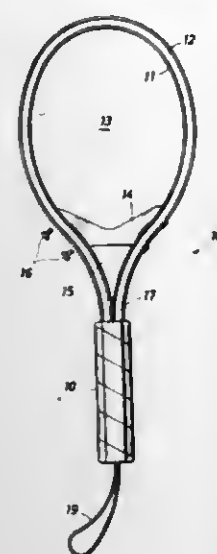
Int. Cl.<sup>3</sup> B21D 35/00

U.S. Cl. 29—469.5

10 Claims

1. A method of making a racquet comprising the steps of:  
(a) providing an extruded, substantially straight lengthwise, metal channel having cavities extending therealong;  
(b) bending the metal channel into a desired curved form of a racquet frame having a stringing surface on the outer surface and side faces having cavities and wherein the ends of the metal channel extend into a handle on the racquet;  
(c) positioning a continuous lengthwise strip of uncured,

pliable laminate material in at least one of said cavities of the extruded curved metal channel; and



(d) curing the cavity located laminate material to form laminations of the plastic material to the metal channel.

4,282,643

**METHOD OF MAKING METAL GASKETS**

Koyu Yamasaki, Obu, and Yousuke Iino, Nagoya, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

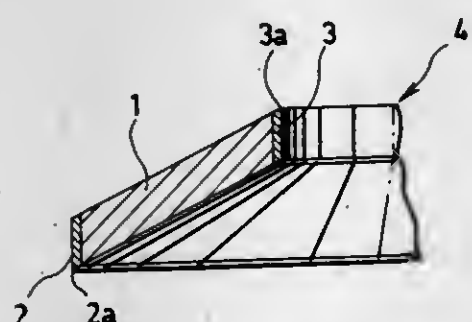
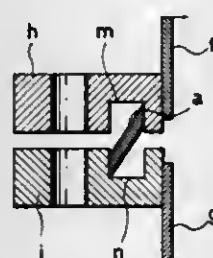
Filed Jun. 5, 1978, Ser. No. 912,215

Claims priority, application Japan, Jun. 9, 1977, 52-67326

Int. Cl.<sup>3</sup> B22D 11/126

U.S. Cl. 29—527.2

4 Claims



1. A method of making a conical metal gasket which comprises providing a hollow cylindrical blank formed of a first metallic material, first coating said hollow cylindrical blank on its inner and outer cylindrical surfaces with a uniform thick-

ness of a second metallic material to form a cylindrical inner surface coating layer and a cylindrical outer surface coating layer on said inner and outer cylindrical surfaces, said second metallic material being softer than said first metallic material, then conically cutting the wall and said inner and outer surface coating layers of said coated cylindrical blank along an angle with respect to the central axis of the cylindrical blank to form a cut surface with sharpened end edges of said coating layers, said sharpened end edges lying on a uniform conical surface of revolution about the central axis of said cylindrical blank, and then conically cutting the wall and said inner and outer surface coating layers of the cylindrical blank at a second location to form a second cut surface, said second cut surface being parallel to said first cut surface.

4,282,644

**TOOL FOR ASSEMBLING CONDUCTORS TO CONNECTOR ELEMENT**

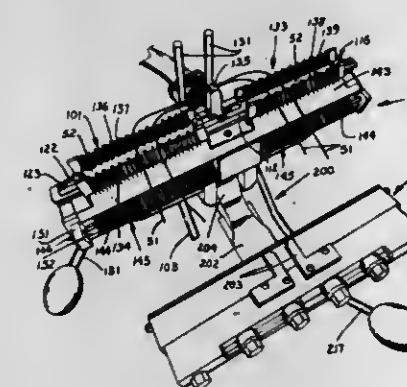
Edwyn H. Petree, Dunwoody, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,161

Int. Cl.<sup>3</sup> H01R 43/04

U.S. Cl. 29—566.3

6 Claims



1. A tool for severing end portions of each of a plurality of insulated conductors and for securing the plurality of conductors to an elongated connector element having a plurality of conductor-receiving portions, said tool comprising:

a nest for holding an elongated connector element having a generally rectangular cross section and having conductor-receiving recesses formed along side surfaces thereof; means disposed on at least one side of said nest for holding a plurality of conductors spaced along the connector element transversely across an upper surface of the element and aligned with conductor-receiving recesses of the connector element preparatory to the conductors being severed and secured to the connector element; cutting means upstanding from said nest adjacent that side surface of the connector element which is to secure a free end portion of each of the conductors;

forming means including a cavity adapted to receive a portion of the connector element which includes the conductor-receiving recesses and cooperating with said cutting means for causing a free end portion of each conductor to be severed so that a remaining free end portion of each has a predetermined length to be secured to the one side surface of the connector element and for causing an end portion of each of the conductors to be formed into a generally U-shaped configuration within an associated aligned one of the conductor-receiving recesses of the connector element;

means connected movably to said nest for mounting said forming means for pivotal movement from an open position which permits the connector element to be loaded into said nest to a closed position above said nest and for reciprocal movement toward and away from said nest; means capable of being interposed between said nest and said mounting means for spacing said forming means at each of at least two predetermined distances from said nest; and means rendered effective subsequent to said spacing means being interposed between said nest and said mounting

means for moving said forming means toward said nest to cause the conductor end portions to be formed partially about the connector element, cut and then formed completely into the U-shaped configuration about the connector element.

4,282,645

**METHOD OF ASSEMBLING AN ENCAPSULATED CHIP CAPACITOR**

David G. Thompson, Williamstown, Mass., and John T. Ogilvie, Bennington, Vt., assignors to Sprague Electric Company, North Adams, Mass.

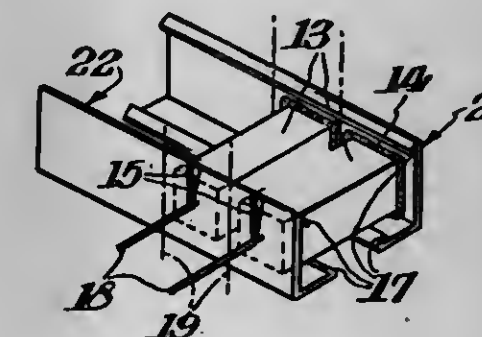
Division of Ser. No. 929,760, Jul. 31, 1978, Pat. No. 4,247,883.

This application Oct. 22, 1979, Ser. No. 86,843

Int. Cl.<sup>3</sup> H01L 21/64

U.S. Cl. 29—570

8 Claims



1. A method for assembling and encapsulating chip capacitors comprising providing two metal channels of substantially L-shaped cross-section, each having a vertical plate portion and a horizontal plate portion forming a right angle along a common edge, said channels facing each other to serve as electrodes, then placing capacitor bodies in side-by-side relationship and spaced from each other in and between said channels, electrically connecting the cathode of each body to one of said channels, electrically connecting the anode of each body to the other of said channels, then filling the channel assembly with a curable insulating material to encapsulate said bodies, curing said material, and then separating the encapsulated capacitors from each other into individual units.

4,282,646

**METHOD OF MAKING A TRANSISTOR ARRAY**

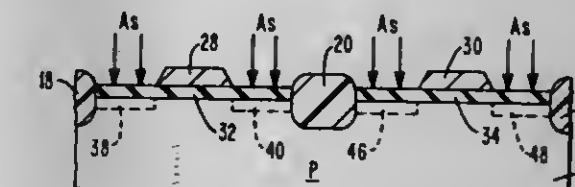
Andres G. Fortino, Essex; Henry J. Geipel, Jr., Essex Junction; Lawrence G. Heller, Essex Junction, and Ronald Silverman, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,282

Int. Cl.<sup>3</sup> H01L 21/26

U.S. Cl. 29—571

8 Claims



1. A method of making an array of transistors which includes:

forming a plurality of gate electrodes insulated from a semiconductor substrate having a given type conductivity, introducing a first impurity having a conductivity opposite to that of said given type conductivity into regions of said substrate defined by an edge of each of said gate electrodes, introducing a second impurity into selected ones of said



regions along the edge of their associated gate electrodes, said second impurity having an opposite conductivity to and a significantly higher diffusivity than that of said first impurity, and heating said substrate to drive said second impurity through said substrate under the associated gate electrodes to decrease the conductivity of said substrate under said associated gate electrodes.

4,282,647

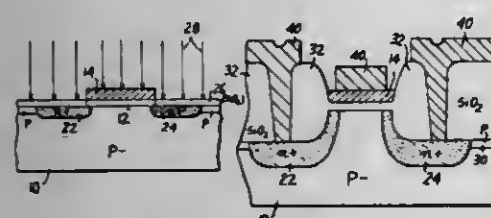
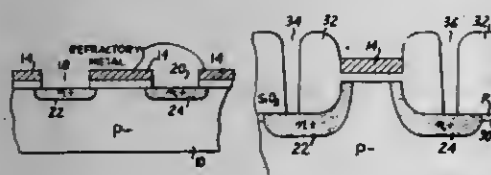
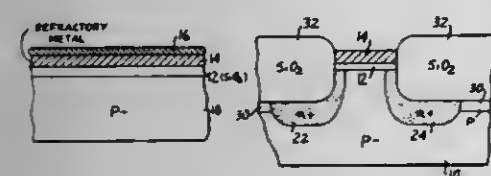
# METHOD OF FABRICATING HIGH DENSITY REFRACTORY METAL GATE MOS INTEGRATED CIRCUITS UTILIZING THE GATE AS A SELECTIVE DIFFUSION AND OXIDATION MASK

Paul Richman, St. James, N.Y., assignor to Standard Microsystems Corporation, Hauppauge, N.Y.

Continuation-in-part of Ser. No. 893,336, Apr. 4, 1978, abandoned. This application Sep. 26, 1979, Ser. No. 79,163 Int. Cl.<sup>3</sup> H01L 21/223, 21/283

U.S. Cl. 29—571

11 Claims



1. A process for fabricating as MOS device comprising the steps of (a) providing a substrate of a first conductivity type, (b) forming on said substrate an insulating layer and an overlying refractory metal layer, (c) selectively removing portions of said refractory metal and the underlying portion of said insulating layer to define openings at the locations of source and drain regions, (d) introducing impurities of an opposite conductivity type through said openings into the exposed upper surface of said substrate to form source and drain regions, (e) removing the portions of said refractory metal remaining over the field regions while allowing the refractory metal to remain over predetermined gate regions; (f) removing the exposed insulating regions and then oxidizing the surface of said substrate to form an oxide region at locations other than those protected by the remaining portion of refractory metal, (g) forming a thick oxide layer by thermal oxidation in areas not protected by said refractory metal, and (h) selectively forming a metalization pattern over said thick oxide regions and over said refractory metal.

4,282,648

# CMOS PROCESS

Kenneth K. Yu, Portland; Mark T. Bohr, Aloha, and Mark B. Seidenfeld, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

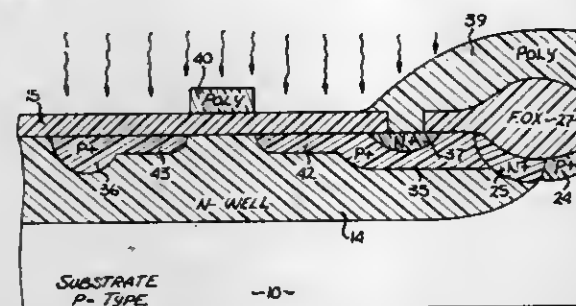
Filed Mar. 24, 1980, Ser. No. 133,580 Int. Cl.<sup>3</sup> H01L 21/22

U.S. Cl. 29—571

11 Claims

1. In the fabrication of CMOS integrated circuits, a process for forming a channel stop in a substrate, which includes an

n-type region and a silicon nitride layer, comprising the steps of: defining an opening through said silicon nitride layer, said opening being formed at a peripheral area of said n-type region; doping said substrate with a p-type dopant through said opening; and



forming an oxide on said substrate at said opening, such that a first region is formed from accumulated n-type dopant from said n-type region and a second region is formed adjacent to said first region from p-type dopant from said doping step; whereby said first and second regions form a channel stop.

4,282,649

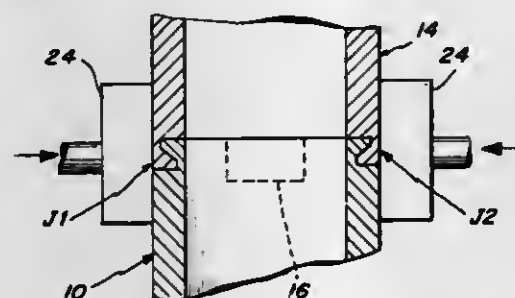
# INTERLOCKED WAVEGUIDE ASSEMBLY

Ronald A. Wilson, Medway, Mass., assignor to Microwave Development Laboratories, Needham, Mass.

Continuation-in-part of Ser. No. 900,736, Apr. 27, 1978, abandoned. This application Aug. 13, 1979, Ser. No. 66,036 Int. Cl.<sup>3</sup> F16I 13/08

U.S. Cl. 29—600

12 Claims



1. A method of joining sections of hollow rectangular waveguide, which joined sections abut end-to-end, the mated ends of the sections having cooperating means along the broad walls which form interlocking joints between the sections, one of the sections having locating tabs extending from its narrow walls and overlapping the adjacent narrow walls of the mated section, said method comprising the steps of;

providing at least one of the interlocking means of at least one section in a yieldable state, providing said at least one of the interlocking means of the one section opened, joining said at least one of the interlocking means of the one section opened, joining the sections with a loose fit therebetween, and applying pressure at the joint to close the interlocking means of one section against the interlocking means of the other section with the inner walls of the joined sections at the joint being coplanar forming a smooth contiguous inner hollow waveguide surface, wherein said joint is formed by at least one leg having contiguous thin-walled and thick-walled sections with the thin-walled section having a thickness in the range of 0.005 to 0.025 inch and with the thick-walled section having a thickness less than the waveguide wall thickness.

4,282,650

# RAZOR BLADE ASSEMBLY

Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

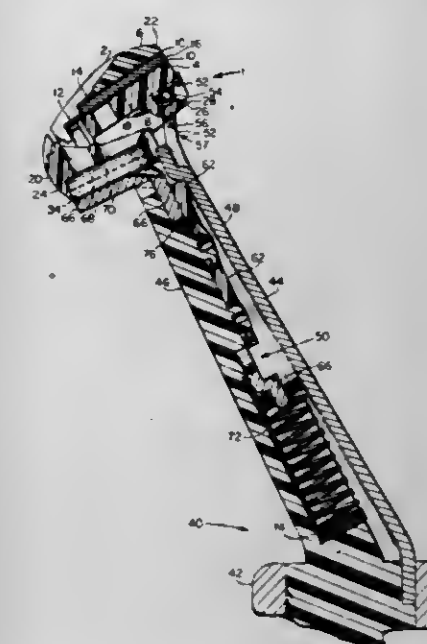
Filed Aug. 31, 1979, Ser. No. 71,711 Int. Cl.<sup>3</sup> B26B 21/06, 21/52

U.S. Cl. 30—47

1 Claim



1. A razor blade assembly comprising a first body portion having blade means permanently fixed therein, a second body portion disposed forwardly of said first body portion and having a guard means extending therefrom, said first body portion being pivotally connected to said second body portion, pivot connecting means comprising a projection disposed centrally on an underside of said first body portion, said projection being configured to form a recess between said projection and said underside of said first body portion, said recess presenting an opening rearwardly of said assembly adapted to receive a razor handle pivot connection portion, and a fixed connecting means depending from said second body portion and comprising slide means extending rearwardly from said guard means and adapted to slidably engage complementary slide means on said razor handle.



on a bar, said bar being reciprocally movable in said neck portion.

4,282,652

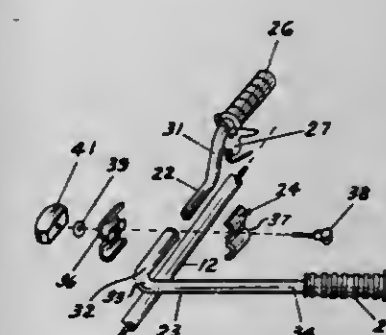
# APPARATUS FOR CUTTING VEGETATION

George C. Ballas, Sr., Houston, Tex., assignor to Emerson Electric Co., St. Louis, Mo.

Filed May 13, 1977, Ser. No. 796,906 Int. Cl.<sup>3</sup> A01D 56/00

U.S. Cl. 30—276

27 Claims



1. In an apparatus for cutting vegetation having a support tube including a substantially straight portion and the support tube carrying a motor, a drive connection and a cutting head mounted for rotation about an axis intersecting the straight portion of the support tube, the head carrying a cutting element extending within a cutting plane, and the motor, drive connection and cutting head providing a mass distribution wherein the center of gravity of the apparatus resides along the straight portion of the support tube and at a location spaced from the cutting head, the improvement comprising:

(a) handle means secured by a clamp upon the straight portion of the support tube adjacent the center of gravity; (b) said handle means formed of first and second handle members with a rotary interconnection adjacent the clamp on the support tube; (c) said first handle member extending in a direction away from said cutting head but in parallel relationship with the support tube and said first handle member having an intermediate offset portion adjacent a hand grip at the free end thereof; (d) said second handle member extending in a first portion from said clamp toward said cutting head and having an arcuate second portion extending laterally from the first portion to an angled third portion carrying a hand grip at the free end thereof; and

4,282,651

# RAZOR HANDLE

Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Aug. 31, 1979, Ser. No. 71,476 Int. Cl.<sup>3</sup> B26B 21/06, 21/22

U.S. Cl. 30—89

5 Claims

1. A razor handle for use in conjunction with a replaceable blade assembly, the handle comprising a grip portion, a neck portion extending from said grip portion, a pivot connecting means extending from a free end of said neck portion and adapted to engage said blade assembly to form a pivotal connection therebetween, and a fixed connecting means extending from said free end of said neck portion and adapted to fixedly interconnect with mounting means on said blade assembly, said



(e) said first and second handle members having lengths and non-linear portions arranged so that the hand grips reside spacially in a user's hands when his arms hang downwardly in a natural position along his body with said cutting head positioned substantially directly in front of the user's body.

4,282,653

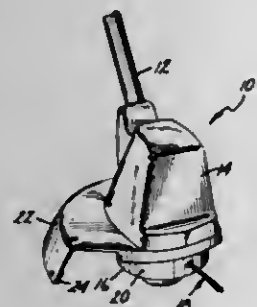
## CUTTING ELEMENT FOR VEGETATION LINE TRIMMERS

Robert C. Comer, Hopkins, and Henry B. Tillotson, Minneapolis, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Jan. 15, 1979, Ser. No. 3,242  
Int. Cl.<sup>3</sup> A01D 50/00

U.S. Cl. 30—276

11 Claims



1. A cutting assembly for use in a vegetation line trimmer, comprising:
  - a filament holder mounted to the vegetation line trimmer for rotation about an axis; and
  - a plurality of associated cutting filaments the free ends of which emanate from a common situs at the outer surface of said filament holder, said plurality of filaments disposed for radial extension from said outer surface when said filament holder is made to rotate about said axis.

4,282,654

## MEASURING AND/OR TRACING DEVICE

Karl Reiff, Plochingen; Wolfgang Wagner, Warnau, and Klaus Masur, Esslingen, all of Fed. Rep. of Germany, assignors to C. Stiefelmayer KG, Fed. Rep. of Germany

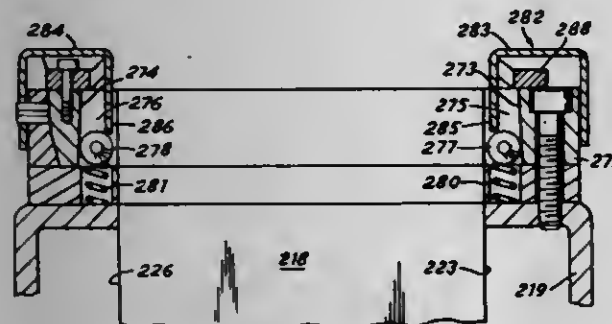
Division of Ser. No. 778,808, Mar. 17, 1977, Pat. No. 4,149,317.  
This application Jan. 9, 1979, Ser. No. 2,162

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1976, 2613451

Int. Cl.<sup>3</sup> G01B 3/00

U.S. Cl. 33—1 M

5 Claims



1. In a measuring and tracing device, of the kind having:
  - (i) a vertical column
  - (ii) a transverse sliding unit secured to said column and movable in a vertical direction,
  - (iii) a cross arm held by said unit and movable horizontally
  - (iv) a holder on the end of said cross arm for a measuring and tracing tool
  - (v) a counterweight to balance the transverse sliding unit, said counterweight being disposed inside the column so that it can move freely and being attached to the transverse sliding unit by a cable passing over a guide roller at

the upper end of the column, the improvement which consists in that:

- (a) a safety braking device is attached to the transverse sliding unit and acts in conjunction with the external surfaces of the column, the cable being secured to the braking device so that, in consequence of the cable tension exerted, the braking device is held in a disengaged position out of contact with the outer surfaces of the column, whereas when the cable tensions falls, the braking device drops automatically into braking position and engages with the outer surfaces of the column, thereby preventing movement,

- (b) the column is of rectangular cross-section and has two outer surfaces opposite and approximately parallel to one another, the braking device having a pivoted frame mounted on the transverse sliding unit so that it can rotate around an axis disposed at a distance from the center of the column, the cable being attached to one side of the frame at a spacing from the pivoting axis, the other side of said frame having fitted thereto at a spacing from the pivoting axis

at least one vertical brake adjusting spring acting in the same direction as the force of the cable, said pivoted frame when rotating about the pivoting axis into the disengaged position and the braking position striking against braking elements fitted in the area of two opposite outer faces of the column and located, in the disengaged position, substantially out of contact with and at a spacing from the corresponding outer surface and, in the braking position, in contact with the corresponding outer surface in such a way as to prevent movement, said braking elements being cylindrical gripping rollers fitted in the region of both mutually opposite outer surfaces of the column.

4,282,655

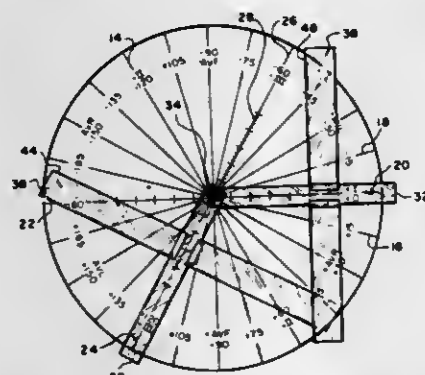
## CARDIAC AXIS CALCULATOR

Daniel Tinman, 2656 Hampshire Rd., Cleveland Heights, Ohio 44106

Filed Jan. 11, 1980, Ser. No. 111,243  
Int. Cl.<sup>3</sup> G01B 3/00

U.S. Cl. 33—1 C

6 Claims



1. A device for determining the mean cardiac axis in connection with an electrocardiograph comprising:
  - a substantially planar disc shaped member having a plurality of radial lines thereon;
  - a pair of radially extending arms pivotally attached to a point on said disc shaped member, and
  - a pair of elongated slides, each slide being carried by a different one of said arms and being adapted to slide radially along the length of the arm, each slide including an elongated element thereon which is substantially perpendicular to its respective arm.

4,282,656

## CYLINDER FOR A PAPER MACHINE, OR THE LIKE

Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

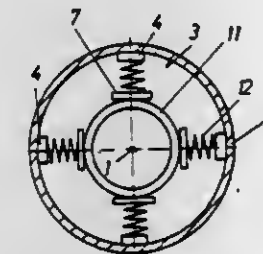
Filed Nov. 6, 1979, Ser. No. 91,397

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849454

Int. Cl.<sup>3</sup> F26B 25/20

U.S. Cl. 34—110

20 Claims



1. A cylinder for use in paper making machines, or the like, comprising:

- a hollow cylinder having an inner surface; a plurality of ridges extending in the longitudinal direction of said cylinder, applied against said inner surface of said cylinder and annularly arrayed in spaced apart relationship around said inner surface of said cylinder;
- a common support in said cylinder for all said ridges; a respective bar extending longitudinally of said cylinder and interposed between said common support and each said ridge; each said bar being in engagement with said common support; a plurality of resilient connections at longitudinally spaced apart locations between each said bar and a said ridge where that said bar is interposed between said common support and that said ridge for resiliently urging said ridges in a direction radially outwardly of said cylinder; said common support restraining motion of each said bar radially inwardly with respect to said cylinder.

4,282,657

## HEEL RESTRAINT WITH AN ADJUSTABLE AND FLEXIBLE CLOSURE ASSEMBLY FOR SHOES

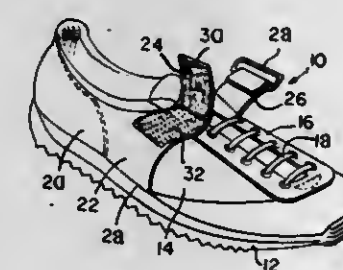
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204

Filed Mar. 16, 1979, Ser. No. 20,990

Int. Cl.<sup>3</sup> A43B 11/00, 5/00

U.S. Cl. 36—50

31 Claims



1. A shoe having a sole, uppers and a variable opening, the improvement including a heel counter adjacent the rear portion of said uppers, said heel counter formed with at least one adjustable and flexible closure assembly located adjacent the rear and side portions of said uppers forming a heel restraint, said closure assembly comprising:
  - a flexible, multi-adjustable, separable fastener means having first and second fastening members including arrays of complementary, coating flexible gripping elements for securing said closure assembly;
  - a fastener strap having a fixed portion and a free end, said free end including said first fastening member, said second

fastening member positioned adjacent said fixed portion of said fastener strap; and anchor means having a fixed portion and a free end, said free end having an opening through which the free end of said fastener strap passes, permitting adjustment to maintain a precise desired tautness of said closure assembly to fasten said shoe.

4,282,658

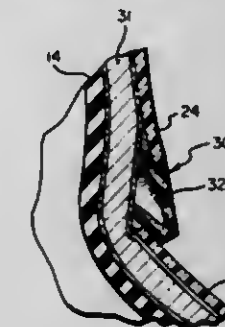
## ANTI-BOWING FORM FITTING BOOT

Chris A. Hanson, Boulder, and George S. Henderson, Netherlands, both of Colo., assignors to Hanson Industries Incorporated, Boulder, Colo.

Filed Feb. 20, 1980, Ser. No. 123,049  
Int. Cl.<sup>3</sup> A43B 5/04

U.S. Cl. 36—121

9 Claims



1. In a boot that covers the ankle of the wearer, said boot including a vamp and an upper instep portion, an improvement for preventing bowing of the boot on either boot side adjacent the wearer's ankles, said improvement comprising:
  - said upper instep portion extending downwardly to overlie a portion of said vamp;
  - a pleat member interconnecting said upper instep portion and said vamp portion; and
  - said pleat member including an aperture extending transversely across the front of said boot and between said upper instep portion and said vamp portion.

4,282,659

## SPORTS BOOT STRAP CLOSURE SYSTEM

Rene Bourque, Duvernay, and Lorne S. Overbaugh, Burlington, both of Canada, assignors to Gamebridge, Inc., Quebec, Canada

Filed Aug. 21, 1979, Ser. No. 68,400  
Int. Cl.<sup>3</sup> A43B 5/00, 11/00

U.S. Cl. 36—121

12 Claims



1. A closure system for a front entry boot having a top, an ankle portion with a back, a front opening, and sides extending above the ankle bone of a wearer, and an upper with a front opening, comprising:
  - (a) a substantially flat flexible strap having two ends;
  - (b) a plurality of guide means on the upper disposed on opposite sides of the front opening for receiving and guiding said strap, said guide means constructed such that said



strap can move therethrough, said strap being laced through said guide means in such a direction that the ends of said strap are generally near said top of the boot;

- (c) a hook means on the side of the ankle portion;
- (d) fastening means on said strap, said fastening means including a strap adjusting part through which said strap passes, said strap adjusting part releasably retaining said strap in a fixed relationship with said fastening means;
- (e) attaching means on said strap between said guide means and said fastening means, said attaching means releasably attaching said strap to said hook means, a length of said strap passing across said ankle portion, and passing through and reversing at said attaching means, said strap arranged such that tension applied to said strap at either said fastening means or said attaching means will tend to close said front openings and tighten said length of said strap across said ankle portion.

4,282,660

## LEG-SIZE ADJUSTING FORM FITTING BOOT

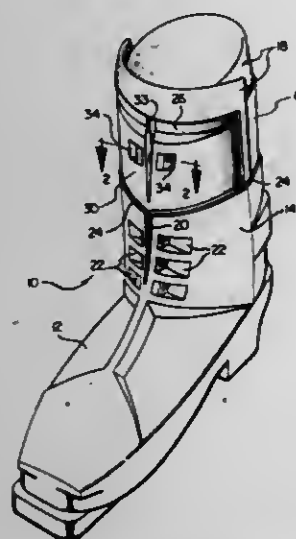
Chris A. Hanson, Boulder, Colo., assignor to Hanson Industries Incorporated, Boulder, Colo.

Filed Feb. 20, 1980, Ser. No. 123,048

Int. Cl.<sup>3</sup> A43B 5/04

U.S. Cl. 36—121

5 Claims



1. In a boot that includes a substantially rigid shell for covering at least to the ankle of the wearer, and a substantially rigid rear tongue member extending upwardly from the shell along the back of the wearer's lower leg, the improvement comprising:

- an elongated, substantially rigid, curved tab member having a thin lower portion adapted for insertion into said boot shell in the instep area and a thick walled upper portion extending from the top of said shell in the area of the front of the wearer's lower leg opposite said substantially rigid rear member;
- means for securing said tab lower portion to said shell;
- said tab upper portion including a slit extending downwardly from the top of said thick walled tab upper portion; and
- adjustable threaded means on said thick walled tab upper portion extending across said slit to vary the width of said slit in conformance with the lower leg size of said wearer.

4,282,661  
TOWING SUCTION DEVICE FOR A DREDGING CRAFT  
Willem Nagelkerke, Oosterhooft, Netherlands, assignor to B.V. Scheepswerf en Reparatie bedrijf "Breebot", Dordrecht, Netherlands

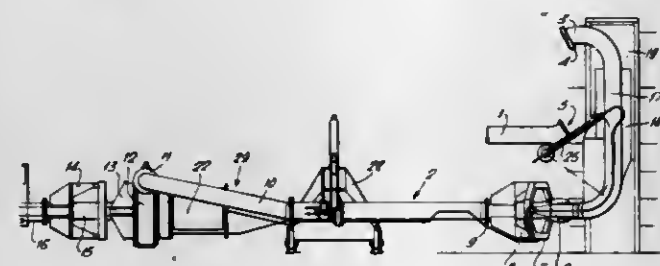
Filed Oct. 30, 1979, Ser. No. 89,445

Claims priority, application Netherlands, Nov. 1, 1978, 7810861

Int. Cl.<sup>3</sup> E02F 3/90

U.S. Cl. 37—58

11 Claims



1. A suction device for a dredging craft comprising:
- a first tube affixed to said craft for receiving dredging discharge;
- a second tube having an upper end and a lower end, said second tube being positionable in a dredging position in which said tube extends along a side of the ship for inserting the lower end thereof in the water, said second tube having a dredging pump connected in the portion thereof that is immersed in the water when said second tube is in the dredging position; and
- a displaceable tube element having an outboard end coupled to said second tube and an inboard end coupleable to said first tube, said tube element being displaceably mounted on the craft for coupling and disconnection movement generally transversely of the side of the craft between a first position in which said inboard end is coupled to said first tube for delivering dredging discharge and a second position in which said inboard end is disconnected from said first tube.

4,282,662

## ROTARY TRENCH DIGGING MACHINE

Louis Zucco, Maubourguet, France, assignor to Roger Bourgela, Mezin Sainte Maure de Peyriac, France

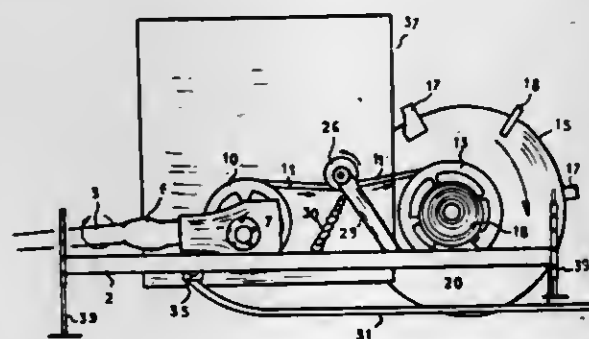
Filed Dec. 28, 1979, Ser. No. 108,038

Claims priority, application France, Jun. 30, 1978, 78 20435; Apr. 24, 1979, 79 10973

Int. Cl.<sup>3</sup> E02F 5/08

U.S. Cl. 37—94

10 Claims



1. A trench-digging machine, normally movable in a forward direction, comprising in combination:
- a frame,
- rotatable soil-moving means mounted on said frame for digging a trench in the soil, and including a disc equipped with cutter-means mounted on its periphery, thereby operatively throwing up earth,
- transmission-gear means mounted on said frame, coupled to said rotatable soil-moving means, and adapted to be pow-

ered by external drive means, said external drive means including a tractor,

control means, including ski-means mounted substantially horizontally on the underside of said frame to set the depth of the trench cut by said soil-moving means,

first and second supports for said ski-means located upstream and downstream of the cutter means—equipped disc, respectively, as defined by said forward direction of movement,

at least partially curved soil-deflector means mounted on said frame for deflecting earth operatively thrown up by said soil moving means,

rotatable and vertically movable trench side-surface processing means, including two rotatable grinding discs coaxially mounted on said frame downstream of said soil moving means for smoothing the side surfaces of said trench, respectively, said grinding discs being adapted to be powered by said external drive means, each grinding disc having a outwardly facing convex portion, and resilient means interposed between said grinding discs for urging them apart.

4,282,664

## DIPPER DOOR RETAINER

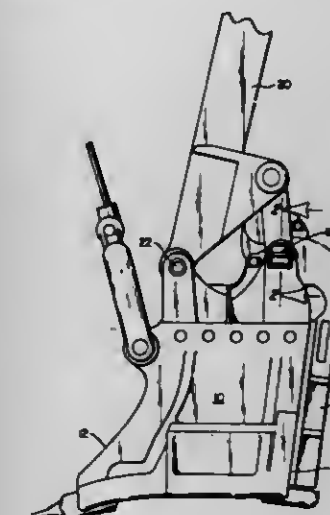
Arthur M. Thiele, Park Forest, and Herman A. Fabert, Jr., Homewood, both of Ill., assignors to Abex Corporation, New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,885

Int. Cl.<sup>3</sup> E02F 3/46, 3/81

U.S. Cl. 37—118 R

4 Claims



1. A fastening device for pivotally attaching a power shovel dipper to a power shovel handle and for pivotally attaching a door to the dipper, characterized by a first member of the fastening device, the first member pivotally attaching the dipper to the handle about a horizontal axis, a second member of the fastening device, the second member pivotally attaching the door to the dipper about said axis, wherein the first member can be removed independently of the second member to permit the dipper to be removed from the handle independent of the removal of the door from the dipper.

4,282,663

## TRACK WORKING MACHINE WITH A BALLAST PLOW ARRANGEMENT

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

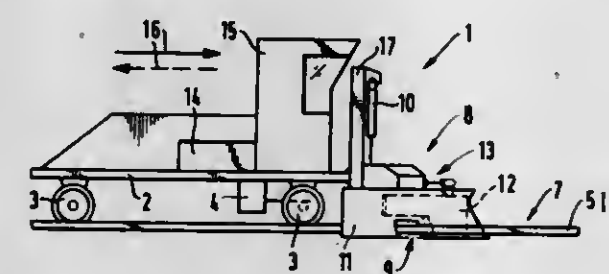
Filed Dec. 17, 1979, Ser. No. 104,000

Claims priority, application Austria, Jan. 16, 1979, 324/79

Int. Cl.<sup>3</sup> E01B 27/04

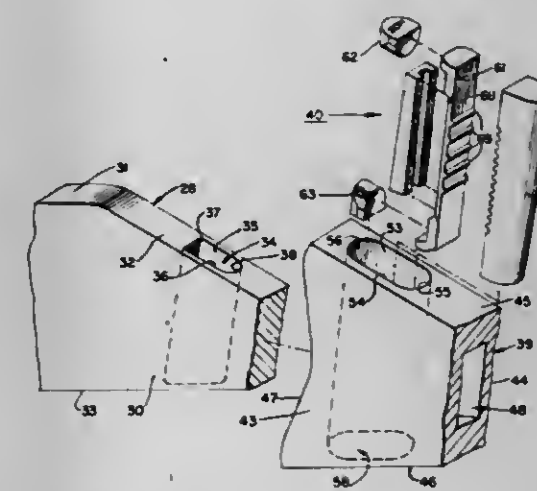
U.S. Cl. 37—104

8 Claims



1. A track working machine comprising a ballast plow arrangement for distributing and profiling the ballast of a railroad track including two rails, the machine having a frame with a central axis extending between and substantially parallel to the rails, the ballast plow arrangement comprising

- (a) two plows arranged on the machine frame for independent vertical adjustment, each of the plows being constituted by
- (1) an integral plow plate bridging a respective one of the track rails and extending transversely to the central axis into the range thereof, the plow plates having adjacent ends in the range of the central axis and defining an acute angle with each other to form a plow arrangement extending over substantially the entire width of the track, and
- (2) a ballast regulating guide plate mounted on each plow plate end for selective adjustment between a rest position wherein the ballast regulating guide plate is fully covered by the plow plate on which it is mounted, seen in the direction of machine elongation, and an operating position wherein the ballast regulating guide plate projects beyond the central axis and the plow plate on which it is mounted.



1. A tooth assembly for a working implement having a tooth shank provided with an opening therethrough comprising a tooth member mountable on said tooth shank, said tooth member having a socket for receiving said tooth shank therein and a pair of aligned openings registerable with said tooth shank opening when said tooth member is mounted on said tooth shank, and a pin assembly receivable in said registered openings in said tooth shank and tooth member when said tooth



member is mounted on said tooth shank, said pin assembly including a locking pin retainer insertable in said aligned openings, having a resilient pad engaging said tooth shank when said tooth member is mounted on said tooth shank, shims disposable between said tooth member and said locking pin retainer when said tooth member is mounted on said tooth shank and said locking pin retainer is inserted in said aligned openings, and a locking pin insertable in said aligned openings when said tooth member is mounted on said tooth shank, said locking pin retainer is inserted in said aligned openings and said shims are disposed between said tooth member and said locking pin retainer, engaging said locking pin retainer and tooth shank in wedging relation to urge said tooth-member in positive engagement with said tooth shank.

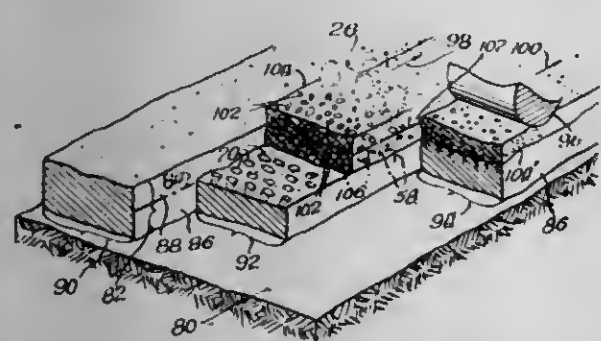
4,282,666

# METHOD AND APPARATUS FOR BREAKING HARD SNOW

Claude R. Brandt, R.D. 2, Corinth Rd., Glens Falls, N.Y. 12801  
Continuation-in-part of Ser. No. 593,732, Jul. 7, 1975,  
abandoned. This application Nov. 13, 1979, Ser. No. 93,225  
Int. Cl.<sup>3</sup> E01M 5/00

U.S. Cl. 37-195

9 Claims



1. A method of breaking hard snow in the form of a continuous main layer of substantial depth on the ground, comprising the steps:

pulling a rotary spiked tool, by and after a traction implement, having a plurality of spikes distributed around and along the tool, and thereby driving the spikes into the main layer to a predetermined depth and forming holes by the spikes reaching to that predetermined depth, so forming the holes of about two inches in width at the top, and tapering downwardly, the forming of the holes resulting in loosening and dislodging snow therefrom in the form of chunks, and smaller pieces, at least a substantial portion of the chunks being of a transverse width similar to that of the holes at the top of the holes.

forming a top layer of said loosened and dislodged snow, continuous in extent and being less, in quantity of mass, than the total mass of the main layer, and retaining a continuous bottom layer of hard snow containing the holes, the top layer thereby lying on the bottom layer, and effecting the falling of the chunks and loosened snow, in part, into the holes and holding them in position on the bottom layer by the holes, against forces tending to dislodge the loosened snow from that position on the bottom layer.

4,282,667

# ADVERTISING POSTER DISPLAY FRAME

Gaston M. Glade, 4 Bis, rue Jean-Jaures, 77410 Claye Souilly, France

Filed Oct. 25, 1979, Ser. No. 88,001

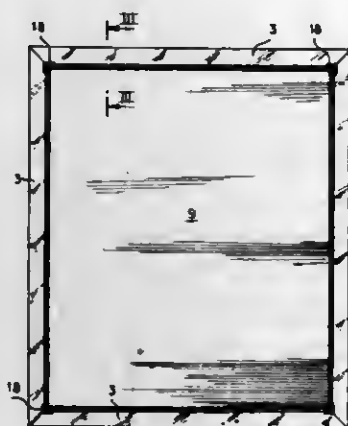
Int. Cl.<sup>3</sup> G09F 3/18

U.S. Cl. 40-16

7 Claims

1. A document display unit, characterized in that it comprises a support plate, a framing border dimensioned so that its outer edge registers with said plate and its inner edge overlies said plate a selected distance from the plate edge, and mouldings having a resilient, generally U-shaped cross-section whose legs are shorter than the width of the border for engaging over

the peripheral edge margins of said registering plate and border, said mouldings having inwardly projecting longitudinal ridges so that when the mouldings are engaged over the edge margins of the registering plate and border, they clamp the



4,282,668

# MOUNTING SYSTEM AND METHOD

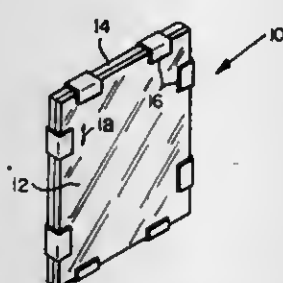
Robert M. Jolkovski, Arlington, Mass., assignor to Product Planning & Development, Inc., Boston, Mass.

Filed Nov. 20, 1979, Ser. No. 95,997

Int. Cl.<sup>3</sup> G09F 1/12

U.S. Cl. 40-155

11 Claims



1. A self-tightening frame clip mounting system comprising:
  - a U-shaped frame clip adapted to be slipped over a sandwich-like structure including an unprepared pierceable backing material;
  - a plow-type anchor assembly including a base having a front portion and teeth protruding from said base and angled downwardly towards said front portion; and,
  - spring biasing means connected between said front portion and said frame clip so as to cause self-tightening without clip dislocation when the teeth of said plow-type anchor are pressed into said backing material.

4,282,669

# ILLUMINATED PICTURE FRAME

Jose Rienmont, 60 E. 34 St., Hialeah, Fla. 33013

Filed Feb. 4, 1980, Ser. No. 118,087

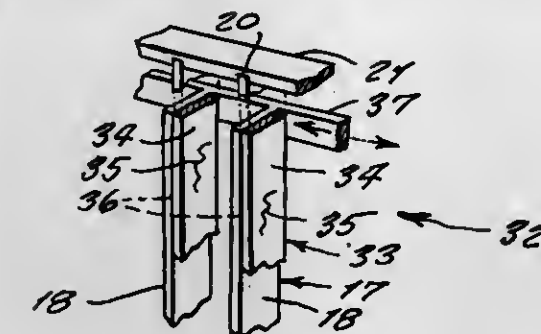
Int. Cl.<sup>3</sup> G09F 19/14; A47G 1/06; G09F 11/30, 13/00

U.S. Cl. 40-453

1 Claim

1. An illuminated picture frame, displaying a plurality of pictures, comprising, in combination, a rectangular frame around a central opening, a box behind said opening being open on its front side to said opening, a slotted, stationary, first grate in said box, a first picture on a front side of a rear wall of said box, a second and a third picture carried by said first grate, said first grate comprising a row of equally spaced-apart, equal width, flat slats positioned at right angles to said rear wall, said

second picture comprising a plurality of picture sections on a left side of said slats, while said third picture comprises a plurality of picture sections on a right side of said slats; a slotted, slidable, second grate comprising a plurality of equally spaced-apart, equal width, flat slats, slidable adjacent either said left or right sides of said first grate slats, and cover respec-



tively either said second or third picture, and a fourth and fifth picture carried by said second grate, said fourth picture comprising a plurality of picture sections on a left side of said second grate slats, while said fifth picture comprises a plurality of picture sections on a right side of said second grate slats; and fluorescent lamp means carried on said frame for illumination of said pictures.

4,282,670

# CONSUMABLE CASELESS AMMUNITION AND FIREARM FOR UTILIZING SAME

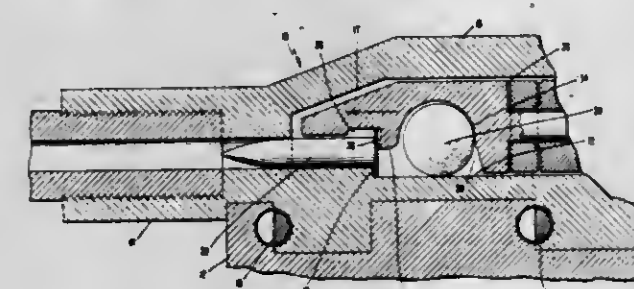
Ralph D. Junker, Columbus, N.C., assignor to Junker Systems, Incorporated, Tryon, N.C.

Filed Aug. 1, 1979, Ser. No. 62,794

Int. Cl.<sup>3</sup> F41C 11/00, 15/12; F42B 11/16

U.S. Cl. 42-16

22 Claims



1. A firearm for firing projectiles by the detonation thereof behind of a separate propellant cartridge, the projectile carrying a primer charge for igniting the propellant cartridge, said firearm comprising:
  - a body including a receiver, a barrel connected to said receiver, and a firing chamber communicating with a bore of the barrel;
  - means for introducing a projectile and a propellant cartridge therebehind into said body;
  - a bolt slidably mounted in said body, said bolt including laterally open pocket means for receiving said introduced projectile and cartridge and for advancing them to an armed position within said firing chamber;
  - a surface of said bolt being arranged to ignite said primer charge when said projectile is in said armed position.

4,282,671

# BOLT-ON FORE STOCK

John C. Wood, Baltimore, and Charles W. Thompson, Rosemeath, both of Canada, assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 28, 1979, Ser. No. 16,222

Int. Cl.<sup>3</sup> F41C 23/00

U.S. Cl. 42-75 A

4 Claims

1. In a firearm having a receiver, a fore stock and at least one barrel, an improved means for adjustably attaching the fore

stock to the remainder of the firearm; said means comprising: an attachment lug carried by the barrel and including a first inclined cam surface, a fore stock wedge co-operating with said attachment lug and including a second inclined cam surface, and means adjustably attaching said fore stock to said fore



stock wedge so as to permit adjustment of the radial distance therebetween, said second cam surface riding on said first cam surface, such that radial displacement of said fore stock wedge, relative to said fore stock, results in a corresponding axial displacement of said fore stock relative to said lug, whereby said fore stock may be adjustably abutted against the receiver.

4,282,672

# DIVING PLANE FOR FISHING

Joseph F. Neary, Novato, Calif., assignor to Troller Corporation, Corte Madera, Calif.

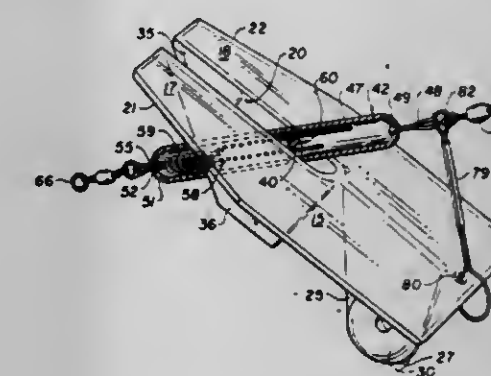
Continuation-in-part of Ser. No. 778,829, Mar. 17, 1977, Pat. No. 4,129,956. This application Apr. 10, 1978, Ser. No. 894,463

The portion of the term of this patent subsequent to Dec. 19, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> A01K 97/00

U.S. Cl. 43-43.13

7 Claims



1. Diving apparatus for use with a towed fishing line comprising:

- a release member serially connected between a leading segment and a trailing segment of said line, having a first portion with a trailing end connected to said trailing segment of said line and a second portion with a leading end connected to said leading segment of said line;
- a planar platform being formed with a leading base area, a pair of trailing flukes separated to form a rearwardly extending open slot from said leading base member;
- a connector mounted to said platform at said base and to said leading end of said second portion of said release member to permanently attach said platform to said leading segment of said line;
- first and second fin members formed from and supported on said flukes at said slot extending normally to the planar surface of said platform for receiving snugly therebetween a trailing end of said second portion of said release member into said slot and for resisting side to side movement of said second portion of said release member in said slot;
- a member spanning said slot, said first portion of said release member being looped at a leading end thereof about said slot spanning member;
- said second portion of said release member including first and second flared legs, both said first portion of said release member configured for mutual engagement therebetween of said



first portion of said release member where said first portion is looped about said slot spanning member; means tensioning said flared legs of said second portion of said release member towards one another, so that when a force less than a given force is supplied through said line to said platform, said release member portions remain engaged and said platform is held angularly to said line whereby said line sinks, and when a force greater than said given force is supplied through said line to said platform said release member portions disengage and said platform parallels said line whereby said line is permitted to rise.

4,282,673

## FLYING INSECT TRAP

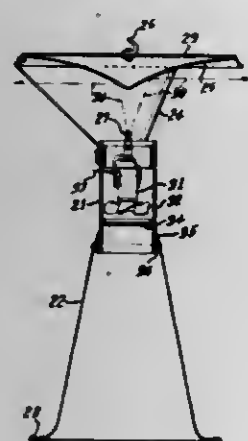
Dana A. Focks, and John W. Hock, both of P.O. Box 12852, Gainesville, Fla. 32604

Filed Jun. 21, 1979, Ser. No. 50,814

Int. Cl.<sup>3</sup> A01M 1/04, 1/06

U.S. Cl. 43-113

4 Claims



1. An improved flying insect trap comprising an elongated hollow cylindrical body above which is suspended a cover-reflector and below which is removably attached a flexible bag of mosquito netting; said cylindrical body internally supporting an electric fan directed to propel air downwardly against a valve which is biased in such a fashion as to be closed when the fan is not operating and opened by the force of air flow when the fan is operating, said valve comprising two separately counterbalanced semicircular portions; said cylindrical body also supporting upstream from the electric fan a screen of a mesh large enough not to impede the passage of flying insects but small enough to prohibit the passage of beetles or similar large sized insects; said cylindrical body also supporting an electric light bulb upstream of the beetle screen; said cover-reflector, generally extending from immediately above said light bulb outwardly a sufficient distance to extend beyond the vertical projections of all lower portions of the trap; said light bulb being located generally below the center of said cover-reflector; and a source of electric power for operating said fan and said light bulb.

4,282,674

## TOY CASH REGISTER

Steven P. Hanson, Brea, Calif.; Palmer J. Schoenfeld, Evanston, and Harry Disko, S. Barrington, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 4, 1980, Ser. No. 118,622

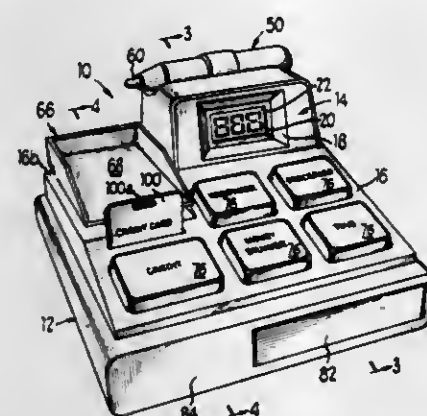
Int. Cl.<sup>3</sup> A63H 33/30; G09F 3/04; A63B 71/00

U.S. Cl. 46-39

14 Claims

1. A toy cash register for young children and the like, comprising:  
a housing having an indicia display window in a wall portion thereof;  
an indicia display element having a plurality of indicia on a face thereof mounted in said housing with a portion viewable through said window and movable relative to said window for displaying different indicia thereof;

electric motor means for moving said display element; manually operable means for momentarily connecting said motor means with an electrical power source for moving said display element;  
said display element comprising a disk mounted for rotation about a spin axis and driven by said motor means, said display window positioned radially outward of said spin axis and dimensioned to display only a limited radial segment of a face of said disk behind said window, said disk being divided into a plurality of said radial segments, each segment having indicia thereon for display through said window when aligned therewith, and indexing means for aligning each of said radial segments with said window after said motor means is deenergized, said indexing means comprising a plurality of radially extending elements on said disk between said segments and a fixed element mounted in said housing adjacent the path of travel of said radial elements rotating with said disk, said radial elements and said fixed element being magnetically attractable to center one of said radial elements in front of said fixed element whenever said disk is not rotating.



ments, each segment having indicia thereon for display through said window when aligned therewith, and indexing means for aligning each of said radial segments with said window after said motor means is deenergized, said indexing means comprising a plurality of radially extending elements on said disk between said segments and a fixed element mounted in said housing adjacent the path of travel of said radial elements rotating with said disk, said radial elements and said fixed element being magnetically attractable to center one of said radial elements in front of said fixed element whenever said disk is not rotating.

4,282,675

## AUTOMATIC ELEVATOR CONTROL FOR MODEL GLIDER

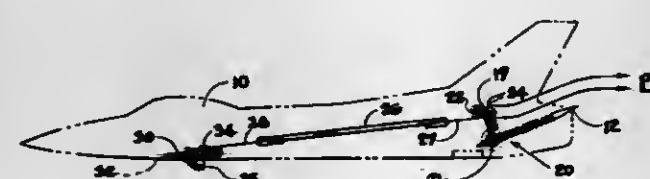
Sheldon A. Stripling, Jr., 1001 Esplanade Way, Apt. 41D, Casselberry, Fla. 32707

Filed Jul. 16, 1979, Ser. No. 58,116

Int. Cl.<sup>3</sup> A63H 27/14

U.S. Cl. 46-81

1 Claim



1. Automatic elevator control device for use with a power launched scale model glider, said glider having a fuselage and a pair of elevators, comprising:  
elevator adjustment means disposed within said fuselage and adapted to adjust said pair of elevators to a neutral position or to a glide position, said means attached to said fuselage;  
tension means connected to said elevator position adjustment means for holding said elevators in said glide position when said glider is in free flight;  
leverage adjustment means associated with said tension means and said elevator position adjustment means for permitting optimum leverage for the model glider to be selected; and  
tension adjustment means selectively adjustable to cause aerodynamic forces on said elevators during power launching of said glider to cause said elevators to assume said neutral position during said launching, said tension adjustment means including

(a) a removable hatch block disposed in a hatch opening through said fuselage,  
(b) a cleat attached to an inner surface of said hatch block, and  
(c) a thread having a first thread end attached to said second elastic band end, and a second thread end free to be temporarily attached to said cleat so as to produce tension in said elastic band, the amount of such tension being finely adjustable by selection of the point of such temporary attachment along said second end of said thread.

4,282,676

## MECHANICAL SOUND MECHANISM

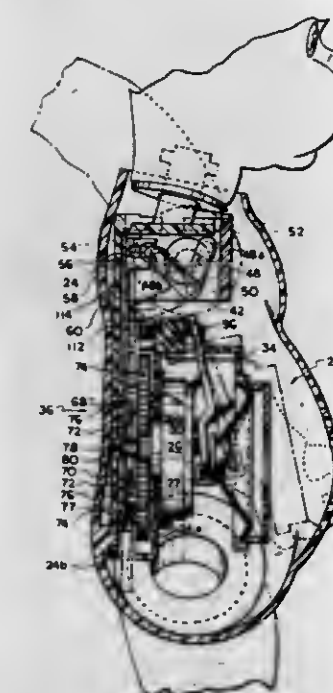
Robert E. Davis, North Branford, Conn., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed Sep. 28, 1979, Ser. No. 79,842

Int. Cl.<sup>3</sup> A63H 5/00; G11B 3/00

U.S. Cl. 46-118

7 Claims



1. A toy doll comprising a body including at least one arm pivotally mounted on said body and a sound reproducing device mounted in said body including a rotatable grooved phonograph record, transmission means operatively connected between said record and said arm for rotating said record in a predetermined direction upon oscillation of said arm; a diaphragm support movably mounted in said body for movement between a first position adjacent said record and a second position spaced from said record, a diaphragm mounted on said diaphragm support above said record, a tone arm having a first end portion engaged with said diaphragm and a needle mounted therein for operative engagement with said record; means for mounting said tone arm for swinging movement in a plane generally parallel to the record to allow the needle to track in the grooved record and for movement towards and away from the record with said diaphragm support, said tone arm being located generally between the record and the diaphragm; means carried by said diaphragm support and engaged with said tone arm for moving the tone arm between said first and second positions with said diaphragm support and defining a start position for the tone arm in a predetermined location relative to the record while permitting said swinging movement of the tone arm; spring means for normally biasing said diaphragm support into said first position adjacent the record whereby the needle engages the record to reproduce sound upon rotation thereof and for normally biasing said tone arm towards said start position; said transmission means including means for selectively moving said diaphragm from said first position to said second position upon movement of said arm to a predetermined position relative to said body whereby the needle is disengaged from the record and returned to its start position; said spring means comprising a first spring for biasing the diaphragm support to its first position and a second

spring for biasing the tone arm to said start position and against the record; and said means carried by the diaphragm support comprising a frame element having an elongated slot formed therein positioned above the record and extending along the plane of swinging movement of the tone arm, a portion of said tone arm being engaged in said slot.

4,282,677

## AMBULATORY WORKER TOY

Yoichi Abe, Funabashi, Japan, assignor to Toybox Corporation and Wamy Corporation, both of Japan

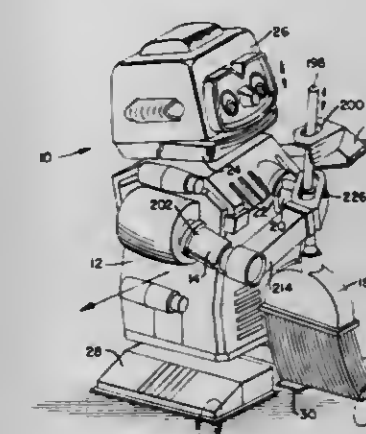
Filed Apr. 25, 1980, Ser. No. 143,639

Claims priority, application Japan, Apr. 17, 1979, 54-51746[U]

Int. Cl.<sup>3</sup> A63H 5/00, 11/00

U.S. Cl. 46-118

9 Claims



1. An ambulatory toy, comprising:  
a chassis;  
two leg members each having a foot member mounted at the bottom end thereof, the top end of each leg member being movably mounted on said chassis;  
a power source mounted on said chassis, said power source including a rotatable gear, the axis of said gear being substantially perpendicular to a line connecting said foot members;  
ambulatory transmission mechanism means operatively connecting said leg members to said power source for periodically moving said leg members vertically and angularly to propel said chassis sideways along a line connecting said foot members, said ambulatory transmission mechanism means including two pegs, each peg being affixed to a corresponding leg member between the top and bottom ends thereof, and two corresponding rotatably mounted elements operatively connected to said gear at different points on the periphery thereof, each rotatably mounted element having an offset hole therein to receive the corresponding peg, the axis of rotation of each rotatably mounted element being substantially perpendicular to a line connecting said foot members.

4,282,678

## TOY TO SIMULATE HEARTBEATS AND A STETHOSCOPE

Kwok W. Tsui, Wanchai, Hong Kong, assignor to Arco Industries, Ltd., Kowloon, Hong Kong

Filed Apr. 25, 1980, Ser. No. 143,854

Int. Cl.<sup>3</sup> A63H 5/00, 29/16

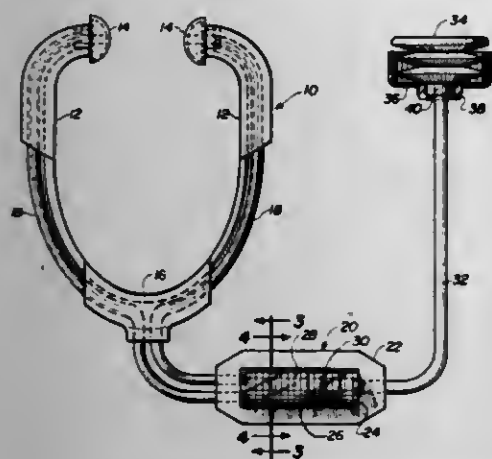
U.S. Cl. 46-175 R

4 Claims

1. A toy to simulate a heartbeat and a stethoscope connected thereto to permit listening to said beat and comprising in combination, a double-ended bellows element closed at one end and the other end having an opening connected to one end of a flexible tube member, an open-ended cup-like member surrounding said one end of said tube and partially enclosing the end of the bellows connected to said tube, the closed end of



said bellows, when expanded, projecting beyond the open end of said cup-like member to permit pressure against said bellows to compress it, a flexible yoke having earpieces respectively on the outer ends of the arms thereof, additional branch tube



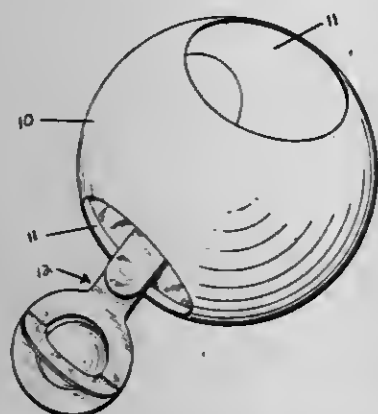
members interconnected to the other end of said flexible tube, and a sound-producing reciprocable member operable with a body interconnected in series with said tube members and actuated by operation of said bellows element to simulate the sound of a natural heartbeat.

4,282,679

**INFANT'S TOY—RATTLE AND PEEK-A-BOO BALL**  
Lawrence B. Grubb, Monkton; Danny E. Simpson, Baltimore, both of Md.; Louis S. Hoffman, Morristown, N.J., and David M. Williams, Montreal, Canada, assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.  
Filed Nov. 20, 1979, Ser. No. 96,074  
Int. Cl.<sup>3</sup> A63H 5/00

U.S. Cl. 46—193

7 Claims



1. An infant's toy comprising, in combination: a hollow ball; an insert for said ball; and retaining means for trapping said insert at least partially within said ball; said hollow ball having a plurality of openings, the opening being of such a size that the hand of an infant may be readily inserted therethrough into the hollow ball; said insert having an elongated stem portion with first and second enlarged portions at each end thereof, said enlarged portions being small enough to fit through said hollow ball openings; said retaining means being provided within said hollow ball and having a maximum dimension sufficient to prevent said retaining means from being withdrawn from said ball through said hollow ball openings while being freely movable inside said ball; said retaining means being provided with a hole large enough to accommodate the stem of said insert but small enough to prevent said enlarged portion of said insert from passing therethrough; said insert being provided with one enlarged portion inside

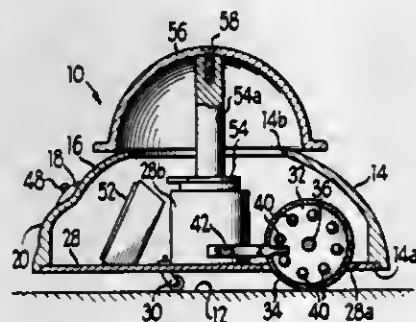
said hollow ball and with said stem passing through the hole of said retaining means and with said second enlarged portion extending out of a hollow ball opening; whereby the configuration of the toy may be freely varied by having any of said insert enlarged portions pass through any of said hollow ball openings while said insert is still restrained by said retaining means.

4,282,680

**MANUALLY OPERATED FREQUENCY CHANGER ON WHEELED TOY WITH LED'S**  
John V. Zaruba, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.  
Filed Jan. 30, 1980, Ser. No. 116,941  
Int. Cl.<sup>3</sup> A63H 33/26, 11/10, 5/00

U.S. Cl. 46—227

14 Claims



1. An animated action toy for manually controlled movement over a support surface, comprises: a hollow body having a front end portion and wheel means for rolling support of said body for movement in diverse directions over said support surface; a control cap mounted for manual rotation relative to said body for controlling an electrical element therein; electrical circuit means for generating an audible tone from speaker means thereof including said electrical element for controlling the frequency of said tone in response to the rotation position of said cap; and switch means activated by rotation of said wheel means for periodically interrupting said tone generated by said circuit means.

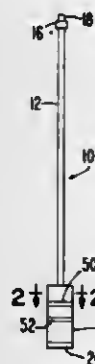
4,282,681

**ELECTRONIC WAND**

Robert E. McCaslin, 1227 Coldwater Canyon, Beverly Hills, Calif. 90210  
Filed Nov. 30, 1979, Ser. No. 99,186  
Int. Cl.<sup>3</sup> A63H 33/26

U.S. Cl. 46—228

1 Claim



1. An electronic wand adapted to be held in the hand comprising: a rod-like body provided with a hollow base at one end thereof and a light emitting diode at the opposite end thereof, said base defining a handle capable of being grasped by the hand; and an electronic circuit in said base and electrically coupled with said light emitting diode, said circuit including a

multivibrator having an output signal capable of oscillating at operating frequency to cause the light emitting diode to flash, said base having a pair of spaced terminals thereon coupled to the circuit, said terminals being bridged by the palm of the hand when the handle is grasped so that the palm provides a resistance forming part of the circuit, said resistance being variable as a function of hand pressure to cause a change in the frequency of flashing of the light emitting diode.

4,282,682

**METHOD OF MULCHING WITH ANTISTATIC SYNTHETIC POLYMER FILM**

Marcel Dalens, Carmaux, and Armand Haas, Mazingarbe, both of France, assignors to Societe des Plastiques de Carmaux Scazar, Carmaux and Societe Chimique des Charbonnages CdF Chimie, Paris, both of, France  
Division of Ser. No. 748,214, Dec. 7, 1976, Pat. No. 4,221,830.  
This application Mar. 17, 1980, Ser. No. 130,591  
Int. Cl.<sup>3</sup> A01G 7/00

U.S. Cl. 47—9

2 Claims

1. A method for preventing the virus degeneration of plants by virus-carrying aphides comprising mulching plants exposed to such degeneration with antistatic films obtained by the method consisting essentially of continuously printing over at least part of the surface of at least one side of a film of synthetic polymer with aluminum powder by suspending in solvent a composition consisting essentially of aluminum powder and a polyamide resin, setting said suspension down onto said film, and permitting said solvent to evaporate, said synthetic polymer of said film being selected from the group consisting of low density polyethylene, high density polyethylene, polypropylene, and polybutene.

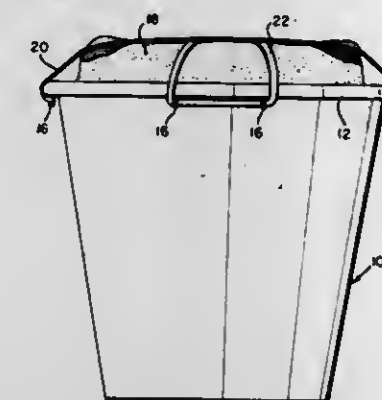
4,282,683

**FLORAL ARRANGEMENT CONTAINERS**

Bernard Frankel, 7957 Heather Rd., Elkins Park, Pa. 19117  
Filed Oct. 17, 1979, Ser. No. 86,015  
Int. Cl.<sup>3</sup> A47G 7/07

U.S. Cl. 47—41 R

10 Claims U.S. Cl. 49—141



1. A flower pot for holding arrangements of cut flowers or the like, utilizing a charge of mounting material disposed in the flower pot, comprising: an open-top container having an upstanding side wall; a rim extending outwardly from the top of the side wall; attachment means formed integrally with the rim and projecting downwardly from the underside of the rim; elastic securing means passing over the mounting material and locking the material in place within said pot, being held by the attachment means; and, a handle, having ends adapted for engaging the attachment means and overfitting the securing means, positively preventing separation of the securing means from the attachment means.

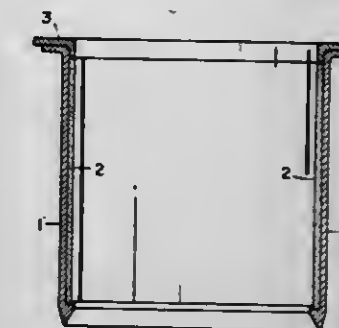
4,282,684

**BAND TYPE PLANT TRANSPLANTER**

Norvel J. McLellan, 1002 N. Main St., Pleasanton, Tex. 78064  
Filed Aug. 1, 1979, Ser. No. 62,566  
Int. Cl.<sup>3</sup> A01G 23/04

U.S. Cl. 47—73

3 Claims



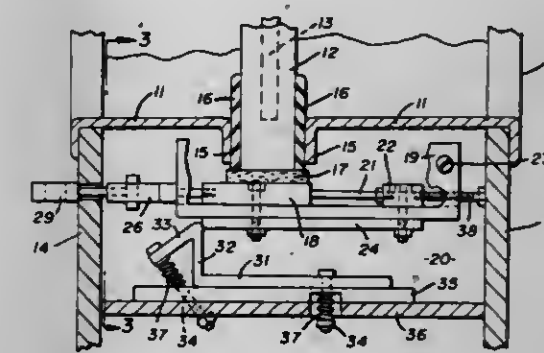
1. A transplanting device comprised of a cylinder open at each end, terminating at its upper end in an outwardly directed peripheral flange, the lower end terminating in a sharpened edge for ground penetration, said lower end having an inner peripheral ledge, and means at said upper end providing an additional inner peripheral ledge, said ledges and the inner wall of said cylinder being adapted to seat a plant band therein.

4,282,685

**QUICK OPENING WINDOW FOR TRAILERS AND MOBILE HOMES**

Brian Williams, 545 7th St., Struthers, Ohio 44471, and Richard Kratsas, 1408 E. Florida Ave., Youngstown, Ohio 44502  
Filed Oct. 3, 1979, Ser. No. 81,474  
Int. Cl.<sup>3</sup> E05C 15/02

3 Claims



1. A quick opening window for trailer and mobile home walls in which a window opening in one of said walls is defined by a frame, the frame having a longitudinally extending slot therein communicating with a cavity in said wall below said window opening, a glazed sash movably positioned in said frame in said window opening in registry with said longitudinal slot, a support bar in said cavity beneath said glazed sash normally supporting said glazed sash in said frame, members having horizontally disposed surfaces receiving the end portions of said support bar in movable relation to said glazed sash and wherein a secondary support bar is attached to said support bar in spaced parallel relation thereto so that the area between said support bar and said secondary support bar defines an opening through which said glazed sash may move into said cavity and out of said window opening.



4,282,686

## SWINGING DOOR FOR VEHICLES

Ingo Britzke, Kassel, and Manfred Horn, Kaufungen, both of Fed. Rep. of Germany, assignors to Gebr. Bode & Co., Kassel, Fed. Rep. of Germany

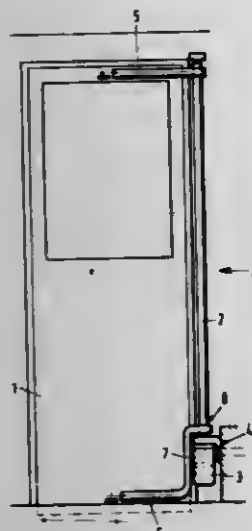
Filed Aug. 27, 1979, Ser. No. 70,156

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1978, 2838486

Int. Cl.<sup>3</sup> E05D 15/28; E05F 15/04

U.S. Cl. 49—253

9 Claims



1. A swinging door construction for a vehicle comprising a turnable door panel, upper and lower swing arms connected to said door panel, a rotatable swing column having upper and lower ends, means connecting said swing arms to said swing column such that rotation of said swing column produces turning of said door panel, drive means supported at the lower end of said swing column for rotating said swing column, said lower swing arm being at a level below said drive means, said means which connects the lower swing arm to the swing column comprising a connecting means extending alongside and above said drive means to overlap said drive means and being secured to the swing column at a level above said drive means.

4,282,687

## FIRE RESISTANT STRUCTURE

Peter F. Teleskivi, Wandin North, Australia, assignor to Jacmir Nominees Pty. Ltd., St. Kilda, Australia

Filed Sep. 11, 1979, Ser. No. 74,538

Claims priority, application Australia, Sep. 12, 1978, PD5909

Int. Cl.<sup>3</sup> E06B 3/00, 3/82, 5/16

U.S. Cl. 49—503

8 Claims



1. A fire resistant door or door leaf structure including a

sub-frame, central panel means, and a pair of outer panel means attached to said sub-frame, and insulating material between each said outer panel means and said central panel means, said sub-frame comprising two spaced apart arrangements of vertically and horizontally extending sub-frame members between which the central panel means is situated, said sub-frame members being of substantially Z-shaped cross-section and including a flat central web and two flat flanges extending away at right angles from opposite sides of said central web and substantially parallel to each other, said central panel means being connected to one of said flanges and one of said outer panel means to the other flange, with the space defined between said central panel means, said outer panel means, and the central webs of said sub-frame members being filled with said insulating material:

4,282,688

## ADJUSTABLE CTE GRAPHITE-EPOXY BAR

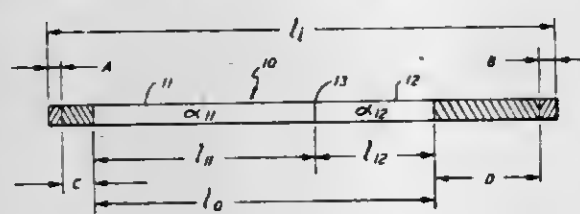
Michael K. Krim, Trumbull, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jul. 5, 1979, Ser. No. 54,732

Int. Cl.<sup>3</sup> E04H 9/00

U.S. Cl. 52—1

13 Claims



1. A structural element having a specific overall expansivity along a given axis, comprising in combination; a member comprising first and second sections integrally formed therewith, said member comprising a plurality of layers of graphite epoxy composite, each of said sections having a length and coefficient of thermal expansion such that overall expansion or contraction is zero and wherein, the layers in said first section have different wrap angles from the layers in said second section.

4,282,689

## PORTABLE DOOR COVERING FOR INDOOR HEAT SAVINGS

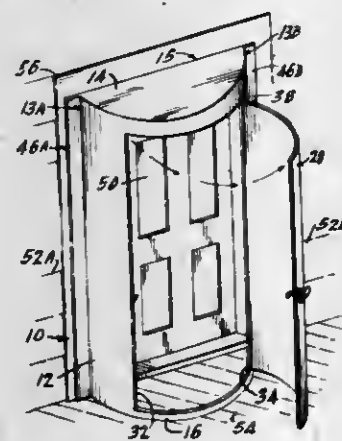
George R. Royer, 2137 Ragan Woods Dr., Toledo, Ohio 43614

Filed Aug. 20, 1979, Ser. No. 68,060

Int. Cl.<sup>3</sup> E04H 1/12

U.S. Cl. 52—79.6

2 Claims



1. A portable door covering formed of one continuous piece of transparent plastic material for heat savings inside a building, said door covering device being adapted for placement in front of the building door leading to areas outside the building,

and wherein said door covering device has a frontal area and back portions respectively for placement orientation and wherein said door covering device comprises:

- (a) a vertically extending member having a continuous frontal wall on the frontal area, and wherein said vertically extending member has a hollow portion open to spatial areas outside said vertically extending member, and wherein the hollow portion is open towards the back of said vertically extending member, and wherein the back portion of said vertically extending member is placed with one of each side thereof being on opposite sides of the building door with the hollow portion thereof facing a portion of the building door, said vertically extending member having flanged vertical sides in each side of said back wall for placement of said flanged sides flush against the adjacent building wall.
- (b) openable and closable doorway means in said frontal continuous wall in the frontal area of said vertically extending member to provide exit and entrance means between said hollow portion and said frontal portion of said vertically extending member.
- (c) a separately formed pivotable door in said doorway means to allow openings of closure of said doorway means.

4,282,690

## PRECAST BUILDING CONSTRUCTION

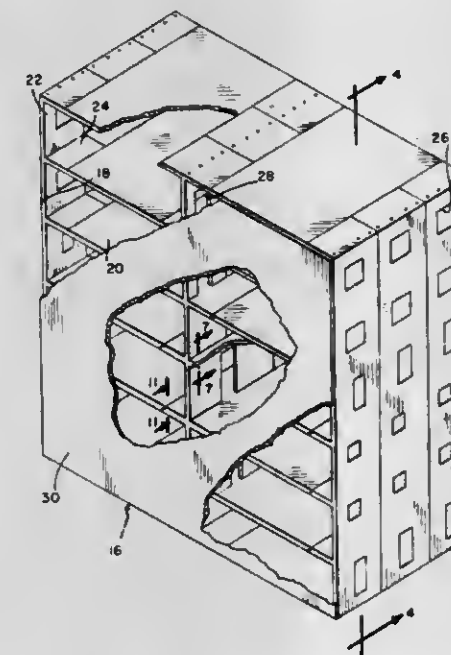
H. Joe Meheen, 1550 Dover, Suite 7, Lakewood, Colo. 80215

Filed Aug. 23, 1979, Ser. No. 68,940

Int. Cl.<sup>3</sup> E04H 1/04

U.S. Cl. 52—79.11

2 Claims



1. A wall tree unit for use in precast building construction in conjunction with one or more base slab units and one or more wall tree units, said wall tree unit comprising:

- a generally planar wall segment having a substantially uniform thickness throughout and including a first end and a second end for forming a wall portion in a building;
- a first generally planar cantilever member integrally joined to said wall segment and extending at right angles from said wall segment while extending the entire lateral width of said wall segment to form a floor or roof portion of a building;
- a second generally planar cantilever member integrally joined to said wall segment, said second cantilever member extending at right angles from said wall segment in a direction opposite that of said first cantilever member while extending the entire lateral width of said wall segment, said second cantilever member being substantially coaxial with said first cantilever member to form another floor or roof portion of a building;

means formed in an outer edge of each of said first and

second cantilever members for matingly receiving a base slab unit;  
an insert formed in a first end of said wall segment;  
a hoisting eye having an opening formed inwardly of said wall segment adjacent a second, opposite end of said wall segment;  
an angle brace connected to said second end of said wall segment in the hoisting eye opening and having a first arm and a second arm, said second arm having an opening; and  
a shaft insertable in said insert through said second arm opening for interconnecting two vertically adjacent wall trees with said insert being accessible through said hoisting eye opening.

4,282,691

## WEEP HOLE DEVICE

David G. Risdon, 1871 Greenpine Dr., Cincinnati, Ohio 45231

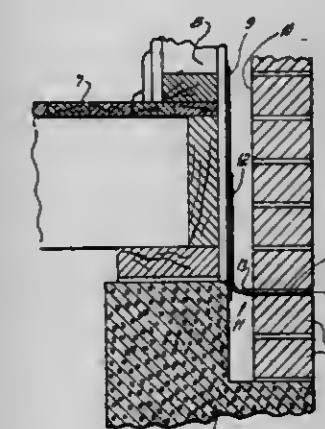
Continuation-in-part of Ser. No. 965,606, Dec. 1, 1978,

abandoned. This application Sep. 26, 1979, Ser. No. 79,182

Int. Cl.<sup>3</sup> E04B 1/70, 1/72

U.S. Cl. 52—101

5 Claims



1. A weep hole device for a building comprising a plastic tube having a water inlet end and a water outlet end, a stainless steel screen molded to the outlet end to provide a porous opening, and an elongated durable porous member extending from the interior of the tube and outwardly from the water inlet end, said extending member preventing debris from clogging said inlet end and collecting water by sorption for feeding to the inlet end whereby the water may be channeled through the wall to the exterior of the building.

4,282,692

## PRECAST CONCRETE BUILDING CONSTRUCTION

Richard H. Potthast, 5625 Tall Oaks Rd., Waunakee, Wis. 53597

Filed Nov. 22, 1978, Ser. No. 962,985

Int. Cl.<sup>3</sup> E04B 5/02, 1/58

U.S. Cl. 52—236.3

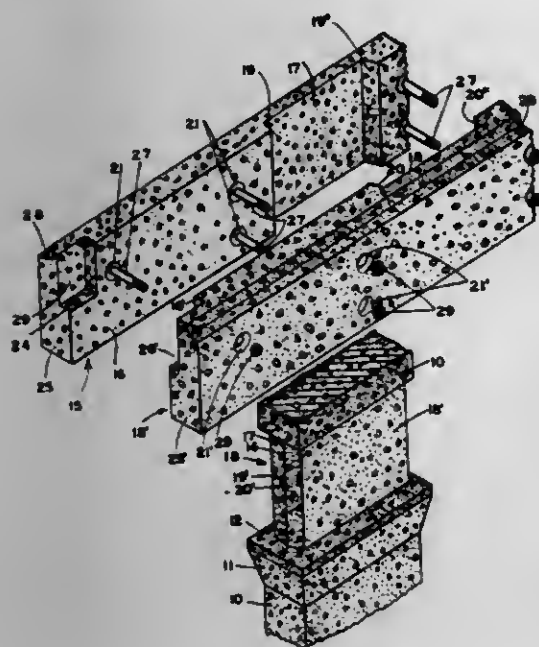
6 Claims

1. In reinforced concrete building construction, the combination of

- (a) at least one reinforced multi-story concrete column configured with at least one bearing surface projecting substantially horizontally, defining in said column a configuration of the interface between transversely extending key-in-keyway groove,
- (b) at least one pair of elongated, horizontal pre-cast reinforced concrete beam members configured to comprise a configuration of the interface between transversely extending key-in-keyway groove complementary to that of said column and to bear upon said horizontal bearing surface conextensive with each other and vertically facing



each other continuously past said column and faying with opposite faces of said column.



(c) means securing said beam members substantially into interfacial contact.

4,282,693

## PREFABRICATED HOUSE

Richard Merklinger, Lange Str. 111, D-7570 Baden-Baden, Fed. Rep. of Germany

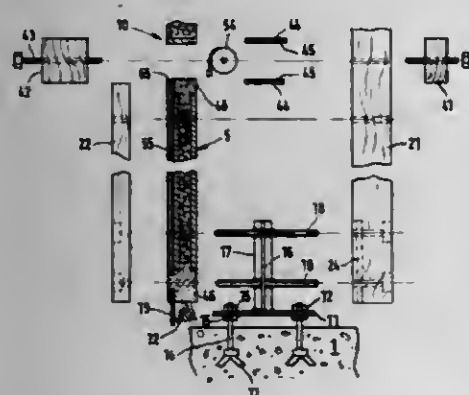
Filed Sep. 10, 1979, Ser. No. 74,145

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850085

Int. Cl.<sup>3</sup> E04B 1/00

U.S. Cl. 52—282

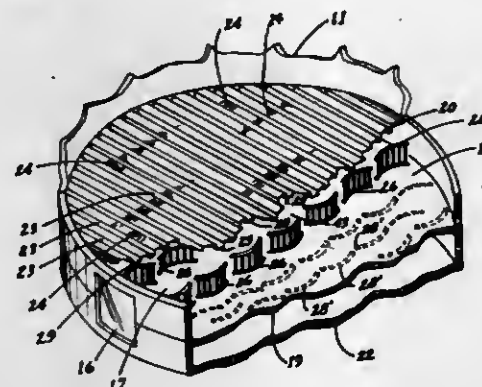
21 Claims



1. Prefabricated house with wall and corner support posts erected on a foundation, these posts being connected in their upper zone by frames, as well as with wall elements inserted between the wall posts and corner posts, respectively, wherein each post includes:

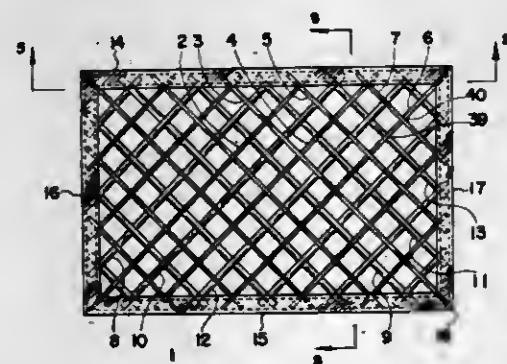
- a baseplate,
- baseplate connecting means for connecting the baseplate to the foundation,
- at least one vertical fishplate connected to the baseplate, at least one inner stud and one outer stud,
- and attaching means fixedly secured to said fishplate and extending therefrom in opposing directions for detachably attaching the inner and outer studs to the fishplate independently of each other and with a wall element clamped along its vertical sides between respectively one inner stud and one outer stud.

4,282,694  
GRAIN BIN FLOOR SUPPORT SYSTEM  
Harold C. Mead, Charles City, Iowa, assignor to Nixdorff Krein Industries, Inc., St. Louis, Mo.  
Filed Nov. 8, 1979, Ser. No. 92,533  
Int. Cl.<sup>3</sup> E04H 7/00  
U.S. Cl. 52—508  
9 Claims



1. For use with a storage bin for storing grain or the like, an improved floor support system comprising a plurality of flooring elements jointly cooperable for providing a generally horizontal grain bin floor and a plurality of independent floor supports arranged in an assembly for supporting said floor, each floor support comprising a curvilinear lower rail serving as a base member formed for bearing against a supporting surface and defining thereon a curvilinear path, an upper rail member of curvilinear configuration like that of said lower rail, a plurality of load bearing spacers extending between said lower and upper rails for maintaining the latter in spaced, parallel relationship, said upper rail bearing against and contacting said flooring elements in a curvilinear path coincident with the curvilinear path defined on said supporting surface, said spacers transmitting load from said upper rail to said lower rail, said upper and lower rails each comprising a relatively long, thin, flat strip of structural metal, each said strip in plan being of narrow curvilinear form.

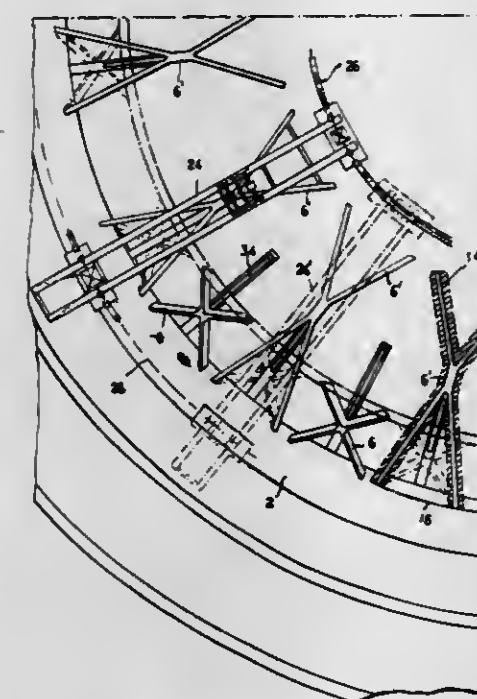
4,282,695  
SELF-INTERLOCKING GRILLE  
Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005  
Filed Jul. 18, 1979, Ser. No. 58,556  
Int. Cl.<sup>3</sup> E04C 2/42  
U.S. Cl. 52—668  
2 Claims



1. A self-interlocking grille comprising:  
(a) a first group of strips having a plurality of notches cut out along one edge of said strips at equal distance and a plurality of holes disposed on said strips in such a way that each of said holes is disposed at the mid-point between each of the adjacent pair of said notches, said strips of said first group of strips being arranged in a parallel configuration in a first direction;  
(b) a second group of strips having a plurality of notches cut out along one edge of said strips at equal distance and a plurality of holes disposed on said strips in such a way that

each of said holes is disposed at the mid-point between each of the adjacent pairs of said notches, said strips of said second group of strips being arranged in a parallel configuration in a second direction transverse to said first direction, wherein each of said notches disposed on said strips of said second group of strips engages each of said notches disposed on said strips of said first group of strips in crossing each other and, thus forming a network;  
(c) a first group of bars arranged in a parallel configuration in said first direction, each of bars of said first group of bars disposed intermediate each of the adjacent pairs of strips of said first group of strips and threaded through said holes on the strips of said second group of strips; and  
(d) a second group of bars arranged in a parallel configuration in said second direction, each of the bars of said second group of bars disposed intermediate each of the adjacent pairs of strips of said second group of strips and threaded through said holes disposed on the strips of said first group of strips, wherein said bars of said second group of bars interlace said bars of said first group of bars.

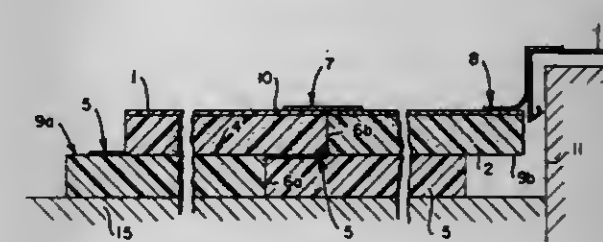
4,282,696  
METHOD FOR FABRICATING AND ERECTING UNITARY STRUCTURAL ELEMENTS  
Bertrand Michel, Paris, France, assignor to Societe Nord-France d'Entreprises, Generales et de Constructions en beton arme, Paris, France  
Filed Apr. 5, 1978, Ser. No. 893,279  
Claims priority, application France, Apr. 6, 1977, 77 10361  
Int. Cl.<sup>3</sup> E04G 21/00  
U.S. Cl. 52—745  
3 Claims



1. In a method of forming a cooling tower having a base ring which is spaced above the ground by means of a plurality of peripherally disposed supporting posts, the steps comprising:  
(a) constructing in the ground a circular footing (8) of an outer diameter greater than the diameter of what will become said base ring,  
(b) preforming on the ground a plurality of adjacent substantially horizontal supporting post structures (6) each of which is formed with two foot members having free ends and which diverge from a common portion of the post structure toward such locations on said footing such that each preformed post structure extends from the footing in a different radial direction relative thereto,  
(c) disposing a plurality of pairs of horizontal pivotal shafts in a circular row (16) on said footing and positioning said pairs of pivotal shafts in such a manner with respect to said preformed post structures that the distance between one of the pivotal shafts of each pair and the other pivotal shaft of the pair corresponds to the distance between the

free ends of said divergent foot members, that the axis of said one pivotal shaft is perpendicular to a vertical radial plane passing between said one pivotal shaft and said other pivotal shaft, and that the axis of said other pivotal shaft coincides with the axis of said one pivotal shaft,  
(d) securing the thus positioned pivotal shafts to the footing,  
(e) securing the two free ends of the foot members to the corresponding pivotal shafts for pivotal motion thereabout,  
(f) exerting successively on each post structure a continuous tractive force capable of pivoting the post structure to the supporting position thereof,  
(g) temporarily supporting the thus raised post structure with a prop, and  
(h) embedding the pivotal connection between the raised post structure and the footing in concrete.

4,282,697  
INSULATING PANEL FOR ROOF COVERINGS  
Paul Spielau, Troisdorf-Eschmar; Peter Pütz, St. Augustin; Richard Weiss, Troisdorf, all of Fed. Rep. of Germany, and Hansfritz Schraube, deceased, late of Hennef, Fed. Rep. of Germany (by Maria Katharina Schraube, sole heir and legal representative), assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany  
Filed Apr. 27, 1979, Ser. No. 33,840  
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818485  
Int. Cl.<sup>3</sup> E04D 1/28  
U.S. Cl. 52—746  
12 Claims



1. A process for the production of a roof with a plurality of insulating panels, each panel comprising a core layer of a synthetic foam material bonded adhesively on its topside to a sealing thermoplastic layer or sheet throughout the surface area of the topside for the covering of roof structures, said core layer comprising at least two superimposed foam sheets of an elastic, closed-cell crosslinked polyolefin foam material, said sheets being bonded together throughout the contacting surface areas by flame laminating, the bonding surfaces of the foam sheets initially melted by said flame laminating together constituting a homogeneous polyolefin layer, which comprises mechanically joining the insulating panels to a substrate in a force-locking manner, joining the abutting insulating panels in rabbet joints, sealing off the butt joints of the insulating panels on the topside with sealing strips by adhesively bonding the panels together, and establishing a force-locking connection in the joints of the abutting insulating panels by the introduction of an adhesive and/or by welding.

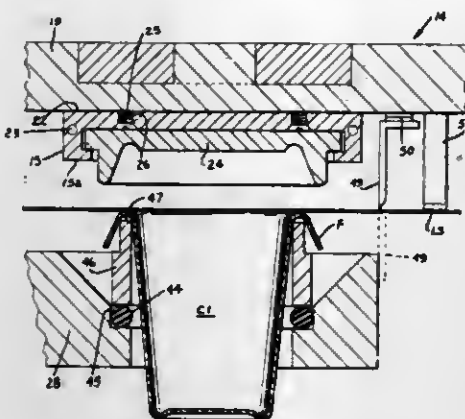
4,282,698  
LIQUID FILLING MACHINE  
Guenther Zimmermann, 600 Casler Ave., Clearwater, Fla. 33515  
Filed Aug. 20, 1979, Ser. No. 67,735  
Int. Cl.<sup>3</sup> B65B 3/04, 61/02, 61/06; B67B 3/04  
U.S. Cl. 53—282  
18 Claims

1. A liquid filling machine for automatically filling and enclosing containers comprising a plurality of discrete stations disposed in operative relation relative to a container support including a turn table rotatably mounted on a base, said plurality of discrete stations comprises a container dispensing station configured to operatively retain a plurality of containers in stacked array, a liquid filling station, a foil supply station com-

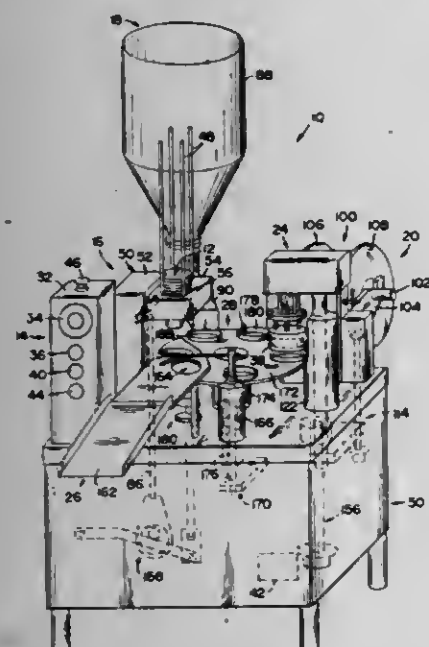


prising a foil mounting means to operatively support a continuous roll of foil thereon, and a heat sealing station comprising a heat sealing head operatively coupled to said drive means to move said heat sealing station between an upper and lower position, said heat sealing station being disposed relative to said container support to seal foil to the container when in said lower position, said heat sealing head includes a bias means to normally bias said heat sealing head in a lower position, such that said heat sealing head engages said foil on the container before said cutting blade engages said foil, operatively mounted on said base, said turn table includes at least one container aperture formed thereon to selectively receive containers from said container dispensing station, said container retainer further includes an annular pocket extending upwardly about the periphery of said container aperture to operatively support the container on said turn table, said foil supply

cluding a groove formed in said carrier plate and a resilient O-ring disposed in said groove, and a sealing ring supported by

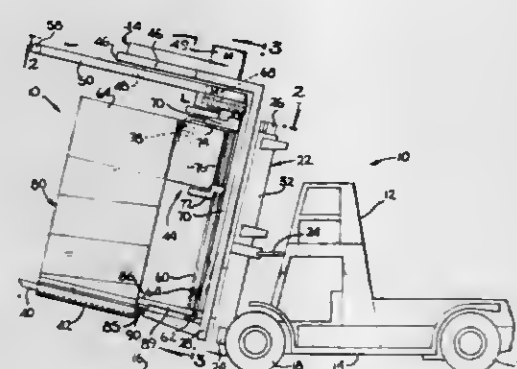


said O-ring and engageable with the flange of a container to be sealed and having a flanged open end.



**4,282,700**  
**STRETCH WRAPPER FOR PALLETIZED LOAD**  
Joseph Goldstein, 1325 Southwind Cir., Westlake Village, Calif. 91361

Filed Apr. 12, 1979, Ser. No. 29,331  
Int. Cl.<sup>3</sup> B65B 13/04  
U.S. Cl. 53—556 14 Claims



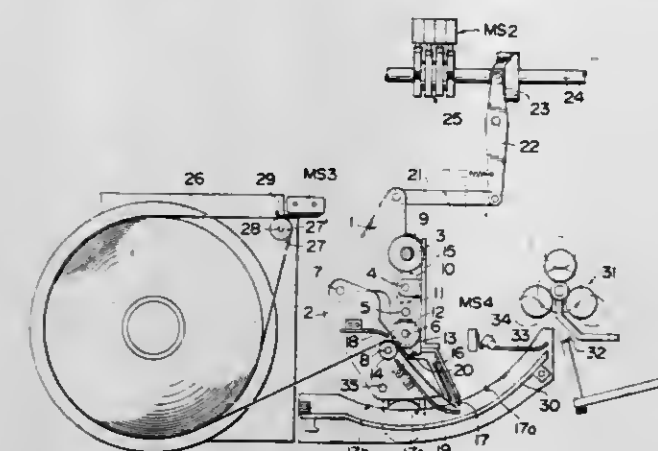
1. A stretch-wrap system comprising:  
a load carrier for supporting and carrying a load, said load carrier being a pallet carrier, said pallet carrier having means thereon for engaging, supporting and transporting a pallet and a load carried on the pallet; and  
a stretch wrapper mounted on said pallet carrier and positioned for wrapping a load carried on said pallet carrier with a web of stretch-wrap film, said stretch wrapper having a forwardly positioned pivot and a swinging arm pivoted on said pivot and positioned over said pallet-engaging means, a stretch-wrap roll support mounted on said swinging arm means for moving said swinging arm about said pivot and thereby moving said roll around the load, said swinging arm including means for varying the radius between said swinging arm pivot and said stretch-wrap roll support during the wrapping operation in response to the size of the load so that a stretch-wrap roll can be mounted on said stretch-wrap roll support and said swinging arm can carry a stretch-wrap roll on varying radius around the load for winding stretch-wrap film around the load so that the load can be wrapped with stretch-wrap film while the load is being carried and transported on said load carrier.

**4,282,699**  
**HEAT SEALING APPARATUS**  
Joseph J. Embro, Jr., Atlanta, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 27, 1979, Ser. No. 69,945  
Int. Cl.<sup>3</sup> B65B 7/28; B67B 3/04, 3/08  
U.S. Cl. 53—298 10 Claims

1. Container heat sealing apparatus comprising a heated reciprocable sealing block having a heat emitting surface, a sealing head mounted on said sealing block, mounting means for holding a part of said sealing head in close heat transferring slidable contact with said heat emitting surface whereby said sealing head is adapted to accommodate moderate misalignment of said reciprocable sealing block and a container to be sealed which is disposed in general alignment with the path of reciprocatory movement of said sealing block and said sealing head, a container carrier plate having resilient container support means disposed in the path of reciprocable movement of said sealing block, said resilient container support means in-

**4,282,701**  
**METHOD OF SETTING PACKAGING PAPER IN COIN PACKAGING MACHINE**  
Yorizo Miyazaki, and Katusuke Furuya, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan  
Filed Sep. 20, 1979, Ser. No. 77,276  
Claims priority, application Japan, Sep. 22, 1978, 53/117104  
Int. Cl.<sup>3</sup> B65B 11/04  
U.S. Cl. 53—465 2 Claims

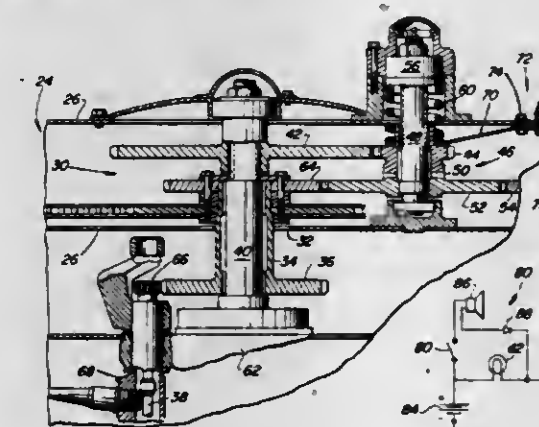


1. A method of setting a packaging paper in a coin packaging machine comprising a feeding and cutting assembly having a pair of rollers for feeding a packaging paper and a cutting blade for cutting the same, the cutting blade being positioned between a roll of packaging paper and packaging rollers for applying the packaging paper to coins to be packaged, said feeding and cutting assembly being movable to set its position in accordance with the diameter of coins to be packaged, which method comprises the steps of:

- (a) setting the feeding and cutting assembly in a first predetermined position in accordance with the diameter of coins to be packaged simultaneous with memorizing the position of the feeding and cutting assembly;
- (b) automatically shifting the feeding and cutting assembly by control means to a second predetermined position for facilitating loading of a leading end of a new roll of packaging paper on the assembly between the pair of rollers in response to the detection of a small amount of a previous roll of packaging paper; and
- (c) automatically returning the feeding and cutting assembly by said control means to the memorized position for the restarting of packaging operation when the loading of the new roll has been completed.

**4,282,702**  
**PICKER DRUM SLIP CLUTCH MONITOR**  
Steve H. McBee, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 19, 1980, Ser. No. 161,081  
Int. Cl.<sup>3</sup> A01D 75/18  
U.S. Cl. 56—10.3 6 Claims

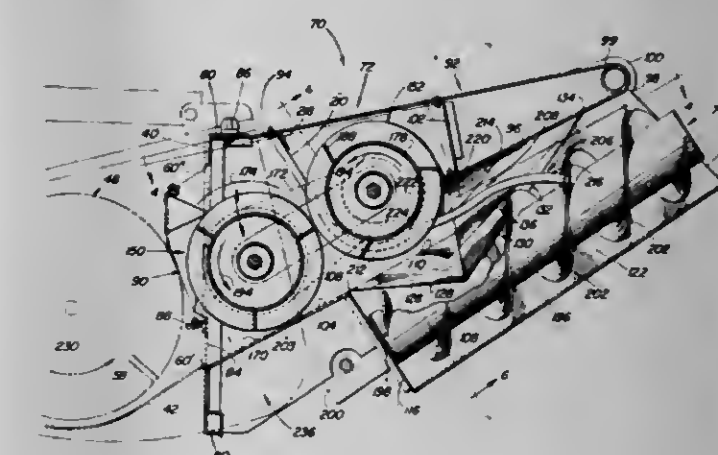


1. In a cotton harvester having a picker unit housing sup-

porting an upright driven picker drum including picker means for removing cotton from cotton plants, drive assembly means operably connected to and for driving of the picker drum, said drive assembly means including torque responsive means movable from an operating position to an overload position in response to the torque required to drive the picker drum exceeding a preselected level for removing drive from the drum, and indicator means for providing a signal in response to the movement of the torque responsive means to the overload position.

**4,282,703**  
**FEEDER HOUSE FOR A CROP HARVESTER**  
John E. Wilson, Colona City, Ill., and Edward J. Hengen, Bettendorf City, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 10, 1979, Ser. No. 102,090  
Int. Cl.<sup>3</sup> A01F 7/06, 12/00  
U.S. Cl. 56—14.6 28 Claims



1. In a mobile harvester including a crop processing means, and a forward mounted harvesting means equipped to gather crop material from a field and convergently deliver it to a discharge opening of the harvesting means, the combination therewith of an improved means for conveying crop material from the harvesting means to the crop processing means comprising:

- a feeder housing having walls and an inlet registering with the discharge opening of the harvesting means and an outlet having a width significantly less than that of the inlet and communicating with the crop processing means; first conveyor means carried by the housing including a portion adjacent the inlet substantially spanning the width of the inlet and operable to engage and discharge rearwardly within the feeder housing over a transverse span substantially greater than that of the housing outlet crop material delivered to the discharge opening of the harvesting means;
- second conveyor means of lateral extent significantly less than that of the first conveyor means carried by the housing downstream of and in a crop-receiving relationship with the first conveyor means and including a portion adjacent the outlet substantially spanning the outlet, for receiving crop material from the first conveyor means and operable to move it rearwardly within the housing to the outlet for delivery to the crop processing means; and means for driving the conveyor means.



4,282,704

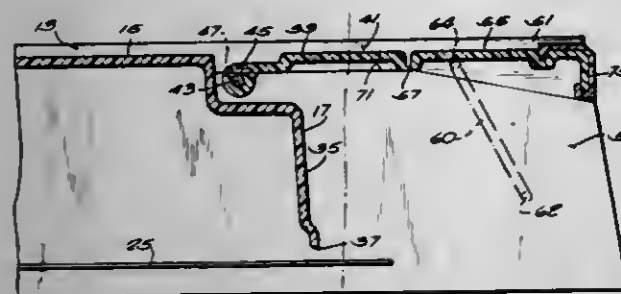
## FILAMENT TRIMMER MOWER WITH FOLDING SHIELD

Myron T. Stevens, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed May 23, 1980, Ser. No. 152,835  
Int. Cl.<sup>3</sup> A01D 67/00, 75/20

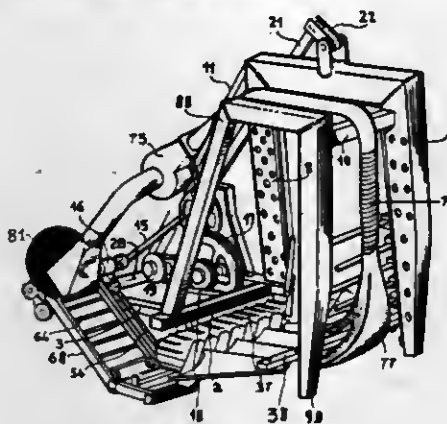
U.S. Cl. 56—320.1

10 Claims



1. A filament mower comprising a housing having a main portion including a depending wall and a housing extension movable between a generally horizontally outwardly extending guard position and a retracted position, said extension including a first segment hinged to said housing main portion about a first axis extending transversely to the direction of intended mower movement for upward movement from said guard position, and a second segment hinged to said first segment about a second axis spaced from said first axis and extending transversely to the direction of intended mower movement for movement about said second axis in the rotary direction opposite to the direction of rotary movement of said first segment about said first axis, resilient means biasing said housing extension toward said guard position, a plurality of wheels supporting said housing, a filament head carried by and within said housing and including a filament string, and means on said housing for rotating said head.

(d) a chassis carrying driving means for each of said detaching means, scales and evacuating means;



(e) a portico laterally positioned upon said chassis and comprising a rearwardly inclined front element; and  
(f) beating means positioned on said front element.

4,282,706

SHAKER UNITS FOR HARVESTING MACHINES  
Franklin P. Orlando, Morgan Hill, Calif., assignor to FMC Corporation, San Jose, Calif.

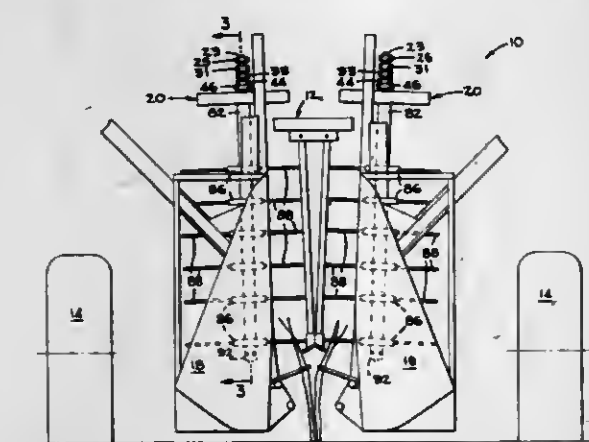
Filed Nov. 2, 1979, Ser. No. 90,798

Claims priority, application United Kingdom, Mar. 8, 1979, 08161/79

Int. Cl.<sup>3</sup> H01D 46/00

U.S. Cl. 56—330

4 Claims



1. A shaker assembly for use in a harvesting machine, said assembly comprising shaker shaft means, circumferentially spaced tines projecting radially from said shaker shaft means, means for circumferentially oscillating said shaker shaft means and tines about the axis of said shaft means, means for unidirectionally rotating said shaker shaft means about its axis including a driven rotary member and means for driving said rotary member; the improvement comprising rotationally elastic, elongate torsion bar means concentric with the axis of said shaker shaft means, means for connecting one end portion of said torsion bar means to said driven rotary member, and means for connecting the other end portion of said torsion bar means to said shaker shaft means.

4,282,705

## GRAPE PICKING MACHINE

Andre Fontan, 11 rue Republique, 32110 Nogaro, France  
Filed Oct. 4, 1978, Ser. No. 948,547Claims priority, application France, Oct. 10, 1977, 77 30639  
Int. Cl.<sup>3</sup> A01D 46/00

U.S. Cl. 56—330

37 Claims

1. A grape picking machine for collecting a harvest comprising:

- (a) means for detaching said harvest from grapevine trunks;
- (b) at least two rows of partially overlapping, superimposed scales adapted to be positioned at the level of said trunks for recovering said harvest after detachment and for preventing said detached harvest from falling from said machine;
- (c) means for evacuating said harvest from said machine, said evacuating means including means for dividing said harvest into waste and must by aspirating said must such that it becomes entrained in air, means for recycling said air and entrained must through said machine and for conducting said air to an outlet, said outlet comprising means both for blowing air to prevent said harvest from falling between said scale rows and to propel said harvest along said scales;

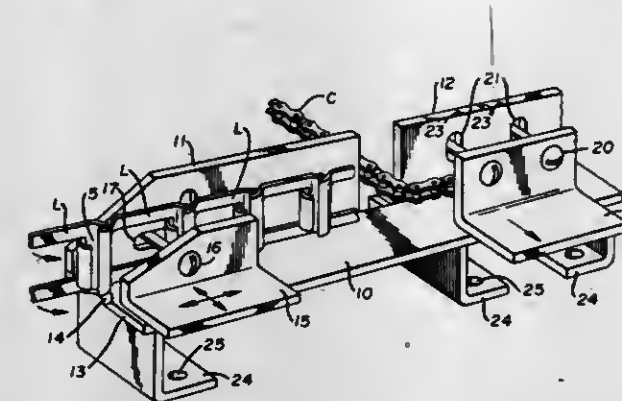
4,282,707

## CHAIN BREAKING TOOL

Robert O. Fox, R.D. #7, Box 258, New Castle, Pa. 16102  
Filed Oct. 18, 1979, Ser. No. 85,901Int. Cl.<sup>3</sup> B21L 21/00

U.S. Cl. 59—7

6 Claims



1. A chain breaking tool for use with detachable sprocket chains of the type with links which include a generally rectangular shaped frame with a male end or pintle and an open sided female end or sleeve at the other end, the pintle of one link being received in the sleeve of an adjoining link to connect the two, said tool comprising an elongated body member having at least one cross sectionally L-shaped clamp slidably positioned thereon for longitudinal and transverse movement, at least one vertically standing side section on said elongated body member adjacent said clamp and means for moving said clamp toward said side section to effect a clamping action on a chain positioned on its edge with its links disposed vertically therebetween, an offset tapered arcuate area formed in one end of said elongated body member and disposed between said clamp and said side section and beneath engaged ends of two links in said chain whereby downward movement imparted one of said two links brings the same into engagement with said offset tapered arcuate area to impart sideward motion to said link and facilitate its separation from the other of said two links.

4,282,708

## METHOD FOR THE SHUTDOWN AND RESTARTING OF COMBINED POWER PLANT

Tetsuzo Kuribayashi, and Tsuguo Hashimoto, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

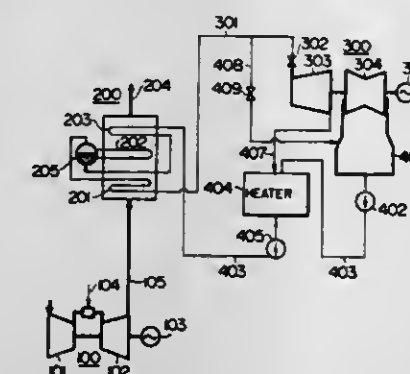
Filed Aug. 22, 1979, Ser. No. 68,562

Claims priority, application Japan, Aug. 25, 1978, 53/102913

Int. Cl.<sup>3</sup> F02C 7/00; F02G 5/02

U.S. Cl. 60—39.02

5 Claims



1. A method for a shutdown and restarting of a combined plant comprising in combination a gas turbine, a waste heat recovery boiler heated by a heat of exhausts from said gas turbine to generate steam, and a steam turbine driven by the steam generated by said waste heat recovery boiler, said method comprising the steps, which are followed when the plant is restarted following temporary shutdown, of:

- (1) shutting down the steam turbine while the gas turbine is still operating at high load by reducing a load applied to the steam turbine before reducing the load applied to the

gas turbine, when the load applied to the entire plant is to be reduced;

- (2) allowing excess main steam produced by the load reduction and shutdown of the steam turbine to flow through a bypass system to a condenser without causing the excess main steam to flow through the steam turbine;
- (3) maintaining metal of the steam turbine at a temperature level substantially equal to a temperature at which the metal is maintained during operation of the steam turbine by supplying steam, as gland sealing steam, of a temperature level substantially equal to a temperature level of the metal of the steam turbine in operation at the time of load reduction and shutdown of the steam turbine;
- (4) shutting down the gas turbine after further reducing the gas turbine load to a level lower than a level attained in said steam turbine shutting down step;
- (5) starting the gas turbine first to increase the load applied to the plant when the plant is to be restarted;
- (6) maintaining the metal of the steam turbine at a temperature level substantially equal to the temperature level of the metal of the steam turbine attained during operation of the latter, by supplying steam of a temperature level substantially equal to a temperature level of the metal of the steam turbine attained during operation of the latter as gland sealing steam for the steam turbine; and
- (7) starting the steam turbine by the steam generated by the waste heat recovery boiler to increase the plant load.

4,282,709

## GAS TURBINE-TRANSMISSION PLANT

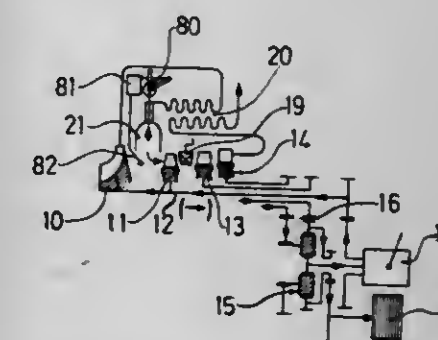
Sven-Olof Kronogard, Karstorsvägen 31, Lomma, Sweden (23400)

Continuation-in-part of Ser. No. 834,920, Sep. 20, 1977, abandoned. This application Jul. 20, 1979, Ser. No. 59,163

Claims priority, application Sweden, Sep. 24, 1976, 7610578  
Int. Cl.<sup>3</sup> F02C 3/10

U.S. Cl. 60—39.16 S

4 Claims



1. A gas turbine-transmission plant which operates at a temperature  $T_{max}$  at full load comprising:

- (A) a combustor,
- (B) adjustable fuel supply means to said combustor,
- (C) said fuel supply means being adapted to provide, during part load and at a given turbine speed, a gas temperature, upstream of all turbine rotors, being substantially equal to  $T_{max}$ ,
- (D) a compressor part comprising a compressor and at least one turbine rotor driving the same for delivering air to said combustor,
- (E) a turbine part comprising at least one power turbine rotor connected to a load, and at least one auxiliary rotor arranged in a common gas flow passage from said combustor to thereby receive gas flow directly therefrom and rotating in a direction opposite thereto,
- (F) said power turbine rotor having conventional reaction type blades, and said auxiliary rotor having vanes with a symmetrical air foil cross section and with a rounded and aerodynamically favorable inlet edge arranged to form a vane grid providing essentially no expansion,
- (G) transmission means interconnecting said auxiliary rotor



and compressor driving turbine rotor, and arranged to permit transfer of torque in both directions, and (H) means for determining the rotational speed of the said auxiliary turbine rotor, to impose a load on said power turbine when the plant is operating at part load, to make said auxiliary rotor act as a fan.

4,282,710

### CONTROL SYSTEM AND METHOD FOR A PRESSURE RESPONSIVE FUEL REGULATOR

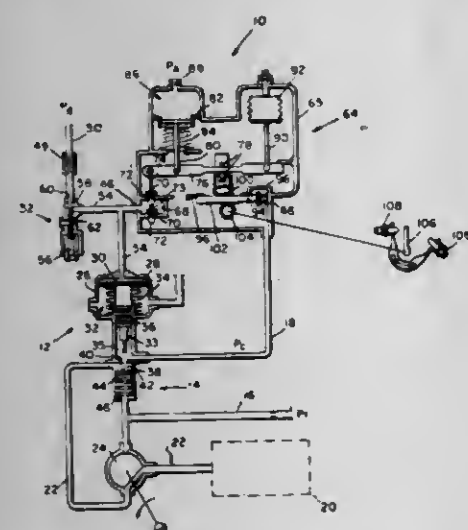
William W. Avant, Paradise Valley, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Feb. 26, 1979, Ser. No. 15,252

Int. Cl.<sup>3</sup> F02C 9/04

U.S. Cl. 60—39.28 R

35 Claims



1. A control system for a pressure-responsive fuel flow regulator, comprising pressure calculation means for providing a predetermined output control pressure; means for providing a source of ram air pressure; valve means movable between a first position for coupling the control pressure to the regulator, and a second position for coupling the ram air pressure to the regulator for controlling regulator fuel flow; and switch means for controllably shifting said valve means between said first and second positions.

4,282,711

### HYDROSTATIC TRANSMISSION CONTROL SYSTEM

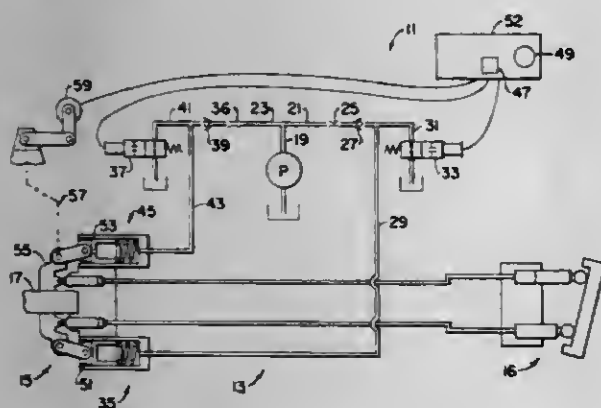
Ronald L. Branstetter, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jul. 26, 1979, Ser. No. 61,140

Int. Cl.<sup>3</sup> F16H 39/46

U.S. Cl. 60—395

15 Claims



1. In combination a hydrostatic transmission having a fluid responsive variable displacement pump unit in fluid communication with a motor, a pair of pressure responsive servo means for varying the displacement of said pump unit, a source of displacing fluid open to said pair of pressure responsive servo means, a reservoir, a first and second electrically responsive normally open valve means connecting said source and said

pair of pressure responsive servo means to said reservoir, and an electric control circuit for controlling said first and second electrically responsive valve means, wherein the electrical control circuit comprising:

- first means for generating a first electrical signal potential proportional to desired displacement of said unit;
- second means for generating a second electrical signal potential proportional to actual displacement of said unit;
- means responsive to said first and second electrical signal potentials for providing a first electrical output signal potential which is indicative of whether the displacement of said unit is less than or greater than the selected displacement;
- power output amplifier means for activating said first and second valve means; and,
- comparator means for receiving said first output potential and comparing said first output potential to a predetermined amount, should said first output potential indicate said unit displacement is less than said desired displacement and said first output potential is greater than said predetermined amount, said comparator means generates a second output potential sufficient to cause said power output amplifier means to activate said first valve means to initiate displacement in one direction of said unit, should said first output potential indicate said unit displacement is greater than said desired displacement and said first output potential less than said predetermined amount said comparator means generates a third output potential sufficient to cause said power output amplifier means to activate said second valve means to initiate displacement in another direction of said unit, should said first output potential be within a predetermined range of said predetermined amount said comparator means generates a second and third output potential sufficient to cause said power output amplifier means to activate said first and second valve means to maintain achieved displacement.

4,282,712

### DEVICES FOR EXTRACTING ENERGY FROM WAVES

Cecil A. Comyns-Carr, Bath, and Michael J. Platts, Willingham, both of England, assignors to The Secretary of State for Energy in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 7, 1979, Ser. No. 92,200

Claims priority, application United Kingdom, Nov. 17, 1978, 450748/78

Int. Cl.<sup>3</sup> F03B 13/12; E02B 9/08

U.S. Cl. 60—500

11 Claims



1. A device for extracting energy from waves on a liquid, comprising two members hingedly connected one to another so as to allow angular relative motion between the members in response to waves, at least one of the members being of buoyant construction, and pump means between said hingedly connected members for displacing fluid in response to said relative motion, wherein the improvement comprises, said pump means comprising a vane pump having a pump chamber defined by one end of one of the hingedly connected members, and a vane defined by the adjacent end of the other hingedly connected member and extending therefrom into said pump chamber so as to be displaced angularly in said pump chamber by said relative motion, thereby to displace said fluid.

4,282,713

### CONTROL FOR SUPERCHARGER TURBINES

Mitugu Antoku, and Fumio Saito, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

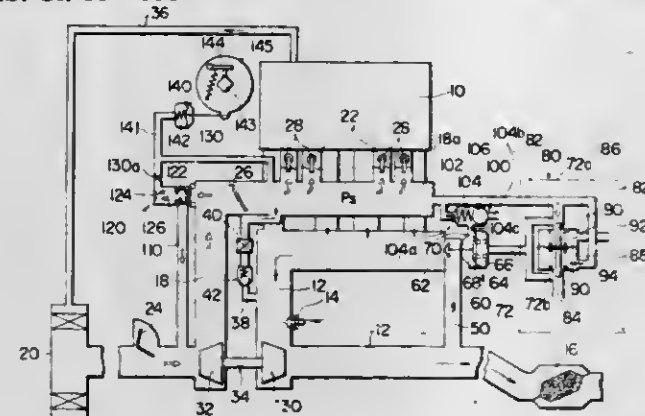
Filed May 26, 1978, Ser. No. 910,145

Claims priority, application Japan, May 26, 1977, 52-60509

Int. Cl.<sup>3</sup> F02B 37/00

U.S. Cl. 60—600

12 Claims



1. A waste gate control for an engine turbosupercharger having a turbine driven by gases exhausted from the engine to operate a compressor for supplying induction air to the engine through a throttle valve, said control comprising a passage for bypassing exhaust gases around the turbine, valve means in said passage for controlling fluid flow there-through, means normally biasing said valve means toward a closed position, and means for operating to force said valve means to an open position in response to the induction pressure exceeding a first predetermined magnitude and the induction pressure falling below a second predetermined magnitude lower than said first predetermined magnitude, wherein said means for forcing said valve means comprises a first controller operatively responsive to the induction pressure for producing first, second and third pressure signals when the induction pressure exceeds said first predetermined magnitude, when the induction pressure falls below said second predetermined magnitude, and when the induction pressure is between said first and second predetermined magnitudes, respectively, a second controller operatively responsive to the induction pressure for producing fourth and fifth pressure signals when the induction pressure exceeds said first predetermined magnitude and when the induction pressure falls below said second predetermined magnitude, respectively, and means operable in dependence on the pressure difference between the pressure signals produced by said first and second controllers for moving said valve means to an open position.

4,282,714

### EXPLOSIVE ACTUATED TOOLS FOR DRIVING ANCHORING MEMBERS

Gnilio Fiocchi, Milan, Italy, assignor to Berfi S.p.A., Milan, Italy

Filed Jan. 10, 1980, Ser. No. 111,164

Claims priority, application Italy, Jan. 23, 1979, 20575/79[U]

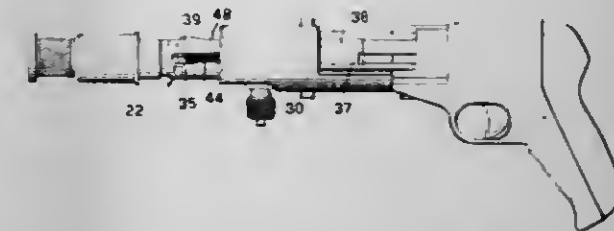
Int. Cl.<sup>3</sup> B25C 1/14

U.S. Cl. 60—632

4 Claims

1. Explosive actuation tool for driving anchoring members, of the type comprising a barrel slidable in a breech tube, having a central bore in which a driving piston is slidably housed, the rear end of the said barrel forming a firing chamber adapted to receive an explosive cartridge, said tool further comprising a trigger and firing pin mechanism and an extraction and ejection mechanism, characterized in that the extraction and ejection

mechanism for the cartridge case after the firing comprises a sleeve slidably mounted to the said barrel and having a half bottom which is complementary with respect to a half bottom provided in the end of the barrel, so as to form a cartridge chamber which is perimetally perfectly closed, said sleeve comprising a stop pawl, radially protruding and slidably engaged in a groove formed in the internal surface of the said breech tube, so as to stop at a predetermined point the sliding displacement of the sleeve together with the barrel, and spring means opposing to the sliding motion of the sleeve with respect to the barrel in the slipping off motion of the barrel with respect to the breech tube.



4,282,715

### METHOD AND APPARATUS FOR PREVENTING CORROSION IN A STEAM POWER PLANT

Bengt Edwall, Svarteso, S-274 CC Skurup, and Anders Kullen-dnrff, Linneavagen 33, S-61600 Aby, both of Sweden

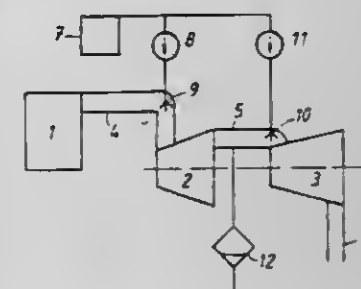
Filed Nov. 13, 1978, Ser. No. 960,017

Claims priority, application Sweden, Nov. 11, 1977, 7712753

Int. Cl.<sup>3</sup> F01K 21/06

U.S. Cl. 60—646

13 Claims



1. A method of operating a steam power plant with corrosion prevention, comprising the steps of: generating a supply of steam; adding hydrogen peroxide to the steam; supplying the steam to a first turbine; and, driving the first turbine with the steam.

4,282,716

### STIRLING CYCLE REFRIGERATOR

Yutaka Momose, Toynta, and Kazuaki Nakamura, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 16, 1979, Ser. No. 39,608

Claims priority, application Japan, May 16, 1978, 53-58109

Int. Cl.<sup>3</sup> F25B 9/00; F01B 29/10; F02G 1/04

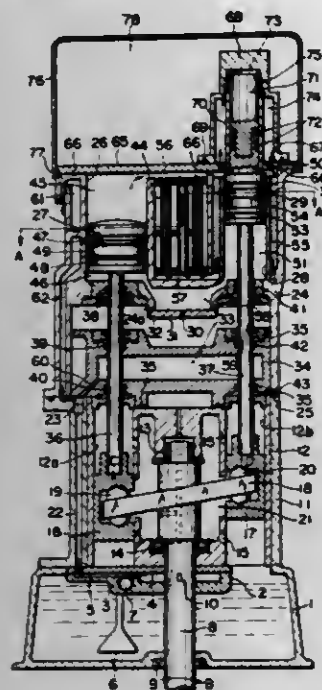
U.S. Cl. 62—6

5 Claims

1. Stirling cycle refrigerator which comprises a pair of compression chambers provided at diametrically opposite positions, a pair of compressor pistons positioned respectively in said compression chambers for reciprocating movement therein, a pair of displacer chambers provided at diametrically opposite positions with each other, said displacer chambers being located along a diametrical line which makes an angle of 90° with respect to a diametrical line along which said compression chambers are located, a pair of displacer pistons positioned respectively in said displacer chambers for reciprocating movement therein, rotatable swash plate means associated



with said compressing and displacer pistons for producing reciprocating movements of the pistons, one of said compressing chambers being connected with one of said displacer cham-

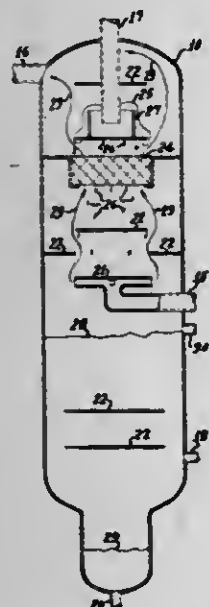


bers, and the other compression chamber being connected with the other displacer chamber so that stirling cycles are effected when the swash plate means is effected.

**4,282,717**  
**OIL SEPARATOR AND HEAT EXCHANGER FOR VAPOR COMPRESSION REFRIGERATION SYSTEM**  
Henry B. Bonar, II, 4939 Morven Rd., Jacksonville, Fla. 32210  
Filed Nov. 19, 1979, Ser. No. 95,499  
Int. Cl.<sup>3</sup> F25B 43/02

U.S. Cl. 62-84

13 Claims



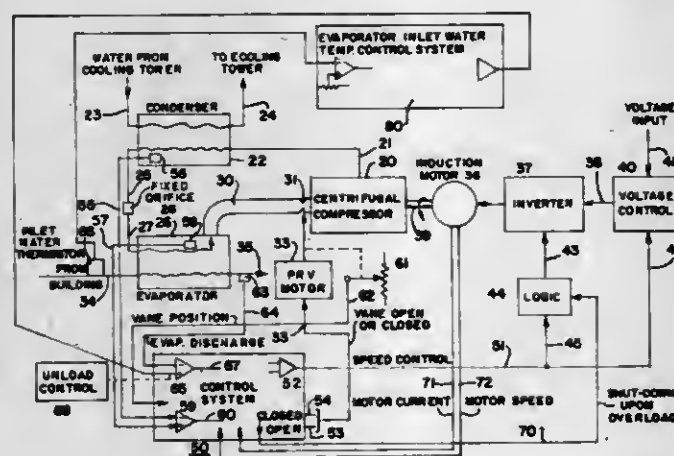
1. A method of removing oil from the refrigerant in refrigeration system including a motor driving a compressor for compressing the refrigerant vapor, a condenser for condensing the compressed vapor to a liquid, and an expansion device and an evaporator for expanding and evaporating the liquid to a vapor; the method comprising introducing hot compressed refrigerant vapors having a predetermined pressure and containing entrained droplets of oil into a confined space, introducing cool liquid refrigerant under sufficient pressure to overcome the pressure of the hot compressed vapors into the confined space spacedly above the introduction of the hot compressed refrigerant vapors such that droplets of the liquid refrigerant fall downwardly by gravity in direct contact with the upwardly flowing hot compressed refrigerant vapors to effect a countercurrent heat exchange therebetween, subjecting the vapors while in said confined space to sudden changes in flow

direction and to sudden changes in velocity to effect separation of the entrained oil droplets of oil from the vapors with the oil droplets falling by gravity into the bottom of the confined space into a pool of refrigerant liquid, separating the oil from the pool of refrigerant liquid, extracting the separated oil to lubricate the motor and compressor, and extracting the refrigerant liquid from the pool to the expansion device and the evaporator.

**4,282,718**  
**EVAPORATOR INLET WATER TEMPERATURE CONTROL SYSTEM**  
Kenneth J. Kountz, Hoffman Estates, Ill.; Richard A. Erth, and Dean K. Norbeck, both of York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.  
Filed Sep. 12, 1979, Ser. No. 75,041  
Int. Cl.<sup>3</sup> F25B 5/00; F25D 5/00

U.S. Cl. 62-115

16 Claims



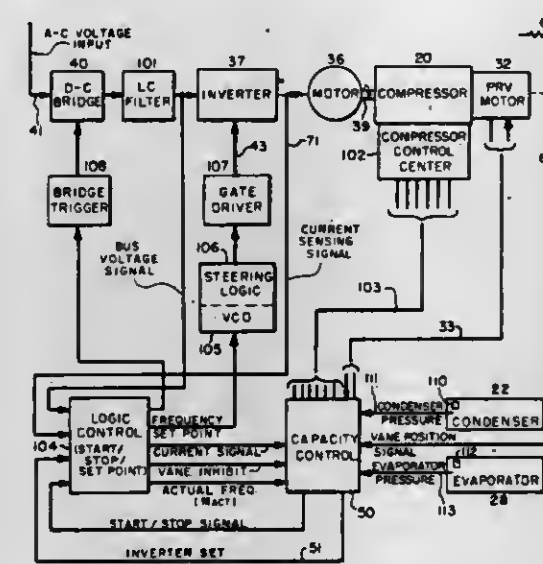
1. An evaporator inlet water temperature control system for a refrigeration system including a compressor having an adjustable capacity control means, a condenser and an evaporator having an inlet receiving fluid from a load and an outlet discharging chilled fluid to be returned to said load comprising:

- means for sensing the temperature of said fluid at the evaporator inlet,
- means for sensing the temperature of said fluid at the evaporator outlet,
- a first control circuit means coupled to said outlet fluid temperature sensing means to regulate said adjustable capacity control means in response to the temperature of said outlet fluid, said control circuit having a variable set point,
- means for establishing a set point temperature for the fluid at the evaporator inlet, and
- a second control circuit means coupled to said inlet fluid temperature sensing means and said set point temperature means to generate a differential electrical signal as a function of the difference between the sensed temperature and the set point temperature of the fluid,
- said second control circuit means having an output coupled to said first control circuit and dependent on said electrical signal for adjusting the variable setpoint and regulate the adjustable capacity control means to maintain the inlet set point temperature.

**4,282,719**  
**CONTROL SYSTEM FOR REGULATING LARGE CAPACITY ROTATING MACHINERY**  
Kenneth J. Kountz, Hoffman Estates, Ill.; Richard A. Erth, and Dean K. Norbeck, both of York, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.  
Filed Sep. 12, 1979, Ser. No. 75,044  
Int. Cl.<sup>3</sup> F25B 1/00

U.S. Cl. 62-115

4 Claims

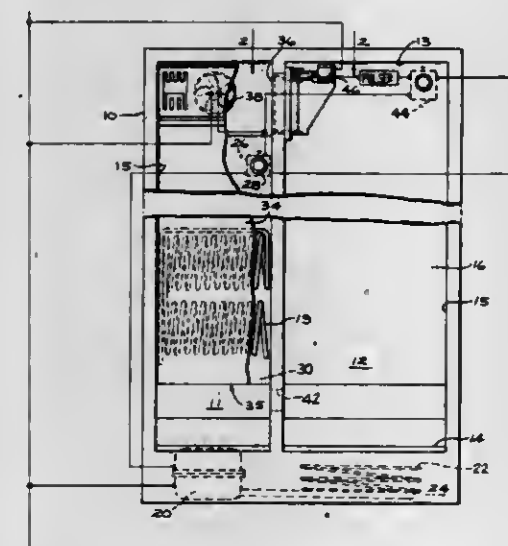


1. A control system for a refrigeration system including a compressor, a condenser and an evaporator, all connected in a closed refrigeration circuit, which compressor includes an adjustable capacity control means, means for regulating the adjustable capacity control means, an electrical prime mover connected to drive the compressor, and means for regulating the speed of the prime mover, which control system includes means for sensing the absolute condenser pressure and the absolute evaporator pressure and for regulating the adjustable capacity control means and the electrical prime mover in an energy-conservation manner while avoiding compressor surge in accordance with a control signal varying as a function of the expression  $(P_{cd} - P_{ev})/P_{ev}$ , where  $P_{cd}$  is the absolute condenser pressure and  $P_{ev}$  is the absolute evaporator pressure.

**4,282,720**  
**REFRIGERATOR AIR Baffle CONTROL**  
Richard L. Stottmann, and Gerhard K. Losert, both of Louisville, Ky., assignors to General Electric Co., Louisville, Ky.  
Filed Aug. 29, 1979, Ser. No. 70,565  
Int. Cl.<sup>3</sup> F25D 17/00; F16K 31/44

U.S. Cl. 62-180

18 Claims



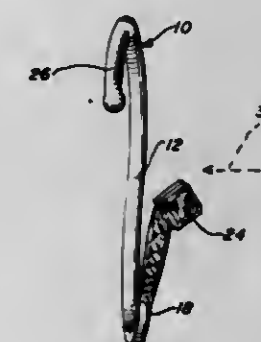
1. A refrigerator cabinet including a divider wall separating said cabinet into a freezer and fresh food compartments;

a housing arranged on said divider including a passageway communicating with said compartments;  
a valve member arranged in said housing for controlling the flow of air between compartments, said valve including axial members on the longitudinal ends thereof being arranged in said housing for allowing rotational movement of said valve in said passageway between set open and closed positions, one of said axial members having a drive end extending through said housing;  
valve positioning means on said drive end including a first and second ratchet means, each having a like number of teeth being spaced circumferentially so that the teeth of one of said ratchets are positioned intermediate the other; a solenoid mounted on said housing including an armature arranged for perpendicular movement relative to said axial members between a normal retracted position and a momentary extended position;  
actuating means on said armature including a first pawl dimensioned to engage a tooth on said first ratchet for imparting initial rotational movement to said valve during movement of said armature in one direction and a second pawl dimensioned to engage a tooth on said second ratchet for imparting a secondary continuing rotational movement to said valve during the return movement of said armature in the other direction to complete movement of said valve between its set positions;  
means for locking said valve in either of its set positions when said armature is in its deenergized position, including stop means on said drive end having spaced teeth, holding means movable with said armature being dimensioned to engage one of said teeth on said stop means when said solenoid is in its deenergized position to hold said valve in its set positions.

**4,282,721**  
**EAR ORNAMENT**  
Sally A. Roach, 222 Pearson East, Apt. 301, and Rob R. Hansen, 70 E. Walton, Apt. 4D, both of Chicago, Ill. 60611  
Filed May 1, 1980, Ser. No. 145,426  
Int. Cl.<sup>3</sup> A44C 7/00

U.S. Cl. 63-14 R

5 Claims



1. An ear ornament which comprises an elongated, curved rod member defining a stable frame proportioned to easily rest on an ear without discomfort, said member including a central body of generally C-shape, proportioned to reside behind an ear; a lower portion attached to one end of said C-shaped central body, said lower portion curving rearwardly from said central body through an arc, and proportioned to curve about the front of an earlobe to extend at least substantially across the entire earlobe; and an upper portion attached to the other end of said C-shaped central body to reside against the top of the ear and to curve toward the front of the ear in retentive relation thereto, said curved rod member defining a three-dimensional irregular spiral structure, with the irregular spiral extending in a dimension normal to said generally C-shape of the central body, said lower portion extending in said dimension, substantially without retrogression, to one side of the central body, said upper portion extending in said dimension, substantially without retrogression, to the other side of said central body.



**4,282,722**  
**DEVICE FOR PROTECTING IN PARTICULAR THE**  
**ARTICULATION AND BEARING OF A TRANSMISSION**  
**SHAFT**

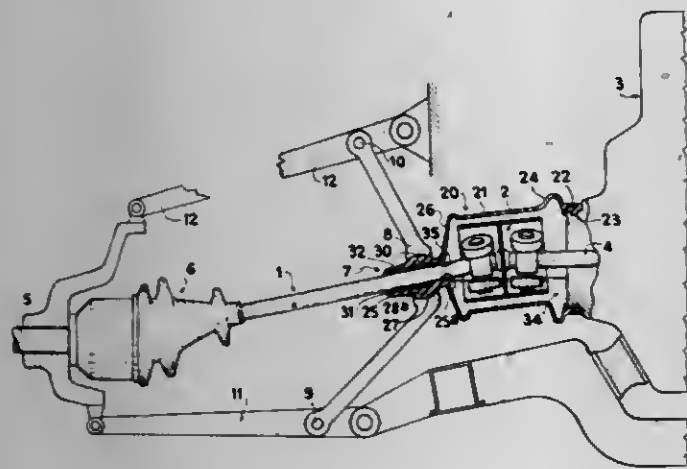
Michel A. Orain, Conflans Ste Honorine, France, assignor to  
 Glaenzer Spicer, Poissy, France

Filed Mar. 12, 1979, Ser. No. 19,898

Claims priority, application France, Apr. 26, 1978, 78 12336  
 Int. Cl.<sup>3</sup> F16D 3/84

U.S. Cl. 64—32 F

16 Claims



1. A structure comprising in combination a drive unit having an output shaft, a transmission shaft, an articulation interconnecting the output shaft and the transmission shaft, a support device combined with the unit, a protecting device comprising a gaiter of a deformable material which surrounds the articulation, said gaiter comprising a body surrounding the articulation, a mounting flange extending an end of the body, at least one fold interposed between the body and the flange, an elastomeric neck portion extending an end of the body remote from said mounting flange, means rigidly mounting the flange on the unit, the neck portion having a passageway through which the transmission shaft extends and being combined with the support device so as to be supported by and held longitudinally in position in the support device, a bearing mounted on the transmission shaft and held in the passageway of the neck portion with the elastomeric neck portion interposed between the bearing and the support device and engaging the bearing and the support device so that the bearing is resiliently supported, and sealing means in sealing contact with the transmission shaft and connected to the passageway of the neck portion on a side of the bearing remote from said mounting flange.

**4,282,723**  
**COUPLING**

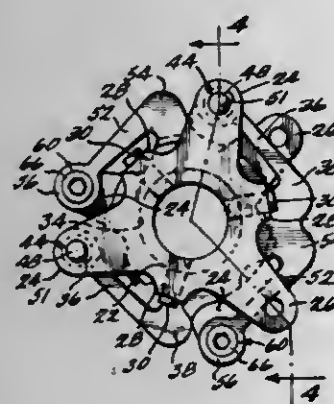
Richard Schmidt, 11525 Islandale Dr., Cincinnati, Ohio 45240

Filed Oct. 9, 1979, Ser. No. 82,928

Int. Cl.<sup>3</sup> F16D 3/70

U.S. Cl. 64—19

19 Claims



1. A coupling for uniformly transmitting torque from a first shaft to a second shaft while accommodating parallel, angular

and/or axial misalignment between the axes of said first and second shafts, said coupling comprising:

a first annular member having means for fixedly securing the same to the first shaft for rotation therewith about an axis of rotation coincident with the axis of the first shaft,

a second annular member having means for fixedly securing the same to the second shaft for rotation therewith about an axis of rotation coincident with the axis of the second shaft,

a third intermediate member having an axis of rotation aligned with the axes of rotation of said first and second annular members when the axes of the latter are aligned, said intermediate member including an annular portion disposed between said first and second annular members and first and second pairs of elongated generally parallel arm portions operatively associated with said first and second annular members respectively,

each of said arm portions including a fixed end fixedly interconnected with said annular portion within the axial extent thereof and a free end,

a first pair of connecting elements fixedly projecting axially from said first annular member and connected with the free ends of said first pair of parallel arm portions at positions related to the longitudinal extent of said first pair of parallel arm portions and the position of fixed connection of the fixed ends thereof with said annular portion so as to cause torque fixedly transmitted to said first annular member by the first shaft to be transmitted longitudinally through one of said first pair of arm portions to said annular portion under tension without longitudinal material displacement and through the other of said first pair of arm portions to said annular portion under compression without longitudinal material displacement while enabling through transverse material flexure of said first pair of arm portions the following relative motions of said annular portion with respect to said first annular member (1) a parallel linkage type substantially rectilinear movement in a first transverse direction generally perpendicular to the longitudinal extent of said first pair of parallel arm portions, (2) an angular movement about an axis extending generally in said first transverse direction, and (3) an axial movement, and

a second pair of connecting elements projecting axially from said second annular member and connected with the free ends of said second pair of parallel arm portions at positions related to the longitudinal extent of said second pair of parallel arm portions and the position of fixed connection of the fixed ends thereof with said annular portion so as to cause torque transmitted to said annular portion to be transmitted longitudinally through one of said second pair of arm portions to said second annular member under tension without longitudinal material displacement and through the other of said second pair of arm portions to said second annular member under compression without longitudinal material displacement while enabling through transverse material flexure of said second pair of arm portions the following relative motions of said annular portion with respect to said second annular member: (1) a parallel linkage type substantially rectilinear movement in a second transverse direction generally perpendicular to the longitudinal extent of said second pair of parallel arm portions and said first transverse direction, (2) an angular movement about an axis extending generally in said second transverse direction, and (3) an axial movement.

**4,282,724**

**CONTROL MAGNET SYSTEM**

Heinrich Elsässer, Stuttgart, Fed. Rep. of Germany, assignor to  
 Sulzer Morat GmbH, Fed. Rep. of Germany

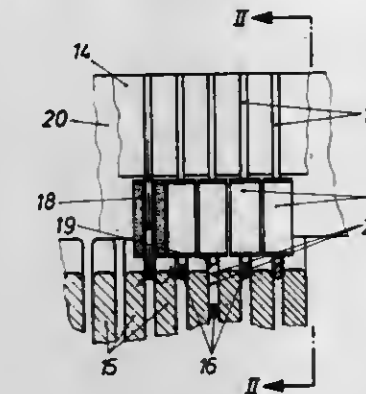
Filed Feb. 20, 1980, Ser. No. 122,866

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907008

Int. Cl.<sup>3</sup> D04B 7/00, 15/66

U.S. Cl. 66—75.2

7 Claims



1. A control magnet system for a pattern apparatus on a textile machine, in particular a knitting machine, comprising at least one permanent magnet which includes at least one control pole having a pole surface and controllable by means of a control coil and at least one co-operating pole having a pole surface, and comprising at least one armature which is freely movable relative to the two poles and which can be applied against the pole surface of the control pole against a spring force in such a way that, when the control coil is not energised, the armature remains against the pole surface of the control pole by virtue of the magnetic force produced by the permanent magnet, whereas, when the control coil is energised, the armature is released from the pole surface of the control pole by virtue of the spring force, wherein the pole surface of the control pole is arranged substantially perpendicular to the direction of release of the armature, characterised in that the pole surface (21) of the co-operating pole (15) is arranged substantially perpendicular to the pole surface (19) of the control pole (17 or 27, 28).

**4,282,725**

**CIRCULAR KNITTING MACHINE WITH LATCH**  
**DETECTOR**

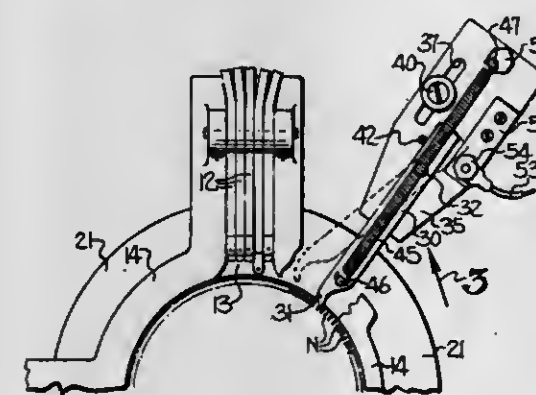
Harper Shields, Burlington, and Roscoe M. Farrell, Pittsboro, both of N.C., assignors to Kayser-Roth Hosiery, Inc., Burlington, N.C.

Filed Apr. 25, 1980, Ser. No. 143,793

Int. Cl.<sup>3</sup> D04B 35/10

U.S. Cl. 66—157

5 Claims



1. In a circular knitting machine including a circle of needles mounted for rotation about a fixed axis, each of said needles including an upper hooked end and a pivoted latch movable between open and closed positions, and yarn feed fingers for feeding yarn to said needles as said needles are raised and

lowered to form stitch loops, the combination therewith of latch detector means for detecting a latch improperly positioned in a closed position, said latch detector means comprising

- a trigger lever including a free end,
- means supporting said trigger lever for pivotal movement intermediate its ends and about an axis parallel to said fixed axis of said circle of needles, said free end being normally positioned in an operative latch detecting position immediately below the path of travel of said upper hooked ends of said needles so that a latch in the proper open position does not engage said free end of said trigger lever and while a latch in an improper closed position will engage and initially move said free end of said trigger lever to an inoperative position wherein said free end is moved in the direction of movement and outwardly away from the path of travel of said needles,
- stop means mounted on said supporting means and adapted to engage one side of said trigger lever for normally maintaining said free end of said trigger lever in said detecting position,
- resilient means mounted between said trigger lever and said supporting means for urging said trigger lever into engagement with said stop means with said trigger lever in said detecting position, and for immediately moving said free end of said trigger lever to said inoperative position outwardly and away from the path of travel of said needles upon being laterally deflected from said detecting position by a latch in an improper closed position, and
- sensor means operable by said trigger lever for signaling when said free end of said trigger lever is engaged by a closed latch and moved outwardly and away from the path of travel of said needles.

**4,282,726**

**ANTI-SLIP FOOTLET SOCK**

Donald L. Wilkins, Ringgold, Ga., assignor to Wayne Gossard, Inc., Nashville, Tenn.

Filed Oct. 31, 1979, Ser. No. 89,896

Int. Cl.<sup>3</sup> D04B 9/46

U.S. Cl. 66—172 E

8 Claims



1. A knit footlet sock adapted to be worn inside of a low cut shoe comprising, a foot portion including a toe portion and a heel embracing portion, a foot receiving portion positioned above and closely adjacent said heel embracing portion and adapted to encircle the ankle area of a wearer, said foot receiving portion including a roll top having the inherent tendency to roll outwardly from the ankle area of the wearer, said roll top comprising a plurality of courses of elastic yarn inlaid in a predetermined number of wales of a body yarn forming an outer selvage of the foot receiving portion, and a number of courses of an ornamental yarn forming a bulky stitch comprising several courses commencing with a first course spaced from the outer selvage by a lesser number of courses of said bulky stitches, said stitch being knit on the outside of said foot receiving portion in spaced wales of said predetermined number and floated over the wales intermediate said spaced wales on the inside of said foot receiving portion.



4,282,727

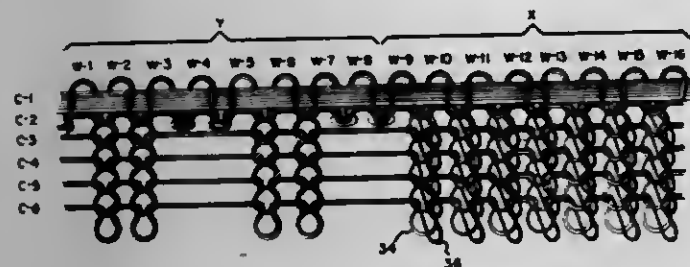
## DECORATIVE FOOTLET-TYPE SOCK

Albert R. Dunlap, Mt. Airy, and Dallas G. Nester, Burlington, both of N.C., assignors to Brown Wooten Mills, Inc., Burlington, N.C.

Filed Nov. 26, 1979, Ser. No. 97,134  
Int. Cl.<sup>3</sup> D04B 9/46

U.S. Cl. 66—172 E

4 Claims



1. A knit, low-cut, footlet-type sock adapted to be worn inside a low-cut shoe and substantially covered thereby with the exception of an exposed decorative welt, said welt comprising:

- (a) a rear portion extending around substantially the rear half of said welt, said rear portion comprising a substantially freely and outwardly rolled construction which encircles the lower ankle area when emplaced on the wearer, said rolled construction including a plurality of courses knit with a combination body yarn and elastic yarn with the body yarn formed in terry loops and the elastic yarn forming the backing therefor; and
- (b) a front portion extending around substantially the front half of said welt, the upper edge of said front portion being tacked down to the lower edge of said welt portion in a controlled, folded construction;
- (c) said front portion of said welt comprises: bands separated by at least one of relatively narrow, low relief wale-wise band;
- (d) said high and low relief bands being formed the inside of said welt portion of said sock, the welt portion being turned down and attached to the bottom of said welt along the upper edge of the front portion of said sock.

4,282,728

## KNEE PROTECTIVE SOCK

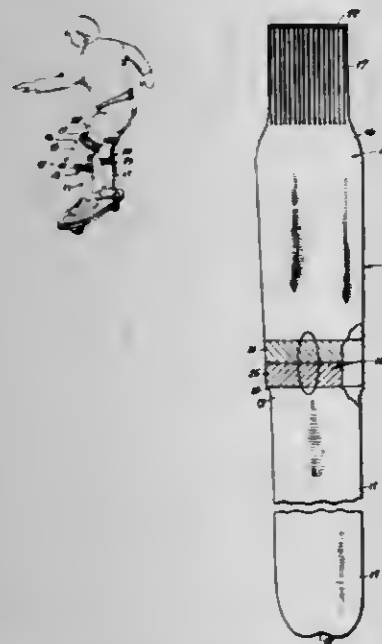
Robert H. Tapp, Bronxville, N.Y., and Clarence W. Wall, Newton, N.C., assignors to Rudin & Roth, Inc., New York, N.Y.

Filed Mar. 23, 1978, Ser. No. 889,501

Int. Cl.<sup>3</sup> D04B 9/46

U.S. Cl. 66—182

9 Claims



1. A knee protective sock comprising a one-piece knit construction comprising a first portion for the foot and calf, a

second portion for below the knee, and a third portion for the knee, said portions being integrally knitted, and wherein said third portion is of thicker knit than said other portions, and further comprising an elastic webbing attached to the third portion and forming the top of the sock, and wherein said first portion comprises a cotton thread and a stretch thread knit, said second portion comprising a two stretch thread knit, and said third portion comprising a three thread knit comprising two threads of cotton and one stretch thread, whereby the top elastic in combination with the said second portion grips the leg of the wearer to prevent slipping of all portions, and wherein the second portion is more elastic than the first and third portions so that said third portion is retained in position to protect the knee of the wearer.

4,282,729

## FOAM RANDOM DYEING SYSTEM

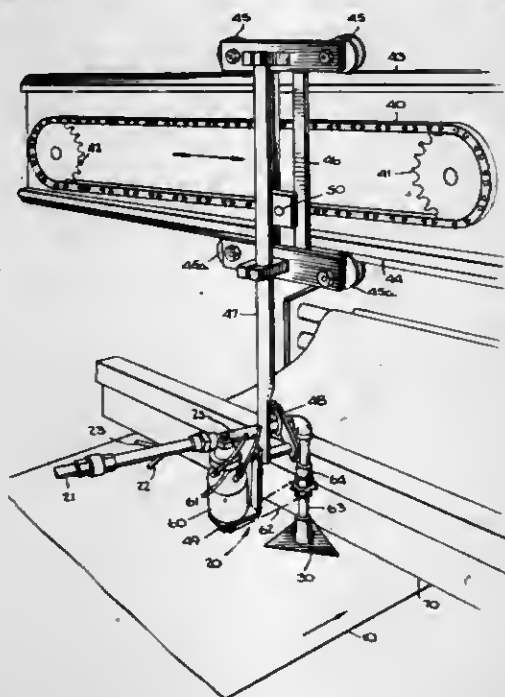
Larry G. Smith, North Augusta, S.C., assignor to United Merchants and Manufacturers, Inc., New York, N.Y.

Filed Sep. 28, 1979, Ser. No. 80,062

Int. Cl.<sup>3</sup> D06B 1/00

U.S. Cl. 68—205 R

18 Claims



1. An apparatus for applying a foamed composition onto a substantially horizontal textile fabric to impart a generally random coloring effect to the fabric which comprises: means for supplying a foam composition including a coloring agent therein; conduit means through which said foam composition and coloring agent are routed, said conduit means having the exit portion thereof disposed in a generally downwardly directed vertical direction; directing means disposed above and spaced from the substantially horizontal fabric being treated, said directing means being provided in association with the exit portion of said conduit means for causing the flow of the foam-color containing composition to be directed at least partially in a substantially horizontal direction prior to being fed downwardly from said directing means onto the fabric being treated; means for moving said conduit and directing means transverse to the direction of travel of said fabric being treated; and means for moving said directing means relative with respect to at least a portion of said conduit means independently of the foam supply means so as to cause the foam-color containing composition to impart a generally random coloring effect to the fabric.

4,282,730

## ANTI-THEFT DEVICES FOR AUTOMOBILE VEHICLES

Paul Lipschutz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

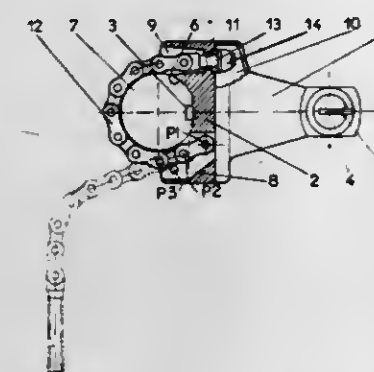
Filed Apr. 25, 1979, Ser. No. 33,294

Claims priority, application France, May 24, 1978, 78 15385

Int. Cl.<sup>3</sup> E05B 65/12; F16B 2/08

U.S. Cl. 70—184

4 Claims



1. A steering anti-theft device for an automobile vehicle, intended to be fitted on the steering column enclosing the steering shaft of the said vehicle, comprising

- (a) a base portion formed with a groove having a semi-cylindrical surface to permit location of said base portion on the steering column,
- (b) a body portion attachable to said base portion by means of screws with break-away heads,
- (c) a locking bolt within said body portion movable between a locking position in which the bolt engages an aperture in the steering shaft and a withdrawn position in which the steering shaft is unlocked,
- (d) a key-operated security lock within said body portion for effecting movement and locking of said locking bolt,
- (e) a plurality of discrete locations provided in said base portion each location capable of selectively and fixedly mounting pins arranged parallel to and spaced from the axis of said semi-cylindrical surface at different distances,
- (f) an elongated flexible element attached at one end to a selected one of said locations by a pin, and
- (g) adjustable connecting means on said base portion for securing the other end of the flexible element to said base portion, whereby after said flexible element has been wrapped around the steering column and said one end attached to the base at the selected location by the pin, the other end of the flexible element is secured to the base portion by said connecting means which are adjusted to tighten the flexible element around said column, whereafter said body portion is attached to said base portion.

4,282,731

## PIN-TUMBLER-TYPE LOCK HAVING ANTI-PICK SECURITY ACTION

Joseph G. Taksony, 2600 NE. Athens Way #A7, Bremerton, Wash. 98310

Filed Jun. 4, 1979, Ser. No. 45,238

Int. Cl.<sup>3</sup> E05B 63/00

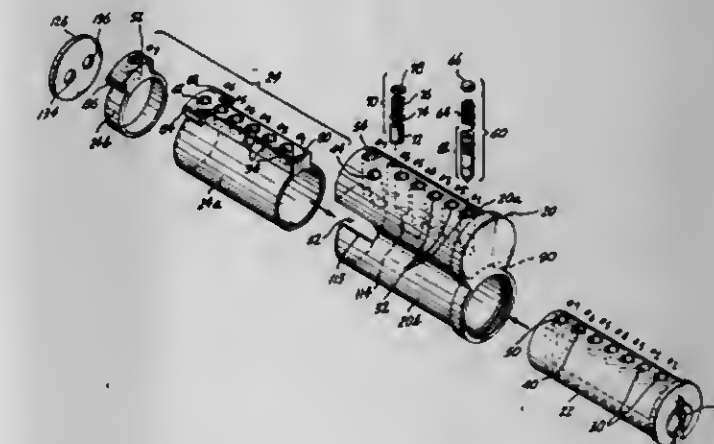
U.S. Cl. 70—364 A

18 Claims

1. In a lock of the type having a casing and a core housing that houses a locking mechanism and that is releasably retained within the casing, and wherein the locking mechanism includes a cylindrical locking/unlocking plug defining a keyway and includes a core retaining control sleeve rotatably fitted on the plug and disposed therewith in the core housing, and a row of transversely oriented tumbler bores and associated primary/control tumbler assemblies so constructed and arranged in the core housing, sleeve and plug so that the tumbler assemblies have true primary and control breakpoints which respectively enable a primary key to rotate the plug relative to the control sleeve and core for unlocking the lock, and enable a control key to rotate the plug and control sleeve relative to the core

housing for releasing the core housing from the casing, wherein the lock incorporates the improvement of an anti-pick jamming action that comprises:

said sleeve being transversely divided into first and second sleeve segments that are arranged for independent limited angular rotation relative to said core housing, said true primary/control breakpoints in said tumbler assemblies being disposed to that the primary key causes said plug to rotate relative to both said first and said second sleeve segments, and so that the control key causes said plug to rotate relative to said first segment and causes said second segment to rotate jointly with said plug relative to said core housing to release said core housing from said casing; at least a first security tumbler bore formed in said core housing so as to intersect with said first sleeve segment, and a security tumbler bore formed in said first sleeve segment so as to extend between said core housing and plug, and a security tumbler bore formed in said plug so as



to extend from said first sleeve segment inwardly into said plug, said security bores in said plug and first sleeve segment being normally aligned with each other and circumferentially offset from said first security tumbler bore in said core housing and being movable into alignment with said first security tumbler bore in said core housing when said first sleeve segment and said plug are caused to rotate relative to said core housing due to picking of breakpoints on said primary/control tumbler assemblies; and at least a first security tumbler means mounted in said first security tumbler bore of said core housing for causing said first sleeve segment and said plug to be jammed together so as to prevent relative rotation therebetween when said security tumbler bores in said plug and first sleeve segment become aligned with said first security tumbler bore in said core housing such that said plug cannot be rotated sufficiently relative to said core housing to open the lock because said plug is constrained to the limited angular rotation of said first sleeve segment.

4,282,732

## DUST COVER FOR LOCK

Robert A. Bennett, 170 Sturbridge Rd., Easton, Conn. 06425

Filed Jan. 7, 1980, Ser. No. 110,186

Int. Cl.<sup>3</sup> E05B 17/18

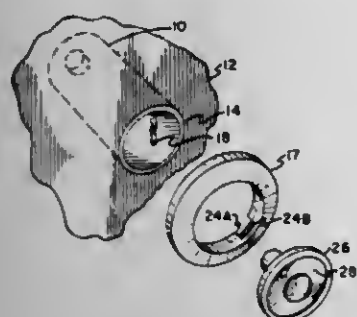
U.S. Cl. 70—455

5 Claims

1. In combination with a lock cylinder having one end with a key receiving aperture therein, said cylinder being disposed within a frame, a dust cover comprising: an annular member having a circular central opening centered on said one cylinder end, the diameter of said opening being slightly larger than the diameter of said cylinder, said member having front and rear surfaces, said member having a slot therein which extends from the rear surface of the member to a position intermediate the front and rear surfaces of the member, said slot communicating with said opening;



first means detachably securing the rear surface of said member to said frame;  
a circular disc having front and rear surfaces and adapted to be moved into and out of sealing engagement with said opening, the front surface of the disc being adjacent the front surface of the member when the disc engages the opening;  
second means pivotally interconnecting a portion of said



member to a portion of the periphery of said disc, one end of said second means being disposed in said slot to enable said one end of the second means to be rotatable in said slot and movable back and forth in said slot toward and away from the rear surface of said member; and  
an elongated pivot lever secured at one end to the center of the rear surface of said disc and extending at right angles thereto, the other end of said lever being engagable with said one cylinder end when the disc engages the opening.

4,282,733

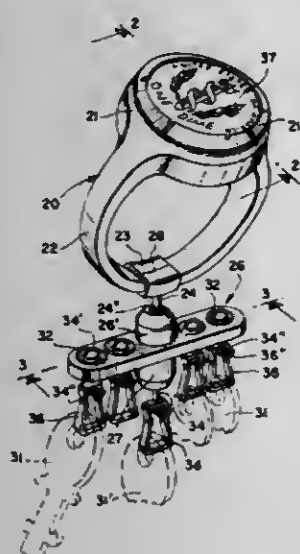
## FINGER-RETAINED KEY HOLDER ASSEMBLY

Dorothy D. Schmitt (Johnston), 4138 Eagle Rock Blvd., Los Angeles, Calif. 90065

Filed Nov. 29, 1978, Ser. No. 964,788  
Int. Cl.<sup>3</sup> A47G 29/10

U.S. Cl. 70—456 R

13 Claims



1. A finger-retained key-holder assembly comprising finger-retaining means adapted to be fitted to the fingers of a hand to permit the assembly to be dangled from and carried by the fingers without being gripped by the hand, a transverse key support bar extending more than the width of one finger and adapted to be leveled and gripped therebelow by the fingers against the palm of the hand, said finger-retaining means including a member embracing the top of the fingers and flexible and swivel means for connecting the key support bar to the finger embracing member to hold the key support bar closed upon the undersides of the fingers and foldable rearwardly into the palm of the hands outwardly thereof along the fingers, means for respectively loosely connecting the respective key supporting clips to the key support bar to normally dangle loosely therefrom, said key clips with the keys all being foldable into the palm of the hand or extendable along the under-

faces of the fingers of the hand, the overall height of the assembly with keys on the clips and when attached to the fingers being such that the keys may be easily reached and grasped by the thumb and forefinger of the same hand from which the assembly is being carried by the fingers, said fingers embracing member being a ring adapted to be fitted to the third finger of the hand, said flexible and swivel means for connecting the transverse key support bar to the ring comprising a socket attachment connected to the bottom of the ring band, a link of about the height of the finger thickness having an upper ball head swivelly carried by the ring band socket attachment and loosely depending therefrom, said transverse key support bar having a ball socket attachment and loosely depending therefrom, said transverse key support bar having a ball socket formation and said line having a ball head on its lower end seated in the support bar socket formation to swivel relative thereto.

4,282,734

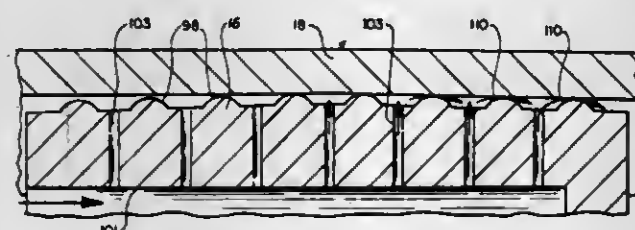
## STRUCTURE OF TRUING PISTON CYLINDERS

George R. Eddy, Coulter, Iowa, assignor to Century Machine, Inc., Coulter, Iowa

Filed Feb. 5, 1979, Ser. No. 9,408  
Int. Cl.<sup>3</sup> B21D 22/10

U.S. Cl. 72—54

6 Claims



1. A structure for truing piston cylinders, comprising:
  - (a) a mandrel support means including a piston cylinder support means mounted on a support base means, and a power supply means;
  - (b) a piston cylinder to be trued is mounted on said piston cylinder support means;
  - (c) a mandrel member is mounted in said piston cylinder support means, said mandrel member having portions thereof of a greater diameter than said piston cylinder;
  - (d) said mandrel member is forced through said piston cylinder by said power supply means to expand same to a desired trued diameter;
  - (e) said mandrel member includes a main body having a plurality of spaced sizing ring sections;
  - (f) said sizing ring sections of sections of progressively increasing diameters so as to progressively increase the diameter of said piston cylinder;
  - (g) said mandrel member having a leading end and a trailing end;
  - (h) a central fluid channel resembles a bore extends from said leading end toward said trailing end; and
  - (i) a plurality of fluid bleed holes, each extended between said central fluid channel and pairs of said sizing ring sections.

4,282,735

## BRAKE FOR SHEET METAL OR THE LIKE

Douglas G. Break, Farmington Hills, Mich., assignor to Van Mark Products Corporation, Farmington Hills, Mich.

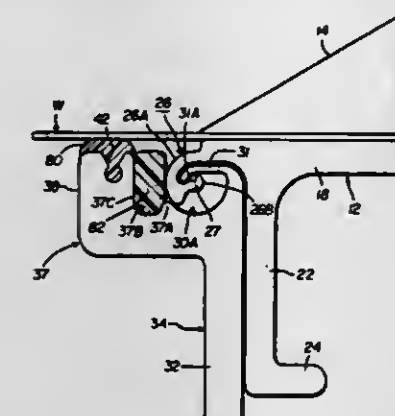
Continuation-in-part of Ser. No. 25,844, Apr. 2, 1979, abandoned. This application Aug. 21, 1979, Ser. No. 68,389  
Int. Cl.<sup>3</sup> B21D 5/04

U.S. Cl. 72—319

13 Claims

1. A brake for workpiece of sheet metal or the like comprising:
  - a base,

a jaw connected to said base having a linear edge about which the workpiece is to be bent,  
means connected to the base for clamping a planar portion of the workpiece against said jaw leaving exposed a portion of the workpiece to be bent against said edge  
a bearing connected to said base,  
a crank for mounting on said bearing, the bearing affording a linear axis of rotation for said crank, the axis and the line of said edge lying in a common plane and on opposite sides of the plane of the planar portion when clamped, the crank comprising (a) a drive arm and (b) a head as a driven arm for exerting a bending force on the exposed portion of



the workpiece against said edge when the drive arm is driven in one direction about said axis, said bearing receiving said crank and being engaged with said bearing by axial movement onto the bearing, and during engagement may be rotated on the bearing about the axis but cannot be radially disengaged, and said bearing comprising a member having an external cylindrical bearing surface of a first radius of curvature centered on said axis, said member having a second external cylindrical bearing surface of a second radius of curvature greater than said first radius and centered on said axis, and said bearing surfaces being diametrically remote with respect to each other relative to said axis.

4,282,736

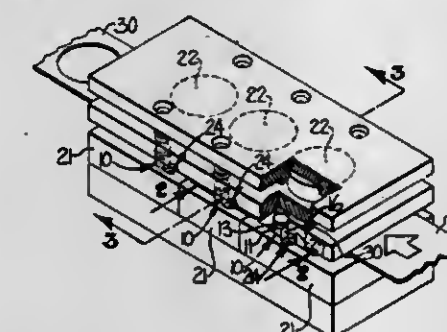
## STOCK LIFTER

Harry G. Mashburn, Asheville, N.C., assignor to Blue Ridge Industrial Technologies, Inc., Asheville, N.C.

Filed Mar. 13, 1980, Ser. No. 130,113  
Int. Cl.<sup>3</sup> B21D 45/00

U.S. Cl. 72—345

10 Claims



1. A stock lifter for use in pairs and at opposite edge portions of strip stock material for supporting and guiding such stock material from one pair of relatively movable opposing die members to another pair and for moving such stock material out of engagement with die members during separation of the die members following successive die operations on such stock material, said stock lifter being characterized as being capable of being positioned in any desired orientation in a supporting die member thereby effectively serving to reduce the amount of material required for the formation of such supporting die member, said stock lifter comprising
  - an elongate body adapted to be slidably supported in one of

the die members for longitudinal movement parallel with the relative movement of the die members,  
resilient means cooperating with and acting upon said elongate body for biasing said body outwardly from the supporting die member in a direction towards an opposing die member,  
said elongate body having a head defining an outer free end thereof with an annular groove extending around the entire circumference of said body adjacent to and below said head, and adapted for supporting and guiding the strip stock material during die operation,  
shoulder means located on and alongside the medial portion of said elongate body and adapted for being engaged by a hold-down fastener located in the supporting die member to retain said stock lifter and limit its extent of outward travel from the supporting die member,  
the medial portion of said elongate body being unobstructed from said shoulder means to adjacent said annular groove for avoiding interference with the inward sliding movement of the elongate body as when the die members are moved to closed position, and  
the annular nature of the stock supporting and guiding groove allowing said shoulder means and said unobstructed medial portion of said elongate body along with a hold-down fastener in the supporting die member to be oriented at any desired location around the circumference of the stock lifter instead of otherwise being positioned opposite that portion of the stock lifter supporting and guiding the strip stock material as heretofore, thereby allowing the supporting die member to be formed of a reduced width of material.

4,282,737

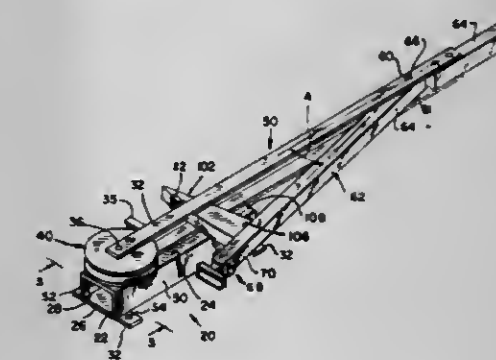
## HAND OPERATED BENDING APPARATUS AND METHOD FOR METAL BAR, TUBING AND THE LIKE

Billy G. Maples, 65 Dale Rd., Middletown, N.J. 07748  
Filed Mar. 24, 1980, Ser. No. 132,823

Int. Cl.<sup>3</sup> B21D 7/03

U.S. Cl. 72—388

13 Claims



1. Apparatus for a hand-operated bending of metal bars and/or tubing, said bending being automatically terminated when and as the bending reaches a preselected arc point, this apparatus including:

- (a) a base member providing means for mounting said base member to a worktable, vise and the like;
- (b) a forming die removably secured to and carried by the base member, said forming die having a theoretical center providing a bend radii means for a said metal bar, tubing and the like;
- (c) a first guide means removably secured to said base member and providing aligning and retaining means for maintaining said metal bar, tubing and the like in a longitudinal axial position with the forming die preparatory to being bent;
- (d) a sweep lever arm having one end pivotally secured to said forming die at an axis which is substantially at the center of a bend radii of and for the bar, tubing and the like being bent;
- (e) a force link having one end pivotally carried and



mounted in the sweep lever arm, this pivoted end mounted intermediate the extent of said sweep lever arm, a distal end of said force link having a second guide means adapted to engage said bar, tubing or the like prior to the bending of said bar, tubing and the like, wherein the distal end of the force link is swung from an included angle of zero degrees or alignment with said sweep lever arm a selected amount, to form an included angle between the force link and the sweep lever arm, and at this time the second guide means engages the bar, tubing or the like along a longitudinal extent;

(f) means for grasping and rotating the sweep lever arm about the forming die, said rotation progressively reducing the included angle between the force link and the sweep lever arm, so that at the completion of the bend of the bar, tube and the like the distal end of the force link swings to and through an included angle of zero degree and alignment with the sweep lever arm.

#### 4,282,738 METHOD AND APPARATUS FOR ADJUSTING STROKE LENGTH OF A RAM FOR PRESSES

Shigeo Kojima, Tokyo, and Katsumi Koyama, Hiratsuka, both of Japan, assignors to Amada Company, Limited, Kanagawa, Japan

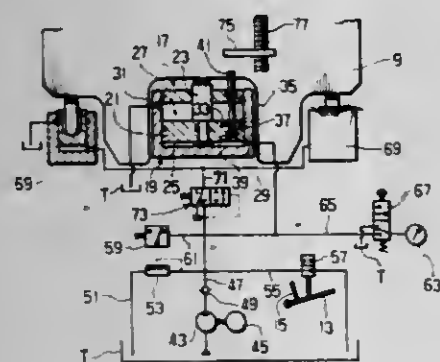
Filed Apr. 2, 1979, Ser. No. 26,367

Claims priority, application Japan, Mar. 31, 1978, 53-37529

Int. Cl.<sup>3</sup> B21D 5/02

U.S. Cl. 72-389

2 Claims



1. An apparatus for adjusting a stroke length of a ram for a press, comprising:
  - a ram;
  - a first tool held by the ram;
  - a frame aligned in opposition to the ram;
  - a second tool held by the frame;
  - hydraulic driving means for raising and lowering the ram;
  - rotary encoder means for detecting a point where said first and second tools are completely engaged with each other at a predetermined hydraulic pressure in the driving means;
  - control means for setting said point as a base point from which a stroke length of the ram is thereafter measurable with respect to said second tool, for storing said point as the base point, and for transmitting signals;
  - whereby the stroke length of the ram is adjusted with respect to said base point;
  - stopper means for stopping the ram at a desired position, said stopper means being adjustably provided on the frame;
  - a hydraulically acting chamber, provided in the driving means, for raising the ram;
  - check valve means for communicating with the acting chamber; and
  - a push rod means for contacting the stopper means at one end and for pushing the check valve means at its other end;
  - whereby the hydraulic pressure level in the acting chamber is adjusted.

#### 4,282,739 GEARED POWER AMPLIFICATION UNIT FOR PRESSES

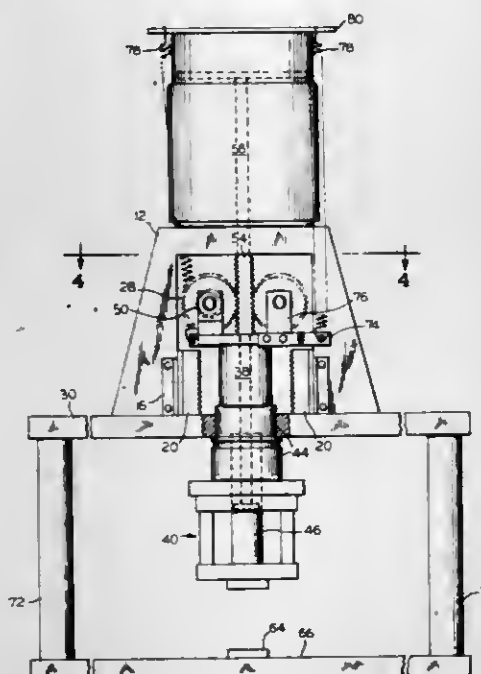
Norman P. Hallenbeck, Hebron, and Stephen F. Willard, Andover, both of Conn., assignors to N. P. Hallenbeck Company, Vernon, Conn.

Filed Aug. 8, 1979, Ser. No. 64,891

Int. Cl.<sup>3</sup> B21J 9/12

U.S. Cl. 72-449

12 Claims



1. A stamping press with an augmented power stroke comprising:
  - a. a support having a guide portion;
  - b. a ram slidably seated in said guide portion of said support for movement between first and second positions, said ram having a head portion at one end thereof adapted for mounting tool means thereon, said head portion being spaced from a workpiece when said ram is in said first position thereof and being spaced adjacent the workpiece when said ram is in said second position thereof;
  - c. elongated movable rack means providing a rack surface thereon extending generally parallel to the axis of movement of said ram;
  - d. drive means operatively connected to said movable rack means for reciprocation of said movable rack means in the direction of movement of said ram;
  - e. elongated stationary rack means fixedly mounted on said support and providing a rack surface extending generally parallel to said movable rack surface;
  - f. gear means on the end of said ram opposite said head portion, said gear means meshing with said rack surface of said movable rack means, said gear means being spaced from said stationary rack surface in said first position of said ram, said gear means meshing with said stationary rack surface, when said movable rack means move to a predetermined engagement distance from said second position, to produce movement of said ram in the direction of movement of said movable rack means but at a speed lower than that of said movable rack means, thereby affording said movable rack means in a mechanical advantage while said ram is between said second position and the predetermined engagement distance from said second position; and
  - g. means for maintaining said ram substantially in a predetermined position relative to said movable rack means while said stationary rack surface is spaced from said gear means but permitting relative movement while said stationary rack surface meshes with said gear means, said ram thereby moving with substantially the same velocity as that of said movable rack means while said stationary rack surface is spaced from said gear means but moving with a velocity whose ratio to that of said movable rack means is

determined by said gear means when said stationary means meshes with said gear means.

#### 4,282,740 HEIGHT EXTENDER FOR USE IN CONNECTION WITH AN APPARATUS FOR REPAIRING AND STRAIGHTENING

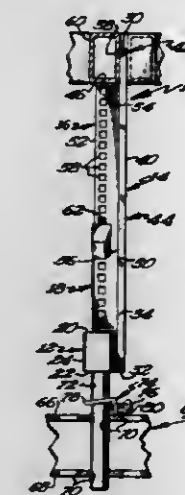
Gerald A. Specktor, 409 Cleveland Ave. South, St. Paul, Minn. 55105

Filed Aug. 3, 1979, Ser. No. 63,608

Int. Cl.<sup>3</sup> B21D 1/12, 1/14

U.S. Cl. 72-461

18 Claims



1. In an apparatus for repairing and straightening the body and frame of a high ground clearance wheeled vehicle including a tread member allowing the placement of the vehicle thereon, with the tread member including a plurality of apertures vertically passing therethrough, a bolster removably received in the tread apertures, and means for locking the bolster in the tread apertures, and with the bolster and tread member being adapted for receiving counterforces from the vehicle, the improvement comprising a removable, bolster height extender comprising, in combination: means for abutting with the vehicle; a sleeve member slidably mounted on the bolster for transferring counterforces to the bolster, with the sleeve member having an aperture of a size allowing receipt of the bolster; an elongated bar member connecting the abutting means with the sleeve member and vertically spacing the abutting means above the sleeve member, with the elongated bar member being spaced from the bolster when the bolster is received in the aperture of the sleeve member for preventing counterforces from being transferred directly from the elongated bar member to the bolster; first and second elongated brace members upstanding from and attached to the sleeve member and attached to the elongated bar member for insuring that the elongated bar member does not contact the bolster at all times when a counterforce is transferred from the vehicle to the bolster by the height extender, with the first and second elongated brace members including a series of positioning apertures passing therethrough; and a pin received in the positioning apertures of the first and second elongated brace members which abuts with and is supported on the bolster received in the sleeve member to allow the multilevel positioning of the height extender on the bolster, and with the sleeve member transferring all counterforces received by the height extender to the bolster adjacent to the tread member to avoid an undue amount of cantilever type counterforce into the tread member or the bolster.

#### 4,282,741 DEVICE AND METHOD FOR DETECTING ALKALI METALS

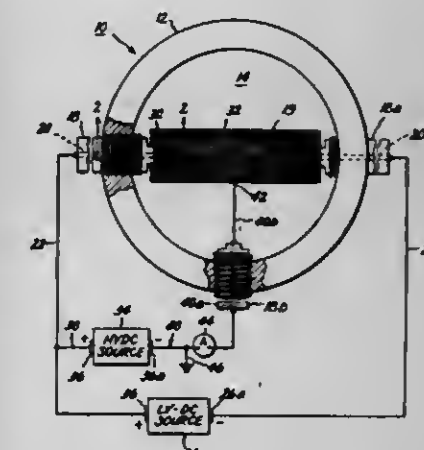
Andrew S. Zarchy, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 25, 1979, Ser. No. 33,257

Int. Cl.<sup>3</sup> G01N 27/00

U.S. Cl. 73-23

2 Claims



1. A device for detecting the presence of one or more alkali metals present in trace amounts in a flowing gas, comprising:
  - (a) a conduit defining a cavity adapted to conduct a flow of said gas along a flow path extending through said cavity,
  - (b) a generally straight metalliferous filament having a work function of at least 5.3 eV disposed within said cavity and extending transversely through said flow path,
  - (c) means for heating said filament to a temperature sufficient to ionize a substantial portion of the alkali metals,
  - (d) an electrically conductive ion-collection member including a portion surrounding said filament in closely spaced coaxial relationship therewith to define an ionization-collection region of said cavity, said surrounding portion having a plurality of through-holes adapted to pass at least a portion of said flow therethrough,
  - (e) means electrically connected at one end thereof through a first lead to said filament and connected at the other end thereof through a second lead to said ion-collection member for developing a high-voltage electrical field within said region, said field having lines of force extending from said filament through said flow path to said surrounding portion of said member to effect contact of said ions with said collection member and neutralization of said ions thus contacted,
  - (f) means operably associated with said second lead for generating a signal in response to said neutralization and proportional to the rate of neutralization, and
  - (g) means for both (i) electrically insulating said ion-collection member from said first lead and (ii) reducing leakage current through said signal-generating means, said insulating-and-leakage reduction means including (A) a first electrically insulating high-resistance sleeve extending longitudinally of and peripherally about said first lead adjacent the end thereof adjoining said filament, (B) an electrically conductive low-resistance metallic sleeve extending longitudinally of and peripherally about said high-resistance sleeve, (C) a second electrically insulating, high-resistance sleeve extending longitudinally of and peripherally about said metallic sleeve, and (D) means for electrically connecting said metallic sleeve to ground.





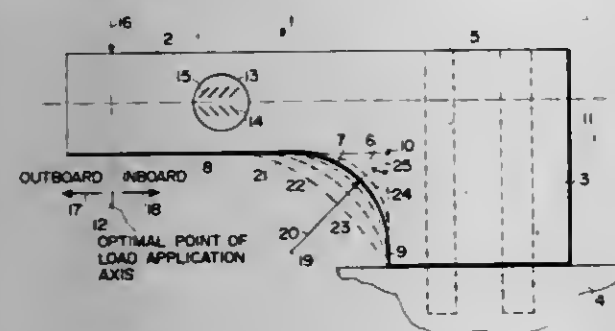


**4,282,748**  
**MECHANICAL MOMENT SENSITIVITY**  
**COMPENSATION IN SHEAR BEAM TRANSDUCERS**  
 Harry E. Lockery, Sudbury, and Eric Laimins, Belmont, both of Mass., assignors to Hottinger Baldwin Measurements, Inc., Framingham, Mass.

Filed Jan. 27, 1979, Ser. No. 52,613  
 Int. Cl.<sup>3</sup> G01L 1/04

U.S. Cl. 73—862.66

11 Claims

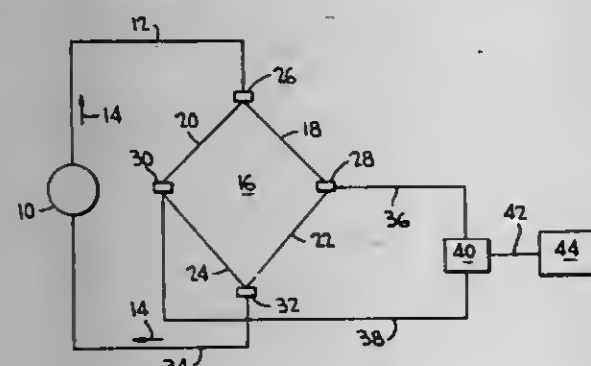


1. A method for mechanically compensating the moment sensitivity of a shear beam transducer having a free end load application section, a mounting section and fillet means located substantially where said sections merge, comprising the following steps: providing said fillet means with an initial fillet radius which differs from a final compensating radius, establishing a load application axis extending through an optimal loading point in said load application section of said shear beam transducer, applying a defined load to the shear beam transducer in said optimal loading point, measuring the respective transducer output, applying said defined load off-center relative to said optimal loading point and again measuring the respective transducer output, comparing the two transducer outputs with each other to ascertain any difference between the two measurements, mechanically changing said initial fillet radius, applying said defined load again off-center and measuring the resulting output, comparing the outputs again to see whether the respective difference has been reduced relative to said first mentioned difference, and continuing the foregoing steps including the mechanical changing of the fillet radius until said difference is substantially zero, whereby the shear beam transducer is made substantially insensitive to off-center load applications, and whereby all shear beam transducers of the same type may be provided with the same compensating fillet radius once the foregoing steps have been performed for one shear beam transducer of that type.

**4,282,749**  
**STRAIN MEASURING SYSTEM**  
 John D. Russell, 26878 Sea Vista Dr., Malibu, Calif. 90265  
 Filed Jan. 28, 1980, Ser. No. 116,145  
 Int. Cl.<sup>3</sup> G01L 5/00

U.S. Cl. 73—862.58

6 Claims



1. A system for measuring strain in a body subjected to stress comprising:  
 a plurality of strain-deformable members adapted for attachment to said body and arranged in a fluid bridge configu-

ration having a pair of fluid input junctions and a pair of fluid output junctions;  
 a source of fluid pressure connected across said fluid input junctions for supplying a fluid stream at a constant rate and pressure through said members in said fluid bridge; and  
 a pressure sensitive transducer connected across said fluid output junctions, whereby a change in fluid flow rate and pressure in said members effected by deformations produced by strains in the body will be detected by said transducer.

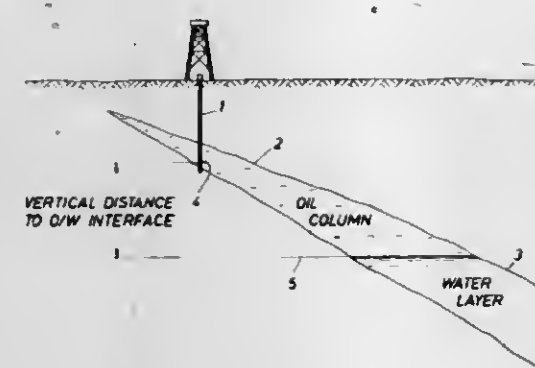
**4,282,750**  
**PROCESS FOR MEASURING THE FORMATION WATER**  
**PRESSURE WITHIN AN OIL LAYER IN A DIPPING**  
**RESERVOIR**

Michael Prats, and Alexander S. Williamson, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 4, 1980, Ser. No. 137,342  
 Int. Cl.<sup>3</sup> E21B 49/00

U.S. Cl. 73—155

7 Claims



1. A process for directly measuring a pressure substantially equaling the formation water pressure in an oil-productive portion of a subterranean reservoir comprising:  
 displacing a limited volume of water into a continuous water-phase which (a) extends through a material which has an oil entry pressure which is high enough to effectively prevent oil entry while maintaining a permeability to water and thus to function as a selectively water-permeable capillary diaphragm and (b) extends into the oil-productive reservoir;  
 allowing the pressure within said water-phase to be reduced by the imbibition of water into the reservoir; and,  
 subsequently measuring the pressure within said water-phase.

**4,282,751**  
**FLUID FLOWMETER**  
 James M. Brown, Allen Park; Hermann Kaiser, Utica, and Jerry A. Olson, Dearborn, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 29, 1979, Ser. No. 70,593  
 Int. Cl.<sup>3</sup> G01F 5/00

U.S. Cl. 73—202

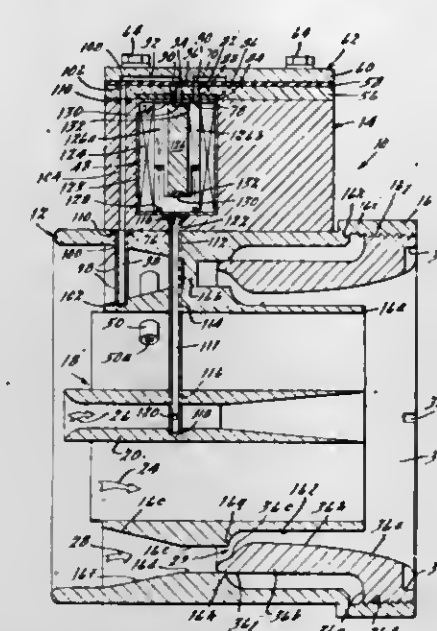
19 Claims

1. An improved fluid flowmeter of the type including a passageway for the flow of fluid therethrough and a fluid flow sensing means operative to generate a signal as a function of said fluid flow over a range of operation, said improvement comprising:

a bypass passage disposed substantially concentrically with said passageway and operative to interconnect a point within said passageway upstream of said fluid flow sensing means with a second point within said passageway downstream of said means; and

flow restricting means composed of nominally radially opposed inner and outer contoured protrusions disposed within said bypass passage and coacting to define a throat therein, and protrusions being preselectably axially dis-

placeable with respect to one another to establish a characteristic discharge coefficient within said bypass passage



which continuously increases with increasing fluid flow over the entire range of operation.

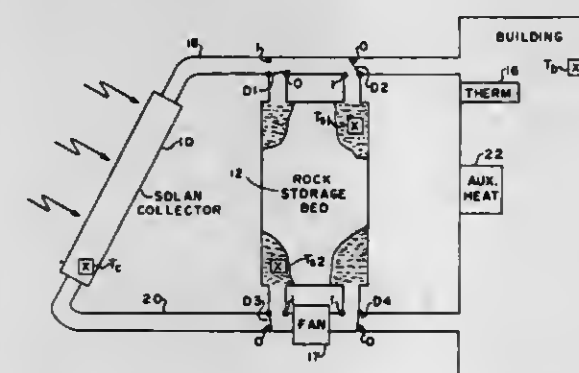
**4,282,752**  
**MULTI-CHANNEL TEMPERATURE MEASUREMENT**  
**AMPLIFICATION SYSTEM**

James R. Currie, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 29, 1979, Ser. No. 98,569  
 Int. Cl.<sup>3</sup> G01K 3/08

U.S. Cl. 73—341

6 Claims



1. A multi-channel temperature measurement amplification system comprising:

first, second, and third multiplexers having a plurality of sequentially operated, coordinately switched, channels, each channel having an input and output, the outputs of said first and second multiplexers being commonly connected together, and the inputs of the channels of said third multiplexer being connected together;

a reference and common input being connected to one input of a first of said coordinately switched channels of said first and second multiplexers;

at least one temperature measurement signal means for providing an input to an input of one, other than said first, channel of said first multiplexer;

amplification means comprising at least one amplifier stage and responsive to the sequential outputs of said channels of said first multiplexer for providing an output to inputs of said channels of said third multiplexer;

at least one reference temperature signal means for providing an input to one, other than said first, channel of said second multiplexer; and

signal correction means comprising:  
 a differential amplifier having its negative input coupled to the output of said first channel of said third multi-

plexer, its positive input connected to the output of the channels of said second multiplexer, and its output connected to the input of a stage of amplification of said amplification means, and

a capacitor being coupled between said first input and output of said differential amplifier, and the polarity of signal coupling of said differential amplifier being such that a negative feedback is effected from the output to input of said amplification means;

whereby at least one temperature measurement signal applied to an input of one of said channels of said first multiplexer is compared with a reference temperature signal, and a significant output is provided from one of the outputs of said third multiplexer when a temperature measurement signal exceeds a signal from said reference temperature signal means appearing in the same channel.

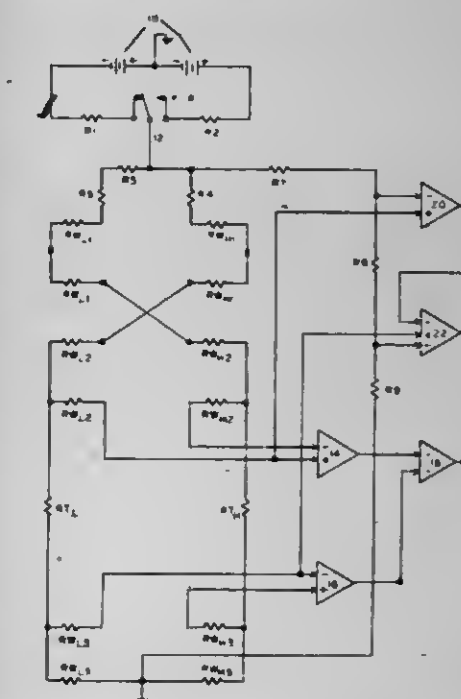
**4,282,753**  
**COMBINATION ABSOLUTE AND DIFFERENTIAL**  
**TEMPERATURE SYSTEM**

William A. Davidson, Evanston, Ill., assignor to The United States of America as represented by the Secretary of Transportation, Washington, D.C.

Filed Mar. 31, 1980, Ser. No. 135,370  
 Int. Cl.<sup>3</sup> G01K 7/18

U.S. Cl. 73—342

10 Claims



1. Apparatus for measuring a temperature differential between two spatially displaced points comprising:

first temperature sensor means, said first sensor means including a temperature responsive resistance element;

second temperature sensor means, said second sensor means including a temperature responsive resistance element;

means for connecting said sensor means resistance elements in adjacent legs of a bridge circuit, said bridge circuit having an excitation terminal;

a source of excitation current for said bridge circuit, said current source having a pair of opposite polarity terminals;

means for alternately connecting said bridge circuit excitation terminal to said opposite polarity current source terminals;

first differential amplifier means connected to first ends of each of said sensor means resistance elements, said first amplifier means providing a signal commensurate with the voltage difference at the said first end of said resistance elements;

second differential amplifier means connected to second ends of each of said sensor means resistance elements, said



second amplifier means providing a signal commensurate with the voltage difference at the said second ends of said resistance elements; and  
means connected to said first and second amplifier means and responsive to said signal commensurate with voltage difference for providing an output signal indicative of the difference in the temperatures to which said sensor means are exposed.

4,282,754

# TEMPERATURE SENSOR FOR MEASURING THE TEMPERATURE OF AN ENGINE

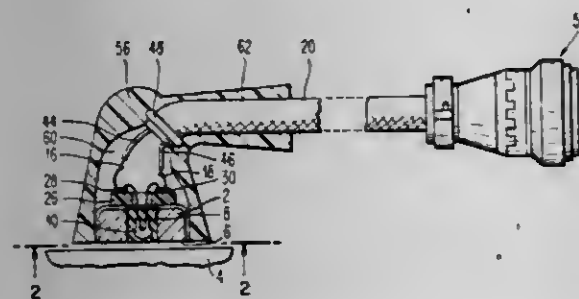
Robert Provasnik, Holland, Pa., assignor to Siemens Corporation, Iselin, N.J.

Filed Nov. 15, 1979, Ser. No. 94,438

Int. Cl.<sup>3</sup> G01K 1/14, 7/16

U.S. Cl. 73-346

6 Claims



1. A temperature sensor for measuring the temperature of an automobile engine, comprising:

- (a) a magnet of cylindrical shape having
  - (a1) a longitudinal axis, an aperture being formed along said axis and extending through said magnet,
  - (a2) a first flat end surface, and
  - (a3) a second flat end surface for magnetic attachment to said engine;
- (b) an electric heat sensitive device for temperature measurements, said device having electrical leads and being retained within said aperture by a heat-conductive material, and said electrical leads extending out of said aperture at said first flat end surface;
- (c) an electrical insulating board attached to said first surface of said magnet, said board having
  - (c1) a clearance opening for leading said electrical leads therethrough, and
  - (c2) electrical connection points on elongated contact means mounted on the free surface of said insulating board, said leads from said heat sensitive device being electrically connected respectively to said points;
- (d) a lead-out cable having lead-out leads, said lead-out leads being spacedly electrically connected via said contact means respectively to said connection points; and
- (e) a thermal insulating housing of an elastic and electrical insulating material, said housing enclosing said board and said connecting points and circumferentially encompassing and holding said magnet, thereby leaving open said second surface of said magnet, and said housing comprises an outlet portion for leading said lead-out cable out of said housing approximately parallel to said second surface of said magnet.

4,282,755

# TRANSDUCER DRIVE AND CONTROL

Bayard G. Gardiner, Skillman, and George W. Leber, Delran, both of N.J., assignors to Technicare Corporation, Solon, Ohio

Filed Dec. 5, 1979, Ser. No. 100,598

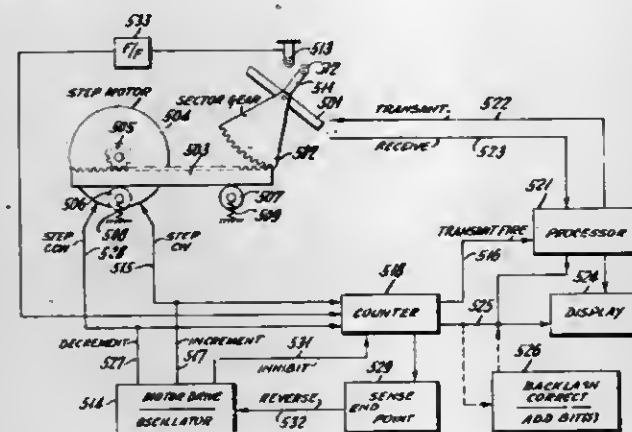
Int. Cl.<sup>3</sup> G01N 29/04

U.S. Cl. 73-634

8 Claims

1. In an ultrasound imaging system, scan and display control apparatus comprising:

- a. ultrasound transducer means adapted physically to oscillate about a predetermined axis;
- b. transducer positioning means for oscillating said transducer, an increment at a time, through a given arc about said axis, said positioning means including a stepping motor system and control means for energizing said motor system at predetermined time increments;
- c. means for sensing select passages of said transducer means through a given, predetermined portion of said arc, and for generating a reference signal pulse at each said sensed passage;



- d. counting means, responsive to said means for energizing and reset by each said reference signal pulse, for maintaining a representation of cumulative increments travelled by said transducer means from said predetermined position; and
- e. means, responsive to said counting means, for conditioning said positioning means to reverse the direction of oscillation of said transducer means about said axis when said counting means achieves select predetermined counts.

4,282,756

# APPARATUS FOR ESTIMATING THE STRAIN ON AN INACCESSIBLE PORTION OF A ROTATING SHAFT

Albert J. Molnar, Trafford; Fred H. Wolff, Penn Township, Allegheny County, and Donald G. Ramey, Churchill Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 10, 1979, Ser. No. 56,368

Int. Cl.<sup>3</sup> G01N 29/00

U.S. Cl. 73-650

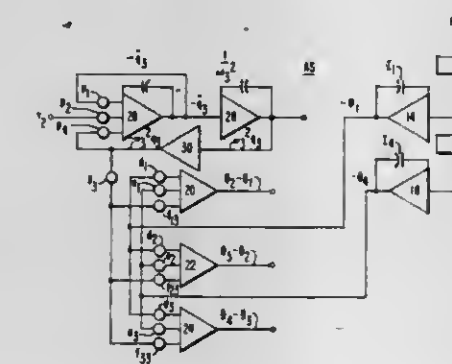
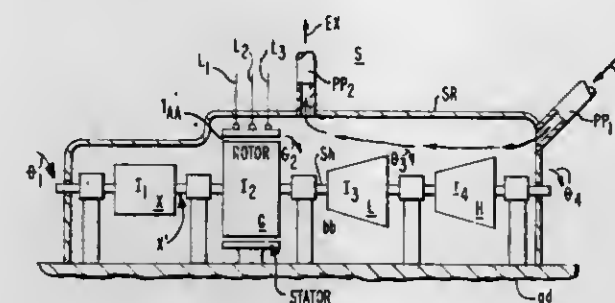
22 Claims

1. Apparatus for indirectly determining in a mechanical system the relative difference in instantaneous angular displacement ( $\theta_{m+1} - \theta_m$ ) between two rotating masses on a common resilient shaft to which is applied a driving torque ( $T_{app}$ ) and on which two other masses are accessible for direct monitoring, comprising:

- (a) first monitoring means disposed to monitor the first of said other masses for providing a first monitoring means output signal which is related to the instantaneous displacement  $\theta_1$  of said first other mass relative to a fixed reference;
- (b) second monitoring means disposed to monitor the second of said other masses for providing a second monitoring means output signal which is related to the instantaneous angular displacement  $\theta_n$  of said second other mass relative to said fixed reference;
- (c) torque detecting means disposed to detect said torque for providing a torque means output signal which is related to said torque ( $T_{app}$ ) at any instant of time;
- (d) solution means interconnected with said torque means and utilizing said torque means output signal as an input for generating the instantaneous value of a modal coordinate ( $q_a$ ) as a modal coordinate output signal in accordance with the continuous solution of the following differential equation:

$$q_a + K q_a + K_1 q_a = K_2 T_{app}$$

where K, K<sub>1</sub> and K<sub>2</sub> are constants determined by the physical properties of said mechanical system and the normal mode transform; and



- (e) summing means interconnected with said first monitoring means, said second monitoring means and said solution means for summing said first monitoring means output signal, said second monitoring means output signal and said modal coordinate output signal to produce a summing means output signal which is related to the quantity ( $\theta_{m+1} - \theta_m$ ) even though the values  $\theta_{m+1}$  and  $\theta_m$  have not been directly measured.

4,282,757

# DEVICE FOR DETECTING RATE OF CHANGE IN PRESSURE

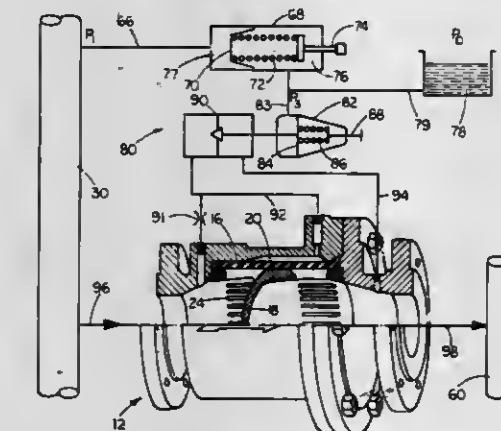
Alan R. Cohn, El Cerrito, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Oct. 1, 1979, Ser. No. 80,988

Int. Cl.<sup>3</sup> G01L 7/08; G05D 11/00

U.S. Cl. 73-714

5 Claims



1. Apparatus for detecting a rate of pressure increase higher than an acceptable level comprising:  
a monitor conduit to be connected at one end thereof to a pipeline to be protected;  
a monitor chamber with a uniform cross section connected

at one end thereof to the other end of said monitor conduit;  
a pressure-responsive, movable member across said chamber;  
a spring biasing said movable member toward said one end of said chamber; and  
means for producing a signal when rate of pressure increase in said pipeline exceeds a predetermined level;  
said last-named means comprising:  
an orifice in said monitor conduit; and  
a pilot valve with a valve member operated by a pressure-responsive member for comparing the pressures at said one and said other ends of said monitor conduit, operable to produce said signal when pressure at said one end exceeds pressure at said other end by a predetermined amount;  
first duct means connecting said other end of the monitor conduit to one side of said pressure-responsive member to bias said valve member toward closed position;  
adjustable force-applying means acting against said one side of the pressure-responsive member; and  
second duct means connecting said one end of the monitor conduit to the other side of said pressure-responsive member;  
said apparatus further including:  
a flow diverting line to be connected to said pipeline to deliver fluid to a reservoir;  
a surge relief valve in said diverting line to open when pressure in said diverting line overcomes pressure in a control jacket;  
said jacket being normally at a pressure to maintain said relief valve closed; and  
an evacuation line connecting said jacket to a zone of low pressure;  
said pilot valve being connected in said evacuation line.

4,282,758

# INDIVIDUAL LEAD PULL TEST FOR BEAM LEADED DEVICES

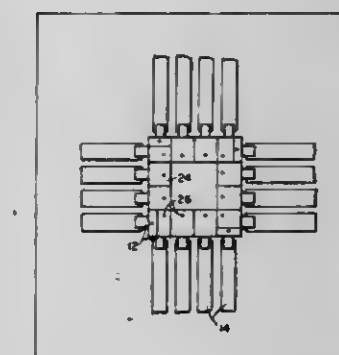
Richard M. Wootten, Huntsville, Ala., and Jake Herron, Jr., Niceville, Fla., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 20, 1979, Ser. No. 105,839

Int. Cl.<sup>3</sup> G01N 3/08

U.S. Cl. 73-827

3 Claims



1. A method for testing individual beam-leads of a chip-beam lead device that has a multiplicity of beam-leads bonded to respective conductors that are mounted on a substrate, said method comprising cutting said chip beam-leaded device into sections so that a beam-lead remains on each section, then cutting a hole through each cut section at a position adjacent to said beam-lead, placing a hook of a gram pull tester through said hole in said cut section and pulling said gram pull tester until said beam-lead breaks or is separated from said conductor to determine the bond strength of said beam-lead relative to said conductor.



4,282,759

# METHOD AND APPARATUS FOR NON-DESTRUCTIVE TESTING OF BEAM-LEAD INTEGRATED CIRCUIT CONNECTIONS

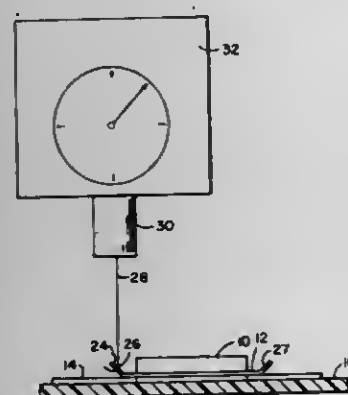
Jimmy D. Merrell, Madison, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 26, 1979, Ser. No. 106,983

Int. Cl.<sup>3</sup> G01N 3/08

U.S. Cl. 73—827

2 Claims



1. A method for testing individual beam-leads of a chip beam-leaded device that has a multiplicity of beam-leads bonded to respective conductors that are mounted on a substrate and with each of said beam-leads having a pull tab with a weakened area, said method comprising connecting a pull hook of a pull tester to said pull tab by inserting said hook through an opening in said pull tab and then exerting a predetermined pull force from said pull tester to said pull tab until said pull tab is broken at said weakened area to determine that the individual beam-lead is sufficiently bonded to its respective conductor.

4,282,760

# MULTIPHASE FLUID FLOW METER (D#76,244)

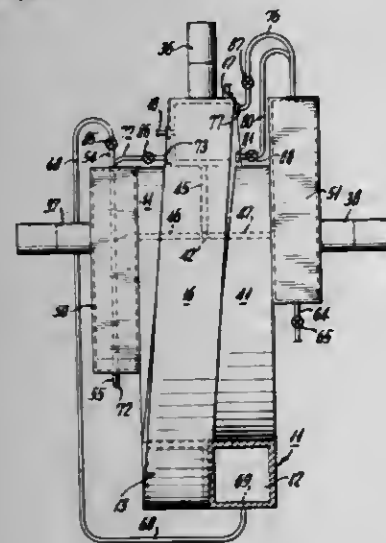
Robert W. Pitts, Jr.; Dan M. Arnold, and Hans J. Paap, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 23, 1980, Ser. No. 114,482

Int. Cl.<sup>3</sup> G01F 1/88

U.S. Cl. 73—861.02

8 Claims



1. Improved multiphase fluid flow meter wherein one of said phases is a gas, comprising a conduit for said fluid to flow therethrough, said conduit including a full circle loop for subjecting said fluid to centrifugal force, first means for measuring the pressure differential between the center and outside radii on said loop, second means for measuring the pressure differential between the inside and center radii on said loop.

means for measuring the average density taken radially across the fluid flowing through said loop, means for measuring the density of said gas phase, and means for measuring the density of said liquid phase, all whereby rates of fluid flow including said gas flowing through said meter may be measured.

4,282,761

# FLUID FLOW METER

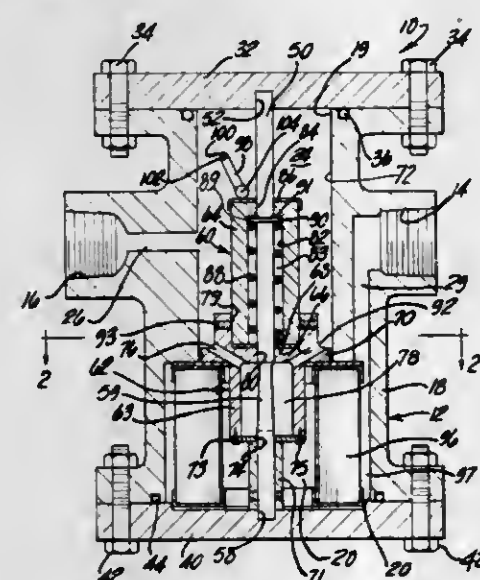
Nils O. Rosaen, 5490 Waldon, Clarkston, Mich. 48016

Filed Aug. 20, 1979, Ser. No. 67,444

Int. Cl.<sup>3</sup> G01F 1/22

U.S. Cl. 73—861.58

14 Claims



1. A fluid flow meter comprising: a housing having a fluid inlet and a fluid outlet radially disposed in said housing; fluid passage means formed through said housing for connecting said inlet with said outlet, said passage means including an elongated chamber and means connecting one end to the inlet and its other end to the outlet; a piston assembly axially slidably mounted in said housing chamber and movable between a first and a second position; means for fluidly sealing said piston assembly to said housing; said piston assembly further comprising an orifice plate having a fluid port open to the inlet end of said chamber, said orifice plate being removable from said piston assembly, and means formed through said piston assembly for fluidly connecting said port to the outlet end of said chamber; means for resiliently urging said piston assembly toward the inlet end of the chamber; a rod held in said housing and extending axially through at least a portion of said chamber, said rod having a tapered portion which extends through said port and variably restricts said port in dependence upon the axial position of said piston assembly; means for exteriorly indicating the axial position of the piston assembly; and said housing having a removable end cover on an axial end of the chamber on the side of the piston assembly opposite the resilient urging means, said orifice plate being removable from said piston assembly and removable from said housing without disturbing or replacing said piston assembly or said rod when said end cover is removed from said housing whereby said orifice plate can be replaced with another orifice plate having a different size port to thereby change the flow range of the flow meter.

4,282,762

# LOAD SENSING TRANSDUCER

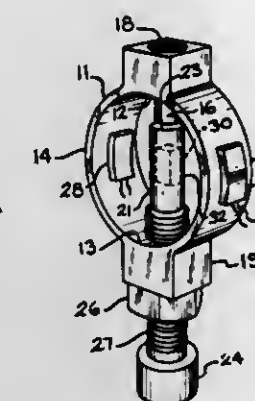
Richard L. Zenker, Grosse Pointe Woods, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Oct. 29, 1979, Ser. No. 88,879

Int. Cl.<sup>3</sup> G01L 1/22

U.S. Cl. 73—862.52

5 Claims



1. A dual range load measuring transducer comprising an annular member having two diametrically opposed end regions and two diametrically opposed side regions spaced between said end regions, means for applying a load between said end regions, such load elastically deforming said side regions, first strain gauge means for measuring any force between said end regions deforming said side regions, an anvil, an adjustable spindle, means mounting said anvil on said spindle within said annular member in alignment with said diametrically opposed end regions and spaced apart to define a gap, said gap having a preselected adjustable spacing which closes when an applied load between said end regions exceeds a predetermined load whereby such predetermined load is the maximum load deforming said regions and any additional load above such predetermined load is transmitted between said anvil and said spindle, and second strain gauge means located on one of said spindle and said anvil for measuring any load transmitted between said anvil and said spindle.

4,282,763

# COMPOUND OSCILLATOR

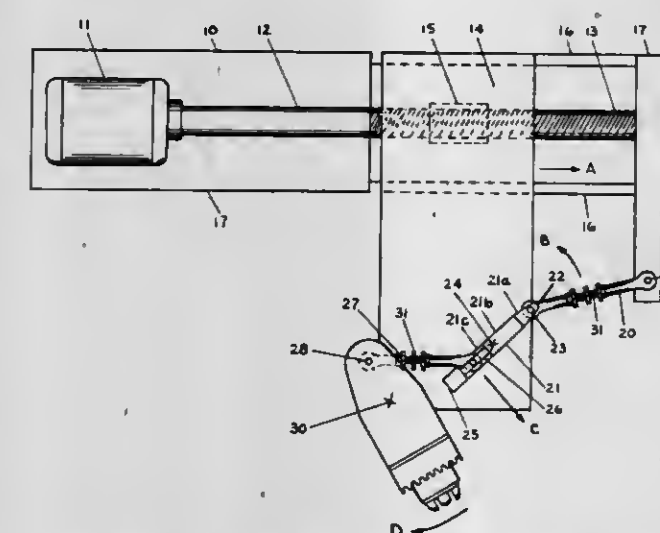
Elmer L. Griebeler, Cleveland Heights, Ohio, assignor to C-R-O, Inc., Menomonee Falls, Wis.

Filed May 15, 1979, Ser. No. 39,200

Int. Cl.<sup>3</sup> F16H 27/02, 21/44

U.S. Cl. 74—89.15

14 Claims



1. Apparatus for variable oscillatory movement comprising a central member having a first end and a second end, a first link pivotally affixed at one end thereof to said central member at a first-link attachment intermediate said first end and said second end, said first link being pivotally mounted at a fixed location at an end opposite said end affixed to said central member, a second link pivotally affixed at one end thereof by

an adjustable resultant member to said central member intermediate said first-link attachment and said second end, said central member being pivotally attached to a carrier by a fulcrum, said fulcrum being intermediate said first-link attachment and said second end, said carrier being rectilinearly movable relative to said fixed location.

4,282,764

# ROTARY TO LINEAR ACTUATOR AND METHOD OF MAKING THE SAME

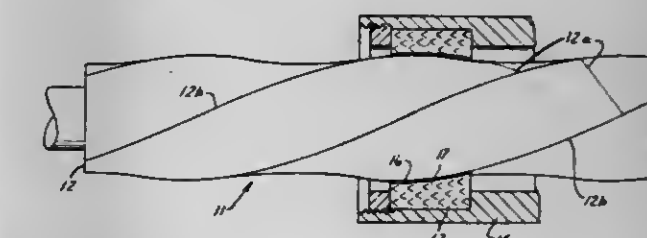
Bernard Harris, Bayside, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Sep. 17, 1979, Ser. No. 75,930

Int. Cl.<sup>3</sup> F16H 1/18; B65H 81/00

U.S. Cl. 74—89.15

9 Claims



1. A rotary-to-linear actuator which includes a rigid shaft and a low friction material lined filament reinforced resin collar, the shaft having a helical groove, the collar having a corresponding spiral ridge, said helical groove being of the form generated by a straight line of fixed angularity respecting a plane normal to the helix axis, the fixed angle referred to being between 30 and 45 degrees, the reinforcing of the collar comprising successive layers of parallel filaments helically wound over and around the low friction material, the first layers which form the inner layers of the collar being wound at an angle not greater than said fixed angle such that the filaments lie across the projecting face of the spiral ridge and do not span the groove whereby the low friction material is directly supported against the outer dimensions of the shaft.

4,282,765

# ANGLE GEAR FOR VEHICLE STEERING MECHANISM

Karl Ashauer, and Fritz Blumenstein, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

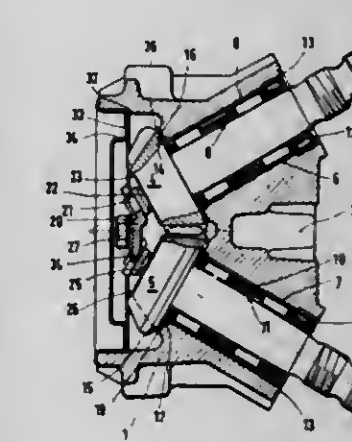
Filed Jul. 5, 1979, Ser. No. 54,892

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829895

Int. Cl.<sup>3</sup> F16H 1/14

U.S. Cl. 74—417

8 Claims



1. An angle gear for a vehicle steering mechanism with two meshing bevel gears rigidly mounted on shafts which can be axially displaced in a housing and whose axes form an angle relative to each other, characterized in that on the housing there is maintained a support arrangement with bearing sur-



faces directed essentially perpendicular to the end faces of the bevel gears and bearing against said end faces of said gears for support of them against axial forces.

#### 4,282,766 ADJUSTING MECHANISM FOR REGULATING DEVICES

Rudolf Huber, Vienna, Austria, assignor to Hoerbiger Ventilwerke Aktiengesellschaft, Vienna, Austria

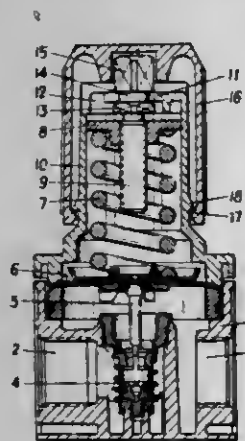
Filed Jul. 25, 1979, Ser. No. 60,727

Claims priority, application Austria, Jul. 25, 1978, 5413/78

Int. Cl.<sup>3</sup> F16H 1/20; F16K 31/12

U.S. Cl. 74-424.8 VA

6 Claims



1. An adjusting mechanism for a regulating device, said mechanism including

an elongated housing which has an end wall including a key slot therethrough that is shaped to have a larger portion and a smaller portion, the smaller portion being positioned so as to be in alignment with the axis of said housing, a spring collar which is slidably mounted in said housing to be movable towards and away from said end wall, said spring collar having a threaded hole therethrough which is in alignment with the axis of said housing,

a regulating spring mounted in said housing, one end of said regulating spring abutting said spring collar and the opposite end being in contact with a movable part of said regulating device, movement of said spring collar away from said end wall causing said regulating spring to be compressed against said movable part of said regulating device;

an adjusting spindle which is shaped to have an elongated threaded lower portion, a collar portion and an upper portion, said collar portion having larger radial dimensions than the smaller portion of said key slot whereas said upper portion includes at least a section which has smaller radial dimensions than said smaller portion of said key slot, said elongated threaded lower portion and said collar portion of said spindle being movable through the larger portion of said key slot in said end wall and repositionable such that said threaded lower portion will threadingly engage the axial threaded hole in said spring collar and such that said section of said upper portion of said spindle will fit within said smaller portion of said key slot, the collar portion of said spindle preventing said spindle from thereafter being removed through said smaller portion of said key slot,

rotation of said spindle moving said spring collar along said housing and thus adjusting the pressure of said regulating spring against said movable part of said regulating device.

#### 4,282,767 REDUCTION GEAR

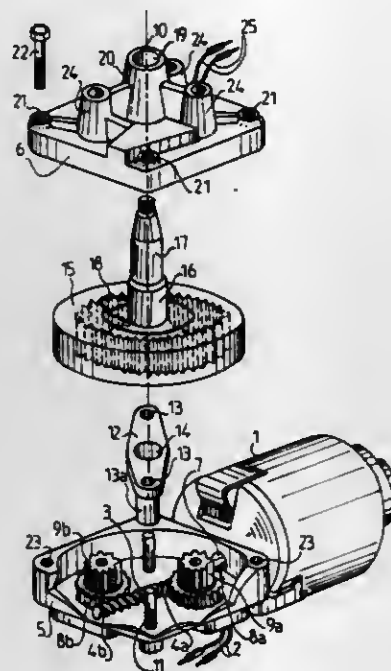
Roland R. Guichard, Chaource, France, assignor to Societe pour l'Equiptement de Vehicules, Issy-les-Moulineaux, France

Filed Jul. 2, 1979, Ser. No. 53,812

Int. Cl.<sup>3</sup> F16H 1/20

U.S. Cl. 74-427

13 Claims



1. A reduction gear unit comprising a housing which is adapted to be fixed to a motor; a drive output shaft rotatable about an axis; gear transmission members in said housing and connected to said drive output shaft; and means on said housing defining a journal bearing for said drive output shaft, said housing being externally substantially symmetrical in relation to said drive output shaft, wherein said housing comprises: (a) a casing having an open side, and a closed side which is perpendicular to the axis of rotation of said drive output shaft; (b) a cover closing said open side; (c) means on said cover for securing the reduction gear unit on a support; wherein said cover is secured on the casing at n points which are regularly interspaced around said axis of the drive output shaft at the same distance from said axis; and wherein said cover carries p securing means regularly distributed around said axis of the drive output shaft at the same distance from the said axis, p being an integer which is different from n.

#### 4,282,768

VIBRATION ISOLATION MOUNT FOR GEAR SHIFTER  
Charles Osborn, Spring Lake, Mich., assignor to JSJ Corporation, Grand Haven, Mich.

Filed May 25, 1979, Ser. No. 42,220

Int. Cl.<sup>3</sup> G05G 9/12, 25/00

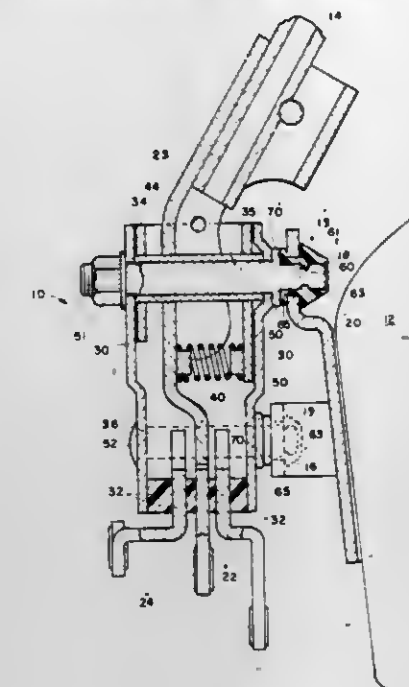
U.S. Cl. 74-473 R

21 Claims

1. In an automotive transmission shifter of the type mounted directly on an automotive transmission and including a shift stick extending into a vehicle passenger compartment, said shifter comprising a plurality of displaceable gear actuators and a plurality of spacer plates sandwiched between a pair of side plates, said side plates being bolted together by at least one bolt, the improvement comprising sound and vibration isolation means disposed between the transmission and said shifter comprising:

a plurality of sound and vibration isolating grommets for

providing a widely spaced three-point connection between the transmission and said shifter; and



at least one post for mounting one of said grommets disposed on the end of said at least one bolt.

#### 4,282,769

TRANSMISSION SHIFTER NEUTRAL LOCK

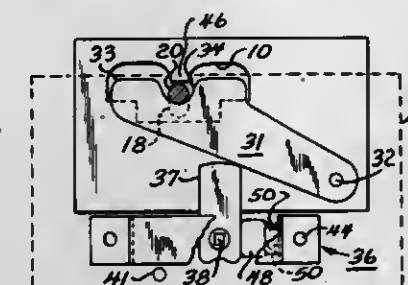
Don G. Sandrock, McHenry, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.

Filed Dec. 7, 1979, Ser. No. 101,111

Int. Cl.<sup>3</sup> G05G 5/06

U.S. Cl. 74-475

8 Claims



1. A lock assembly for securely retaining a gear shift lever of a vehicle transmission in a neutral position to prevent accidental or unintentional movement of the gear shift lever into a drive position comprising

manually operable locking means having a locking arm pivotally mounted for selective movement to engage and retain a transmission gear shift lever in a neutral position, and

said locking means further including a lock actuating member having a first end portion adapted to contact said locking arm and a second end portion pivotally mounted to a support structure for selective manual movement between a first position spaced from said locking arm to a second position in contact with said locking arm for effecting said selective movement of said locking arm to engage and retain a transmission gear shift lever in a neutral position.

#### 4,282,770

STEERING GEAR AND METHOD OF ASSEMBLING SUCH GEAR

Frederick J. Adams, Clevedon, England, assignor to Cam Gears Limited, Hertfordshire, England

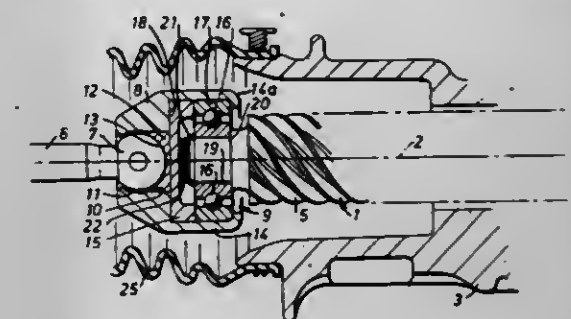
Filed Nov. 19, 1979, Ser. No. 95,456

Claims priority, application United Kingdom, Dec. 7, 1978, 47569/78

Int. Cl.<sup>3</sup> B62D 1/20; F16H 27/02

U.S. Cl. 74-498

14 Claims



12. A variable ratio steering apparatus for use in effecting turning movement of a steerable vehicle wheel, said apparatus comprising a longitudinally extending rack gear movable along its longitudinal axis, control means for effecting rotational movement of said rack gear about its longitudinal axis simultaneously with movement of said rack gear along its longitudinal axis to vary the rate of movement of said rack gear along its longitudinal axis and the rate of turning movement of the steerable vehicle wheel, a pivotal output member connected with the steerable vehicle wheel, a housing, universal joint means disposed within said housing for enabling said output member to pivot in a plurality of directions relative to said rack gear, and bearing means disposed within said housing adjacent to said universal joint means for connecting said rack gear with said housing and for enabling said rack gear to rotate relative to said housing and said universal joint means about the longitudinal central axis of said rack gear, said bearing means being disposed between said housing and said one end portion of said rack gear to transmit thrust forces from said rack gear to said housing while enabling said rack gear to rotate relative to said housing.

#### 4,282,771

RAILROAD HAND BRAKE WITH SPRING CLUTCH  
William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Company, Mundelein, Ill.

Filed Nov. 9, 1977, Ser. No. 849,777

Int. Cl.<sup>3</sup> G05G 1/08; F16D 67/02

U.S. Cl. 74-505

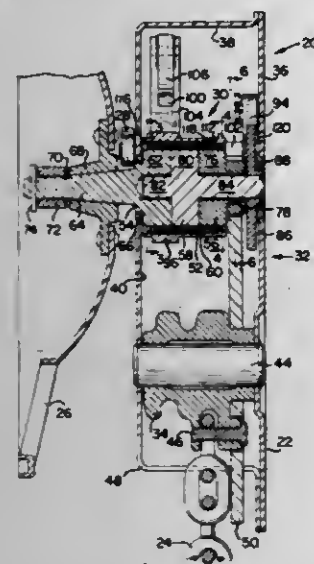
27 Claims

1. A load take up device of the type incorporating a spring clutch, and comprising in combination:

a housing;  
an output drum having a cylindrical surface;  
coupling means for interconnecting the output drum with the load;  
a control drum having a cylindrical surface adjacent to and aligned with said output drum;  
said output and control drums being mounted for rotation relative to said housing about a common axis;  
rotation controlling means connected between the housing and the control drum and permitting rotation of the control drum in only one rotational direction;  
a coil spring telescoped with said output and control drums, said spring being radially deformable in a first direction to engage said output and control drums and being radially deformable in a second direction to release said output and control drums;  
an input element engageable with said spring at a region adjacent said control drum and remote from said output drum and movable in opposed rotational directions selec-



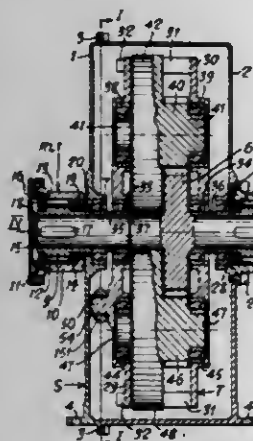
tively to radially deform said spring in said first direction to interlock said input element and said control and output drums for rotation thereof in said one rotational direction for load take up, and to radially deform said spring in said second direction to release said output drum from said control drum to permit gradual movement of said output drum in the opposite rotational direction for gradual release of the load; and



a quick release element engageable with said spring at a region said output drum and remote from said control drum, said quick release element being movable to radially deform said spring in said second direction abruptly to uncouple said output drum from said control drum for unrestricted release of the load.

#### 4,282,772 ROTATIONAL SPEED AND TORQUE MECHANICAL TRANSDUCER

Gino Franch, 54, Via S. Vigilio, Bolzano, Italy  
Filed Jun. 29, 1979, Ser. No. 53,435  
Claims priority, application Italy, Jul. 14, 1978, 4846 A/78; Oct. 30, 1978, 4869 A/78; Feb. 23, 1979, 4810 A/79  
Int. Cl.<sup>3</sup> F16H 29/02, 37/12  
U.S. Cl. 74—679 25 Claims

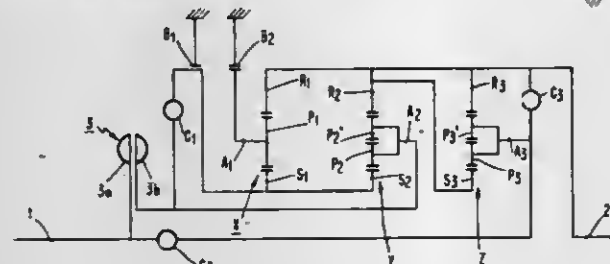


1. A rotational speed and torque mechanical transducer, comprising:

- a epicyclic gearing presenting a sun gear (6) secured on a main shaft (5), at least one planet gear (40, 46) and a planet carrier (T) for carrying the said planet gears, rotatably mounted around the axis of the said main shaft (5);
- an active mass (42, 48) connected with each planet gear (40, 46), whose alternating torques produced by the inertia forces are transmitted to the main shaft (5), and whose barycenter lies on the axis of rotation of the respective planet gear;
- coupling means to couple the driving shaft (60, 460, 600) to the said planet carrier (T) for driving the said carrier

(T) into swinging rotational movement around its rotational axis (5);  
(d) at least a pair of freewheel couplings (RL1, RL2, RL3, 1RL1, 1RL2, 1RL3) which provide their locking action in opposite rotational directions, limiting the angular speed of the main shaft (5), and at least one output shaft (77, 177, 277, 377, 477, 577) coupled, through at least one freewheel coupling, with the main shaft (5).

4,282,773  
**CHANGE-SPEED TRANSMISSION**  
Kunio Ohtsuka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan  
Filed Apr. 25, 1978, Ser. No. 899,992  
Claims priority, application Japan, May 13, 1977, 52/54207  
Int. Cl.<sup>3</sup> F16H 47/08  
U.S. Cl. 74—688 16 Claims

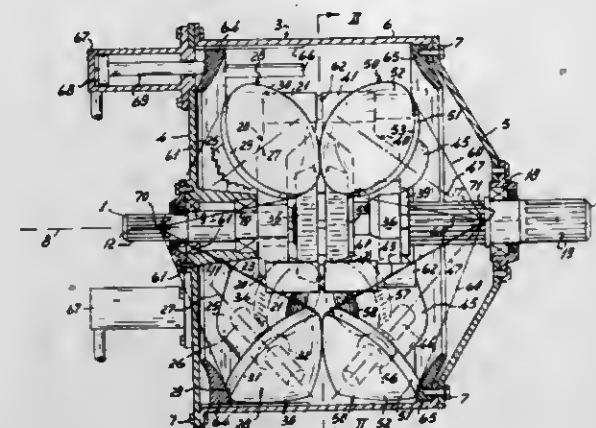


1. A change-speed transmission comprising:  
an input member (1) to receive the input torque;  
an output member (2) to provide the output torque;  
a hydrokinetic unit (3) having a pump (3a) connected to said input member for simultaneous rotation therewith and a turbine (3b);  
a first and a second and a third clutch (C<sub>1</sub>, C<sub>2</sub>, C<sub>3</sub>);  
a planetary gear unit (X, Y, Z) having at least a first, a second and a third rotary element;  
said first rotary element of said gear unit being connected to said turbine (3b) through said first clutch for simultaneous rotation therewith when said clutch is engaged;  
said third rotary element of said gear unit being connected to said output member for simultaneous rotation therewith;  
said input member (1) being connected to said second rotary element through said second clutch (C<sub>2</sub>) for simultaneous rotation therewith when said clutch is engaged;  
said input member being directly connectable through said second and third clutches (C<sub>2</sub>, C<sub>3</sub>) to said output member (2) for simultaneous rotation therewith so as to bypass said hydrokinetic unit when said clutches are simultaneously engaged;  
whereby the output torque of the transmission may be selectively provided totally through said hydrokinetic unit (3), may be split partially through said hydrokinetic unit (3) and partially through at least one of said second and third clutches thereby providing at least a portion of the output torque to the output member (2) bypassing said hydrokinetic unit (3) and may be totally provided bypassing said hydrokinetic unit (3) by actuation of both said second and third clutches for increased efficiency.

4,282,774  
**TORQUE CONVERTER**  
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland  
Filed Oct. 11, 1979, Ser. No. 83,637  
Claims priority, application Netherlands, Oct. 13, 1978, 7810296; Oct. 13, 1978, 7810297  
Int. Cl.<sup>3</sup> F16H 15/50, 37/02  
U.S. Cl. 74—690 29 Claims

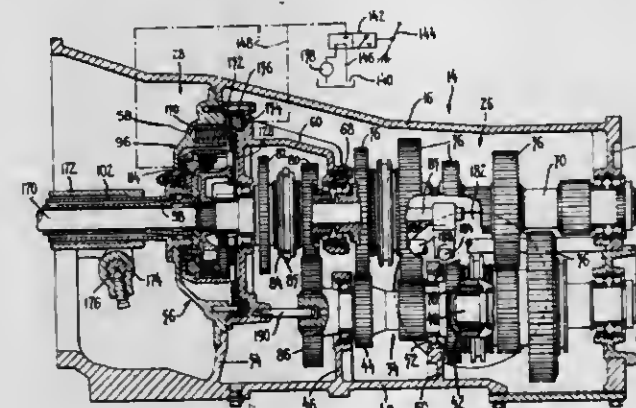
29. A torque converter comprising a housing, an input shaft and an output shaft that are drivenly interconnected through respective friction elements within said housing, the two shafts being rotatable about a common main axis and each shaft being

geared to at least one respective friction element that is mounted for rotation about a corresponding rotary shaft, said rotary shaft being inclined to said main axis and the elements of said input and said output having friction surfaces that engage one another, respective annular control members being positioned adjacent the elements of said input and output shafts.



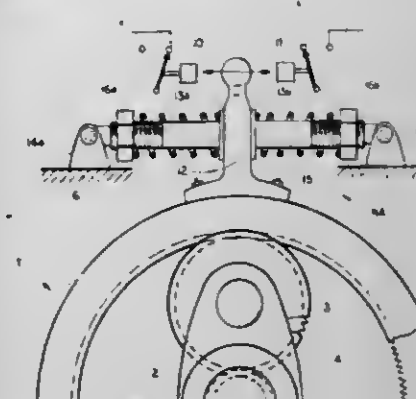
#### 4,282,775 TRANSMISSION HAVING A TWO-SPEED PLANETARY GEAR SET

Jean-Claude Van Dest, Ris-Orangis, France, assignor to Massey-Ferguson Inc., Detroit, Mich.  
Filed May 18, 1979, Ser. No. 40,379  
Claims priority, application United Kingdom, May 30, 1978, 23948/78  
Int. Cl.<sup>3</sup> F16H 37/00, 3/08  
U.S. Cl. 74—740 5 Claims



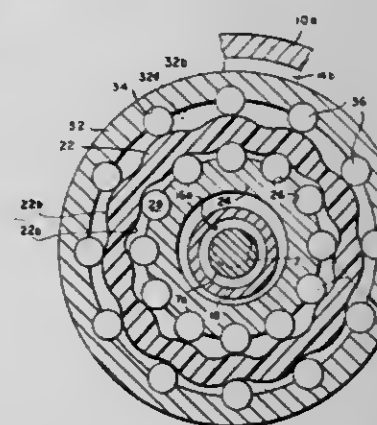
1. In a transmission (14) having a first change gear mechanism (26) including first and second parallel shafts (30, 34) carrying a plurality of intermeshing gear sets (36) and an input gear (86); and a housing (16) for the first change gear mechanism (26); the improvement comprising a support (60) removably supported within the housing (16), a second change gear mechanism (28) carried by said support (60), the second change gear mechanism (28) including a rotatable third shaft (78), a forward/reverse gear mechanism including a pair of gears (80, 82) rotatably journaled about the third shaft (78) and capable of selectively interconnecting the rotatable third shaft (78) with the input gear (86) to drive the same, and a two-speed planetary gear set (96) in driving relationship with the third shaft (78).

4,282,776  
**OVERLOAD PROTECTION FOR TRANSMISSION SYSTEM WITH PLANETARY-GEAR TRAIN**  
Fritz D. Eller, Hellweg 36, 43 Essen 14, Fed. Rep. of Germany  
Filed Mar. 29, 1979, Ser. No. 25,181  
Int. Cl.<sup>3</sup> F16H 1/28, 5/52  
U.S. Cl. 74—801 12 Claims



1. In a transmission system comprising an input shaft driven by a power source, an output shaft coupled with a load, and a planetary-gear train including a sun gear connected with one of said shafts, a planet carrier connected with the other of said shafts and a ring gear disposed in a stationary housing, the combination therewith of:  
yieldable retaining means tending to hold said ring gear in a predetermined position relative to said housing;  
control means entrained by said ring gear;  
first and second position-sensing means secured to said housing and juxtaposed with said control means for detecting a relative rotation of said ring gear beyond respective limits on opposite sides of said predetermined position; and  
first and second overload-signaling means respectively controlled by said first and second position-sensing means for indicating the sense of deviation of said ring gear from said predetermined position.

4,282,777  
**PANCAKE PLANETARY DRIVE**  
Henry Ryffel, Nashua, N.H., and Thomas J. Black, Jr., Lowell, Mass., assignors to Compodrive Corporation, North Billerica, Mass.  
Filed Jan. 2, 1979, Ser. No. 555  
Int. Cl.<sup>3</sup> F16H 1/28; F04C 18/113  
U.S. Cl. 74—804 14 Claims



1. An improved two stage planetary differential drive comprising:  
A. a housing,  
B. an inner nonorbiting member in the housing,  
C. an outer nonorbiting member in the housing, one of said nonorbiting members being rotatively fixed to the housing, the other nonorbiting member being rotatively movable in the housing,







securing the pair of cast blanks of the die racks to a rotatable spindle in a side-by-side relationship with the mounting surfaces thereof engaged with the spindle; turning the forming faces of both blanks by rotating the spindle while cutting the blanks to form the partially circular shape of the forming face of each blank at the proper location relative to the mounting surface thereof and in a uniform relationship with respect to the other blank; and subsequently cutting forming projections in the turned face of each die rack.

4,282,783

## HANDLES FOR PLIERS

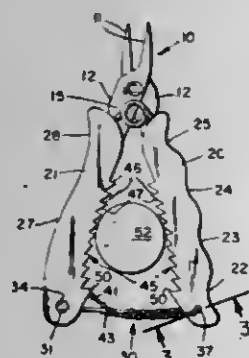
William S. Fortune, 29866 Cuthbert St., Malibu, Calif. 90265

Filed Feb. 11, 1980, Ser. No. 120,403

Int. Cl.<sup>3</sup> B25B 7/02

U.S. Cl. 81—428 R

8 Claims



## 1. Handles for metal pliers comprising:

- a first handle having an outer portion which when put over one of the handles of the pliers has smooth consecutive indentations to fit the four fingers of the operator;
- a second handle having a smooth outwardly curved outer portion to fit the palm and an indentation close to the jaws of the pliers to fit the thumb of the operator, both of said handles consisting of a moldable, plastic material having electrical insulating properties and having a central opening therethrough shaped to fit over the plier handles;
- the insides of each of said handles facing each other when inserted over the plier handles having serrated portions to retain components and the like, thereby to act as holding fixture;
- a safety strap;
- retaining means on one end of said strap;
- a hole in one end of one of said handles for passing there-through said safety strap and retaining means;
- a hole in the other one of said handles for passing there-through the free end of said strap; and
- means for retaining the loose end of said strap, said means being disposed near the fixed end of said strap.

4,282,784

## METHOD AND LATHE FOR MACHINING OUT-OF-ROUND CIRCUMFERENCES

Otto Feller, Leichlingen; Helmut Oepen, Hückeswagen; Manfred Kühl, Leverkusen; Alois Skrobek; Horst Bornfeld, both of Burscheid; Hans G. Seiler, Odenthal, and Walter Johann, Wermelskirchen, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Jun. 5, 1979, Ser. No. 45,733

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1978, 2824624

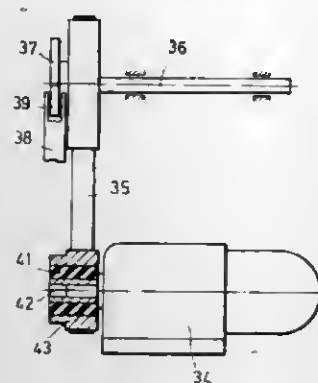
Int. Cl.<sup>3</sup> B23B 3/28, 3/00, 19/02

U.S. Cl. 82—19

4 Claims

1. A lathe for circumferentially machining an out-of-round workpiece comprising
  - a supporting structure,
  - a spindle rotatably mounted on said supporting structure, said spindle receiving at least one workpiece, and
  - a variable speed drive for rotating said workpiece at an

irregular angular speed, said drive comprising a motor and energy storage means interposed between said motor and



said spindle for partially storing and discharging kinetic energy during each revolution of said spindle.

4,282,785

## ELECTRONIC MUSICAL INSTRUMENT

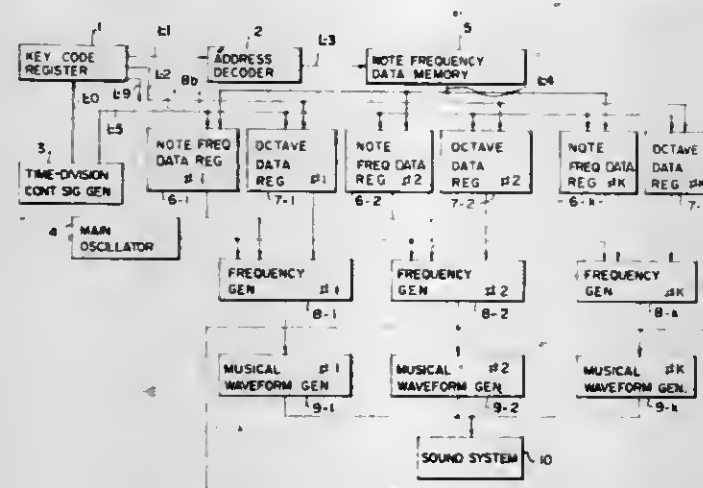
Nobuharu Obayashi, Kami; Hikaru Hashizume, Hamamatsu; Seiji Kameyama, Hamamatsu; Sadaaki Ezawa, Hamamatsu; Tatsunori Kondo, Hamamatsu; Kiyomi Takauji, Hamamatsu, and Tohru Aoyama, Hamamatsu, all of Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Oct. 17, 1977, Ser. No. 842,525

Int. Cl.<sup>3</sup> G10H 1/00; G10F 1/00; G10H 1/04

U.S. Cl. 84—1.01

3 Claims



1. An electronic musical instrument comprising key switches, a key code register coupled to said key switches for providing coded data in response to key-switch depression, a note frequency data memory for storing note frequency data corresponding to the coded data from the key code register;
  - a time division control signal generator for generating a time division pulse;
  - a note frequency data register for latching and storing the data from the note frequency data memory by the time division pulse whereby the note frequency data memory is used on a time-shared basis;
  - an octave data register for latching and storing octave data from the key code register by the time division pulse from the time division control signal generator;
  - a frequency generator composed of a programmable counter supplied with the output from the note frequency data register to provide a generator frequency corresponding thereto, a frequency divider array having a plurality of output ends and supplied with said generator frequency, and a decoder supplied with the output from the octave data register, the outputs from the respective output ends of the frequency divider array being selected by the output from the decoder in accordance with the octave data, to produce a frequency generator output, and

a musical waveform generator composed of filter circuits corresponding to respective musical instrument sounds and supplied with the output from the frequency generator to provide a musical signal.

4,282,786

## AUTOMATIC CHORD TYPE AND ROOT NOTE DETECTOR

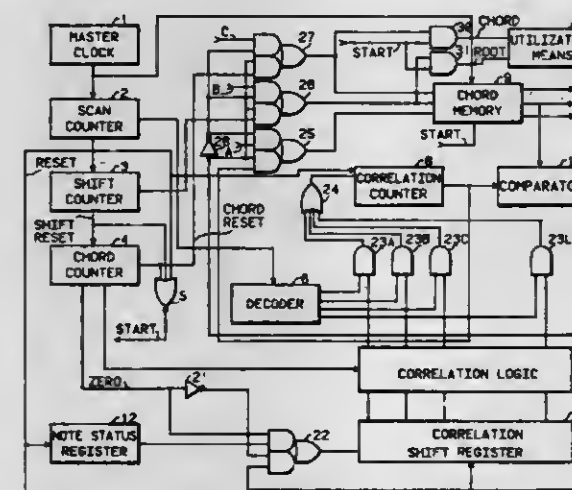
Ralph Deutsch, and Leslie J. Deutsch, both of Sherman Oaks, Calif., assignors to Kawai Musical Instruments Mfg. Co., Ltd., Hamamatsu, Japan

Filed Sep. 14, 1979, Ser. No. 75,432

Int. Cl.<sup>3</sup> G10H 1/38, 5/00

U.S. Cl. 84—1.01

11 Claims



1. Apparatus for selecting a musical chord type and its root note from a set of preselected musical chord types in a musical instrument having a keyboard with a plurality of key switches comprising:

- a clock providing a sequence of timing signals,
- a status memory means for storing data corresponding to actuated note switches in said plurality of key switches,
- a first memory means for storing data to be thereafter read out,
- a transfer means whereby data is read from said status memory and stored in said first memory,
- a second memory means for storing a plurality of transfer functions each corresponding to a musical chord type,
- a correlation evaluation means responsive to selected members of said plurality of transfer functions and responsive to data accessed from said first memory wherein a plurality of correlation numbers are generated,
- a third memory means wherein a correlation number is stored to be thereafter read out,
- a comparison means for comparing the magnitude of each of said plurality of correlation numbers with the correlation number stored in said third memory means wherein a correlation number having the maximum magnitude value is selected and stored in said third memory means, and
- a selection means responsive to said timing signals and said correlation number having a maximum magnitude value wherein a selection is made of a musical chord type from said preselected musical chord types and a selection is made of a corresponding root note.

4,282,787

## ELECTRONIC MUSICAL INSTRUMENT SIMULTANEOUSLY OPERABLE IN MONOPHONIC AND POLYPHONIC MODES

Richard M. Walborn, Tonawanda, N.Y., assignor to Norlin Industries, Inc., Deerfield, Ill.

Filed Feb. 19, 1980, Ser. No. 122,340

Int. Cl.<sup>3</sup> G10H 1/00

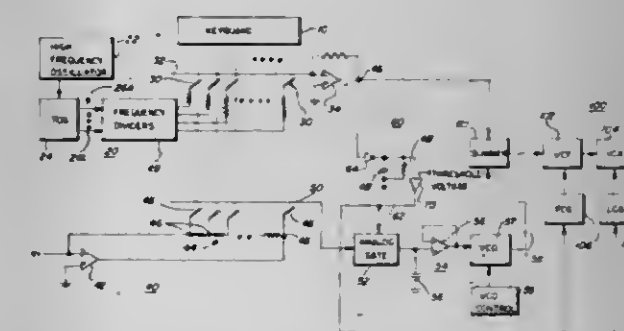
U.S. Cl. 84—1.01

11 Claims

1. An electronic musical instrument having combined mono-

phonic and polyphonic sound producing capabilities comprising:

- a plurality of player operable keys each representing a different pitch of a musical scale;
- polyphonic means for producing a first audio signal having frequency components representing the pitches of all of said keys which are depressed;
- means for producing a gate signal in response to the detection of the presence of said first audio signal;
- monophonic means enabled in response to said gate signal for producing a second audio signal having a frequency representing the pitch of only one of said keys which are depressed;
- means for producing a third audio signal representing the sum of said first and second audio signals; and
- output means responsive to said gate signal for controllably processing said third audio signal.



7. In an electronic musical instrument of the type having a keyboard and an output system, the improvement comprising:
  - means for developing a polyphonic audio signal in accordance with the operation of said keyboard;
  - means for producing a gate signal in response to said polyphonic signal;
  - a voltage controlled oscillator;
  - means developing a voltage control signal representing the pitch of a single depressed key of said keyboard;
  - gate means responsive to said gate signal for coupling said voltage control signal to said voltage controlled oscillator for developing a monophonic audio signal representing said single operated key; and
  - means for coupling said polyphonic and monophonic audio signals to said output system.

4,282,788

## ELECTRONIC MUSICAL INSTRUMENT WITH AUTOMATIC CHORD PERFORMANCE DEVICE

Eiichi Yamaga; Junji Iio; Toshio Takeda; Akira Nakada, and Akio Imamura, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 27, 1979, Ser. No. 97,717

Claims priority, application Japan, Nov. 27, 1978, 53/146168

Int. Cl.<sup>3</sup> G10F 1/00

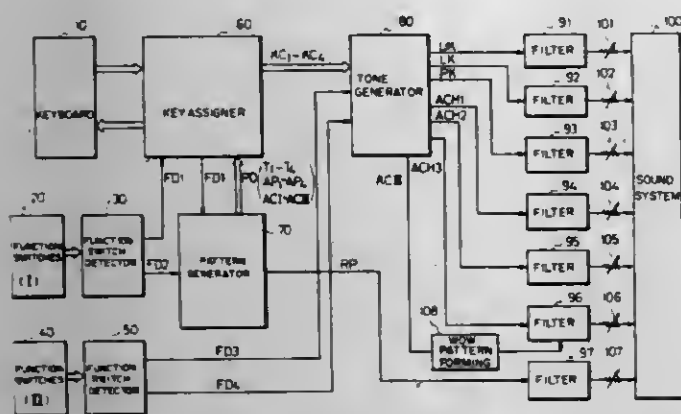
U.S. Cl. 84—1.03

16 Claims

1. An electronic musical instrument with an automatic chord performance device comprising:
  - a pattern generator including a memory for storing a plurality of automatic chord performance tone generating patterns, said plural patterns being read out concurrently as plural chord tone generation timing signals from said memory;
  - chord tone signal producing means for producing a complete set of chord tone signals having tone pitch relation constituting a chord to be played; and
  - a plurality of envelope control circuits each separately, concurrently imparting an amplitude envelope to said complete set of chord tone signals in response to a respective one of said plural chord tone generation timing signals, so as to produce duplicates of said complete set of



chord tone signals each with a respective different amplitude envelope pattern for the same one rhythm, and



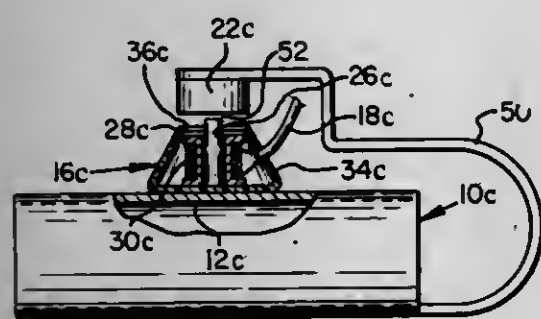
a common sound system for reproducing all of said duplicated sets of chord tone signals.

**4,282,789**  
**FINGER MOUNTABLE ELECTRIC GUITAR PICK-UP**  
Steven H. Lamborn, 3217 S. 368th Pl., Federal Way, Wash. 98003

Filed Aug. 1, 1977, Ser. No. 820,778  
Int. Cl.<sup>3</sup> G10H 3/00

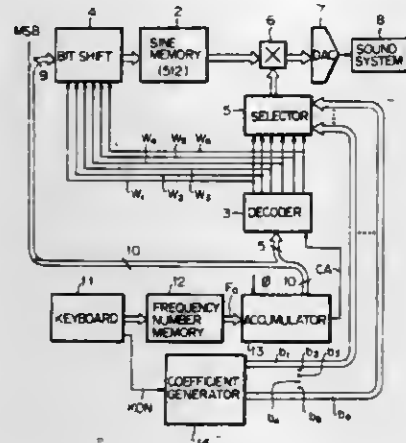
U.S. Cl. 84—1.15

1 Claim



1. A guitar pick-up apparatus comprising: string contacting means for contacting a guitar string to alter the vibrational frequency thereof; and a transducer mechanically connected to said string contacting means for producing electrical impulses which correspond to the vibrations of said string when said contacting means is in contact with said string, said transducer including:
  - a. an elongated iron core radiating outwardly from said contacting means;
  - b. an electrically conducting coil surrounding said core;
  - c. an arm extending from said contacting means to a position just outward of said core;
  - d. a permanent magnet positioned on said arm so that it is located adjacent to, but out of contact with the outermost end of said core; and
  - e. mounting means to hold said coil and core to said contacting means in such a fashion that said magnet is free to move relative to said coil so that, when said contacting means is held against a vibrating guitar string, said contacting means vibrates and said magnet moves relative to said coil so that the reluctance of the magnetic circuit is varied and an output voltage, proportional to the vibration velocity, is produced in said coil.

**4,282,790**  
**ELECTRONIC MUSICAL INSTRUMENT**  
Masatada Wachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan  
Filed Aug. 20, 1979, Ser. No. 67,693  
Claims priority, application Japan, Aug. 29, 1978, 53-104345  
Int. Cl.<sup>3</sup> G10H 1/08, 5/00  
U.S. Cl. 84—1.21 16 Claims



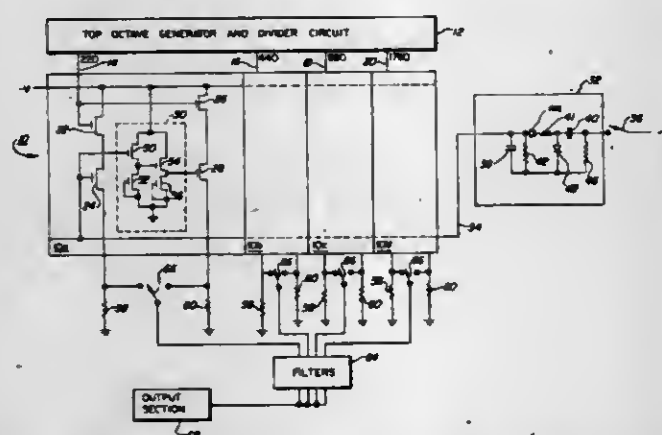
1. An electronic musical instrument comprising: means for repeatedly generating a waveshape having a frequency which changes as a function of time from the start point of said waveshape, said start point of said waveshape being synchronized with a predetermined phase point of the fundamental period of a musical tone to be generated and said waveshape being terminated within a period of said fundamental period of said musical tone; an amplitude control means for controlling the amplitude of said waveshape in correspondence with said frequency changing as a function of time within said fundamental period; and a sound system means for producing a musical tone from the output of said amplitude control means.

**4,282,791**  
**KEYER SYSTEM FOR AN ELECTRONIC ORGAN**  
Ray B. Schrencongost, Park Ridge, Ill., assignor to Marmon Company, Chicago, Ill.

Filed Dec. 26, 1979, Ser. No. 106,724  
Int. Cl.<sup>3</sup> G10H 1/053, 1/08

U.S. Cl. 84—1.26

14 Claims



1. A keying system for use in an electronic organ having a top octave generator and divider circuit for providing a plurality of rectangular wave signals at various frequencies and a keyboard for providing a keying signal upon depression of any key, said keying system comprising:
  - a. a keying block having a plurality of keying sections each of said keying sections having at least a first and a second semiconductor switching element, all of said semiconductor elements having an input, a control and an output;
  - b. a source of direct current potential and a source of reference potential, said direct current potential being connected to

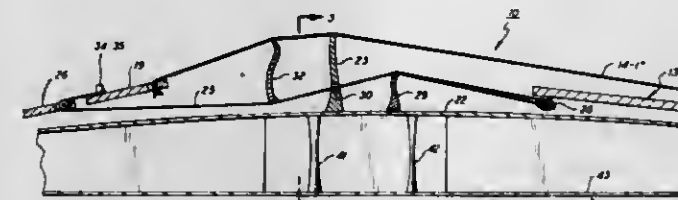
the input of the first semiconductor element of each of said sections;  
first conductor means for connecting the output of the first semiconductor element of each section to the input of the second semiconductor element of the same section;  
a plurality of load resistors connected individually between the outputs of said second semiconductor elements and said source of reference potential;  
second conductor means for connecting the rectangular wave signals from said top octave generator and divider circuit individually to the controls of the first semiconductor elements of each section; and  
envelope means including a source of keying potential for applying an envelope signal to the controls of the second semiconductor elements of said keying sections upon depression of a key on said keyboard characterized in that at least one of said second semiconductor elements has a selectable threshold of conductivity which differs from the threshold of conductivity of the second semiconductor elements of the other keying sections whereby the decay time of the component keyed by said at least one keying section is selectable and differs from the decay times for the components keyed by said other keying sections.

**4,282,792**  
**COUNTER PRESSURE SYSTEM FOR STRINGED INSTRUMENTS**

Peter Voorthuyzen, 113 Ball Ave., Canastota, N.Y. 13032  
Filed Jul. 23, 1979, Ser. No. 59,735  
Int. Cl.<sup>3</sup> G10D 3/00, 1/02, 3/04, 3/12

U.S. Cl. 84—295

26 Claims



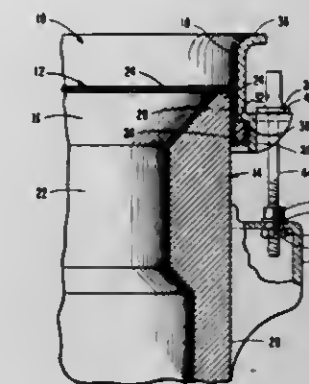
20. A stringed instrument having a plurality of melody strings supported above the belly of a sound box upon a main bridge including
  - a. a string suspension system having a plurality of spaced-apart runs mounted beneath the melody strings of the instrument and being positioned along the belly of the sound box,
  - b. a counter pressure bridge seated in biasing contact against both the melody strings and the suspension system runs with the top of said bridge in contact with the melody strings and the bottom of said bridge seated upon said runs, and
  - c. an auxiliary bridge, with said auxiliary bridge spaced apart from said main bridge so as to contact said sound box at a different point from the main bridge, and having its top surface seated in contact against the suspension system runs.

**4,282,793**  
**COMPOSITE DRUM HEAD**  
Samuel N. Muchnick, Los Angeles, Calif., assignor to Research Development Systems, Inc., S. El Monte, Calif.  
Continuation-in-part of Ser. No. 910,116, May 30, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,396  
Int. Cl.<sup>3</sup> B32B 3/02, 3/10; G10D 13/02  
U.S. Cl. 84—414 16 Claims

1. A novel drum head membrane structure having a generally planar central portion and a turned down peripheral portion extending from said central portion a relatively short distance and essentially perpendicular thereto, said structure comprising an interwoven fabric made up of fibers of a

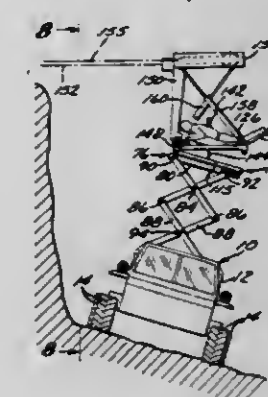
polyaramide high molecular weight polymer rigidized with a cured and hardened epoxy resin comprising a cross-linked polymer of a polyglycidyl ether of a polyol, said fabric and epoxy cooperating to define interstitial voids forming air passing micropores in the drum head membrane structure.

4. A novel drum comprising: a drum frame; and



a drum head pulled taut across said drum frame and comprising a membrane composed of an interwoven fabric made up of fibers of a polyaramide high molecular weight polymer rigidized with a cured and hardened epoxy resin comprising a cross-linked polymer of a polyglycidyl ether of a polyol, and a ring comprising said cured and hardened epoxy resin embedding the edge of said membrane; said fabric and said epoxy cooperating to define interstitial voids forming air passing micropores in said membrane.

**4,282,794**  
**SELF-PROPELLED OFF-ROAD VEHICLE**  
Ary L. Miller, deceased, late of Encino, Calif.; by Roberta L. Miller, deceased, late of Encino, Calif., and Lindsey Miller-Lerman, 715 J. E. George Blvd., Omaha, Nebr. (executor)  
Filed Apr. 30, 1979, Ser. No. 34,430  
Int. Cl.<sup>3</sup> F41H 7/02  
U.S. Cl. 89—36 M 17 Claims



1. A self-propelled off-road vehicle comprising: a chassis; platform means including a support platform and an operator platform adapted to support an operator; first means operative to raise said platform means relative to said chassis; sighting means carried by said operator platform and characterized by a sighting axis; second means operative to raise said sighting means relative to said operator platform; a weapons pod carried by said operator platform and characterized by a firing axis; third means operative to raise said weapons pod relative to said operator platform to orient said firing axis in predetermined relation to said sighting axis; and fourth means operative to rotate said operator platform relative to said chassis to direct said sighting axis toward a target area.



4,282,795

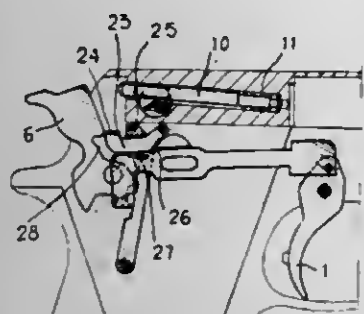
## SAFETY FOR AN AUTOMATIC PISTOL

Pier C. Beretta, Gardone V.T., Italy, assignor to Fabbrica d'Armi Pietro Beretta S.p.A., Gardone V.T., Italy  
Filed Sep. 18, 1978, Ser. No. 943,117

Claims priority, application Italy, Oct. 28, 1977, 5240 A/77  
Int. Cl.<sup>3</sup> F41C 17/04

U.S. Cl. 89—148

14 Claims



1. In an automatic pistol which includes a trigger, an arming rod connected at one of its ends to said trigger, a lever pivoted for angular displacements and cooperating with the other extremity of said rod, a hammer attached in an armed position to said lever and detached therefrom by means of said rod, and a firing pin having a rear extremity which is acted upon by said hammer, the improvement comprising:

(a) manually-actuated safety means for blocking said firing pin in a neutral position and for deactivating said lever and said rod so that said lever and said rod cannot cooperate with each other and with said hammer; and

(b) automatic safety means for intercepting and blocking said hammer to prevent its contact with said firing pin, wherein said automatic safety means comprises a pendulum-like lever having a terminal tappet facing said hammer and having a lateral arm facing said arming rod so as to be in front of and cooperating with a tooth provided on said rod; said pendulum-like lever being actuated by a spring so as to keep it in the position wherein said tappet is interposed between the hammer and a stationary shoulder integral with the pistol; said tooth of said arming rod displacing said pendulum-like lever in an opposite direction when said hammer is disengaged.

4,282,796

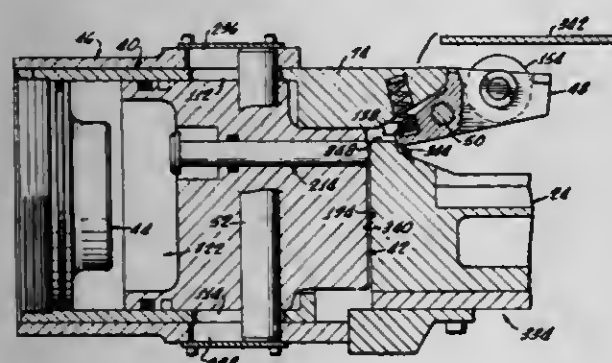
## DOUBLE ACTING, PNEUMATIC BOLT AND SEAR BUFFER FOR AUTOMATIC CANNON

Eugene M. Stoner, Stuart, Fla., and Richard R. Gillum, Marblehead, Ohio, assignors to ARES, Inc., Port Clinton, Ohio  
Filed Mar. 27, 1979, Ser. No. 24,185

Int. Cl.<sup>3</sup> F41D 11/12

U.S. Cl. 89—198

9 Claims



1. In an automatic cannon having a breech, a bolt assembly mounted for reciprocating movement along a recoil and counterrecoil path and triggering means for selectively controlling movement of the bolt assembly and firing of the cannon, double acting recoil and sear buffer apparatus, which comprises:

(a) a buffer housing disposed on the cannon rearwardly of the breech;

(b) a pneumatic buffer disposed in the housing, said buffer including a cylinder, means for closing a rearward end of the cylinder and a piston axially slidably disposed in the cylinder, said buffer further including searing means fixed to forward regions of the cylinder and responsive to the triggering means for searing up the bolt assembly on counterrecoil thereof,

said cylinder, said means for closing the rearward end thereof and said piston forming a gas pressure chamber adapted for containing a pressurized gas, said piston being operative for being driven rearwardly and compressing the pressurized gas contained in the pressure chamber in response to rearwardly directed bolt assembly recoil impact, said pressurized gas in the pressure chamber re-expanding after bolt assembly recoil is stopped to drive the bolt assembly towards the breech at a counterrecoil velocity approximately equal to bolt assembly recoil velocity, and said cylinder being operative for being driven forwardly and compressing the pressurized gas contained in the pressure chamber in response to forwardly directed searing up impact of the bolt assembly against said searing means to soften bolt assembly searing up; and,

(c) travel limiting means for preventing rearward axial movement of the cylinder when the piston is driven rearwardly in response to bolt assembly recoil impact thereagainst and for preventing forward axial movement of the piston when the cylinder is driven forwardly in response to searing up impact of the bolt assembly against the searing means;

said travel limiting means including means defining corresponding slots in the housing and in the cylinder forwardly of the pressure chamber, said slots being elongated in a direction parallel to a barrel bore axis, said travel limiting means further including a piston pin mounted in the piston along an axis orthogonal to said bore axis, ends of the pin extending into said corresponding slots, axial travel of the pin and the piston in both rearward and forward axial directions, relative to the cylinder and housing, being thereby limited.

4,282,797

## PROTECTIVE FLUID SYSTEM

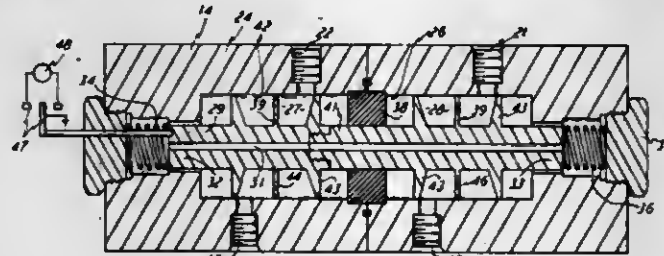
Arthur E. Hirsch, Terre Haute, Ind., assignor to J. 1. Case Company, Racine, Wis.

Continuation-in-part of Ser. No. 766,933, Feb. 9, 1977, abandoned. This application Dec. 4, 1978, Ser. No. 965,906

Int. Cl.<sup>3</sup> F01B 25/26; F15B 13/042

U.S. Cl. 91—1

14 Claims



1. A protective fluid system comprising a fluid pump and a fluid control valve and a fluid protective valve and a fluid motor means, all fluid-flow connected together with fluid lines and having said protective valve positioned closest to said fluid motor means and said fluid control valve being positioned between said pump and said fluid protective valve, said fluid motor means having two fluid-flow capacity requirements respectively with each separately fluid-flow connected with said protective valve, said protective valve having a valve body with two fluid-flow separated compartments, an elongated valve spool disposed in said valve body and having each end extending into a respective one of said compartments and being axially movable therein, each end of said spool having two fluid-flow closure portions thereon and also having a

projection interposed between said two closure portions with fluid-flow orifices extending through said projections in the longitudinal axial direction of said spool, spool-centering springs in said valve body and acting on said spool for positioning said spool in a centered position to have fluid flow between said passageways in each of said pair of passageways, said orifices in said respective projections being of a total fluid-flow capacity equally proportioned relative to said two fluid-flow capacity requirements of said motor means to effect equal fluid pressure drop through said respective orifices when said motor means is experiencing fluid flow of its said two fluid-flow capacity requirements, said body having a pair of fluid-flow passageways extending into each of said two compartment and with the latter said passageways being spaced apart on said body in the longitudinal axial directions of said spool, said projections disposed on said spool to be positionable intermediate said passageways of each said pair of passageways and have said orifices respectively receive all the flow of fluid between said passageways in each said pair of passageways, said closure portions on each end of said spool disposed on said spool to be respectively positionable to one side of each of said pairs of passageways, in one axial position of said spool for the flow of fluid between said passageways in each of said pair of passageways and through said orifices, and to be respectively positionable between said passageways in each of said pair of passageways, in another axial position of said spool, to block the flow of fluid between said passageways in each of said pair of passageways, whereby an unequal fluid pressure drop through said orifices and thus on opposite sides of said projections axially shifts said spool for the blocking of fluid flow, said fluid control valve being of a type to create fluid back pressure in said fluid line connected therewith, whereby opening of said fluid control valve does not simulate a break in said fluid line to trigger said protective valve, and said protective valve being operable for blocking of fluid flow for breaks in said fluid line which do not effect a back pressure therein.

4,282,798

## CONTROL VALVE UNIT FOR HYDRAULIC LINEAR ACTUATOR

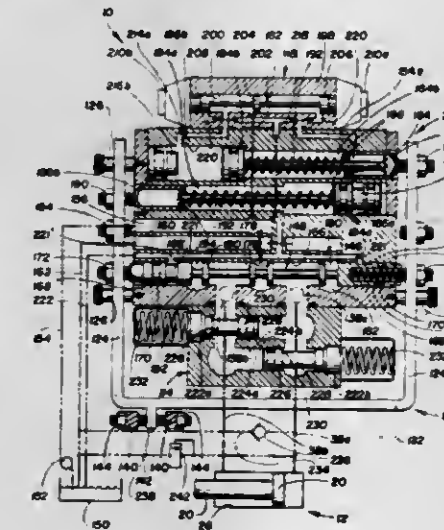
Roland J. Barlow, Madison Heights, and David L. Keem, Royal Oak, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 22, 1979, Ser. No. 87,274

Int. Cl.<sup>3</sup> F15B 13/16

U.S. Cl. 91—358 R

15 Claims



1. A control valve unit for a hydraulic linear actuator comprising: a base adapted to be mounted on the linear actuator; a control valve supported by the base and selectively operable to supply hydraulic fluid to the linear actuator to provide driving thereof in opposite directions; said control valve including a deactivator movable to terminate driving of the actuator in the associated direction; a slide mechanism on the base including a pair of movable slides; means for resiliently biasing the slides in opposite directions away from each other; said slides being

4,282,799

## NEGATIVE PRESSURE BOOSTER

Hiroo Takeuchi, Ueda, Japan, assignor to Nissin Kogyo Kabushiki Kaisha, Ueda, Japan

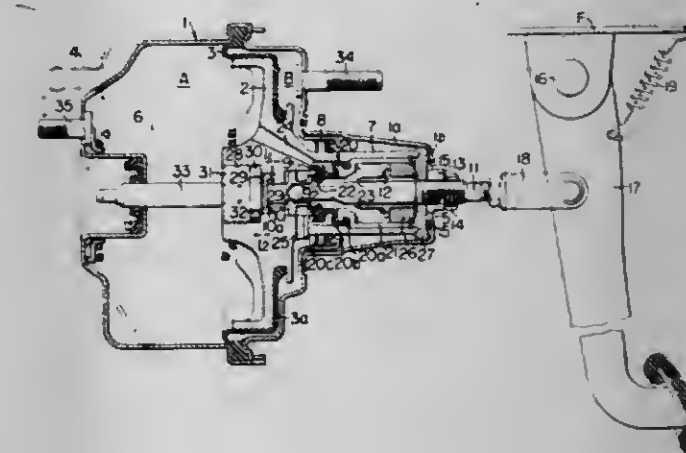
Filed Oct. 10, 1979, Ser. No. 83,534

Claims priority, application Japan, Feb. 2, 1979, 54-11740

Int. Cl.<sup>3</sup> F15B 9/10

U.S. Cl. 91—369 A

2 Claims



1. A vacuum-operated booster comprising: a booster shell, a booster piston dividing the interior of said booster shell into a first operating chamber in communication with a vacuum source and a second operating chamber; a valve cylinder, said valve cylinder extending from a rear end of said booster piston and having a first annular valve seat formed at the front end thereof; a valve piston, said valve piston having a second annular valve seat encircled by said first valve seat, said valve piston operatively connected to an input rod; a cylindrical resilient valve body biased to seat on said first and second valve seats and having a hollow interior in communication with the atmosphere; said booster piston having a large diameter bore open to a forward end surface thereof and a small diameter bore open to a rear end wall of said large diameter bore; an output piston, said output piston being slidably received in said large diameter bore and operatively connected to an output rod; a resilient piston, said resilient piston being slidably received in said large diameter bore between said output piston and the rear end wall of said large diameter bore, so as to be compressively deformed by said output piston, said valve piston having its forward end present in said small diameter bore; a reaction piston, said reaction piston being slidably disposed in said small diameter bore between said valve piston and said resilient piston for transmitting the compressive force of said resilient piston to said valve piston, whereby said second chamber and the hollow interior of said resilient valve body being brought into communication with each other through a clearance formed between said second valve seat and said resilient valve body when said valve piston is moved forward; a clearance formed between said first valve seat and said resilient valve body to bring said first and second chambers into communication with each other when said valve piston is moved rearward, and said resilient valve body being compressively deformed in an axial direction by the rearward movement of said valve piston, after abutment of said reaction piston against the end wall of said small diameter bore whereby, the sliding stroke of said reaction piston being made smaller than that of said valve piston.



4,282,800

## FLUID PRESSURE ACTUATOR

Alastair J. Young, Kenilworth, and John P. Burke, Leamington Spa, both of England, assignors to Automotive Products Limited, Warwickshire, England

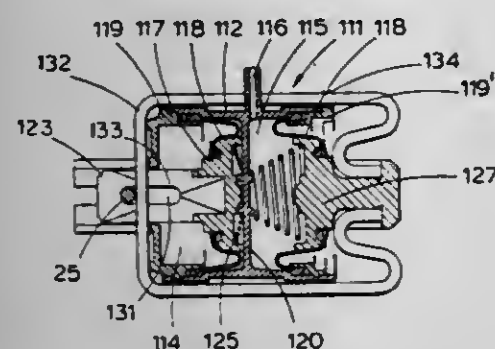
Filed Oct. 10, 1979, Ser. No. 83,225

Claims priority, application United Kingdom, Oct. 16, 1978, 40698/78

Int. Cl.<sup>3</sup> E05B 65/38; F01B 19/00

U.S. Cl. 92—37

6 Claims



1. A fluid pressure servo motor comprising:
  - a body;
  - two co-axial fluid chambers supported by the body and being operatively independent
  - a pair of co-axial piston means located one in each chamber and being movable in opposite directions in response to a pressure in their respective chamber, a two condition member movable in opposite directions from one to the other of said two conditions by said pair of piston means, and each piston means having a lost-motion means connection with said member for abutting engagement therewith and to allow idle return of the piston means without movement of said member in the event of cessation of the pressure; and a stirrup formed from a loop of wire which is fixed to one piston means and bridges the other piston means to act in use against the two position member, said other piston means and said stirrup defining a lost motion connection therebetween such that said other piston means is able to move independently of the stirrup.

4,282,801

## CRASHWORTHY FUEL PUMP

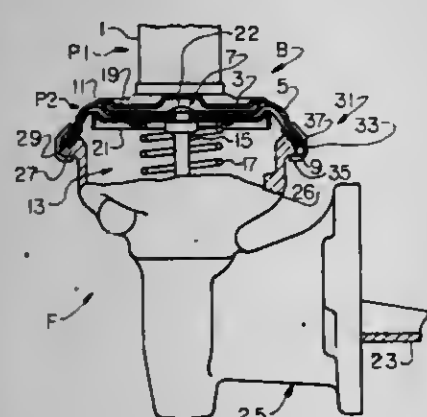
Walter E. Basch, St. Louis, and John W. Haney, Florissant, both of Mo., assignors to ACF Industries, Inc., New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,267

Int. Cl.<sup>3</sup> F01B 19/02; F04B 43/12

U.S. Cl. 92—102

1 Claim



1. In a fuel pump for use in an automotive fuel system, the fuel pump including a body having a first portion in which is formed a fuel intake cavity and a fuel discharge cavity and a second portion in which is formed a fuel pumping chamber, a flexible diaphragm enclosing the pumping chamber, the diaphragm being insertable into the open end of the second portion of the body with the periphery of the fuel pump body at the open end thereof having a lip formed therearound which is

bent over the outer margin of the diaphragm to clamp the diaphragm within the pump body and form a fluid tight seal therewith; and means for flexing the diaphragm to pump fuel into and out of the pumping chamber through the respective intake and discharge cavities, the improvement comprising:

a housing for the flexing means, the housing having a hollow pump head with an outwardly extending circumferential rim, the upper face of the rim being downwardly and outwardly sloping with an upwardly extending circumferential lip at the outer margin of the rim, the sloping upper face of the rim and the lip forming a circumferential groove, the housing abutting with the pump body so the fluid seal forming portion of the pump body is received in the groove with the circumferential housing lip being bent over the outer surface of the pump body to complete a unified fuel pump assembly, capable of withstanding abnormal forces such as occur during an automobile crash without a fuel leak resulting.

4,282,802

## SLIDEBOARD DEVICE FOR UNDERGROUND MINE FACE VENTILATION

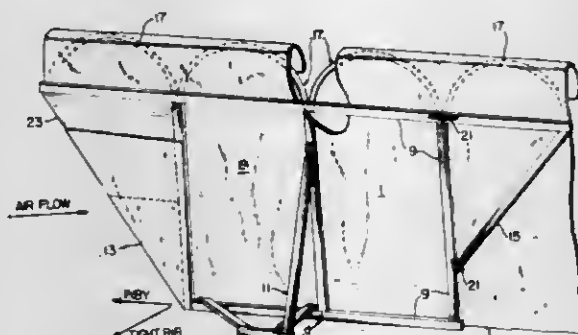
Edward F. Divers, and John C. LaScola, both of Pittsburgh, Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 31, 1980, Ser. No. 136,126

Int. Cl.<sup>3</sup> F24F 7/00

U.S. Cl. 98—50

5 Claims



1. A self-supporting movable slideboard apparatus for use in improving underground mine face ventilation in conjunction with a stationary line brattice comprising:

a main frame assembly extending in a vertical and horizontal direction and having a plurality of interconnected rigid frame support members, at least one of the members being a horizontal member in slideable contact with the mine floor;

a plurality of flexible supports mounted on said main frame and extending in seriatim the length thereof and upwardly therefrom to engage the mine roof in an operative mode; a vertical support assembly attached to the main frame near its lower portion and extending in a transverse direction therefrom to act as a support and spacer between the apparatus and an adjacent mine wall;

vertical pivot means connecting at least two of said rigid frame support members together located towards the rear of the slideboard apparatus; and

a layer of air impervious material covering the main frame and flexible support to control and direct the passage of air between the apparatus and an adjacent mine wall whereby the rear portion of the apparatus overlaps the line brattice used therewith.

4,282,803

## TWINE WRAPPER FOR ROUND BALE FORMING MACHINE

Antoon S. P. Cools, Brugge St. Kruis, Belgium, assignor to Sperry Corporation, New Holland, Pa.

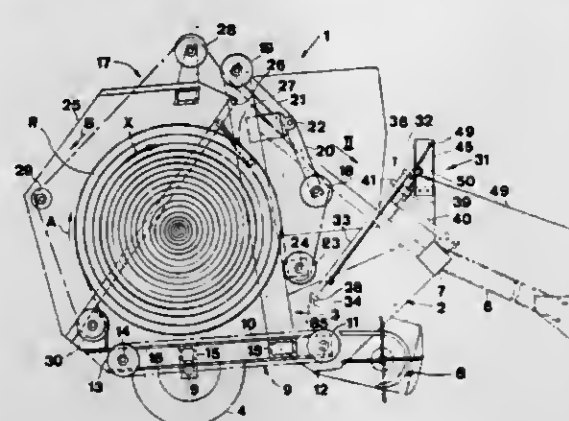
Filed Nov. 27, 1979, Ser. No. 97,760

Claims priority, application United Kingdom, Nov. 28, 1978, 46259/78

Int. Cl.<sup>3</sup> B65B 13/18

U.S. Cl. 100—5

7 Claims



1. In a crop material roll forming machine having:

(a) a frame,

(b) means on the frame defining a roll forming region,

(c) a dispensing mechanism pivotally mounted on the frame adjacent one end and pivotable back and forth across the machine with its opposite end movable along a predetermined arcuate path in the vicinity of a roll forming region to dispense material for wrapping a bale formed in the roll forming region, the path having its point closest to the roll forming region intermediate a rest position and a maximum stroke position,

(d) spring means extending between a fixation point on the dispensing mechanism at one side relative to the pivotal mounting of the dispensing mechanism and a fixation point on the frame at the opposite side relative to the pivotal mounting of the dispensing mechanism and operable to urge the dispensing mechanism in a first direction away from the rest position towards the maximum stroke position while dispensing wrapping material,

the improvement comprising:

(e) said spring means being attached to the dispensing mechanism relative to the pivotal mounting thereof such that during the pivotal movement of the dispensing mechanism from said intermediate position to said maximum stroke position said spring means act through a moment arm of increasing length, and

(f) control means connected to the dispensing mechanism and operable to move the dispensing mechanism in a second direction opposite to that induced by said spring means.

4,282,804

## TWINE WRAPPER FOR ROUND BALE FORMING MACHINE

Antoon S. P. Cools, Brugge, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Nov. 27, 1979, Ser. No. 97,761

Claims priority, application United Kingdom, Nov. 28, 1978, 46259/78

Int. Cl.<sup>3</sup> B65B 13/18

U.S. Cl. 100—5

8 Claims

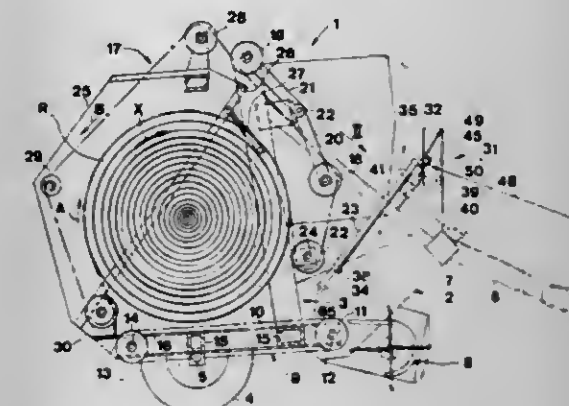
1. A roll forming machine comprising

(a) a mobile frame,

(b) a roll forming region defined within the frame,

(c) dispensing means mounted to the frame and movable across the roll forming region to dispense wrapping material about a completed roll being formed in the machine, said dispensing means comprising an elongate wrapping

material directing arm with an inlet and an opposed outlet for the wrapping material, the improvement comprising (d) tensioning means mounted on the wrapping material directing arm intermediate its inlet and outlet ends and operable to tension the wrapping material as it is being applied to a roll, and



- (e) means engageable with the tensioning means to render the latter inoperative at a predetermined point in the dispensing movement of the wrapping material directing arm.

4,282,805

## DRIVE FOR PRINTING ELONGATED ARTICLES

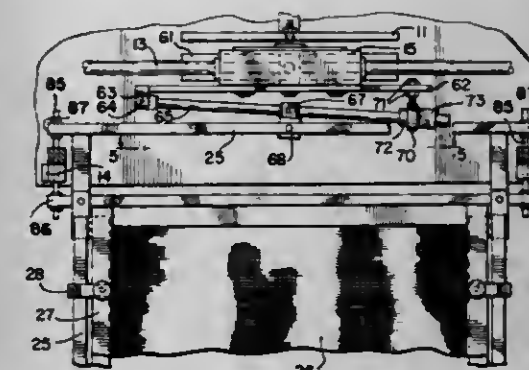
Louis A. Lala, Cook County, Ill., assignor to American Screen Printing Equipment Company, Chicago, Ill.

Filed May 21, 1979, Ser. No. 40,492

Int. Cl.<sup>3</sup> B41F 17/22; B41L 13/18

U.S. Cl. 101—38 R

8 Claims



1. A printing press for printing on elongated articles, said printing press comprising primary support shafts, a squeegee assembly, a screen assembly, said shafts supporting said screen assembly for lateral and vertical movement and said squeegee assembly for vertical movement, a workholder for securing an elongated cylindrical article to be printed on, the article being mountable on said workholder for rotation about a longitudinal axis, said longitudinal axis being fixedly held by said workholder parallel to said shafts for presentation of a circumferential surface of said article to said screen assembly in a print mode, said screen assembly being movable in a direction perpendicular to said shafts over said article by a drive means, and immovable in a direction parallel to said shafts, said drive means comprising a drive carriage reciprocally movable on a stationary shaft, a screen drive shaft means connected by a pivotal connection at a first end portion to said drive carriage and a means for adjustably securing a second end portion of said screen drive shaft means to said drive carriage with said first end portion closer to said drive carriage than said second end portion, said screen assembly being connected to said screen drive shaft means by sliding means for free reciprocal movement of said screen drive shaft means parallel to said stationary shaft, said screen assembly thereby being reciprocally movable toward and away from said stationary shaft in its following movement on said sliding means.



4,282,806

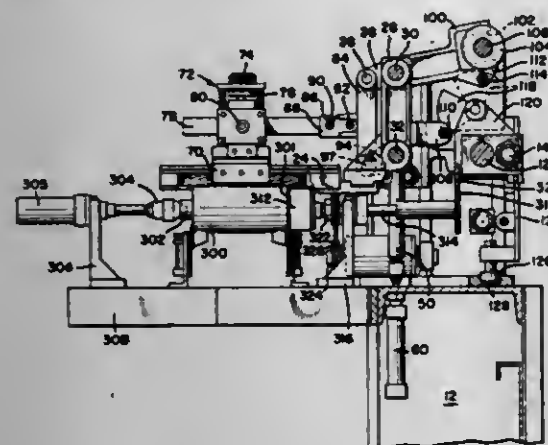
**SILK SCREEN PRINTING MACHINE**

Louis A. Lala, Chicago, Ill., assignor to American Screen Printing Equipment Company, Chicago, Ill.

Filed Jul. 24, 1978, Ser. No. 927,553  
Int. Cl.<sup>3</sup> B41F 15/08, 15/30, 15/42

U.S. Cl. 101-38 R

6 Claims

**1. A screen printing machine, comprising:**

- a machine frame;
- screen carrier support means having at least one horizontally extending support member, and a pair of end rods disposed in spaced parallel relation in a vertical plane supported on said frame and supporting said support member for up and down movement;
- a screen carrier laterally movably mounted to said screen carrier support means for vertical movement therewith;
- first pneumatic drive means directly engaging both said end rods for causing said up and down movement of said screen carrier support means on command;
- a squeegee carrier;
- a squeegee carrier support means supported by said screen carrier support means for vertical movement therewith and for laterally movement thereon and connected thereto with a parallelogram linkage means for causing relative movement between said squeegee carrier and said screen carrier upon vertical movement of said screen carrier support means;
- second pneumatic drive means comprising a double acting pneumatic cylinder means disposed parallel to said at least one horizontally extending support member and extending the length of maximum reciprocal movement of said squeegee carrier support means and said screen carrier;
- a first yoke member secured to a central portion of said squeegee carrier support means;
- a second yoke member secured to a central portion of said screen carrier; and,
- a connector arm pivotally mounted to a bracket driven by a piston portion of said pneumatic cylinder means for reciprocal movement therewith and selectively engagable with said first or second yoke member for causing lateral reciprocal movement of either.

4,282,807

**OFF-SET SCREEN-PRINTING MACHINE FOR DECORATING CERAMIC WARE**

Frederick A. Turnock, Stoke-on-Trent, England, assignor to Service (Engineers) Limited, Stoke-on-Trent, England  
Filed May 25, 1979, Ser. No. 42,640

Claims priority, application United Kingdom, Feb. 2, 1979, 03741/79

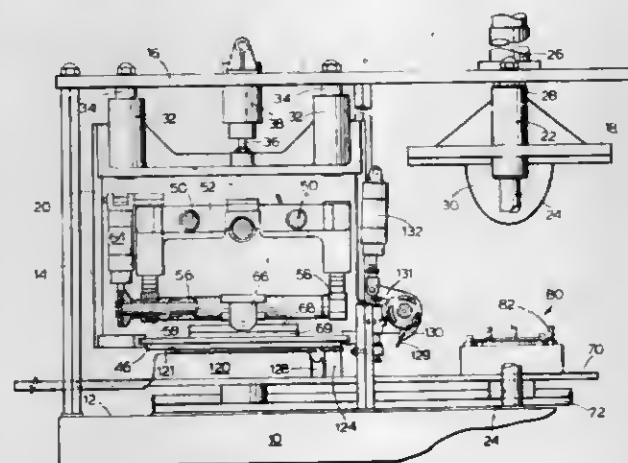
Int. Cl.<sup>3</sup> B41F 17/00

U.S. Cl. 101-41

6 Claims

1. An off-set screen-printing machine for use in applying a design in colour to the surfaces of a succession of articles, such as articles of ceramic ware, comprising a transfer plate affording a flat, non-absorbent, highly finished surface constituting an intermediate surface, screen-printing means enabling a de-

sign in colour to be applied by a screen-printing process on to that intermediate surface, an article support for supporting an article to which the design is to be applied, and a deformable transfer pad in the shape of an inverted dome enabling the design in colour to be transferred from the intermediate surface to an article on the article support, the machine being operable cyclically in such a manner that, in each cycle, first registration is effected between the screen and the intermediate surface and colour is applied through the screen on to that surface, second registration is effected between the transfer pad and the intermediate surface and colour is picked up from that surface by the pad, and third registration is effected between the article support and the pad and the colour is transferred from the pad to an article supported by the article support, the machine comprising also plate cleaning means for removing from the



4,282,808

**LABEL MACHINE**

Bobby J. Clay, Cincinnati, Ohio, assignor to Natmar, Inc., Cincinnati, Ohio

Division of Ser. No. 920,178, Jun. 29, 1978, Pat. No. 4,248,112.  
This application Jun. 4, 1979, Ser. No. 45,201

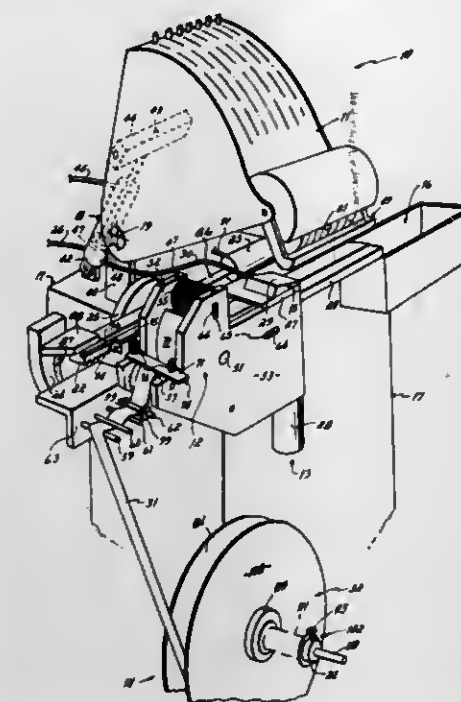
Int. Cl.<sup>3</sup> B41J 3/24

U.S. Cl. 101-93.07

17 Claims

1. A machine for forming tape sections of a predetermined length from an endless tape strip, said machine comprising a tape feed mechanism adapted to contact said endless strip, said tape feed mechanism extending said endless strip a predetermined length in response to operation thereof, a cutter assembly for cutting a tape section of said predetermined length from said endless strip after extension thereof, an ejector nozzle positioned in operational relation with said cutter assembly, said ejector nozzle being connectable with an air source, air discharged from said ejector nozzle being operable to blow each tape section away from said cutter assembly to a collection station after said tape section has been cut from said endless strip, and pneumatic motor means connected with said machine, said

pneumatic motor means being operable during a work stroke to power at least one component of said machine,



the exhaust air of said pneumatic motor means providing the air source for said ejector nozzle.

4,282,809

**MAILBOX LETTER CANCELER**

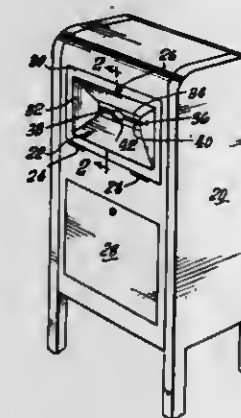
Vernon Stewart, 2146 Sonora, Pomona, Calif. 91767

Filed Aug. 8, 1979, Ser. No. 64,718

Int. Cl.<sup>3</sup> B41F 5/00, 31/22

U.S. Cl. 101-212

7 Claims



1. A stamp canceler positionable in a mailbox so that the mail is canceled as it is inserted in the mailbox, said canceler including:

- a front panel having a narrow slot for receipt of mail defined therein, said defined slot having first and second opposite ends and a finger hole defined centrally therein;
- means to connect said canceler to the mailbox;
- at least one canceling roller adjacent said first end of said slot and laterally spaced from said finger hole, said at least one canceling roller having a cylindrical surface and a canceling die on said cylindrical surface about the periphery thereof;
- at least one pressure roller having a cylindrical surface facing said cylindrical surface of said at least one canceling roller, said at least one canceling roller and said at least one pressure roller being positioned to receive mail inserted through said slot therebetween so the mail is pressured against said canceling die; and
- means to apply canceling ink to said canceling die, said defined finger hole extending from said front panel to beyond the position the mail is pressured against said canceling die, whereby a finger can push the mail through and out of said canceling and pressure rollers.

4,282,810

**PRINT ROLLER**

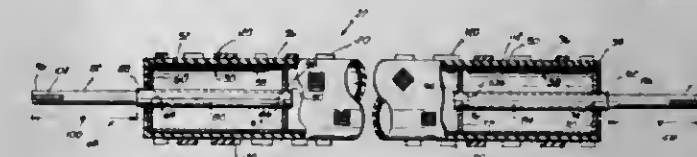
James F. Ellis, Box 100B Chandler Rd., LaFayette, Ga. 30728

Filed Jun. 11, 1979, Ser. No. 43,432

Int. Cl.<sup>3</sup> B41F 27/00

U.S. Cl. 101-376

7 Claims



1. An improved print roller for applying a dyestuff to a textile substrate which comprises:

- a hollow cylindrical body member having a first end, an opposed second end, a generally smooth cylindrical exterior surface and a cylindrical interior surface;
- a first end plate secured to the first end of the hollow cylindrical body member, the first end plate having a substantially centrally disposed aperture therein;
- a second end plate secured to the opposed second end of the hollow cylindrical body member, the second end plate having a substantially centrally disposed aperture therein;
- a plurality of support members fixedly disposed within the hollow cylindrical body member, the support members having an aperture therein which is aligned with the apertures in the first and second end plates;
- a first shaft having a first end portion and an opposed second end portion, the opposed second end portion of the first shaft being disposed within the apertures of the first end plate and at least one support member and secured thereto such that the first end portion of the first shaft extends outwardly from the first end plate along the central longitudinal axis of the hollow cylindrical body member;
- a second shaft having a first end portion and an opposed second end portion, the first end portion of the second shaft being disposed within the apertures of the second end plate and at least one support member and secured thereto such that the opposed second end portion of the second shaft extends outwardly from the second end plate along the central longitudinal axis of the hollow cylindrical body member, at least one of the first end portion of the first shaft and the opposed second end portion of the second shaft operably connectable to a driving means for rotating the hollow cylindrical body member;
- a first tubular sleeve disposed upon and affixed to the opposed second end portion of the first shaft;
- a second tubular sleeve disposed upon and affixed to the first end portion of the second shaft;
- cover means securely affixed to the generally smooth cylindrical exterior surface of the hollow cylindrical body member for encapsulating same, said cover means being formed of a substantially impervious elastomeric material; and
- at least one dye applicator having a first side and an opposed second side, the applicator being fixedly mounted to the cover means on its first side, the opposed second side having a dyestuff carrying surface.

4,282,811

**METHOD FOR DESENSITIZING OFFSET PRINTING PLATES**

Masayuki Kuzuwata, Yokohama; Hazime Machida, Tokyo; Hiroshi Tamura, Fujisawa, and Tadashi Saito, Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Division of Ser. No. 878,400, Feb. 16, 1978, Pat. No. 4,208,212.

This application Aug. 10, 1979, Ser. No. 65,487

Claims priority, application Japan, Feb. 22, 1977, 52-18568

Int. Cl.<sup>3</sup> B41M 1/00

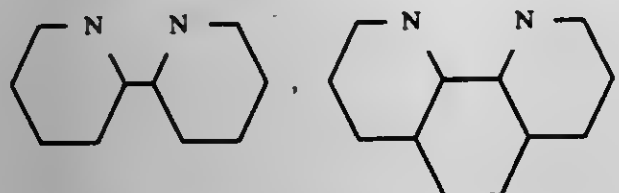
U.S. Cl. 101-451

15 Claims

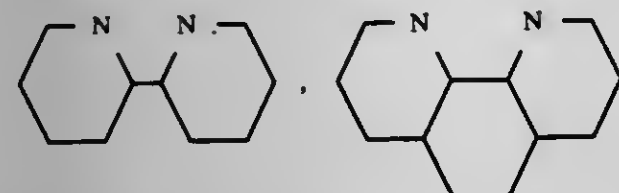
1. A method for desensitizing an offset printing plate which



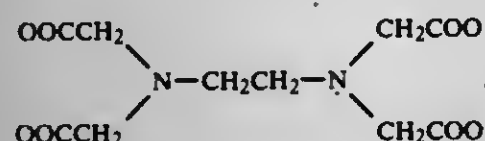
comprises applying an aqueous desensitizing composition consisting essentially of at least one complex to a non-image area of the offset printing plate having an oleophilic image formed thereon in an amount effective to desensitize said non-image area, said complex being selected from the group consisting of compounds having the formula I,  $[M(X)_a](Y)_b \cdot cH_2O$ , wherein M is selected from the group consisting of Ir, Co, Ti, Fe, Cu, Ni, Pt, Mn, Ru, Rh, Hf, V, Be and Pd,  $X_1$  is  $NH_3$ ,  $OH_2$ ,  $H_2N(CH_2)_2NH_2$ ,  $C_2O_4$ ,  $NO$ ,  $NO_2$ ,  $OCHO$ ,  $NH_2$ ,  $HONC(CH_3)C$ ,  $(CH_3)NO$ ,



$OCN_2H_4$  or  $OC(NH_2)_2$ , Y is an anion, "a" is a number in the range of from 2 to 6, "b" is a number in the range of from 1 to 3 and "c" is 0 or a number in the range of from 1 to 10, compounds having the formula II,  $[M(X)_a](X_2)_b \cdot (Y)_c \cdot cH_2O$ , wherein M,  $X_1$ , Y, "b" and "c" are respectively the same as in formula I,  $X_2$  is  $OH$ ,  $OH_2$ ,  $NO_2$ ,  $CO_3$ ,  $NH_2CH_2COO$ ,  $HONC(CH_3)C(CH_3)NO$ , Br, Cl,  $H_2N(CH_2)_2NH_2$ , N,  $ONO_2$ ,  $ONO$ ,  $NCS$ ,  $H_2O$ ,



F or I, and "a'" and "a'" are respectively a number in the range of from 1 to 5, compounds having the formula III,  $(M_1)_p(M_2)(X_3)_q(X_4)_r \cdot nH_2O$ , wherein  $M_1$  is Na, K,  $NH_4$  or hydrogen,  $M_2$  is selected from the group consisting of Ir, Co, Ti, Fe, Cu, Ni, Pt, Mn, Ru, Rh, Hf, V, Be and Pd,  $X_3$  is  $C_2O_4$ ,  $NO_2$ , Cl, Br, I or



"p" is a number in the range of from 1 to 3, "q" is a number in the range of from 1 to 6, and "n" is 0 or a number in the range of from 1 to 10, compounds having the formula IV,  $(M_1)_p(M_2)(X_3)_q(X_4)_r \cdot nH_2O$ , wherein  $M_1$ ,  $M_2$ ,  $X_3$ , "p", "q" and "n" are respectively the same as in the formula III,  $X_4$  is  $NH_3$  or  $NH_2CH_2CH_2NH_2$ , and "r" is a number in the range of from 1 to 6, and compounds having the formula V,  $(M_1)_p(M_2)(X_3)_q(X_4)_r(X_5)_s \cdot nH_2O$ , wherein  $M_1$ ,  $M_2$ ,  $M_3$ , "p", "q" and "n" are respectively the same as in the formula III,  $X_4$  and "r" are respectively the same as in the formula IV,  $X_5$  is  $C_2O_4$ ,  $NO_2$ , Cl or Br, and "s" is a number in the range of from 1 to 6.

4,282,812

#### FIELD-PRIMABLE CHUB CARTRIDGE HAVING A LONGITUDINAL THREADING TUNNEL INTEGRAL THEREWITH

James H. Forgey, Martinsburg, W. Va.; Donald R. Stephens, Wilmington, Del., and Eogann A. Tan, Hagerstown, Md., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

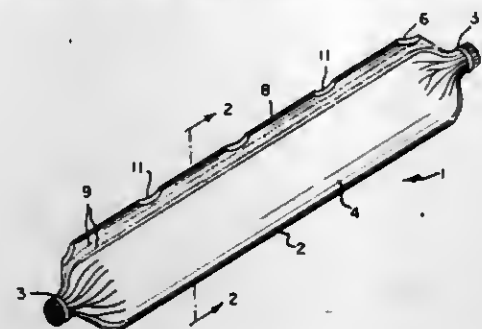
Filed Apr. 6, 1979, Ser. No. 27,882  
Int. Cl. C06C 11/00

U.S. Cl. 102—318

26 Claims

1. A blasting cartridge of the chub type comprising a generally cylindrical body of plastic film gathered and closed at both

ends and containing a water-bearing blasting agent, said generally cylindrical body comprising a web of film wrapped about a longitudinal axis and sealed continuously in the direction of said axis to form (a) a sealed, substantially tubular enclosure filled with said blasting agent, and (b) a flap portion, said flap



portion being sealed longitudinally to form a tunnel adjacent to the substantially tubular enclosure on an axis parallel to the longitudinal axis of said enclosure, and said tunnel having a portion of its wall exposed to allow access to the tunnel without destroying the integrity of the tubular enclosure.

4,282,813

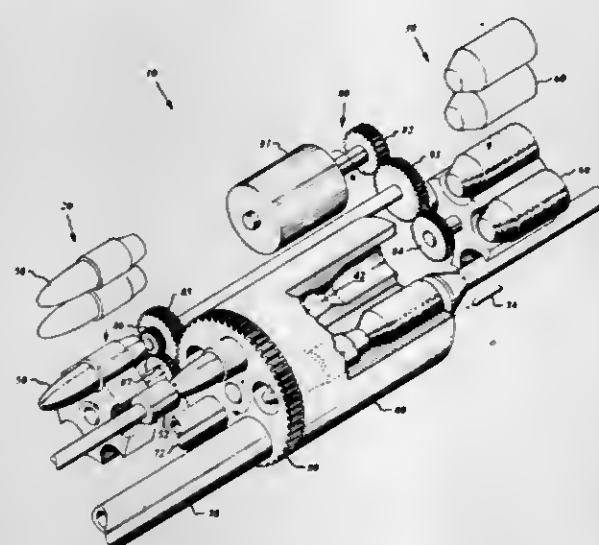
#### TWO PIECE CASELESS ROUND AND GUN THEREFOR

Gerald A. Sterbutzel, Bowmansville, N.Y., assignor to Calspan Corporation, Columbus, Ind.

Filed Dec. 15, 1978, Ser. No. 970,086  
Int. Cl. F42B 5/02

U.S. Cl. 102—431

2 Claims



1. A two-piece non-telescoped caseless cartridge including a projectile portion and a propellant portion which are separately fed to a firing chamber of a gun, said propellant portion including:

- a shaped propellant charge;
- an ablator material disposed at an end portion of said propellant charge adjacent said projectile;
- a heat shrinkable polyester film encapsulating said propellant charge and said ablator material separately from said projectile.

4,282,814

#### DUAL-END WARHEAD INITIATION SYSTEM

Fredric L. Menz, and Gordon A. Greene, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

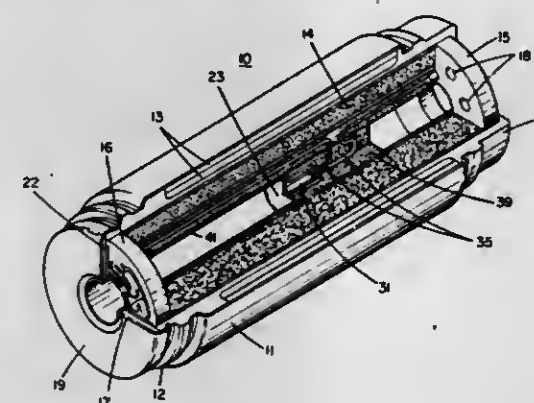
Filed Dec. 20, 1974, Ser. No. 535,068  
Int. Cl. F42B 13/02

U.S. Cl. 102—318

4 Claims

1. An initiation apparatus for use in explosive warhead for causing substantially simultaneous initiation at the plurality of predetermined zones of the explosive warhead comprising;

an explosive charge positioned with a chamber; said explosive charge being formed as a body having a substantial wall thickness and a cavity extending therethrough; a centrally located initiation transfer means within said explosive charge and having primary and secondary ignitors; said initiation transfer means being a cylindrical substantially thin walled metal angular container having an expandable detonator train housing formed to extend along the longitudinal axis of said container; first shock absorbing means located centrally within said annular container and positioned substantially from either end of said annular container;



second shock absorbing means positioned within said detonator train housing; a multiplicity of detonator trains of equal length interconnecting said primary and secondary ignitors; booster explosive means positioned adjacent said secondary ignitor and said explosive charge; and actuator means positioned adjacent said primary ignitor for ignition of said primary ignitor; whereby the actuator means ignites the primary charge thereby causing detonating fronts to travel through the detonator trains to cause detonating of the secondary ignitors which in turn causes the booster explosive to initiate the explosive charge.

4,282,815

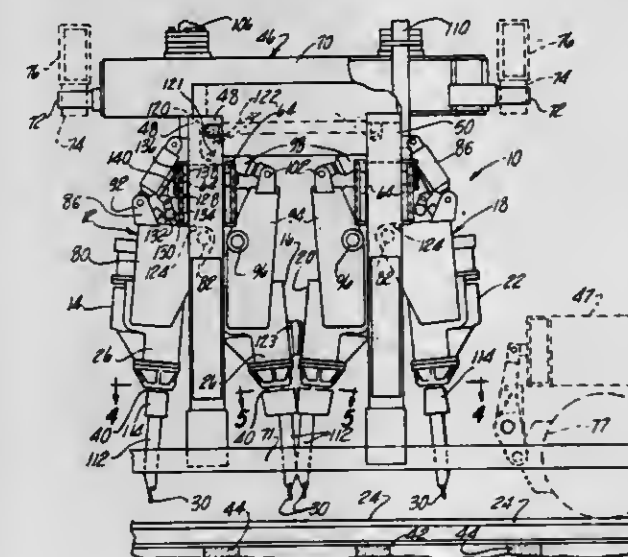
#### RAILROAD TAMPING MACHINE

Helmuth von Beckmann, Columbia, S.C., assignor to Canon Corp., West Columbia, S.C.

Filed Oct. 12, 1979, Ser. No. 84,307  
Int. Cl. E01B 27/14

U.S. Cl. 104—12

17 Claims



1. A railroad tamping machine mounted on a railroad vehicle for movement along the track comprising; a pair of work heads each including a pair of tamping units arranged longitudinally of a rail of said track with said pair of tamping units of

each tamping head being disposed at opposite sides of one tie of a pair of adjacent ties, and one tamping unit of each of said tamping heads being disposed between adjacent ties, said pair of tamping units of each tamping head being supported for swinging movement about horizontal axes extending transversely of said track toward and away from each other at opposite sides of an associated tie, said pairs of tamping heads being supported relative to said vehicle for vertical movement simultaneously and independently of each other, and means to hold one of said tamping heads in an elevated inoperative position relative to one tie while the other of said tamping heads is in an operative position relative to an adjacent tie.

4,282,816

#### ELASTOMERIC RAILWAY SUSPENSION

Reginald Harrison, Leicestershire, England, assignor to Dunlop Limited, London, England

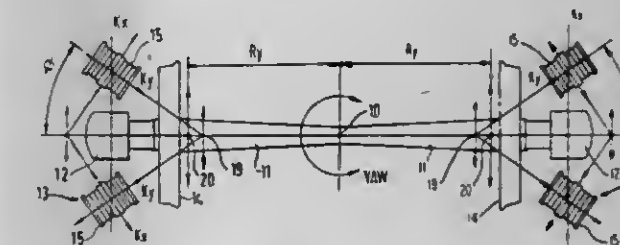
Filed May 31, 1979, Ser. No. 44,357

Claims priority, application United Kingdom, Jun. 10, 1978, 26666/78

Int. Cl. B61F 5/30, 5/38, 5/50

U.S. Cl. 105—224.1

15 Claims



1. A vehicle axle suspension comprising an axle supported at each end by a respective axle box, respective spring means acting between each axle box and an associated rigid vehicle mounting, each spring means comprising a pair of spring units arranged one on each side of said axle in the direction of movement of the vehicle, each spring unit comprising a plurality of layers of elastomeric material interleaved with reinforcing elements, the layers of elastomeric material in each spring unit lying in planes angled relative both to said direction of normal movement and to the direction of the length of said axle wherein the resultant compression stiffness of each spring unit lies in a plane which subtends an acute angle with respect to said axle and intersects said axle at a point between an associated axle box and the center of said axle, so that the effective spring centre of each spring means is displaced along the length of said axle and acts at a point between the axle centre and the associated axle box.

12. A suspension according to claim 11 in which the compression stiffness is twice that of the shear stiffness.

13. A suspension according to claim 11 in which the compression is twenty times that of the shear stiffness.

4,282,817

#### EXPANDABLE FURNITURE

Gary Gutterman, 160 E. 56th St., New York, N.Y. 10022

Filed May 29, 1979, Ser. No. 43,312

Int. Cl. A47B 83/00; A47C 17/66

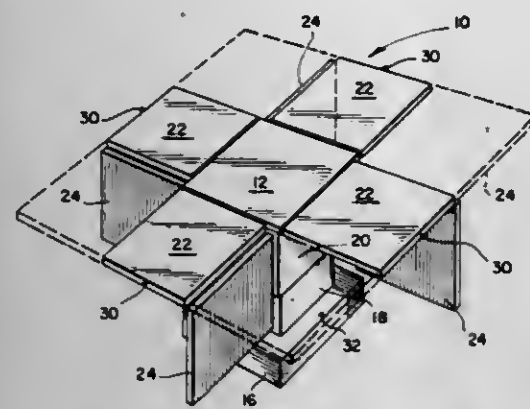
U.S. Cl. 108—11

9 Claims

1. An article of furniture comprising a pedestal and a table top, said table top including a central top portion, said pedestal comprising an expandable assembly to enable said top selectively to be at side table height and to be raised to be at dinner table height, said central top portion having straight sides, a panel extending from each of said sides and being hingedly connected thereto, each of said panels including a side member and an extension member, said extension member hingedly connected to said side member, said extension member being folded under said side member,



each of said panels being folded down about its respective hinge connection to sandwich said extension member material.



between said pedestal and said side member to form a cubular configuration when all of said panels are so folded down.

4,282,818

### MOTION TRANSFER APPARATUS FOR TUFTING MACHINES

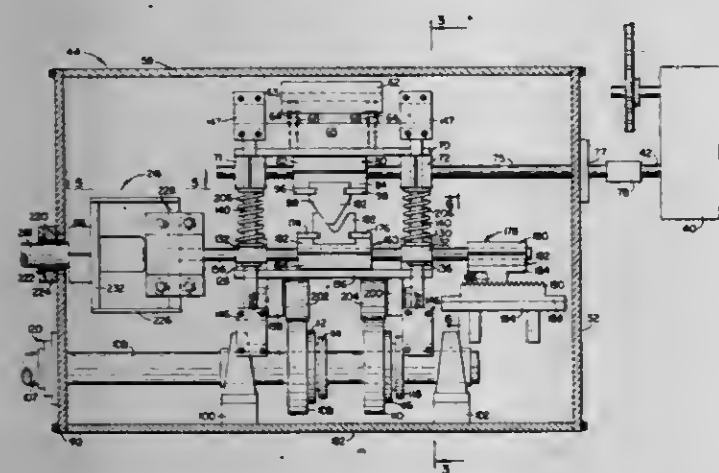
Gary L. Ingram, Ooltewah, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed May 8, 1980, Ser. No. 146,008

Int. Cl.<sup>3</sup> D05C 15/00

U.S. Cl. 112—79 R

18 Claims



1. Apparatus in combination with a tufting machine having a reciprocating needle bar carrying a plurality of needles spaced transversely across the machine and adapted to penetrate a base material moving longitudinally thereof to insert a plurality of stitches upon each penetration of the base material, said machine including mounting means for permitting relative transverse movement between the needle bar and the base material, and a positioning device providing a controlled transverse step shift at an output drive member during a first portion of the needle bar reciprocation cycle, said apparatus comprising, a first drive coupling member, means connecting said member to said positioning device output drive member for transverse movement therewith, a second drive coupling member disposed for engagement with said first drive coupling member, said first and second drive coupling members having complementary engageable surfaces, the surface of said first drive coupling member constraining and directing the movement of said second drive coupling member when said members engage, actuating means driven in timed relationship with the reciprocation of said needle bar for moving the second drive coupling member into engagement with the first drive coupling member during a second portion of said cycle and for moving and maintaining said second drive coupling member out of engagement therewith during the remainder of said cycle, said second portion of said cycle being different than said first portion, and connecting means connecting said second drive coupling member to said mounting means for shift-

ing the needle positions transversely relatively to said base material.

4,282,819

### ADJUSTMENT DEVICE IN A SEWING MACHINE

Friedhelm Sartor, Bielefeld, Fed. Rep. of Germany, assignor to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

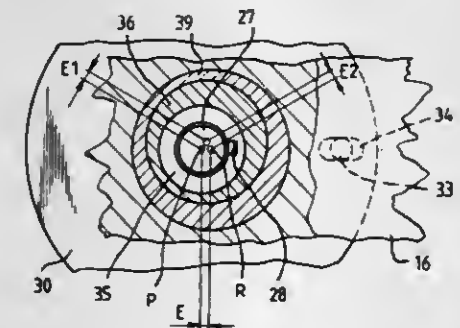
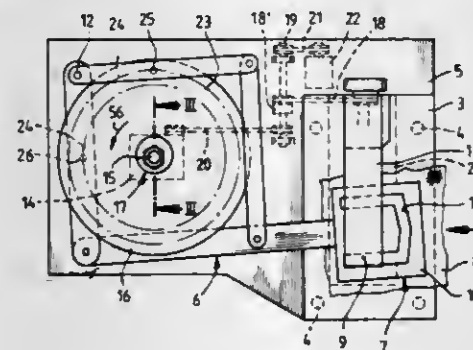
Filed Aug. 1, 1980, Ser. No. 174,448

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1980, 3011368

Int. Cl.<sup>3</sup> D05B 21/00

U.S. Cl. 112—121.12

7 Claims



1. A sewing machine for producing a stitch contour in a workpiece according to a predetermined program, comprising: stitch forming means including a needle; a workpiece receiving device movably arranged with respect to said needle; linkage means connected to said workpiece receiving device and having cam following means provided at said linkage means; and a control cam with a first axis cooperating with said cam following means and drivingly connected to said stitch forming means by transmitting elements including a shaft with a second axis adjustably receiving said control cam by a control cam adjustment device having a flange and a hub arranged on said shaft and comprising setting means arranged between said control cam and said shaft for allowing a lateral adjustment of said first axis in relation to said second axis.

4,282,820

### WORKPIECE-CLAMPING ASSEMBLY AT SEWING STATION

Horst Fenzl, Oerlinghausen, Fed. Rep. of Germany, assignor to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed May 21, 1980, Ser. No. 152,035

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1979, 2924412

Int. Cl.<sup>3</sup> D05B 21/00

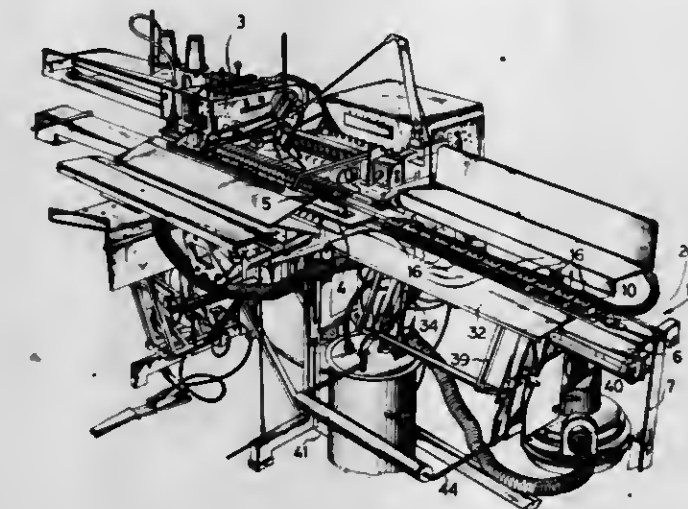
U.S. Cl. 112—121.15

11 Claims

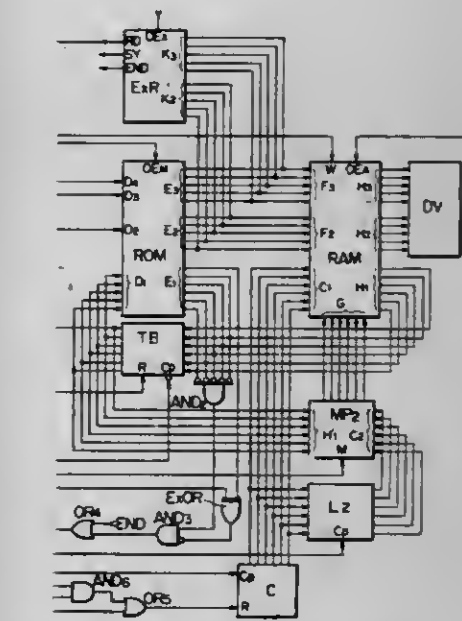
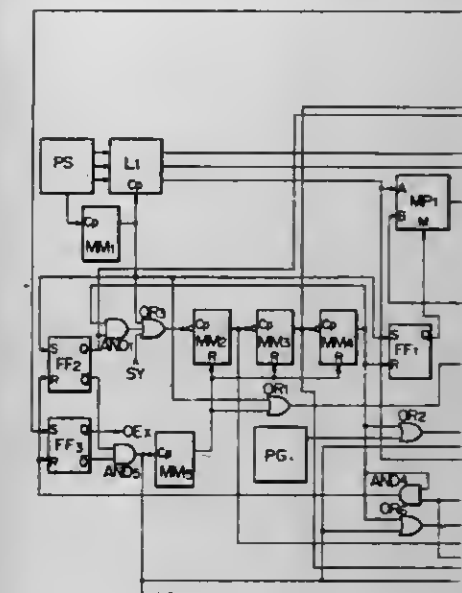
1. An assembly disposable at a sewing-machine station for positioning workpieces with respect to one another prior to stitching together at said station, comprising:

a frame; arresting means on said frame for enabling the sequential

alignment by an operator of a first workpiece and a second workpiece; a plurality of independently actuatable first clamps on said frame for fixing respective portions of said first workpiece with respect to said frame upon alignment of said portions via said arresting means; a plurality of independently actuatable second clamps on said frame for fixing respective sections of said second



workpiece with respect to said frame upon alignment of said sections via said arresting means; operator-controllable actuator means on said frame operatively connected to said clamps for selectively actuating same to effect a piecewise positioning of said first workpiece and of said second workpiece; and transfer means on said frame for at least facilitating delivery to said station of said first workpiece and said second workpiece upon positioning and clamping thereof.



signal temporarily stored in the second memory is read out therefrom and used to vary needle position and fabric feed.

4,282,821

### ELECTRONIC CONTROL SYSTEM FOR SEWING MACHINES

Kazuo Watanabe, Hachioji; Hachiro Makabe, Fussa; Toshiaki Kume, Tachikawa; Toshihide Kakinuma, Tokyo, and Hideaki Takenoya, Hachioji, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1979, Ser. No. 55,306

Claims priority, application Japan, Jul. 8, 1978, 53/83245

Int. Cl.<sup>3</sup> D05B 3/02

U.S. Cl. 112—158 E

11 Claims

1. An electronic control system for use in sewing machines which vary needle position and fabric feed in order to stitch a plurality of stitch patterns in accordance with stitch control signals, comprising: a pulse generator issuing pulses in synchronism with rotation of the sewing machine; a first memory storing a plurality of stitch control signals; a user-operable pattern selector for selecting an initial address within the first memory; a plurality of monostable multivibrators which are connected to each other and to the pattern selector in a manner that the monostable multivibrators oscillate when the pattern selector is operated; and a second memory connected to the pulse generator, the first memory and said plurality of monostable multivibrators, the second memory operating in a manner that each time an oscillation of the monostable multivibrators takes place, a stitch control signal is read out of the first

4,282,822

### BOAT HULL ANTI-FOULING SHROUD

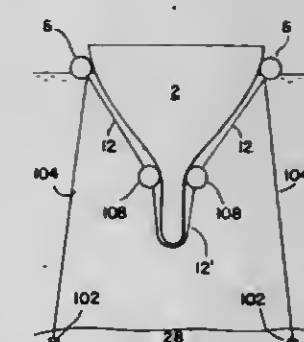
Robert Jackson, 89 Woodward Island, Clearwater, Fla. Division of Ser. No. 883,414, Mar. 6, 1978, Pat. No. 4,215,644.

This application Jun. 6, 1980, Ser. No. 157,230

Int. Cl.<sup>3</sup> B63B 59/00

U.S. Cl. 114—222

1 Claim



1. A selectively floatable protective shroud for a boat hull floating in a body of water, comprising: an inflatable, elongated toroidal bladder with an inner open-



ing larger than the circumference of the hull of said boat at its waterline, having an inflation nozzle, located in said body of water;

a continuous, flexible, water impervious shroud having a circumferential edge mounted about the circumference of said toroidal bladder, for protecting said hull when deployed about said boat;

a gas pump connected to said inflation nozzle of said bladder, for controllably inflating said bladder to selectively float said shroud from a submerged position beneath said boat to a deployed position enveloping the hull of said boat;

a water drain nozzle mounted on said flexible shroud for evacuating sea water from the region between said flexible shroud and said boat hull;

a water pump connected to said water nozzle for controllably pumping out said sea water from said region;

a guide member mounted to the sea bed floor and connected to said bladder, for guiding said shroud from said submerged position beneath said boat into said deployed position enveloping the hull of said boat;

said guide member further comprising:

a pair of anchors mounted to the sea bed floor on opposite sides of said boat;

a pair of elastic members, respectively mounted to each of said anchors and connected to said bladder;

said bladder having its motion constrained by said anchors and elastic members to remain in substantially the vertical direction in transferring said shroud between said floating and submerged positions;

said boat having a keel portion;

a second inflatable, elongated toroidal bladder having an inner opening larger than the horizontal cross section of said keel portion of said boat, and an outer size smaller than said circumference of said hull of said boat at said water line, mounted in a central portion of said flexible shroud;

said second bladder being inflated to envelop said keel portion of said boat prior to positioning said shroud in said deployed floating position enveloping said hull.

4,282,823

## UNDERWATER HULL OR TANK

Giunio G. Santi, Milan, Italy, assignor to S.S.O.S. Sub Sea Oil Services S.p.A., Milan, Italy

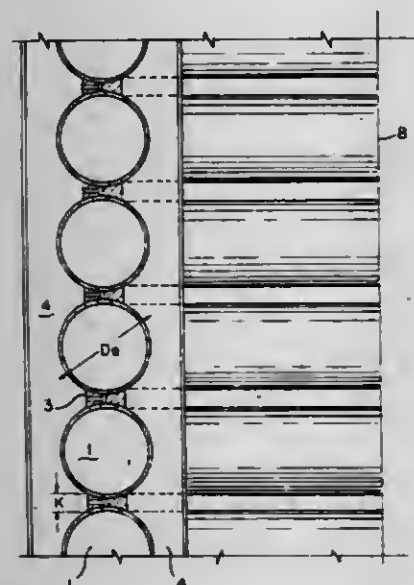
Filed Jul. 30, 1979, Ser. No. 62,064

Claims priority, application Italy, Aug. 4, 1978, 26474 A/78

Int. Cl.<sup>3</sup> B63G 8/00; B65D 8/10, 88/06

U.S. Cl. 114—341

1 Claim



1. A structure for a hull for underwater use and which accommodates high external pressure when immersed to great depths, comprising a plurality of toric components positioned in a series about a common axis with each component being

adjacent at least one other of the components, transversal connecting rings between each two adjacent toric components, said rings being shaped to engage the outer surface of each of the two toric components between which said ring is located and being fused to said two components, and inner and outer longitudinal connecting beams, said beams each having a profile to fit about the toric components and to fit against the rings between the components and being fused to said components and said rings.

4,282,824

## MEMORY AIDING DEVICE

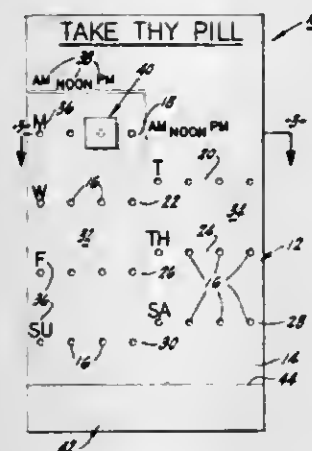
Lyndon E. Lafferty, 230 Bergwall Way, Vallejo, Calif. 94590

Filed Oct. 27, 1978, Ser. No. 955,329

Int. Cl.<sup>3</sup> G09F 9/00

U.S. Cl. 116—308

5 Claims



1. A device for aiding memory in the performance of an act such as the administration of a medication comprising:

- a display board including a plurality of surfaces, including a first surface having at least a pair of substantially parallel rows of a plurality of openings being staggered from each other, a second surface having a plurality of openings, and a third surface having a plurality of openings, said display board having at least one surface thereof adapted for being visible to an observer;
- indicia associated with each of said plurality of openings, each indicium denoting a selected time period;
- peg means for fitting within any of said plurality of openings for supporting said peg means against the pull of gravity, said peg means comprising a shaft portion dimensioned to be removably placed in any of said openings and an indicia bearing portion including a plurality of faces, each of said plurality of faces including a different indicium able to be visible to an observer without removal of said shaft portion of said peg means from an opening.

4,282,825

## SURFACE TREATMENT DEVICE

Hiroto Nagatomo, Hinode; Tetsuya Takagaki, Kodaira; Hisao Seki, Hamura; Shiron Terasaki, Kokubunji, and Hitoshi Horimuki, Kofu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 26, 1979, Ser. No. 61,049

Claims priority, application Japan, Aug. 2, 1978, 53-93592; Nov. 24, 1978, 53-144169; Dec. 22, 1978, 53-157445; Dec. 25, 1978, 53-158544; Jan. 26, 1979, 54-7107

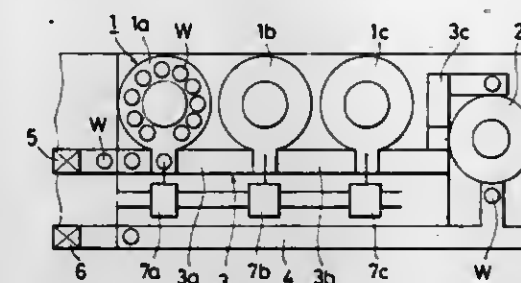
Int. Cl.<sup>3</sup> B05C 3/04, 3/10

U.S. Cl. 118—58

27 Claims

1. A surface treatment device comprising at least one treatment vessel means containing a treatment liquid for treating the surfaces of plate-like articles, means for causing the treatment liquid to flow from one end portion of the treatment vessel to a second end portion of the treatment vessel, and a conveyor means for conveying the plate-like articles in said treatment liquid in a direction opposite to a flow direction of the treat-

ment liquid along a conveyor path which is nearly in parallel with main surfaces of the plate-like articles, wherein the sur-



faces of said plate-like articles are treated while being conveyed in the treatment liquid in the treatment vessel by said conveyor means.

4,282,826

## APPARATUS FOR REGULATION OF THE COATING THICKNESS IN THE COATING OF CONTINUOUS WEBS OF MATERIAL

Gerhard Wohlfeil, Monheim, Fed. Rep. of Germany, assignor to Jagenberg-Werke AG, Dusseldorf, Fed. Rep. of Germany

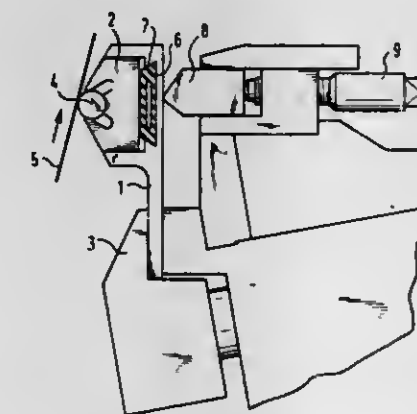
Filed Nov. 21, 1979, Ser. No. 96,357

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1978, 2851015

Int. Cl.<sup>3</sup> B05C 11/02

U.S. Cl. 118—118

12 Claims



1. In an apparatus for the regulation of the coating thickness in the coating of continuous webs of material having a doctor roll which bears on the coated side of the web and which is supported in a shape-retaining, wear-resistant doctor-roll bed and means elastically joining the doctor-roll bed to a stationary frame, the improvement wherein the elastic joining means comprises an elastically deformable mount and means removably mounting the doctor roll bed in the mount for replacement of the doctor-roll bed independent of the mount and biasing means for deforming the mount to move the doctor-roll into contact with a web.

4,282,827

## DEVELOPMENT SYSTEM

Ronald A. Andrews, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 12, 1979, Ser. No. 74,692

Int. Cl.<sup>3</sup> G03G 15/09

U.S. Cl. 118—648

5 Claims

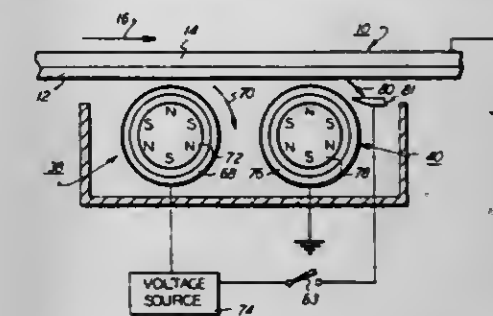
1. An apparatus for developing an electrostatic latent image recorded on a surface region with conductive developer material, including:

electrically insulating means for transporting developer material adhering removably on the exterior surface thereof into contact with the surface region to develop the latent image recorded thereon;

an electrically conducting member spaced from and dis-

posed closely adjacent to said insulating means and the region of the surface; and

means for electrically biasing said conducting member to generate an electrical field between said insulating means and the surface region with the electrical field vector



4,282,828

## SHOWER VACCINATION APPARATUS

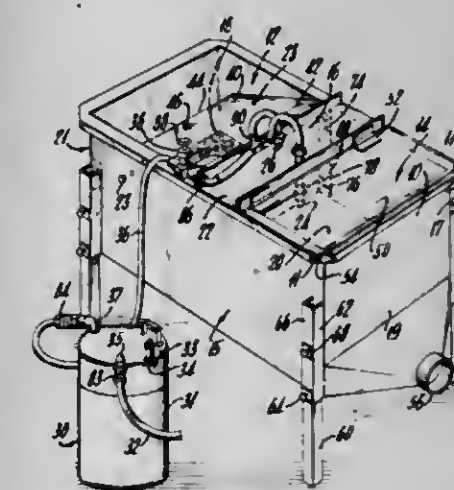
Keith A. Johnson, Bothell, Wash., assignor to Tavolek, Inc., Redmond, Wash.

Filed Mar. 10, 1980, Ser. No. 128,989

Int. Cl.<sup>3</sup> A01K 63/00

U.S. Cl. 119—3

11 Claims



1. An apparatus for vaccinating fish comprising:

a tank having first and second side walls, front and rear end walls and a floor;

a gate extending across said tank from said first side wall to said second side wall and separating said tank into an inlet chamber for receiving a quantity of fish to be vaccinated and a shower chamber where vaccine may be administered to the fish;

a dewatering grate disposed in said inlet chamber and defining a bottom therefor generally coextensive with said tank floor of said inlet chamber and raised thereabove to provide a space into which water which may be introduced into said inlet chamber with the fish can run off;

a floor disposed in said shower chamber extending across said shower chamber from one tank side wall to the other and extending from said grate part way to said front end wall and raised above said tank floor;

said front end wall including a discharge opening for the fish;

means for adjusting the distance between the bottom of said gate and the surface defined by said grate to control the rate at which fish pass from said inlet chamber to said shower chamber.

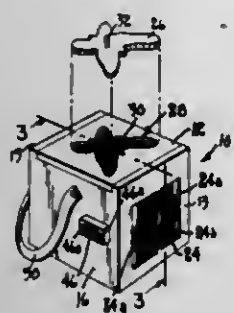


4,282,829

**ANIMAL OBSERVATORY AND TOY APPARATUS**  
Dennis O. Tweed, 420-21st Ave. SW., Rochester, Mich. 55901  
Filed Dec. 18, 1979, Ser. No. 104,954  
Int. Cl.<sup>3</sup> A01K 1/02

U.S. Cl. 119-19

27 Claims



1. Observatory cage apparatus suitably sized to be carried by a child, comprising:

- (a) an enclosed observatory cage for retainably housing at least one small animal, comprising:
  - (i) a floor member; and
  - (ii) a plurality of wall members cooperatively connected with said floor member to define therewith an enclosed internal cavity;

- (b) access means associated with at least one of said wall members, for enabling movement of said one wall member to permit access into said internal cavity;

- (c) means for ventilating said internal cavity while preventing egress therefrom of items placed for observation within said internal cavity;

- (d) a removable plug member normally operatively forming a portion of one of said wall members and being removable therefrom to define an observation port through that wall member into said internal cavity while preventing egress therethrough of items placed for observation within said internal cavity; said plug member being removable from said one wall member in an outward direction, away from said internal cavity, and generally perpendicular to the general plane of said one wall member;

- (e) retention means for retainably attaching said plug member to said observatory cage when said plug member is removed from its normal wall-forming position; wherein said retention means includes:

- (i) a handle member projecting outwardly from said plug member in a direction away from said internal cavity when said plug member is inserted within and positioned to form a portion of said one wall member; and
- (ii) receptor means formed within a second of said plurality of wall members for retainably accepting and holding said handle, whereby said plug member becomes externally removably secured to said second of said wall members when said handle is placed within said receptor means.

4,282,830

**ION DISPENSER USABLE FOR TREATING POULTRY OR ANIMAL ZONES**

Donald G. Saurenman, Whittier, Calif., assignor to Consan Pacific Incorporated, Whittier, Calif.

Filed Feb. 25, 1980, Ser. No. 124,242

Int. Cl.<sup>3</sup> A01K 31/00

U.S. Cl. 119-21

5 Claims

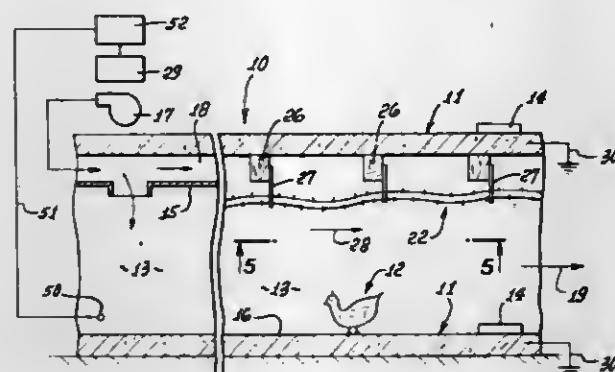
1. In combination:

- (a) means forming an animal or poultry confinement zone which characteristically contains air-borne particles and animal waste, producing ammonia;

- (b) a flexible cable supported within said zone including a metallic core to which voltage is applicable, the cable including a protective sleeve of insulating material on and extending along and about the core, the sleeve defining a wall,

- (c) a plurality of spaced needles having shanks penetrating

through said sleeve wall and into contact with the core to make electrical contact therewith so as to receive application of said voltage, the needles having tips openly exposed outwardly of the cable on different sides thereof to dispense ions into the atmosphere near the cable,



- (d) means openly suspending said cable in said zone, whereby said cable is bent to conform with a desired relation within said forming means to produce sufficient ions to suppress said particles and ammonia, and
- (e) means supplying sufficient voltage to said core to produce said sufficient ions.

4,282,831

**BACK FLOW CHECK AND SELF-CLEANING SPRING BIASED WATERER VALVE**

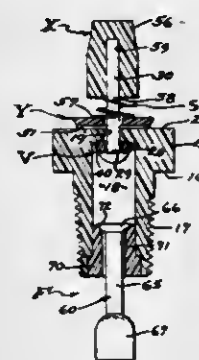
Norman P. Nilsen, P.O. Box 33, Phelan, Calif. 92371

Filed Nov. 13, 1978, Ser. No. 959,726

Int. Cl.<sup>3</sup> A01K 39/02

U.S. Cl. 119-75

2 Claims



1. A positive shut-off and protected poultry waterer unit for dispensing water from a pressured supply into an upwardly open vessel having a side wall of substantially vertical extent for the containment of water to a level therein, and comprising: a valve body with a flat top face and a chamber therethrough and having a port opening at and normal to said top valve body face and into the vessel, a downwardly faced valve seat in said chamber surrounding the port opening therethrough, a shut-off valve with an angularly displaceable pin projecting loosely through said seat and port and said valve pin normally engaging the valve seat and operable therefrom by angular displacement of said pin to open and increase the water level in said vessel, an actuator head of relatively small horizontal extent on the upper end of the pin and exposed within the vessel to be nudged by the beaks of the poultry to angularly displace the pin, a baffle plate of relatively large horizontal extent fitted loosely over the pin and engaged with the top face of the valve body, the small head and large plate acting to encourage the settlement of silt-like particles in a direction away from the waterer unit valve body, and a compression spring acting between the baffle plate and actuator head to depress upon the former and to lift the latter for alignment of the shut-off valve pin into normal alignment and engagement with the valve seat, the poultry waterer unit further including a check valve permitting entry of water into said valve body chamber and nor-

mally closing a passage opening into the water supply, said chamber entrapping a body of water between the shut-off valve and the check valve when the shut-off valve and check valve are closed to thereby isolate the water supplied into the vessel from the pressured supply thereof, said check valve comprising a poppet member operable to lift into the chamber with the water flow therinto, the poppet member including an enlarged top head element permanently located in the chamber and adopted to normally substantially plug a chamber entrance defined in the chamber, a stem extending loosely through the chamber entrance, and a second enlarged poppet member portion having a greater extent than the chamber entrance, the distance between the head top and the second enlarged portion being less than the distance from the head top in its normal plugging position to the shut-off valve, to restrict upward poppet member motion during water flow into the chamber so as to prohibit poppet member interference with the shut-off valve.

4,282,832

**PROCESS FOR VAPORIZING A LIQUID HYDROCARBON FUEL**

Donald F. Szydlowski, East Hartford; Vaidotas Kuzminskas, Glastonbury, and Joseph E. Bittner, East Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 21, 1980, Ser. No. 123,226

Int. Cl.<sup>3</sup> F22B 1/02

U.S. Cl. 122-28

2 Claims



1. In a process for vaporizing a liquid hydrocarbon fuel, the steps of:

- introducing the liquid fuel into a substantially vertical conduit having a plurality of regions of closely packed, high void volume, high surface area inert packing material disposed therein, said regions of packing material each having a top surface and being spaced apart vertically within the conduit, each region of packing material being supported by a foraminous material extending across the conduit, wherein said liquid fuel is distributed substantially uniformly over the top surface of the uppermost region of packing material and passes down through the conduit over the packing material within each region coating the surfaces of the packing material with a film of liquid;

- redistributing, over the top surface of each region of packing material following the uppermost region, all unvaporized liquid fuel passing through the immediately preceding region;

- vaporizing the said liquid fuel by (1) introducing an inert hot gas into the conduit above the top surface of the upper-

4,282,833

**HOT-WATER BOILER, FOR INSTANCE A CENTRAL HEATING BOILER, AND A METAL CASTING THEREFOR**

Gerardus J. Giesen, Tegelen, Netherlands, assignor to Metaalgieterij G. Giesen, B.V., Tegelen, Netherlands

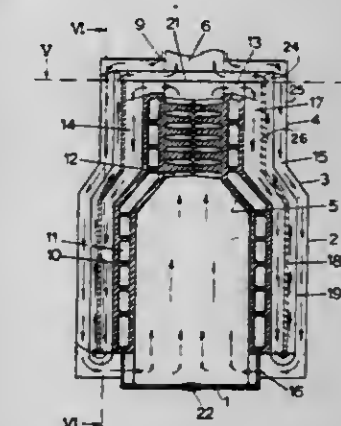
Filed May 23, 1979, Ser. No. 41,793

Claims priority, application Netherlands, May 23, 1979, 7805539

Int. Cl.<sup>3</sup> F22B 7/00

U.S. Cl. 122-158

10 Claims



1. In a hot water boiler having a double-wall structure containing passages for flow of the water being heated and providing bounding walls on at least two opposite sides of a combustion chamber, there being outside said double-wall structure a plurality of further walls providing passages for flow of combustion air and combustion gases, whereby the combustion gases exchange heat with the water and the air for combustion, and the said double-wall structure having vertically extending first projections on its outside face which project into a passage for combustion gas, the improvement that the said double-wall structure is comprised of opposed hollow metal castings which provide opposed bounding walls of a combustion gas outlet passage extending upwardly from the said combustion chamber and have second projections extending into said outlet passage extending upwardly from the combustion chamber, there being outside each of the castings three walls providing in sequence in the outward direction firstly a first passage for downward flow of the combustion gases from the said outlet passage over the surfaces of said first projections on the outside of the casting, secondly a second passage interconnected with said first passage for upward flow of the combustion gases from the lower end of said first passage and thirdly a passage for downward flow of combustion air which is connected into the bottom of the combustion chamber.



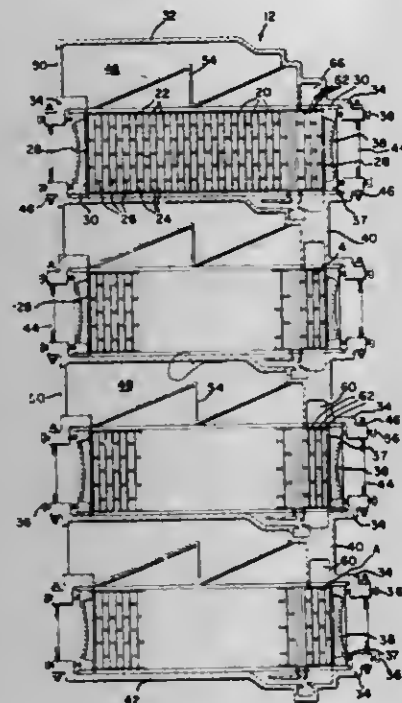
# 4,282,834 BOILER STRUCTURE EMBODYING A PLURALITY OF HEAT EXCHANGE UNITS

J. Hilbert Anderson, York, Pa., assignor to Sea Solar Power,  
York, Pa.

Filed Jul. 19, 1979, Ser. No. 59,031  
Int. Cl.<sup>3</sup> F28F 1/00, 3/10

U.S. Cl. 122—367 C

7 Claims



1. A boiler structure comprising a plurality of heat exchange units arranged as a horizontal bank of units with a plurality of said banks of units arranged in tier formation, each heat exchanger unit having a plurality of plates arranged in pairs in vertical planes and in spaced parallel relation to one another, each pair of plates defining a passageway therebetween and each pair of plates defining a passage between adjacent pairs of plates, a top cover member for each unit with certain of said top cover members constituting bottom cover members for a superjacent unit, said cover members defining compartments with which said passageways communicate, for delivering a vapor thereto, a vapor exhaust manifold, conduits connecting each of said compartments to said manifold, each of said top cover members having an eliminator screen provided therein to remove liquid droplets from the vapor moving through the compartments to the exhaust manifold.

# 4,282,835 INTERNAL COMBUSTION ENGINE WITH GAS SYNTHESIZER

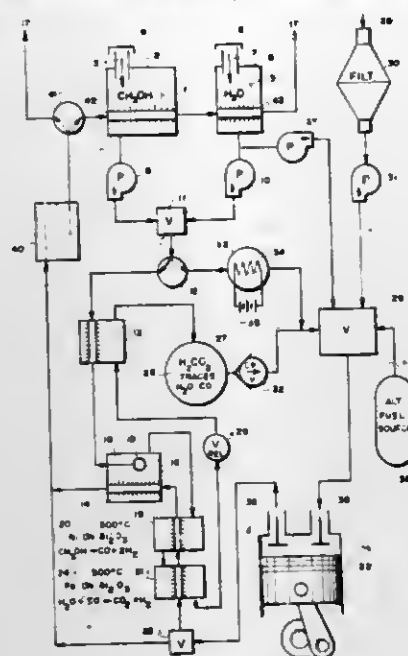
William D. Peterson, Salt Lake City, Utah, and John M. Lytle,  
Richland, Wash., assignors to Wm. D. Peterson & Associates,  
Salt Lake City, Utah

Filed Jul. 2, 1979, Ser. No. 53,750  
Int. Cl.<sup>3</sup> B01J 7/00; F01N 3/15; F02B 43/08; B01J 8/02  
U.S. Cl. 123—1 A

1 Claim

1. In combination, an internal combustion engine, a source of fuel comprising a mixture of Methanol and water, for supply to a pair of synthesizers serially connected and accepting exhaust gas from said engine, the first of said synthesizers first receiving exhaust gases containing a catalyst of iron on  $Al_2O_3$  and the second one of said synthesizers containing a catalyst of Nickel on  $Al_2O_3$ , a first heat exchanger accepting engine exhaust gases discharged from said second synthesizer and arranged to accept said fuel mixture; means for conducting said fuel mixture from said first heat exchanger to said synthesizers thence to said engine for combustion therein; and a second heat exchanger located between said internal combustion engine and the discharge from said first synthesizer for the passage there-

through of gas discharged from said synthesizers prior to supply to said engine, and means conducting said fuel mixture



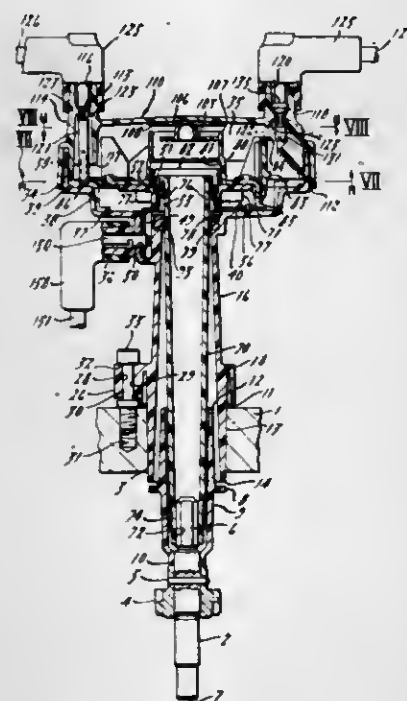
through said second heat exchanger prior to the supply of said mixture to said first heat exchanger.

# 4,282,836 LIGHTWEIGHT DISTRIBUTOR ROTOR DRIVESHAFT David H. Fox, Ann Arbor, and Charles C. Kostan, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 14, 1979, Ser. No. 103,677  
Int. Cl.<sup>3</sup> F02P 7/02

U.S. Cl. 123—146.5 A

8 Claims



1. An internal combustion engine ignition distributor connected to be driven by said engine and containing a rotor driveshaft, a rotor element and a fixed metallic ring element having an outside circular surface, said rotor driveshaft includes:

- a first end containing means for engagement with a drive member of said engine;
- a second end containing means for mounting said rotor element thereon and said rotor mounting means contains an integral inwardly facing circular surface having a diameter slightly larger than said fixed metallic ring element surface, located in opposition to said metallic surface to thereby form a rotational bearing therebetween.

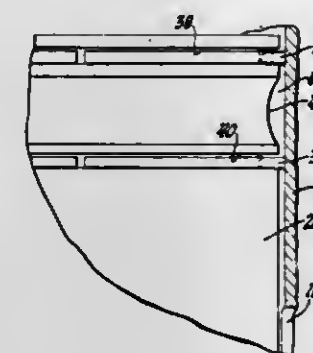
# 4,282,837 TWO-CYCLE DIESEL ENGINE WITH PISTON RING STABILIZING ACCUMULATOR VOLUME

Robert L. Holtman, and Robert B. McClure, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 5, 1979, Ser. No. 72,580  
Int. Cl.<sup>3</sup> F02F 7/00

U.S. Cl. 123—193 P

2 Claims



1. The combination in a two-stroke cycle diesel engine of the type having a piston with at least two axially spaced split metal compression sealing rings retained in grooves near one end of the piston, the piston being reciprocable within a ported cylinder to alternately cover the ports for retention of cylinder pressure at said one piston end during compression and expansion strokes and uncover the ports for scavenging and recharging of the cylinder during a portion of the piston motion at the low pressure end of said strokes, wherein the improvement comprises an accumulator volume defined by the piston between the two rings closest to said one end of the piston, said volume being sized large enough in relation to the piston ring leakage area, engine cylinder pressures and normal operating speeds to limit the build-up of gas pressure in the volume between the rings to a value below that of the cylinder pressure during nearly all conditions of normal engine operation, whereby shock loading of the end ring through cyclic unseating due to differential pressure reversals is substantially avoided.

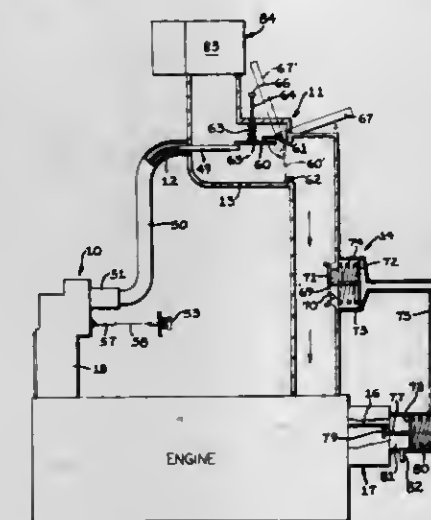
# 4,282,838 ENGINE OVERSPEED SHUT-DOWN SYSTEM Harold C. Davidson, Chillicothe, and John H. Parks, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US/79/00128, § 371 Date Mar. 2, 1979, § 102(e)  
Date Mar. 2, 1979, PCT Pub. No. WO80/01821, PCT Pub.  
Date Sep. 4, 1980

This PCT application filed Mar. 2, 1979, Ser. No. 81,218  
Int. Cl.<sup>3</sup> F02B 77/08

U.S. Cl. 123—198 DB

28 Claims



1. An overspeed shut-off system in combination with an internal combustion engine having an intake manifold (13)

connected thereto for communicating ambient air to said engine and fuel control means (17) for supplying combustible fuel to said engine, said shut-off system comprising,

first valve means (11) for opening or closing said manifold (13) to selectively communicate ambient air therethrough, second valve means (14) for movement between a closed position and an open position communicating a vacuum from said intake manifold (13) to said vacuum actuating means (15), and overspeed control means (10) responsive to the speed of said engine for automatically closing said first valve means (11) when such speed exceeds a predetermined maximum.

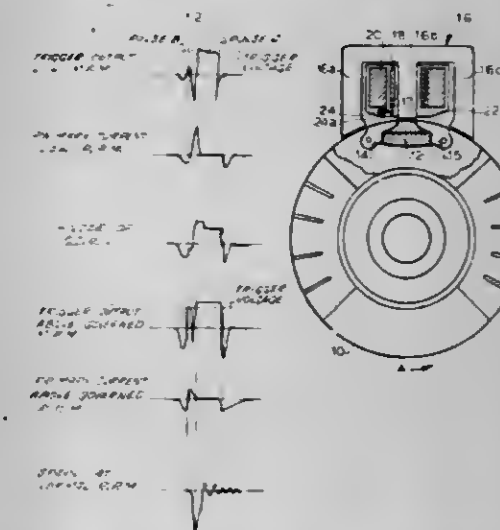
# 4,282,839 BREAKERLESS MAGNETO IGNITION SYSTEM

Richard D. Newberry, Springfield, and Elwin J. Brayley, East Longmeadow, both of Mass., assignors to Eltra Corporation, Toledo, Ohio

Filed Apr. 20, 1978, Ser. No. 898,279  
Int. Cl.<sup>3</sup> F02D 3/08

U.S. Cl. 123—335

12 Claims



1. A breakerless magneto ignition system for an internal combustion engine wherein a flywheel containing a magnet assembly is rotated synchronously with the engine operation for the purpose of inducing a current in a primary coil and the current is switched OFF at a particular time in the engine cycle for the generation of an ignition spark on a secondary coil that is magnetically coupled to said primary coil, said breakerless magneto ignition system comprising:

- a primary winding;
- a secondary winding that is magnetically coupled to said primary winding;
- a solid state switch for controlling the primary winding current flow;
- first means for driving said switch into conduction in response to said rotating magnet assembly for turning the primary current ON at a first selected time;
- second means for driving said switch into nonconduction in response to said rotating magnet assembly for turning the primary current OFF at a second selected time during the engine cycle, said means driving the current OFF at a third selected time in response to the magnet assembly rotating at a predetermined rate;
- said second means including a trigger coil adapted to produce first and second pulses in response to the flywheel movement;
- said first pulse rendering said solid state switch nonconductive when said engine is operated below said predetermined rate;



said second pulse rendering said switch nonconductive at and above said predetermined rate and occurring at a time in the engine cycle at which there is insufficient primary winding current flow through said switch to generate an ignition spark;  
said pulses being in substantially constant phase relationship with each other.

4,282,840

# INTERNAL COMBUSTION ENGINE WITH ALTITUDE COMPENSATION DEVICE

Kenji Yamada, Aichi; Akira Takata; Akira Ii, both of Toyota, and Katsuhiko Ohiwa, Handa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of Japan

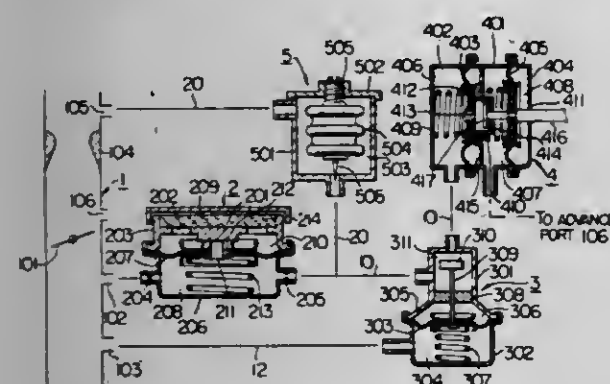
Filed Feb. 21, 1980, Ser. No. 123,424

Claims priority, application Japan, Feb. 22, 1979, 54-20004; Apr. 28, 1979, 54-57127[U]

Int. Cl.<sup>3</sup> F02P 5/04

U.S. Cl. 123-412

9 Claims



1. An internal combustion engine including an intake system having a throttle valve disposed therein, a vacuum-operated ignition timing advancer having a vacuum chamber pneumatically connected by a vacuum line to a vacuum port formed in said intake system downstream of said throttle valve, a pressure regulator disposed in said vacuum line and being operative to produce an output vacuum of a substantially constant vacuum level to be introduced into said vacuum chamber, and means continuously responsive to variation in the atmospheric pressure to continuously control the pressure level in said vacuum chamber such that the ignition timing is advanced as the atmospheric pressure is reduced.

4,282,841

# IGNITION TIMING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yasuo Takagi; Miebio Onoda; Masaaki Katsumata, all of Yokohama, and Kenji Yoneda, Fujisawa, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Apr. 30, 1979, Ser. No. 34,286

Claims priority, application Japan, Jun. 27, 1978, 53-77858; Jun. 27, 1978, 53-77859

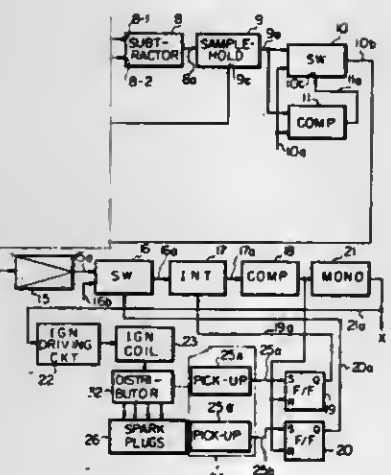
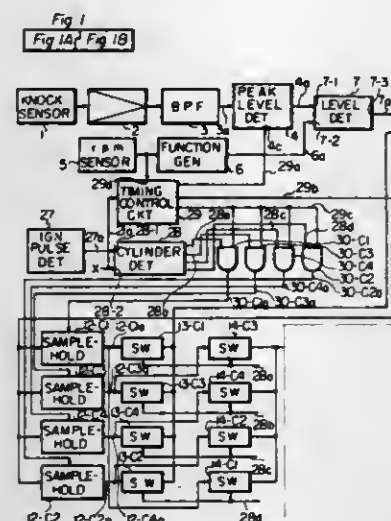
Int. Cl.<sup>3</sup> F02P 5/04

U.S. Cl. 123-425

16 Claims

1. An ignition timing control system for an internal combustion engine, comprising:  
(a) first means for producing a function of respective intensities of combustion knock in each cylinder of said engine;  
(b) second means for respectively storing said function corresponding to each cylinder in a sequence; and  
(c) third means for determining respective ignition timings of each cylinder in accordance with the respectively stored functions by modifying the basic ignition timing determined by an advance mechanism, wherein said first means comprises:  
a knock sensor for producing an output signal indicative of

the intensity of an impact of combustion knock in the cylinders of said engine,  
a band-pass filter responsive to said output signal of said knock sensor for transmitting only frequencies of combustion knock,  
a peak level detector for producing an output representing the peak level of the intensity of combustion knock in said cylinder,



means for generating a reference signal which is variable in accordance with the engine rotational speed,  
a level detector for comparing said output signal of said peak level detector with said reference signal, and  
a subtractor for subtracting said level detector signal from the function stored by said second means to produce said function of respective intensities of combustion knock in each cylinder of said engine.

4,282,842

# FUEL SUPPLY CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Takao Sasayama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 12, 1978, Ser. No. 924,006

Claims priority, application Japan, Jul. 22, 1977, 52/87426

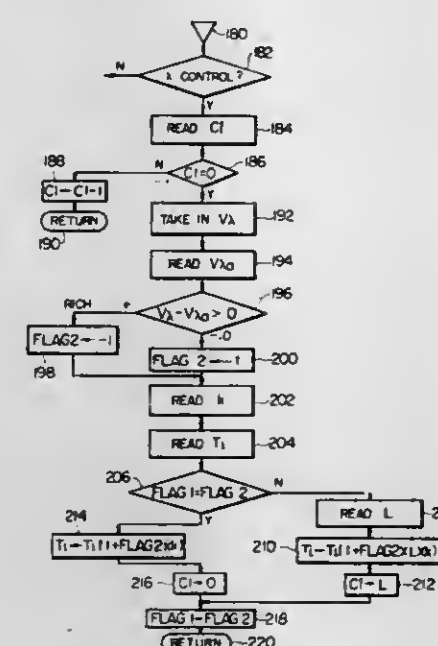
Int. Cl.<sup>3</sup> F02D 5/00

U.S. Cl. 123-440

10 Claims

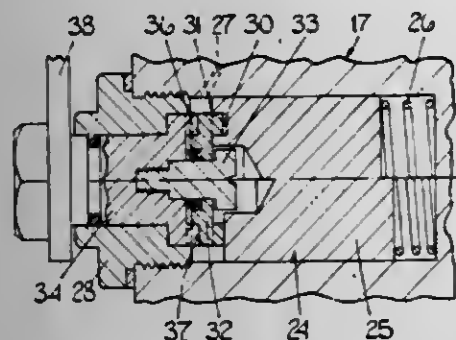
1. In a fuel control system for an internal combustion engine having an integrating controller and real time feedback producing a correction by changing the air-fuel ratio at a time when it is optimum comprising:  
means for detecting the condition of load on said engine;  
means for determining the rate of fuel supply in accordance with the output of said load condition detecting means;  
means for detecting the condition of the exhaust gas from said engine;  
means for correcting said rate of fuel supply to produce said rate in accordance with the output of said exhaust gas condition detecting means; and

means for supplying fuel at said corrected rate of fuel supply; an improvement which comprises:  
means for comparing the output of said exhaust gas condition detecting means with a predetermined signal corresponding to an output which would be produced from said exhaust gas condition detecting means if the fuel supply were optimum with respect to the air supply to the engine to produce an output signal when the comparison indicates that the coincidence between the output of said exhaust gas condition detecting means and said predetermined signal has occurred;





with said fuel control means and operable to increase the amount of fuel delivered by the injection pump for the purpose of obtaining satisfactory idling of the engine when the engine is cold, a first member positioned adjacent said speed responsive member, a second member positioned adjacent said first member, means coupling said second member to said lever means whereby when said lever means is moved in a direction to increase the delivery of fuel for cold idling purposes, said second member will be moved in a plane normal to the direction of movement of said speed responsive member, first tang and slot elements defined by the presented faces of the speed responsive member and the first member, second tang and slot elements defined by the presented faces of the first and second members, one of said tang and slot elements having the slot wider than the tang and of varying depth and resilient means



acting between the one pair of members defining the aforesaid one tang and slot elements, said resilient means acting to urge the members in a direction such that the tang is disposed at the shallower end of the slot, the arrangement being such that when said lever means is moved to increase the delivery of fuel the aforesaid one pair of members move relative to each other so that the tang moves to the deeper end of the slot thereby allowing the one pair of members to move closer to each other so that the timing of delivery of fuel is retarded, and when the engine starts the members defining the other of said tang and slot elements move away from each other to disengage the other tang and slot elements while the one pair of members move relative to each other under the action of the resilient means thereby providing advance of the timing of delivery of fuel for cold idling of the engine.

4,282,845

#### INTERNAL COMBUSTION ENGINE WITH EXHAUST GAS ACCUMULATION CHAMBER

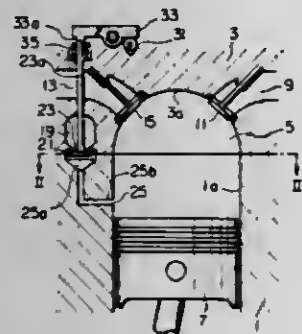
Hidetaka Nohira, Mishima; Sumio Ito, Susono, and Hisashi Oki, Numazu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 21, 1979, Ser. No. 22,490

Int. Cl.<sup>3</sup> F02M 25/06

U.S. Cl. 123—568

6 Claims



1. An internal combustion engine which includes: a cylinder block which has a cylinder bore formed therein and a piston sealingly inserted in said bore, said piston being connected to a rotatable crankshaft for reciprocation in the cylinder; a cylinder head which has a recess formed therein contain-

ing an intake valve for controlling the introduction of intake air into the cylinder and an exhaust valve for controlling the discharge of burnt gases from the cylinder and which is secured to said cylinder block so that a combustion chamber is formed by said cylinder bore, said recess and the top of said piston;

an exhaust gas accumulation chamber formed adjacent to said combustion chamber and having an entrance; a third valve which is disposed at the entrance of said exhaust gas accumulation chamber; and a communicating passage for communicating said third valve with said combustion chamber, wherein the improvement comprises:

means for opening said third valve once each engine cycle at a first predetermined time in the compression stroke and for shutting said third valve once each cycle at a second predetermined time in the succeeding expansion stroke, in synchronism with rotation of said crankshaft, and wherein said communicating passage opens into a surface of said cylinder bore, at a level between the top and bottom dead center positions of the top of said piston wherein said piston acts to open and shut the entrance to said accumulation chamber at predetermined times between the opening and shutting of said third valve.

4,282,846

#### EXHAUST GAS RECIRCULATING DEVICE

Mikio Minoura, Nagoya, Japan, assignor to Aisan Industry Co., Ltd., Aichi, Japan

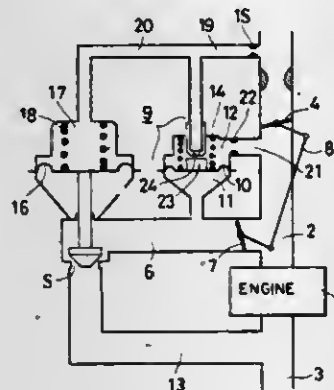
Filed Aug. 6, 1979, Ser. No. 64,261

Claims priority, application Japan, Aug. 23, 1978, 53-102606

Int. Cl.<sup>3</sup> F02M 25/06

U.S. Cl. 123—568

10 Claims



1. An exhaust gas recirculating device of an engine communicating with a suction manifold and having an exhaust pipe and having a carburetor and an exhaust gas recirculating passage leading from the exhaust pipe, comprising:

a throttle valve mounted in the carburetor, two valves comprising an exhaust gas recirculating EGR valve and a variable throttle valve, both of said two valves being disposed in the exhaust gas recirculating passage leading from the exhaust pipe of the engine, said exhaust gas recirculating passage leads to downstream of the throttle valve in the carburetor,

said carburetor includes a carburetor flange, an insulator,

a variable throttle valve body is secured said carburetor flange together with said insulator,

a regulator means for being actuated by negative pressure downstream of the throttle valve of the carburetor for operating said EGR valve,

said carburetor forms an air horn defining a suction air passage,

said regulator means being formed integrally with said air horn of said carburetor, said air horn is formed with a bore forming a small air passage connecting said regulator means with said suction air passage of the air horn;

link means interconnecting said throttle valve and said vari-

able throttle valve for keeping constant the ratio of the opening area between said throttle valve and said variable throttle valve and for controlling the pressure difference between front and rear sides of the variable throttle valve to reduce Nox; and

said carburetor flange being formed with a groove on an underside of the carburetor flange,

a plate interposed between said carburetor flange and the suction manifold, said groove and said plate both cooperatively forming a portion of the exhaust gas recirculating passage and an exhaust gas delivery port opening into the suction manifold.

4,282,847

#### EXHAUST GAS RECIRCULATION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yasuhiro Ikuta, and Masashi Matsuo, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

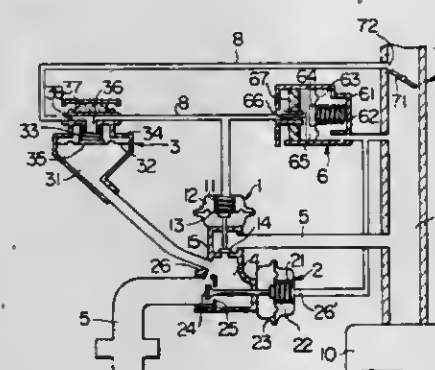
Filed Sep. 11, 1979, Ser. No. 74,765

Claims priority, application Japan, Jul. 31, 1979, 54-98491

Int. Cl.<sup>3</sup> F02B 47/08

U.S. Cl. 123—568

2 Claims



1. In an exhaust gas recirculation system for an internal combustion engine having an intake manifold, a throttle valve therein, an exhaust gas recirculation passage communicating with said manifold downstream of said throttle valve, a constant pressure chamber disposed in an intermediate portion of said passage, a first vacuum-actuated flow-rate control valve in said passage downstream of said chamber, a second vacuum-actuated flow-rate control valve in said passage upstream of said chamber for changing the cross-sectional area of said passage, first conduit means communicating the vacuum in said manifold downstream of said throttle valve to said second control valve for actuating the same, second conduit means for communicating the vacuum in said manifold immediately upstream of said throttle valve when closed to said first control valve for actuating the same, a restriction in said second conduit means, and a pressure regulating valve in said second conduit means between said restriction and said first control valve for regulating the vacuum applied thereto in accordance with the exhaust gas pressure in said passage upstream of said first control valve, the improvement comprising:

a vacuum-actuated atmospheric pressure introduction valve communicating with said second conduit means between said pressure regulating valve and said first control valve for introducing atmospheric pressure into said second conduit means; and

third conduit means communicating the vacuum in said manifold downstream of said throttle valve with said atmospheric pressure introduction valve for actuating the same.

4,282,848

#### BATTING PRACTICE APPARATUS

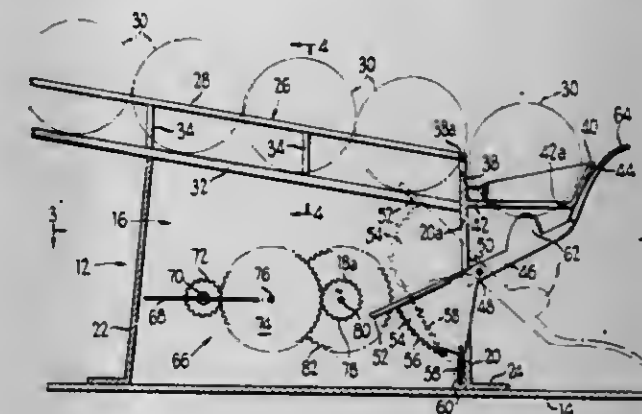
Ralph J. Kulesza, Chicago; Burton C. Meyer, Downers Grove, and Donald F. Nix, Hanover Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 21, 1979, Ser. No. 106,283

Int. Cl.<sup>3</sup> F41B 7/00

U.S. Cl. 124—16

17 Claims



1. Batting practice apparatus for projecting a ball upwardly into the air to be hit by a bat, comprising: trough means for holding a plurality of balls to move in sequence toward a feed position against a stop at a lower end; holding means adjacent said stop for supporting a single ball in a ready position to be projected upwardly into the air; feed means for sequentially moving a ball in said feed position adjacent said stop from said trough means into said ready position in said holding means, motor means for forcefully propelling said ball in said ready position upwardly of said holding means into the air; and an arm pivotal upwardly from a first position spaced below said ball in said ready position toward a second position for striking said ball in said ready position to propel the same upwardly, said arm pivotal about an axis and including a feed portion to one side of said axis moveable from said second position spaced below the ball in said feed position towards said first position engaging said ball in said feed position to lift the same over said stop into said ready position, said arm also including a striker portion on the other side of said axis for striking said ball in said ready position to propel the same upwardly.

4,282,849

#### BOW AND ARROW HOLDER

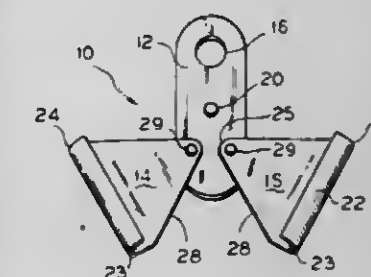
Dwayne A. Russ, 220 Grace St., Schofield, Wis. 54476

Filed Jan. 21, 1980, Ser. No. 113,549

Int. Cl.<sup>3</sup> F41B 5/00

U.S. Cl. 124—23 R

10 Claims



1. A holder comprising a first support plate member and a pair of generally triangular holder element means for pivoting to a bow string and arrow receiving position, each of said element means having a first corner and a first opposed edge, said first corner of each element being pivotably secured to a first side of said plate member and said first opposed edges being curled upwardly from the plane of said holder elements



for receiving a bow string and a locked end of an arrow, said holder elements being arranged on said plate member whereby second edges of said holder elements are adjacent to a parallel to one another when said elements are in a first closed position to receive a bow string and an arrow.

4,282,850

## ARCHERY BOW WITH ARROW GUIDE APPARATUS

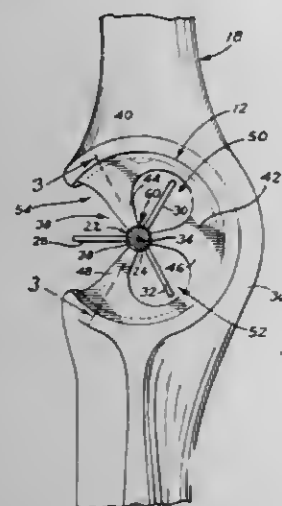
Allen E. Warnicke, P.O. Box 513, Willamina, Oreg. 97396

Filed Dec. 3, 1979, Ser. No. 99,274

Int. Cl.<sup>3</sup> F41B 5/00

U.S. Cl. 124—24 R

4 Claims



1. In a bow including a handle section bounded by front and rear sides,

means in said handle section defining a channel having an axis extending transversely of the handle section and extending from the front and back and the belly sides of the handle section,

and means forming an arrow guide in said channel comprising plural, angularly spaced fins, all of a one-piece flexible sheet material, occupying substantially a common plane which plane is disposed substantially normal to the axis of said channel, said fins being mounted on said handle section and projecting radially inwardly from the sides of said channel and terminating at inner ends which are out of contact with each other and which are positioned and arranged to define an opening adapted for the embracing of an arrow shaft, adjacent fins defining an opening therebetween adapted to accommodate the passage of an arrow vane therethrough.

4,282,851

## ARCHERY BOWSTRING RELEASE DEVICE

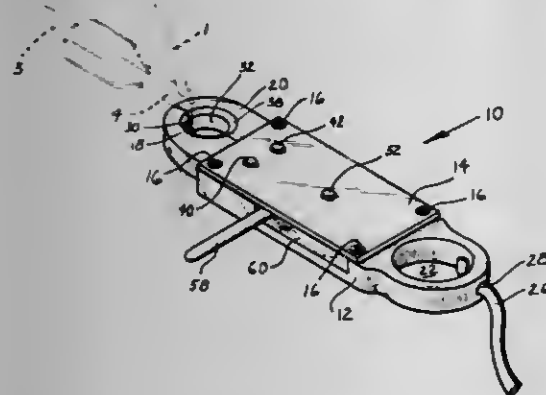
Leon W. Lyons, 1122 Dewitt Ave., Niles, Mich. 49120

Filed Aug. 1, 1979, Ser. No. 62,701

Int. Cl.<sup>3</sup> F41B 5/00

U.S. Cl. 124—35 A

4 Claims



1. An archery bowstring release device comprising a housing, jaws pivoted intermediate their ends to said housing and

having projecting ends with confronting string-receiving notches, spring means normally separating the projecting ends of said jaws, said jaws being shiftable between a string retaining position and a string releasing position, each of said jaws including an elongated leg within the housing, and manually shiftable means pivotally carried by said housing and having a cam projection positionable between and engageable with said jaw legs for retaining said jaws in their string retaining position during bowstring drawing and aiming, said cam projection being so constructed as to coact with said jaw legs under the biasing action of said spring means to permit pivoting of said shiftable means out of retaining engagement with said legs when the user releases manual pressure on said shiftable means.

4,282,852

## AIR RIFLE WITH PISTON IMPELLED BY COMPRESSED GAS

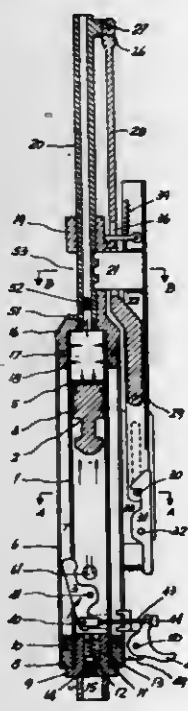
Julio A. Omana, Coronel Bogado 2480, Boulogne, San Isidro, Buenos Aires, Argentina

Filed Jun. 13, 1979, Ser. No. 47,990

Int. Cl.<sup>3</sup> F41B 11/00; F41F 1/04

U.S. Cl. 124—67

10 Claims



1. A compressed air rifle comprising means defining a cylinder containing a freely slidable piston that divides the interior of the cylinder into a rear chamber adapted to be charged with a compressed gas and a forward chamber defining an air compression chamber, a piston latch in said rear chamber and a trigger operably connected thereto for controlling said latch, means including a unidirectional valve for charging said rear chamber with compressed gas, a member mounted on the forward end of said cylinder having a rifle barrel guide and a projectile insertion opening, an open-ended rifle barrel coaxial with said cylinder slidably mounted in said guide for movement between a first loading position wherein it may receive in its forward open end a projectile inserted through said insertion opening in said member, a second position wherein it has been thrust into said cylinder sufficiently to push said piston into locking engagement with said trigger controlled latch, and a third firing position wherein it closes said insertion opening in said member and its rear open end is substantially at the forward end of said compression chamber whereby when said trigger is actuated to release the piston the piston is impelled by said compressed gas in the rear chamber to move forwardly in said cylinder to compress air in said compression chamber to drive the projectile through said barrel.

4,282,853

## WEIGHT COMPENSATOR FOR ADJUSTABLE BROILER OVEN

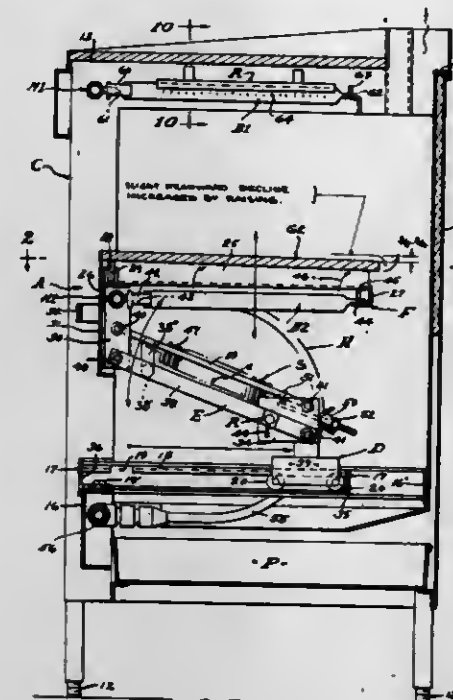
Howard R. Reynolds, 1551 21st St., Manhattan Beach, Calif. 90266

Continuation-in-part of Ser. No. 749,316, Dec. 10, 1976, Pat. No. 4,144,870. This application Sep. 15, 1978, Ser. No. 942,637

Int. Cl.<sup>3</sup> A21B 1/00; A47J 37/00

U.S. Cl. 126—19 R

8 Claims



1. An adjustable broiler stove including, a cabinet of panels forming an oven chamber, radiant heat means disposed horizontally within the top of the oven chamber, a food supporting griddle moveable within the oven chamber, elevator means comprising upper and lower arms swinging from a pair of vertically spaced supporting pivots carried by the cabinet and extending to a bracket having a pair of vertically spaced pivots carrying the griddle, the said arm and pivot structure forming a substantially quadrilateral configuration having a dynamic center of effort as the arms are moved, and weight compensator means comprising a tension spring extending over the said center of effort and from the bracket end of and in the plane of the upper arm and to an anchor between the vertically spaced supporting pivots thereby to have a reciprocal increase and decrease in spring pressure applied to the dynamic center of effort so that lifting action is nominally the same, and means to position the said griddle in the oven chamber and in spaced relation to said radiant heat means.

4,282,854

## CHARCOAL LIGHTER

Garner B. Byars, Corioth, Miss., assignor to Auto Fire Corporation, Corinth, Miss.

Filed May 25, 1979, Ser. No. 42,910

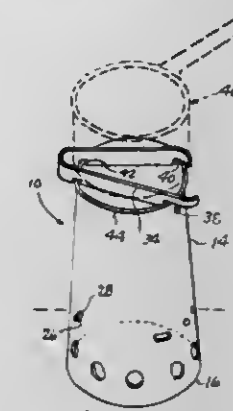
Int. Cl.<sup>3</sup> F24B 3/00

U.S. Cl. 126—25 B

12 Claims

1. A charcoal starter comprising a tubular housing of substantial height having an upper rim and a lower rim and adapted to rest vertically with its lower rim disposed on a subjacent supporting surface, a grate pivoted in the housing, depending leg means fixedly secured to the grate and having a lower edge by lying in the plane of said lower rim of the housing when the grate is substantially horizontal, said leg depending below said lower rim when the housing is lifted, above the supporting surface, and handle means attached to an upper portion of said housing, said handle means comprising means for removably attaching said handle means to said housing and means for seating said handle means on the upper rim of said housing for supporting a pot or pan, whereby said handle means may be grasped to lower the housing onto said supporting surface causing the lower edge of said leg means to

engage the supporting surface and automatically turn the grate to its horizontal position ready to receive charcoal for igniting, and subsequent grasping and lifting of said handle means auto-



matically causes the grate, by gravity to tilt downwardly about its pivot to dump the ignited charcoal onto the supporting surface.

4,282,855

## FIREPLACE SCREEN SYSTEM

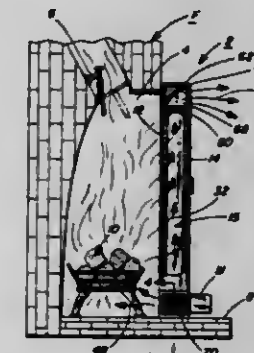
Charles Perry, 6166 Parkwood Rd., Mentor, Ohio 44060

Filed May 24, 1979, Ser. No. 42,127

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—121

4 Claims



1. In a forced air fireplace screen system comprising, at least one panel section adapted to be mounted on a fireplace opening including a pair of neatly parallel and laterally spaced oppositely disposed tempered glass panels, said tempered glass panels being connected together by oppositely disposed side frames to define a chamber for permitting heat extraction by means of forced air therebetween, baffle means disposed at the top of said section for directing heated air upwardly and outwardly from between said glass panels, inlet and manifold means disposed adjacent the bottom of said section for the delivery of external ambient air between said glass panels, and electric blower motor means adjacent said inlet and manifold means communicating with the chamber defined by said glass panels for forcing ambient air upwardly through said chamber and outwardly through said baffle means, said manifold means being an elongated box-like construction defined by oppositely disposed side and end walls defining a generally rectangular configuration in side elevation, one of said end walls including a vent member defining said inlet means, one of said side walls containing, (the innermost wall of said manifold), a plurality of laterally spaced apertures, a slide bar operably connected to said side wall including said selectively adjustable control means for reciprocating said slide bar in relation to said apertures for selectively opening and closing said apertures for controlling the minimum amount of combustion air delivered into the fireplace for proper combustion with the remaining greater volume of air delivered into said chamber so as to confine and control the heat of radiation created by the fireplace.



4,282,856

## SOLAR-ENERGY COLLECTOR

Otto Stehl, Essen-Bredeney, and Hans Spakowski, Gelsenkirchen, both of Fed. Rep. of Germany, assignors to BFG Glass-group, Paris, France

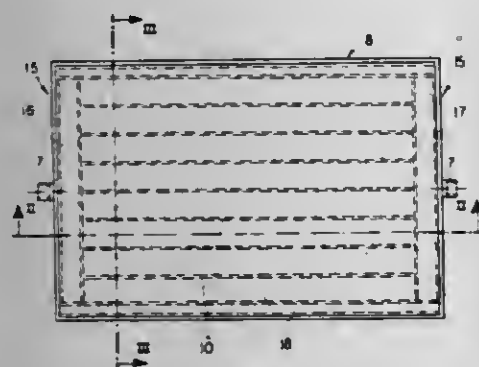
Filed Aug. 2, 1978, Ser. No. 930,173

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1977, 2734709

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—417

12 Claims



1. A solar-energy collector comprising:

- a double-pane insulating unit having a first pane with first and second surfaces transparent to solar energy and with said first surface turned toward the sun and a second pane turned away from the sun, said panes defining between them a flow chamber for a fluid adapted to pick up heat from incident sunlight;
- a cover pane spaced from said first pane and defining a gas-containing dead-air space therewith;
- inlet and outlet fittings connected to said flow chamber for admitting said fluid to and discharging said fluid from said flow chamber;
- an emission-limiting coating on said first surface of said first pane adjoining said dead-air space; and
- heat-transfer-promoting means in said flow chamber between said first and second panes.

4,282,857

## SOLAR ENERGY COLLECTOR ASSEMBLY

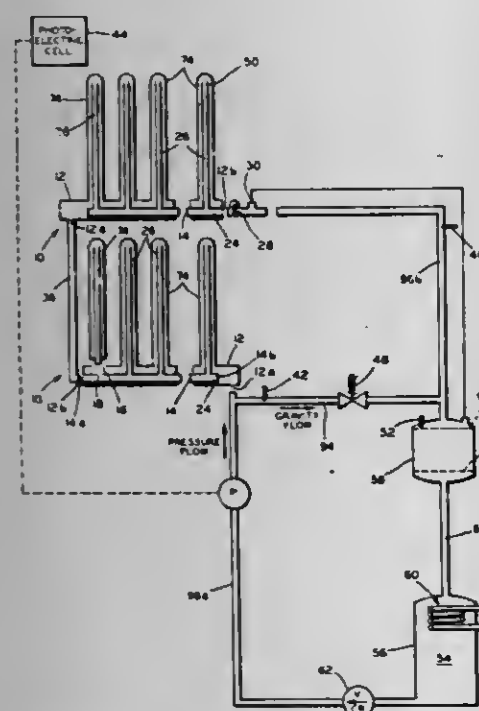
Yu K. Pei, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 6, 1980, Ser. No. 127,705

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—422

9 Claims



1. In a solar energy collector apparatus, a manifold assembly

interconnecting a plurality of tubular solar energy collectors with each other, in parallel, to form a bank of collectors, said manifold assembly further interconnecting a plurality of banks of collectors with each other, in series, to form a tiered arrangement, said manifold assembly comprising:

- (a) a plurality of enclosed outer jackets, each jacket having inlet and outlet openings for transferring a fluid there-through in one direction under pressure and in an opposite direction under gravity, said outer jackets having a plurality of spaced apart holes of a suitable diameter to receive said tubular collectors on the upper portion of said outer jackets, and said outer jackets being positioned substantially horizontally and spaced to provide said tiered arrangement;
- (b) a plurality of receptacles positioned about said spaced apart holes on said upper portion of said outer jackets, for sealably mounting each of said tubular collectors;
- (c) a plurality of inner jackets, one of which is located within each of said outer jackets, said inner jackets having a plurality of spaced apart holes on its upper portion and in alignment with said holes in said outer jackets, said inner jackets having at least one drain hole on its lower portion, and said inner jacket having one enclosed end and one open end, wherein said open end is sealably fixed to said outlet opening in said outer jacket to form a union;
- (d) a plurality of grommets seated in each of said holes on said upper portion of said inner jackets;
- (e) a plurality of upwardly extending tubular projections having one open end seated within said grommets, passing through said receptacles and extending substantially the length of said collectors with the other open end adjacent the closed end of said collector when said collectors are sealably mounted on said receptacles;
- (f) a plurality of connective tubing, each of which has one end connected to said union and has the other end connected to an inlet opening in another of said outer jackets, so that said banks of collectors are in open communication; and
- (g) air trap means proximal to said outlet opening of said last outer jacket in said tiered arrangement, to prevent a siphoning effect when said pressure is removed, so that said fluid remains intact in said manifold assembly until released upon command;

whereby as fluid is introduced under pressure into one of said openings in the first outer jacket in said tiered arrangement, said fluid is accommodated for circulation under pressure in one direction through said tubular collectors, in parallel, and through said banks of collectors in series, and said fluid is further accommodated for draining, under gravity, in a reverse direction, upon said command.

4,282,858

## SOLAR ENERGY SYSTEM AND METHOD

Richard S. Bowers, Jr., Lebanon, Pa., assignor to Bowers Industries, Inc., Cleona, Pa.

Filed Mar. 27, 1980, Ser. No. 134,467

Int. Cl.<sup>3</sup> F24J 3/02

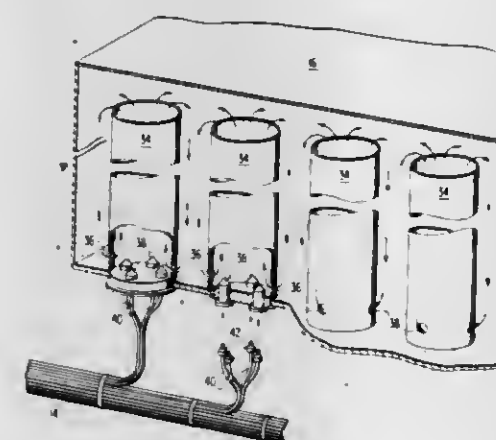
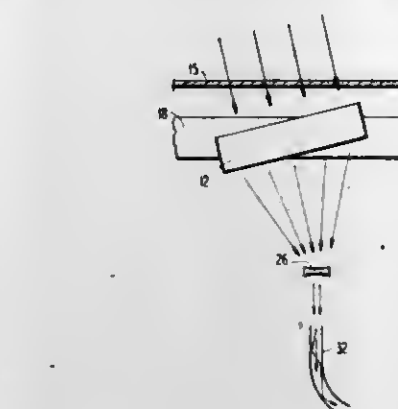
U.S. Cl. 126—425

8 Claims

1. A solar energy heating system comprising:

- a plurality of solar collectors each adapted for orientation toward the sun and each including a lens element for focusing sunlight;
- a fluid storage tank including a plurality of heat transfer tubes, at least the lower end of said tubes being of a heat conductor substance, being open at the upper end to permit the egress of relatively heated fluid therefrom, being closed at the lower end, and being apertured adjacent the lower end to permit the entrance of relatively cooled fluid into the tube adjacent the closed end; and
- fiber optic means for connecting each of said solar collectors to the closed end of one of said heat transfer tubes, said means including means at one end for positioning said one end to receive sunlight focused by one of said plurality of

solar collectors and means at the other end for positioning said other end to direct sunlight against the closed end of



one of said plurality of heat transfer tubes and thereby heat fluid within said storage tank.

4,282,859

## SOLAR HEATER

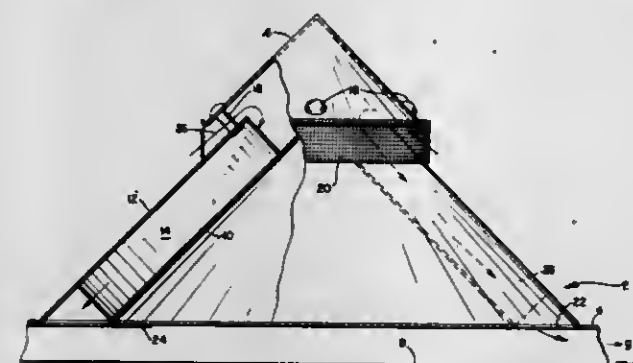
Norman G. Hayward, 11720 Moffitt La., Manassas, Va. 22110

Filed Nov. 27, 1979, Ser. No. 97,684

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—428

4 Claims



- 1. A solar heater for air, comprising: a chamber, first means providing a first downwardly-enlarged generally conical surface disposed above the chamber, second means providing a second downwardly-enlarged generally conical surface spaced outwardly from the first generally conical surface, said first and second means providing a space between said surfaces which is substantially open at the top and bottom, the open top of said space being open to the atmosphere and providing an air inlet thereto, port means for connecting of the bottom of said space to said chamber, and means for drawing air through said air inlet into said space between said surface and thence through said port means into said chamber.

4,282,860

## HOT AIR TYPE SOLAR HEAT-COLLECTING APPARATUS

Hisao Koizumi, Zushi; Yoshinosuke Kawada, and Koichi Matsui, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 863,037, Dec. 21, 1977, abandoned.

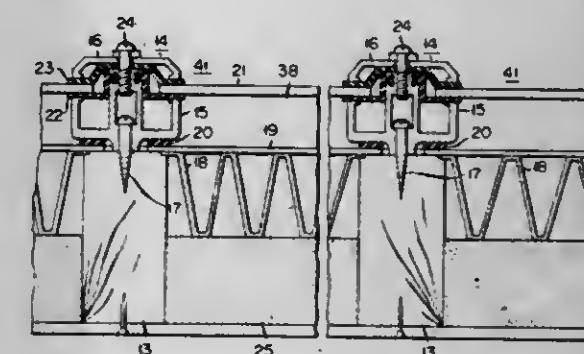
This application Nov. 29, 1979, Ser. No. 98,593

Claims priority, application Japan, Dec. 23, 1976, 51-154263

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—429

9 Claims



1. A hot air type solar heat-collecting apparatus for heating a room comprising:

- a transparent plate permeable to sunlight;
- a transparent plastic film which spatially faces the plate and is permeable to sunlight passing through the plate;
- an air-sealing layer spatially facing the opposite side of the transparent film to the transparent plate;
- a heat-collecting plate disposed between the transparent film and air-sealing layer in parallel relationship therewith, contacted with the transparent film and air-sealing layer and crosswise corrugated with a large number of ridges and furrows to absorb the heat of the sunlight passing through the transparent film, the transparent plastic film being continuously supported by the heat-collecting plate, which is supported on the air-sealing layer;
- a first group of air passages being defined by one side of the corrugated heat-collecting plate and the transparent film;
- a second group of air passages being defined by the other side of said corrugated heat-collecting plate and air-sealing layer;
- means for circulating air through both groups of air passages in the lengthwise direction of the heat-collecting plate, thereby heating circulating air by the heat delivered from the heat-collecting plate, and
- said means for circulating including a blower for pulling heated air from the air passages for forwarding it into said room such that said transparent plastic film can be continuously supported by the heat-collecting plate.

4,282,861

## WATER HEATING SYSTEM USING SOLAR ENERGY

Charles F. Roark, 24 Maple Ln., Brownsburg, Ind. 46112

Continuation of Ser. No. 810,888, Jun. 28, 1977, abandoned.

This application May 3, 1979, Ser. No. 35,464

Int. Cl.<sup>3</sup> F24J 3/02; F28F 3/12

U.S. Cl. 126—435

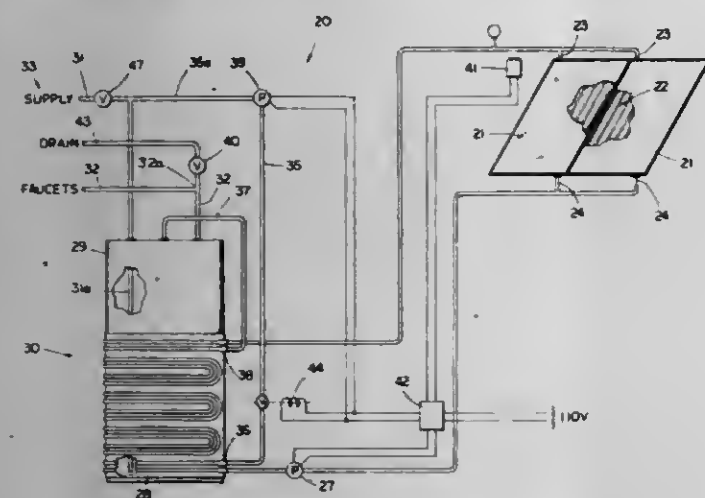
3 Claims

1. A water heating system which comprises:

- a water storage tank;
- a heat exchanger jacket having at least two separate fluid passageways extending therethrough in double serpentine tube-in-sheet configuration therein, said jacket being oriented around the exterior surface of said water storage tank;
- means for connecting one of said separate fluid passageways in a flow communication arrangement with the water storage space in said water storage tank;
- said connecting means comprising a pump and piping connected to said one of said plurality of said separate fluid



passageways and cooperating with said storage tank to establish a water heating loop for circulation of water from within said water storage tank through said jacket and back into said water storage tank;  
said jacket being removably attached to said water storage tank and said tank being part of a conventional hot water heater assembly having an outer housing, insulation inside said housing and surrounding said jacket, and a heating device associated with said tank for heating stored water in the tank independent of any medium in the other of said fluid passageways in said jacket, and said assembly;



said system further comprising three pipes which pass through said housing from the outside of said housing and are connected to said tank inside said housing, a first one of said pipes connecting the inlet of said pump to said water storage tank, a second one of said pipes connected to one end of said one passageway of said heat exchanger jacket and extending outside said housing and then back into said housing to its connection to said water storage tank, a third one of said pipes arranged to provide hot water from said water storage tank to a point of use.

4,282,862

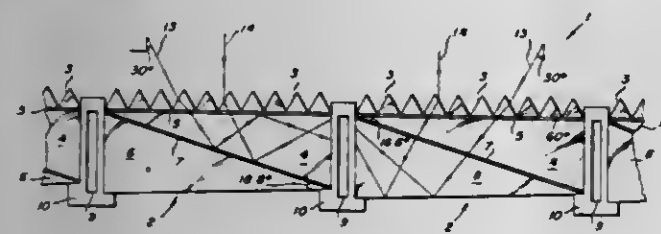
## THIN-LINE COLLECTORS

Bertrand S. Soleau, 4203 Kincaid Ct., Chantilly, Va. 22021  
Filed Nov. 9, 1979, Ser. No. 93,035

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126-439

7 Claims



## 1. A solar collector comprising:

at least one glass module, said glass module comprising a plurality of glass wedges having a high index of refraction, a first triangular shaped piece of glass having a high index of refraction cemented to said wedges and a second piece of triangular shaped glass having a high index of refraction cemented to said first piece of triangular shaped glass, said first and second triangular shaped pieces of glass being so arranged as to form a generally rectangular shape with said plurality of wedge shaped pieces of glass protruding from the top surface of said generally rectangular shape; and  
means for converting solar energy incident on said glass module to a different form of energy; said means for converting solar energy incident on said glass module to a different form of energy being secured around the outside surface of said glass module.

4,282,863

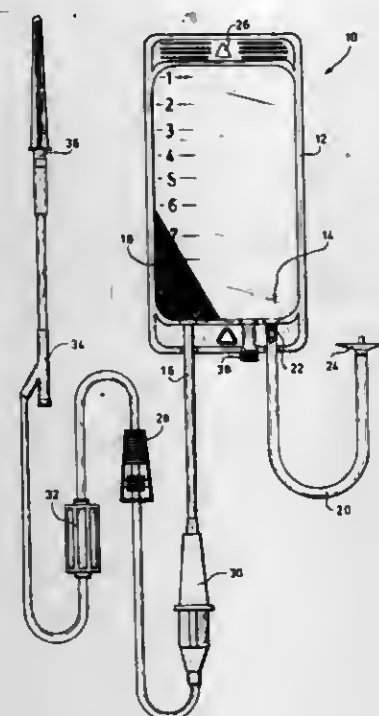
METHODS OF PREPARING AND USING  
INTRAVENOUS NUTRIENT COMPOSITIONS

Myron A. Beigler, Two Palo Alto Sq., Palo Alto, Calif. 94304,  
and Amin J. Khoury, 29 Tubwreck Dr., Dover, Mass. 02030  
Filed Jul. 20, 1978, Ser. No. 926,399

Int. Cl.<sup>3</sup> A61B 19/00; A61M 5/00; A61J 1/00

U.S. Cl. 128-1 R

20 Claims



11. A dry-packaged article of manufacture for the containment and intravenous administration of a sterile, pyrogen-free, particulate-free nutrient composition to a mammal, which comprises:

- a hermetically sealed, moisture-proof microorganism-impermeable, ionizing ray permeable container adapted to contain the composition in dry form and aqueous mixture;
  - a nutrient composition in a solid form having a moisture content which is not more than about 30 percent by weight of the solid form, provided that when the nutrient is an amino acid or carbohydrate, the moisture content does not exceed about 15 percent by weight and when the nutrient is a vitamin the moisture content does not exceed about 10 percent by weight, said form being readily dissolved in water at a temperature of circa 185° F. to form an aqueous solution which will pass through a 5 micron filter by gravity at a rate of at least 1 liter per hour and the filtrate will pass through a 0.22 micron filter by gravity at a rate of at least 1 liter per 2 hours, disposed within said container;
  - means for introducing into the container sterile, pyrogen-free water in a proportion sufficient to form an intravenous mixture of the water and said nutrient composition in the container, connected to the container;
  - means connected to the container, for administering the intravenous mixture to a mammal;
  - filter means associated with the means for administering, adapted to remove particulate matter from the intravenous mixture; and
  - a bacteria-impermeable covering hermetically enclosing the container and the connected and associated means;
- said enclosed container and means being sterile and the nutrient composition being sterile and pyrogen-free, sterility being achieved by ionizing ray.

4,282,864

METHOD AND APPARATUS FOR INDUCING A  
PRE-HYPNOTIC STATE

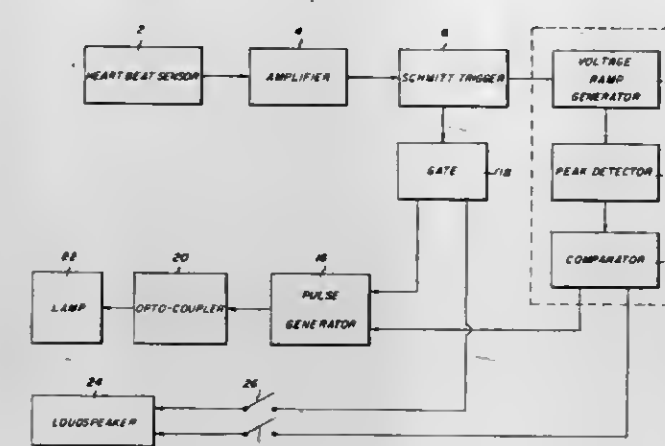
Robert S. Pizer, 4007 Connecticut Ave. N. W., Washington, D.C. 20008

Filed May 12, 1980, Ser. No. 148,785

Int. Cl.<sup>3</sup> A61N 1/34

U.S. Cl. 128-1 C

14 Claims



1. A device for inducing a pre-hypnotic state in an individual, comprising

- (a) means for producing a first pulse signal the pulses of which correspond with the heartbeat of the individual;
- (b) interpolation means connected with said first signal producing means for producing a second pulse signal the pulses of which occur midway in time between successive pairs of said first heartbeat pulses, respectively, said interpolation means including
  - (1) voltage ramp generator means responsive to said first pulse signal for producing a linear voltage ramp output the peaks of which are in synchronization with the pulses of said first signal, respectively, the amplitude of said voltage peaks corresponding with the heartbeat rate of the individual;
  - (2) peak detector means for sensing the peaks of said voltage ramp output; and
  - (3) comparator means connected with said peak detector means for sensing the mid-point of said voltage ramp output between successive peaks, thereby to produce said second signal; and
- (c) stimulus means having a pair of inputs connected with said first signal producing means and with said interpolation means, respectively, for producing a pulsed physical stimulus in response to said first and second signals, said pulsed stimulus having a frequency of twice the heartbeat rate of the individual, whereby a state of profound relaxation is induced when the pulsed stimulus is applied to the individual, and further whereby the individual's mind is receptive to suggestion.

4,282,865

## APPARATUS FOR EXERCISING A LIMB OF A PATIENT

William F. Pogue, P.O. Box 749, DeQueen, Ark. 71832

Filed Aug. 13, 1979, Ser. No. 66,223

Int. Cl.<sup>3</sup> A61H 1/02

U.S. Cl. 128-25 R

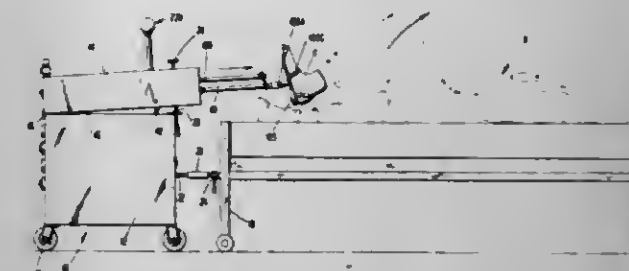
18 Claims

1. Apparatus for reciprocating and oscillating a limb of a user comprising:

- a housing means;
- movable means on said housing means for engaging a limb of a user;
- means for connecting said movable means to the limb to prevent relative movement therebetween;
- motor means on said housing means for simultaneously reciprocating and oscillating said movable means to reciprocate and oscillate the user's limb;
- adjustment means for varying the extent of the stroke of

reciprocation and the stroke of oscillation of said movable means;

said movable means comprising a reciprocating rod of a reciprocating motor, said motor means for oscillating said rod including a rotary motor, and means operably interconnecting said rotary motor to said rod to oscillate the rod as the latter is reciprocating; and



said reciprocating motor comprising a cylinder, and a double acting fluid actuated piston within said cylinder, said piston being connected to said rod; said interconnecting means comprising a sleeve mounted to said cylinder, a shaft slidably disposed in said sleeve, means connecting an outer end of said shaft to said rod, and a link connecting an output shaft of said rotary motor with said cylinder to oscillate the latter.

4,282,866

BATTERY OPERATED PORTABLE HYDROMASSAGE  
APPLIANCE

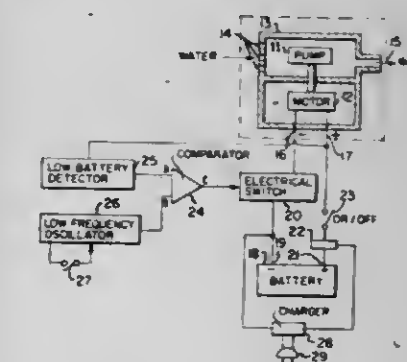
Donald C. Miffitt, Chelmsford, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 12, 1979, Ser. No. 47,851

Int. Cl.<sup>3</sup> A61H 9/00

U.S. Cl. 128-66

9 Claims



7. A hydromassage appliance comprising a housing including an inlet and an outlet;

- a water pump positioned in said housing for drawing water from said inlet and expelling water from said outlet;
- DC motor means positioned in said housing and mechanically connected to said water pump for driving said water pump in response to an electrical signal;
- a rechargeable DC source positioned in said housing and electrically connectable to said motor means for providing the electrical signal;
- low battery detector means positioned in said housing for sensing the voltage level of said DC source and for electrically disconnecting said motor means from said DC source when a predetermined voltage level of said DC source is sensed; and
- electrical low frequency oscillator means electrically connected to said motor means for providing a pulsed input electrical signal to said motor means which switches said motor means on and off at a rate of about five hertz whereby a pulsed water output is created.



4,282,867

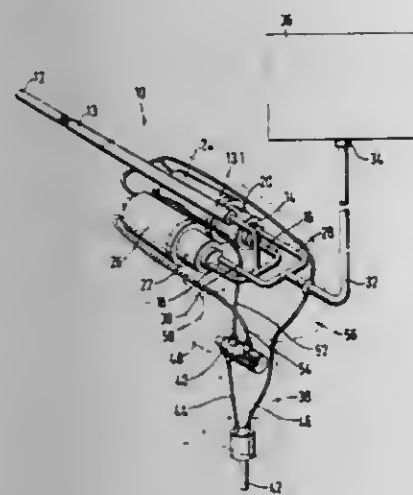
## CLEANING FLUID INJECTION DEVICE

Rudolph M. Du Toit, Paarl, South Africa, assignor to Christopher Edward; Hans Rudolf Kabutz and Frank Corker, all of, South Africa

Filed Dec. 5, 1979, Ser. No. 100,518  
Int. Cl.<sup>3</sup> A61H 9/00

U.S. Cl. 128—66

3 Claims



1. A portable medical treatment device for irrigating the human ear canal comprising:
  - (a) a cylindrical tube having a cleansing fluid passage and being dimensioned to enter an aural passage of a human body;
  - (b) an injection nozzle provided at one end of the tube and constituting an outlet from the fluid passage;
  - (c) at least two pumps connected in parallel, each having a suction side connection to a cleansing fluid reservoir and a delivery side for connection to the passage;
  - (d) at least a pair of electrical motors adapted to each drive a respective one of the pumps for pumping cleansing fluid under pressure from the reservoir to the nozzle via the cleansing fluid passage; and
  - (e) electrical control means adapted to sequentially energize one or both of the motors to vary the cleansing fluid output from the injection nozzle.

4,282,868

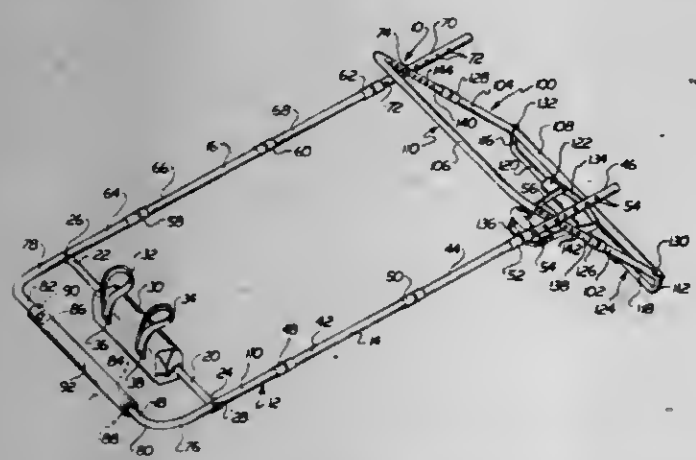
## BODY TRACTION DEVICE

Dean D. Riggs, 147 Burton St., Avon Lake, Ohio 44012  
Filed Feb. 15, 1980, Ser. No. 121,905

Int. Cl.<sup>3</sup> A61H 1/02

U.S. Cl. 128—75

11 Claims



1. A patient operated traction apparatus for the application of tension to the body of a patient comprising a generally U-shaped frame member having a distal foot portion extending between longitudinally extending side members each terminating in a proximal end and defining said U-shape, and a generally rectangular head member having opposed side elements and opposed cross pieces defining said rectangular shape hav-

ing a proximal end and a distal end, means for adjustably pivotally securing the proximal ends of said longitudinally extending side members to the opposed side elements, respectively of said rectangular head member at a point intermediate the cross pieces thereof, the location of such pivot means being spaced from the cross piece located at the proximal end of said head member, whereby the portions of the side elements between the pivot means and the cross piece joining such portions at the proximal end of the head member provide parallel levers projecting from said pivot outwardly above said U-shaped frame and having said cross piece at the proximal end of said side elements and being selectively operable by the patient to apply or release tension, flexible strap means carried by the distal foot portion for attachment to the body of the patient, and flexible strap means carried by the distal cross piece of said head member for attachment to another part of the body of the patient, whereby when the extremities of the section of the patient's body to be treated are respectively secured to the strap means at each end of the apparatus, and the patient applies a force by pulling downwardly on said cross piece at the proximal end of said head member to activate said levers about said pivot, the lever action about said pivots tends to move the foot portion to which one body portion extremity is attached relatively away from the cross piece to which the other body portion extremity is attached thereby subjecting the body portion intermediate said strap means to tension.

4,282,869

## APPARATUS FOR OXYGEN TREATMENT

Arnold Zidulka, Cote St. Luc, Canada, assignor to Montreal General Hospital Research Inst., Montreal, Canada

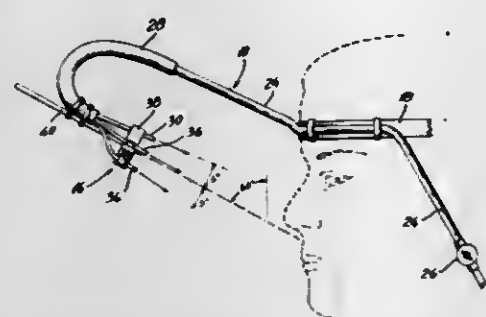
Filed Jun. 22, 1979, Ser. No. 51,014

Claims priority, application Canada, Jul. 21, 1979, 307887

Int. Cl.<sup>3</sup> A61M 15/00

U.S. Cl. 128—200.28

11 Claims



1. An apparatus for supplying a predetermined concentration of oxygen to the nose and mouth of a person's head, including adjustable support means adapted to be removably fixed to the person's head, nozzle head means, including at least one jet nozzle, and mounted to said support means such that the jet nozzle is directed towards the nose and mouth of a person's head, supply means supported on the support means for supplying the oxygen under pressure to the nozzle head means, means for adjusting the nozzle head means such that the axis of the jet nozzle passes through the breathing ingress area formed by the nose and mouth of the person, flow rate means associated with said supply means for controlling the flow of oxygen from the nozzle head means to form a volume of a predetermined concentration of oxygen at the breathing ingress area of the person, and said nozzle head means being spaced from the support means such that ready unimpeded access to the nose and mouth area is obtained.

4,282,870

## BREATHING MIXTURE CONTROLLER

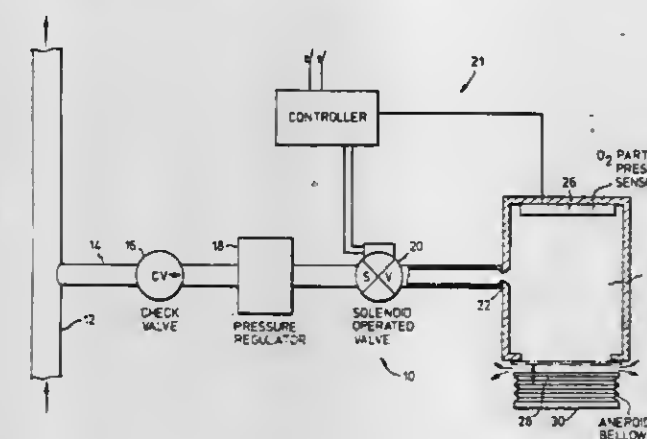
Joseph G. A. Porlier, Downsview, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jul. 11, 1979, Ser. No. 56,731

Int. Cl.<sup>3</sup> A62B 7/00

U.S. Cl. 128—203.14

4 Claims



1. In an aircraft breathing system including an oxygen generator of the type used in pilot life support systems to draw gases from engine bleed air and to provide oxygen to the pilot and which generates oxygen/nitrogen mixture when overloaded, a device to cause an excess demand on the oxygen generator at lower altitudes so that a variable oxygen/nitrogen breathing mixture is drawn from the generator, and at higher altitudes a higher oxygen concentration breathing mixture is drawn from the generator, the device comprising:

- inlet means for receiving a portion of breathing mixture from the life support system in parallel to the pilot's demand on the system;
- means defining a chamber having substantially cabin pressure therein for receiving said portion;
- an oxygen partial pressure sensor contained in the chamber means to sense the partial pressure of oxygen in the breathing mixture;
- a valve positioned between the inlet and the chamber means and operable to change the rate of flow of breathing mixture to said chamber;
- control means coupled to the sensor and to the valve, the control means controlling the valve dependent on the sensed partial pressure of the oxygen so that if the partial pressure deviates from a predetermined pressure the valve is moved to adjust the rate of flow of said portion until the predetermined partial pressure is sensed by said partial pressure sensor so that at lower altitudes as the flow rate increases, an excess demand is created on the generator and a lower oxygen concentration breathing mixture is produced; and
- means sensitive to cabin pressure to prevent flow of said portion at higher altitudes when the cabin pressure is above a predetermined limit so that the device is then inoperative and the pilot receives a suitable higher oxygen concentration breathing mixture from the generator.

4,282,871

## NASO-GASTRIC TUBE STABILIZER

Ingram S. Chodorow, Upper Saddle River, N.J., and Richard Hall, New Canaan, Conn., assignors to Technalytics Inc., Upper Saddle River, N.J.

Filed Jan. 8, 1979, Ser. No. 1,757

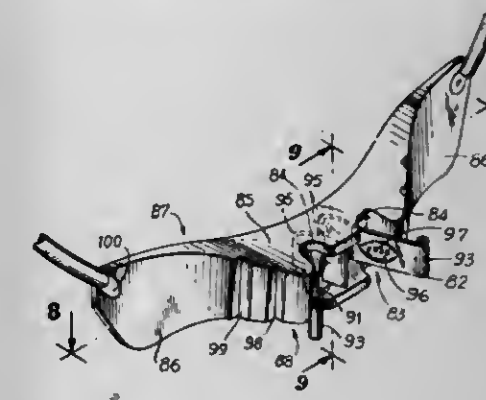
Int. Cl.<sup>3</sup> A61M 25/02, 15/08

U.S. Cl. 128—207.18

30 Claims

1. A device for engaging and stabilizing an exposed section of a naso-gastric tube extending out of a patient's nostril generally along the axis thereof, the device comprising (a) a base with a central part having a front portion, a rear portion positionable adjacent the patient's upper lip, top and bottom por-

tions, and opposite end parts, (b) first means on said central part of the base for releasably engaging and holding said exposed section of the tube, and (c) second means separate and independent of said first means for releasably securing said device to the patient's head, said first means comprising (i) a first surface on said front portion which is accessible from the front for receiving and generally aligning said tube section



with the axis of the nostril when the base is adjacent the patient's upper lip, and (ii) spring means permanently secured to said base and having a gripping second surface, said spring means operable alternatively to engage and resiliently urge said tube section against said first surface and to release and allow said tube section to move axially relative to the base and to move laterally away from said base.

4,282,872

## DEVICE FOR THE PRE-PROGRAMMABLE INFUSION OF LIQUIDS

Manfred Franetzi, Uttenreuth; Klaus Gagneur, Bubenreuth, and Karl Prestele, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

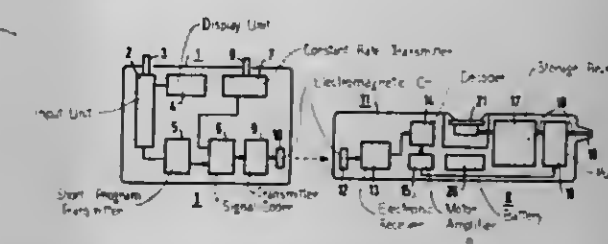
Filed Dec. 13, 1978, Ser. No. 969,189

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1977, 2758467

Int. Cl.<sup>3</sup> A61M 37/00

U.S. Cl. 128—213 R

9 Claims



1. Apparatus for the pre-programmable infusion of liquids into a patient's body, comprising
  - a microdosing unit having supply means for supplying the liquid at a controllable infusion rate in response to programming signals,
  - a control device operable for supplying selected programming signals to said microdosing unit for correspondingly controlling the rate of supply of the liquid thereby,
  - said control device having program storage means (5) for storing at least one predetermined control program (31-40), which provides for the generation of respective different programmed sequences of infusion amounts as a function of time, each of the respective different programmed sequences of infusion amounts as a function of time providing for the delivery of a respective different total liquid amount by said supply means over a relatively short time span of not more than three hours, with the different total liquid amounts lying within a predetermined available range of amounts suitable for selection by the patient,
  - said program storage means (5) being controllable by each of



a respective series of manually generated selection signals each representing a respective different one of said total liquid amounts to be infused within said available range of amounts and beginning at a given starting point, to generate the respective corresponding one of said programmed sequences of infusion amounts as a function of time over the relatively short time span thereof in accordance with said one control program stored therein, such that the respective corresponding total liquid amount is supplied by said microdosing unit in said relatively short time span, said control device having manually actuatable control means (3, 23) coupled with said program storage means (5) and being selectively manually actuatable by the patient to respective positions corresponding to respective total liquid amounts within said available range of amounts to supply respective ones of said series of said manually generated selection signals and to supply the given starting time to the program storage means (5), whereby the microdosing unit is responsive to patient manual selection of one of said total liquid amounts from said available range of amounts and a desired starting point based on actual real time patient need while supplying such patient-selected total amount over a relatively short time span and at a rate as a function of time which can be pre-programmed by the patient's physician according to the characteristics of the individual patient.

4,282,873

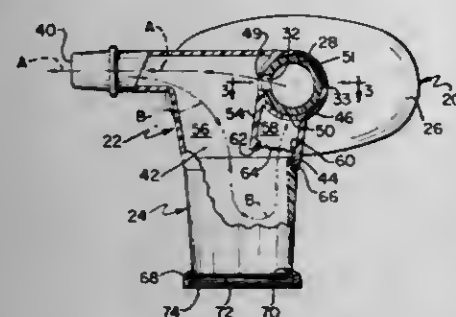
## MEDICAL IRRIGATION DEVICE

Robert A. Roth, 29 Hyslop Rd., Brookline, Mass. 02146  
Filed Apr. 3, 1980, Ser. No. 136,890

Int. Cl.<sup>3</sup> A61M 1/00

U.S. Cl. 128—276

5 Claims



1. A medical irrigation device for alternately introducing fluid into and withdrawing fluid from a body cavity through a cannula, said device comprising in combination:

- a fluid receptive manually operable syringe;
- a specimen collecting receptacle;
- a fluid conductive manifold including a fluid conductive first arm segment, and a bifurcated fluid conductive second arm segment connected substantially orthogonally thereto, said first arm segment including means for providing connection to and establishing open communication with said cannula, and said second arm segment including means for providing connection to and establishing open communication with said specimen collecting receptacle; said second arm segment comprising a first fluid conduit and a second fluid conduit, said first fluid conduit being between and in open communication with said first arm segment and said specimen collecting receptacle and said second fluid conduit communicating with said specimen collecting receptacle through a particulate filter means; and
- a manually operable valve means for controllably establishing open communication alternatively between said syringe and said first arm segment and between said syringe and said second fluid conduit.

4,282,874  
DISPOSABLE ABSORBENT ARTICLE OF MANUFACTURE

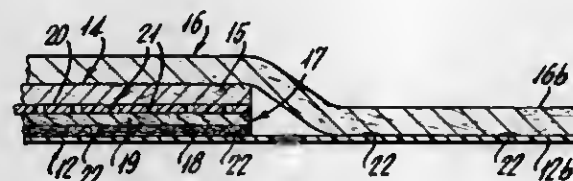
Frederick K. Mesek, Tinley Park, Ill., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed May 11, 1979, Ser. No. 38,370

Int. Cl.<sup>3</sup> A41B 13/02

U.S. Cl. 128—287

14 Claims



1. An absorbent article of manufacture having a multilayer absorbent pad means, a moisture-imperious backing sheet on one side of the absorbent pad means, and a moisture-permeable facing sheet overlying the other side of the absorbent pad means, the absorbent pad means comprising a first highly-porous, loosely-compacted cellulosic fibrous batt having on one side the facing sheet and on the other side a moisture-imperious film having a plurality of openings therein for permitting fluid to pass therethrough, and on the other side of the moisture-imperious film between the film and backing sheet a second batt of greater density than the first batt to provide a wickability gradient for drawing fluid through the openings in the moisture-imperious film and retaining the fluid in the second batt.

4,282,875

## OCCLUSIVE DEVICE

Fedor A. Serbioenko, Kutuzovskiy prospekt, 33, kv. 43, and Sergei I. Kljuchnikov, Volgogradskiy prospekt, 164, korpus 2, kv. 111, both of Moscow, U.S.S.R.

Filed Jan. 24, 1979, Ser. No. 6,037

Int. Cl.<sup>3</sup> A61M 25/00

U.S. Cl. 128—325

9 Claims



1. An occlusive device for use in plugging blood vessels of the brain, comprising:

- an elastic catheter having a distal tip with an opening there-through, said distal tip having a thin walled elastic bulb releasably mounted thereon, said bulb having a thick spherical head portion accommodating a metal plug which provides means to dampen vibrations caused by the flow of blood, and a thick spherical tail portion containing a self-closing aperture surrounding and housing said distal tip of said catheter, wherein said aperture functions as a valve which closes upon removal of the distal tip of said catheter from the elastic bulb; said distal tip of the catheter having connecting or coupling enlargement means thereon which extends through the tail portion and which internally secures the tip within the bulb cavity said enlargement means adapted to prevent detachment of the tip from the bulb by the flow of blood; and wherein the opening in the distal tip of the catheter is relatively smaller

in diameter and has a greater elasticity than the main body of the catheter.

4,282,876

## RADIOPAQUE POLYURETHANE RESIN COMPOSITIONS

Vincent J. Flynn, 130 New Rd., Apt. D10, Parsippany, N.J. 07054

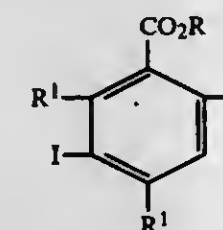
Division of Ser. No. 40,278, May 18, 1979, Pat. No. 4,250,072, which is a continuation-in-part of Ser. No. 862,773, Dec. 21, 1977, abandoned, which is a continuation of Ser. No. 712,189, Aug. 6, 1976, abandoned. This application Dec. 28, 1979, Ser. No. 108,392

Int. Cl.<sup>3</sup> A61M 25/00

U.S. Cl. 128—349 R

9 Claims

1. A medical-surgical catheter formed from tubing comprising
- (a) a resin which includes from 100 to 33 parts by weight of a thermoplastic polyurethane and from 0 to 67 parts of a polymer of a halogenated vinyl monomer; and
  - (b) a radiopacifier therefor consisting of a diiodobenzoate or a tetraiodobenzoate compound of the formula



wherein R<sup>1</sup> is hydrogen or iodo, and R is alkyl or alkoxy-alkyl or a mixture of said compounds; said radiopacifier (b) comprising 10 to 40 parts by weight per 100 parts by weight of (a) and (b).

4,282,877

## HAIR REMOVING ARRANGEMENT

Larry Mathews, New York, N.Y., assignor to Alleghany Pharmaceutical, New York, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,221

Int. Cl.<sup>3</sup> A61B 17/00

U.S. Cl. 128—355

4 Claims

1. Arrangement for removal of unwanted hair, comprising a plastic sheet material of predetermined shape and size having a pressure sensitive adhesive composition comprising a high molecular weight polymer selected from the group consisting of polymers of natural rubber, butyl rubber, butadiene styrene, block styrene, ethylene vinyl acetate, vinyl acetate, ethyl cellulose and natural waxes in an amount of about 9-10% by weight, a tackifier selected from the group consisting of terpenes, rosin derivatives, coumarone indene, hydrocarbon resins and terpene phenolics in an amount of about 65-68.5% by weight, a softener selected from the group consisting of mineral oil, liquid rosin derivatives, lanolin dibutyl phthalate, dioctyl phthalate and tricresyl phosphate in an amount of about 21.5-25% by weight, and an antioxidant selected from the group consisting of 2,2-methylene-bis(4-methyl-6-tertiary butyl)-phenol, 1,3,5-triethyl-2,4,6-tris-(3,5-ditertiary butyl-4-hydroxy benzyl)-benzene, butylated hydroxy anisole and butylated hydroxy toluol in an amount of about 0.5% by weight applied to a face thereof, said composition adhering firmly to hair but not to skin so that when the same is applied to an area of the body from which it is desired to remove unwanted hair, and subsequently peeled away therefrom, only the unwanted hair is removed.

4,282,878

ELECTRODE STRUCTURE FOR ELECTROCARDIOGRAPH AND RELATED PHYSIOLOGICAL MEASUREMENTS AND THE LIKE

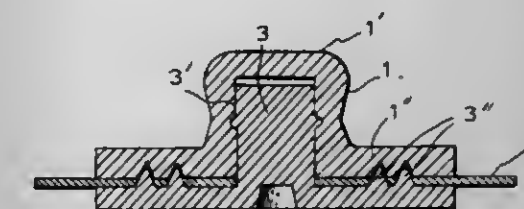
Peter P. Novello, North Andover, Mass., assignor to Vaughn Corporation, Salisbury, Mass.

Filed Aug. 17, 1979, Ser. No. 67,342

Int. Cl.<sup>3</sup> A61B 5/04

U.S. Cl. 128—641

6 Claims



1. An electrode structure for electrocardiograph and related physiological measurements and the like having, in combination, cooperative thin plastic stud and eyelet members, each plated with the same highly conductive surface, said members having a mated interface and cooperative flange surfaces extending from said interface, means for securing an electrolytic gel to the conductive surface of the eyelet and means for inhibiting leakage of the gel into said interface between the members, said leakage inhibiting means including cooperative sealing ring and groove means in the respective flange surfaces of said members for providing positive swaged lock-sealing therebetween.

4,282,879

## ULTRASONIC DIAGNOSING APPARATUS

Yutaka Kunii; Toshikuni Shimoji, and Masaaki Tsutsumi, all of Kawasaki, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

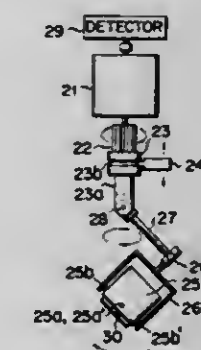
Filed Feb. 22, 1979, Ser. No. 13,975

Claims priority, application Japan, Feb. 23, 1978, 53/20271

Int. Cl.<sup>3</sup> A61B 5/00

U.S. Cl. 128—660

11 Claims



1. An apparatus for oscillating an ultrasonic probe of an ultrasonic sector scanner through a variable sector angle to sector scan a subject to be examined comprising:

- a holder for supporting the ultrasonic probe,
- means pivotably mounting said holder about a first fixed axis to sector scan the probe about said first fixed axis,
- a support member pivotably fixed to said holder about a second axis substantially perpendicular to said first fixed axis, thereby forming in effect a universal joint,
- a connecting rod,
- a spherical bearing joining one end of said connecting rod to said support member at a point on said support member spaced from said first fixed axis,
- an adjustment mechanism rotatable about a third fixed axis



and pivotably fixed to the end of said connecting rod at a pivot point opposite said spherical bearing, said adjustment mechanism being slidable along said third fixed axis to vary the distance between said pivot point and said first fixed axis, whereby the probe will oscillate through a sector angle as the adjustment mechanism rotates and whereby the sector angle traveled by the probe is a function of the distance between said first fixed axis and said pivot point, and

means for sliding said adjustment mechanism along said third fixed axis to thereby adjust the sector angle through which said holder oscillates.

4,282,880

# WATER CIRCULATION AND MAINTENANCE SYSTEM FOR AN ULTRASOUND MAMMARY SCANNING APPARATUS

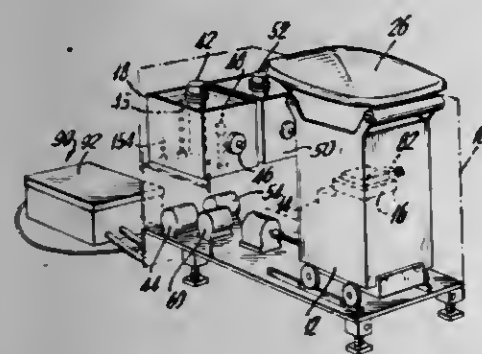
Bayard G. Gardineer, Skillman; James A. Heringes, Dayton, and Paul Mandel, Edison, all of N.J., assignors to Technicare Corporation, Solon, Ohio

Filed Mar. 12, 1980, Ser. No. 129,813

Int. Cl.<sup>3</sup> A61B 10/00

U.S. Cl. 128—660

22 Claims



1. Apparatus for conditioning a fluid transmission medium for an ultrasound imaging system used for examining a patient's breast, said apparatus comprising transducer means for transmitting to and receiving sonic energy from the patient;
  - a main tank enclosing a first quantity of transmission medium and adapted to house an ultrasound transducer and associated focusing lens, and having an open top facing said patient;
  - a main reservoir in fluid communication with said main tank;
  - a main circulation circuit for circulating said fluid transmission medium between said main tank and said main reservoir and for conditioning the medium therein to facilitate the transmission of the ultrasound;
  - a suspension pool of transmission medium isolated from fluid communication with said main tank and adapted to receive a patient's breast;
  - a suspension pool reservoir in fluid communication with suspension pool; and,
  - a suspension pool circulation circuit for circulating said medium between said suspension pool and said suspension pool reservoir and for conditioning the medium therein to provide a substantially continuous fluid transmission medium from transducer through said main tank and through said suspension pool to the patient.

4,282,881

# MANOMETER FOR INFUSION APPARATUS

Robert J. Todd; Gregg H. Smith, both of Salt Lake City, and Gordon S. Reynolds, Bountiful, all of Utah, assignors to Sorrenson Research Co., Inc., Salt Lake City, Utah

Filed May 10, 1979, Ser. No. 37,614

Int. Cl.<sup>3</sup> A61B 5/02

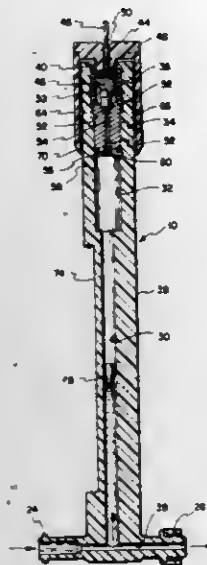
U.S. Cl. 128—674

35 Claims

1. A manometer for measuring the hydrodynamic pressure

of fluids parenterally administered to a patient, said manometer comprising:

- a housing, said housing having a fluid inlet means and a fluid outlet means;
- a continuously open passageway formed in said housing, said passageway accommodating continuous flow of fluid there-through from said fluid inlet means to said fluid outlet means;



- a pressure measuring chamber formed in said housing, one end of said measuring chamber being in fluid communication with said passageway, said measuring chamber having at the other end thereof a normally closed air space that defines a non-expandable volume; and
- reference means, associated with said pressure measuring chamber, for indicating the pressure of the fluid flowing through said passageway.

4,282,882

# APPARATUS FOR MODIFYING INTRAOCULAR PRESSURE

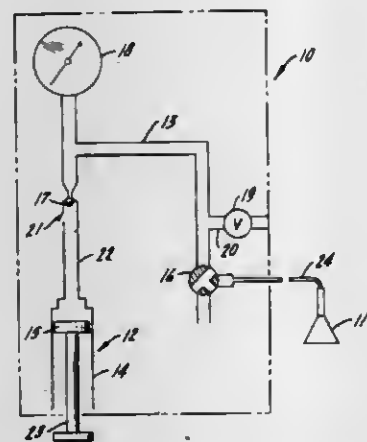
Maurice E. Langham, Lutherville, Md., assignor to Bio-Rad Laboratories, Inc., Richmond, Calif.

Continuation-in-part of Ser. No. 844,076, Oct. 17, 1977, abandoned. This application Sep. 25, 1979, Ser. No. 78,842

Int. Cl.<sup>3</sup> A61B 5/02

U.S. Cl. 128—676

2 Claims



1. In an apparatus for modifying intraocular pressure in an eye by applying a negative pressure to a scleral portion of said eye, said apparatus including a hollow, scleral cup means intended to be applied to said scleral portion and a valved conduit extending into said cup for withdrawing gas from said cup to create said negative pressure, said cup means having an open portion defined by rigid thick walls the interior periphery of which defines the area of said scleral portion subjected to said negative pressure upon application of said cup means to said scleral portion, the improvement wherein the surface of said cup means intended to contact said scleral portion is an

edge of said rigid thick walls, said edge being beveled inwardly with a concave radius of curvature.

4,282,883

# SPIROMETERS

Moshe Yerushalmy, Turramurra, Australia, assignor to Scitec Corporation Ltd., Sydney, Australia

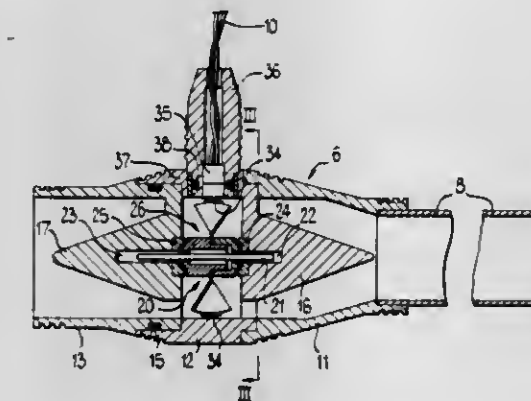
Filed Jun. 25, 1979, Ser. No. 51,897

Claims priority, application Australia, Jul. 3, 1978, PD4924

Int. Cl.<sup>3</sup> A61B 5/08

U.S. Cl. 128—726

5 Claims



1. A turbine transducer for a spirometer comprising a hollow body adapted to be held in the hand of and raised to the mouth of a patient, said body having an axially extending passage throughout its length,
  - means on the body at one end of said passage to receive a removable tube through which the patient can exhale air into said passage,
  - a pair of conical diffuser members each having a cone angle of between 35° and 40°,
  - means supporting said diffuser members in said passage coaxially, base to base, and spaced apart,
  - a turbine rotor assembly,
  - means mounting said turbine rotor assembly in the space between said conical diffuser members for rotation about the axis of said passage,
  - said turbine rotor assembly including a plurality of radially extending blades, said blades having portions exposed to the movement of air through the said passage extending at an angle of between 20° and 40° to the axis of rotation of the turbine assembly, selected ones of said blades having a portion directed toward the wall of said passage and lying adjacent thereto,
  - means defining apertures in said diffuser members supporting means permitting passage of air past said conical diffuser members to said blades to cause rotation of the turbine rotor assembly at a rate directly related to the rate of flow of air in said passage,
  - photo-optical sensor means,
  - an aperture in the side of said body opposite said blades,
  - means supporting said photo-optical sensor means in said aperture in said body allowing the photo-optical sensor means to direct radiation onto each said blade portion directed towards the wall of said passage and to receive radiation reflected from each said blade portion during its passage past said photo-optical sensor means and thereby produce an electrical pulse,
  - said body being made in at least two separate parts, each part including one of said conical diffuser members and a part of said means for mounting said turbine rotor assembly, whereby the transducer may be dismantled and the turbine assembly removed for cleaning.

4,282,884

# DEVICE FOR OBTAINING TISSUE SAMPLES

Manfred Boebel, Oetisheim, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

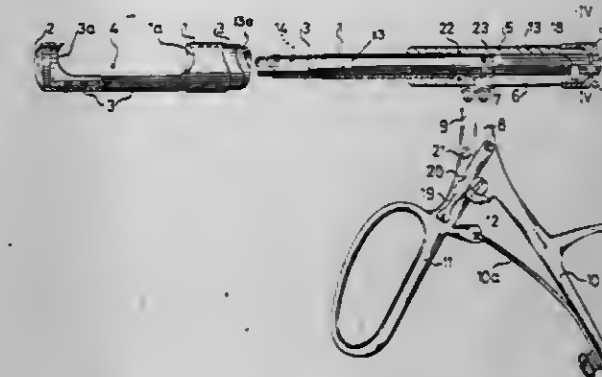
Filed Jun. 4, 1979, Ser. No. 45,105

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 7817220[U]

Int. Cl.<sup>3</sup> A61B 10/00

U.S. Cl. 128—751

9 Claims



1. In a device for obtaining medical tissue samples from an operating area and being of the kind having a scissors handle and an outer shaft joined to a reinforcing housing, in which a tubular punch structure, having a closed distal end and provided with a recess near the distal closed end and also having a cutting edge directed to the proximal end of the device, can be pushed axially out of the open end of the outer shaft, the outer shaft having a cutting edge opposite to the cutting edge of the punch structure, and which punch structure can also be drawn back into the outer shaft to engage the cutting edges thereby to remove tissue from the operating area, the improvement comprising:
  - a receiver member positioned inside the tubular punch structure and having an open end terminating near the distal end of the outer shaft, said receiver member comprising a length of a tubular receiving tube proximally connected detachably to a rod, and said rod being proximally detachably connected to the housing so that after tissue has been collected in the distal end of the tubular receiving tube the receiver member may be detached and separated from the housing allowing the remainder of the device to remain in the operational area.

4,282,885

# ELECTRODE FOR IMPLANTATION IN THE HEART

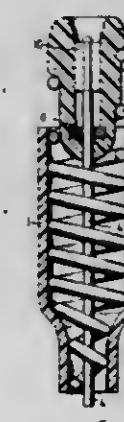
Hans-Jürgen Bisping, Tittardshang 12, D-5100 Aachen-Laurensberg, Fed. Rep. of Germany

Filed Aug. 21, 1978, Ser. No. 935,122

Int. Cl.<sup>3</sup> A61N 1/04

U.S. Cl. 128—785

18 Claims



1. In an electrode arranged to be inserted into the body of a patient and implanted in the patient's heart, which includes an



electrode lead, a structure in the form of a helix protruding at the end of the electrode lead which is directed toward the heart for screwing the electrode into cardiac tissue, and a protective device positioned to protrude beyond the front end of the helix during insertion of the electrode to protect against inadvertent hooling of the helix, the improvement wherein said protective device comprises a cylindrical body disposed within said helix to be axially movable relative to said helix between a protective position in which said body is at least flush with the end of said helix, for insertion of said electrode, and a retracted position in which said helix is exposed for screwing into the cardiac tissue, for performing implantation, said cylindrical body being provided at its outer peripheral surface with shaped regions which are adapted to the pitch of said helix in the manner of threads and which are arranged to come into operating engagement with said helix for preventing movement of said cylindrical body toward its retracted position by forces which are effective thereon during insertion of said electrode, and said electrode comprises an actuating element extending between said cylindrical body and a location outside of the patient's body when said electrode lead is at the implantation location, said actuating element comprising means positively engaging said cylindrical body for driving said cylindrical body in a positive manner from its protective position to its retracted position, by transmitting to said body a retracting force applied to said element at the location outside the patient's body.

4,282,886

#### ADHESIVE BONDED POSITIVE FIXATION EPICARDIAL LEAD

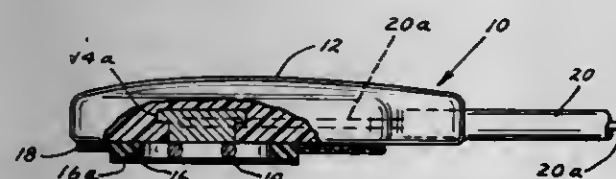
Wendell L. King, North Oaks, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 13, 1979, Ser. No. 93,346

Int. Cl.<sup>3</sup> A61N 1/04

U.S. Cl. 128-785

6 Claims



1. An electrode assembly suitable for chronic implantation within the human body comprising:
  - an electrode support member of material substantially inert to body fluids;
  - an epicardial electrode attached to said electrode support member;
  - first means attached to said electrode support member capable of long-term adhesion of said electrode support member to body tissue for affixing said electrode support member to body tissue after a time subsequent to implantation of said electrode assembly without penetrating said body tissue; and
  - second means attached to said electrode support member capable of epicardial attachment of said electrode support member for affixing said electrode support member to body tissue without penetrating said body tissue from implantation of said electrode assembly until said time subsequent to implantation of said electrode assembly, when said second affixing means loses resiliency.

#### 4,282,887 RIDGE-WAVEGUIDE APPLICATOR FOR TREATMENT WITH ELECTROMAGNETIC ENERGY

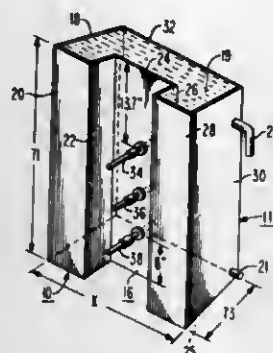
Fred Sterzer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 11, 1979, Ser. No. 83,638

Int. Cl.<sup>3</sup> A61N 1/40

U.S. Cl. 128-804

7 Claims



1. A direct contact applicator for localized electromagnetic energy treatment of living tissue of a patient with signals at a desired radio frequency where for the desired treatment depth the wavelength is relatively long compared to a desired area of treatment comprising:

a waveguide having a ridge extending along the longitudinal length thereof, said waveguide being filled with a low loss and high dielectric medium like that of said patient, said waveguide including said ridge being dimensioned to propagate said signals therein as transverse electric mode waves where there is relatively little electric field component in the direction of propagation of said waves and to concentrate the signal energy in the region adjacent the ridge;

a substantially radio frequency transparent material adapted to conform to a body surface of said patient covering one end of said ridge waveguide; and  
means coupled to said waveguide for applying said signals thereto for exciting propagation thereof in said transverse electric mode, whereby said signals are applied to said patient with the electric field component primarily parallel to said body surface.

4,282,888

#### APPARATUS FOR STRIPPING LEAVES FROM A STALK CURED TOBACCO PLANT

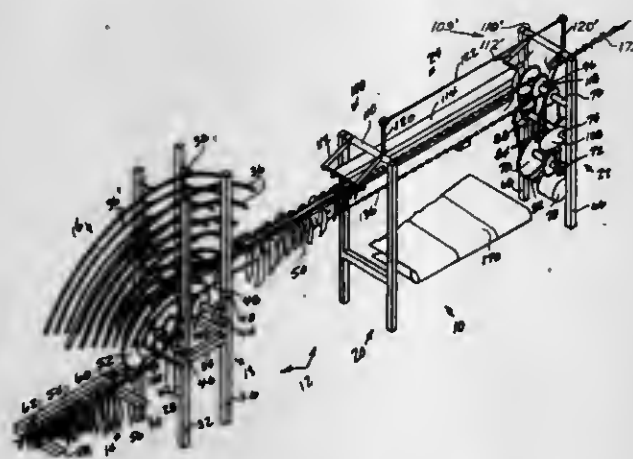
Jesse R. Pinkham, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Dec. 22, 1978, Ser. No. 972,548

Int. Cl.<sup>3</sup> A01D 1/00

U.S. Cl. 130-30 R

10 Claims



1. An apparatus for stripping the leaves from a stalk of a tobacco plant comprising:

- (a) conveyor means for receiving a tobacco plant with its leaves disposed on at least one side of the conveyor means; and
- (b) clamping means located adjacent the conveyor means which engage hold and maintain the leaves in their relative stalk position as the stalk is moved continuously past the clamping means to pull the leaves from the stalk.

4,282,890

#### OPEN CELL STRUCTURE FOAMED CELLULOSE ACETATE FILTERS

Carl J. Howell, Jr., Charlotte, N.C.; David W. Trott, Fort Mill, S.C., and Jesse L. Riley, Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

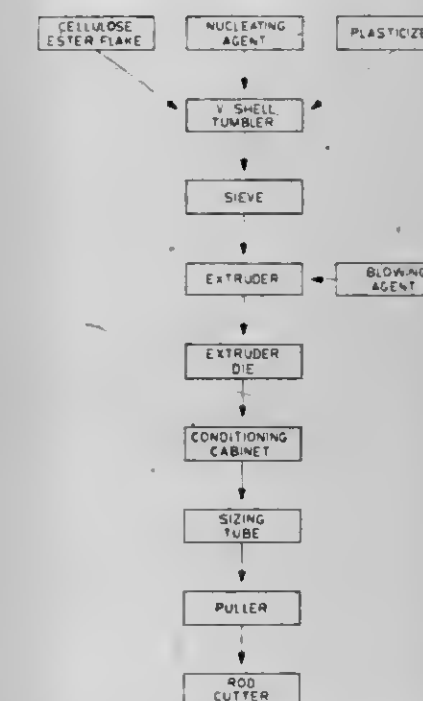
Division of Ser. No. 886,201, Mar. 13, 1978, Pat. No. 4,180,536.

This application May 23, 1979, Ser. No. 41,577

Int. Cl.<sup>3</sup> A24D 3/04

U.S. Cl. 131-332

17 Claims



4,282,889

#### METHOD AND APPARATUS FOR INFLUENCING THE PERMEABILITY OF WRAPPERS OF FILTER CIGARETTES OR THE LIKE

Rolf Dahlgrün, La Celle-St. Cloud, France, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Fed. Rep. of Germany

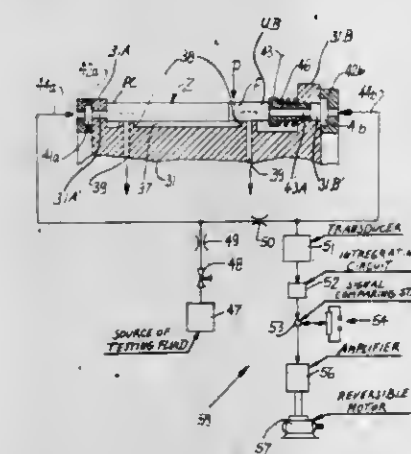
Filed Oct. 3, 1979, Ser. No. 81,314

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1978, 2845342

Int. Cl.<sup>3</sup> A24B 1/04; A24C 5/46, 5/48, 5/56

U.S. Cl. 131-281

26 Claims



1. A method of influencing the permeability of foraminous wrapping material for rod-shaped commodities which form part of or constitute smokers' products, comprising the steps of coating at least a portion of one side of the wrapping material with adhesive; converting the thus coated wrapping material into open-ended tubular wrappers of rod-shaped commodities; testing the wrappers with a gaseous fluid including establishing a pressure differential between the interior and the exterior of the wrappers and generating first signals denoting the rate of flow of testing fluid through the wrappers; comparing said first signals with a second signal denoting the desired rate of flow and generating third signals denoting the difference, if any, between said first signals and said second signal; and varying the quantity of adhesive which is applied per unit area of said one side of the wrapping material as a function of said third signals to thereby vary the permeability of the wrappers.

4,282,891

#### FINGERNAIL TREATING DEVICE

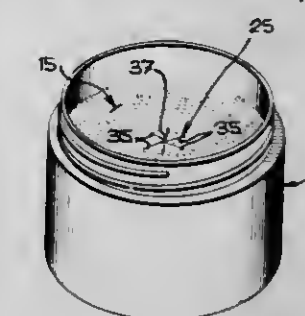
Antoine Dupeppe, Ville d'Anjou, Canada, assignor to Revelations Antoine Ltee, Ville d'Anjou, Canada

Filed Jun. 5, 1978, Ser. No. 912,887

Int. Cl.<sup>3</sup> A45D 29/18

U.S. Cl. 132-73.5

8 Claims



1. A device for use in treating fingernails with liquid, said device comprising:
  - a flat-bottom container with a height, said container having a removable cover;
  - a liquid, disposed in said container, for treating said fingernails;
  - a sponge pad fitted into said container with a friction fit, said sponge pad comprising a means for preventing sloshing of said liquid in said container by virtue of covering the entire diameter of said container; and
  - means, in said sponge pad, for snugly receiving at least said fingernail to be treated, said receiving means extending only partially into said sponge pad.



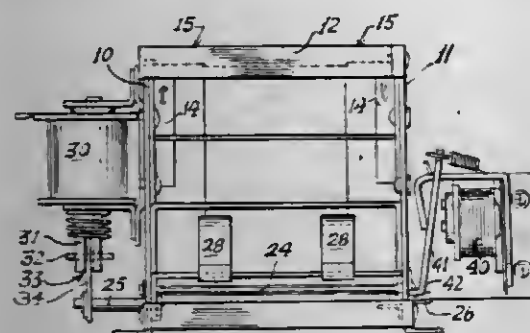
4,282,892

**PAPER MONEY DISPENSING MEANS**

Walter M. Burnside, Waukegan, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.  
Division of Ser. No. 864,928, Dec. 27, 1977, Pat. No. 4,190,066.  
This application Aug. 22, 1979, Ser. No. 68,615  
Int. Cl.<sup>3</sup> G07D 1/00

U.S. Cl. 133—1 R

2 Claims



1. Mechanism for dispensing transparent tubular paper money cartridges one at a time from a compact viewing magazine adapted for mounting behind a viewing window in a coin-controlled machine, said mechanism comprising: a skeletonized magazine structure having opposite end plates with adjoining opposite side members at least one of the sides being substantially open and said structure being arranged to confine the endwise portions of a single column of said tubular paper money-containing cartridges one upon another, said stack being supported upon a rockable dispensing cradle at the bottom of the magazine, said cradle comprising an inverted U-shaped yoke consisting of a flat bight portion with opposite ends turned down at right angles thereto to provide opposite yoke arms, a rod affixed to the inside of said yoke with opposite pivot ends projecting beyond said arms and each journaled in a corresponding portion of one of said end plates; a lock rod affixed to the inside face of said bight eccentrically of said pivot rod and having opposite ends projecting through said yoke arms with ends thereof projecting freely beyond the apertaining end plates; an actuating electromagnet carried at one of the magazine ends and having an armature member drivingly connecting with one of the projecting ends of the lock rod for operation as a crank to rock said cradle from a normal position sustaining the bottom cartridge in the magazine to a dispensing position to discharge such bottom cartridge; a second electromagnet carried at the opposite end of the magazine and having a blocking armature member normally overlying one of the projecting ends of the lock rod to block dispensing movement of the cradle yoke, energization of the second electromagnet moving said armature member to non-blocking position; that one of the sides of the magazine which is substantially open exposing to view a substantial portion of the lengthwise aspects of the contained cartridges for displaying the monetary contents thereof when positioned behind a viewing window in a coin-controlled machine, as aforesaid.

4,282,893

**CLEANING DEVICE FOR SWIMMING POOLS**

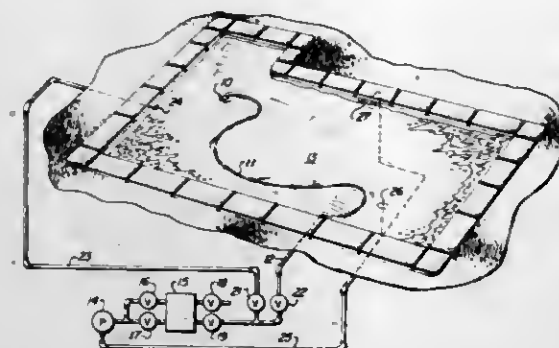
Robert J. Kane, 5035 N. 12th St., Phoenix, Ariz. 85011  
Filed Apr. 21, 1980, Ser. No. 141,898  
Int. Cl.<sup>3</sup> B08B 9/08, 3/02

U.S. Cl. 134—167 R

10 Claims

1. A cleaning device for swimming pools comprising: a generally conical shaped housing comprising a first portion forming the tip of the housing and a second portion the base of the housing, said base portion defining a first fluid conduit arranged axially along at least a part of its length which is open at the base of the base portion for connection to an elongated flexible conduit which is connectable to a source of water under pressure,

said base portion further defining a plurality of second fluid conduits spacedly arranged around said first fluid conduit, one end of each of said second fluid conduits terminating in a nozzle adjacent the base of said base portion, and means for connecting the other end of said first fluid conduit with each of the other ends of said second fluid conduits interiorly of said base portion,



whereby water under pressure passing through said first fluid conduit from said one end to its other end thereof and through said second fluid conduits causes said cleaning device to move through the water in a swimming pool while dragging the flexible conduit behind it.

4,282,894

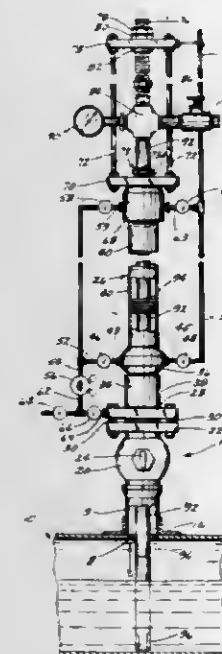
**PRESSURE-OPERATED PORTABLE SIPHON APPARATUS FOR REMOVING CONCENTRATIONS OF LIQUID FROM A GAS PIPELINE**

Walter C. Mills, and James W. Patterson, both of San Angelo, Tex., assignors to Northern Natural Gas Company, Omaha, Nebr.

Continuation-in-part of Ser. No. 832,673, Sep. 12, 1977, Pat. No. 4,155,372. This application May 21, 1979, Ser. No. 40,712  
Int. Cl.<sup>3</sup> F16K 51/00; F17D 3/10; F04F 10/00

U.S. Cl. 137—15

5 Claims



1. The method of removing concentrations of liquid from a natural gas pipeline, comprising the steps of:

- locating a concentration of liquid in the pipeline;
- installing a valve means on said pipeline above the concentration of liquid;
- creating an opening in said pipeline which communicates with the interior of said valve means;
- mounting a removable secured hollow support means to said valve means, a vertically movable siphon pipe means being completely enclosed within said hollow support means;
- supplying operating pressure to said siphon pipe means, from within the pipeline, thereby lowering said siphon

4,282,896

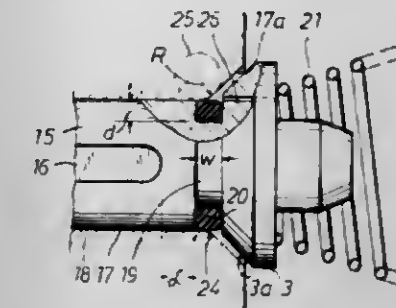
**PILOT OPERATED CHECK VALVE**

Yoshihiro Makino, Takamatsu, Japan, assignor to Shinei Mfg. Co., Ltd., Takamatsu, Japan  
Filed May 21, 1979, Ser. No. 40,880  
Int. Cl.<sup>3</sup> F16K 15/06

U.S. Cl. 137—495

10 Claims

pipe means through said valve means into the interior of said pipeline;  
(f) utilizing the pressure within the pipeline to force the liquid upwardly through said siphon pipe means to a receiving area remote from said siphon pipe means;  
(g) and supplying operating pressure to said siphon pipe means, from within the pipeline, thereby raising said siphon pipe means from the interior of said pipeline above said valve means to enable removable of said hollow support means.



4,282,895

**FREEZE-PROOF, POLLUTION FREE VALVE**

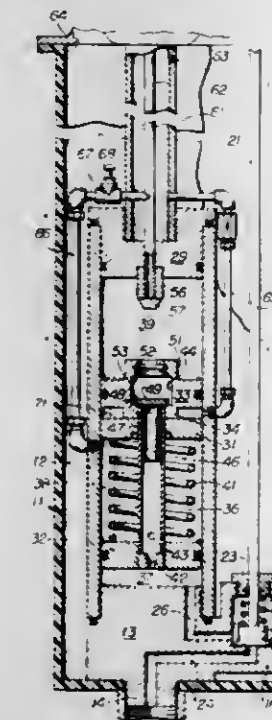
Richard E. Young, San Leandro, Calif., assignor to Valve Engineering Service Corp., San Leandro, Calif.

Filed Apr. 20, 1979, Ser. No. 31,747

Int. Cl.<sup>3</sup> E03B 9/04

U.S. Cl. 137—281

17 Claims



1. A valve comprising a substantially closed cylinder having a first end and a second end, said valve being divided by a transverse partition into a first portion and a second portion, a first piston reciprocable in said first portion and a second piston reciprocable in said second portion, first means for causing said pistons to move together, resilient means biasing said pistons toward said first end, manually operable second means for admitting fluid under pressure into said first portion near said first end, third means for transmitting fluid from said second end to a point remote from said valve, an opening in said first piston permitting constricted fluid flow from said first end past said first piston, fourth means transmitting fluid from said first end of said first portion through said first means and through said second piston, fifth means cutting off flow through said third means when said second means is open and also when said second piston is moved toward said first end when said second means is closed, sixth means activates said fifth means when said second piston is adjacent said second end to allow fluid to flow from said fourth means into said third means, and when said second means is open said pistons are moved away from said first end by fluid pressure and when said second means is closed said resilient means biases said pistons away from said second end, said second piston thereby sucking fluid out of said third means.

15. A valve according to claim 1 in which said valve is located below the frost line and said third means extends up to a point above the ground level.

**VALVE ASSEMBLY FOR PRESSURIZED FLUID SYSTEMS**

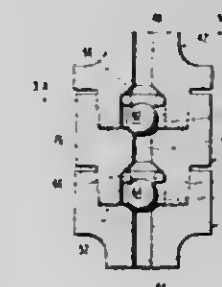
Charles F. de Mey, II, West Redding, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 29, 1979, Ser. No. 42,759

Int. Cl.<sup>3</sup> F16K 15/04

U.S. Cl. 137—515.7

5 Claims



1. A ball valve assembly for use in a liquid chromatography system where said liquid of said system contains particulate matter; said assembly comprising:

a housing defining a flow passage including a port and a shoulder downstream of and surrounding said port, said shoulder having a generally chamfered surface extending upstream therefrom, said housing further defining a chamber on the downstream side of said port;



a ball disposed in said chamber;  
means for continuously self-sealing the interface between said chamfered surface of said shoulder and said ball and for preventing particulate matter remaining on said interface from entering subsequent flow streams, said means including a valve seat member disposed on said shoulder and having a central opening in registry with said inlet port, said valve seat member being formed of a material containing at least 50% pure gold;  
a member, constituting part of said housing, further defining said chamber and having a face engaging said seat on the side thereof opposite said shoulder to retain said seat against said shoulder whereby a seal is formed between said face of said member and said shoulder for preventing communication between said chamber and said port externally about said seat.

4,282,898

# FLOW METERING VALVE WITH OPERATOR SELECTABLE BOOSTED FLOW

James L. Harmon, Joliet, and John A. Junck, Sandwich, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

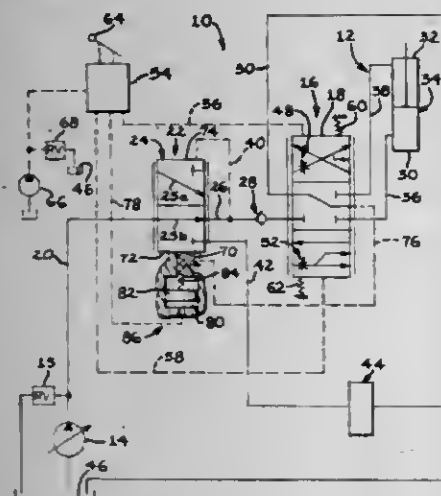
PCT No. PCT/US/79/01033, § 371 Date Nov. 29, 1979, § 102(e) Date Nov. 29, 1979, PCT Pub. No. WO81/01595, PCT Pub. Date Jun. 11, 1981

This PCT application filed Nov. 29, 1979, Ser. No. 144,148

Int. Cl.<sup>3</sup> F15B 13/042

U.S. Cl. 137—596.13

6 Claims



1. In a system (10) for supplying fluid flow to a hydraulic work circuit (12), the system (10) having a single pressurized fluid source (14) for supplying pressurized fluid thereto, control valve means (16) for controlling delivery of fluid flow from said source (14) to selectively drive the circuit (12) and flow control means (22) for metering a portion of the fluid flow to the hydraulic circuit (12), the improvement comprising:  
means (86) for controlling the magnitude of said portion in response to application thereto of a signal;  
operator controlled input means (78) for operator selectively applying said signal to said means (86) for operator selectively directly controlling the magnitude of said portion in direct response to a controlling action initiated by an operator;  
and wherein said flow control means (22) includes:  
a valve element (24) positionable in a first position and in a second position;  
means (70) for biasing said element (24) towards said first position thereof;  
means (25a, 25b) for allowing fluid flow to pass through said flow metering means (22) to said control valve means (16) in response to said element (24) being in said first position and for preventing said fluid flow in response to said element (24) being in said second position;  
means (40) for opposing said biasing means (70) with a force determined by a pressure of said portion intermediate said flow control means (22) and said control valve means (16); and

means (76) for adding a force representative of the load to that of said biasing means (70) in response to a load experienced by said circuit (12);  
and wherein said signal applying means (78) adds a force to that of said biasing means (70), the added force being in response to selective operator input.

4,282,899

# TIMED SHOWER HEAD VALVE

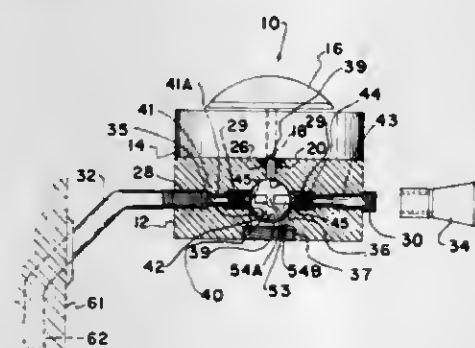
William H. Dunckhorst, P.O. Box 32, South Lake Tahoe, Calif. 95705

Continuation-in-part of Ser. No. 843,825, Oct. 20, 1978, abandoned. This application Aug. 7, 1979, Ser. No. 64,532

Int. Cl.<sup>3</sup> F16K 11/087

U.S. Cl. 137—624.18

2 Claims



1. A valve assembly adaptable for mounting on a conduit leading to a bath shower head and to a said bath shower head so as to conserve the amount of water employed for a complete shower in one cycle of operation of said assembly, by control of the time of individual periods of flow of water through said shower head, so as to provide a sequence of a plurality of timed periods of water flow separated by at least one period of non-flow of water during one cycle of operation,

in which said valve is structured and fitted with time control means so as to automatically provide a shower cycle sequence of a first timed period of water flow for wetting of the user, a second timed period of non-water flow to provide the user time to soap himself, without wasting water, and a third timed period of water flow to provide a rinse period for the user,

in which the assembly comprises

a valve housing

a clock timer device that serves as said time control means, which is mounted to said valve housing and fitted with a rotatable shaft, said clock timer incorporating spring clock work mechanism to cause said shaft to rotate, at a uniform velocity in a second direction for a circular angular sector generally equal to the circular angular sector that said shaft has been initially rotated manually in a first direction, with a first end of said shaft attachable externally to a knob,

a circular valve member rotatably mounted in an interior chamber in said valve housing and attached to said shaft,

an interior chamber of a shape to fit about the circular perimeter of said valve housing,

an internal inlet port and an internal outlet port in said valve housing each joining said interior chamber by an individual passageway to an external inlet port and an external outlet port respectively,

a first groove recessed in the circular perimeter of the valve member, and a second groove recessed in the circular groove of the valve member, with the axis of each groove lying substantially in a common plane that intersects the axis of both internal inlet and outlet ports, said common plane being substantially perpendicular to the axis of the rotatable shaft of the clock timer, and with each groove separated from the other groove along the periphery of the valve member by non-recessed sections of the valve member periphery, where

each said non-recessed section extends along an angular sector, in said common plane, so as to completely block an internal inlet port or internal outlet port when said non-recessed section is aligned with said internal port, a through passageway in said valve member, joining both said grooves,  
said grooves and said non-recessed sections located so that in the initial and final position of the valve member a first non-recessed section completely blocks one internal port, so that in  
a second position of the valve member, one recessed groove extends completely to both internal ports so as to permit water flow through said groove, so that in  
a third position of the valve member, a second non-recessed section completely blocks an internal port, and so that in a fourth position of the valve member each internal port communicates directly with one recessed groove with water flow travelling between said ports through the through passageway in said valve member,  
said second, third, fourth and final positions being positions that the valve member is rotated to, in sequence; in a second direction by the timer shaft after the timer shaft has been rotated manually in the first direction, opposed to said second direction, from the said initial and final position to the said second position.

4,282,900

# EXTENDED LIFE SPOOL VALVE

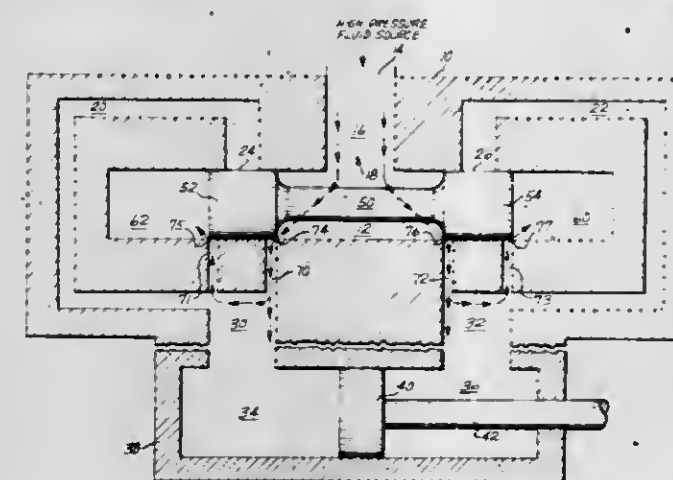
Andu Lauba, Bellevue, and Egil R. Pettersen, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 30, 1979, Ser. No. 34,330

Int. Cl.<sup>3</sup> F15B 13/04

U.S. Cl. 137—625.3

2 Claims



1. In a fluid flow valve having:

a valve body including a sleeve portion provided therein and provided primary passageways for accessing said sleeve portion at main metering orifices; and

a spool being slidable in said sleeve portion and having land portions thereon for forming main metering surfaces with said main metering orifices to control fluid flow through the valve, the improvement comprising:

secondary passageways provided in said valve body for accessing said sleeve portion at sacrificial metering orifices, said sacrificial orifices forming sacrificial metering surfaces with said land portions, said secondary passageways and sacrificial metering surfaces being predeterminedly positioned relative to said primary passageways and main metering surfaces for forming a fluid flow path in parallel with said primary passageways and main metering surfaces and said land portions overlapping said sacrificial metering surfaces and overlapping said main metering surfaces in the valve's neutral position, such that fluid through the valve, in the valve's neutral position, is carried by said secondary passageways and sacrificial

orifices thereby reducing fluid flow erosion at said main metering surfaces.

4,282,901

# PROPORTIONAL CONTROL TYPE REMOTE-CONTROL DIRECTION SWITCHING CONTROL VALVE DEVICE

Yuji Satoh, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

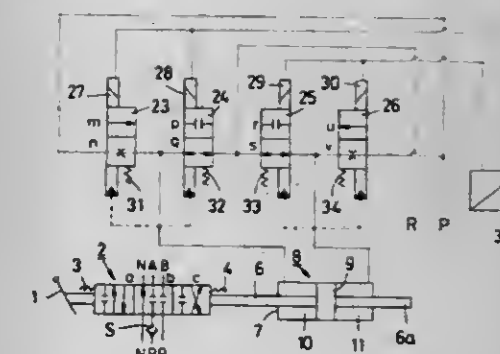
Filed Jul. 13, 1979, Ser. No. 57,410

Claims priority, application Japan, Jul. 18, 1978, 53-86790; Jul. 18, 1978, 53-86791

Int. Cl.<sup>3</sup> F15B 13/043

U.S. Cl. 137—625.64

1 Claim



1. A proportional control type remote-control direction switching control valve device comprising:

a hydraulic power source;

a hydraulic fluid tank;

a direction switching control valve having a valve passage whose opening is varied in response to an amount of movement of a spool, said valve including a hydraulic actuator for actuation thereof, said actuator including hydraulic fluid chambers on opposite sides of a piston;

an electromagnetic pressure reducing valve interposed and connected between each of said fluid chambers and said hydraulic power source, said electromagnetic pressure reducing valve being movable between a full-open position and a throttle position and urged to the full-open position by means of an electromagnetic force;

and an electromagnetic open or closed valve interposed and connected between each of said fluid chambers and said liquid tank, said electromagnetic opening and closing valve being urged to a closed position by an electromagnetic force and wherein the electromagnetic force on said electromagnetic pressure reducing valves and said electromagnetic open or closed valves is opposed by the pressure in each of said fluid chambers of said hydraulic actuator and said electromagnetic reducing valves being operated at a pressure lower than that of said electromagnetic open or closed valve.

4,282,902

# VALVE APPARATUS FOR SIMULTANEOUS CONTROL OF A PLURALITY OF FLUID PATHS

John L. Haynes, Redwood City, Calif., assignor to Becton Dickinson & Company, Paramus, N.J.

Filed May 4, 1979, Ser. No. 35,835

Int. Cl.<sup>3</sup> F17D 3/01

U.S. Cl. 137—636.1

8 Claims

1. Valve apparatus for simultaneously controlling the flow of fluids in a plurality of flow paths comprising:

a rotatable shaft;

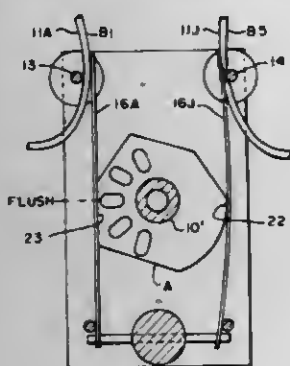
a plurality of cams mounted in parallel planes on said shaft for rotation therewith, each of said cams having a plurality of cam surfaces;

detent means for providing a predetermined plurality of switch positions for said shaft and cams;

a plurality of flexible tubes providing said plurality of flow paths for said fluids, each unique pair of tubes being lo-



cated in a plane corresponding to a unique one of said cams;  
rigid abutment means located on an opposite side of said tubes relative to said cam surfaces;  
said cam surfaces of said cams having preselected radii from the axis of rotation of said shaft to selectively compress



closed a tube against said abutment means when the shaft is rotated to a particular switch position, said pairs of tubes being located opposite each other with respect to said unique one of said cams and each tube of such pair being exclusively associated with a unique half of the number of cam surfaces of such cam.

4,282,903

## STEAM CLEANING MACHINE

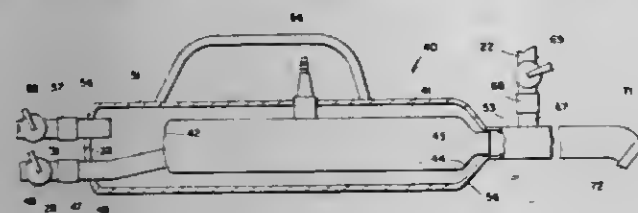
Charles A. Powell, Oxford, Fla., assignor to National Power Corporation, Wildwood, Fla.

Filed Feb. 13, 1979, Ser. No. 11,941

Int. Cl.<sup>3</sup> F05B 1/24; B08B 3/00

U.S. Cl. 137—893

16 Claims



1. A steam generating and discharging machine comprising in combination, a hand-held steam generator unit and a fluid supply system therefor,

(a) said hand-held steam generator unit comprising:

- (i) means for producing heat solely by combustion including a substantially closed combustion chamber of heat conducting material having an exhaust pipe extending therefrom, said exhaust pipe having a free open end spaced from said combustion chamber,
- (ii) means remote from said exhaust pipe for admitting a combustible fluid mixture to said combustion chamber,
- (iii) a jacket having a closed end in spaced surrounding relationship to said combustion chamber, and including a steam discharge pipe surrounding said exhaust pipe and having a free end extending beyond said free end of said exhaust pipe,
- (iv) means extending into said combustion chamber for igniting said combustible mixture therein, and
- (v) means for admitting water to said jacket remote from said steam discharge pipe,
- (vi) whereby combustion gasses from said combustion chamber discharge from said exhaust pipe open end and into said steam discharge pipe and mixing with said water and steam, therein, prior to discharge from said steam discharge pipe,

(b) said fluid supply system comprising means for producing said combustible fluid mixture including:

- (i) means for storing a supply of fluid fuel,
- (ii) means for supplying oxygen-containing fluid,

- (iii) means for mixing said fluids to produce said combustible fluid mixture,
- (iv) means comprising flexible conduit means for connecting said mixing means and said combustible fluid mixture admitting means, and
- (c) said fluid supply means further comprising water supplying conduit means comprising flexible conduit means connected to said water admitting means.

4,282,904

ARTICLE OF MANUFACTURE COMPRISING A HOLLOW ROD OF LONGITUDINALLY GATHERED TUBING WITH A SUPPORT SHEATH SURROUNDING THE HOLLOW ROD, PROCESS FOR PRODUCING SAME, AND USE OF THE ARTICLE IN PRODUCING SAUSAGES

Reinhold Becker, and Wolfgang Michel, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

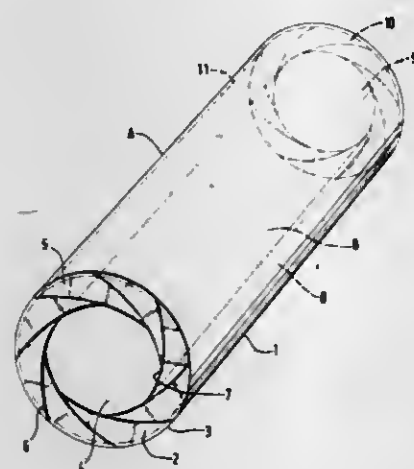
Filed Dec. 6, 1979, Ser. No. 100,745

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1978, 2853400

Int. Cl.<sup>3</sup> F16 9/00

U.S. Cl. 138—109

2 Claims



1. An article of manufacture comprising a one-piece container-like hollow cylindrical support sheath and an open-ended hollow rod of longitudinally gathered cellulose hydrate tubing disposed in the interior of said support sheath with the support sheath surrounding said hollow rod while leaving the open end of the hollow rod free; said hollow rod constituting a formed, but unutilized, sausage casing; said support sheath being made from a formable, flexible sheet of fusible, thermoplastic polymer material and being disposed around said hollow rod with the length of said sheath being such that the ends of the sheath project outwardly beyond the ends of the hollow rod; said outwardly projecting sheath ends being rotationally twisted around their longitudinal axis by at least 30° and buckled to form a plurality of permanently shaped, partially overlapping helical folds whereby the inside diameters of the projecting ends of said sheath are partially narrowed to form integral sheath end walls with a center opening in each end wall; said folds being longitudinally compressed to compact said sheath while maintaining a straight, central, longitudinally axial free space at both ends as a passage for removing with simultaneous unfolding the tubing of the hollow rod from the interior of the support sheath; adjacent folds being at least partially fused to firmly join them to each other and to make the shape of the integral end walls permanent; said end wall ensuring that the shape and position of the hollow rod in the interior of the support sheath are fixed when the hollow rod is soaked in water or moistened.

4,282,905

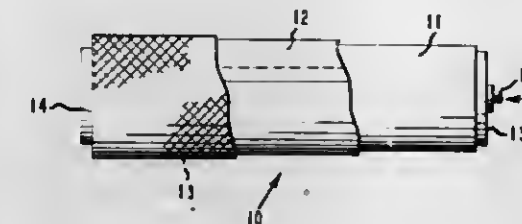
MANUFACTURE OF SEAMLESS LAMINATED TUBING  
Raymond J. Dopkin, and Jerome Hochberg, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 1, 1978, Ser. No. 938,800

Int. Cl.<sup>3</sup> F16L 11/00; B32B 31/16; B65C 3/26; B29C 17/00

U.S. Cl. 156/74

12 Claims



1. The process of forming a laminated pipe which comprises:
  - (1) placing a tube of chemically inert thermoplastic polymer within a close-fitting seamless sleeve of fabric made from an inert fiber;
  - (2) heating the tube to the softening temperature of the polymer;
  - (3) expanding the softened tube by inflation or centrifugal force, thereby forcing the softened polymer between the interstices of the fabric sleeve; and
  - (4) cooling the tube while polymer is still within the sleeve so that an integral pipe is formed by means of a bond between the polymer and the fabric.
9. A laminated seamless tube comprising a seamless cylindrical thermoplastic liner and a seamless cylindrical fabric sleeve around the liner, there being a bond between the liner and the sleeve formed by thermoplastic material forced within the sleeve.

4,282,906

## NARROW ELASTIC FABRIC

Thomas C. Black, Middletown, Canada, assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Division of Ser. No. 831,457, Sep. 7, 1977, Pat. No. 4,164,963.

This application Apr. 27, 1979, Ser. No. 34,089

Int. Cl.<sup>3</sup> D03D 15/02, 5/00

U.S. Cl. 139—422

7 Claims



1. A narrow woven fabric comprising:
  - a plurality of shrunk non-elastomeric warp threads;
  - a plurality of bare elastomeric warp threads separated by said shrunk warp threads;
  - a pair of elastomeric threads forming the edge warp threads, each of said edge warp threads having a loosely wrapped yarn thereon which was heat set before being wrapped about said edge warp threads for increasing the holding of said edge warp threads without modifying the diameter of said edge warp threads; and
  - a shrunk non-elastomeric weft thread.

4,282,907

TENSION SENSING MECHANISM FOR STRAPPING TOOL

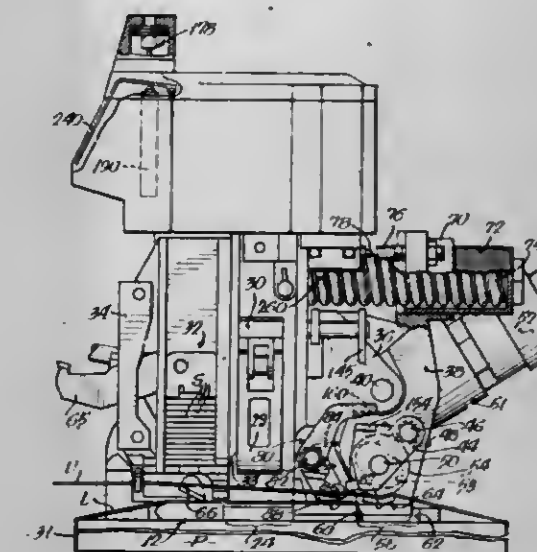
Robert J. Massion, Woodstock; Peter Lems, Wilmette, and Robert J. Nix, Park Ridge, all of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed Oct. 10, 1979, Ser. No. 83,455

Int. Cl.<sup>3</sup> B21F 9/02, 45/00

U.S. Cl. 140—93.4

16 Claims



1. In a strapping tool for tensioning a loop of strapping having overlapping end portions about an article;
  - a frame;
  - means for gripping one of the two strap portions and restraining it from movement relative to said frame;
  - a first arm pivotally mounted to said frame for pivoting movement in a first direction and in a second, opposite direction;
  - first biasing means for biasing said first arm in said first direction;
  - a second arm pivotally mounted on said first arm for pivoting movement in the first and second directions away from and toward the other of said two strap portions, respectively;
  - second biasing means for biasing said second arm in said second direction;
  - tensioning means connected to and mounted for movement with said second arm for engaging the said other strap portion and effective when operated for progressively applying tension to the loop whereby, at a predetermined tension level, the loop tension reaction force on said first arm urges said first arm to overcome said first biasing means and pivot relative to said frame in said second direction; and
  - control means responsive to the pivoting movement of said first arm in said second direction for terminating the operation of said tensioning means at the predetermined loop tension level.

4,282,908

TRANSFERRING AND TRANSPORTING ELONGATED MAGNETIC ARTICLES FOR TREATMENT SUCH AS LEAD STRAIGHTENING

Kristen E. Bankes, Reading; Anderson F. Johnson, Jr., Sinking Spring; Donald M. Large, Temple, and Fred J. Reinhard, Reading, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,255

Int. Cl.<sup>3</sup> B21F 1/02

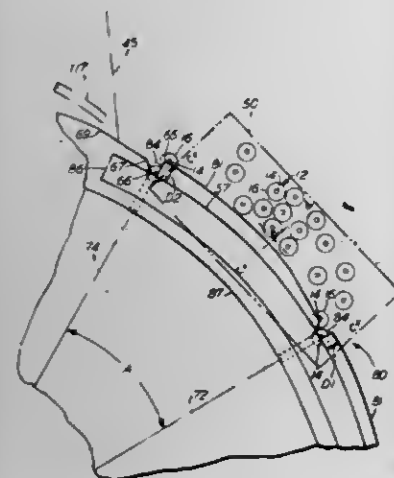
U.S. Cl. 140—147

24 Claims

1. A method of transferring and transporting elongated, magnetic articles, comprising:
  - orienting a supply of the articles so the elongated dimension of each article is substantially transverse to a given direction in which said articles are to be transported;



urging the articles into contact with a transport member, said member having a succession of slots adapted to receive the articles;  
 advancing the transport member in the given direction in communication with the supply of articles to permit the articles to be urged into the successive slots in the member;  
 magnetically attracting the articles into the slots and supporting the articles in the slots along a fixed first level



support sufficiently to stabilize such articles therealong and to prevent more than a predetermined number of articles from entering each of the slots;  
 magnetically attracting the entered articles as such articles are advanced by the transport member beyond the supply of the articles; and  
 discontinuing supporting the articles at the first level after the articles are so advanced beyond the supply and magnetically attracting the entered articles further into the slots to a predetermined second level.

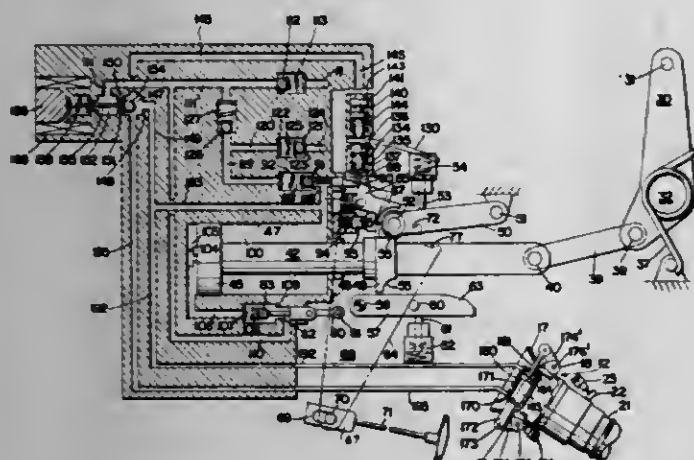
4,282,909

## AERIAL REFUELING DEVICE

Charles R. Clark, Mission Viejo; Lowell R. Hanson, Lakewood, and Gerald G. Steele, Mission Viejo, all of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio  
 Filed Feb. 5, 1979, Ser. No. 9,213  
 Int. Cl.<sup>3</sup> B65B 3/04; B64D 39/06

U.S. Cl. 141-98

46 Claims



1. A device for opening a door on an aircraft to expose a refueling receptacle having latches to lock a nozzle to the receptacle, said device comprising a hydraulic door actuator having a rod connectable to said door for moving the door to open position when the rod is extended and to closed position when the rod is retracted, a piston connected to the rod and dividing the door actuator into first and second chambers, an inlet for pressurized fluid, a single supply conduit connecting the inlet to the door actuator and connected to one of said chambers, a first valve in said supply conduit and normally closed to isolate the inlet from said supply conduit, uplock means, first means movable from a first position in which it

permits said uplock means to lock the rod in retracted position to a second position in which it moves said uplock means to a rod unlock position, valve opening means movable by the first means to a position for opening said first valve when the first means is moved toward its second position whereby pressurized fluid from the inlet passes through said supply conduit to said door actuator for extending said rod, and means for moving said first means.

4,282,910

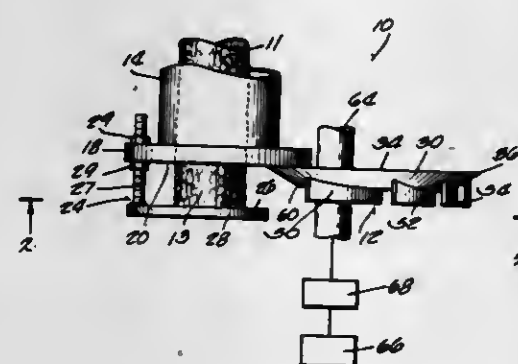
## FINGERLING SHEAR

Tauno B. Kilpela, Atlantic Mine, and Bruce A. Haataja, Lake Linden, both of Mich., assignors to Michigan Technological University, Houghton, Mich.

Filed Jul. 10, 1980, Ser. No. 168,366  
 Int. Cl.<sup>3</sup> B27L 7/00

U.S. Cl. 144-3 K

7 Claims



1. A fingerling shear comprising means for supporting an elongated piece of wood having a grain direction, means for shearing a length of the elongated wood in a plane transverse to the grain direction and for splitting the sheared length along the grain direction to form a plurality of fingerlings, said shearing means comprising a planar shearing blade, said blade being supported for rotation about an axis, the planar shearing blade including opposed surfaces and a peripheral involute cutting edge adapted to engage the elongated piece of wood during rotation of the planar shearing blade and for shearing off a length of that piece of wood, and a plurality of splitting blades fixed to one of said surfaces of the planar shearing blade and spaced along the involute cutting edge, the splitting blades each including a leading cutting edge spaced from said involute cutting edge and extending transversely to said one surface, said cutting edges of said splitting blades being adapted to sequentially engage portions of the sheared length of the wood stock to sequentially split fingerlings from said sheared length.

4,282,911

## COMBINED HANGER AND BAG FOR A HANGER BAG

Kojiro Sumitomo, Taipei, Taiwan, assignor to Sanyei Corporation, Japan  
 Filed Mar. 10, 1980, Ser. No. 128,392  
 Int. Cl.<sup>3</sup> A45C 11/00; B65D 85/18

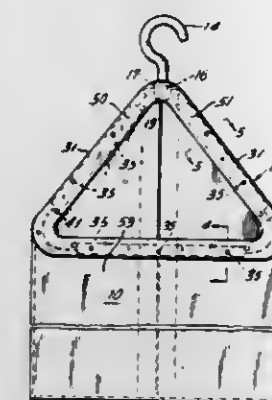
U.S. Cl. 150-1

7 Claims

1. A combined hanger and bag, comprising: a hanger comprised of a frame having a bottom run and at least one run extending upwardly from said bottom run and in a common plane therewith; said hanger frame comprising a pair of parallel and congruent sections, with one said section being a principal support section and the other said section being a securement section; said principal support section having a plurality of extensions extending therefrom; said securement section having a plurality of corresponding openings for securely receiving and holding said extensions in said openings when said two sections are placed together;

a bag having an open upper end; a plurality of openings formed in said upper end of said bag; said bag openings each corresponding to the position of a said extension on

said main support section; said bag being placed such that the portions thereof including said bag openings is placed between said hanger frame sections; said extensions pass-



ing through said bag openings when said sections are placed together;  
 said hanger also including suspension means for suspending said hanger.

4,282,912

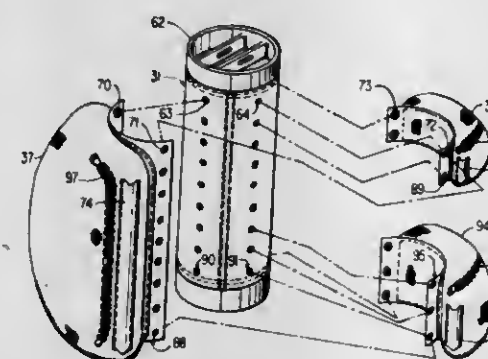
## UNIVERSAL GOLF BAG

William L. Brown, Box 571, 1739 Middle St., Sullivan's Island, S.C. 29482

Filed Oct. 25, 1979, Ser. No. 88,183  
 Int. Cl.<sup>3</sup> A63B 55/00

U.S. Cl. 150-1.5 C

33 Claims



1. A bag for transporting golf equipment comprising:  
 a. a longitudinal structure operative to hold said golf equipment;  
 b. a plurality of pockets, each securable to said longitudinal structure;  
 c. a fastening area on the outside surface of said longitudinal structure operative for the securing of said plurality of pockets;  
 d. a mounting area on the outside surface of said longitudinal structure not operative for the securing of said plurality of pockets;  
 e. a plurality of bag fastening means secured to said fastening area of said longitudinal structure and spaced apart a pre-determined distance or multiples of said pre-determined distance; and  
 f. a bag top insert operative to be removable and rotatable, whereby if said bag is mounted on any type of cart, said mounting area would face said cart and said fastening area would face away from said cart.

4,282,913

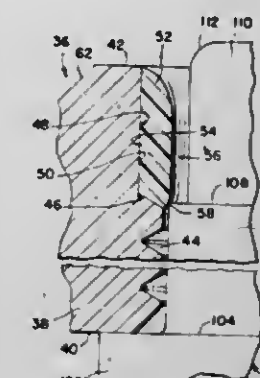
## SELF-LOCKING NUT AND MANUFACTURE AND COMPONENT THEREFOR

Paul A. Trimmer, Berkeley Heights, N.J., assignor to Amerace Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 781,485, Mar. 25, 1977, abandoned. This application Mar. 8, 1978, Ser. No. 884,638  
 Int. Cl.<sup>3</sup> F16B 39/34

U.S. Cl. 411-303

39 Claims



1. A prevailing torque type self-locking nut comprising a metallic nut body having first and second opposite ends, an internal screw thread of predetermined nominal major and minor diameters, said thread located between said ends and having a first radial end adjacent said first end of said body and adapted to be entered by a complementary externally threaded member, said body further having a well portion extending axially from said second end of said body toward said thread, said well portion having an internal surface facing the thread axis and spaced therefrom a distance greater than one-half the major thread diameter, and a self-locking element of thread impressionable thermoplastic material, at least a substantial portion of which is within said well portion and having an external surface secured by adhesion to said internal surface of said well portion, an internal surface at least in part initially unthreaded and confronting the thread axis and spaced therefrom a distance less than one-half the major thread diameter, a first axial end facing the first end of said body and a second axial end facing the second end of said body, the ratio of the axial length of said element to its radial thickness being greater than 2.5 and said element is formed by melting powder of said material in situ.

4,282,914

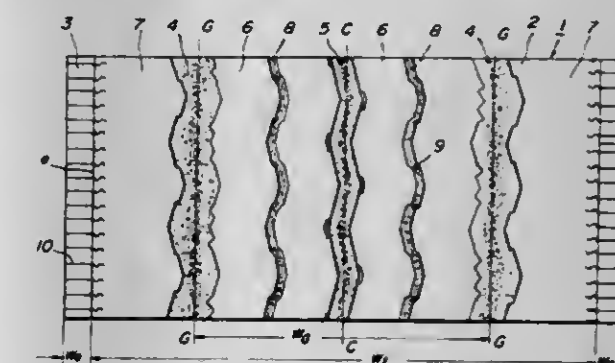
## PNEUMATIC TIRE FOR HEAVY LOAD VEHICLES

Hiroyoshi Takigawa, Kodaira; Nobuhiro Miyamura, Higashimurayama; Hiroshi Ogawa, Kodaira, and Shinichiro Ohkuni, Tokyo, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed May 17, 1979, Ser. No. 39,972  
 Claims priority, application Japan, May 26, 1978, 53-62944  
 Int. Cl.<sup>3</sup> B60C 11/00, 11/08

U.S. Cl. 152-209 D

4 Claims



1. In a pneumatic radial tire for heavy load vehicles compris-



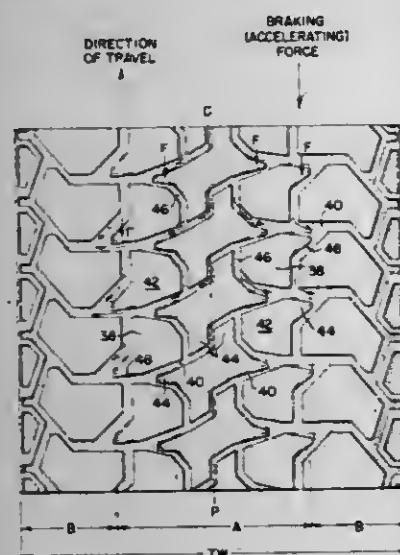
ing a pair of annular bead bundles, a radial carcass toroidally extending between these bead bundles, and a reinforcing belt superimposed about the carcass and providing a tread composed of a crown portion including the reinforcing belt, the improvement comprising: said tread composed of a relatively flat main region exclusively brought into contact with ground when the tire is normally running and a narrow inclined region located at both side edges of said main region, said narrow inclined region including a number of notches transversely extending said tread and circumferentially spaced apart from each other, said notches arranged circumferentially and spaced from each other by an average distance of 1% to 5% of the width of said main region, said narrow inclined region inclined at an angle within a range from 30° to 60° to a tangent drawn from said tread and extending in parallel with the rotational axis of the tire and being resiliently brought into contact with wheel prints formed on road surface to prevent wandering phenomenon.

#### 4,282,915 PNEUMATIC TIRE

Jean F. L. Fontaine, Ingeldorf, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio  
Filed Feb. 21, 1980, Ser. No. 123,134  
Int. Cl.<sup>3</sup> B60C 11/00

U.S. Cl. 152-209 R

7 Claims



1. A pneumatic tire having a ground-engaging tread portion characterized by said tread portion having a plurality of independent projections placed about the circumference of said tire and arranged so as to provide a plurality of substantially axially extending grooves from the centerplane of the tire to the tread edge, said independent projections have a rigid portion and at least one flexible portion such that when a braking force is applied to the tire said flexible portion of said independent projections deform so as to improve water drainage from the tread portion of the tire.

#### 4,282,916 EASILY MOUNTED ANTI-SKID TIRE CHAIN

Carl A. Carlson, 2839 Eddington Ave., Cornwells Heights, Pa. 19020

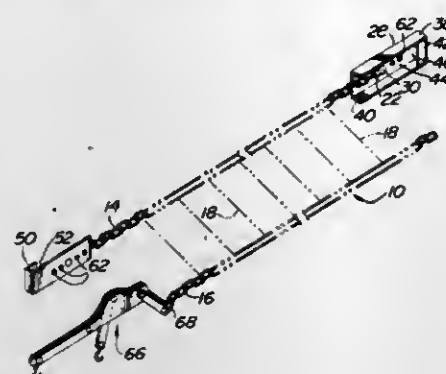
Filed Apr. 28, 1980, Ser. No. 144,234  
Int. Cl.<sup>3</sup> B60C 27/00

U.S. Cl. 152-241

3 Claims

1. In an anti-skid tire chain assembly comprising a circumferential inner chain, a circumferential outer chain, cross chains connected to said inner and outer chains, the improvement comprising, a connector having a male part attached to one end of said inner chain and a female part attached to the opposite end of said inner chain, said male part including a lip turned upon itself to form a U-shape in cross section and defining a first space, said female part having sides and a base defining a channel

shape and a bridging plate connecting said sides and defining a second space, said lip being guided into said second space by said sides and being received in said channel between said sides of said female part and within said second space,



said bridging plate being snugly received in said first space, so as to lock said male and female parts together, and a toggle device attached to the opposite ends of said outer chain for tightening said outer chain about said tire.

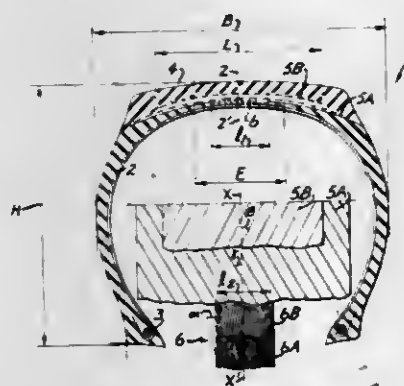
#### 4,282,917 RADIAL CARCASS TIRE EMPLOYING CARCASS EXPANSION LIMITING BLOCK

Jean Pommier, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation-in-part of Ser. No. 44,478, Jun. 1, 1979, abandoned. This application Jan. 30, 1980, Ser. No. 117,039  
Claims priority, application France, Mar. 29, 1979, 79 08176  
Int. Cl.<sup>3</sup> B60C 9/08, 9/20

U.S. Cl. 152-352 R

11 Claims



1. A tire with a radial carcass reinforcement anchored on both sides to at least one bead ring and with a tread reinforcement formed of at least two superimposed work plies of wires or cables which are parallel in each ply and crossed from one ply to the other forming acute angles of between 10° and 45° with the longitudinal direction of the tire, the tread reinforcement, seen in meridian cross section, being parallel to the radial carcass reinforcement along an equatorial zone and being arranged between the radial carcass reinforcement and the tread, characterized by the fact that between the radial carcass reinforcement and the tread reinforcement in the equatorial zone along which the tread reinforcement is parallel to the radial carcass reinforcement there is arranged a limiting block formed of two superimposed plies of wires or cables of low extensibility which are parallel to each other in each ply and crossed from one ply to the other forming with the longitudinal direction angles of opposite sign, each being both other than zero and less in absolute value than one-half of the small angle of the wires or cables of the work plies, the axial width of the limiting block being both between 60% and 100% of the axial width of the equatorial zone along which the tread

reinforcement is parallel to the radial carcass reinforcement and, for a ratio  $H/B$  of between 0.3 and 1.2, between a maximum value  $M_b = (-80 \cdot H/B) + 100$  and a minimum value  $m_b = (-48 \cdot H/B) + 60$  expressed in percentage of the overall maximum axial width  $B$  of the tire, and by the fact that for a ratio  $H/B$  of between 0.3 and 1.2, the axial width of the narrowest work ply or the common axial width of the work plies of the tread reinforcement is between a maximum value  $M_a = (-50 \cdot H/B) + 110$  and a minimum value  $m_a = (-30 \cdot H/B) + 85$  expressed in percentage of the overall maximum axial width  $B$  of the tire,  $H$  being the overall radial height of the tire on a rim and wherein the wires or cables of low extensibility of the limiting block have a relative elongation less than 0.2% under a load equal to 10% of their rupture load.

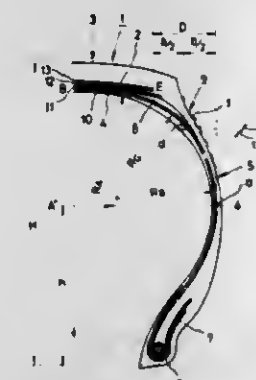
#### 4,282,918 CARCASS ARRANGEMENT IN SHOULDER OF PNEUMATIC TIRE

Hajime Tomoda, Atsugi, and Ken Takahashi, Hiratsuka, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1979, Ser. No. 49,034  
Claims priority, application Japan, Jun. 29, 1978, 53/78064  
Int. Cl.<sup>3</sup> B60C 9/02

U.S. Cl. 152-353 C

7 Claims



1. An improved pneumatic tire comprising a belt layer composed of a plurality of crossing belt plies embedded in the tread portion, an inner liner layer, and a carcass ply embedded along the tread portion, shoulder portion, side wall portion and bead portion and arranged in the radial direction or substantially in the radial direction, said carcass ply being contiguous to the belt layer at the center of the tire top and being gradually increasingly separated from the belt layer toward both ends of said belt layer by a wedge-shaped elastic interposing member, said carcass ply further having a natural sectional profile and in the region between the maximum width position (A-A') of the tire and the center (B) of the tire top, said natural sectional profile is defined by three curves (circles), that is, a curve having a curvature radius (Ra) in the tread portion, a curve having a curvature radius (Rb) in the side wall portion and a curve having a curvature radius (Rg) in the shoulder portion, which consists of a circle tangential to said two curves, said curvature radii (Ra), (Rb) and (Rg) satisfying the requirement of  $(Ra) > (Rb) \geq (Rg)$ , wherein the improvement consists in that said inner liner layer is integrally formed with no interiorly facing projections thereon and that said carcass ply is disposed in the shoulder portion of the tire in the vicinity of the center of thickness of the shoulder portion and is arranged so that, in connection with the central portion (d) of the carcass ply on the central line of the distance (D) in the widthwise direction of the tire between the central point (a) of the carcass ply on the maximum width portion (A-A') of the tire and the outermost end portion (E) of the region where at least two belt plies cross each other, the thickness  $t_2$  of the inner liner layer in the direction of the normal line (f) of the carcass profile passing through said central point (d) on the inside of the carcass ply and the thickness  $t_1$  in the direction of said normal line (f) on the outside of the carcass ply satisfy the requirement of  $0.3 \leq t_2/t_1 \leq 1.0$  and so that the thickness  $t_2$  of the inner liner layer is largest in the vicinity of said central point (d) in the

region between the central point (a) of the carcass ply on the maximum width portion (A-A') of the tire and the outermost end portion (E) where at least two belt plies cross each other and the thickness  $t_2$  of the inner liner layer is gradually decreased toward said central point (a) and outermost end portion (E).

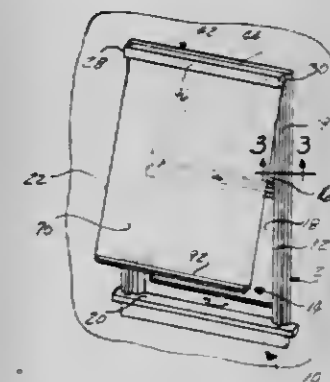
#### 4,282,919

#### INTERIOR STORM WINDOW

Francis D. Teno, 17696 Toepfer, East Detroit, Mich. 48021  
Filed Apr. 9, 1980, Ser. No. 138,662  
Int. Cl.<sup>3</sup> E06B 9/08

U.S. Cl. 160-23 R

7 Claims



1. An auxiliary window for sealing an existing window opening comprising:  
a flexible sheet;  
means for extendably and retractably supporting said sheet such that the sheet is extendable over the entire surface area of said existing window opening;  
means, carrying and releasably surrounding said supporting means, for sealingly covering said supporting means, said covering means including:  
a first member adapted to be mounted to the vertical planar surface surrounding said window opening; and  
a second member pivotally connected to said first member at a first end thereof;  
said first and second members being releasably interlockable along the entire length of a second edge so as to surround the supporting means and trap the top portion of the sheet therebetween to provide an air tight seal therealong;  
said supporting means including:  
a spring roller adapted to carry said flexible sheet; and  
first and second spaced end brackets mounted to said first member of said covering means and adapted to rotatably support said spring roller therebetween;  
means for releasably clamping the side edges of said sheet when said sheet is extended over said existing window opening, said clamping means being adapted to be secured to the vertical planar surfaces surrounding said existing window opening; and  
means for sealingly locking the bottommost edge of said sheet to the planar surface adjacent the bottom of said existing window opening.

#### 4,282,920 GRILLE

Paul E. Kremm, Lindenhurst, N.Y., assignor to Jim Walter Doors North American, Div. of The Celotex Corp., Tampa, Fla.

Filed Jun. 25, 1979, Ser. No. 51,620  
Int. Cl.<sup>3</sup> E06B 9/08

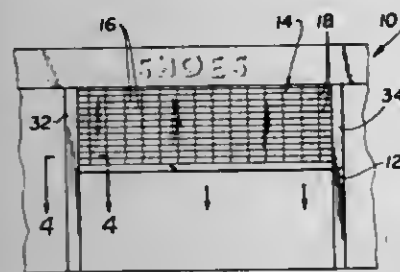
U.S. Cl. 160-133

4 Claims

1. As a closure for a building opening, an improved vertically movable grille operatively disposed for opening and closing movement in said building opening comprising, in combination, two vertically oriented hollow members each



disposed along an opposite side of said building opening and each having a vertically oriented slot in facing relation to said building opening so as to provide vertical guideways for said grille, a grille body formed of horizontally oriented spaced apart rods interconnected by vertically oriented links in attached relation to adjacent pairs of said rods, each said link having a slot of a selected size therein, plural transparent plastic slats having operative horizontally oriented positions resulting from being projected through said slots of said links in



horizontal alignment with each other, each said slat being of a transverse size such that the opposite ends thereof extend through said guideway slots into said hollow members, and crimps in the construction material of each of said slats at said opposite ends within said hollow members effective to modify the shape thereof so as to obviate sliding movement of said slat ends through said slots of those of said links adjacent said ends, whereby said crimped slat ends are only nominally vulnerable to tampering in said hollow members while being effective in maintaining said slats in position on said grille.

4,282,921

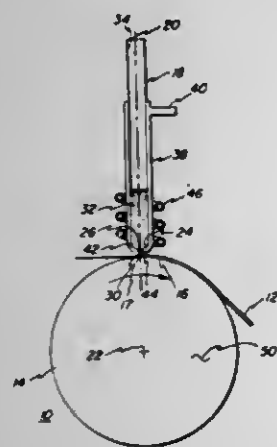
#### METHOD FOR MELT PUDDLE CONTROL AND QUENCH RATE IMPROVEMENT IN MELT-SPINNING OF METALLIC RIBBONS

Howard H. Liebermann, Gloversville, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 17, 1979, Ser. No. 76,364

Int. Cl.<sup>3</sup> B22D 11/06

U.S. Cl. 164-463



1. An improved method for chill-block melt-spinning metallic ribbon comprising preparation of a molten alloy in a reservoir in a crucible, ejecting a melt stream of said molten alloy through an orifice in said crucible onto a moving substrate surface to form a molten alloy puddle thereon, and rapidly quenching said ejected alloy to form a continuous metallic ribbon from said molten alloy puddle, the improvement comprising

supplying a confluent gas at a predetermined flow rate, said confluent gas being coaxial with and encompassing said ejected melt stream and bearing down on and surrounding, said molten alloy puddle as said ribbon is formed therefrom.

#### 4,282,922 LEAD COATED ALUMINA FIBER AND LEAD MATRIX COMPOSITES THEREOF

Hans S. Hartmann, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 16, 1980, Ser. No. 150,423

Int. Cl.<sup>3</sup> B22D 19/14

U.S. Cl. 164-97

5 Claims

1. A process for preparing lead-coated alumina fibers useful for reinforcement in lead matrix composites, comprising applying to the alumina fibers a solution or dispersion of glass containing at least about 74% lead oxide or an equivalent amount of a precursor thereof, heating the coated fiber to form an adherent glass film on the fiber and submitting the coated fiber to a reducing atmosphere at a temperature of from 600° C. to 900° C. to reduce the lead oxide to metallic lead.

5. A process for preparing a lead matrix composite wherein lead-coated alumina fibers of claim 1 are infiltrated with molten lead and the lead solidified.

4,282,923

#### REGENERATIVE HEAT EXCHANGE SYSTEMS

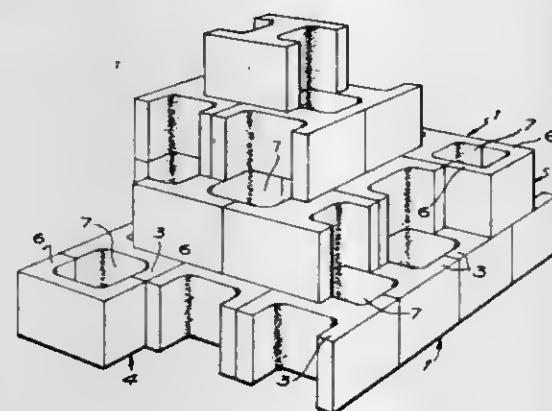
Stuart E. Cheetham, Sheffield, England, assignor to GR-Stein Refractories Limited, Sheffield, England

Filed Nov. 15, 1978, Ser. No. 961,045

Int. Cl.<sup>3</sup> F28D 17/00

U.S. Cl. 165-9.1

5 Claims



1. A regenerative heat exchange system comprising a multiplicity of refractory members laid in adjacent parallel rows to form one course in the system, each refractory member being so shaped as to provide a central generally web-like portion with flanges towards each end of the generally web-like portion extending to both sides, such that when the refractory members are laid, the flanges on adjacent refractory members abut to form a gas passageway or duct through that first course, the refractory members of an adjacent course being similarly shaped and arranged in parallel rows with the refractory members turned through 90° with respect to the refractory members of the first row and being off-set therefrom, the flanges of adjacent members in each row in the said second course again abutting to form a gas passageway or duct through the adjacent course, each gas passageway or duct in the adjacent course constituting a continuation of a respective gas passageway or duct in the said one course.

4,282,924

#### APPARATUS FOR MECHANICALLY CLAMPING SEMICONDUCTOR WAFER AGAINST PLIABLE THERMALLY CONDUCTIVE SURFACE

Ronald A. Faretra, Melrose, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Mar. 16, 1979, Ser. No. 21,362

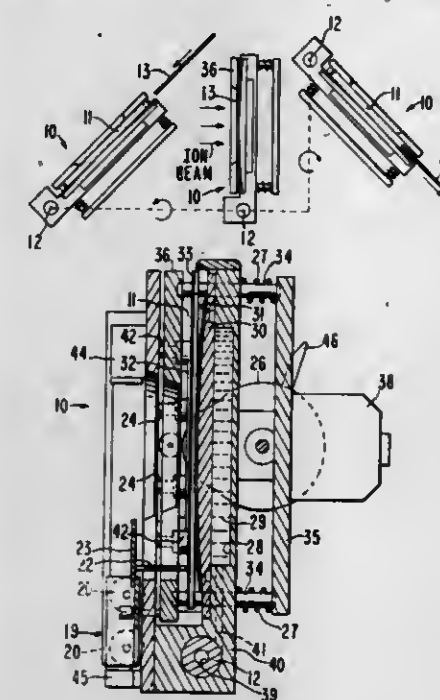
Int. Cl.<sup>3</sup> B23Q 3/00

U.S. Cl. 165-80 E

8 Claims

1. An apparatus for providing active cooling for semiconductor wafers during implantation in an ion implantation chamber, comprising

a housing incorporating a convexly curved platen, said platen having a coating of a pliable thermally conductive material adhered to the surface thereof;  
a clamping ring mounted within said housing in slidable relationship with said convexly curved platen, the travel of said clamping ring ranging between a receiving or eject position wherein said clamping ring and said convexly curved platen define a slot for receiving or rejecting a semiconductor wafer and a locked position wherein a



semiconductor wafer is firmly pressed against said convexly curved platen by the contact of said clamping ring against said semiconductor wafer at its circumferential edge, said wafer substantially conforming on its back side to the contour of said convexly curved platen;  
actuating means for determining the position of said clamping ring with respect to said convexly curved platen; and active cooling means for transferring thermal energy from said platen.

4,282,925

#### SCRAPED SURFACE HEAT EXCHANGER

Lloyd F. Hay, Oakdale; Albert F. Rica, and J. R. Webber, both of Stockton, all of Calif., assignors to FranRica Mfg. Inc., Stockton, Calif.

Filed Mar. 26, 1980, Ser. No. 134,266

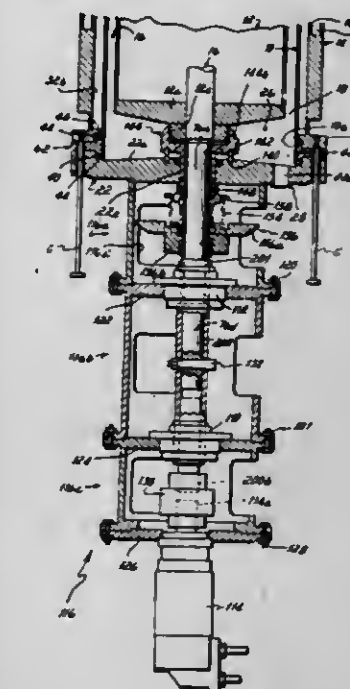
Int. Cl.<sup>3</sup> F28F 5/00

U.S. Cl. 165-94

15 Claims

1. A heat exchanger comprising:  
a heat exchange cylinder having an inlet end and an outlet end,  
a rotatable element positioned within said heat exchange cylinder and defining therewith a product flow chamber having an inlet end and an outlet end between which product flows in said product flow chamber in heat transfer relation to said heat exchange cylinder,  
a thermally insulated jacket surrounding said heat exchange cylinder and spaced therefrom to define a flow chamber for a medium which is in heat transfer relation to said product via said heat exchange cylinder,  
a drive shaft connected to said rotatable element, said drive shaft having a longitudinal axis of rotation,  
an inlet end closure enclosing said inlet end of said heat exchange cylinder and having a product inlet opening communicating with said inlet end of said product flow chamber, said inlet end closure having a drive shaft opening through which said drive shaft passes,  
an outlet end closure enclosing said outlet end of said heat exchange cylinder and having a product outlet opening communicating with said outlet end of said product flow chamber,

a stationary annular seal encircling said drive shaft and mounted to said inlet end closure,  
a rotatable annular seal encircling said drive shaft disposed axially inwardly of said stationary seal in sealing relation therewith,  
a seal carrier surrounding said drive shaft and mounting said rotatable seal, said carrier being generally axially movable and angularly immovable relative to said drive shaft,



means biasing said carrier axially outwardly relative to said drive shaft to urge said rotatable seal against said stationary seals and thereby preload said seal with a predetermined preload sealing force,  
an indicator element extending outwardly from said carrier through said drive shaft opening in said inlet end closure which moves axially with said carrier relative to said drive shaft when said seals wear to provide a visual indication of seal wear.

4,282,926

#### COOLING OF FLUID STREAMS

Kenneth B. D. Holland, Forestville, Australia, assignor to James Howden and Company Australia Pty. Limited, Australia

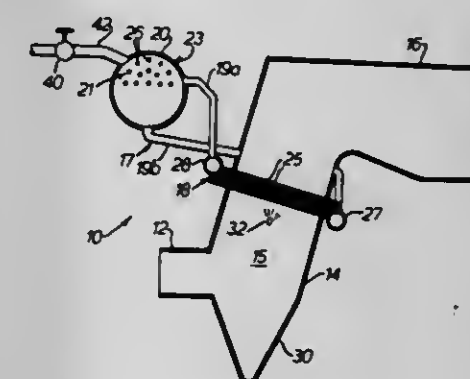
Filed Feb. 22, 1979, Ser. No. 14,087

Claims priority, application Australia, Feb. 24, 1978, PD3507/78; Jun. 9, 1978, PD4663/78

Int. Cl.<sup>3</sup> F28D 15/00

U.S. Cl. 165-1

6 Claims



1. A method for cooling a gas stream in a manner to provide a time lag between a failure of a cooling fluid supply and a consequent rise in the discharge temperature of the said gas stream comprising:  
passing the gas stream through a duct into heat exchange relationship with the liquid phase of a secondary fluid in a primary heat exchanger whereby to vaporize the liquid; recondensing the vaporized secondary fluid by passing it



through a secondary heat exchanger into heat exchange relationship with a third fluid which is introduced into the secondary heat exchanger at ambient temperature and which exits therefrom without having undergone a phase change;

allowing the secondary fluid to circulate between the primary and secondary heat exchangers substantially without loss of the secondary fluid unless the pressure of the secondary fluid exceeds a predetermined value which is above atmospheric pressure, the secondary fluid being substantially in the vapor phase when passing from the primary to the secondary heat exchanger and being substantially in the liquid phase when travelling from the secondary to the primary heat exchanger;

the secondary fluid being so chosen and the rate of condensation in the secondary heat exchanger being so controlled that the pressure of the secondary fluid is normally maintained below the said predetermined value; and, in the event that the third fluid stream fails, venting the vaporized secondary fluid to maintain the pressure of the secondary fluid below the said predetermined value.

4,282,927

## MULTI-PASS HEAT EXCHANGER CIRCUIT

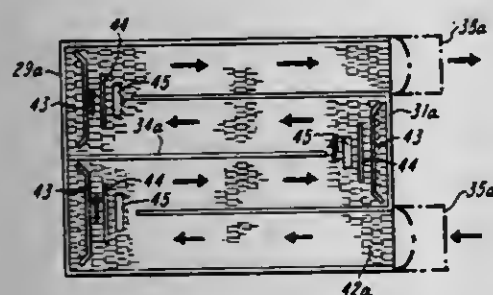
Carl E. Simmons, Oxford, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio

Filed Apr. 2, 1979, Ser. No. 25,773

Int. Cl.<sup>3</sup> F28F 3/02

U.S. Cl. 165—166

8 Claims



1. A plate and fin heat exchanger in which a flowing fluid is compelled to make plural passes through the heat exchanger at least at one level thereof, including

- superposing plates at said one level;
- marginal plate spacer means defining an internal flow area between said plates having an inlet and an outlet;
- at least one divider member positioning intermediately of said spacer means to have an inner end terminating within said flow area and defining with said spacer means and with one another a circuitous flow path between said inlet and said outlet including plural passes paralleling said divider member, said flow path further including a portion of transverse extent around the inner end of said divider member;
- and a single continuous layer of a secondary heat transfer material occupying the entirety of said flow area including said flow passes and said portion of transverse extent of said flow path and providing fin-like corrugations approximately parallel to said divider member and extending beyond the said inner end of said divider member to and through said portion of transverse extent of said flow path, said layer being slotted to accommodate said divider member;
- and corrugations of said layer being slit at least in the location of said flow path portion of transverse extent to provide for fluid flow transversely of said corrugations in said portion.

4,282,928

## METHOD FOR CONTROLLING PERMEABILITY OF SUBTERRANEAN FORMATIONS

Charles J. McDonald, Midland, Mich.; John V. Van Landingham, Sapulpa, Okla., and Steven P. Givens, Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 813,903, Jul. 8, 1977, Pat. No. 4,182,417.

This application Sep. 17, 1979, Ser. No. 76,113

The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> E21B 21/00, 33/138

U.S. Cl. 166—274

6 Claims

1. In a well drilling method wherein a drilling fluid is injected into a borehole in the earth during the drilling of the borehole, the improvement which comprises injecting as the drilling fluid a fluid medium containing discrete spheroidal microgels of a water-swellaible or water-swollen crosslinked polymer in an amount sufficient to reduce the loss of the drilling fluid via penetration of porous subterranean strata proximate to the borehole, said polymer being crosslinked with from about 5 to about 200 weight parts of copolymerizable polyethylenic monomer per million parts of total monomers of the polymer.

2. In an enhanced oil recovery method in which an aqueous drive fluid is injected through an injection well bore into a hydrocarbon-bearing nonfractured formation having hydrocarbon-deficient and hydrocarbon-rich zones to drive hydrocarbon from the formation to a recovery well, the improvement wherein an aqueous fluid medium containing discrete, spheroidal microgels of a water-swellaible or water-swollen, crosslinked polymer of ethylenically unsaturated water-soluble monomer(s) is introduced through the injection well bore into the formation in an amount sufficient to reduce the aqueous fluid permeability of the porous formation, said polymer being crosslinked with from about 5 to about 200 weight parts of copolymerizable polyethylenic monomer per million parts of total monomers of the polymer and said microgels in at least a partially water-swollen state having diameters in the range from about 0.5 to about 200 micrometers, thereby restricting the passage of the drive fluid into hydrocarbon-deficient zones of the formation but not substantially impeding the passage of the drive fluid through hydrocarbon-rich zones of the formation.

4,282,929

## METHOD OF CONTROLLING SCALE IN OIL RECOVERY OPERATIONS

Richard W. Krajciek, Houston, Tex., assignor to Carmel Energy, Inc., Houston, Tex.

Filed Jul. 30, 1979, Ser. No. 61,673

Int. Cl.<sup>3</sup> E21B 43/24, 43/27

U.S. Cl. 166—303

1 Claim

1. A method of producing heavy viscous petroleum crude oil from a subterranean formation which comprises the steps of:

- a burning a sulfur containing fuel with a substantially stoichiometric amount of air in a pressurized combustion chamber to achieve substantially complete combustion of the fuel, in the presence of sufficient injected water to maintain temperatures of from about 590° C. to about 2200° C., to form a combustion gas;
- injecting water and ammonia into the combustion gas to produce a thermal vapor stream;
- warming downstream piping and a well bore communicating with a subterranean deposit of heavy viscous petroleum crude oil, venting a portion of the vapor stream from the well to maintain gas velocity in the well to lift condensed liquids from the well, for a time sufficient to warm the piping, well bore and the subterranean formation adjacent the well bore;
- ceasing the venting from the well and reducing the injection of ammonia into the combustion gases and water into the combustion chamber to allow acidic compounds, formed

in the pressurized combustion chamber, to be injected into the subterranean formation through the well bore with the vapor stream whereby the acidic compounds in the vapor stream increase the acidity of the connate water in the formation;

discontinuing the injection of the thermal vapor stream when the formation and oil is heated; and

recovering the petroleum crude oil from the well bore.

4,282,930

## PROCESS FOR THE RECOVERY OF PETROLEUM FROM SUBTERRANEAN FORMATIONS

Karl-Heinz Grodde, and Hartwig Volz, both of Celle, Fed. Rep. of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,537

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811666

Int. Cl.<sup>3</sup> E21B 43/22

U.S. Cl. 166—305 R

4 Claims

1. In a process for the recovery of petroleum from underground formations by means of a polymer flood employing a salt-sensitive partially hydrolyzed polyacrylamide in soft water, the improvement comprising the injection of a slug of a solution of a salt-insensitive polymer in soft water, immediately prior to the undertaking of said polymer flood, said salt-insensitive polymer being selected from the group consisting of a polysaccharide, a polyacrylamide hydrolyzed from 0% to 15%, and a cellulose ether.

4,282,931

## METAL HYDRIDE ACTUATION DEVICE

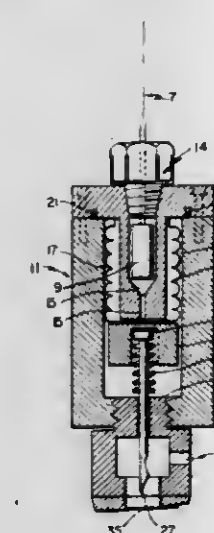
Peter M. Golben, St. Paul, Minn., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 23, 1980, Ser. No. 114,522

Int. Cl.<sup>3</sup> A62C 35/02, 37/18; B67B 7/24

U.S. Cl. 169—61

10 Claims



1. A metal hydride actuation device comprising:

- a container having a metal hydride material located therein, said container being constructed to act as a storage medium for the material and capable of allowing any released gases therefrom to freely pass through the container's walls;
- means to supply heat to the metal hydride in its container;
- a first chamber substantially surrounding the container on all sides and having an expandable volume under the influence of gaseous pressure;
- a second chamber substantially surrounding the first chamber and formed by a housing containing a member capable of reciprocal movement;
- biasing means in the second chamber to normally maintain the reciprocating member against the first chamber; and
- means for actuating the discharge of a triggering medium

whereby upon the application of heat to the metal hydride hydrogen gas is liberated from the container to build up a gaseous pressure in the first chamber until the pressure is sufficient to move the reciprocating member from its normal position against the biasing member and thereby cause the means for actuating to trigger the medium.

4,282,932

## ROCK PICKER

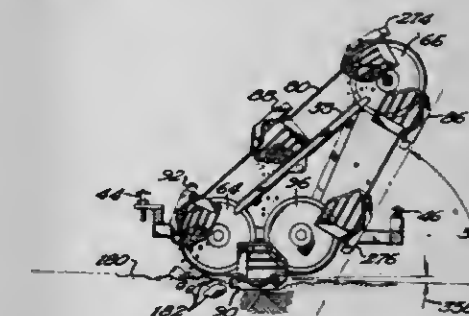
Raymond R. Anderson, Box 218, Ray, N. Dak. 58849

Filed Nov. 1, 1979, Ser. No. 90,317

Int. Cl.<sup>3</sup> A01D 19/02; A01B 17/00

U.S. Cl. 171—63

14 Claims



1. A rock picker comprising:

- a plurality of buckets for scraping the ground and having substantial openings which selectively retain rocks of at least a predetermined size in said buckets but which allow soil to exit from said buckets through said openings;
- conveyor means for conveying said buckets into, across, and out of the ground and for conveying said buckets such that rocks retained by said buckets may be collected, said conveyor means comprising a cable means which is attached to said buckets and a plurality of guide means for guiding said cable means such that said buckets are conveyed into, across, and out of the ground and are conveyed such that rocks retained by said buckets may be collected, wherein the angle of attack at which said buckets are conveyed across the ground is approximately 4° and wherein said conveyor means conveys said buckets upwardly away from the ground for a substantial distance such that substantially all of the soil scraped into said buckets is caused to fall from said openings in said buckets;
- vehicle means for transporting said buckets and said conveyor means across the ground; and
- collector means for collecting the rocks retained by said buckets, said collector means being mounted on said vehicle means.

4,282,933

## AUTOMATIC CONTROL DEVICE FOR AN EARTH WORKING EQUIPMENT

Takashi Suganami, Fujisawa; Tasbiro Takeda, Hiratsuka; Tetuya Nakayama, Fujisawa; Kob Shimizu, Tokyo, and Teruo Manseki, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 7, 1979, Ser. No. 46,179

Claims priority, application Japan, Feb. 2, 1978, 53/11298

Int. Cl.<sup>3</sup> A01B 63/111; E02F 3/76

U.S. Cl. 172—4.5

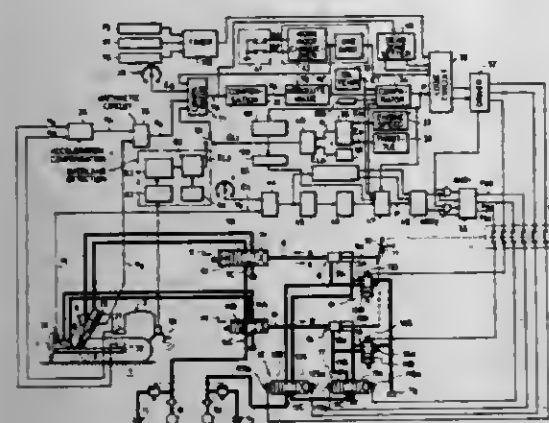
8 Claims

8. An automatic control system for use in earth working equipment of the type which includes a body, a movable frame coupled to the body and a blade carried on the frame, said control system comprising:

- inclinometer means for providing at least one inclination signal corresponding to the inclination of the body, wherein said at least one inclination signal includes an unwanted acceleration component caused by movement of the body;
- an acceleration compensation arithmetic circuit connected to the inclinometer means for substantially removing said



acceleration component to thereby provide an output signal which is substantially a function of body inclination alone;  
detection means for providing an output corresponding to the angle of the frame with respect to the body;



an inclination arithmetic circuit for receiving the outputs of the acceleration compensation circuit and the detection means and for calculating a present inclination angle of the frame with respect to the ground; and blade control means for controlling the position of the blade in response to the difference between the present inclination angle and a reference value.

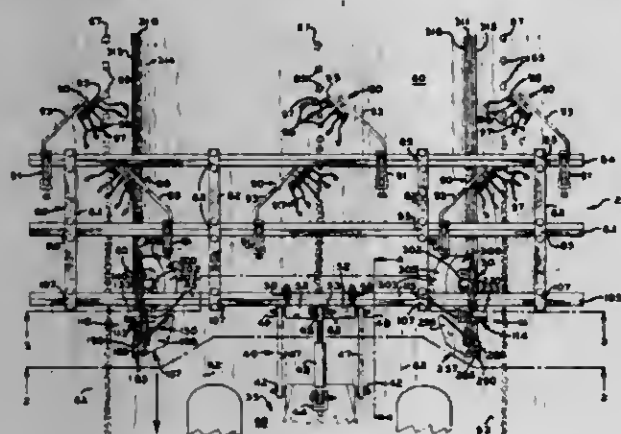
4,282,934

# GUIDANCE SYSTEM FOR AGRICULTURAL IMPLEMENTS

Paul A. Bezzerides, P.O. Box 211, Orosi, Calif. 93647  
Filed Sep. 4, 1979, Ser. No. 72,447  
Int. Cl.<sup>3</sup> A01B 69/00

U.S. Cl. 172-26

3 Claims



3. A guidance system for agricultural implements comprising:

- A. a frame;
- B. means for mounting the frame for earth traversing movement in a direction of travel and limited lateral adjustment;
- C. a pair of scraper blades mounted on the frame spaced from each other transversely of said direction of travel for scraping earth engagement and said blades having corresponding edges inclined substantially transversely of the direction of travel from corresponding lower ends to corresponding upper ends oppositely outwardly spaced from the lower ends to form spaced, substantially parallel first and second tracks during said scraping earth engagement inclined upwardly and outwardly transversely of the direction of travel; and
- D. a pair of wheels mounted on the frame for rolling earth engagement spaced from each other transversely of the direction of travel and individually in trailing relation with respect to the direction of travel to the scraper blades of said pair and said wheels mounted on the frame for rotational movement about individual axes of rotation

individually substantially parallel to the tracks formed by the scraper blades with respect to which they are in trailing relation so as to dispose said wheels in inclined attitudes in individual outward engagement with said tracks resisting said lateral adjustment of the frame to guide said earth traversing movement thereof.

4,282,935

# MULTIPLE SECTION, ADJUSTABLE WIDTH PLOW

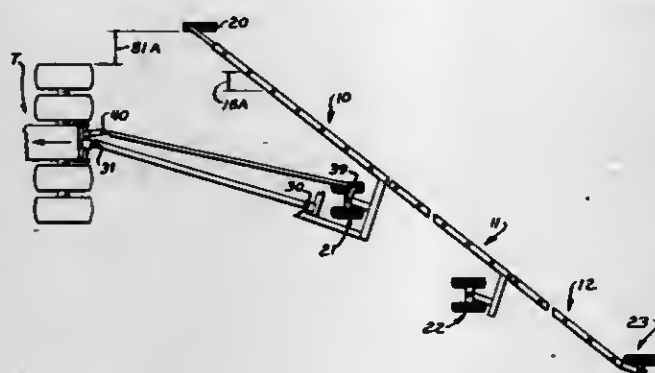
William J. Dietrich, Congerville, Ill., assignor to DMI, Inc., Goodfield, Ill.

Filed Sep. 18, 1979, Ser. No. 76,588

Int. Cl.<sup>3</sup> A01B 69/00, 69/08, 63/22

U.S. Cl. 172-284

10 Claims



1. An adjustable width plow adapted to be pulled by a tractor comprising a forward section, an intermediate section and a rear section, each including a frame; means for connecting adjacent ends of said frames of said sections together for relative pivotal motion about horizontal axes; a plurality of plow units on said frame of each of said sections, said units being connected together and mounted for rotation about respective vertical axes in unison; first support wheel means for supporting said frames adjacent the rear end of said first section and adapted to run on unplowed land; first steering means for steering said first support wheel means in response to the turning of said tractor, said steering means being further responsive to the setting of the cutting width of said plow units for adjusting said first support wheel means to steer in the proper direction under plowing operation at the adjusted width setting of the plow units; second support wheel for supporting said frames adjacent the rear end of said intermediate section and adapted to run on unplowed land and including means for turning said second support wheel means in response to the setting of the cutting width of said plow units but not in response to the turning of said tractor; and support caster wheel means for supporting said frames.

4,282,936

# QUICK ACTING COUPLER FOR CULTIVATOR ATTACHMENT

Daniel M. Zuhone, and Mark S. Coleman, both of R.R. 4, Mattoon, Ill. 61938

Filed Jun. 20, 1979, Ser. No. 50,460

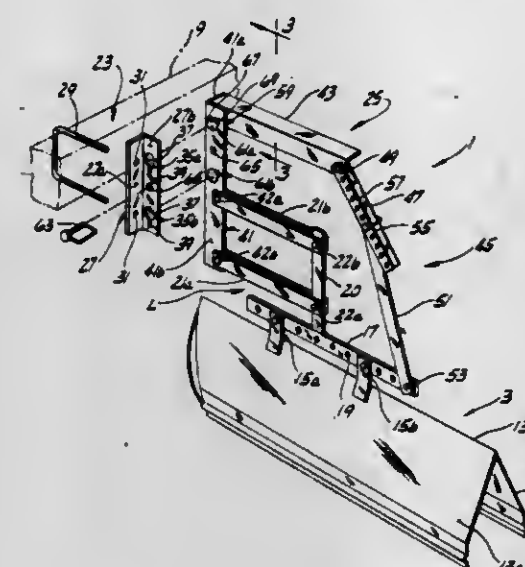
Int. Cl.<sup>3</sup> A01B 39/26

U.S. Cl. 172-512

10 Claims

1. A system for easily and quickly coupling and uncoupling a cultivator attachment, such as a cultivator shield or fender, to a cultivator, the latter including a cultivator frame adapted to be hitched to a tractor or other prime mover for movement of the cultivator through a field to be cultivated, said cultivator frame including a generally horizontal tool bar extending transversely of the direction of travel of the prime mover substantially the entire width of said cultivator, said coupling system comprising a hitching member adapted to be securely fastened to said tool bar at any desired location therealong for attachment of said cultivator attachment to said tool bar at any desired position along said tool bar, a mounting frame for said

cultivator attachment, said mounting frame including a vertical member having a vertical portion thereof adapted to be disposed relative to said hitching member for securement of said cultivator attachment to said cultivator frame, and quick acting fastening means for the ready securement of said hitching member and said vertical member together and for the ready uncoupling thereof, said fastening means comprising pin and slot fastener means including a headed pin extending in generally transverse direction from either said vertical member or from said hitching member, said headed fastener having a shank and an enlarged head on said shank with said head being spaced from the member on which said pin is secured, the



other of said members having a slot therein for reception of said headed fastener, said slot including an enlarged portion for reception of said shank, further, said hitching member and said vertical member each having a hole therethrough, these last-said holes being in register with one another when said headed fastener is received in said slot, and a removable fastener insertable through said holes whereby upon said headed fastener being inserted in its respective slot and upon said removable fastener inserted through its respective holes, said cultivator attachment is rigidly secured to said tool bar at said desired position therealong.

4,282,937

# HAMMER

George A. Hibbard, Claremont, N.H., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

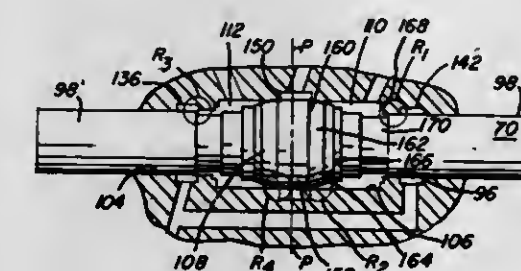
Continuation of Ser. No. 680,822, Apr. 28, 1976, abandoned.

This application Jun. 25, 1979, Ser. No. 51,928

Int. Cl.<sup>3</sup> B25D 9/00

U.S. Cl. 173-1

31 Claims



1. A hydraulic drive for actuating a tool structure comprising: a body member having an elongated bore therein with one end of said bore being adapted to receive at least a portion of an actuatable tool structure internally thereof, an elongated piston axially reciprocal within said bore to deliver impact blows to such a tool structure, said bore having an intermediate axially extending formed portion, said piston having an axially intermediate head portion cooperable with said formed portion to define chamber portions within said bore on axially opposite

sides of said head portion which chamber portions vary inversely in volume as said piston reciprocates, first passageway means in said body member having hydraulic fluid flow through portions thereof controlled by said piston upon reciprocation thereof to provide for selective admission of hydraulic fluid to said chamber portions, and second passageway means in said body member having fluid flow communication alternately with said chamber portions controlled by said head portion of said piston during reciprocation thereof to provide at least substantially continuous discharge of hydraulic fluid from said chamber portions.

4,282,938

# VIBRATION INSULATION DEVICE FOR HANDLE OF VIBRATORY MACHINE

Makoto Minamidate, Miura, Japan, assignor to Yokosuka Boat Kabushiki Kaisha, Yokosuka, Japan

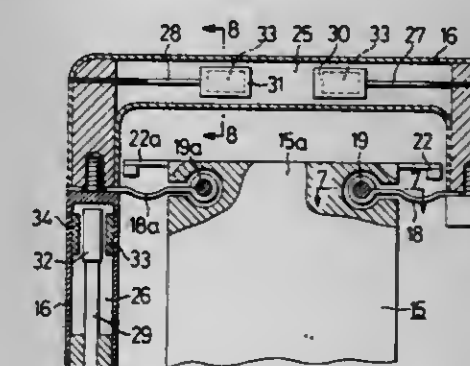
Filed Dec. 13, 1978, Ser. No. 968,980

Claims priority, application Japan, Mar. 25, 1978, 53/34393

Int. Cl.<sup>3</sup> E21B 3/00

U.S. Cl. 173-162 H

10 Claims



1. In a vibratory machine in which a unidirectional vibration is caused by a vibration source in a direction perpendicular to the longitudinal direction of a handle of said machine, said handle having a grip, a device for insulating said handle from said vibration comprising:

- a spring interposed between the vibration source and said handle, for free displacement in the direction of said vibration;
- a dynamic vibration absorber including a conductive weight plate suspended in a cavity formed in the grip of said handle so as to be adapted to float along the direction of said vibration and extending in the same direction as said vibration, and a pair of permanent magnets disposed in said cavity and adapted to produce a magnetic field acting at a right angle to said plate.

4,282,939

# METHOD AND APPARATUS FOR COMPENSATING WELL CONTROL INSTRUMENTATION FOR THE EFFECTS OF VESSEL HEAVE

L. Donald Maus; Jerry M. Speers, both of Houston, Tex., and James D. Howell, Grétna, La., assignors to Exxon Production Research Company, Houston, Tex.

Filed Jun. 20, 1979, Ser. No. 50,351

Int. Cl.<sup>3</sup> E21B 7/12

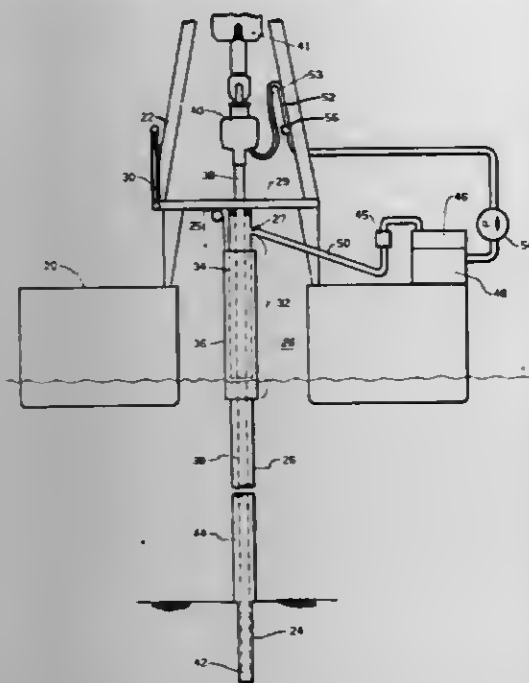
U.S. Cl. 175-7

19 Claims

1. A method for determining the flow of a drilling fluid during a floating drilling operation having a marine riser and a telescoping section, said method comprising:  
determining a reference position on the telescoping section;  
and



measuring the volume of drilling fluid flowing from said telescoping section during the time period in which said



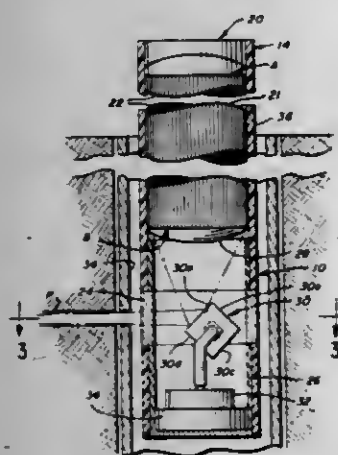
telescoping section moves away from and back to the reference position.

4,282,940

**APPARATUS FOR PERFORATING OIL AND GAS WELLS**  
Winfield W. Salisbury, Scottsdale, and Walter J. Stiles, Phoenix, both of Ariz., assignors to Magnafrac, Fort Worth, Tex.  
Division of Ser. No. 894,261, Apr. 10, 1978, Pat. No. 4,199,034.  
This application Sep. 11, 1979, Ser. No. 74,497  
Int. Cl.<sup>3</sup> E21B 7/00

U.S. Cl. 175-11

3 Claims

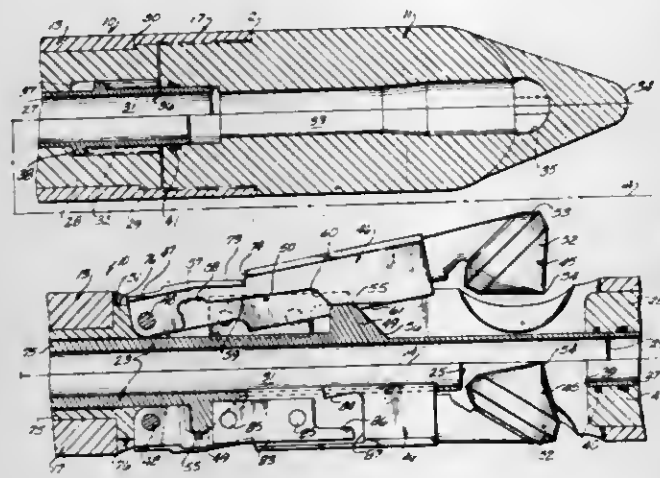


1. Apparatus for increasing the recovery flow from a bore hole casing of an oil or gas well by projecting a flow hole through the casing and through adjoining subsurface formations at a selected depth, the apparatus comprising surface mounted laser generator means for generating a high-powered coherent light beam, transmitting means including a fiber optics cable having a bundle of fibers of internal refracting transparent material disposed in distributed relation within the casing for transmitting the beam in an axial path following relation through the casing from the top thereof to the selected depth therein, and beam control means within the casing at said depth for laterally deflecting the beam for focusing the deflected beam to project a flow hole laterally through the casing and the adjoining subsurface formations.

4,282,941  
**UNDERREAMER WITH LARGE CUTTER ELEMENTS AND AXIAL FLUID PASSAGE**  
Gregg S. Perkin, Redondo Beach, Calif., assignor to Smith International Inc., Newport Beach, Calif.  
Filed Apr. 18, 1979, Ser. No. 31,170  
Int. Cl.<sup>3</sup> E21B 9/26

U.S. Cl. 175-267

26 Claims



1. A borehole underreamer comprising a tubular body adapted at an upper end thereof for coaxial connection to a rotary drill string, a plurality of cutter means support arms having upper and lower ends, the arms being disposed at selected locations around the circumference of the body at a selected point therealong and being mounted at their upper ends for pivotal motion relative to the body between (a) retracted positions in which the arms are disposed essentially within the outer diameter of the body and (b) opened positions in which the arm lower ends are disposed a selected distance outwardly of the exterior of the body, cutter means mounted to the lower end of each arm and configured to extend essentially to the center of the body when the arm is in its retracted position, actuator means in the body selectively operable for moving the arms from their retracted to their opened positions, the actuator means including an open ended tubular element movable downwardly in the body coaxially thereof during operation of the actuator means from (a) an upper position wherein the lower end of the element is disposed above the locations occupied by the cutter means in the retracted positions of the arms to (b) a lower position wherein the lower end of the element is disposed below said cutter means locations, the body having a fluid flow passage therealong comprised of upper and lower axial passage sections respectively above and below said cutter means retracted positions, the lower passage section including means engageable with the lower end of the tubular element in the lower position of the element for connecting the passage upper and lower sections in fluid flow relation via the tubular element.

4,282,942  
**UNDERREAMER WITH PORTED CAM SLEEVE UPPER EXTENSION**

Thomas L. Longmore, Long Beach, Calif., assignor to Smith International Inc., Newport Beach, Calif.  
Filed Jun. 25, 1979, Ser. No. 51,684  
Int. Cl.<sup>3</sup> E21B 10/33

U.S. Cl. 175-269

14 Claims

12. A borehole tool having an axial liquid flow passage therealong and operable between actuated and unactuated states, the tool comprising an actuator including an axially movable tube defining at least a portion of the passage and having limits of travel corresponding to the actuated and unactuated states of the tool, an annular piston chamber formed about the tube so that a portion of the tube defines the inner wall of the chamber, said piston being driven by piston driving fluid, an annular piston movable with the tube and disposed in

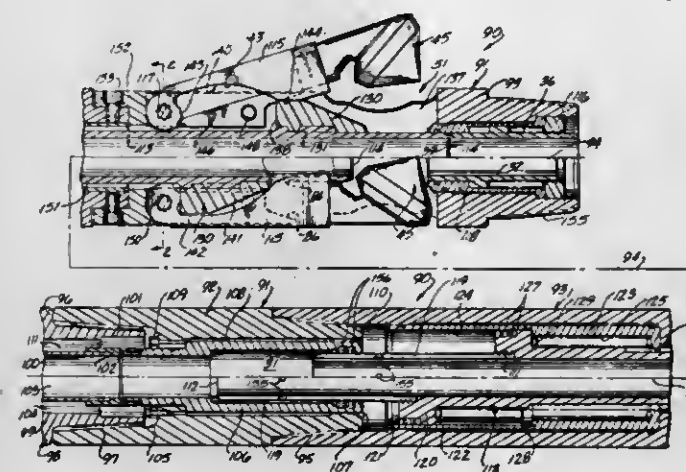
the piston chamber, seal means cooperating with the exterior of the tube, fluid flow ports through the tube, the seal means and the ports being so disposed relative to each other and to the tube limits of travel that the seal means close the ports from the piston chamber when the tube is at its limit corresponding to the unactuated state of the tool and the ports are open to the

removed from the ground, a substantially cylindrical void is provided without undue soil compaction.

4,282,944  
**WIND POWER SYSTEM**  
J. Walter Trumpy, 14820 Sunset Blvd., Pacific Palisades, Calif. 90272  
Filed May 22, 1979, Ser. No. 41,488  
Int. Cl.<sup>3</sup> B60L 11/18

U.S. Cl. 180-2

15 Claims



piston chamber for diverting at least some of the driving fluid directly into the axial liquid flow passage, when the tube is at its limit corresponding to the actuated state of the tool, the tool also comprising means for communicating piston driving fluid to the piston chamber in at least the unactuated state of the tool.

4,282,943

**LAWN AERATOR**

Joseph Leitner, 1868 Del Mar Ave., Redding, Calif. 96003  
Filed May 23, 1979, Ser. No. 41,543  
Int. Cl.<sup>3</sup> E21B 10/44

U.S. Cl. 175-394

1 Claim



1. An aerator comprising a solid elongate shaft terminating at one end in an imperforate drilling portion integral with said shaft, said elongate shaft having a length substantially greater than the length of said drilling portion, the other end of said elongate shaft adapted to be mounted in an associated electric drill to permit a person standing erect to insert said drilling portion into the ground, said drilling portion having a substantially helical configuration forming a single spiral flight to provide a plurality of shelf portions, said drilling portion having a horizontally disposed, outwardly flaring end portion of triangular shape terminating in a pointed tip which forms a small portion of a shelf portion, said end portion being provided with a radially extending cutting edge for cutting into soil or the like for movement of the soil upwardly on said shelf portions during the rotation of said elongate shaft by said associated electric drill whereby when said drilling portion is

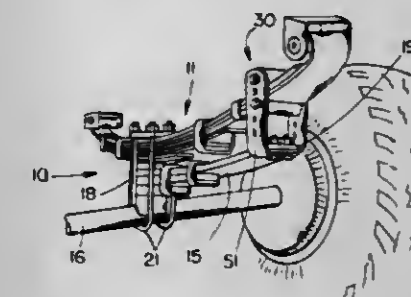
4,282,945  
**SUSPENSION MODIFYING DEVICE FOR LEAF SPRING SUSPENSIONS**

Robert L. Bessey, Alto, Mich., assignor to Grand Rapids Spring Service Co., Grand Rapids, Mich.

Filed Jan. 31, 1980, Ser. No. 117,102  
Int. Cl.<sup>3</sup> B60G 11/10

U.S. Cl. 180-71

5 Claims



2. A combination traction bar, chassis lifting and suspension modifying device for four-wheel drive heavy duty vehicles having leaf spring suspensions comprising:  
a longitudinally extending beam adapted to be clamped below a vehicle leaf spring, between the vehicle leaf spring and axle of a vehicle for lifting the chassis of the vehicle, said beam having first and second longitudinally opposed ends, said first end of said beam being clamped between the vehicle leaf spring and axle of the vehicle; means for engaging the vehicle leaf spring disposed on said second end of said beam to prevent wrap-up of the vehicle



axle about the vehicle leaf spring during rapid acceleration or deceleration;  
said beam comprising a plurality of longitudinally extending flexible leaf spring members for stiffening the spring rate of the vehicle leaf springs during large suspension deflections;  
said means for engaging the vehicle leaf spring comprising a bifurcated member secured to said second end of said beam, said bifurcated member having first and second upstanding ends encompassing the sides of the vehicle leaf spring and first and second vertically spaced elastomer rollers encompassing the top and bottom of the vehicle leaf spring to facilitate longitudinal and vertical movement of the vehicle leaf spring and thus provide an unmodified spring rate preserving the ride of the vehicle under light load conditions.

4,282,946

## MULTI-TERRAIN VEHICLE

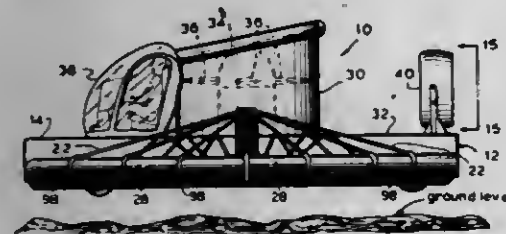
John C. MacGuire, 201 E. Ninth St., Casper, Wyo. 82601

Filed Jun. 26, 1979, Ser. No. 52,323

Int. Cl.<sup>3</sup> B60V 3/02

U.S. Cl. 180—128

11 Claims



1. A multi-terrain vehicle for use over a variety of terrain having a body portion, means associated with said body portion for said vehicle to be in moving contact with the surface of said terrain and means for permitting said vehicle to remain above the surface of said terrain comprising a flexible portion for causing fluid to impinge upon the surface of said terrain and means for extending and folding said flexible portion, said flexible portion including rigid members and said means for extending and folding said flexible portion comprising vertical pivot means for rotatably connecting said rigid members to said body portion to permit said rigid members to be rotated in a substantially horizontal plane about said vertical pivot means.

4,282,947

## HYBRID VEHICULAR POWER SYSTEM AND METHOD

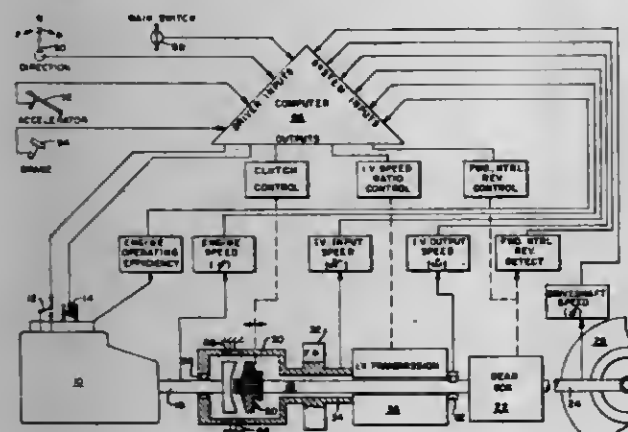
Yves J. Kemper, Birmingham, Mich., assignor to Vadetec Corporation, Troy, Mich.

Filed May 11, 1978, Ser. No. 904,776

Int. Cl.<sup>3</sup> B60K 9/00

U.S. Cl. 180—165

20 Claims



1. The method of propelling a vehicle having an engine, an energy storing flywheel, a drivewheel and an I.V. transmission having a range of input/output speed ratios variable from a

minimum in which output speed is reduced relative to input speed to a maximum, said method comprising the steps of:  
coupling the engine to the flywheel and the input of the I.V. transmission to drive the I.V. transmission input at engine speeds;  
coupling the output of the I.V. transmission to the drive-wheel and varying the speed ratio of the I.V. transmission from minimum to maximum to effect a first operational mode;  
coupling the engine to the drivewheel and to the output of the I.V. transmission to initiate a second mode of operation; and  
adjusting the speed ratio of the I.V. transmission in said second mode of operation to feed back excess power developed by the engine from the output of the I.V. transmission to the input thereof to drive the input and the flywheel at speeds to store the energy of said excess power.

4,282,948

## MOTOR VEHICLE PROPULSION SYSTEM

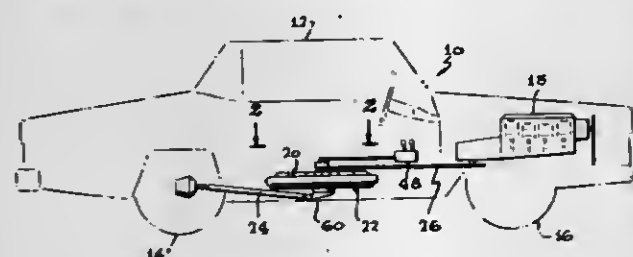
George A. Jerome, 8413 Fullbright Ave., Canoga Park, Calif. 91306

Filed Aug. 1, 1979, Ser. No. 62,673

Int. Cl.<sup>3</sup> B60K 9/04

U.S. Cl. 180—165

12 Claims



1. A motor vehicle propulsion system comprising:  
a motor vehicle, wheels on said motor vehicle for supporting, guiding and propelling said motor vehicle, an engine on said motor vehicle, said propulsion system interconnecting said engine and said propelling wheels, said propulsion system comprising two flywheels mounted on said motor vehicle for rotation in opposite directions about a flywheel axis, said engine being connected to rotate said flywheels, said flywheels having liquid therein, said axis being substantially vertical in said vehicle;  
a turbine positioned adjacent said flywheels for rotation on said axis, at least one nozzle mounted on at least one of said flywheels and interconnecting such flywheel and said turbine, said turbine being connected to said propelling wheels so that liquid in said nozzled flywheel having kinetic energy by reason of rotation of said flywheel by said engine can be discharged through said nozzle to said turbine to impart kinetic energy to said turbine and through said propelling wheels to said motor vehicle so that kinetic energy of said nozzled flywheel is converted to kinetic energy of vehicle motion, and liquid delivery from said nozzled flywheel to said nozzle to said turbine is controlled by a motor vehicle operator.

4,282,949

## HUB LOCKS FOR INDEPENDENTLY SUSPENDED WHEELS

Leonard F. Kopich, Madison Heights, and James A. Steele, Brighton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 29, 1979, Ser. No. 89,189

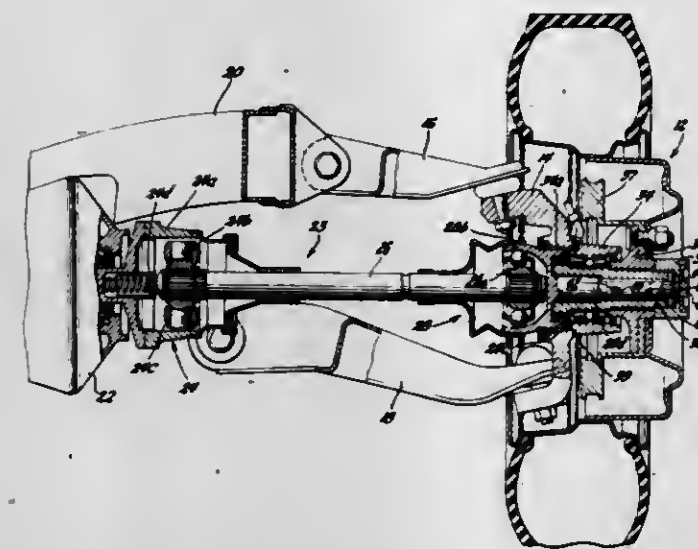
Int. Cl.<sup>3</sup> B60K 17/30; F16D 11/04

U.S. Cl. 180—252

2 Claims

1. A hub lock for a vehicle wheel which is rotatably mounted on an independently suspended hub and selectively

driven by a variable length drive axle which accommodates suspension travel and which has a telescopic universal joint of low end motion resistance at an inboard end connecting the drive axle to a drive device fixed on the vehicle frame, said hub lock comprising:  
a first positive clutch part which is connected to the vehicle wheel and which is journaled in the independently suspended hub in an axially fixed relationship,  
a second positive clutch part which is connected to a universal joint housing at an outboard end of the variable length drive axle and which is engageable with the first part for drivingly connecting the drive axle and the vehicle wheel,



said universal joint housing being slidably mounted in the hub for movement between a first position where said hub lock parts are disengaged and a second position where said hub lock parts are engaged,  
spring means extending the drive axle and biasing the universal joint housing in the first position where the clutch parts are disengaged and  
fluid motor means for retracting the drive axle and moving the universal joint housing to the second position where the clutch parts are engaged.

4,282,950

## MUFFLER

Peter Fuchs, Grenzstrasse 8, Köflach-Pichling, Austria (A-8581)

Filed Sep. 6, 1979, Ser. No. 72,942

Int. Cl.<sup>3</sup> F01N 1/10

U.S. Cl. 181—257

19 Claims



1. A muffler for use in conjunction with an internal combustion engine for reducing the noise level of exhaust gases emitted by the engine, the muffler comprising an elongated diffuser having the shape of a truncated cone, a smaller diameter defining an upstream end of the diffuser and a larger diameter defining a downstream end of the diffuser; a frustoconically shaped, perforated shell having an upstream, large diameter end coupled to the downstream end of the diffuser and a downstream, smaller diameter end, the shell including perforations; a generally cylindrical conduit having a first end attached to the downstream end of the shell, extending from the shell in a downstream direction, and including an opening adjacent a second end of the conduit; a housing surrounding the shell and the conduit and extending from the diffuser to a discharge end of the muffler; a sound absorbing material disposed between the shell and the housing; a baffle disposed within the housing to seal the opening and an annular space

between the conduit and the housing from the discharge end and at least one tube oriented substantially parallel to the conduit, extending past the baffle and having a first, intake end proximate the first end of the conduit and a second, outlet end, communicating with the discharge end so that exhaust gas entering the diffuser can travel through the conduit tube, the opening therein, the annular space and thereafter through the tube to the discharge end of the muffler.

4,282,951

## GAFF GUARD FOR LINEMEN'S CLIMBERS

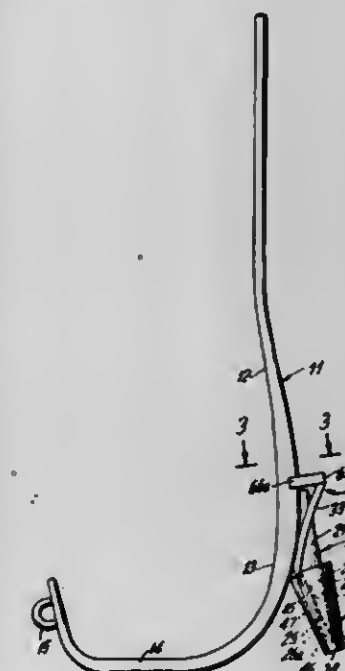
Ronald P. Zellins, Rockaway, Township, Morris County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,111

Int. Cl.<sup>3</sup> A63B 27/02

U.S. Cl. 182—221

7 Claims



1. A guard for the gaff of a lineman's climber having a leg iron to which said gaff is secured, said guard comprising a body of synthetic resinous material having parts comprising,

(a) a scabbard having a longitudinally elongated hollow interior for receiving the point of said gaff,

(b) a clip adapted to straddle transversely opposite sides of said leg iron at a location above said gaff and to there attach by a snap-on action to said leg iron, said clip comprising an arm longitudinally spaced from and disposed transversely of said scabbard, a pair of prongs joined to said arm on transversely opposite sides of the centerline of said interior and projecting rearward from said arm, and a pair of tabs each joined rearward of said arm to a respective one of said prongs and projecting therefrom inwardly towards each other to be disposed to make contact with the back face of said leg iron upon attachment thereto of said clip, and

(c) a resilient stem coupling said clip and scabbard together in fixed spatial relation when said stem is resiliently unstressed, said stem being connected to said arm by a junction thereof and to said scabbard by a junction of said arm and scabbard inwards of the outer side of said scabbard, and said junctions being transversely offset to the same side from said centerline to permit said stem to extend between said clip and scabbard to one transverse side of the base of said gaff.



4,282,952

## WHEEL ASSEMBLY

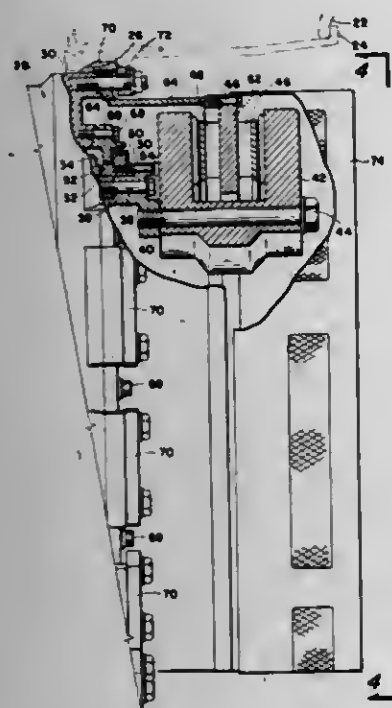
Francis A. Bartley, Tulsa, Okla., assignor to Paccar Inc., Bellevue, Wash.

Continuation-in-part of Ser. No. 846,926, Oct. 31, 1977, abandoned. This application May 18, 1979, Ser. No. 40,419

Int. Cl.<sup>3</sup> F16D 55/22

U.S. Cl. 188—18 A

19 Claims



1. An improved wheel assembly for large, off-highway vehicles or the like comprising a wheel having a central non-rotatable housing section and a radially outer rotatable wheel section including a rotatable outer hub and a wheel rim, said assembly comprising:

drive means mounted on said central non-rotatable housing section for transmitting driving forces to said outer wheel section;

brake caliper means mounted on said central housing section and disposed radially outwardly from the axis of rotation of said outer wheel section, said caliper means opening radially outwardly from said axis of rotation;

carrier means mounted on said outer hub section between said central non-rotatable housing section and said wheel rim; and

an annular brake disc supported by said carrier means and operably disposed within and radially outwardly of said brake caliper means,

said brake caliper means being positioned to contact said brake disc proximate the maximum radius thereof.

4,282,953

## EMERGENCY OVERSPEED BRAKE

R. D. Lichti, Lakewood, and Howard Reimel, Rancho Palos Verdes, both of Calif., assignors to Park Mobile, Inc., New York, N.Y., by said Howard Reimel

Filed Mar. 2, 1979, Ser. No. 16,820

Int. Cl.<sup>3</sup> B60T 7/12

U.S. Cl. 188—189

29 Claims

1. A dual action overspeed safety brake for a shaft rotatable in either direction in said brake comprising:

stop means mountable on a stationary base extending radially inwardly therefrom in the direction of the shaft for providing at least a contact surface for each of the two directions of shaft rotation;

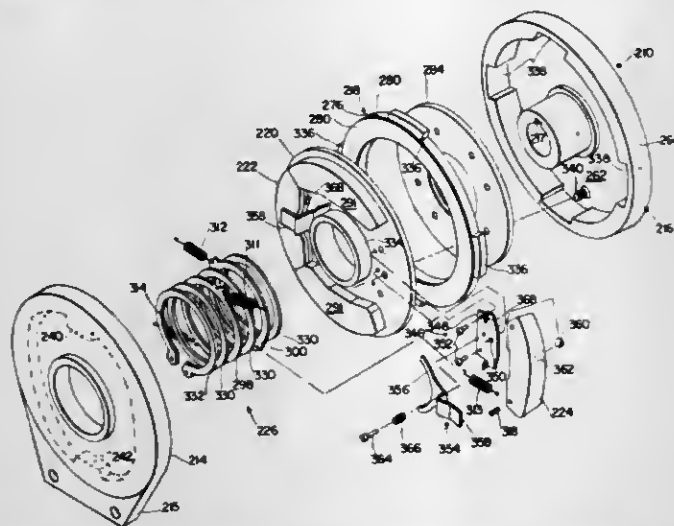
brake means operatively connectable to the shaft for the braking thereof;

at least one elongate pawl rotatable when the shaft is rotating and having a leading end and a trailing end, depending upon the direction of shaft rotation;

restraining means for preventing said pawl trailing end from

travelling completely radially outwardly in response to centrifugal force;

mounting means for mounting said pawl so as to permit outward radial movement of both said pawl ends in response to centrifugal force such that said leading end engages the contact surface corresponding to the direc-



tion of rotation and so as to permit said restraining means to prevent the complete outward radial movement of said trailing pawl end; and

means coupled to said brake means for transmitting the braking force from said engagement of said pawl with said stop means to said brake means, thereby braking the rotation of the shaft.

4,282,954

## REWINDER DEVICE

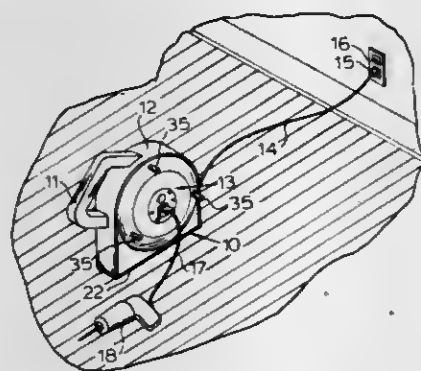
John O. Hill, 545 N. James St., Hazelton, Pa. 18201

Filed Feb. 11, 1980, Ser. No. 120,704

Int. Cl.<sup>3</sup> H02G 11/02

U.S. Cl. 191—12.4

16 Claims



1. A hand reel for electrical extension cord comprising: a central, enclosed casing defining a hollow circular center, a spool means for holding electrical extension cord comprised of circular hubs, said hubs having bearing surfaces fitted for rotation in opposed exterior ends of said casing center, and spool portions, said spool portions being integrally formed on said hubs and extending interiorly of said casing and said spool portions having mating inner surfaces for joining together within said casing,

means for mounting electrical receptacles on said hubs at opposed ends of said spool,

means for connecting said electrical receptacles with electrical extension cord contained in said spool means,

a first handle means formed on said central cylindrical casing, and

second handle means extending outward from each of said hub portions for rotating said spool means.

4,282,955

## ROTARY SHAFT CONTROL SYSTEM

Kanryo Shimizu, Tokyo, and Kengo Kobayashi, Kawasaki, both of Japan, assignors to Fujitsu Fanuc Limited, Japan

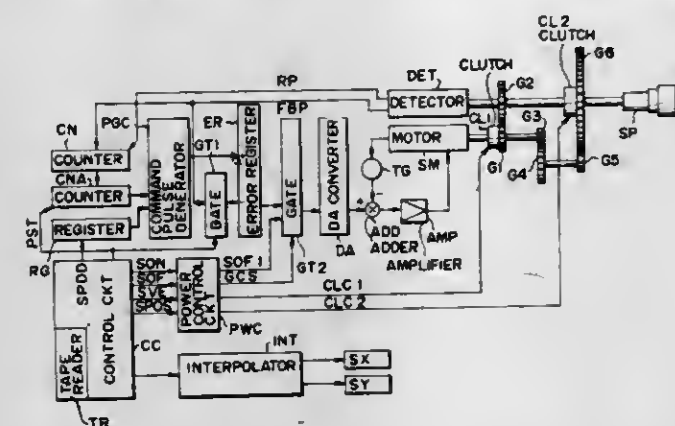
Filed Apr. 30, 1979, Ser. No. 34,601

Claims priority, application Japan, May 2, 1978, 53-52992

Int. Cl.<sup>3</sup> F16D 21/00; B60K 41/02

U.S. Cl. 192—0.096

7 Claims



1. A rotary shaft control system for rotating and positioning a rotary shaft at a commanded position with one motor, comprising:

two rotation transmission mechanisms of different ratios provided between the motor and the rotary shaft;

means for selectively activating one of said two rotation transmission mechanisms;

a rotational position detector, for generating a pulse feedback signal, coupled to the rotary shaft;

feedback means for receiving said pulse feedback signal and for providing a control signal to the motor, wherein the rotary shaft is positioned at the commanded position in accordance with said pulse feedback signal from the rotational position detector, irrespective of which one of the two rotation transmission mechanisms is used.

4,282,956

## RACKING MECHANISM FOR BOBBIN MACHINE

Juan C. Miro, Santa Maria de Barbara, Spain, assignor to Industria Española de Manufacturas Especiales, S.A. (IEMESA), Sabadell, Spain

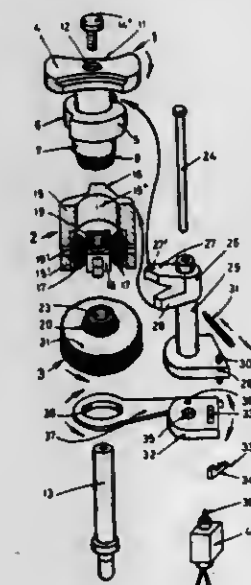
Continuation-in-part of Ser. No. 869,033, Jan. 6, 1978, Pat. No. 4,232,769. This application Jun. 22, 1979, Ser. No. 51,211

Claims priority, application Spain, Jan. 8, 1977, 454,896; Jun. 29, 1978, 471,249; May 18, 1979, 480,682

Int. Cl.<sup>3</sup> F16D 67/00; F16H 57/10

U.S. Cl. 192—4 R

15 Claims



1. A bobbin-racking mechanism for a jacquard machine, said mechanism comprising:

a support;  
a drive gear rotatable on said support above a drive axis and supporting an input gear and an eccentric cam;  
a transmission member rotatable on said support independent of said drive gear about said drive axis;  
an output member connectable to a bobbin and rotatable on said support independent of said drive gear and transmission member about said drive axis;  
an output gear fixed to said output member and spaced from said drive gear;

a transmission gear rotatable on said transmission member about a transmission axis transverse to said drive axis and simultaneously meshing with said input gear and said output gear, whereby on rotation of said transmission member said transmission gear orbits about said drive axis; operator means selectively engageable with said members; and

coupling means arranged between said cam and said operator means for displacing the latter between a stopping position preventing rotation of said output member and permitting rotation of said transmission member and a racking position permitting rotation of said output member and preventing rotation of said transmission member.

4,282,957

## SUB-TRANSMISSION CONTROL SYSTEM FOR PROVIDING ENGINE BRAKING

Hiroshi Sugimoto, Aichi, and Jiro Nakano, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

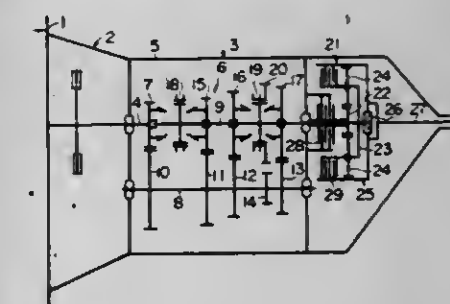
Filed Aug. 29, 1979, Ser. No. 70,696

Claims priority, application Japan, Oct. 9, 1978, 53-124382

Int. Cl.<sup>3</sup> B60K 41/20; F16H 37/00

U.S. Cl. 192—9

4 Claims



1. In a vehicle which comprises:  
an engine for supplying rotary power,  
a transmission connected to the engine and having a plurality of speed stages,

a sub-transmission connected in series with the transmission to receive rotary power from the engine to drive the vehicle, the subtransmission including a higher speed stage for providing a first gearing ratio from its input to its output, and a lower speed stage for providing a second gearing ratio lower than the first gearing ratio,

and a braking system for generating a braking signal when operated;

a sub-transmission control system which includes:  
a main control system for automatically controlling the shifting of the sub-transmission between said higher and said lower speed stages depending on ongoing sensed operating parameters of the vehicle; and

a sub-control system for receiving said braking signal, said sub-control system including means for measuring the duration of said braking signal, means for determining if said measured duration exceeds a first predetermined time, and means for generating an engine braking shutdown signal only after said determination that said braking signal has continued for more than said first predetermined time;

said engine braking shutdown signal being supplied to said main control system to control said main control system to



shift the sub-transmission positively into the lower speed stage.

4,282,958

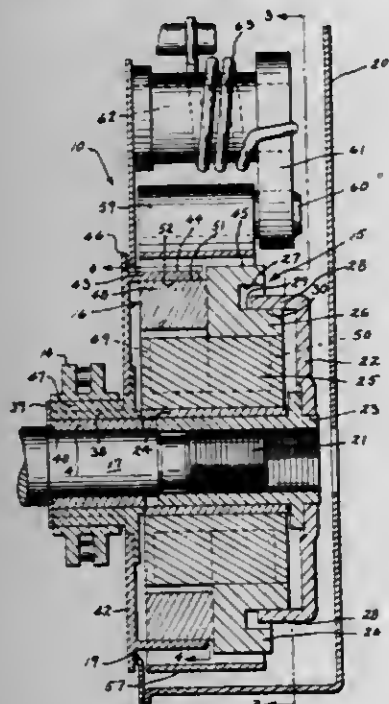
## DRIVE TRANSMISSION

Hugh A. Zindler, Rte. #3, Pleasant Valley La., Watertown, Wis. 53094

Filed Sep. 13, 1979, Ser. No. 75,127  
Int. Cl.<sup>3</sup> B60K 41/24

U.S. Cl. 192—17 R

5 Claims



1. In a drive transmission, rotatable coaxial drive and driven members, a drum carried on each said drive and driven member with the circumferential drum flanges disposed in facing relation, a hub member intermediate the drive and driven drums, a first clutch comprising segmental clutch shoes disposed between the hub member and the drive drum, means for effecting movement of the first clutch shoes into engagement with the drive drum to drivingly clutch the hub member to the drive drum with a relatively high energizing force, said first segmental clutch shoes projecting radially outward beyond the driven drum in their clutch engaged position, a second clutch comprising segmental clutch shoes disposed between the hub member and the driven drum, spring means biasing the second segmental clutch shoes toward disengagement from the driven drum with the biasing force of said spring means being overcome by centrifugal force above a predetermined speed to drivingly clutch the hub member to the driven member with a generally lower energizing force than experienced at said first clutch to provide for clutch slippage due to excessive loading at the driven member clutch connection and thereby generally preclude slippage at the drive member clutch connection, a braking surface on the outer periphery of the first segmental clutch shoes, a brake band extending peripherally around the first segmental clutch shoes and the drum flange on said driven member, said brake band being movable between an expanded condition wherein the brake band is spaced radially outward relative to the first segmental clutch shoes and the drum flange of said driven member and a contracted condition wherein the brake band serially engages first with the braking surface on said first segmental clutch shoes to displace the shoes inwardly out of clutching engagement with the drive drum and then engages with the drum flange of the driven member to stop rotation of the driven member without interrupting the rotation of the drive member, and means to move the brake band.

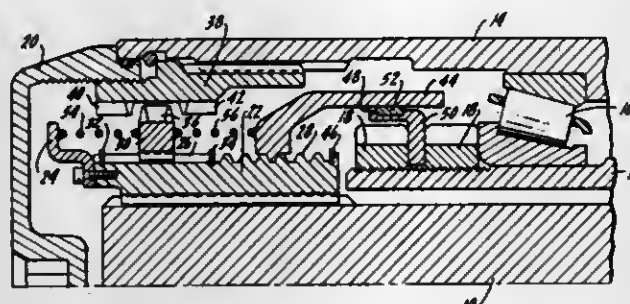
4,282,959  
AUTOMATIC CLUTCH

Julian Schachner, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 4, 1979, Ser. No. 72,508  
Int. Cl.<sup>3</sup> F16D 11/04; B60K 17/34

U.S. Cl. 192—35

8 Claims



1. An automatic clutch for effecting engagement between rotatable driving and driven members in response to rotation of said driving member, said driving member including means defining straight and helical splines, said clutch comprising first and second clutching means respectively rotatable with said driving and driven members, said first clutching means being axially movable relative to said driving member to first and second positions respectively out of and in clutching engagement with said second clutching means, said first clutching means being guided in its axial movement by said straight spline, means biasing said first clutching means for axial movement to its first position in the absence of rotation of said driving member, and means for moving said first clutching means axially to its second position, said moving means including an actuator rotatable with and axially movable relative to said driving member, said actuator being guided in its axial movement by said helical spline, means tending to retard rotation of said actuator thereby effecting said axial movement of said actuator relative to said driving member, and means coupling said actuator with said first clutching means for effecting said axial movement of said first clutching means to its second position in response to said axial movement of said actuator.

4,282,960

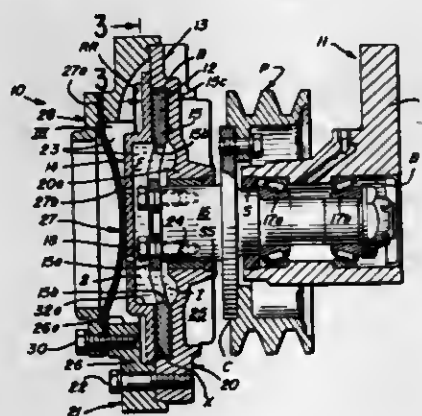
## VISCIOUS FLUID CLUTCH

Richard E. Glasson, and Jerre F. Lauterbach, both of Columbus, Ind., assignors to Cummins Engine Company, Columbus, Ind.

Filed Jun. 8, 1979, Ser. No. 46,942  
Int. Cl.<sup>3</sup> F16D 35/00, 43/25

U.S. Cl. 192—58 C

6 Claims



1. A viscous fluid clutch comprising first and second drive members mounted for rotation about a common axis, said second drive member being provided with an internal chamber for a predetermined volume of viscous fluid, said first drive member being disposed in said chamber; a third drive member disposed within said chamber and intermediate said first drive member and a chamber-forming wall of said second drive member, said third drive member being rotatable as a unit with

said second drive member and movable axially independently of said second drive member, corresponding surfaces of said first and third drive members forming therebetween an annular fluid shear space concentric with the rotary axis of said drive members; and a thermal-responsive membrane mounted on and forming a part of said chamber-forming wall of said second drive member and rotatable as a unit with said second and third drive members, said membrane having a segment thereof engageable with said third drive member and independently movable axially of said first drive member in response to predetermined ambient temperature changes, axial movement of said membrane segment effecting corresponding axial movement of said third drive member, and varying the configuration of said shear space; all of said members being adapted to rotate as a unit when said first and third drive members are in closest axial proximity and the annular fluid shear space is substantially filled with the viscous fluid.

4,282,961

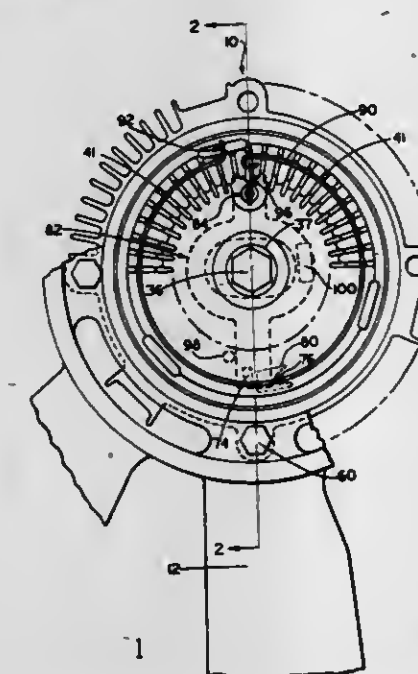
## FAN DRIVE WITH TORQUE TRANSMITTING DEVICE

Charles S. Roscoe, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 30, 1979, Ser. No. 71,223  
Int. Cl.<sup>3</sup> F16D 35/00, 43/25

U.S. Cl. 192—58 B

21 Claims



1. A torque transmitting device adapted to transmit torque from an input comprising a first member defining an operating chamber therein, a second member disposed within said operating chamber and rotatable relative to said first member about an axis of rotation, a fluid reservoir, a fluid passageway connectable with said fluid reservoir and said operating chamber, pivotable valve means for controlling the fluid flow through said fluid passageway to effect selective communication between said fluid reservoir and said operating chamber, fluid means disposed in said reservoir and selectively displaceable into said operating chamber through said fluid passageway whereby fluid is positioned in said operating chamber to transmit energy through said fluid from one of said members to the other, a thermostatic ring having one end connected to said first member and responsive to the ambient temperature of the torque transmitting device and having its opposite end connected to said valve means for controlling the position of said valve means and the volume of said fluid means in said operating chamber in response to the ambient temperature of the torque transmitting device, said ring being radially spaced apart from said axis of rotation and being disposed substantially coaxial to said axis of rotation, said opposite end of said ring being connected to said valve member to pivot said valve member about a pivot point which is radially spaced apart from said axis of rotation to control the fluid flow through said fluid passageway, and fastener means for connecting one of

said first and second members to the input to effect relative rotation of said first and second members, said fastening means being disposed substantially coaxial to said axis of rotation.

4,282,962

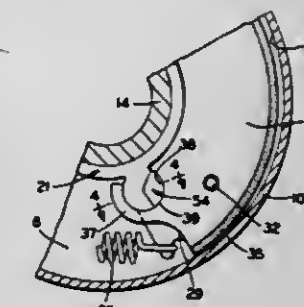
## PIVOTAL MOUNTING ASSEMBLY

Richard C. St. John, North Canton, Ohio, assignor to Aspro, Inc., Canton, Ohio

Filed Nov. 2, 1978, Ser. No. 957,141  
Int. Cl.<sup>3</sup> F16D 43/18

U.S. Cl. 192—105 CD

9 Claims



1. In a centrifugal clutch construction of the type having a driven clutch member, drive shaft means, hub means mounted on the drive shaft means for rotation with said shaft means, clutch shoe means pivotally mounted on the hub means for outward movement under the influence of centrifugal force toward and against the drive clutch member for coupling engagement therewith, and pivot means pivotally mounting the clutch shoe means on the hub means, wherein the improvement includes: said pivot means being a generally cylindrical-shaped projection mounted on the hub means and extending in an axial direction along said hub means; a longitudinally extending groove formed in the cylindrical-shaped projection; and a strip of plastic material mounted in said groove, having a low-friction, shock-absorbing arcuate pivotal bearing surface for the clutch shoe means, said plastic strip being complementary to the pivot projection groove and having a radius of curvature substantially equal to the radius of curvature of the cylindrical-shaped projection with said arcuate bearing surface lying in the imaginary circumference defined by said projection.

4,282,963

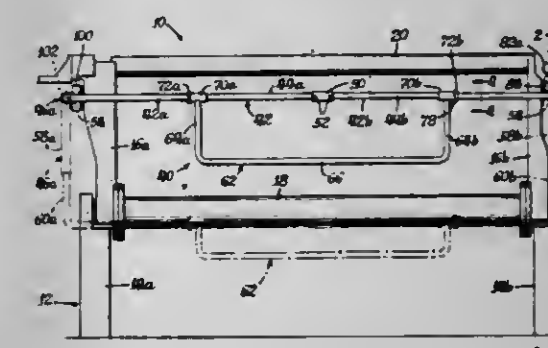
## BARRIER GUARD

Frederick G. Kafura, and Thomas M. Medland, both of Appleton, Wis., assignors to Hammermill Paper Company, Erie, Pa.

Filed May 3, 1979, Ser. No. 35,785  
Int. Cl.<sup>3</sup> F16P 3/08

U.S. Cl. 192—133

8 Claims



1. A barrier guard for use with apparatus which includes frame means rotatably supporting a pair of elongated rolls so that said rolls establish a nip therebetween accessible to an operator, said barrier guard comprising a first generally U-shaped guard bar having parallel substantially coplanar arm portions interconnected by an elongated reach, said arm por-



tions being axially adjustable in length and adapted for pivotal connection to said frame means so that said elongated reach is substantially parallel to said rolls and is spaced therefrom, and a second generally U-shaped guard bar having parallel arm portions interconnected by an elongated reach, said arm portions of said second guard bar being pivotally mounted on said elongated reach of said first guard bar so that said elongated reach of said second guard bar is spaced from said reach of said first guard bar, and means operatively associated with said first and second guard bars for limiting the extent of relative pivotal movement of said second guard bar relative to said first guard bar.

4,282,964

## ARTICLE TRANSFER DEVICE

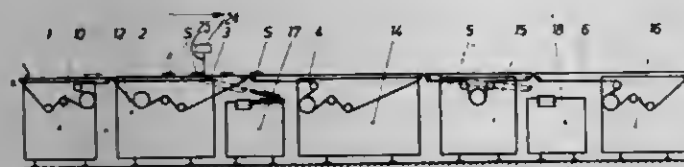
Wilhelm Hogenkamp, Hanover, and Gert Wostbrock, Garbsen, both of Fed. Rep. of Germany, assignors to Otto Hansel GmbH, Fed. Rep. of Germany

Filed Jul. 17, 1979, Ser. No. 58,196

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1978, 2831323

Int. Cl.<sup>3</sup> B65G 47/26, 47/64

U.S. Cl. 198—358



1. A device for transferring articles arriving in transverse rows on a circulating endless delivery belt, to at least two processing sites, wherein a delivery belt is followed by a continuous conveyor belt at the same plane and operating in the same direction as the delivery belt, the delivery belt has at its end a downwardly pivotable beak, by way of which arriving articles can be brought to a removal belt positioned at a lower level than the delivery belt and feelers are provided which control the pivoting of the beak as a function of the articles arriving on the delivery belt, characterized in that a transfer belt is adapted for pivotal movement at one end thereof and about an axis in the plane of said removal belt, said transfer belt further adapted for up and down pivotable movement so as to lie either in the plane of said removal belt or the plane of the beak of said delivery belt upon said beak being in its lowest downwardly pivoted position to thereby transfer articles in transverse rows from said delivery belt to said transfer belt.

4,282,965

## FEEDING AND ORIENTING DEVICE

Erwin F. Bates, Binghamton, and Michael D. Snyder, Chenango Bridge, both of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Nov. 16, 1979, Ser. No. 95,514

Int. Cl.<sup>3</sup> B65G 47/24

U.S. Cl. 198—380

9 Claims



1. Apparatus for feeding, and orienting parts having a body and spaced terminals projecting in a predetermined fixed relationship from said body, said apparatus comprising:  
a laterally sloping shelf having a guide means along the length of said shelf adapted to prevent lateral sliding of

said parts down said shelf and to orient said parts by sliding engagement of at least one of said terminals with said guide means as said parts are fed along said guide means;

fluid ejection means adjacent to said guide means for positive fluid engagement with at least one of said terminals to eject improperly oriented parts as they are fed along said guide means.

8. A method for orienting parts having a body and terminals projecting in a predetermined, fixed relationship from said body comprising the steps of:

feeding said parts along a guide means for guiding said parts with a greater number of terminals on one side of said guide means and at least one of a lesser number of terminals on the other side of said guide means;

providing fluid ejection means along the path of travel of said parts along said guide means for directing fluid against at least one terminal of said parts to eject a misoriented part from said guide means.

4,282,966

## FEEDING AND ORIENTING DEVICE

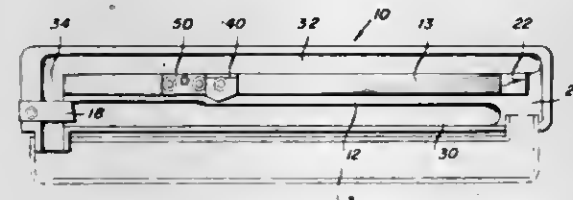
Erwin F. Bates, Binghamton, and Michael D. Snyder, Chenango Bridge, both of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Jan. 7, 1980, Ser. No. 109,873

Int. Cl.<sup>3</sup> B65G 47/24

U.S. Cl. 198—382

7 Claims



1. An apparatus having a guide means and adapted for feeding and orienting parts, each of said parts having a body which may be described in orientation relative to a line of travel along said guide means by a major reference axis and a minor reference axis perpendicular to and intersecting said major reference axis, such that said body is properly oriented when conditions are met that said major reference axis is tangent to a point of said line of travel and said minor reference axis is in a required angular orientation about said line of travel at said point and said body is misoriented when said conditions are not met, comprising:

a first ejection means adjacent to said guide means for ejecting parts that are misoriented in one way, with said major reference axis yawed relative to said line of travel, by causing transverse displacement of said parts relative to said guide means, whereby said parts misoriented in one way are caused to become unbalanced and to fall from said guide means;

a second ejection means adjacent to said guide means, for ejecting parts that are otherwise misoriented, with said major reference axis pitched or said minor reference axis rolled out of said required orientation relative to said line of travel, said second ejection means located to emit fluid onto said otherwise misoriented parts to blow them from said guide means and not to blow properly oriented parts from said guide means.

4,282,967

## GRAIN ELEVATOR CONTROLS

Harry O. Boling, Garland, and Larry R. Brzycki, Lewisville, both of Tex., assignors to Maxi-Tronic, Inc., Dallas, Tex.

Filed Jan. 17, 1980, Ser. No. 113,138

Int. Cl.<sup>3</sup> B65G 43/04

U.S. Cl. 198—571

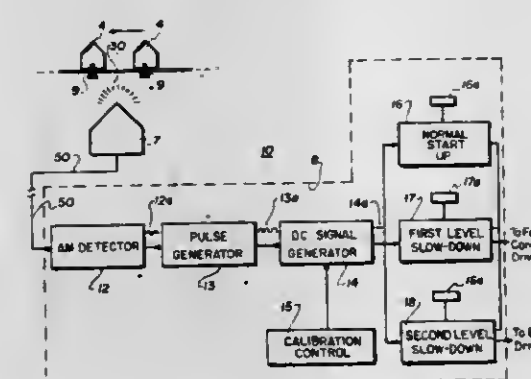
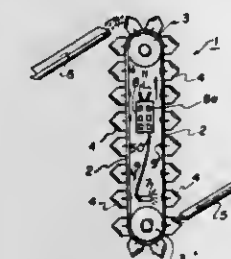
10 Claims

6. In combination with grain elevator equipment of the type including a plurality of spaced buckets for conveying granular

material between feed and dispensing stations, first motive means for continuously transporting said buckets between said stations, second motive means for supplying said granular material to said buckets at said feed station, said buckets having a metallic material associated therewith,

a motion detector apparatus for sensing and responding to the rate of transport of said buckets, said motion detector apparatus comprising:

- (a) metal detector means for generating first signals respectively responsive to the passage of each bucket in proximity to said metal detector means;
- (b) control means electronically coupled to said metal detector means responsive to said first signals for gener-



ating a DC voltage proportional to the rate of transport of said buckets past said metal detector means;

- (c) automatic calibration means coupled to said control means for assuring that the DC voltage is of an identical predetermined magnitude for respectively different desired operating rates of said bucket transport; and
- (d) trigger means coupled to said control means for generating respective trigger signals for controlling said second motive means whenever the said DC voltage is less than said predetermined magnitude by a first deficient amount and for controlling said first motive means whenever the said DC voltage is less than said predetermined magnitude by a second deficient amount greater than said first deficient amount.

4,282,968

## SCRAPER-CHAIN CONVEYOR CHANNEL SECTION

Helmüt Temme, Waltrop, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhütte Westfalia, Lünen, Fed. Rep. of Germany

Filed Aug. 13, 1979, Ser. No. 66,275

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836132

Int. Cl.<sup>3</sup> B65G 19/28

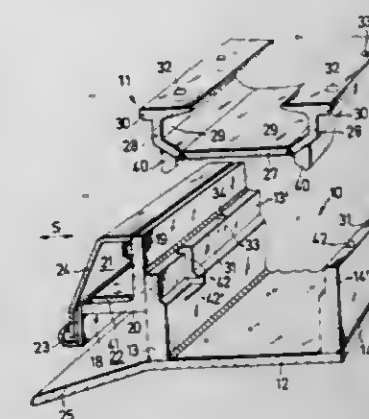
U.S. Cl. 198—735

18 Claims

1. A scraper-chain conveyor comprising:

- (a) a plurality of channel sections joined together end-to-end,
- (b) each channel section comprises a lower, trough-shaped part and an upper, trough-shaped part detachably connected to the lower part,
- (c) the lower part including a pair of side walls connected together and a plough guide section,
- (d) connectors associated with the side walls of the lower parts articulatedly join each pair of adjacent channel sections,
- (e) each connector is housed in correspondingly shaped

pockets formed in the adjacent portions of the respective side walls of the respective lower parts,



- (f) each upper part including two bars running respectively along the under side of its side walls and overlying the pockets to hold the connectors in position housed in the pockets.

4,282,969

## MATERIAL MOVING APPARATUS FOR A BALE WAGON

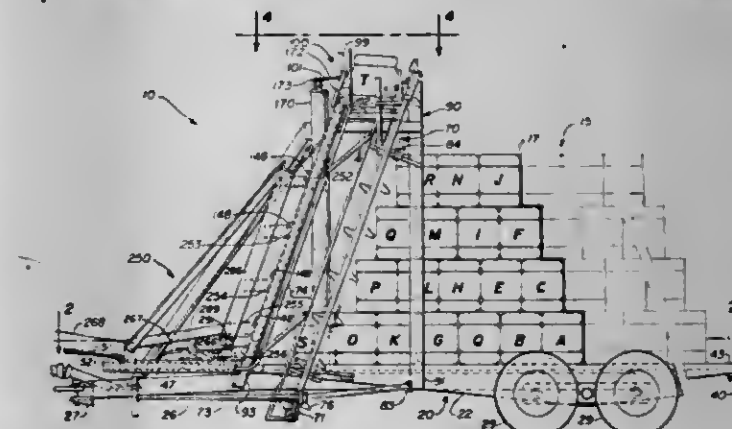
Randall E. Zipser, Clovis, Calif., assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 8, 1979, Ser. No. 64,969

Int. Cl.<sup>3</sup> B60P 1/00

U.S. Cl. 198—747

9 Claims



1. Apparatus for moving material from a first location on a support surface to a second location thereon comprising:  
an elongate rack affixed to said support surface and extending substantially from a first position to a second position thereon, said rack being reciprocable along a line between said first and second positions and having a plurality of catch means thereon generally equally spaced along the length thereof;

means affixed to said rack for reciprocating same;  
a ratchet mechanism including a main body portion with first and second opposing ends slidably engaged with said rack, a first ratchet plate pivotally mounted on said first end of said main body portion for movement between an operative position wherein it may serially engage said catch means on said rack and an inoperative position remote therefrom, a second ratchet plate pivotally mounted on said second end of said main body portion for movement between an operative position wherein it may serially engage said catch means on said rack and an inoperative position remote therefrom, an over-center device having means thereon to selectively simultaneously pivot said first and second ratchet plates between said operative and inoperative positions so that only one is in said operative position at a time;  
means on said main body portion to engage material; and  
means mounted on said support surface to engage said over-centered device to actuate same to reverse the positions of



said first and second ratchet plates whereby said main body portion will be moved along the length of said rack until actuation of said over-center device, upon which the direction of movement of said main body portion is reversed.

4,282,970

## OSCILLATING-ACCUMULATING CONVEYOR

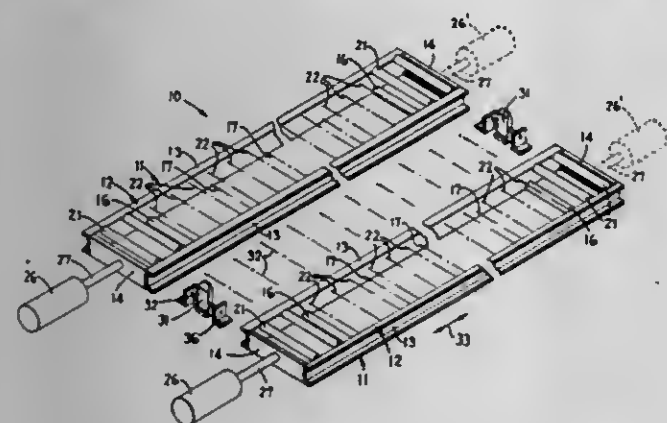
William L. Smock, 5831 S. Meridian St., Indianapolis, Ind. 46217

Filed Dec. 26, 1979, Ser. No. 107,128

Int. Cl.<sup>3</sup> B65G 25/04

U.S. Cl. 198—772

2 Claims



1. An oscillating-accumulating conveyor, comprising: horizontally elongated frame means defining a substantially horizontally extending longitudinal direction; wheel means rotatably supported on said frame means at longitudinally spaced intervals and disposed for supporting and rolling engagement with a stationary horizontally extending support surface; drive means for causing said frame means to be cyclically reciprocated back and forth in said longitudinal direction through a predetermined stroke, whereby said frame means is rollingly supported during said reciprocation due to said wheel means being rollingly engaged with said support surface; a plurality of conveyor rolls mounted on said frame means at longitudinal intervals therealong, said conveyor rolls being individually freely rotatably supported on said frame means for individual rotation about horizontal axes which extend substantially perpendicular to said longitudinal direction, said conveyor rollers at their uppermost peripheral surface defining a substantially horizontal conveying plane which extends longitudinally of the conveyor, whereby a load to be conveyed can be supported on said conveyor rolls and moved longitudinally along said plane; one-way holding means extending in said longitudinal direction for permitting said load to be forwardly moved along said conveyor during the forward stroke of said drive means while preventing rearward movement of said load during the rearward stroke of said drive means, whereby said conveyor rolls rollingly engage and support said load as the frame means and the conveyor rolls mounted thereon are retracted rearwardly relative to the load by said drive means, whereby the cyclic reciprocation of said frame means by said drive means causes the load to be intermittently advanced in a steplike manner along the length of the conveyor; and said one-way holding means including a plurality of individual one-way holding devices disposed at spaced intervals along a row which extends parallel to said longitudinal direction, each said holding device including a movable holding member swingably movably supported on a mounting structure which is fixedly secured relative to said support surface, said holding member being normally maintained in a first position wherein a part thereof projects upwardly for physical engagement with an end surface of the load for positively preventing the load from

moving in said rearward direction, said holding member being movable by said load into a retracted position wherein the holding member is disposed in its entirety below the load in response to engagement of said holding member by said load during its forward movement so as to permit unrestricted free forward movement of the load during advancing of the conveyor, said holding member being provided with a roughened nose at the upper end thereof which is disposed for engagement with a bottom lower surface on the load when the holding member is positioned thereunder and is held thereby in said retracted position, whereby the roughened nose engages a bottom surface of the load to prevent rearward movement thereof.

4,282,971

## CONVEYOR BELT CHAIN AND METHOD FOR ITS USE

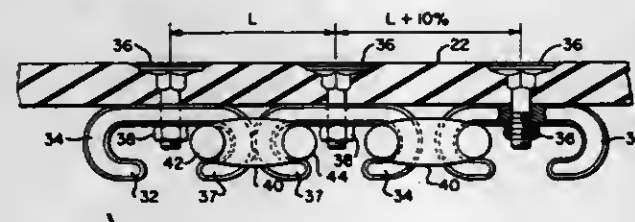
Harry R. Becker, Utica, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Oct. 5, 1979, Ser. No. 82,370

Int. Cl.<sup>3</sup> B65G 15/28

U.S. Cl. 198—846

3 Claims



1. In a conveyor belt of the type comprising an elongated web of resilient material and a chain adapted to be driven by engagement with teeth of a dual sprocket drive extending along the longitudinal length of said web and having selected links secured to said web intermediate its edges; the improvement in said chain comprising a strand of alternate links one of which is a C-shaped link secured to said belt and the other of which is a connecting link which permits the C-shaped links on either side to approach each other or to separate until they engage the connecting link to transmit pull thereto, the C-shaped links being connected to the belt while out of pulling engagement with forward and aft connecting links whereby, when tension is applied to the chain, the C-shaped links will pull apart to stretch said belt along its longitudinal axis and, said connecting links each comprise spaced crossbar portions interconnected by spacers to provide a central opening through which hooked portions of the C-shaped links extend, and slots at the edges of said connecting link which receive the teeth of a dual-sprocket drive.

4,282,972

## PAN FOR ANGIOGRAPHIC CATHETERS

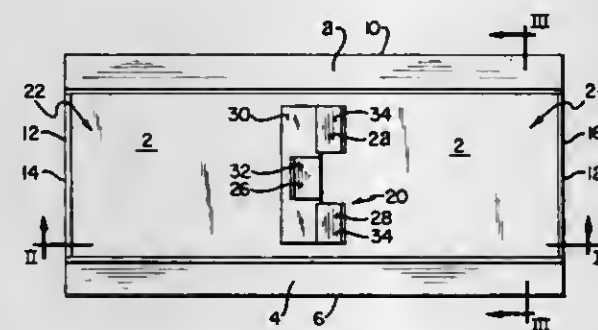
Robert D. Chiulli, 71 Cherry St., Somerville, Mass. 02144

Filed Feb. 15, 1980, Ser. No. 121,694

Int. Cl.<sup>3</sup> B65D 85/04, 1/36, 3/28, 5/48

U.S. Cl. 206—303

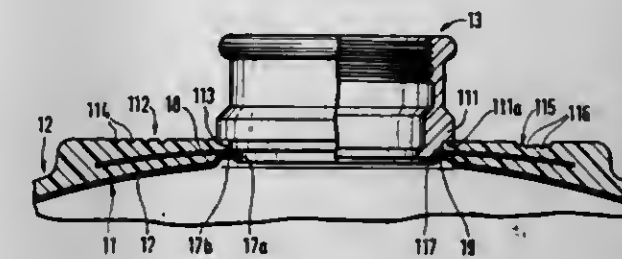
10 Claims



1. A pan for angiographic catheters and catheter guide

wires, the pan comprising a rectangular planar bottom portion, a first pair of walls comprising a first wall upstanding from a first end of said bottom portion and a second wall upstanding from a parallel second end of said bottom portion, a second pair of walls comprising a third wall upstanding from a third end of said bottom portion and a fourth wall upstanding from a parallel fourth end of said bottom portion, said first pair of walls being inclined from said bottom portion inwardly toward each other, said walls and said bottom portion forming a basin adapted to retain a liquid, and divider means upstanding from said bottom portion and extending generally normal to said first pair of walls, said divider means dividing said basin into a plurality of compartments, said divider means having a first barrier portion extending toward a first of said compartments and a second barrier portion extending toward a second of said compartments.

encases said reinforcing plate therein forms a substantially planar surface which encircles said bung socket and defines an



inscription field, and wherein said inscription field consists at least partially of indentations in said plastic coat.

4,282,973

## PACKAGE FOR FLEXIBLE MAGNETIC MEDIA AND METHOD THEREFOR

Constance J. Binkowski, Sunnyvale, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.

Filed Oct. 15, 1979, Ser. No. 84,778

Int. Cl.<sup>3</sup> B65D 85/57, 85/62, 71/08, 81/04

U.S. Cl. 206—444

19 Claims



1. An improved package adapted for a plurality of thin flexible materials of substantially identical geometry, the package comprising: a first and a second substantially rigid plate of length and width dimensions substantially identical to that of a plurality of thin flexible materials to be packaged; and a heat shrinkable material having a hole therein to provide an air escape path suitably heat sealed and heat contracted so as to snugly contain said thin flexible materials therewithin with said thin flexible materials being aligned uniformly on top of one another in a stack with said first substantially rigid plate aligned on top of said stack and with said second substantially rigid plate aligned on the bottom of said stack so that the total thickness of said stack is less than the longest dimension of said thin flexible materials.

4,282,974

## PLASTIC-ENCLOSED METAL BARREL

Siegfried Quandt, Neunkirchen, Fed. Rep. of Germany, assignor to Schäfer Werke GmbH, Neunkirchen, Fed. Rep. of Germany

Filed Aug. 16, 1979, Ser. No. 66,973

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1979, 7824992[U]; Dec. 2, 1979, 7835772[U]

Int. Cl.<sup>3</sup> B65D 21/02, 1/46; B32B 1/02; G09F 3/00

U.S. Cl. 206—509

11 Claims

1. In a barrel including an inner shell of sheet metal arced in the area of the barrel bottoms and on which is provided a bung socket, and further including a coat of plastic, said bung socket being surrounded by a reinforcing sheet metal plate enveloped by said plastic coat, the improvement comprising wherein said reinforcing sheet metal plate encircles said bung socket and includes at least a portion thereof which is spaced from said barrel bottom, wherein said plastic coat is received in the spacing between said portion of said reinforcing sheet metal plate and said barrel bottom and encases said reinforcing sheet metal plate therein, wherein said plastic coat at the end which

4,282,975

## JEWELRY DISPLAY TRAY

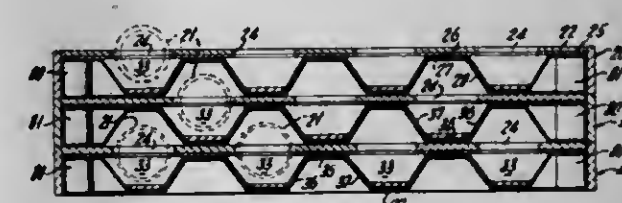
Joseph Ovadia, 343 Sackett St., Brooklyn, N.Y. 11231

Filed Jan. 22, 1980, Ser. No. 114,182

Int. Cl.<sup>3</sup> B65D 1/34, 6/04

U.S. Cl. 206—566

15 Claims



1. A jewelry display tray comprising an upper member, a plurality of recesses formed in said upper member extending in a downward direction when a major plane of said tray is oriented in a substantially horizontal direction, said recesses being arranged in offsetting rows, a lower member having a plurality of recesses extending in an upward direction when the major plane of said tray is in a horizontal position, said upwardly extending recesses arranged in offsetting rows, said upper and lower members being complementarily fit together with said downwardly extending recesses of said upper member fitting in spaces located between said upwardly extending recesses of said lower member, said upwardly extending recesses of said lower member fitting in spaces located between said downwardly extending recesses of said upper member, whereby said upper and lower members form an interlocking structure, and means having access openings overlying said upper member so that the items of jewelry passing through said openings will be accommodated in said downwardly extending recesses of said upper member, whereby upwardly extending recesses of a first tray aligned with downwardly extending recesses of a second tray form compartments for accommodating items of jewelry when said first and second trays are positioned one on top of the other.

4,282,976

## DISPLAY HOLDER

Robert E. Fitzgerald, P.O. Box 100, Barrington, Ill. 60010

Filed Dec. 13, 1979, Ser. No. 103,335

Int. Cl.<sup>3</sup> A47F 5/02

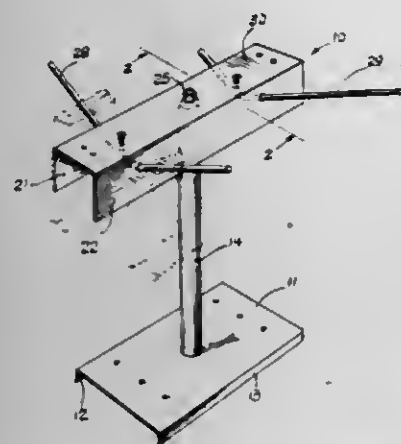
U.S. Cl. 211—59.1

8 Claims

1. A display holder for pre-packaged goods comprising: (a) a substantially rectangular-shaped base providing a flat platform, (b) a standard extending vertically from said platform of said base, (c) a top member rotatably mounted on the free end of said standard, (d) means for rotatably mounting said top member on said standard,



- (e) elongated hanger means projected through said top member so as to extend to either side thereof;  
 (f) means provided by said top member for carrying said hanger means whereby said hanger means project laterally from said top member, and



- (g) means adjustably connecting said hanger means to said top member whereby their length of projection from said top member may be varied.

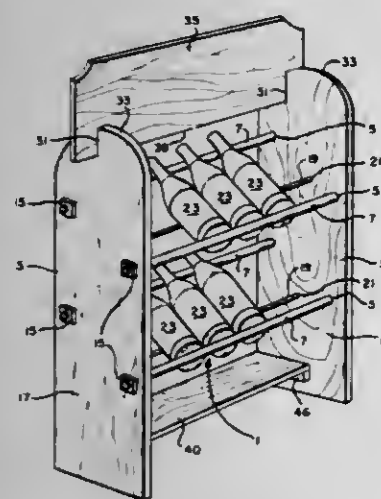
4,282,977

# END THREADED LOCKING DEVICE AND METHOD FOR USING SAME

Eugene L. Di Lorenzo, c/o Louis A. Tirelli, 52 S. Main St., Spring Valley, N.Y. 10977

Filed Nov. 15, 1978, Ser. No. 960,824  
 Int. Cl.<sup>3</sup> A47F 7/28

U.S. Cl. 211-74



1. A joining device for quickly and easily connecting together standards which comprises:

- a pair of standards having corresponding preformed apertures and cavities therein;
- at least two dowels each spaced apart, one being lower than the other and having a reduced section adjacent shoulders at both ends, said reduced sections being threaded in opposite directions;
- at least one pair of keepers provided for each of the at least two dowels for being threaded onto each end of the at least two dowels; and
- at least one rib spaced apart from and below said at least two dowels;

whereby the first one of the pair of standards is selected and one end of each of the at least two dowels is inserted through succeeding ones of the corresponding preformed apertures provided therein and one of each of said at least one pair of keepers is started to be screwed onto each end of the at least two dowels which has been inserted through the corresponding preformed apertures in said selected one of the pair of standards, then, the second one of the pair of standards is moved

toward the free and opposite ends of the at least two dowels said free and opposite ends of the at least two dowels being inserted through said preformed apertures therein, while said ribs are each positioned in respective ones of said preformed cavities, and the remaining one of each of said at least one pair of keepers is started to be screwed onto the corresponding free ends of the at least two dowels, and succeeding ones of the at least two dowels are each rotated until said shoulders butt tightly against said first one and second one of the pair of standards, forming a free standing fixture for supporting one or more articles with said at least two dowels and at least one rib.

4,282,978

# BRIDGE CRANE FOR THE EMPLACEMENT OF ELONGATE PREFABRICATED MEMBERS OF STRUCTURES SPANNING A MULTIPLICITY OF SPACED-APART SUPPORTS

Antonio Zambon, Via Gorizia, Tradate (Varese), Italy

Filed Jan. 28, 1980, Ser. No. 115,710

Int. Cl.<sup>3</sup> B66C 17/06

U.S. Cl. 212-205

9 Claims



1 Claim

1. A bridge crane for emplacing elongate prefabricated members of a structure spanning a series of spaced-apart transversely extending piers, comprising:

- at least three roller mountings respectively disposed on as many of said piers;
- an elongate framework with two rigidly interconnected spaced-apart trusses having upper and lower stringers separated by a longitudinal space, said lower stringers being slidably supported on said roller mountings;
- hoist means displaceably mounted on said upper stringers for elevating a prefabricated member into the space between said trusses and transporting said member longitudinally of said framework; and
- drive means for longitudinally displacing said framework relatively to said roller mountings, said drive means including a motor-driven capstan on said framework, cable means wound around said capstan, and a set of deflecting rollers on said framework, said cable means passing around said deflecting roller and being anchored to one of said roller mountings.

4,282,979

# FORCE ABSORBING ARRANGEMENT

Josef Friedrichs, Krefeld-Verberg, Fed. Rep. of Germany, assignor to Ringfeder G.m.b.H., Krefeld, Fed. Rep. of Germany

Filed Jun. 1, 1979, Ser. No. 44,549

Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2918092

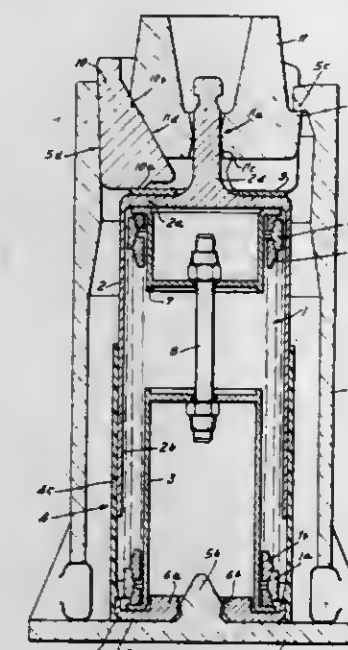
Int. Cl.<sup>3</sup> F16F 1/06; B61G 11/06, 11/14

U.S. Cl. 213-29

23 Claims

1. An arrangement for resilient absorption of forces, particularly for an intermediate buffer coupling of rail vehicles, comprising an elongated housing having two spaced ends, a base plate and an axis, one of said ends being closed, whereas the other of said ends is open and has an opening; a friction element located in the region of said open end of the housing; a resilient element cooperating in series with said friction element and formed as a friction spring having two spaced ends and including a plurality of inner conical rings and a plurality of outer conical rings cooperating with one another with interposition of a lubricant; outer and inner cup-shaped casing members

located in said housing and closely accommodating said friction spring, said outer cup-shaped member outwardly surrounding said outer conical rings of said friction spring and having a bottom located in the region of one end of the latter so as to form a support for said one end of said friction spring, said inner cup-shaped member being located inwardly of said inner rings of said friction spring and having a radially outwardly extending flange in the region of the other end of the latter so as to form a support for said other end of said friction



spring, said flange of said inner cup-shaped member abutting against said base plate of said housing; and a sealing element which is fitted on said outer cup-shaped member and held on said inner cup-shaped member so that said cup-shaped members can move relative to one another in direction of elongation of said housing, but at the same time are sealed by said sealing element, said sealing element having a radially inwardly extending collar which is interposed between said flange of said inner cup-shaped member and said base plate of said housing so as to clamp said sealing element.

4,282,980

# PLASTIC HANGER FOR CONTAINERS

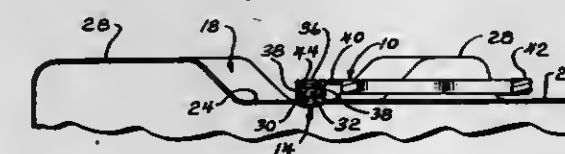
David A. Winchell, Twin Lakes, Wis., assignor to Baxter Travel Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 25,261, Mar. 29, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 157,778

Int. Cl.<sup>3</sup> B65D 23/00

U.S. Cl. 215-100 A

13 Claims



8. A plastic container comprising a bottom wall adapted to rest on a flat surface, a rib integral with said bottom wall and a separate hanger for hanging said container in an inverted position, said hanger comprising a bar secured to said rib, a loop for hanging the container and a relatively thin hinge extending between and integrally joining said bar and said loop, said bar comprising an inverted channel including a top wall and a pair of sidewalls for fitting over said rib, said hinge extending normally from the side of said channel and being disposed in the unstressed state to support said loop adjacent the bottom of said container to reduce interference when the container is set on a flat surface.

4,282,981

# BRIGHT WELDED SEAM CAN OF TINPLATE

Yoichi Kitamura; Hisashi Hotta, both of Yokohama, and Makoto Ito, Kawasaki, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

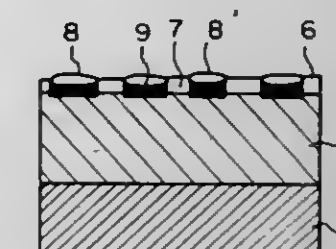
Filed Apr. 11, 1980, Ser. No. 139,632

Claims priority, application Japan, Apr. 12, 1979, 54-43605

Int. Cl.<sup>3</sup> B65D 7/38

U.S. Cl. 220-75

4 Claims



1. A bright welded seam can of tinplate having a side seam formed by welding a tin plate blank, wherein each of the inner and outer surfaces of said side seam has an outermost surface layer having a thickness of 50 to 400 Å and being composed of oxides and a subsequent intermediate layer composed of an iron-tin alloy, which has a thickness corresponding to 5 to 100% of the thickness of the whole tin layer in the tinplate blank, and wherein said inner and outer surfaces of the side seam have a reflectance corresponding to at least 60% of the reflectance of the tinplate blank.

4,282,982

# TUBE CLOSURE DEVICE

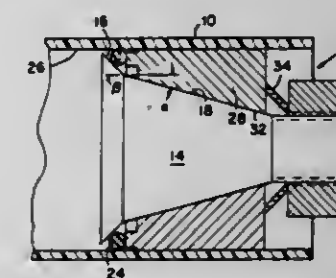
Alfred Nuesslein, Kruppstrasse 31, 447 Meppen, Fed. Rep. of Germany

Filed Mar. 11, 1980, Ser. No. 129,451

Int. Cl.<sup>3</sup> B65D 53/00

U.S. Cl. 220-237

5 Claims



1. A tube closure device comprising a closure assembly including a central member with an outer frusta-conical means, a plurality of arcuate segments positioned around a portion of said frusta-conical means, an O-ring seal in contact with a portion of said frusta-conical means and an end of each of said arcuate segments being in contact with said O-ring seal, adjustable means on said central member for applying force to said arcuate segments to cause said segments to be moved axially and radially on said frusta-conical means and cause said O-ring to move axially and radially and a Belleville spring mounted on said central member between said adjustable means and said arcuate segments, and said adjustable means including a threaded portion on said central member and a nut threaded on said threaded portion.

4,282,983

# CONTAINER WITH IMPROVED SPRING-LIKE HINGE

Peter T. Swartzbaugh, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 14, 1980, Ser. No. 167,991

Int. Cl.<sup>3</sup> B65D 43/24

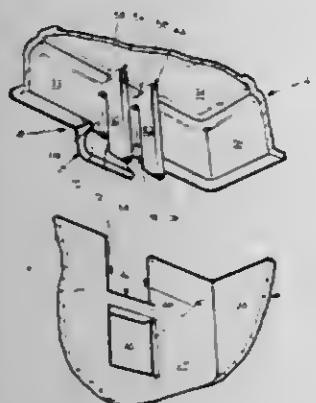
U.S. Cl. 220-335

10 Claims

10. A hinge assembly for a two-part container having a body and a lid comprising:



a first hinge element including an elongate, rigid shaft having a first and second end, having a flat front surface, a flat top surface, a flat bottom surface and a C-shaped rear surface spaced apart from said front surface by a distance  $D_1$  and having a radius of curvature  $R_1$ ;  
means on each said first and second end of said rigid shaft to secure said shaft to and space said shaft apart from said container body;

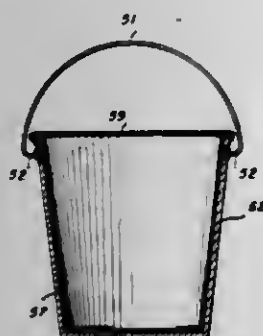


a second hinge element including a rigid, elongate first member depending downwardly from said lid and having a generally rectangular, cross-sectional area in registry with said first hinge element; and  
a second member depending downwardly from said lid and having a flexible first portion and terminating in a generally C-shaped jaw portion corresponding with said C-shaped rear surface having a radius of curvature  $R_1$ , said jaw portion spaced apart from said first member a distance  $D_1$ .

4,282,984

## COMPOSITE CONTAINER STRUCTURE

Byron V. Curry, Jr., Box 5040, Montecito, Calif. 93108  
Division of Ser. No. 3,903, Jan. 16, 1979, which is a continuation-in-part of Ser. No. 928,283, Jul. 26, 1978, abandoned. This application Aug. 13, 1980, Ser. No. 177,734  
Int. Cl.<sup>3</sup> B65D 90/04, 5/56, 3/26  
U.S. Cl. 220—404



1. A composite container having an outer support and an inner liner surrounding the space within the container and top and bottom rigid gas impervious cover means adapted to be sealed onto the container for cooperating with said liner to seal the contents placed in the storage space within the structure, comprising a fibrous tubular member having a generally circular cross-section defined by exterior and interior walls and forming an open ended outer support member, said tubular member having an aperture therein to form a window, a tubular shrinkable plastic barrier film inner liner fitted within the support member for covering said window, said liner having a portion thereof extending beyond at least one of the ends of said tubular member, said liner being flexible and impervious to gas flow, said liner being sealed at one end and having said other open end extending from within the support member and beyond an open end of the support member to define the mouth of the tubular liner, a portion of the mouth of said liner that extends beyond the support member being folded over and around to overlap the exterior wall of the support member at said one end of said at least one of the ends

of said support, the overlapped portion of the liner being heat shrunk to be wrinkle-free and tightly conforming to the exterior surface of the support member at said one end thereof, said heat shrunk overlapped portion of the mouth of the liner forming a plastic ring integral with that open end of the support member, said ring forming a smooth seat for cooperating with the top cover means sealed to the support member over said ring to seal the mouth of the liner, the bottom cover means being crimped to the other end of the support member, said plastic liner being supported within the fibrous member having a product stored within the liner which together with the cover means sealed to the support member over the ring forms a gastight impervious container enclosing the storage space for the product to protect such product when there is a difference in pressure between the storage space within the container and the pressure on the outside thereof, and said liner covering said window serving as a means through which the contents of the container can be visible while the condition of the liner exposed across said window indicates the maintenance of the pressure condition within the container.

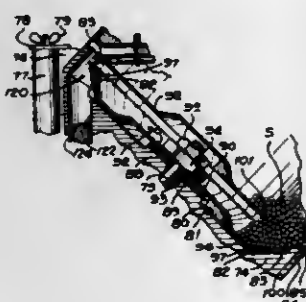
4,282,985

## SEED PLATE

Ray Yamamoto, Rte. 1, Box 1376, Wapato, Wash. 98951  
Filed Jan. 21, 1980, Ser. No. 113,827  
Int. Cl.<sup>3</sup> A01C 7/04

U.S. Cl. 221—254

11 Claims



1. In a hopper having an inclined base portion, upstanding side walls extending upwardly from the base portion and an outlet opening in the base portion at the top of the incline, the improvement comprising a circular seed plate removably disposed within the hopper to overlie the base portion, said plate powered to rotate about its central axis and having a lower face adjacent the hopper base portion, an upper face opposite the hopper base portion and a plurality of cells spaced about the circumference of said plate, each of said cells including:

- an end surface extending generally radially inwardly from the outer diameter of said plate;
- a trailing shelf surface extending from the radially inner end of said end surface forwardly in the direction of rotation of said plate towards the circumference of said plate; and
- a leading shelf surface extending longitudinally forwardly of said trailing shelf surface, said leading shelf surface having a beveled edge portion extending along the intersection of the upper face of said plate and said leading shelf surface.

4,282,986

## METHOD FOR DISCHARGE OF QUANTITIES OF FLUID OR SEMI-FLUID SUBSTANCES FROM A CONTAINER

Bo T. af Ekenstam, Mölndal, and Erik G. P. Nordqvist, Sjöro, both of Sweden, assignors to Landstingens Inkopscentral, Solna, Sweden  
Continuation-in-part of Ser. No. 661,177, Feb. 25, 1976, Pat. No. 4,072,249. This application Dec. 19, 1977, Ser. No. 861,843  
Claims priority, application Sweden, Mar. 3, 1975, 7502318  
The portion of the term of this patent subsequent to Feb. 7, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> B67B 7/00; B65D 37/00

U.S. Cl. 222—1

8 Claims

1. A method of dispensing fluid or semi-fluid liquids or

pastes in which said liquid or paste is contained in a container having a top flexible dome and a bottom dome connected at their open ends to each other and a laterally projecting gripping means at the connection of the open ends of the domes, the bottom dome having a closed spout remote from the open end thereof, said method comprising: forming an opening in said spout, affixing a hypodermic needle to said spout at said opening, pressing said top dome downwardly toward said bottom dome and forcing said top dome into said bottom dome



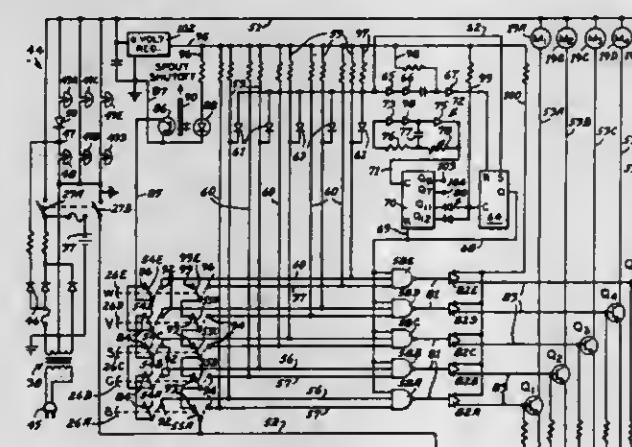
while applying counter-pressure to the gripping means, and discharging said liquid or paste from said bottom dome through the open spout and hypodermic needle under the action of the forcing of the top dome into the bottom dome and the application of the counter-pressure to the gripping means, said counter-pressure acting outside the periphery of the domes whereby to provide stability while also acting at the level of the connection of the domes whereby the fingers of the user are remote from the hypodermic needle, the gripping means also serving to limit the pressing action to the top dome.

4,282,987

## BEVERAGE DISPENSING AND METERING APPARATUS

Ronald C. Thomas, and Ronald G. Thomas, both of P.O. Box 5747, Nashville, Tenn. 37208  
Filed Nov. 24, 1978, Ser. No. 963,412  
Int. Cl.<sup>3</sup> B67D 5/12, 5/64  
U.S. Cl. 222—70

9 Claims



1. A beverage dispensing and metering apparatus comprising:

- (a) a plurality of liquid pumps, each pump having an inlet and an outlet,
- (b) an electric motor drivingly connected to each of said pumps,
- (c) a liquid supply line in fluid communication with each of said pump inlets, each supply line being adapted to lead from a separate liquid storage container,
- (d) a liquid dispensing line in fluid communication with each of said pump outlets,
- (e) electrical power supply means,
- (f) an individual electrical motor control circuit connected to a corresponding electric motor and to said power supply means,
- (g) manually operable switch means in each of said motor control circuits,
- (h) each said manually operable switch means comprising

ganged first and second switches for simultaneous manual actuation between an open position for de-energizing said corresponding electric motor and a closed position for energizing said corresponding electric motor, and  
(i) first interlocking circuit means for electrically coupling all of said first switches and second interlocking circuit means for electrically coupling all of said second switches, whereby manual actuation of only one of said switch means to its closed position will energize only its corresponding electric motor and simultaneously de-energize each of said other electrical motors, and simultaneous actuation of any two or more of said switch means to their open positions will simultaneously de-energize all said electric motors regardless of the positions of said other switch means.

4,282,988

## APPARATUS FOR FACILITATING FLOW OF SOLID PARTICLES BY GRAVITY THROUGH A CONTAINER HAVING AN OPENING IN THE BOTTOM THEREOF

Clarence E. Hulber, Jr., Muskogee, Okla., assignor to Burch I. Williams, Tulsa and B. J. Malouf, Muskogee, both of Okla., part interest to each

Filed Aug. 13, 1976, Ser. No. 714,134  
Int. Cl.<sup>3</sup> B65D 88/28

U.S. Cl. 222—184

8 Claims



1. An apparatus adapted to be positioned within a container for interrupting a consolidating stress field generated within the container to facilitate the flow of solid particles through the container, which apparatus comprises:

- a multisurfaced body the surfaces of which contact said solid particles and are described by curves in both vertical and horizontal directions, the surfaces also converging toward the center and bottom of the container.

4,282,989

## DEVICE WITH A CONICALLY SHAPED HOUSING AND FEELING FOR FEEDING PLASTICS MATERIAL TO AN EXTRUDER

Bernhard Schmitt, Lüdinghausen, Fed. Rep. of Germany, assignor to Joachim Kreyenberg & Co., Münster-Kinderhaus, Fed. Rep. of Germany  
Filed Nov. 2, 1979, Ser. No. 90,646  
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847494

Int. Cl.<sup>3</sup> B65D 88/54

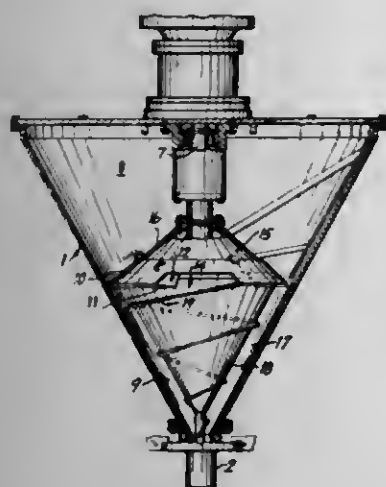
U.S. Cl. 222—316

4 Claims

1. A device for feeding plastics material to an extruder comprising a conically shaped housing with a material outlet opening located at the apex end thereof, motor driven means rotatably mounted within said housing for feeding the material from the material outlet opening in said housing, wherein the improvement comprises that said housing has the apex end thereof directed downwardly, said feeding means comprises a conically shaped wall with the apex end thereof directed downwardly located within and spaced inwardly from the



inner surface of said housing, said wall being disposed in parallel relation with the inner surface of said housing and forming therebetween an annular material flow passageway extending downwardly to the outlet opening from said housing, a screw blade secured to and extending around said wall from the upper end to the lower end thereof and said screw blade extending downwardly from the lower end of said wall through said outlet opening, a partition wall in combination with said feeding means divides the interior of said housing into an upper



storage chamber and a lower material conveying chamber with said conically shaped wall located within said conveying chamber, said partition wall comprises a frusto-conical member having the surfaces thereof diverging in the downward direction, the circumferentially extending lower end of said frusto-conical member having at least one opening there-through, and arcuate segments attached to and extending around the circumferentially extending lower end of said frusto-conical member, said segments being spaced apart in the circumferential direction of said frusto-conical member.

4,282,990

## DISPENSER FOR GRANULAR MATERIAL

Kiyoshi Miyashita, 1328-6, Mitachi, Himeji-shi, Hyogo-ken, Japan

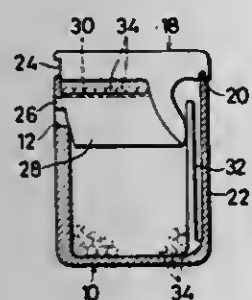
Filed Jul. 25, 1978, Ser. No. 927,902

Claims priority, application Japan, Aug. 6, 1977, 52-105597[U]; Aug. 6, 1977, 52-105598[U]; Apr. 28, 1978, 53-059037[U]

Int. Cl.<sup>2</sup> G01F 11/26; B65D 83/04

U.S. Cl. 222-339

5 Claims



1. A dispenser for dispensing granular material, said dispenser comprising:

- a casing for holding granular material to be dispensed, said casing having an open top, a front wall having therein an outlet, and a rear wall;
- a cap mounted in said open top of said casing;
- said cap having a rear end engaging a top portion of said rear wall of said casing, such that said cap is rockable about said top portion between an upper non-dispensing position and a lower dispensing position;
- said cap having a front end with a projection extending therefrom, said projecting fitting into said outlet in said front wall of said casing, and said projection limiting the extent of rocking movement of said cap toward said upper non-dispensing position thereof;

elastic means, within said casing, for urging said cap toward said upper non-dispensing position thereof;

said cap having formed therein a groove dimensioned to receive therein a predetermined amount of granular material to be dispensed when the dispenser is turned upside down, said groove being positioned to open into and communicate with said outlet when said cap is depressed, against the urging force of said elastic means, into said lower dispensing position, thereby allowing the predetermined amount of granular material in said groove to be dispensed through said outlet, and said groove being positioned to be blocked from communication with said outlet when said cap is in said upper non-dispensing position thereof.

4,282,991

## DISPENSING CLOSURE SEALS

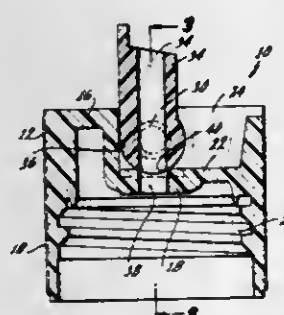
Robert E. Hazard, Kingstown, R.I., assignor to Polytop Corporation, Slatersville, R.I.

Continuation-in-part of Ser. No. 81,213, Oct. 2, 1979. This application Sep. 8, 1980, Ser. No. 185,257

Int. Cl.<sup>3</sup> B67D 3/00, 5/32

U.S. Cl. 222-531

4 Claims



1. A dispensing closure having a cap and a spout, said spout having a base shaped as a surface of revolution extending around an axis and a passage leading therethrough from said base, said cap having an external surface adjacent to said end of said base and an opening leading therethrough intercepting said external surface, said external surface being convex and having a uniform cross-sectional configuration adjacent to said opening, said cap and said spout having cooperating means holding said cap and said spout so that said spout may be rotated between an open position in which said passage and said opening are aligned and a closed position in which said end overlies said opening, said cap including a sealing means formed by said external surface around said opening, said sealing means engaging said end of said spout so as to form a seal therewith at all times, in which the improvement comprises:

- said sealing means comprising an edge on said external surface, the base of said spout only touching said edge to form a seal,
- said external surface adjacent to said edge having a cross-sectional configuration such that in all positions of said end said edge engages said end in the same manner so as to form a seal with respect to said end.

4,282,992

## CLOSURE DEVICE FOR A DISPENSING CONTAINER

Bernard Chessler, 244 W. 74 St., New York, N.Y. 10023

Filed Nov. 30, 1979, Ser. No. 99,039

Int. Cl.<sup>3</sup> B67D 3/00

U.S. Cl. 222-538

5 Claims

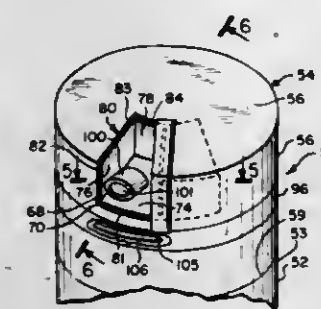
1. A dispensing apparatus comprising:

- a container including a neck portion enclosing an outflow passage;
- a closure for said outflow passage, said closure having a top portion and a skirt extending downwardly from the periphery of said top portion, said closure having a first cutout section in said top portion and a second cutout

section in said skirt, said first cutout section and said second cutout section defining a chamber in said closure;

a spout extending outwardly from said chamber to form an opening through which material within said container can be dispensed;

a cover for said spout, said cover being rotatably mounted on said skirt of said closure and comprising a cap member



rotatably positionable in alignment with said spout, said cover being in a closed position when said cap member is in alignment with said spout and being in an open position when said cap member is out of alignment with said spout, said cap member defining with said cavity an enclosed space surrounding said spout when said cap member is in alignment with said spout.

4,282,993

## QUICK RELEASE BICYCLE BASKET AND CARRIER RACK THEREFOR

Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Co., Inc., Maysville, Ky.

Filed Dec. 13, 1978, Ser. No. 968,750

Int. Cl.<sup>3</sup> B62J 7/02

U.S. Cl. 224-31

6 Claims



1. A basket assembly for a bicycle or the like, said assembly comprising:

- an L-shaped carrier rack having a substantially horizontal bottom portion and an upstanding rear portion, said rear portion including a pair of upwardly convergent, laterally spaced, frame members;
- a basket having front, rear, side and bottom walls defined by a circumferential top frame, a circumferential center frame, and two sets of U-shaped webs the upstanding legs of which are fixedly secured to said top and center frames for defining the upstanding front, rear, and side walls of the basket and wherein the bottom of said U-shaped webs define the bottom wall of the basket,
- hook-defining means projecting from the rear wall of the basket,
- said hook defining means including terminal portions spaced laterally and disposed in spaced relationship with respect to said center frame of said basket, each said terminal portion of said hook defining means opening toward the other spaced terminal portion and being slideably engageable with the upwardly convergent frame members of the rack as the basket is lowered onto the rack whereby the downward movement of the basket relative to the rack is

limited by a wedging action between the hook defining members and the upwardly convergent frame members so as to dispose the bottom wall of the basket in overlying relationship with the horizontal bottom portion of the rack; and

latch means depending from the bottom wall of the basket for pivotal movement between latched and unlatched positions relative to the bottom portion of the rack, said pivoted latch being required to overcome the resiliency of one of the latch elements in order to move from latched to unlatched position or from unlatched to latched position, said latch means when in latched position engaging the horizontal bottom portion of the rack for anchoring the basket to the rack and insuring against displacement therefrom.

4,282,994

## WHEEL CARRIER ASSEMBLY

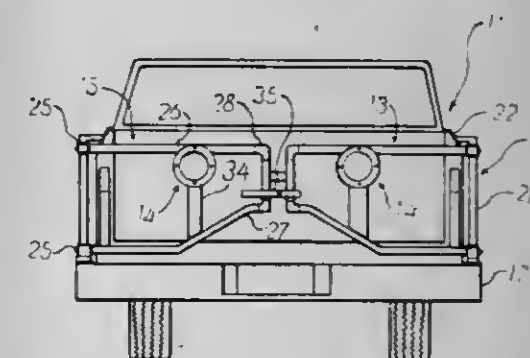
Raymond C. Hilliard, 2126 8th Ave. North, Great Falls, Mont. 59401

Filed Jun. 14, 1979, Ser. No. 48,458

Int. Cl.<sup>3</sup> B62D 43/02

U.S. Cl. 224-42.06

9 Claims



1. A spare wheel apparatus including two symmetrical wheel carrier assemblies, each assembly including a vehicle mounting portion, a supporting portion and a wheel holding portion, said vehicle mounting portion including a socket member engageable with a vehicle bumper, a post section extending upwardly from said socket member, a bracket section affixed adjacent the upper portion of said post section, said bracket section including means for attaching same to a vehicle body, said supporting portion including a plurality of hinge members and being joined by a connecting section adjacent the ends thereof remote from said hinge members, said wheel holding portion including a hub member, means for securing a wheel to said wheel holding portion, said wheel holding portion being affixed to said supporting portion intermediate said hinge members and said connecting section; said apparatus including latch means selectively connecting said two wheel carrier assemblies, an anchor member mountable on a vehicle body at a point thereon between said assemblies; whereby said latch means is selectively engageable with said anchor member to lock said two wheel carrier assemblies in a single vertical plane.

4,282,995

## SPARE TIRE BRACKET LOCK FOR PICK-UP TRUCKS AND LIKE VEHICLES

George O. Austin, Phoenix, Ariz., assignor to Wilma D. Austin, Phoenix, Ariz.

Filed Mar. 27, 1980, Ser. No. 134,586

Int. Cl.<sup>3</sup> B62D 43/04; E05B 65/12

U.S. Cl. 224-42.23

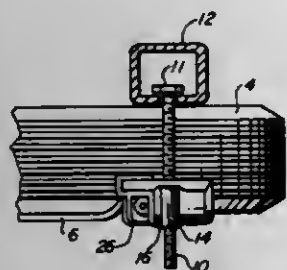
8 Claims

1. A spare tire bracket lock for deterring theft of a spare tire from a pick-up truck or similar vehicle, the vehicle including an elongated bracket for retaining the spare tire against the undercarriage of the vehicle, the vehicle also including a threaded bolt attached to the undercarriage of the vehicle for



extension through a hole in one end of said elongated bracket, said threaded bolt being engaged by a nut for securing said elongated bracket to said threaded bolt, said nut including a flange having an eye therein, said spare tire bracket lock comprising in combination:

- a. a lipped member for sliding over one edge of said elongated bracket, said lipped member engaging an upper surface, a lower surface, and one edge of said elongated bracket; and



- b. a slotted member having a slot for slidably receiving the flange of said nut as said lipped member is slid over the one edge of said elongated bracket, said slotted member being attached to said lipped member for preventing rotation of the flange of said nut, said slotted member permitting a shackle of a padlock to be passed through the eye within the flange of said nut for preventing unauthorized removal of the spare tire.

4,282,996

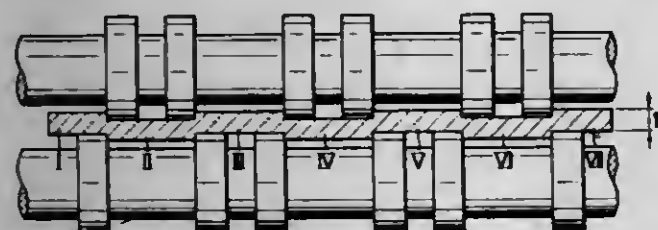
#### METHOD OF CONTINUOUS SLITTING OF FLAT MATERIAL AND APPARATUS THEREFOR

Teizo Maeda, 30-12, Kohinata-2-chome, Bunkyo-ku, Tokyo, and Masao Murakawa, 215, Misono-cho, Kodairo-shi, Tokyo, both of Japan, assignors to Teizo Maeda; Masao Murakawa and Nishimori Kogyo Co., Ltd., Osaka, all of Japan  
Filed Feb. 7, 1977, Ser. No. 766,006

Claims priority, application Japan, Feb. 9, 1976, 51/12401  
Int. Cl.<sup>3</sup> B26F 3/00; B23D 19/06

U.S. Cl. 225—2

18 Claims



2. A method of cold cutting a strip of flat material, said method comprising the steps of:

- (a) feeding said flat material to a first working zone;
- (b) subjecting said flat material to a first working action by an opposing pair of cutter disc means disposed in said first working zone to provide a shearing force thereto, wherein the clearance defined between adjacent side faces of said opposing pair of cutter disc means is 0% to -10% of the thickness of said flat material, said shearing force being perpendicular to the surface of said flat material along a longitudinal line parallel to the longitudinal edge of said flat material whereby a partial penetration is formed in said flat material;
- (c) feeding said partially penetrated material to a second working zone; and
- (d) passing said partially penetrated material through a predetermined spacing between a pair of opposed roller means disposed in said second working zone wherein said partially penetrated material is pressed in a direction opposite to the direction of said shear force by said roller means such that said partially penetrated material is returned to a flat material wherein said material is severed

along said line of partial penetration such that said material is cut into strips without burrs on the edges thereof.

4,282,997

#### APPARATUS FOR REMOVING EXPOSED FILMS AND BACKING STRIPS FROM CASSETTES

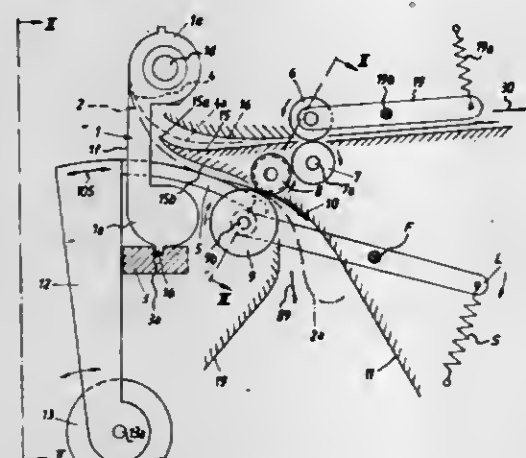
Helmut Zangenfeind, Puchheim, Fed. Rep. of Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 587,231, Jun. 13, 1975, abandoned, which is a continuation of Ser. No. 399,506, Sep. 21, 1973, abandoned. This application Jun. 7, 1979, Ser. No. 46,499  
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1972, 2246671

Int. Cl.<sup>3</sup> B65H 17/36

U.S. Cl. 226—91

3 Claims



1. Apparatus for removing films and backing strips from containers of the type wherein a casing of the container is provided with registering first and second openings and at least the leader of convoluted backing strip is located between said openings, comprising a pusher movable forwardly and backwardly along a predetermined path; locating means arranged to support the casing of a container in such position that the openings of the casing are located in said path whereby said pusher passes, during the forward movement thereof, first through one and thereupon through the other opening of the casing which is supported by said locating means and expels the leader of the backing strip through the other opening; advancing means located behind the other opening of the casing which is supported by said locating means and arranged to engage and advance the expelled leader of the backing strip lengthwise and to thereby draw the film from the casing through the intermediary of the backing strip, said advancing means comprising first and second rotary members located at the opposite sides of said path and means for biasing one of said rotary members against the other of said rotary members; and guide means defining a channel for the leader of the film, said guide means having an inlet adjacent to the other opening of the casing which is supported by said locating means and said guide means comprising deflector means cooperating with the casing which is supported by said locating means to urge successive increments of the backing strip against said deflector means while the backing strip is being moved lengthwise whereby said deflector means automatically introduces the leader of the film into said channel as soon as the leader of the film reaches said deflector means, said pusher having a forward portion about which said leader of said backing strip becomes trained when said pusher expels said leader of said backing strip through said other opening, and one of said rotary members having a peripheral groove into which said portion of said pusher enters during forward movement of said pusher in said path.

4,282,998

#### MAINTENANCE OF CONSTANT WEB CLEARANCE AT CONTACTLESS TURNING GUIDE

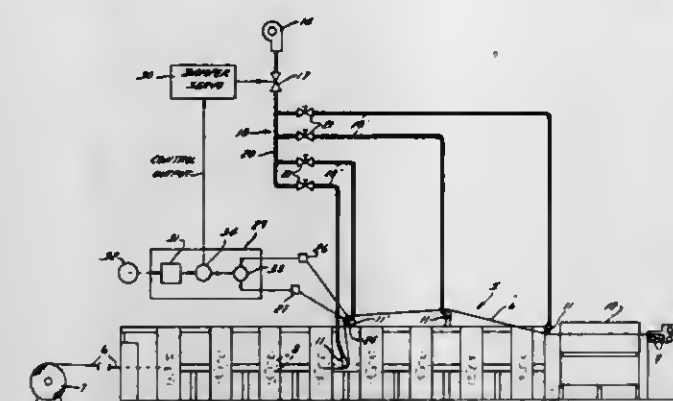
Andreas Peekna, Green Bay, Wis., assignor to W. R. Grace & Co., New York, N.Y.

Filed May 9, 1980, Ser. No. 148,197

Int. Cl.<sup>3</sup> B65H 17/32

U.S. Cl. 226—97

8 Claims



1. In a contactless web guiding apparatus comprising a turning guide having an exterior curved surface which a running web follows for change in its running direction and having a plenum chamber into which pressurized supply air is fed and from which air issues through outlets that open to said surface to provide a pressurized air cushion between said surface and the web whereby the web is held at a distance from said surface, and controllable means for delivering pressurized supply air to the plenum chamber at an adjustably variable rate, automatic means for so controlling said controllable means as to cause said distance between the web and said surface to be maintained substantially constant notwithstanding variations in web tension, said automatic means comprising:

- A. supply pressure sensing means arranged to produce a supply pressure output substantially corresponding to a function of the pressure of supply air in said plenum chamber;
- B. cushion pressure sensing means having an inlet at said surface and arranged to produce a cushion pressure output substantially corresponding to a function of the pressure of air in said air cushion;
- C. ratio means connected with said supply pressure sensing means and said cushion pressure sensing means to receive their outputs and arranged to produce a ratio signal that corresponds to a function of a ratio relationship between said supply pressure output and said cushion pressure output;
- D. demand value means for generating a set-point signal substantially corresponding to a desired value of said distance;
- E. comparison means connected with said demand value means and said ratio means for producing a control output substantially corresponding to the prevailing difference between said set-point signal and said ratio signal; and
- F. means connected between said comparison means and said controllable means for impressing said control output upon said controllable means.

4,282,999

#### H-DIVIDER CONTAINERS

Lenard E. Moen, 7914 Michigan Ave., Whittier, Calif. 90602

Division of Ser. No. 910,198, May 30, 1978, Pat. No. 4,220,076.

This application May 27, 1980, Ser. No. 153,276

Int. Cl.<sup>3</sup> B65D 5/32, 5/48

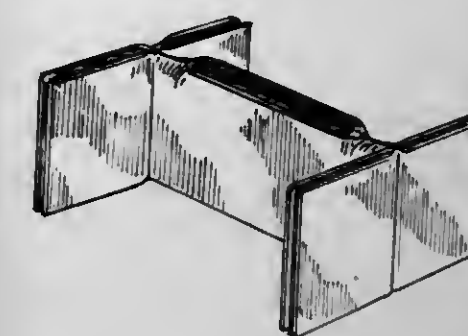
U.S. Cl. 229—15

15 Claims

1. A preformed paperboard blank to be erected into an H-divider configuration, said blank comprising a paperboard sheet consisting of a layer sandwiched between a pair of liners and defining:

- a pair of divider panels joined together along a hinge line,
- a pair of end wall panels at the transversely opposite ends of

each of said divider panels and foldably joined to the corresponding one of said divider panels,



said hinge line comprising a slit score length in which one liner and the corresponding part of said layer are severed, leaving the other liner intact.

4,283,000

#### SAMPLE HOLDER/DISPENSER

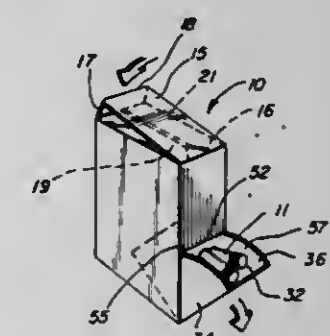
William L. White, Indian Head Park, Ill., assignor to Patrick H. Joyce, Chicago, Ill., a part interest

Filed Feb. 4, 1980, Ser. No. 118,649

Int. Cl.<sup>3</sup> B65D 1/22, 5/42

U.S. Cl. 229—17 B

10 Claims



1. A dispenser arranged to be carried flat and manually assembled in an erected arrangement for dispensing small articles, said dispenser comprising:

- a tubular sidewall having fold lines permitting the sidewall to be collapsed into a flat arrangement and opened into a vertically extending tubular expanded arrangement, a bottom wall hingedly connected to a lower end of said sidewall, means on said bottom wall and sidewall for locking the bottom wall across said lower end of the sidewall with the sidewall disposed in the expanded arrangement thereby to retain the sidewall in the expanded arrangement and define with said sidewall a closed-bottom container for containing a plurality of small articles to be dispensed, said sidewall further defining an opening at said lower end, a closure having a lower end hingedly connected to said bottom wall for selectively closing said opening, and flanges on said closure extending inwardly through said opening and having a stop shoulder on an inner distal portion thereof disposed to engage the sidewall at an edge of said opening to limit the movement of the closure away from said opening to a preselected open position, said closure and flanges cooperatively defining an upwardly open access space when said closure is in said open position;
- a top wall hingedly connected to said sidewall above said opening and having a flap portion connected to the distal end thereof at a fold line for retaining the top wall across the top of the tubular sidewall to act as a selectively positionable cover for the dispenser permitting ready refilling of the dispenser as desired; and
- guide means carried on said bottom wall for guiding the small articles from the container outwardly through the opening into said access space.



4,283,001

**TUBULAR CARTON WITH POLYGONAL CROSS-SECTION**

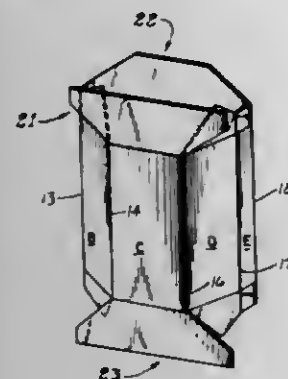
George L. Meyers, Ashland, Ohio, assignor to American Can Company, Greenwich, Conn.

Filed Nov. 9, 1979, Ser. No. 92,692

Int. Cl.<sup>3</sup> B65D 5/36, 5/10

U.S. Cl. 229-37 R

8 Claims



1. A tubular container comprising a plurality of panels bounded and joined by hinge lines and a fastening flap, said container in the erect condition defining a polygon in cross-section, said container being collapsible about predetermined hinge lines, said hinge lines being located at corners of said polygon, into a flat condition without mutilating or separating said panels, one predetermined contiguous set of said panels lying in generally planar face-to-face relation with a second predetermined contiguous set, comprising the remainder, of said panels, when the container is in the recited flat condition, the hinge to hinge dimension of at least one of said panels in said first set being different from the hinge to hinge dimension of each said panel, taken individually, in said second set.

4,283,002

**SELF OPENING CARTON**

Duane R. Mode, Minneapolis, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 17, 1979, Ser. No. 85,787

Int. Cl.<sup>3</sup> B65D 5/42, 25/00

U.S. Cl. 229-41 R

5 Claims



1. A container for being shipped as a flat package and erected to form a three dimensional container by applying a force to the sides of said flat package comprising:

- a base,
- a cover connected to and superimposed over said base to form a flat, rectangular package for shipping, said cover being integrally formed with said base and including an opening for introducing products into said container when in the erected state, and
- means formed with said base and said cover in operative relationship to form a three dimensional container from said flat package when force is applied to the side edges of said flat package, said three dimensional forming means comprising:
  - end walls formed in said base,
  - a lip projecting from the outer edge of each end wall,
  - side walls formed in said base,
  - a web formed in said base and hingedly connecting each corner formed by a side wall and an adjacent end wall, and
  - a guide panel formed with each end of said cover and

each folded under said cover to overlap a portion of each of said end walls whereby said end wall panel lip is forced upwardly as said cover and base separate when a force is applied to the side edges of said flat package thereby forming a three dimensional container.

4,283,003

**RECLOSABLE ENVELOPE**

Harold R. Lillibridge, San Mateo, Calif., assignor to Champion International Corporation, Stamford, Conn.

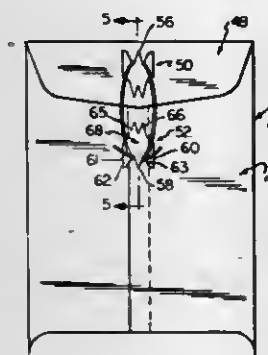
Continuation of Ser. No. 16,308, Feb. 28, 1979, Pat. No.

4,234,122. This application Dec. 19, 1979, Ser. No. 105,210

Int. Cl.<sup>3</sup> B65D 27/28

U.S. Cl. 229-77

2 Claims



1. A reusable, reclosable envelope comprising: an enclosed body portion hingedly connected to an overlying flap; a first tab rigidly connected to the outer surface of said flap by an adhesive; a second tab rigidly connected to the outer surface of said body portion by an adhesive; and means for releasably interconnecting said first and second tabs to thereby releasably secure said overlying flap and said body portion, said means including an elongated, flexible member; said first and second tabs being identical in shape but facing in opposite directions, each tab, also, being complementary in shape to the other by having a first portion adapted to be nestably received and interlocked within a second portion whereby the tabs may be formed in tandem from a single sheet of material each tab including a support portion having two outer elongated fingers and an inner elongated finger spaced about one edge thereof, with the support portion of said second tab facing away from said flap, each of said elongated fingers having a base and at least two opposed sides, the bottom surface of said inner elongated finger being free of adhesive, with the outer elongated fingers extending at least as far as the inner elongated finger to provide support for said second tab and, said bases being integral with said support portion, whereby said flexible member is capable of being releasably received between the bottom surface of said inner elongated finger and the top surface of said body portion.

4,283,004

**VIBRATION ATTENUATION SUPPORT ASSEMBLY FOR A CENTRIFUGAL LIQUID PROCESSING APPARATUS**

Rene G. Lamadrid, Bethesda, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 15, 1979, Ser. No. 66,576

Int. Cl.<sup>3</sup> B01D 21/26, 43/00

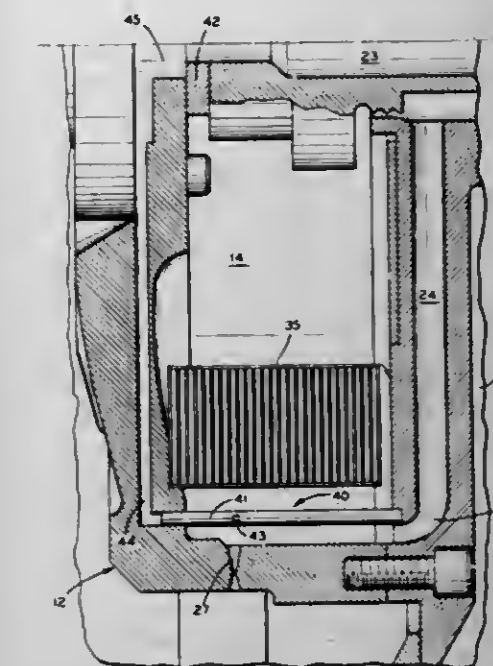
U.S. Cl. 233-1 C

19 Claims

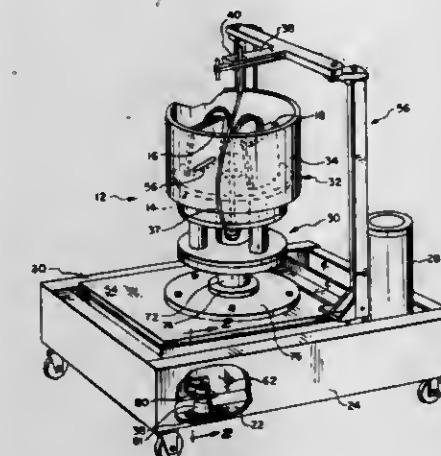
1. In a centrifugal liquid processing apparatus of the type which is utilized for separating a liquid containing particles, such as blood, into the components thereof and which includes a cabinet having sidewalls and a floor, a prime mover within

the cabinet, a rotor assembly which is situated within the cabinet and which includes a rotor mounting receptacles thereon, tubing coupled directly between a source of the liquid outside the rotor to the receptacles within the rotor without the use of fluid seals, a non-rotatable arm within the cabinet for holding the tubings and for directing the tubings toward the rotor assembly and rotatable tubing guide means for guiding the tubings from the holder to the rotor, the tubing guide means being mounted for coaxial rotation with the rotor, and the rotor assembly including drive train means for coupling the prime mover to the rotor and to the tubing guide means for rotating the tubing guide means at a first speed and for rotating the rotor at a second speed twice the first speed to prevent the tubings from becoming entangled, the improvement compris-

outer ends of said radially disposed fluid conduits for discharging clean fluid tangentially past the entrance of said radially



disposed solid contaminant discharge orifice, thereby preventing accumulations of solid contaminants in the vicinity of said orifice.



ing a vibration attenuation support means for supporting the rotor assembly, the non-rotatable arm which is fixed to and forms part of said support means, and the prime mover on the floor of the cabinet and for attenuating the vibrations produced as a result of an unbalanced mass in the rotating parts of the apparatus thereby reducing the transmission of such vibrations to the cabinet, said vibration attenuation support means comprising an attenuation and support assembly including a weldment on which the rotor assembly, the prime mover, and said non-rotatable arm are mounted, and elastomeric means for supporting said weldment on the floor of the cabinet and the ratio of the unbalanced mass to the mass of said weldment, said arm, the rotor assembly and the prime mover being between 1:1000 and 1:10,000.

4,283,005

**PUMP AND CENTRIFUGAL SEPARATOR APPARATUS**

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

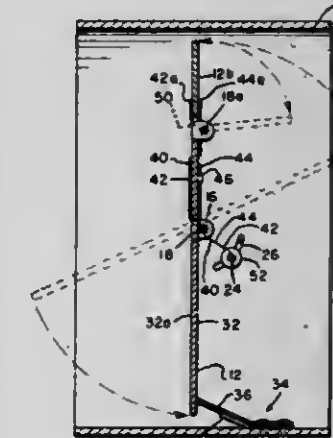
Filed Oct. 1, 1979, Ser. No. 80,379

Int. Cl.<sup>3</sup> B04B 1/10, 11/00

U.S. Cl. 233-47 A

1 Claim

1. In a centrifugal separator apparatus for separating oil well production fluid into its constituents including a rotatable casing defining a pumping and separating chamber, means for delivering the production fluid to the chamber, means for collecting and discharging a pressurized clean fluid constituent of the production fluid from the casing, and a plurality of radially disposed orifices in the outer periphery of the chamber for discharging solid contaminant matter constituent from the casing, the improvement comprising: means in said casing defining a plurality of generally radially disposed fluid conduits connected at their inner end to the clean fluid collecting and discharging means for diverting a portion of the clean fluid into said radially disposed fluid conduits, a plurality of small diameter pipes mounted in and rotatable with said chamber and disposed in parallel relationship to the axis of rotation of said chamber, said pipes being respectively disposed adjacent to the radially disposed contaminant discharge orifices, each said pipe having at least one orifice in its side wall tangentially directed relative to the chamber periphery, and means in said casing respectively connecting the bores of said pipes to the



15. A thermally-activated device, comprising: a leaf-type, planar element; means supporting said element for rotary movement of said element about an axis; and means engaged with said element for causing rotary movement of the latter from one of two dispositions to the other thereof; wherein said rotary-movement-causing means comprises a thermally-responsive component which, upon exposure thereof to a prescribed temperature, effects rotary movement of said element from one of said two dispositions to the other thereof; said closure element comprises a plurality of leaf-type, planar sections; and further including means joining said sections together, for relative rotary movement therebetween; and means engaged with said sections for causing rotary movement, of at least one of said sections relative to another section of said plurality thereof, from a first of two dispositions to a second thereof; wherein



said engaged means comprises a thermally-responsive component which, upon exposure thereof to a prescribed temperature, effects rotary movement of said one section from one of said first and second dispositions to the alternative thereof;

and

said engaged means comprises a plurality of said thermally-responsive components which, upon exposure of one of said components of said plurality thereof to a prescribed temperature, effects rotary movement of said one section from one of said first and second dispositions to the alternative thereof, as aforesaid, and, upon exposure of a second of said components to a given temperature other than said prescribed temperature, effects rotary movement of said one section from one of said first and second dispositions to another disposition.

4,283,007

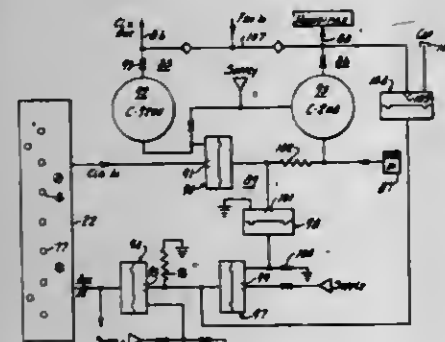
### MULTIPLE LOAD INTEGRATED FLUID CONTROL UNITS

Scott B. Bramow, Oak Creek; Richard N. Laakaniemi, Hales Corners, and Paul E. Wichman, Brookfield, all of Wis., assignors to Johnson Controls, Inc., Milwaukee, Wis.  
Division of Ser. No. 6,865, Jan. 26, 1979, Pat. No. 4,199,101.  
This application Nov. 9, 1979, Ser. No. 92,703

Int. Cl.<sup>3</sup> F24F 3/14

U.S. Cl. 236—44 C

3 Claims



1. A humidity logic control unit for connection to a temperature control unit generating a temperature control signal and an outside air temperature related switchover signal, comprising a first temperature channel having a first input means adapted to be connected to receive the control signal and an output means adapted to be connected to a conditioning means, a second humidity channel having a second input means adapted to be connected to a humidity demand signal source and an output means adapted to control a humidification means, an interlock means operable to connect the second input means to control the output of the first channel conjointly with said first channel input, a switchover fluid repeater having an input chamber adapted to receive said switchover signal and having an output chamber, a first fluid switch having an input chamber adapted to be connected to said fluid repeater and an output chamber connected to said interlock means to selectively actuate said interlock means and thereby control the output of the first channel in accordance with the relative level of signal levels at the first and second inputs, and a second fluid switch having an input chamber adapted to be connected to said fluid repeater to respond to said switchover signal and connected to hold said second channel inactive.

4,283,008

### PRESSURIZED SIGNAL CONTROL APPARATUS

H. Kenneth Ring, Jr., Houston, Minn., assignor to The Trane Company, La Crosse, Wis.

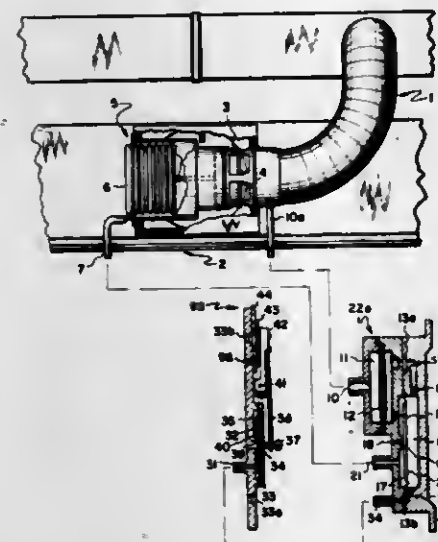
Division of Ser. No. 45,527, Jun. 4, 1979, Pat. No. 4,231,515.

This application May 19, 1980, Ser. No. 150,782

Int. Cl.<sup>3</sup> F24F 7/06

U.S. Cl. 236—49

9 Claims

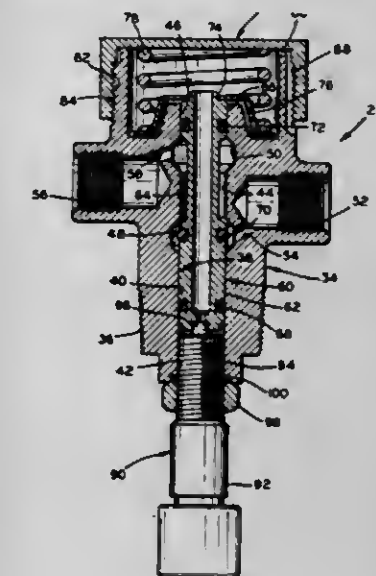


1. In a temperature conditioning system having means for producing pressurized temperature conditioned air, duct means for delivering said air into a space, and means for regulating the flow of said air through said duct means in response to a control signal indicative of the temperature in the space, the improvement comprising

- housing means for defining a control chamber and an actuator chamber;
  - supply port means in fluid communication with said duct means upstream of said flow regulating means, said supply port means being operative to receive air from said duct means;
  - pressure regulator means in fluid communication with said supply port means, for regulating the pressure of air from said duct means to an essentially constant value;
  - restriction means disposed between said pressure regulator means and said control chamber, for limiting the flow of air from said pressure regulator means into said control chamber;
  - control port means in fluid communication with said control chamber, for receiving said control signal which is to be amplified, said control signal being indicative of the temperature in the conditioned space;
  - first bleed valve means for bleeding air from said actuator chamber, said actuator chamber being in fluid communication with said supply port means;
  - actuator port means in fluid communication with said actuator chamber, for conveying air to actuate said flow regulator means, thereby effecting regulation of air flow in said duct means;
  - diaphragm means forming a common wall of said control chamber and said actuator chamber and operative to close said first bleed valve means in response to the pressure said control signal exerts on said diaphragm means, and to open said first bleed valve means in response to pressure exerted on said diaphragm means in said actuator chamber, said pressure acting thereon in opposition, whereby the pressure of air at said actuator port means is made essentially equal to the pressure of said control signal, though having a larger available volume of flow;
  - second bleed valve means in fluid communication with said control port means, for bleeding air from said control port means; and
  - temperature responsive means for controlling the flow of air out said second bleed port means in response to the temperature of said space.
5. In a temperature conditioning system having means for

producing pressurized temperature conditioned air, duct means for delivering said air into a space, and means for regulating the flow of said air through said duct means in response to a control signal indicative of the temperature in the space, the improvement comprising

- first housing means for defining a control chamber and an actuator chamber;
- supply port means in fluid communication with said duct means upstream of said regulating means, said supply port means being operative to receive air from said duct means;
- restriction means disposed between said supply port means and said control chamber, for limiting the flow of air from said supply port means into said control chamber;
- control port means in fluid communication with said control chamber, for receiving said control signal which is to be amplified, said control signal being indicative of temperature in the conditioned space;
- first bleed valve means for bleeding air from said actuator chamber, said actuator chamber being in fluid communication with said supply port means;
- actuator port means in fluid communication with said actuator chamber, for conveying air to actuate said flow regulator means, thereby effecting regulation of air flow in said duct means;
- first diaphragm means forming a common wall of said control chamber and said actuator chamber, and operative to close said first bleed valve means in response to the pressure said control signal exerts on said first diaphragm means, and to open said first bleed valve means in response to pressure exerted on said first diaphragm means in said actuator chamber, said pressures acting thereon in opposition, whereby the pressure of air at said actuator port means is made essentially equal to the pressure of said control signal, though having a larger available volume of flow;
- thermostat means for generating said control signal responsive to temperature in said space and including
  - second housing means for defining a chamber;
  - port means in fluid communication with said control port means, for receiving air from said control chamber and for transmitting said control signal, said control signal changing pressure in response to the temperature in said space;
  - second bleed valve means for bleeding air from said chamber;
  - second diaphragm means forming a wall of said chamber and operative to control the flow of air out said second bleed valve means, and to open said second bleed valve means in response to pressure exerted upon said second diaphragm means by air from said control port means, thereby causing said control signal to be essentially independent of changes in air pressure in said duct means; and
  - temperature responsive means adjacent said second diaphragm means for directly exerting a force thereon, thereby biasing said second bleed valve means to close in response to a change in the temperature.



ber opposite said first sealing member, said valve spool being moveable in said central passage among a first condition in which said third sealing member seals said exhaust bore, said intermediate bore is open, and said first sealing member seals said end bore, a second condition in which said second sealing member seals said intermediate bore, said third sealing member seals said exhaust bore, and said first sealing member seals said end bore, and a third condition in which said second sealing member seals said intermediate bore, said exhaust bore is open, and said first sealing member seals said end bore, temperature-responsive means for moving said spool in one direction in said central passage, and resilient means for urging said spool in the opposite direction in said central passage.

4,283,010

### METHOD AND APPARATUS FOR IRRIGATION OF FIELDS BY MEANS OF FLEXIBLE HOSES

Amatzia Arzi, Doar Na Taanach, Ram'on, Israel, and David Chiel, Afulah, Israel, assignors to Amatzia Arzi, Ram'on and Metal Works Ramat David, Ramat David, both of, Israel

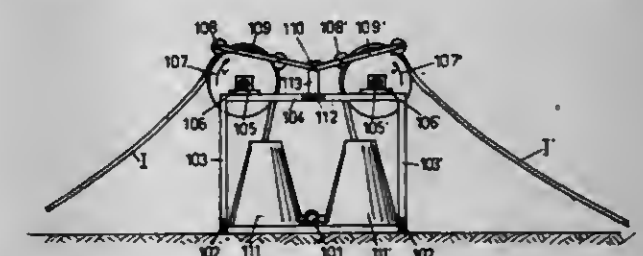
Filed Aug. 16, 1979, Ser. No. 67,233

Claims priority, application Israel, Apr. 9, 1979, 57026

Int. Cl.<sup>3</sup> B05B 3/18; B65H 75/34

U.S. Cl. 239—1

8 Claims



1. A method of irrigating a field by means of flexible hoses, comprising the following steps:  
laying and stretching at least two hoses in their entire length, in a parallel spaced apart relationship, on a field to be irrigated;  
supplying water under pressure to the rear of said hoses and

4,283,009

### CONTROL VALVE FOR FLUID-OPERATED CLUTCH

Brian C. Deem, Avon Lake, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 7, 1980, Ser. No. 119,338

Int. Cl.<sup>3</sup> G05D 23/12

U.S. Cl. 236—86

10 Claims

1. A valve for causing engagement and disengagement of a fluid-actuated clutch in response to the temperature of a fluid which varies according to the engaged or disengaged condition of said clutch, said valve comprising a housing having a central internal passage extending therethrough, said passage having an intermediate bore therein, said housing having an inlet passage communicating with one end of said bore and an outlet passage communicating with the other end of said bore, said central passage having an end bore therein in line with said



causing the water to escape through the completely open front ends of said hoses;  
pulling said hoses and moving said open front ends over the ground in rearward direction by means of a transportable mechanical hose-moving device positioned proximate said rear ends of said hoses, at a velocity proportional to the water volume passing through said hoses, while water is caused to flow out of said open front ends;  
gathering the portions of said hoses that have passed through said hose-moving device; and  
stopping the water supply to said rear ends of said hoses as soon as said front ends have reached said hose-moving device.

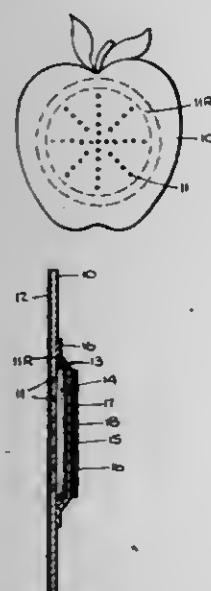
4,283,011

## SCENTED STICKER

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087  
Continuation-in-part of Ser. No. 971,380, Dec. 20, 1978. This application Aug. 28, 1979, Ser. No. 70,512  
Int. Cl.<sup>3</sup> A61L 9/12

U.S. Cl. 239—36

4 Claims



1. A scented sticker attachable to an article of clothing or other surface, each sticker comprising:

- A an applique sheet profiled to simulate an odoriferous object and formed of metal foil conformable to said surface, said sheet having a perforated zone thereon;
- B a dish assembly constituted by a shallow dish having a flat base and a flange, said flange being bonded to a ring zone on the rear face of the applique sheet which surrounds the perforated zone to define a chamber which is vented through said perforated zone, an absorbent pad disposed in said chamber saturated with a volatile scent whose odor simulates the characteristic odor of said object, said dish assembly and said applique sheet being impervious to said volatile scent, and a layer of pressure-sensitive adhesive on said base to attach the base of said dish to said surface, said layer being covered by a removable release paper; and

C a removable seal formed of transparent film material impervious to said volatile scent having a pressure-sensitive adhesive coating thereon secured to said applique sheet to cover said apertured zone to prevent emission of said scent until the seal is removed.

### 4,283,012 SELF-CLEANING NOZZLE CONSTRUCTION FOR PRODUCT ENROBING APPARATUS

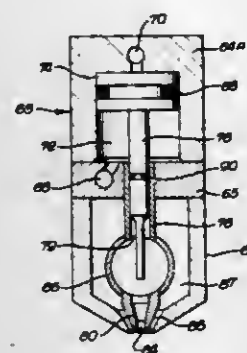
Harold W. Hanson, Newport Beach, Calif., assignor to Par-way Mfg. Co., Newport Beach, Calif.

Filed Oct. 31, 1979, Ser. No. 90,040

Int. Cl.<sup>3</sup> B05B 15/02; B05C 5/00

U.S. Cl. 239—118

18 Claims



1. An enrobing apparatus for applying an ingredient spray to food products comprising:
  - a ingredient tube for carrying a food ingredient to be sprayed;
  - a spray air tube for carrying spray air to assist in the spraying of said ingredient;
  - a housing;
  - a nozzle opening within said housing, said nozzle opening including an inner orifice for said ingredient and an annular outer orifice surrounding said inner orifice for said spray air;
  - a spray air passage connecting said spray air tube to said outer orifice;
  - an ingredient passage connecting said ingredient tube to said inner orifice;
  - a cylinder defined by said housing on the opposite side of said ingredient tube from said nozzle opening;
  - a piston reciprocable within said cylinder;
  - first and second air ports entering said cylinder on opposite sides of said piston;
  - first and second control air passages connected to said first and second air ports, respectively, for supplying compressed control air to said cylinder to cause reciprocation of said piston; and
  - a clean-out plunger connected to said piston and aligned with said inner orifice to enter and clean said inner orifice upon reciprocation of said piston.

4,283,013

## DISPENSER FOR A LIQUID PRODUCT

Jean-Luc Leveque, Montfermeil; Alain Guiolet, Paris, and Jean-Claude Garson, Aulnay-sous-Bois, all of France, assignors to L'Oreal, Paris, France

Filed Apr. 26, 1978, Ser. No. 900,311

Claims priority, application France, Apr. 26, 1977, 77 12568

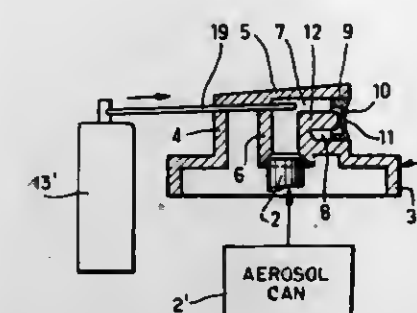
Int. Cl.<sup>3</sup> B65D 83/14

U.S. Cl. 239—304

12 Claims

1. A liquid product dispenser comprising a pressurized container containing a liquid product to be dispensed and a pressurized gas for discharging the liquid product from the container, outlet means on said container through which the liquid product is discharged, and dispensing means connected to said outlet means and comprising (a) a spray nozzle supplied with liquid product from said outlet means and having an ejection orifice, (b) injection duct means having an outlet disposed upstream of said ejection orifice of said nozzle for supplying additional compressed gas to mix with and dispense said prod-

uct through said ejection orifice, and (c) a further container containing a liquefied gas to serve as said additional com-



pressed gas, said further container being connected to said injection duct means.

4,283,014

## MOBILE SPREADER APPARATUS DRIVE SYSTEM

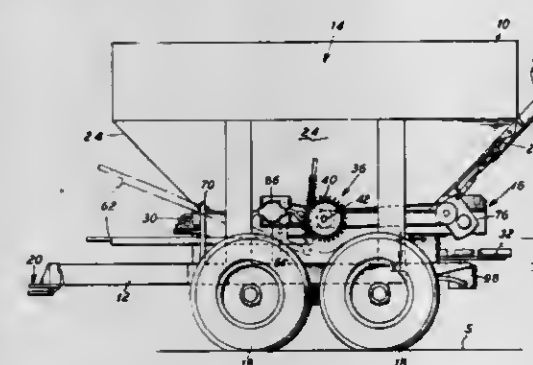
Dwight F. Devorak, P.O. Box 268, Hazen, Ark. 72064

Filed Apr. 9, 1979, Ser. No. 28,243

Int. Cl.<sup>3</sup> A01C 17/00

U.S. Cl. 239—677

13 Claims



13. In a wheeled-mobile spreader apparatus the improvement of a self-cleaning friction drive comprising:
  - a power train having a rotatable transfer shaft;
  - a movable metal driving wheel connected to said shaft and adjusted to be selectively engaged with a ground wheel, said driving wheel comprising a rim member,
  - a row of transverse cleats spaced circumferentially about said rim member and projecting radially outwardly thereof sufficient so that the cleats are urged against the adjoining ground contacting surface of the ground wheel to penetrate dirt and debris adhering to the surface and to achieve positive driving contact with the ground wheel and said cleats extend axially outward beyond the metal wheel and have spaces between them allowing dirt and debris to pass so that said drive wheel is essentially self-cleaning.

4,283,015

### APPARATUS FOR REMOVING NO-BAKE COATINGS FROM FOUNDRY SAND, AND CLASSIFYING THE RECLAIMED SAND ACCORDING TO PARTICLE SIZE

William J. Smith, Hazelton, Pa., assignor to Weatherly Foundry & Manufacturing Co., Weatherly, Pa.

Continuation-in-part of Ser. No. 847,749, Nov. 2, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,206

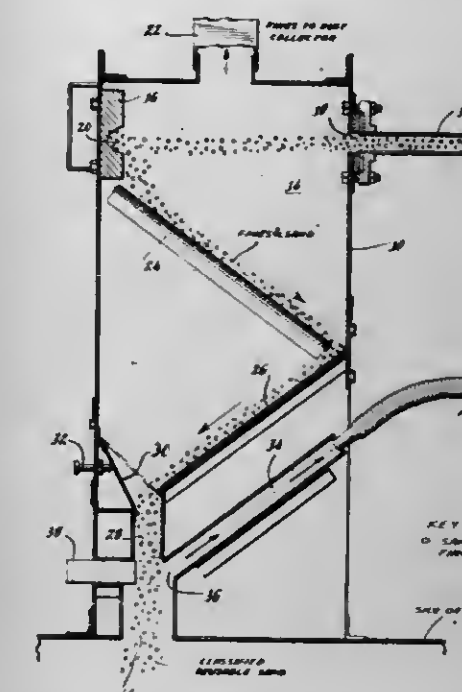
Int. Cl.<sup>3</sup> B02C 19/06

U.S. Cl. 241—5

3 Claims

1. A method for removing no-bake rigid coatings from foundry sand and classifying the reclaimed sand according to particle size, which comprises the steps of,
  - crushing no-bake foundry sand lumps into grain sized no-bake coated sand grains,
  - fluidizing said coated sand grains in a stream to a velocity just sufficient for pneumatic transport,
  - pneumatically transporting said coated sand particles to a

point where reclaimed and classified sand is to be used, and without accelerating said coated sand particles to higher velocity, directing said fluidized sand particles at a target transversely



disposed in said stream to cause the rigid no-bake coatings encasing the sand grains to fracture on impact with said target to provide uncoated sand grains and no-bake coating particles, and thereafter separating the re-usable sand grains and the no-bake coatings.

4,283,016

### METHOD AND APPARATUS FOR CONTROLLING THE EFFECT OF THE CENTRIFUGAL FORCE ON THE STOCK IN PULP DEFIBRATING APPARATUS

Rolf B. Reinhold, 834, 171st Pl., NE., Bellevue, Wash. 98008

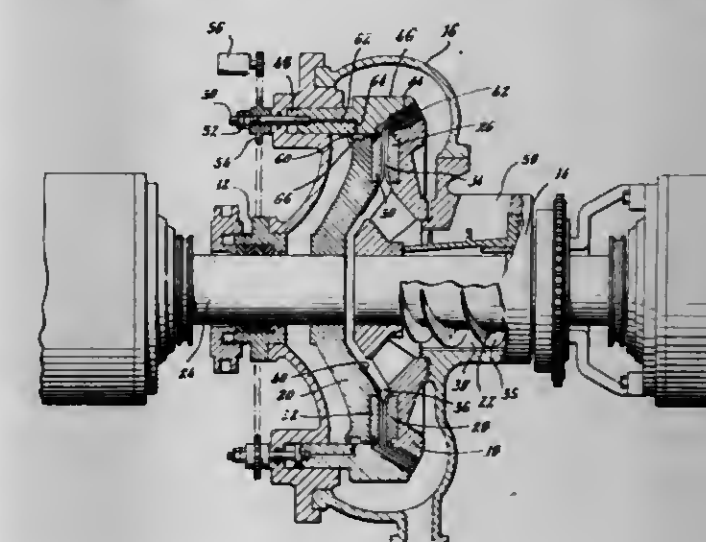
Filed Mar. 16, 1979, Ser. No. 21,184

The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> B02C 7/12

U.S. Cl. 241—21

9 Claims



1. In the method of refining pulp stock in which the pulp material to be ground is introduced into a grinding space including a first grinding zone defined between a first grinding disc opposing a second grinding disc having ridges and grooves providing grinding surfaces, which discs rotate relative to each other in an environment of fluid medium in a housing, and in which first grinding zone the pulp material is accelerated outwardly by the centrifugal force generated by the rotational movement of the rotatable disc,

the improvement for controlling the effect of the centrifugal



force on the pulp comprising: p1 providing a second grinding zone extending angularly from said first grinding zone for receiving the pulp accelerated through said first grinding zone and changing its direction of flow, said second grinding zone being defined between said first rotatable disc and a stationary grinding surface on at least a portion of the surface of a stationary element mounted within said housing.

4,283,017

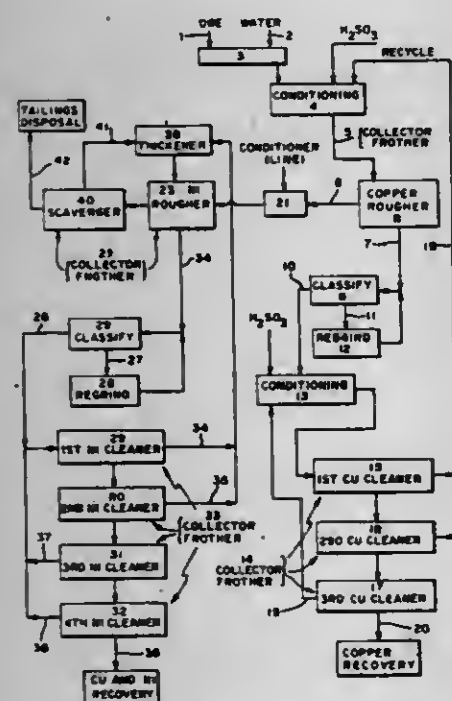
# SELECTIVE FLOTATION OF CUBANITE AND CHALCOPYRITE FROM COPPER/NICKEL MINERALIZED ROCK

Robert D. Coale, Hoyt Lakes, Minn.; Keith W. Sarbutt, Lakefield, Canada, and Derrick B. Smith, Oceanside, Calif., assignors to Amax Inc., Greenwich, Conn.

Filed Sep. 7, 1979, Ser. No. 73,413  
Int. Cl.<sup>3</sup> B02C 23/18

U.S. Cl. 241-24

12 Claims



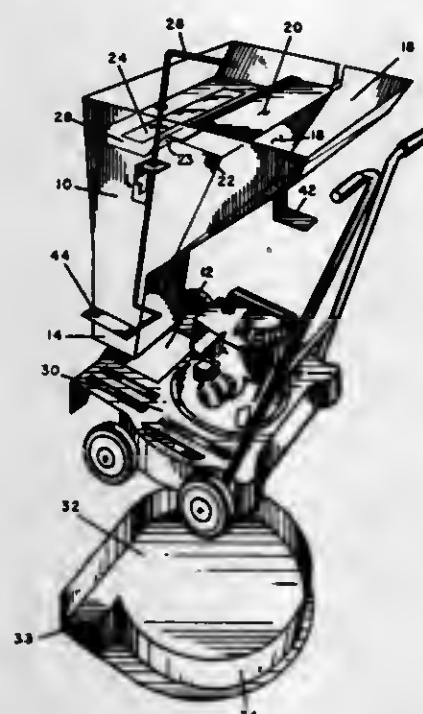
1. A process for selectively recovering a copper concentrate and a nickel concentrate from finely ground feed ore which contains sulfide minerals of copper and nickel and which is substantially free from carbonate minerals, comprising pulping the ore with water to provide a slurry, adding sulfurous acid to the slurry in an amount equivalent to between about 2 pounds and about 4.5 pounds of sulfur dioxide per ton of said finely ground feed ore, wherein the slurry after addition of the sulfurous acid has a solids content between about 25% and about 35% by weight, conditioning the slurry with the sulfurous acid sufficiently long to allow the copper sulfide minerals to be floated selectively from the nickel sulfide minerals, adding a collector and a frother to the conditioned slurry, subjecting the conditioned slurry to froth flotation to produce a froth containing a copper rougher concentrate and an underflow copper rougher tailing, conditioning the copper rougher tailing to activate unfloatable copper and nickel minerals, adding additional frother and collector to the copper rougher tailing, and then subjecting the copper rougher tailing to froth flotation to produce a froth containing a copper-nickel rougher concentrate.

## 4,283,018 SHREDDING ACCESSORY FOR ROTARY LAWN MOWER

Alyre J. Richard, 521 Knox St., Rumford, Me. 04276  
Filed Nov. 26, 1979, Ser. No. 97,436  
Int. Cl.<sup>3</sup> B02C 18/22

U.S. Cl. 241-101.1

3 Claims



1. An improved shredder for a rotary type lawn mower of the type having an open-topped hopper with an elongated basin and a lower portion entering into an aperture defined in the top of the lawn mower housing, wherein the improvements comprise:

- a pivot member extending across the opening of said hopper;
- a hopper entry door mounted within the top opening of said hopper rotatably affixed to said pivot member and adapted for the entry of materials into said hopper;
- a basin entry door also mounted on said pivot adapted to swing inwardly to allow entry of materials from said elongated basin of said hopper;
- a window unit disposed in said open-topped hopper allowing safe viewing of the progress of the shredding;
- said hopper entry door and basin entry door when closed along with said window unit adapted to close the top of said hopper;
- a tamper member adapted to move up and down within said hopper and within the mower housing; and
- a tamper bracket member adapted to support said tamper when lifted in an upward inactive position.

4,283,019

## LACER ARM FOR A WINDING MACHINE

Peter Gujer, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Aug. 29, 1979, Ser. No. 60,590  
Int. Cl.<sup>3</sup> B65H 54/02, 67/04

U.S. Cl. 242-18 A

15 Claims

1. A winding machine comprising
- a rotatable carrier head having a longitudinal axis;
  - a plurality of chucks rotatably mounted on said carrier head and disposed in parallel on said carrier head for rotary movement between a winding position and a doffing position, each chuck having filament take-up means for catching at least one filament presented thereto and being adapted to removably mount a bobbin thereon for receiving a filament thereon in said winding position;
  - filament infeed means for passing filament to a bobbin carried on a chuck in said winding position and such that in normal operation a take-up length of filament extending between said filament infeed means and a chuck moving

from said winding position is presented to a second chuck moving to said winding position in a manner enabling the take-up length to be taken up on said take-up means on said second chuck, and

lace-up means movable, during lacing of the machine prior to normal operation thereof, from a position outside the

to reverse the direction of travel of the reciprocating mechanism.

4,283,021

## AUTOMATIC FILM RETRIEVER

Shigeki Nishida, Kainan, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

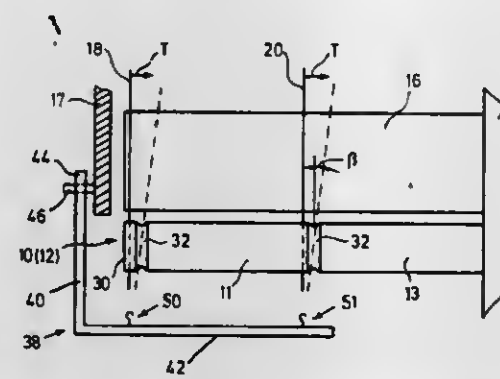
Filed Jun. 13, 1979, Ser. No. 48,227

Claims priority, application Japan, Jun. 17, 1978, 53-73956; Sep. 5, 1978, 53-108105

Int. Cl.<sup>3</sup> B65H 75/02

U.S. Cl. 242-55

6 Claims



working zone of the machine to a position inside said zone to hold at least one filament between said lace-up means and said filament infeed means so that the length of filament extending between said lace-up means and said infeed means can be taken up by a chuck moving to said winding position.

4,283,020

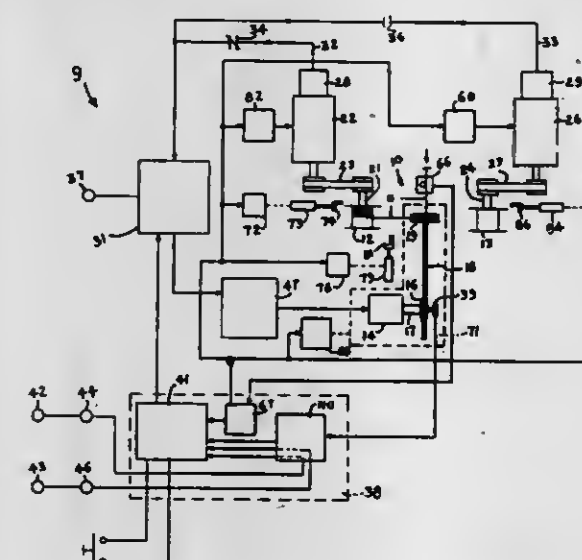
## ELECTRONIC CONTROL SYSTEM FOR RECIPROCATING MECHANISM

William A. Bauer, Bel Air; Charles R. Frohlich, Jr., Kingsville; Raymond H. Griffin, Baltimore County, and Joseph G. Henderson, Bel Air, all of Md., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Sep. 17, 1979, Ser. No. 76,003  
Int. Cl.<sup>3</sup> B65H 54/28

U.S. Cl. 242-25 R

11 Claims



1. A system for controlling the movement of a reciprocating mechanism between spaced end-points along a path of travel of the mechanism, which comprises:
- means for driving the reciprocating mechanism;
  - means responsive to movement of the driving means for developing a voltage signal of varying instantaneous levels representative of instantaneous positions of the reciprocating mechanism along the path of travel thereof;
  - means for establishing a pair of voltage signals at selected levels representative of respective end-points of travel of the reciprocating mechanism;
  - means responsive to the coincidence of the instantaneous voltage signal and one of the pair of the end-point signals for developing a reversal signal; and
  - means for applying the reversal signal to the driving means

1. An automatic film retriever characterized in that the same is comprised of

- a. a cartridge loading part having an insertion opening into which a film retrieving opening of the cartridge is inserted at one side thereof, a guide hole passage with a narrow clearance connected thereto and in addition a cartridge fixing member,
  - b. separate motors which are arranged at the side opposite to said one side against said cartridge loading part and which may be rotated either in a clockwise or in a counter-clockwise direction,
  - c. one first belt-like retriever plate of a resilient material of which the free end is moved forward or backward into said insertion opening through the guide hole passage by one of said motors, inserted into the cartridge through the film retrieving opening of the cartridge fixed at a cartridge loading part, and thereby set to hold a free end of the film which has already been rewound in the cartridge,
  - d. a second retriever plate of which the free end is contacted along a lower surface of said first retriever plate, moved forward or backward into said insertion opening through the guide hole passage by the other of said motors, a leading end of the free end of the second retriever plate being made to form a folded part which is folded toward a central portion of the cartridge of which film retrieving opening is inserted into the insertion opening of said cartridge loading part and fixed therein, the plate being made of the same material as said first retriever plate and set to hold a free end of the film along with the first retriever plate,
  - e. a torque motor to be engaged with a spool of the cartridge when the cartridge is firmly held at said cartridge loading part and enabling the spool of the held cartridge to be rotated either in a clockwise direction or in a counter-clockwise direction,
  - f. a sound wave sensor mounted near said insertion opening in order to sense a sound generated when a free end of the film is moved past a folded part of a leading end of the second retriever plate which is slightly inserted into the cartridge through the film retrieving opening and to reverse a direction of rotation of said torque motor when the spool is rotated by said torque motor in a film winding direction after the free end of said first retriever plate is inserted into the cartridge through the film retrieving opening of the cartridge which is fixed to said cartridge loading part, whereby
- the first and second retriever plates are inserted in sequence through the film retrieving opening into the cartridge fixed to the cartridge loading part and thus the free end of



the film which has already been wound in the cartridge may be pulled out of the cartridge while being held between the two plates.

**4,283,022**  
**DOUBLE-VOLUMED TAPE CARTRIDGE OPERATIVE AT TWO ENDS**

Kuen-Ming Chen, 13, Alley 2, La. 58, Chienmei Rd., Hsinchu City, Taiwan

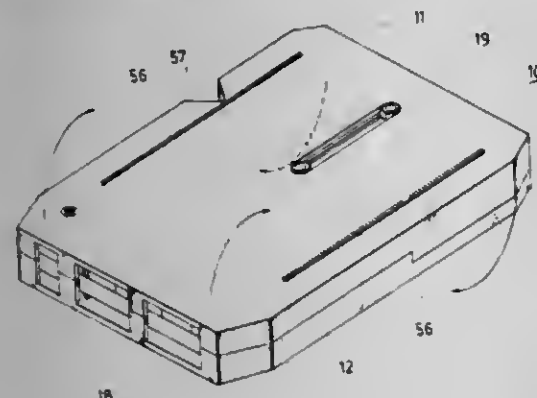
Filed Dec. 19, 1979, Ser. No. 105,262

Claims priority, application Taiwan, Nov. 26, 1979, 6824586 R.O.C.

Int. Cl.<sup>3</sup> B65H 17/48

U.S. Cl. 242—55.19 A

9 Claims



**1. A tape cassette comprising:**

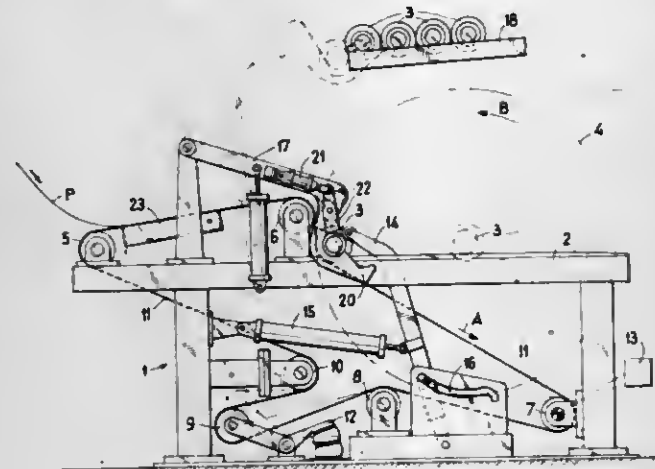
- a cassette housing consisting of two substantially identical sections, one of said sections having a first slot therein;
- at least one tape transport mechanism in one of said sections, said transport mechanism including a pair of reel bases, a pair of reel spindles and a first guide rod, said pair of reel bases being loaded on said reel spindles and said first slot being positioned between said reel spindles of said pair of reel spindles;
- two further guide rods located within said slot;
- a first plate extending between said further rods and having a second slot therein, said second slot being positioned to receive tape;
- a second plate on a reel loaded on one of said reel bases and rotatable accompanying said reel; and
- a rubber roller and two pressure pads defining with said first guide rod and said second slot a tape path;
- wherein the other of said two substantially identical sections has a further first slot therein;
- at least one further tape transport mechanism in the other of said sections, said further transport mechanism including a further pair of reel bases, a further pair of reel spindles and a further first guide rod, said further pair of reel bases being loaded on said further pair of reel spindles and said further first slot being positioned between said reel spindles of said further pair of reel spindles;
- two additional further guide rods located within said further first slot;
- a further first plate extending between said two additional further guide rods and having a further second slot therein, said further second slot being positioned to receive another tape;
- a further second plate on a further reel loaded on one of said reel bases of said further pair of reel bases and rotatable accompanying said further reel; and
- a further rubber roller and two additional pressure pads defining with said further first guide rod and said further second slot another tape path.

**4,283,023**  
**WINDER APPARATUS FOR A PAPER MACHINE**  
Heinz Braun, Ravensburg; Karl Kiesel, Mochenwangen, and Wolf-Gunter Stotz, Ravensburg, all of Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany  
Continuation of Ser. No. 970,623, Dec. 18, 1978, abandoned.  
This application Oct. 20, 1980, Ser. No. 198,806  
Claims priority, application Switzerland, Mar. 22, 1978, 3126/78

Int. Cl.<sup>3</sup> B65H 17/14

U.S. Cl. 242—67.1 R

9 Claims



**1. A winder apparatus for a papermaking machine comprising:**

- a reel-spool for winding up an infed paper web thereon so as to form a paper roll;
- an endless band arrangement for guiding the paper web onto the reel-spool by taking-up said web prior to the web contacting said reel-spool and for winding said paper web thereon in the form of said paper roll;
- guide means for guiding said endless band arrangement such that said band arrangement wraps about part of the reel-spool and the paper roll wound thereon over a part of the circumference thereof and thus places such reel-spool or the paper web wound on such reel-spool into rotation;
- means for supporting said reel-spool against the band for rotation thereby, the support means being constructed for movement of the reel-spool in a direction transverse to its longitudinal axis away from the band as the diameter of the paper reel on the reel-spool increases;
- said guide means constituting only guide rolls for exclusively guiding the band arrangement;
- said guide means guiding the band arrangement such that it contacts the reel-spool and the paper roll wound thereon essentially only laterally and from below; and
- one of said guide rolls serving as a drive roll.

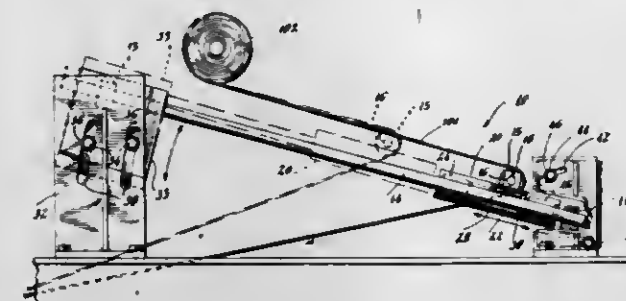
**4,283,024**  
**MATERIAL PROCESS MACHINERY**  
Henry R. Sienkiewicz, Stamford, Conn., assignor to Spadone Machine Company, Inc., Norwalk, Conn.  
Filed Jan. 15, 1980, Ser. No. 112,215  
Int. Cl.<sup>3</sup> B65H 23/16, 59/36

U.S. Cl. 242—75.3

3 Claims

- 1. A device for compensating for slack variations in a moving continuum of material without inducing tensional variations in said material significantly beyond pre-determined limits, comprising**
- a material contact element adapted for having a portion of the surface thereof contacted by a continuum of material immediately after said material has traveled along a first travel path, said first travel path being at an angle of less than 180° with respect to the path traveled by said material as it moves away from contact with said element, said element being circular in cross-section and rotatably

mounted upon one end of a shaft which extends out from, and the opposite end of which is affixed to, a support means for supporting said shaft, said support means comprising parallel, spaced-apart bushings, the axes of which are normal to said shaft,  
a support frame comprising parallel shafts, each of which moveably resides in a different one of said bushings by

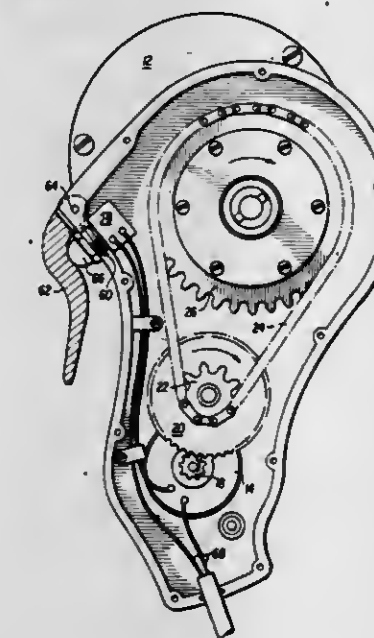


which support frame said support means is supported in linearly moveable relationship thereto in a direction normal to the axis of said shaft,  
said support frame being positioned at an incline with respect to horizontal, so that the ability of said support means to move down said incline in response to gravitational forces is dependent upon increased slack in said material where it contacts said element.

**4,283,025**  
**MOTORIZED ATTACHMENT FOR A FISHING REEL**  
Kelsie C. Whisenhunt, 72 Coleman St., Edgewater, Fla. 32032  
Filed Dec. 17, 1979, Ser. No. 104,534  
Int. Cl.<sup>3</sup> A01K 89/0017

U.S. Cl. 242—84.1 A

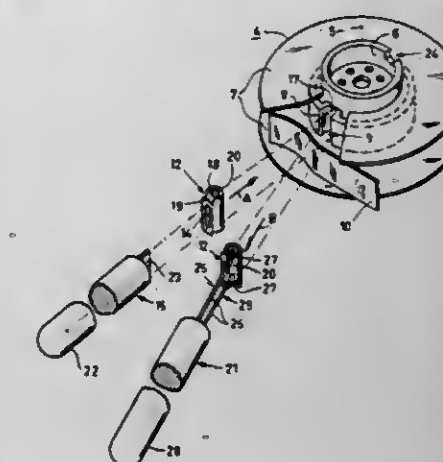
5 Claims



- 2. A motorized attachment for a fishing reel having a frame including a removable member, a reel driving shaft with a removable crank handle thereon and a drag adjusting means surrounding said shaft, said attachment comprising:**
- a casing adapted to be secured to said reel frame when said handle and said removable member are removed from said reel, said casing having a motor therein and a drive train including a one-way drive adapted to be connected to said reel driving shaft;
- a shaft extension in said casing adapted to be attached to said reel driving shaft and having means for mounting said crank handle thereon, outwardly of said casing; and
- means in said casing for selectively actuating said drag adjusting means of said reel and including a manually operable member adjacent the outer end of said shaft extension.

**4,283,026**  
**MAGNETIC TAPE CASSETTE**  
Franz Werner, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y.  
Filed Aug. 8, 1979, Ser. No. 64,921  
Claims priority, application Austria, Aug. 14, 1978, 5919/78  
Int. Cl.<sup>3</sup> B65H 75/28; G03B 1/04; G11B 15/32  
U.S. Cl. 242—199

10 Claims



- 7. A tape cassette comprising a housing, two winding reels disposed in the housing and rotatable about parallel axes of rotation, each reel having a winding hub and a flange at each end of the winding hub,**
- each winding hub having an axis of rotation defining an axial direction, a generally cylindrical outer wall adapted for winding a tape thereon, and a recess in said wall extending generally in said axial direction for receiving an end of a tape to be wound on the hub, and
- a deformable clamping member arranged to be pressed into said recess for fixing the end of a tape wound on the hub, characterized in that the cassette housing and reels are arranged such that the clamping members are accessible only through a space between the reel flanges,
- each clamping member has a wall side facing away from said axis of rotation,
- characterized in that the clamping member has a wall side facing away from said axis of rotation, said wall side being generally cylindrical about said axis and having a tool recess extending toward said axis, said tool recess being adapted for insertion of an assembly tool therein,
- the clamping member further comprises means permitting deformation of the member while an assembly tool is inserted in the tool recess so that the member can be pressed in a radial direction towards said axis into the hub recess, and
- the clamping member has a length in the axial direction at least as small as the distance between the flanges of the respective reel, whereby the clamping members can be inserted and removed radially from between the reel flanges.

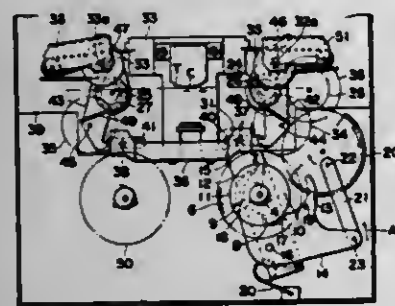
**4,283,027**  
**TAPE FEEDER IN A TAPE RECORDER**  
Kyobei Naito, Tokyo, Japan, assignor to Shinwa Kabushiki Kaisha, Tokyo, Japan  
Filed Mar. 31, 1980, Ser. No. 135,218  
Claims priority, application Japan, Apr. 3, 1979, 54/43676[U]  
Int. Cl.<sup>3</sup> G03B 1/04; G11B 15/32  
U.S. Cl. 242—208

1 Claim

- 1. A tape feeder in a tape recorder comprising:** a pair of reel support drive gears mounted on a pair of reel supports; a pair of tape winding gears capable of being brought into or out of mesh with the corresponding reel support drive gears; a pair of capstans driven by a motor for rotating the corresponding tape winding gears; a pair of pinch rollers connected to a head base plate and capable of being brought into and out of pressing



engagement with the corresponding capstans; a pair of reverse action members rotatably supported on the corresponding capstan bearing, said reverse action members having the tape winding gear rotatably supported at one end thereof and having a cam groove formed at the other end thereof, said cam groove being adapted for receiving the shaft of the pinch roller to bring the pinch roller into or out of pressing contact with the capstan; a pair of springs provided to the corresponding reverse action members, said springs being adapted to press the



pinch roller against the capstan when the head base plate advances and at the same time urge the tape winding gear to mesh with the reel support drive gear; and a slider member slidably provided between the pair of reverse action members, said slider member being slid, when the tape winding is completed, toward the reverse action member on that side where the tape has been wound so as to push one end of that reverse action member against the force of the spring and at the same time release the other reverse action member.

4,283,028

#### ADJUSTABLE WEDGE FITTING FOR SHARING THE THRUST LOAD OF A JET ENGINE

William H. Wilke, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 3, 1979, Ser. No. 99,472  
Int. Cl.<sup>3</sup> B64D 27/16

U.S. Cl. 244—54

5 Claims



1. An adjustable wedge fitting for sharing the thrust load of a jet engine, the fitting adapted for mounting on an air frame strut and a fan duct cowl of a jet engine nacelle, the fitting comprising:

- a bracket adapted for attaching to the side of the air frame strut;
- a wedge attached to the bracket and vertically adjustable thereon; and
- a wedge receiver adapted for attaching to the side of the fan duct cowl, the wedge receiver having a tapered groove integrally formed therein, the wedge when lowered on the bracket received in the tapered groove of the wedge receiver.

4,283,029

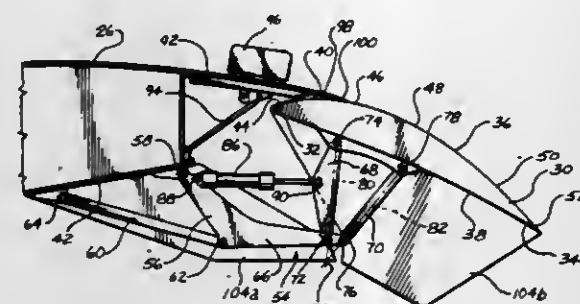
#### ACTUATING APPARATUS FOR A FLAP SYSTEM HAVING AN UPPER SURFACE BLOWING POWERED LIFT SYSTEM

Peter K. C. Rodolph, 13683 18th Ave. SW., Seattle, Wash. 98166  
Filed Jan. 2, 1979, Ser. No. 118

Int. Cl.<sup>3</sup> B64C 9/02, 9/16

U.S. Cl. 244—215

16 Claims



1. In an aircraft having:

- a. an airfoil having a leading edge, a substantially non-adjustable trailing edge, an airfoil chordwise axis, an airfoil upper aerodynamic surface and a rear cove portion with a rear cove edge at a trailing edge of said airfoil aerodynamic surface,
- b. a flap member having a forward end, a rear end, a flap chordwise axis, and a flap upper aerodynamic surface, said flap member moveable between a stowed position in the cove portion of the airfoil with the flap chordwise axis being in general alignment with the airfoil chordwise axis, and a fully deployed position where the flap member extends downwardly from the rear cove edge,
- c. said flap upper surface having a contact area adapted to remain adjacent said rear cove edge as the flap member is moved between its stowed and fully deployed positions, said contact area having a varying radius of curvature which increases rearwardly along said chordwise axis, and a contact location which is that portion of the contact area adjacent the rear cove edge at any flap position,

an actuating apparatus adapted to be used in conjunction with an upper surface blown powered lift system for said aircraft to move said flap member between its stowed position and its fully deployed position to intermediate positions between the stowed and fully deployed positions, in a manner that as the flap member rotates rearwardly or forwardly the upper flap surface is maintained in substantially constant contact with and in general alignment with the trailing edge of the airfoil aerodynamic surface, said actuating means comprising:

- a. a mounting structure positioned below said flap member in its stowed position,
- b. a forward positioning link having a lower end pivotally connected to said mounting structure at a lower first forward location and an upper end pivotally connected to said flap member at an upper second forward location,
- c. a rear positioning link having a lower end pivotally connected to said mounting structure at a lower third rear location and an upper end pivotally connected to said flap member at an upper fourth rear location,
- d. said second and fourth location being spaced from each other by a first greater distance, and said first and third locations being spaced from each other by a second lesser distance, in a manner that with said flap member in its stowed position, said links extend upwardly from said mounting structure divergently from one another,
- e. said first, second, third and fourth locations being so positioned that with said flap member in its stowed position, a first line drawn through said first and second locations and a second line drawn through said third and fourth locations meet at a center point which is an instantaneous center of rotation of said flap member, and said instantaneous center of rotation shifts during movement of said flap member between its stowed and deployed position.

tions in a manner to compensate for variations in curvature of the flap surface contact area, so as to maintain the contact location of said contact area in a position adjacent said rear cove edge,

- f. the actuating apparatus being characterized in that the actuating apparatus itself provides main compensation for the curvature of the upper flap surface.

4,283,030

#### RAILWAY SWITCH HEEL BLOCK

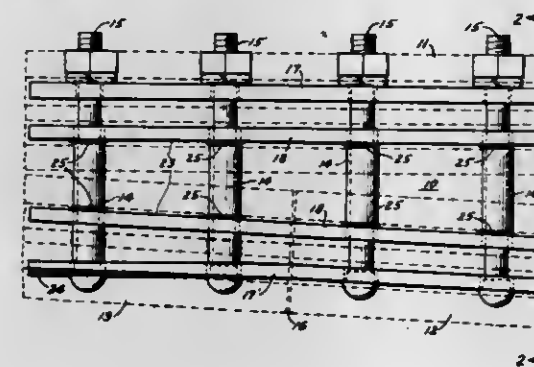
Frank P. Bobb, Camp Hill, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Feb. 20, 1980, Ser. No. 122,928

Int. Cl.<sup>3</sup> E01B 7/10

U.S. Cl. 246—468

5 Claims



1. In a railway switch heel block structure including a stock rail, a fixed closure rail, a movable switch point rail and a heel block; the heel block having a first pair of flat joint bars adjacent and substantially parallel to the outside of the webs of said rails and a second pair of flat joint bars adjacent and substantially parallel to the inside of the webs of said rails, with an upper surface of said joint bars bearing against the underside of the head of said rails and a lower surface of said joint bars bearing against the base flange of said rails, the webs of said rails being formed with bolt holes and said joint bars being formed with transversely aligned bolt holes to register with the bolt holes through said webs; the improvement comprising:

- a preassembled integral heel block unit having pipe separator thimbles fixed to said second pair of flat joint bars and extending completely therethrough, and clamp bolts extending through said separator thimbles and said first and second pairs of flat joint bars and said rail webs for clamping said flat joint bars and said rails in a rigid structure.

4,283,031

#### SYSTEM CONTROLLING APPARATUS WHICH COMPARES SIGNALS FROM SENSORS MONITORING PASSING OBJECTS WITH PRE-DETERMINED PARAMETER INFORMATION TO CONTROL THE SYSTEM

Colin M. Finch, Box 553, Lavington, New South Wales, Australia (2641)

Filed Dec. 12, 1978, Ser. No. 968,846

Claims priority, application Australia, Dec. 14, 1977, PD2772  
Int. Cl.<sup>3</sup> B61L 11/08

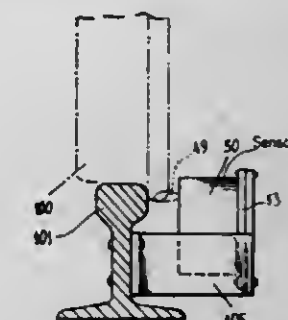
U.S. Cl. 246—128

9 Claims

1. A system controlling apparatus comprising:

- an array of sensors each for detecting information concerning passing articles and for providing signals indicative of the information, each of said sensors being magnetic field proximity sensors, passing articles disturbing a magnetic field, each of said sensors having two transducers spaced less than the length of each of said articles to be detected and wherein each of said transducers includes means for creating said magnetic field, and sensing means disposed within said magnetic field and responsive to changes in said magnetic field such that when said magnetic field is

disturbed by the proximity of each article, the sensing means operates to provide information as to that article; field disturbing means for disturbing said magnetic field whereby to cause the sensing means to operate and provide a facility for simulating the disturbance of the field that would be caused by the proximity of each article; and



signal processing means for comparing the signals with predetermined parameter information as to the system and for providing predetermined control to the system in response to detecting equality between the signals and the predetermined parameter information and for providing an overriding control to the system in response to detecting inequality between the signals and the predetermined parameter information.

4,283,032

#### AUTOMOTIVE ENGINE LUB-OIL DRAINAGE AND DISPOSAL STRUCTURE

Kenneth R. Smith, Newhall, Calif., assignor to Kross, Inc., San Fernando, Calif.

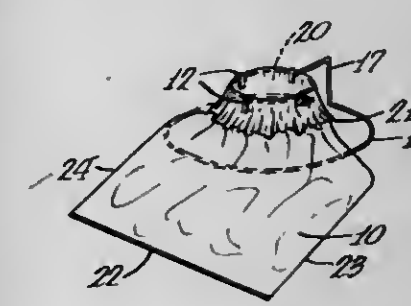
Continuation of Ser. No. 665,944, Mar. 11, 1976, abandoned.

This application May 23, 1977, Ser. No. 799,474

Int. Cl.<sup>3</sup> B65B 67/12

U.S. Cl. 248—97

7 Claims



1. A structure for use in economical draining and disposal of used automotive engine lubricating oil comprising:

- a unitary used-oil bag stand formed of a length of manually bendable wire having a first outer portion defining a relatively large base for supporting the stand at rest upon a horizontal surface, a second portion defining an upright leg at one end of the wire portion defining the base, a third portion defining a horizontal arm extending inwardly of the upper end of the portion of the wire defining the leg, and a fourth, annular portion defining a throat element having a preselected small diameter of no greater than approximately 5" overlying the center of said base, said throat element being held by said leg and arm in an elevated horizontal position above the base a distance similar to the diameter of said throat element, said throat element having a transverse size substantially smaller than that of the base so as to be disposed substantially within the upright projection of the said base;
- a used-oil receiving bag having an open end extending upwardly through and turned over said throat element; and
- clamping means for removably securing said bag open end about the wire portion forming said throat element to provide an unobstructed entrance for free ingress of oil into the bag, said upright leg being of a length substantially less than the length of said bag so that a major por-



tion of the bag may rest upon the underlying surface upon which the stand is placed when said open end is so secured; as when positioned under an engine to receive oil draining therefrom, the bag being secured to the stand at said throat element only, the size of said bag being preselected to assure that the collected oil is supported substantially only by the underlying surface and stand base thereby to avoid placing stress on the wire stand sufficient to cause undesirable deformation thereof in oil-collecting use and whereby the open end of the bag is maintained fixed to said throat element in oil-receiving disposition spaced above the underlying surface while the bag is receiving the entire quantity of used oil from the automotive engine, said bag being formed of a strong, nonpermeable synthetic resin, such as polyethylene, adapted to have the open end gathered and tied to define a substantially leakproof, readily disposable bag of the collected used oil.

4,283,033

# APPARATUS FOR SECURING CHAIR OR TABLE COLUMNS TO THE UNDERSIDE OF CHAIR SEATS, TABLE TOPS OR THE LIKE

Fritz Bauer, Altdorf, Fed. Rep. of Germany, assignor to Suspa Federungstechnik, Fritz Bauer & Sobne oHG, Altdorf, Fed. Rep. of Germany

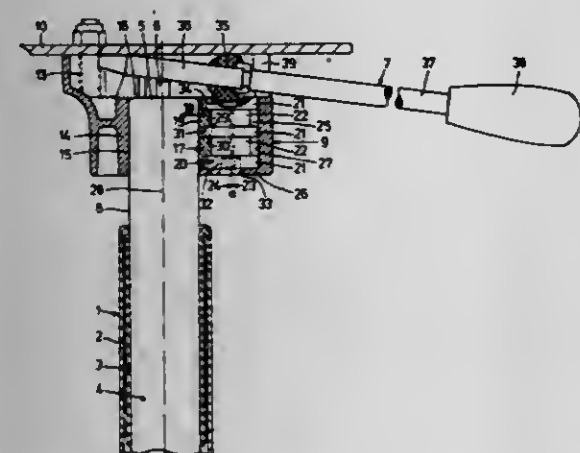
Filed Jul. 16, 1979, Ser. No. 57,754

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1978, 2836666

Int. Cl.<sup>3</sup> F16M 11/16

U.S. Cl. 248—188

6 Claims



1. In an apparatus for securing chair or table columns or the like to the underside of chair seats, table tops or the like, said apparatus including a securing device capable of attachment to the underside of the chair seat or table top or the like and having a bore for receiving the upper end of said column, said securing device including a gripper shoe which is radially displaceable with respect to the column and can be pressed against the column, thereby immobilizing the column with respect to said securing device, the improvement wherein said securing device includes an eccentric body disposed on the side of said gripper shoe remote from said column, said eccentric body being pivotable about an axis and bearing on one side against said gripper shoe and on the other side against a wall of the securing device, and wherein said eccentric body is fixed at the top by means of a bearing assembly disposed between said eccentric body and said chair seat or table top and extending into a pivotable operating lever.

4,283,034

# CURTAIN ROD BRACKET CONSTRUCTION

Maurice J. Sheehan, Ocean Bluff, Mass., assignor to Edward F. McBride, St. Petersburg, Fla., a part interest

Filed Sep. 10, 1979, Ser. No. 74,129

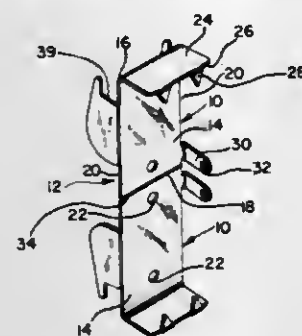
Int. Cl.<sup>3</sup> A47M 1/10

U.S. Cl. 248—263

3 Claims

1. A bracket construction for mounting curtain rods and the like comprising, an essentially flat base plate having opposed

front and rear faces and top, bottom and side edges, said plate adapted for disposition with its rear face against the front face of a molding which forwardly projects as by the thickness thereof from the surface on which said molding is supported, said molding also having top and side edge surfaces, said plate including a pair of laterally spaced supporting arms forwardly projecting from the front face thereof, said plate having combination supporting and positioning means, said means including a supporting flange rearwardly extending at a generally normal attitude from said base plate top edge, said flange adapted to contact the top edge surface of said molding so as to support said bracket thereon, said means further including a positioning



tab rearwardly extending from one of said edges of said plate and adapted to contact said adjacent side edge surface of said molding so as to position said bracket adjacent the end of said molding, said flange further including at least one downwardly projecting tang adapted to penetrate said molding top edge surface so as to fix said bracket to said molding, said flange and said tab being connected to respective top and side edges of said plate along weakened lines whereby bending of said flange and said tab with respect to said plate will permit the removal of said flange and said tab from said plate, said plate further including a pair of spaced openings for attaching said plate to said moldings as by nails, screws and the like when said flange and tab have been removed from said bracket.

4,283,035

# ARRANGEMENT FOR SUPPORTING A CURTAIN HOLDING ROD

Luciano G. Ojembarre, Rodriguez Marin, 69, and Francisco I. Robles, Cuevas de Almanzora, 46, both of Madrid, Spain

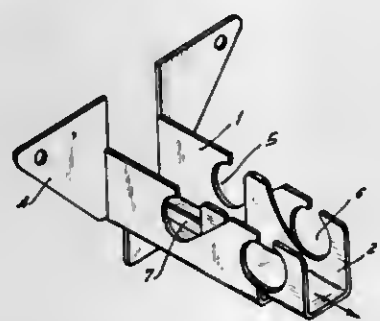
Filed Sep. 28, 1979, Ser. No. 80,018

Claims priority, application Spain, Apr. 23, 1979, 242,834[U]

Int. Cl.<sup>3</sup> A47H 1/10

U.S. Cl. 248—263

14 Claims



1. An arrangement for supporting a curtain holding rod or the like, comprising an elongated outer U-shaped element having two lateral portions and a bottom portion connecting said lateral portions with one another, said lateral portions each having at least one opening which is provided at identical locations in the direction of elongation and is open upwardly in a direction transverse to the direction of elongation; an elongated inner U-shaped element which is received in said outer element and has two further lateral portions and a further bottom portion connecting said further lateral portions with one another, said further lateral portions each having a further opening provided at identical locations in the direction of

elongation and also open upwardly in a direction transverse to the direction of elongation, each of said openings having a circular section and a straight section communicating with one another, the straight sections of said first-mentioned openings of said outer element extending in a first direction which is inclined to the direction of elongation, whereas the straight sections of said further openings of said further openings of said inner element extend in a second direction which is also inclined to the direction of elongation and at the same time is opposite to said first direction, said inner and outer elements being slidably movable in direction of elongation thereof between a first position in which said first-mentioned openings of said outer element are offset relative to said further openings of said inner element so that a curtain holding rod can be inserted from above into at least said first-mentioned openings of said outer element or said further openings, and a second position in which said first-mentioned openings of said outer element and said further openings of said inner element at least partially overlap one another and together form a substantially closed receptacle so that a curtain holding rod inserted in the thus-formed receptacle is retained therein and supported from below by both elements; and means on at least one of said elements for mounting the same on a support structure, in a substantially horizontal position.

4,283,036

# POSITION MEMORY FOR AUTOMATICALLY ADJUSTABLE SEAT ASSEMBLIES

Hiroshi Tsuda, and Hideoki Matsuoka, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

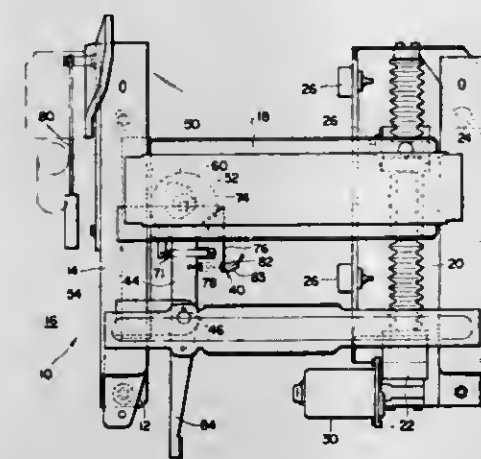
Filed Sep. 27, 1978, Ser. No. 946,166

Claims priority, application Japan, Oct. 12, 1977, 52-137101[U]

Int. Cl.<sup>3</sup> B60M 1/02

U.S. Cl. 248—429

9 Claims



1. Position memory for an adjustable seat assembly having at least one adjustable movable seat member, comprising: drive means for driving the seat member for the adjusting movement thereof, a rotary wheel member engageable with a stationary surface for rotation with the adjusting movement of the seat member while being freely rotatable relative to the stationary surface when disengaged and having a recess formed at the periphery thereof, biasing means to engage said wheel member with the stationary surface, first operating means for bringing said wheel member out of engagement with said stationary surface for free rotation relative to the seat member, said first operating means including a pivotal member carried by said seat member and pivotally movable to allow free rotation of the wheel and a manually operable lever operatively connected with said pivotal member for pivotal movement thereof, second operating means for providing said wheel member with an angular rest position under a condition wherein

said wheel member is disengaged from said stationary member, said second operating means including a cam member integrally mounted on said rotary wheel member and having a cam surface, and a cam mating surface which is engageable with said cam surface to bring said wheel member into said angular rest position, and switch means having a contact element in constant engagement with the periphery of said wheel member and engageable in said recess in the rest position of the wheel member to open said switch means.

4,283,037

# TELEPHONE DISPLAY DEVICE

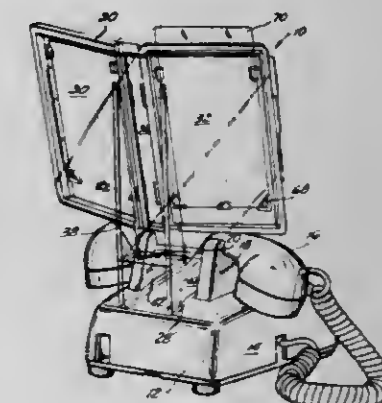
Stanley Bindman, North Bellmore, N.Y., assignor to Business Concepts Marketing Corporation, Island Park, N.Y.

Filed Oct. 2, 1978, Ser. No. 947,614

Int. Cl.<sup>3</sup> H04M 1/21

U.S. Cl. 248—441 B

3 Claims



1. A display stand for use with a telephone set of the type having a cradle with a top surface for supporting a telephone receiver and bottom surface defining the top of a hand grip opening extending toward the front of the telephone from the rear, said cradle bottom surface including a downwardly extending lip at the top rear of said opening, said stand comprising: a pair of spaced legs, an easel supported to the upper portions of said legs, a supporting member extending forwardly from the lower portion of said legs, said member being proportioned to fit within said hand grip opening and including surfaces thereon for locking engagement with surfaces of said telephone set defining said opening; said supporting member extending transversely between said legs and including a top edge, and at least one locking lug secured to said supporting member top edge and biased to extend upwardly beyond said top edge to engage said telephone opening lip when said support member is positioned within said telephone opening, said locking lug having a top camming surface adapted to engage said downwardly extending lip.

4,283,038

# MIRROR MOUNTING DEVICE

Thomas D. Kurtz, 1101 First Ave., Rock Falls, Ill. 61071

Filed Sep. 19, 1979, Ser. No. 76,958

Int. Cl.<sup>3</sup> A47G 1/24

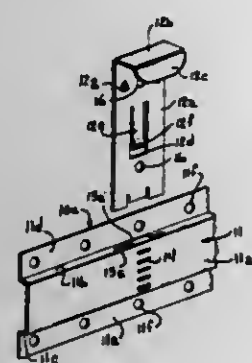
U.S. Cl. 248—478

7 Claims

1. A mirror mounting device comprising, at least one mirror mounting bracket having a mounting plate portion and a mirror hook at one end of the mounting plate portion, an elongated longitudinally channeled mounting strip having a lengthwise extending intermediate wall portion and first and second flange portions along the lengthwise edges of the intermediate wall portion extending laterally from one side of the intermediate wall portion and first and second outturned lip portions on the respective first and second flange portions disposed in a plane parallel to and offset from the intermediate wall portion a distance no less than the thickness of the mounting plate portion of the mirror mounting bracket, the first and second flange portions of the strip having slots therein at correspond-



ing locations therealong to provide at least one pair of slots that register in a direction crosswise of the strip, the mounting plate portion of the mirror mounting bracket extending through the registering pair of slots in the first and second



flange portions and between the intermediate wall portion and the first and second lip portions, and means including fastener receiving openings at spaced locations along the mounting strip for attaching the mounting strip to a wall.

4,283,039

# ANNULAR BLOWOUT PREVENTER WITH UPPER AND LOWER SPHERICAL SEALING SURFACES

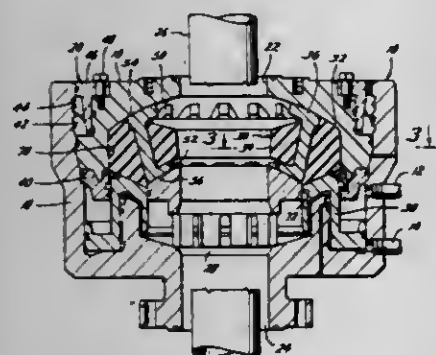
Gary R. Schaeper, and Richard A. Olson, both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Jun. 5, 1980, Ser. No. 156,833

Int. Cl.<sup>3</sup> E21B 33/06

U.S. Cl. 251-1 B

4 Claims



1. In a blowout preventer adapted for use on an oil or gas well rig having a lower housing, an upper housing, a resilient sealin means positioned between the housings, and piston means for actuating said sealing means, the improvement comprising,

the inner surface of the upper housing having a spherical surface, the inner surface of the lower housing having a spherical surface, said spherical surfaces of the upper housing and the lower housing are concentric, and said resilient sealing means including upper and lower spherical surfaces for coacting with the spherical surfaces on the upper housing and lower housing, respectively, responsive to engagement of said sealing means by said piston means upon said actuation.

4,283,040

# PRESSURE OPERATED PILOT CONTROL SHUT-OFF VALVE

Lawrence A. Kolze, Bensenville, Ill., assignor to Eaton Corporation, Cleveland, Ohio

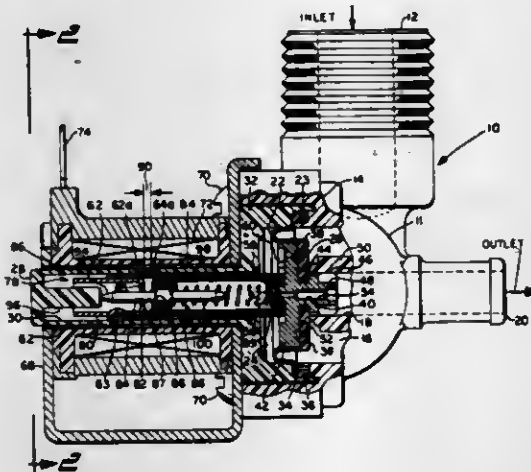
Continuation of Ser. No. 796,779, May 13, 1977, Pat. No. 4,174,824. This application Oct. 5, 1979, Ser. No. 82,204

The portion of the term of this patent subsequent to Nov. 20, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> F16K 31/40

U.S. Cl. 251-30

8 Claims



1. A valve assembly of the type operable to permit and interrupt fluid flow through the main passage thereof, said assembly comprising:

- (a) housing means defining a fluid passage having an inlet and an outlet and including means defining a main valve seating surface intermediate said inlet and outlet, said housing means including guide means defining a guide hollow having the walls thereof formed of nonmagnetic material;
- (b) a main valve member movable with respect to the housing means between a closed position contacting said seating surface and an open position spaced from said seating surface permitting fluid flow from said inlet to said outlet;
- (c) means biasing said main valve member to the closed position;
- (d) means defining a bleed passage across said valve member and means defining a pilot flow passage for communicating said inlet and said outlet;
- (e) a pilot valve member movable between a closed position preventing fluid flow through said pilot flow passage and an open position permitting flow through said pilot flow passage;
- (f) means biasing said pilot valve to the closed position;
- (g) magnetomotive force means operable upon actuation to effect said operation of said valve assembly to move said pilot valve member from said closed to said open position, and including,
- (i) floating pole piece means formed of ferromagnetic material and movably received in said guide hollow,
- (ii) armature means formed of ferromagnetic material received in said guide hollow and movable with respect to said pole piece means between a first position spaced a predetermined distance from said pole piece means in which first position said pilot valve is closed and a second position less than said predetermined distance from said pole piece means in which said second position said pilot valve is open,
- (iii) stop means cooperating with said pole piece and said armature means and movable therewith, said stop means being operable to limit the movement of said main valve member relative to said pole piece means whereupon actuation of said magnetomotive force means, said armature means is moved from said first position to said second position permitting flow through

said pilot passage thereby causing a pressure differential across said valve member, whereupon said main valve is opened by the forces of differential pressure acting thereacross, wherein as said main valve moves from said closed to said open position, said main valve contacts, said stop means and thereafter said pole piece means and said armature means move as a unit therewith.

4,283,041

# METERING VALVE

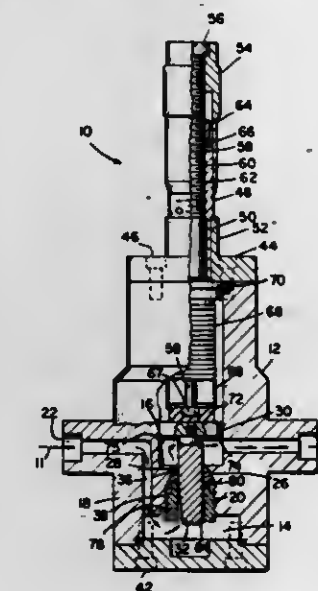
Edmund Kujawski, 8 Coleridge Pl., Greenlawn, N.Y. 11740

Filed Mar. 10, 1980, Ser. No. 129,087

Int. Cl.<sup>3</sup> F16K 47/04

U.S. Cl. 251-205

4 Claims



1. A metering valve for regulating a gas flow rate comprising:

- (a) a valve body having first and second inner cylindrical chambers;
- (b) inlet and outlet ports in said valve body in communication with said first and second inner cylindrical chambers respectively;
- (c) a transverse wall portion between said first and second inner chambers, said wall portion having a passageway extending therethrough to provide communication between the first and second inner chambers, said passageway having a first section being partially threaded and a second tapered section adjacent said first section;
- (d) a valve seat disposed in said passageway having a cylindrical orifice extending therethrough, and an external configuration conforming to said tapered section;
- (e) a valve stem having a groove thereon to cooperate with said valve seat, said groove being tapered and extending longitudinally on said shaft, said groove increasing in depth at a pre-selected rate per unit-length with the maximum depth being at a base end of said shaft, whereby axial movement of said stem regulates the gas flow rate through a preset range between said first and second chambers;
- (f) torque reduction means comprising a cylindrical valve stem having a diameter from 0.093-0.1252 inches for decreasing the torque required to move the valve stem, whereby precise settings of the gas glow can be achieved;
- (g) a bellows disposed in said second chamber concentric with said valve stem, a plug portion disposed on one end of said bellows to abut said transverse wall portions and close said passageway when said bellows is in the extended position;
- (h) micrometer means extending outside of said valve body for moving said valve stem in the axial direction.

4,283,042

# METHOD FOR REPAIRING THE TAP HOLE OF A CONVERTER

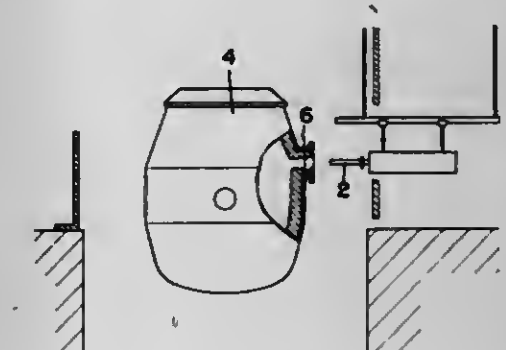
Sueki Kubo, Kitakyushu, Japan, assignor to Kurosaki Refractories Co., Ltd., Fukuoka, Japan

Division of Ser. No. 22,254, Mar. 20, 1979. This application Feb. 22, 1980, Ser. No. 123,614

Claims priority, application Japan, Feb. 3, 1979, 54-11700 Int. Cl.<sup>3</sup> F27D 1/16

U.S. Cl. 266-45

10 Claims



1. A method of repairing the tap hole of a converter under high temperature utilizing a refractory material injection pipe comprising:

- (1) inserting said injection pipe into said tap hole, said injection pipe having at least one refractory material injection opening at the distal end thereof,
- (2) discharging said refractory material within said injection pipe through said injection opening and applying said discharged refractory material onto the inner surface of said tap hole, and
- (3) cooling substantially the entire length of said injection pipe when said refractory material is applied onto the inner surface of said tap hole.

4,283,043

# CUTTING TORCH ATTACHMENT

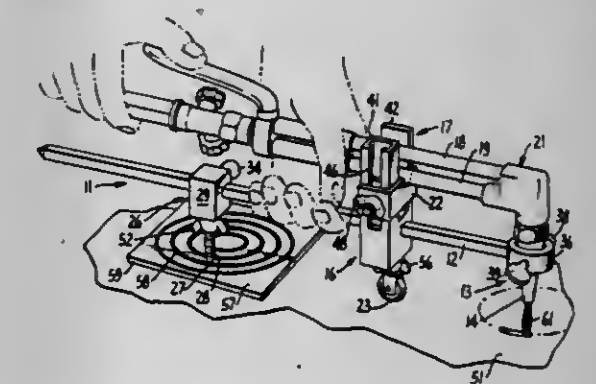
Alan Kallian, 106 Harvard St., San Francisco, Calif. 94134

Filed Oct. 12, 1979, Ser. No. 84,405

Int. Cl.<sup>3</sup> B23K 7/10

U.S. Cl. 266-66

19 Claims



1. An attachment for supporting the tip of a cutting torch in desired relation to the work piece during a variety of cutting operations, comprising:

- an elongated bar of uniform cross-section, holding means secured at one end of said bar and adapted for clamping engagement onto a variety of burning torch tips of different sizes and shapes, a support member mounted on said bar for adjustable positioning therealong and having an upwardly extending portion adapted for receiving the parallel gas supply tubes of a cutting torch having its burning tip clamped in said means, a positioning member vertically adjustable on said upwardly



extending portion and formed to bear against and support the lower tube of the cutting torch,

- a rotatable wheel having an upwardly extending post engaged with the lower end of said support member and formed for selective spacing of said wheel from said bar and for selective rotative positioning of the plane of said wheel about the axis of said post, and
- a centering point device having a downwardly directed point on a vertically extending shank carried by a keeper formed for adjustable positioning along said bar, whereby vertical movement of said shank in said keeper and said post in said support member adjustably positions the spacing and angle of said torch tip with respect to said bar.

4,283,044

# APPARATUS FOR GUIDING A TOOL ALONG A CURVED PATH

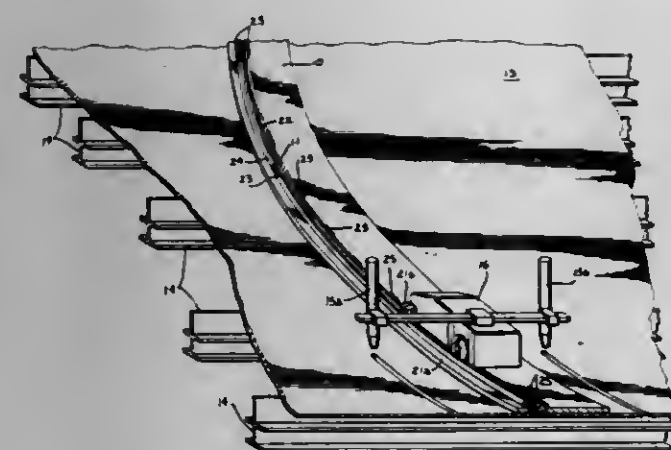
John R. McKibbin, P.O. Box 35209, and Frederick B. Tyler, Jr., P.O. Box 58002, both of Birmingham, Ala. 35209

Filed Mar. 23, 1979, Ser. No. 23,292

Int. Cl.<sup>3</sup> B23K 7/10

U.S. Cl. 266—67

13 Claims



1. An apparatus for guiding a tool along a predetermined curved path in relation to a work piece, including:

- (a) A spline member elastically deformed in the shape of a curve to provide a curved guide member;
- (b) A first means for holding said spline member in the shape of a curve, and
- (c) A second means responsive to said curved guide member for directing the movement of said tool in a predetermined curved path in relation to said work piece.

4,283,045

# APPARATUS FOR THE CONTINUOUS RECOVERY OF TIN FROM IRON RICH CONCENTRATES

Gerhard Melcher, and Horst Weigel, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Division of Ser. No. 952,963, Oct. 20, 1978, Pat. No. 4,236,916. This application Jan. 28, 1980, Ser. No. 115,752

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1977, 2747586

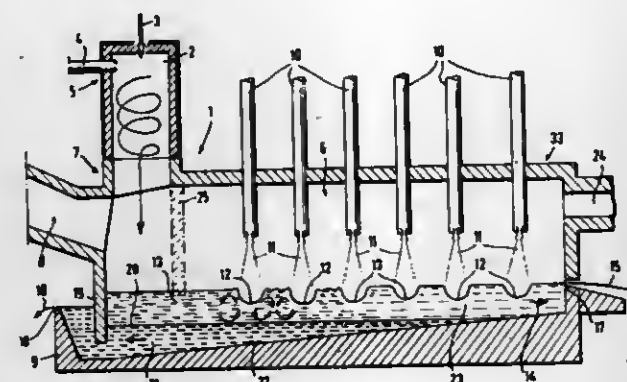
Int. Cl.<sup>3</sup> C22B 9/00

U.S. Cl. 266—162

6 Claims

1. An apparatus for the recovery of tin from an iron rich tin concentrate which comprises:
  - a reaction chamber,
  - smelting means for smelting said concentrate in suspension as it enters said reaction chamber,
  - first overflow means at one end of said chamber for removing slag therefrom,
  - a second overflow means at the other end of said chamber at a lower elevation than said first overflow means for recovering molten metal,
  - a plurality of blower lances spaced along said reaction cham-

ber for projecting reaction gas at the liquid surface formed therein, and



discharge means in said reaction chamber located between said smelting means and the liquid surface in said chamber for discharging exhaust gases generated in said smelting means.

4,283,046

# SEAT CONSTRUCTION

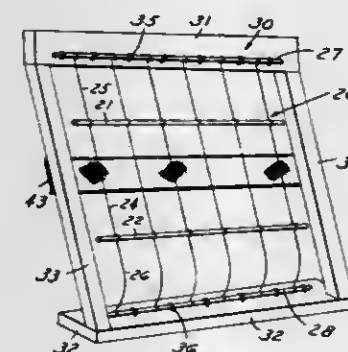
Louis G. Bowles, Jr., High Point, N.C., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Aug. 24, 1979, Ser. No. 69,581

Int. Cl.<sup>3</sup> A47C 7/02

U.S. Cl. 267—102

21 Claims



1. In a seat construction, a spring assembly comprising a pair of longitudinally extending wires, a plurality of transversely extending spaced spring wires, portions of said transversely extending spaced spring wires being wound around said longitudinally extending wires to define an intermediate portion extending between the spaced longitudinally extending wires and free ends extending beyond the longitudinally extending wires at an acute angle to the intermediate portion, an additional longitudinally extending wire connecting the free ends of said transversely extending spring wires along each said first-mentioned longitudinally extending wire, the portions of said transversely extending spaced spring wires between one said additional longitudinally extending wire and the adjacent longitudinally extending wire being curved so that said one additional longitudinally extending wire is displaced out of the general plane of the remainder of said longitudinally extending wires.

4,283,047

# FACING PLY SEPARATOR

Hubert Blessing, Dallas, Tex., assignor to Levi Strauss & Co., Del.

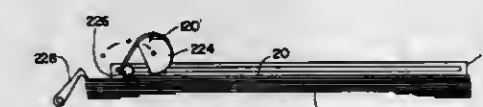
Continuation of Ser. No. 807,348, Jun. 17, 1977, Pat. No. 4,143,871, which is a continuation-in-part of Ser. No. 701,857, Jul. 1, 1976, abandoned. This application Sep. 8, 1978, Ser. No. 940,610

The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> B65H 3/22

U.S. Cl. 271—10

3 Claims



1. Apparatus for sequentially separating layers of stuck together fabric workpieces from a single feed stack, the apparatus comprising a movable separating bar positioned above the topmost layer, means for selectively engaging the topmost layer near one edge thereof, means for moving the engaging means while they are engaged with the topmost layer, over the separating bar and for thereafter moving the engaging means across the topmost workpiece, and means for moving the separating bar behind the moving engaging means to produce a bend in the topmost workpiece, which bend moves across the topmost workpiece during its separation from the stack, whereby the topmost layer travels around a narrower radius, and hence over a shorter path, than the next underlying layer stuck to the topmost layer so that a differential separating force acting between the two layers and tangential to their adjoining surfaces is thereby produced.

4,283,048

# DEVICE FOR SEPARATING OUT FOLDED SPOILED COPIES IN WEB-FED ROTARY PRINTING MACHINES

Hans Müller, Leimen, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

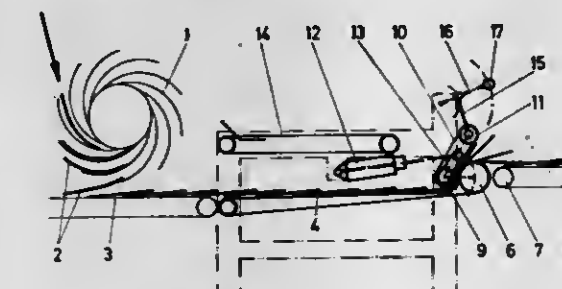
Filed Nov. 5, 1979, Ser. No. 90,983

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1978, 2848010

Int. Cl.<sup>3</sup> B65H 29/62

U.S. Cl. 271—302

3 Claims



1. Device for separating out folded waste or spoiled copies in web-fed rotary printing machines at a delivery of a folding apparatus having a main conveyor belt whereon a stream of folded copies are transported in overlapping, fish scale-like arrangement comprising a roller pair adjacent the main conveyor belt for deflecting the stream of copies in a fanned-out manner, said deflecting roller pair including one deflecting

roller rotatably supporting the main conveyor belt and, as viewed in transport direction of the stream of copies, another deflecting roller located upstream of said one deflecting roller and disposed in substantially horizontal alignment therewith, said other deflecting roller being engageable with the main conveyor belt so as to deflect it and the stream of copies in downward direction and thereby effect the fanning-out of the copies between said rollers of said deflecting roller pair, a short additional conveyor belt drivingly engaged by said other deflecting roller and swingable about said other deflecting roller into a normal operating position thereof for transporting properly printed copies to a delivery system and also swingable about said other deflecting roller into another operating position thereof for transporting spoiled copies to a distribution belt, a tensioning roller rotatably supporting said short additional conveyor belt and swingable therewith about said other deflecting roller, a linkage system comprising a rocking lever and a coupling bar coupling said rocking lever to said tensioning roller, a separating roller carried by said rocking lever at a free end thereof and being swingable in among the fanned-out copies by said linkage system as said short additional conveyor belt is swung about said other deflecting roller into said other operating position, said separating roller being engageable with the fanned-out copies for feeding the following spoiled copies in overlapping fish scale-like manner over said short additional conveyor belt to the distribution belt.

4,283,049

# BOWLING BALL GAME

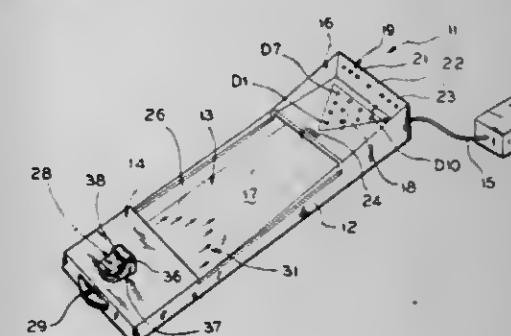
Richard A. Karlin, Chicago; Gordon A. Barlow, Evanston, and John R. Krutsch, Glenview, all of Ill., assignors to Gordon Barlow Design, Ill.

Filed Feb. 7, 1979, Ser. No. 9,762

Int. Cl.<sup>3</sup> A63D 3/00

U.S. Cl. 273—38

9 Claims



1. A miniaturized bowling ball game, said game comprising:
  - a miniaturized bowling lane assembly;
  - pin status means for simulating bowling pins and indicating pin status located at one end of said lane assembly;
  - ball means;
  - mechanical ball propelling means at the other end of said lane assembly for aiming and propelling said ball means the length of said lane assembly;
  - said ball propelling means including means for aiming said ball means at said simulated bowling pins;
  - zone switch means operated by said propelled ball means for determining the location of said ball means when the ball means enters the portion of the lane assembly at the said one end of said lane assembly where the pins would be;
  - said zone switch means comprising a plurality of downwardly extending fingers traversing said lane assembly at said one end;
  - each of said fingers comprising the armature of a switch momentarily closed as said ball means strikes said armature;
  - each of said fingers moving to an open circuit position after said ball means discontinues actuating contact with same; and



said ball means and said fingers further being of relative sizes such that more than one of said switches can be closed by said ball means as said ball means passes said zone switch means;

processing means for determining which pins will be knocked down per propelled ball means responsive to said determined location and a random input for each of the pins standing when said ball means is propelled;

means in said processing means for accommodating variations in closure overlap among a plurality of said fingers struck by said ball means as it momentarily closes said fingers in a substantially simultaneous manner to assure accurate input to said processing means;

switch closure determining means in said processing means for determining the closure of said switches to thereby determine the location of said ball means; and

means including said processing means for operating said pin status means to show which pins have been knocked down.

4,283,050

## RACKET FRAME

Itsushi Nagamoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Continuation of Ser. No. 856,091, Nov. 30, 1977, abandoned.

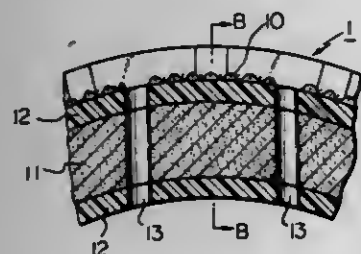
This application May 29, 1979, Ser. No. 43,159

Claims priority, application Japan, Dec. 10, 1976, 51-147662; Dec. 30, 1976, 51-160195; Dec. 30, 1976, 51-160196; Dec. 30, 1976, 51-160197

Int. Cl.<sup>3</sup> A63B 49/02

U.S. Cl. 273-73 K

14 Claims



1. An improved racket frame comprising a generally rounded head portion accompanied by an elongated thin metallic plate formed integrally with a fiber reinforced plastic outer layer of said head portion, said metallic plate including a center extension in the form of first metallic strip means, and elongated branches each also in the form of a respective second metallic strip and extending laterally from and on both sides of said center extension, said center extension being positioned so that its width dimension is substantially normal to the playing faces of said racket and so that it is on the outer side of the curvature of the generally rounded head portion.

4,283,051

## POLICE NIGHT STICK

Sergio J. Perez, 311 W. 97th St., Apt. 3-E, New York, N.Y. 10025

Filed Feb. 11, 1980, Ser. No. 120,485

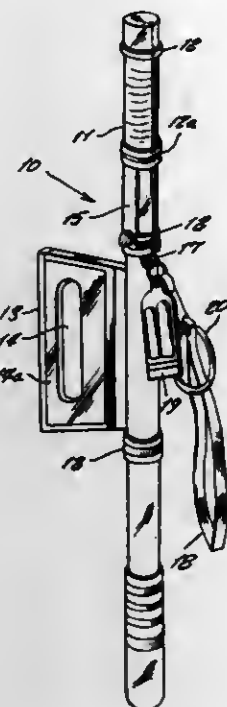
Int. Cl.<sup>3</sup> F41B 15/06

U.S. Cl. 273-84 R

1 Claim

1. An improved policeman's night stick, comprising in combination; an elongated, cylindrical, rigid, straight club portion; a rigid, hard plastic handle mounted on a first surface portion of said club portion and being upwardly directed therefrom; said handle being located approximately midway between the ends of said club portion; a metallic, tubular sheath; means mounting said sheath to a second outer surface portion of said club portion at the forward end thereof; said second surface portion being opposite to said first surface portion; a steel needle being slidably received in said sheath; the operative end of said needle being tapered to a point and being in a normally

retracted position within said sheath when not in use; the opposite end of said needle being located adjacent to said handle and having finger engaging means which the policeman engages to slide said needle within said sheath and expose said



operative end beyond the forward end of said club portion; a spring clip mounted on the outer surface of said club portion for attachment to the policeman's belt; and a whistle and thong tethered to said club portion.

4,283,052

## ELECTRONIC AMUSEMENT APPARATUS AND CIRCUIT

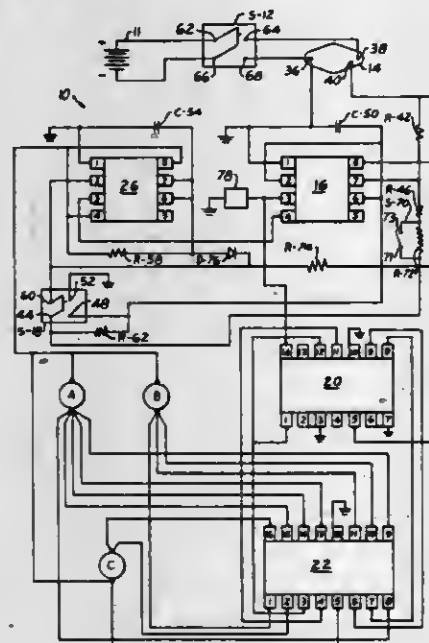
Anthony J. Wiodisch, 3882 Walsh St., St. Louis, Mo. 63166

Filed Oct. 26, 1979, Ser. No. 88,290

Int. Cl.<sup>3</sup> A63F 9/00, 5/00

U.S. Cl. 273-85 G

2 Claims



1. An electronic amusement apparatus, comprising: a playing surface; a plurality of binary indicators displayed on the playing surface; means for electronically pulsing the indicators, said means being connected to drive a sequence of pulses for actuating the indicators, said sequence including a preselected number of pulses, said number of pulses varying among said indicators, one of said pulses ultimately causing one of said indicators to remain actuated, the binary indicators

are light-emitting diodes, the diodes are displayed in a preselected pattern;

switch means movable between first and second positions, said switch means connected for driving said pulses at a first constant rate when said switch means is in said first position and connected for driving said pulses at a second constant rate, slower than said first rate, when said switch means is in said second position, whereby said one diode ultimately remains illuminated, said playing surface comprises two one-half areas, each of said areas including a plurality of said diodes;

an oscillator timer, and means connected to the oscillator timer for emitting sound in response to each pulse; and

said sequence comprises each diode in one of said one-half areas is pulsed and then each diode in the other of said one-half areas is pulsed alternatively.

4,283,053

## AIR POWERED ROCKET SLED GAME

Herman Parker, 404 W. Taylor, McAlester, Okla. 74501; Leon Walker, P.O. Box 415, Welch, Okla. 74369, and Howard S. Berry, Rte. 1, Blue Jacket, Okla. 74333

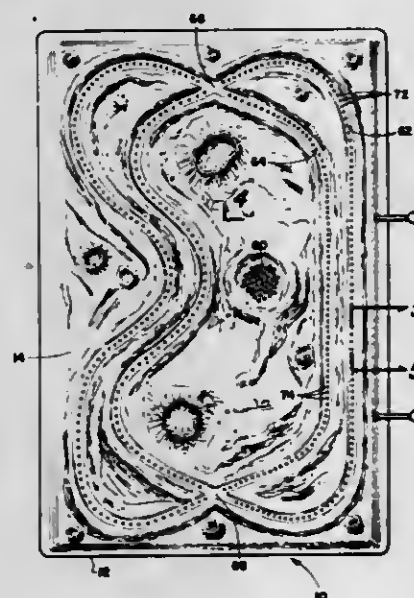
Continuation-in-part of Ser. No. 871,172, Jan. 23, 1978, Pat. No. 4,209,935. This application Apr. 24, 1980, Ser. No. 143,356

Claims priority, application Mexico, May 13, 1977, 169159

Int. Cl.<sup>3</sup> A63F 9/14

U.S. Cl. 273-86 D

8 Claims



1. An apparatus for a rocket sled game comprising a body member;

a pair of elongated substantially enclosed passageways within the body member, the ends of each said passageway being disposed adjacent each other to form a pair of substantial loops of approximately the same length;

a pair of elongated grooved tracks, one provided along the upper outside surface of each passageway to form a pair of continuous loops, each track being in communication with its respective passageway through a plurality of spaced bores along the bottom of each grooved track;

a projectile sled adapted for slidably fitting in the grooved tracks for traveling in a single direction along each said track;

the bores of said plurality of spaced bores being inclined from the vertical, the upper ends of each bore being directed toward the direction of travel of said projectile sled;

means for selectively introducing a separate flow of air into one end of each passageway in a direction opposite the direction of travel of the projectile sled to thereby selectively force the projectile sled along each grooved track in the direction associated with the inclined bores and opposite the direction of flow of air through each passageway, wherein the means for selectively introducing a flow of air comprises a blower compartment, a centrifugal

4,283,054

## DISK GAME APPARATUS

Gianfranco Patella, 4A/8, Via di Serretto, and Luciano Patella, 18/6, Corso Italia, both of Genoa, Italy

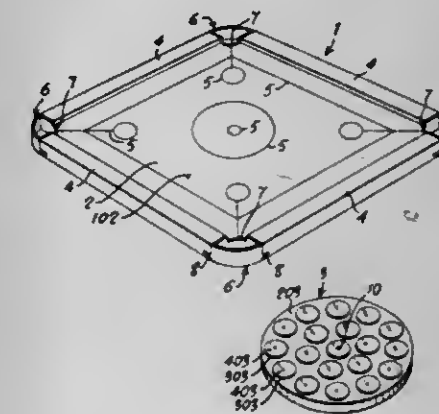
Filed Sep. 19, 1979, Ser. No. 76,933

Claims priority, application Italy, Sep. 19, 1978, 15254 B/78

Int. Cl.<sup>3</sup> A63F 3/00

U.S. Cl. 273-126 R

3 Claims



1. In a game played on a substantially flat playing surface, at least one disk capable of sliding on said surface, said disk having on the side contacting said playing surface a plurality of small circular projections each terminating with a concave imprint having a circular edge directed towards the playing surface, one of said concave imprints being located at the approximate center of said disk and having a point means projecting beyond the plane defined by the circular edge of said one concave imprint to contact said playing surface.

4,283,055

## PUZZLE TYPE TOY

Donald R. Larsen, 358 E. 800 North, American Fork, Utah 84003

Filed Oct. 4, 1979, Ser. No. 81,882

Int. Cl.<sup>3</sup> A63F 9/12

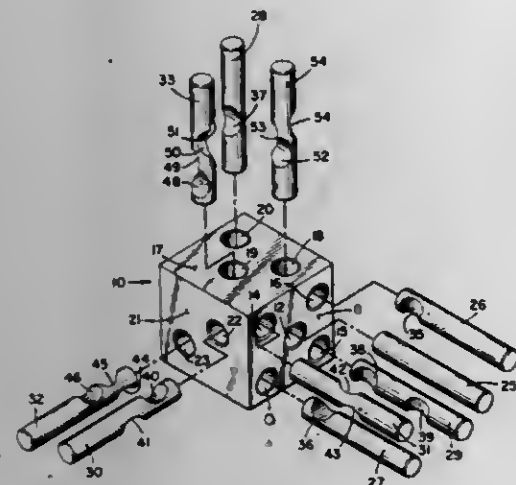
U.S. Cl. 273-160

5 Claims

1. A puzzle type toy comprising a hexahedral, solid body having a plurality of bores of uniform depth extending inwardly only partially through said body from three sides thereof so that each bore extending inwardly from a side of said body partially intersects at least one bore extending inwardly from the other two sides thereof, and a plurality of rods, one rod having either substantially continuous longitudinal side walls or one or more notches therein and the other rods having at least one notch in the sidewalls thereof at various positions around and along the length of said other rods, whereby the rods are all received in the bores only when the rods are inserted in their respective bores in a particular order



with said one rod being the last rod to be inserted into its respective bore, otherwise an interference will occur between



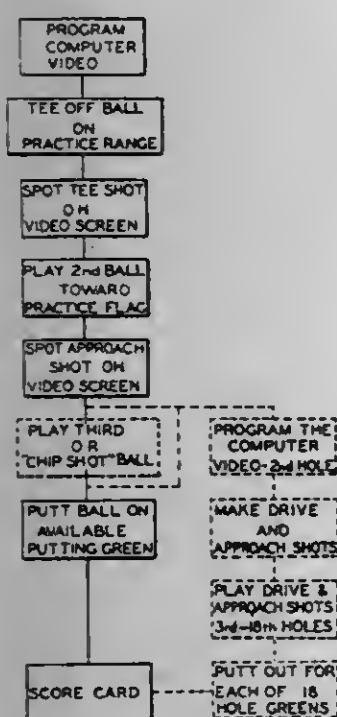
said rods as they are inserted into the bores at the partial intersections of the bores in said solid body.

4,283,056

**PROCESS FOR SIMULATING GAME OF GOLF**  
Franklin C. Miller, 909 Volante Dr., Arcadia, Calif. 91006  
Division of Ser. No. 927,291, Jul. 24, 1978, Pat. No. 4,192,510.  
This application Dec. 27, 1979, Ser. No. 106,889  
Int. Cl.<sup>3</sup> A63B 69/36

U.S. Cl. 273—176 A

3 Claims



I. A game process employing a conventional golf practice range with driving range, approach greens, practice putting greens, a computer having a read-out screen programmable with a golf course hole layout and player accessible controls for indicating the playing ball position on said hole layout on said screen, the steps including programming said computer to image successively the hole layout for each hole of a given golf course, driving a ball on the driving range, positioning an image ball on said screen image hole layout in accordance with the position on the driving range of the driven ball, stroking successive balls on said driving range, positioning said image ball on said screen layout in accordance with the accumulated distance from stroking of the first and successive balls, stroking another ball on said putting practice green after said image ball indicates location on said imaged green until said ball is downed in said green cup, and repeating the steps of the process for each screened hole layout with which the computer is programmed.

4,283,057  
**WHISTLING GOLF CLUB**

James T. Ragan, 473 Thayer Pond Rd., Wilton, Conn. 06897  
Continuation-in-part of Ser. No. 80,061, Sep. 28, 1979,  
abandoned. This application Sep. 5, 1980, Ser. No. 184,392  
Int. Cl.<sup>3</sup> A63B 69/36

U.S. Cl. 273—186 A

7 Claims



1. A golf club comprising a shaft, a head mounted by said shaft and formed with an air flow hole having inlet and outlet ends, a whistle in said hole and actuated by air flow through the hole, means actuated by swinging of said club for forcing air into said inlet end, said outlet end being open to the ambient air and said swinging forming localized air turbulence in the ambient air at said outlet end, and a tailpipe extending from said outlet end to a position where the ambient air is relatively free from said turbulence.

4,283,058

**SEQUENCE ARRANGING BOARD GAME**

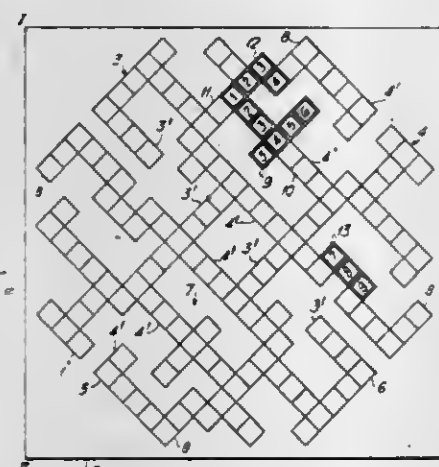
Marie de Cadier, Pirbright, England, assignor to Eugene A. A. E. de Cadier, Pirbright, England, a part interest  
Filed Apr. 10, 1979, Ser. No. 28,870

Claims priority, application United Kingdom, Apr. 12, 1978,  
14317/78

U.S. Cl. 273—236

Int. Cl.<sup>3</sup> A63F 3/00

9 Claims



8. Apparatus for playing a board game, said apparatus comprising:

- (a) a board having a generally square playing surface, said playing surface having a first array of parallel rows of playing positions, each row of said first array being parallel to one diagonal of said surface, a second array of said parallel rows of playing positions extending transversely to said first array, each row of said second array being parallel to a diagonal of said surface transverse to said one diagonal, said arrays crossing over each other to define a plurality of common playing positions, and a plurality of barriers dividing at least some of said rows into sections of playing positions, wherein the number of said sections having two playing positions is equal to or greater than the number of any other sections which have the same number of playing positions as each other, said same number being at least three; and
- (b) at least two distinguishable sets of playing pieces, each of said playing pieces having indicia thereon, each of said sets comprising at least two groups of playing pieces, said playing pieces in each group having indicia which form part of a predetermined sequence, the pieces of each of said sets having at least a majority of the indicia of said

predetermined sequence thereon, the indicia on the playing pieces of each set being the same.

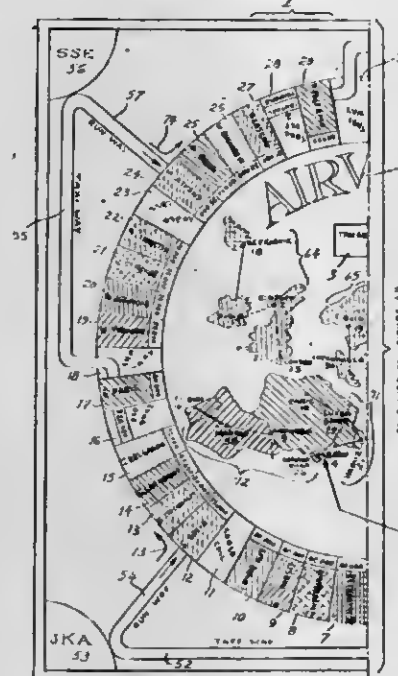
4,283,059

**BOARD GAME APPARATUS**

Wayne A. Beeder, Overhill Rd., Stormville, N.Y. 12582  
Filed Jul. 5, 1977, Ser. No. 812,523  
Int. Cl.<sup>3</sup> A63F 3/00

U.S. Cl. 273—254

18 Claims U.S. Cl. 273—383



1. A board game apparatus comprising:
- a game board with a playing field imprinting upon one side thereof;
  - a geographical map including a plurality of territories imprinted on said playing field, each territory identified by distinctive indicia;
  - at least one city designation imprinted within each of said territories;
  - a course imprinted on said playing field defining a circuit about said map, said course being divided into a plurality of playing spaces;
  - first identification means imprinted on some of said playing spaces corresponding to the indicia on one of said territories;
  - second identification means imprinted on some of said playing spaces corresponding to the indicia on one of said city designations;
  - a plurality of starting bases imprinted on said playing field each having distinctive indicia thereon;
  - one or more pathways extending between each of said starting bases and said course;
  - a plurality of first playing pieces being initially positioned on said starting bases and for moving along said pathways and about said course, each of said first playing pieces including indicia for associating each playing piece with one of said starting bases;
  - dice for controlling the movement of said playing pieces about said course;
  - a plurality of second playing pieces for being placed on said city designations on said map, said second playing pieces including indicia corresponding to the indicia on one of said starting bases; and
  - a spinner for determining penalties in the game, said spinner including a spinner board divided into a plurality of different sections and an arrow for pointing to any one of said coded sections to determine from which territory of said map a player removes an opponents second player piece when under a penalty situation, said sections including indicia corresponding to said first identification means so that each section is associated with one or more territories.

4,283,060

**TARGET HAVING LIMITED ROTATIONAL MOVEMENT UPON IMPACT**

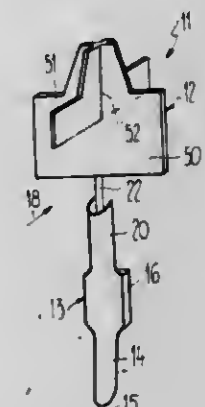
H. Georg Braunschweiler, Dahlienweg 1, 5223 Riniken, Switzerland

Filed Sep. 4, 1979, Ser. No. 71,944

Claims priority, application Switzerland, Sep. 13, 1978,  
9573/78

Int. Cl.<sup>3</sup> F41J 5/00, 7/00

10 Claims



- I. A combat target comprising:
- means defining a target image;
  - a force storage means including a power take off shaft; said power take off shaft being essentially erect when the target image is erect;
  - said target image being coupled for common rotation with said power take off shaft;
  - the storage capacity of the force storage means being adapted for performing a number of revolutions of the power take-off shaft;
  - a stop arrangement against which said take-off shaft is resiliently biased;
  - said stop arrangement in the presence of a hit at the target image being temporarily placed into an ineffectual position for allowing the target image to perform a limited rotational movement;
  - said stop arrangement includes at least one first stop which is rigidly connected for rotation with the power take-off shaft;
  - said stop arrangement further including a stationarily arranged second stop coacting with said first-mentioned stop;
  - both of said stops being structured so that they can be travelled thereover;
  - said stop arrangement further includes a stop carrier seated upon the power take-off shaft; and
  - said stop carrier having bores arranged at substantially uniform angular spacing from one another; and
  - said bores being structured for receiving at least one stop plug forming said first stop.

4,283,061

**BLOW GUN DART**

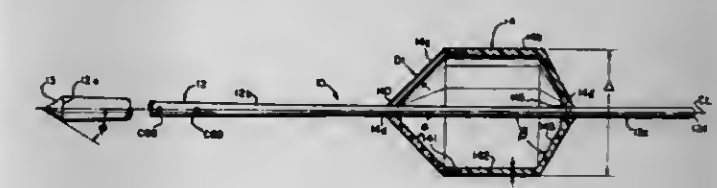
Rolf W. Jordan, ISAR Strasse 93, 2800 Bremen, Fed. Rep. of Germany

Filed May 7, 1980, Ser. No. 147,388

Int. Cl.<sup>3</sup> F41B 1/02

U.S. Cl. 273—423

12 Claims



1. A blow gun dart comprising:



an elongated shaft tapering from tip to tail wherein the forward portion of the shaft has a diameter larger than the rearward portion of the shaft;  
a hollow impeller secured to the rearward portion of said elongated shaft;  
said hollow impeller including a conical forward section having a first predetermined included angle with respect to the center line of the shaft and a rearward section containing a conical portion having a second predetermined angle with respect to the center line of the shaft; and  
wherein the center of gravity of said dart is located in the forward portion of said elongated shaft.

4,283,062

# HYDRAULIC INJECTION MOLDING MACHINE STUFFING BOX

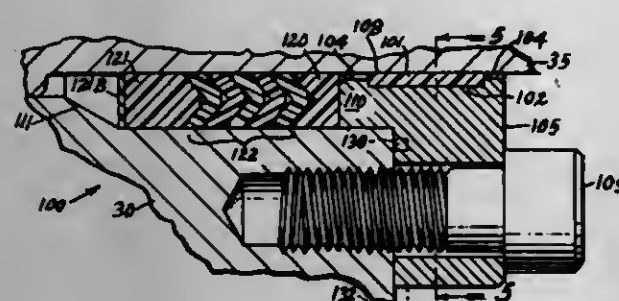
James R. Catanzaro; August R. Meyer, both of Cincinnati, and David L. Willis, Hillsboro, all of Ohio, assignors to Cincinnati Mllacron Inc., Cincinnati, Ohio

Filed Dec. 26, 1979, Ser. No. 106,968

Int. Cl.<sup>3</sup> F16J 15/18

U.S. Cl. 277-12

23 Claims



1. In a ram support packing retainer assembly for use in the stuffing box disposed at the sliding joint between the piston and the cylinder of a hydraulic ram in a hydraulic press such as a hydraulic injection molding machine for molding articles from resin and wherein said stuffing box has packing disposed within an annular outer recess at the end of the cylinder in engagement with the piston and of the kind which expands radially inward against the piston in response to axial compression by a gland or packing retainer ring, the improvement comprising: concentricity pilot means to be connected between said gland and said stuffing box;  
a support bushing groove on the inside diameter of said gland;  
a support bushing supported in said groove and having an inside diameter less than the inside diameter of said gland.

4,283,063

# SELF ALIGNING INSTALLATION RESISTANT LUBRICANT SEAL

David B. Prescott, Littleton, Colo., assignor to The Mechanex Corporation, Englewood, Colo.

Continuation of Ser. No. 41,178, May 21, 1979, abandoned. This application Jun. 26, 1980, Ser. No. 163,181

Int. Cl.<sup>3</sup> F16J 15/34

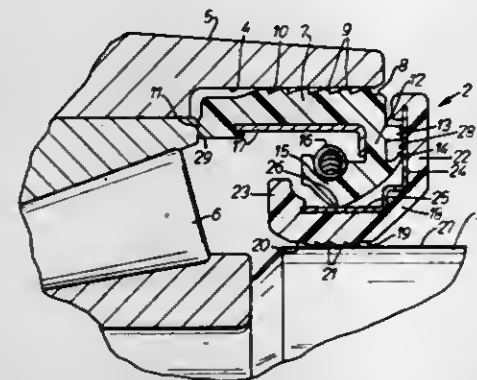
U.S. Cl. 277-37

1 Claim

1. In a vehicle wheel lubricant seal for sealing between a bore in a wheel hub and an axle insertable into said bore, said bore being rotatable with respect to said axle, said bore having a seal limit means for limiting axial movement of said seal into said bore, said seal comprising, in combination:

- a first substantially annular member for sealingly and frictionally engaging and rotating with said bore;
- a second substantially annular member for sealingly and frictionally engaging said axle;
- spacer means on said first member for contacting said second member for maintaining said first member and said second

member in a desired axial spaced relationship with respect to each other during installation of said seal onto said axle; seal means on said first member for sealingly engaging a wear surface on said second member for effecting a seal between said first member and second member under static and dynamic conditions;  
a first plurality of radially outwardly extending resilient seal ridges molded integral with and radially outwardly extending from said first member for sealingly and frictionally engaging said bore in said wheel hub, each of said plurality of seal ridges being formed of a first axially inboard facing substantially annular surface substantially normal to the axis of said seal and extending radially outwardly from said first member and a second annular substantially outboard facing sloping surface extending axially and radially outwardly from said first member, each of said surfaces intersecting to form a sharp angle radially outermost termination of each of said seal ridges;



a second plurality of at least four radially inwardly extending resilient seal ridges molded integral with and radially inwardly extending from said second member for sealingly and frictionally engaging said axle, each of said seal ridges being formed of a first axially inboard facing substantially annular surface substantially normal to the axis of said seal and extending radially inwardly from said member and a second annular substantially outboard facing sloping surface extending axially and radially inwardly from said second member, said surfaces intersecting to form a sharp angle radially innermost termination of each of said seal ridges whereby the resistance to axial sliding of said first plurality of said seal ridges into said bore is less than the resistance to axial sliding of said second plurality of said seal ridges onto said axle when said seal is placed in said bore of said wheel hub and said wheel hub is forced axially onto said axle.

4,283,064

# ROTARY SHAFT SEAL

Thomas E. Staab, Hinsdale, and Joseph Antonini, Chicago, both of Ill., assignors to Dana Corporation, Toledo, Ohio

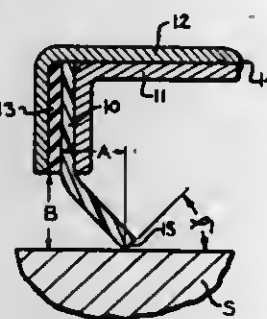
Continuation of Ser. No. 716,501, Aug. 23, 1976, abandoned.

This application Nov. 21, 1977, Ser. No. 853,166

Int. Cl.<sup>3</sup> F16J 15/32

U.S. Cl. 277-81 R

11 Claims



1. A hydrodynamic shaft seal comprising an annular casing

having an axis and a sealing element, said casing engaging the radially outer edge of the sealing element, the sealing element comprising an annular disc of elastomeric material, said disc comprising two faces and a generally annular inner surface extending between and forming edges with said faces, at least one of said edges being radially displaced from said casing axis by varying distances when said sealing element is unstressed, wherein said at least one of said edges is a circumferentially continuous radially innermost sealing edge of said seal when said seal is mounted on a shaft.

4,283,065

# APPARATUS TO PREVENT LEAKAGE OF LIQUID

Mamoru Hira, Okayama, Japan, assignor to Kagaku Kenkyujo Kabushiki Kaisha Hayashibara Seibutsu, Okayama, Japan

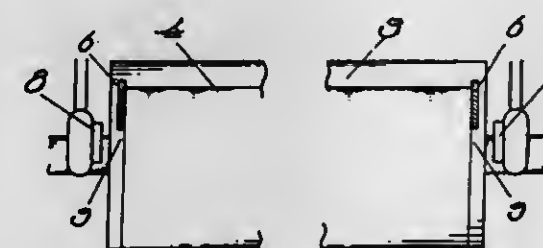
Filed Apr. 12, 1979, Ser. No. 29,470

Claims priority, application Japan, Apr. 12, 1978, 53/42762

Int. Cl.<sup>3</sup> F16J 15/44

U.S. Cl. 277-135

1 Claim



1. An apparatus for the prevention of leakage of liquid from between the drums and end plates of a double drum drier, the end plates of which are in rotating contact with the drums, near each end thereof, with a slight open area at the bottom of the end plates near the point of closest approach to one another of the external surfaces of the drums, comprising:

- nozzle means for applying compressed air or gas to the slight opening formed between the end plate and the rotating drum, said nozzle means comprising at least one nozzle disposed on the exterior of and directed toward said slight opening.

4,283,066

# TANK SUPPORT FOR A TANK TRUCK

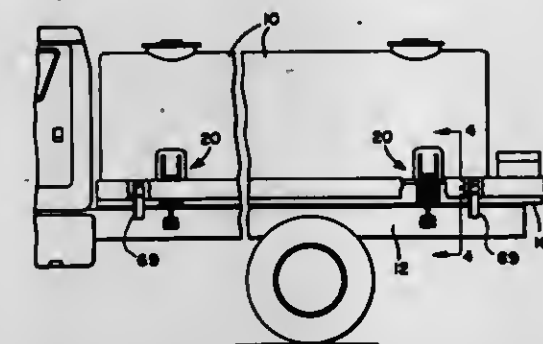
Carl E. Brown, Troy, and Edwin C. Rosenberger, Piqua, both of Ohio, assignors to Chem-Lawn Corporation, Columbus, Ohio

Filed Nov. 7, 1979, Ser. No. 92,244

Int. Cl.<sup>3</sup> B60P 3/22

U.S. Cl. 280-5 D

12 Claims



1. In a tank truck including a main frame, supporting wheels, a cab and a tank mounted behind said cab, the improvement comprising:

- a bed frame disposed above said main frame;
- means interconnecting said bed frame to said main frame;
- and
- means mounting said tank resiliently within the horizontal plane of said bed frame and including a plurality of upper tank holddown brackets secured to said tank, a plurality of

lower tank holddown brackets secured to said bed frame, and means resiliently interconnecting said upper tank holddown brackets to said lower tank holddown brackets.

4,283,067

# PASSENGER MOTOR VEHICLE WITH A TANK ARRANGED BEHIND THE REAR SEATS

Andreas Weber, Lorch, and Manfred Schaefer, Weinstadt, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

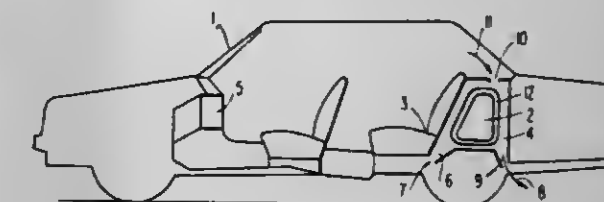
Filed Nov. 6, 1979, Ser. No. 91,762

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849485

Int. Cl.<sup>3</sup> B60K 15/02

U.S. Cl. 280-5 A

7 Claims



1. A passenger motor vehicle which includes a seat means, an air conditioning system, and a fuel tank, characterized in that a space means is provided to a rear of the seat means for accommodating the fuel tank, first inflow opening means are provided for enabling an inflow of dynamic air produced by movement of the vehicle into the space means, second inflow opening means are provided for enabling an inflow of relatively cool exhaust air out of an interior space of the vehicle into the space means, and in that outflow opening means are provided for enabling a flow of air out of the space means so as to enable an air cooling of the fuel tank.

4,283,068

# SLED STRUCTURE

Shirley A. Keyser, P.O. Box 52, Butte, Mont. 59701

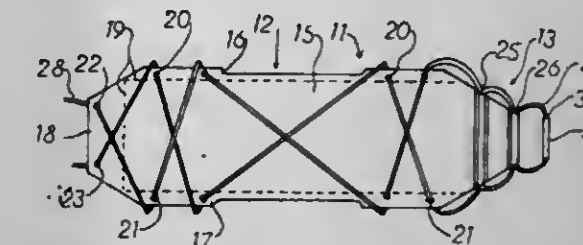
Continuation-in-part of Ser. No. 17,490, Apr. 23, 1979,

abandoned. This application Jan. 8, 1980, Ser. No. 110,550

Int. Cl.<sup>3</sup> B62B 13/16; A61G 1/00

U.S. Cl. 280-19

11 Claims



1. A sled structure including a body supporting portion, a head supporting portion and a towing portion; said body supporting portion and said head supporting portion together forming a substantially flat flexible sheet-like structure, said body supporting portion being of a generally elongated configuration, said body supporting portion including a main section with peripheral side sections and an end section, said side and end sections being foldable with respect to said main section, a plurality of fastening means disposed in said side and end sections, said head supporting portion extending from one end of said body supporting portion, a tubular passage extending from one edge of said sled structure to the other adjacent the juncture of said body supporting portion and said head supporting portion, a second tubular passage adjacent the free end of said head supporting portion, said second tubular passage being spaced from and substantially parallel to said first tubular passage, continuous cord means extending from fastening means adjacent one corner of said end section to fastening



means located in the side section remote from said corner and thereafter to fastening means disposed in the other side section and back and forth between fastening means in said sections in a zigzag pattern to said first tubular passage and therethrough to the opposite edge of said sled structure and then through said second tubular passage, said cord means forming a loop portion and returning through said second tubular passage and said first tubular passage in directions opposite to its initial path therethrough and thereafter between said fastening means in said side sections in a zigzag pattern disposed from said initial zigzag pattern to fastening means located in said end section adjacent to another corner thereof.

4,283,069

**MULTIPLE SPEED BICYCLE DRIVE**

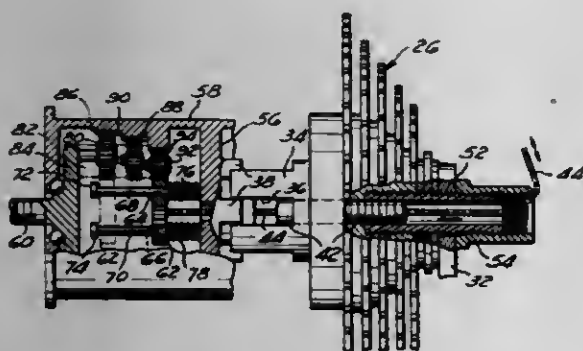
Kenneth J. Citelli, 258 Banner Ave., Ventura, Calif. 93003

Filed Feb. 8, 1980, Ser. No. 119,949

Int. Cl.<sup>3</sup> B62M 9/12, 11/14

U.S. Cl. 280—236

1 Claim



1. In combination with a bicycle, said bicycle having a driving wheel which is to be rotatable driven by a manually operated pedal assembly, said manually operated pedal assembly operating through a chain, said driving wheel having a central hub assembly, the improvement comprising:

first and second gear changing mechanisms, said first gear changing mechanism connected to said second gear changing mechanism and located exteriorly thereof, said first gear changing mechanism comprising a plurality of connected different sized sprockets, said chain connected to said sprockets, said first gear changing mechanism to be manually operable to change from one of said sprockets to another of said sprockets to thereby change the ratio of the number of revolutions of said pedal assembly to the number of revolutions of said driving wheel; and said second gear changing mechanism being mounted within said hub and in driving relationship therewith, said second gear changing mechanism to be manually operable to also change the ratio of the number of revolutions of said pedal assembly to the number of revolutions of said driving wheel, said second gear changing mechanism being operated independent of said first gear changing mechanism, said second gear changing mechanism being operable primarily when said bicycle is stationary while said first gear changing mechanism being operable only when said bicycle is moving.

4,283,070

**RECUMBENT BICYCLE**

Richard J. Forrestall, Wilmington, and David G. Wilson, Cambridge, both of Mass., assignors to Fomac, Inc., Wilmington, Del.

Filed Dec. 26, 1979, Ser. No. 107,348

Int. Cl.<sup>3</sup> B62K 17/00, 21/18

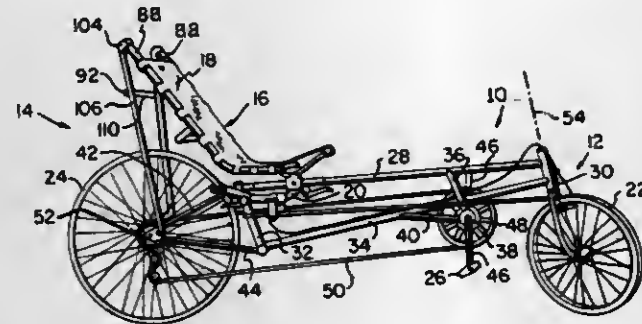
U.S. Cl. 280—274

19 Claims

1. A recumbent bicycle including a bicycle frame, a front wheel rotatable about a turning axis, a rear wheel and drive means including foot pedals for driving said rear wheel, the improvement comprising

a carriage unit including (1) a seat assembly and (2) handle

bars rotatable about a steering axis and coupled to said front wheel so that movement of said handle bars about said steering axis causes said front wheel to rotate about



said turning axis, said carriage unit being mounted on said frame so as to be adjustably movable toward and away from said foot pedals in order to accommodate various sized riders.

4,283,071

**ADJUSTABLE LENGTH COUPLING FOR TOWING AND LIFTING A TRACTOR DRAWN IMPLEMENT**

Jens S. Pedersen, Nrbyndelse, Denmark, assignor to A/S Plovfabrikken Fraugde, Fraugde, Denmark

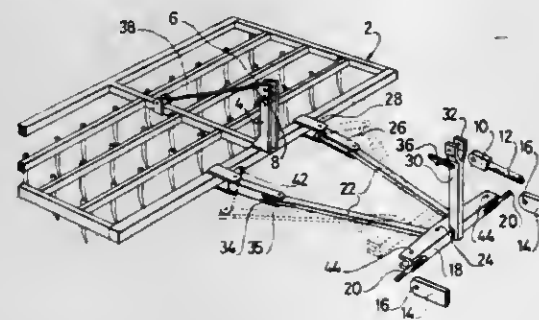
Filed Aug. 3, 1979, Ser. No. 63,448

Claims priority, application United Kingdom, Aug. 5, 1978, 32385/78

Int. Cl.<sup>3</sup> A01B 59/043, 63/102, 73/00

U.S. Cl. 280—415 A

15 Claims



1. A traction coupling for coupling a tractor of the tractor lift fitted type with an implement such as a cultivator propelled by the tractor, comprising a traverse constructed for mounting between opposed ends of lift arms of the tractor lift and a towing member projecting rearwardly from the traverse and constructed for connecting with the implement, characterized in that the towing member is pivotally connected to the traverse and is adjustable in length in such a manner that the coupling, by adjustment of the length of the towing member and without disconnection of the towing member or an end thereof, is shiftable between a towing position, in which the towing member is extended rearwardly relative to the traverse and an articulated coupling is obtained, and a lift mounted position, in which the towing member is contracted relative to the traverse and a relatively rigid coupling is achieved so that a front end of the implement, in use, is located adjacent the traverse in traction and lifting engagement therewith.

4,283,072

**INTEGRAL VEHICLE TRAILER HITCH AND ELECTRICAL SYSTEM**

Frank Deloach, Jr., 2908 Spanford Rd., Panama City, Fla. 32405

Filed Sep. 21, 1979, Ser. No. 77,675

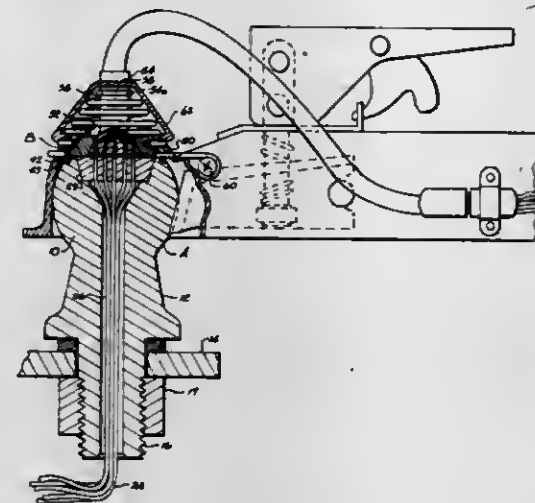
Int. Cl.<sup>3</sup> B60D 1/06, 1/08

U.S. Cl. 280—422

11 Claims

1. A trailer hitch for connecting a towing vehicle having an electrical power source to a towed vehicle having at least one electrically actuated device, said hitch comprising: a ball sec-

tion adapted to be connected to one of said vehicles, said ball section including a vertically disposed face having electrical contact means and means adapted to connect said contact means to one of said power source and said device; a socket coupling adapted to be connected to the other of said vehicles, said socket coupling including a housing for tiltably and rotationally engaging said ball section for transmitting towing force between said vehicles, a cap section having a vertically disposed face overlying said ball section face, said cap section face having electrical contact means for engaging said ball



section contact means, means adapted to connect said cap section contact means to the other of said power source and said device, and means for mounting said cap section on said housing whereby said housing may move relative to said cap section during tilting of said housing relative to said ball section, but said cap section may rotate relatively with said housing relative to said ball section; said cap section and said ball section having interengaging means for maintaining said faces in a constant parallel relationship during said tilting whereby said contact means are maintained in interengagement.

4,283,073

**BALL TYPE GOOSENECK HITCH**

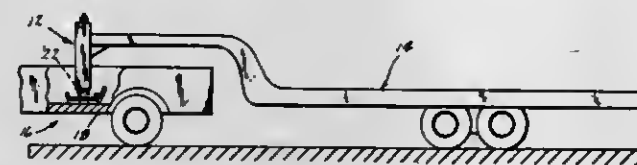
John J. Gostomski, Omaha, Nebr.; Arnold R. Gostomski, Arlington, Tex., and Eugene F. Danel, Malmö, Nebr., assignors to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Oct. 9, 1979, Ser. No. 82,702

Int. Cl.<sup>3</sup> B60D 1/06

U.S. Cl. 280—508

10 Claims



6. In combination, a wheeled vehicle having forward and rearward ends, said wheeled vehicle having a support member at the forward end thereof, a hitch means secured to said support member, a prime mover having an upstanding coupler ball mounted thereon for coupling connection to said hitch means, said hitch means comprising a substantially horizontally disposed support member, a coupler mounted on said support member and extending upwardly therefrom and having an open lower end, said coupler adapted to receive the coupler ball therein, a slide member slidably mounted below said support member and being movable between forward, intermediate and rearward positions relative to said support member, a shaft operatively rotatably mounted on said support mem-

ber rearwardly of said slide member and being disposed transversely with respect to said slide member, said shaft being selectively movable between first, second and third rotational positions, said shaft being normally positioned in said first position, said shaft having an actuator element mounted thereon for rotation therewith, said actuator element being offset with respect to the rotational axis of said shaft, said actuator element being positioned between said shaft and the rearward end of said slide member when said shaft is in its first position to prevent the rearward movement of said slide member thereby maintaining the coupler ball in said coupler, said actuator element being positioned below the axis of said shaft when said shaft is in its third position to permit said slide member to move rearwardly to expose the lower end of said coupler, means for selectively maintaining said shaft in its said second position during the initial stages of the coupling operation whereby engagement of the coupler ball with the forward end of said slide member will move said slide member rearwardly and rotate said shaft from its second position to its third position, and means for automatically returning said shaft to its first position after said coupler ball has moved into said coupler.

4,283,074

**NARROW TRACK ECONOMY MOTOR VEHICLE**

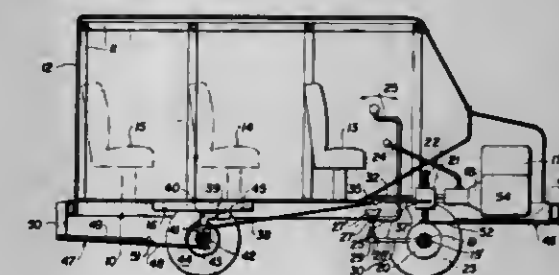
Hubert Tidwell, Box 57, Wellington, Utah 84542

Filed Oct. 24, 1979, Ser. No. 87,731

Int. Cl.<sup>3</sup> B62D 9/02

U.S. Cl. 280—772

4 Claims



1. A narrow track economy vehicle comprising a united main frame and vehicle body, a rear axle for the vehicle having narrow track rear wheels, a front swing axle for steering the vehicle having a pair of narrow track front wheels, front wheel power drive means for the vehicle, spring suspension means for the vehicle coupled between the vehicle main frame and said rear and front swing axles, a master control lever for the vehicle, a transverse axis rocker shaft coupled to the control lever and being turned by the swinging of the control lever in a fore and aft direction, the control lever being swiveled with relation to the rocker shaft for simultaneous swinging from side-to-side in either direction, a steering linkage coupled between the rocker shaft and front swing axle whereby fore and aft swinging of the control lever can effect steering of the vehicle by turning the swing axle in opposite directions, and an additional linkage including a laterally shiftable slotted link engaged with the control lever and shifted thereby when the control lever is swung from side-to-side, and said additional linking including camming means coupled with said laterally shiftable slotted link and acting on said main frame to elevate one side of the main frame to thereby tilt the united main frame and vehicle body in one direction while the vehicle is negotiating a curve.



4,283,075

**PASSIVE OCCUPANT SHOULDER BELT**

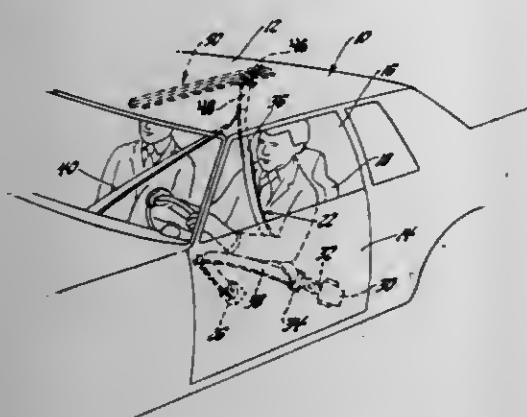
Gary A. Wize, Washington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 1, 1980, Ser. No. 117,618

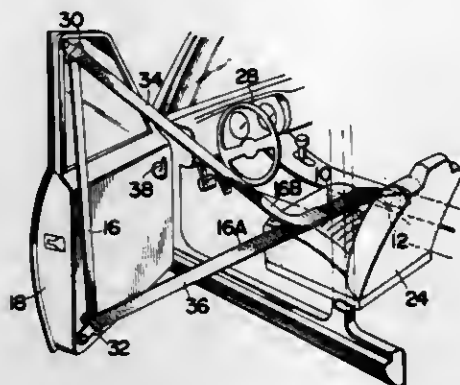
Int. Cl.<sup>3</sup> B60R 21/10

U.S. Cl. 280—804

3 Claims



one end of the inner webbing constituting a shoulder restraining portion for the occupant; whereby the vehicle



is opened or closed so as to automatically fasten the webbing to the occupant.

1. In combination with a vehicle body having a roof and an occupant seat, a passive restraint system comprising:  
a shoulder belt having an upper end and a lower end;  
mounting means fixedly attaching the upper shoulder belt end on the vehicle roof generally rearward and at one side of the seat;  
retractor means retractably mounting the lower shoulder belt end at a low location at the opposite side of the seat to dispose the shoulder belt diagonal restraining position across the occupant;  
a track extending longitudinally along the roof forwardly from the mounting means;  
a belt carriage movable along the track and having a belt engaging means thereon adapted to progressively stow the shoulder belt along the roof during forward movement of the belt carriage along the track; and  
belt stiffening means associated with a portion of the upper belt end adjacent the mounting means and adapted to be engaged by the belt engaging means and abruptly pivoted forward to thereby raise the stiffened shoulder portion from the diagonal restraining position to the stowed position along the roof immediately upon initiation of forward movement of the carriage.

4,283,076

**SEATBELT SYSTEM**

Muneharu Matsunami; Toshio Saito; Akio Yoshida, and Nobuyuki Inokuchi, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai Rika Denki Seisakusho, both of Aichi, Japan

Filed Oct. 30, 1979, Ser. No. 89,443

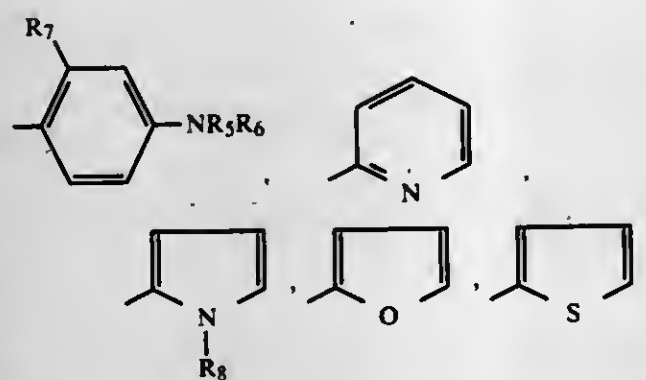
Claims priority, application Japan, Oct. 30, 1978, 53-149154[U]

Int. Cl.<sup>3</sup> B60R 21/10

U.S. Cl. 280—806

6 Claims

1. A seatbelt system comprising:  
(a) an inner webbing;  
(b) an outer webbing whose opposite ends are secured to one end of said inner webbing;  
(c) an emergency locking retractor for winding up the other end of said inner webbing by its biasing force and preventing said inner webbing from being wound off in an emergency of the vehicle, said retractor being secured to the substantially central portion of the vehicle; and  
(d) a pair of slip anchors provided at the upper and lower portion of a vehicle door for turning back the intermediate portions of said outer webbing, the portion between one of the slip anchors and one end of the inner webbing constituting a waist restraining portion for an occupant and another portion between the other of the slip anchors and



4,283,077

**INDOLE COLOR FORMER**

Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

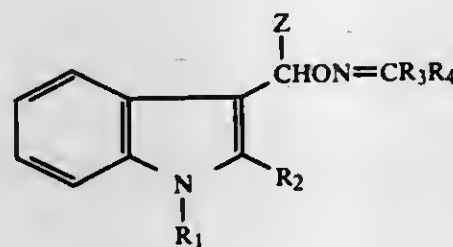
Filed Mar. 6, 1980, Ser. No. 127,649

Int. Cl.<sup>3</sup> B41M 5/16, 5/18, 5/22.

U.S. Cl. 282—27.5

3 Claims

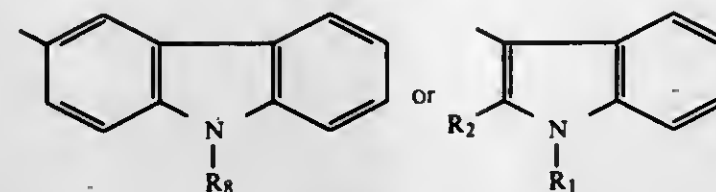
1. A pressure-sensitive carbonless duplicating system or thermal marking system containing a support sheet coated with a color-forming substance comprising a compound having the formula



wherein:

R<sub>1</sub> is hydrogen or lower-alkyl;  
R<sub>2</sub> is hydrogen, lower-alkyl or phenyl;  
R<sub>3</sub> and R<sub>4</sub> are independently hydrogen, alkyl containing 1-8 carbon atoms, benzyl, phenyl, phenyl substituted with 1 or 2 halo, lower-alkyl, lower-alkoxy or di-lower-alkylamino groups, or CR<sub>3</sub>R<sub>4</sub> is cyclopentyl, cyclohexyl or cycloheptyl, provided that R<sub>3</sub> and R<sub>4</sub> are not simultaneously hydrogen; and  
Z is naphthyl, biphenyl, phenyl, phenyl substituted with 1 or 2 lower-alkyl, lower-alkoxy, phenyl, halo or nitro groups or Z is a substituent having the formula

-continued



where in the above formulas

R<sub>5</sub> and R<sub>6</sub> are independently lower-alkyl or benzyl;  
R<sub>7</sub> is hydrogen, lower-alkyl, lower-alkoxy, halo or di-lower-alkylamino, and  
R<sub>8</sub> is hydrogen or lower-alkyl.

4,283,078

**FLEXIBLE JOINT PROTECTOR**

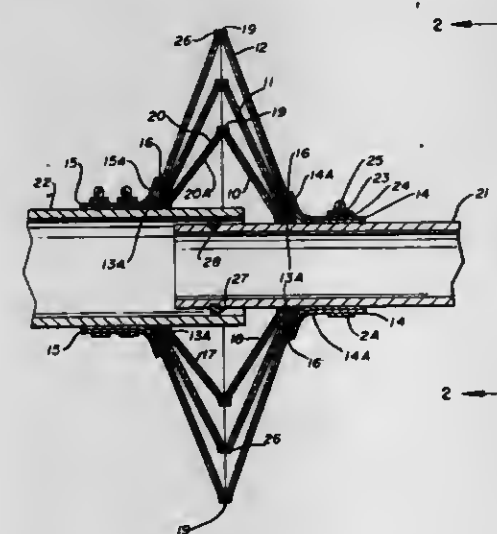
Victor H. Ross, 111 Okinawa Dr., and Victor H. Ross, Jr., Old Apple Orchard, R.D. #3, both of New Castle, Pa. 16105

Filed May 1, 1980, Ser. No. 145,872

Int. Cl.<sup>3</sup> F16L 11/12

U.S. Cl. 285—45

4 Claims



1. A flexible joint protector for use with a pipe joint and comprising an assembly of several spaced individual accordion type bellows, each of said bellows being annular and of different outer diameters, said bellows positioned one within the other with the largest diameter bellows defining the outside of said assembly and the smallest of said bellows defining the inside of said assembly, each of said bellows formed of a pair of flat circular flexible members having central openings and joined at their outer peripheral edges, each of said individual bellows arranged in juxtaposition and joined to one another in the areas about their central openings, each of said bellows made of air impervious material, a pair of tubular sleeves secured to the joined areas about said central openings of said bellows in oppositely disposed outwardly extending relation thereto, clamps securing said sleeves to said pipes on either side of said joint.

4,283,079

**ULTRA HIGH VACUUM SEAL ARRANGEMENT**

Robert Flaherty, Mt. Lebanon, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 30, 1978, Ser. No. 891,675

Int. Cl.<sup>3</sup> F16L 13/14

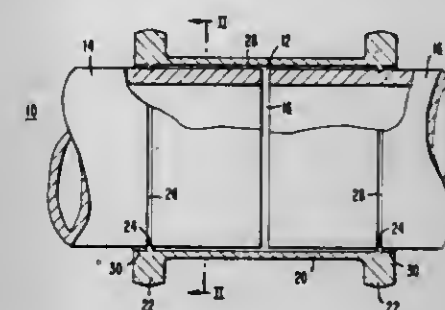
U.S. Cl. 285—381

7 Claims

1. Apparatus for removably sealing two concentric longitudinally aligned metallic tubes in an ultra high vacuum system comprising:

a tubular seal formed of a heat recoverable metallic material having integrally formed reacting rings of enlarged cross section near the ends thereof, said reacting rings extending radially outward from the balance of said tubular seal,

each said ring having associated therewith an integral protruding circumferential lip, each said lip extending radially inward from the balance of said seal in longitudinal alignment with a corresponding ring, said seal sized such that one of said lips circumferentially contacts one of



said concentric tubes upon transformation from a martensitic to austenitic state with a pressure sufficient to plastically deform said one tube and another of said lips circumferentially contacts the other of said tubes upon said transformation with a pressure sufficient to plastically deform said other tube.

4,283,080

**FLANGE FOR A DUCT**

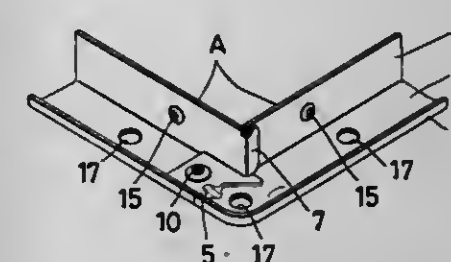
Kenji Nakajima, 3-5, 6-chome, Nagayoshi-deto, Hirano-ku, Osaka-shi, Osaka-fu, Japan

Filed Jan. 2, 1980, Ser. No. 109,186

Int. Cl.<sup>3</sup> F16L 23/00

U.S. Cl. 285—405

3 Claims



1. A flange for a polygonal cross-section duct, comprising a plurality of flange pieces connected together in a polygonal flange, each of said flange pieces having a base wall for being secured to the duct and a flange wall connected along one edge of said base wall and extending perpendicular to said base wall and having means for being connected to an opposed flange, said flange wall having a transverse extension at one end of said flange piece extending past said base wall at an angle to the length of said flange piece corresponding to the angle between the walls of the duct, said transverse extension being connected to the flange wall of the flange piece which is next adjacent the one end of said flange piece, and said base wall having a hook at the other end of said flange piece bent around the end of the base wall of the flange piece next adjacent the other end of said flange piece.

4,283,081

**LOCK FOR PORTABLE CONTAINER**

Vitaly I. Shalaev, ulitsa Bairona, 161G, kv. 32; Alexandr K. Protasov, ulitsa Vladimira Kononova, 43; Vladimir I. Vasiliev, ulitsa Bljukhera, 26, kv. 172, and Viktor I. Ponomarev, ulitsa Gvardeltsev Sheronintsev, 69/42, kv. 37, all of, Khar'kov, U.S.S.R.

Filed Aug. 27, 1979, Ser. No. 70,145

Int. Cl.<sup>3</sup> E05C 5/02

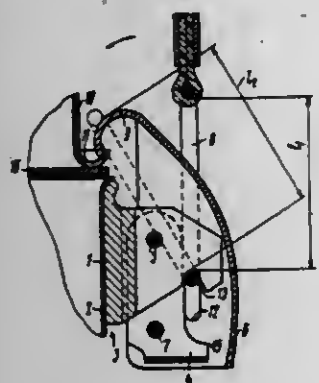
U.S. Cl. 292—113

6 Claims

1. A lock for a container having a body with sidewalls and a cover, the lock comprising a lug mounted fixed to a sidewall of the container and having a transverse groove; a latch assem-



bly mounted on said lug for releasably locking the cover on the container; said latch assembly comprising a link pivotally mounted on said lug, a latch pivotally mounted on the link and having a hooked end for engaging the cover and locking it on to the container body when the latch is pivoted in a direction to a position downwardly toward engaging said link and for releasing the cover when the latch is pivoted in a direction upwardly away from the link, the latch having longitudinal



slots spaced from each other and disposed to lie in a plane in which said groove is disposed when the latch is positioned locking the cover on the container body, a stirrup movable in said slots for entering said transverse groove and maintaining the latch fixed relative to the lug to maintain the lock locked when the latch is disposed in the position for locking, and retaining means coactive with the stirrup for releasably maintaining the stirrup in the transverse groove.

4,283,082

#### TOOL FOR RETAINING AND RELEASING RINGED ELEMENTS

Wayne R. Tracy, 132 Royal St., Chicopee, Mass. 01020  
Filed Apr. 28, 1980, Ser. No. 144,430  
Int. Cl.<sup>3</sup> B65G 7/12

U.S. Cl. 294—15

4 Claims



1. A tool for retaining and selectively releasing ringed members, said tool including ringed member retaining and releasing means at one end thereof and ringed member capturing means at the other end thereof; said tool comprising, in combination: an axially elongated, hollow tube having oppositely disposed open ends; the retaining and releasing means including an integrally formed, elongated central body portion, a reduced diameter pin portion and a threaded end portion; the threaded end portion of said retaining and releasing means being

secured for reciprocation adjacent one of said open ends of said tube and the other end of the retaining and releasing means being free; said retaining and releasing means including radially expandable means formed by a plurality of axial incisions through the central body means to define a plurality of discrete sections, at least part of the axial length of said incisions extends outwardly of said one end of said hollow tube when said retaining and releasing means is operatively assembled therein, said expandable means adapted for selective, axial reciprocation between a first, radially retracted position when pressure is applied against said free end, and a normally biased, radially expanded position when no pressure is applied to said free end, the outer diameter of the expandable means in the retracted position being equal to or less than the outer diameter of the hollow tube;

whereby the tool is adapted to slidably retain the ringed members about the outer diameter of the tube when the retaining and releasing means is in the normally biased, radially expanded position, and said tool is adapted to release ringed members from about the outer diameter of the tube when the retaining and releasing means is in the radially retracted position due to the application of pressure against the free end thereof; and

an end plug having opposed ends, one end of said plug being secured to the end of said tube opposite the end securing said retaining and releasing means; the other end of said plug being slotted so as to compress radially when radial force is applied to the slotted end of said plug, said slotted end of said plug including a flange of a diameter greater than the outer diameter of said tube and greater than the inner diameter of ringed members adapted for use with the tool; whereby the slotted flange of the plug may be radially compressed to capture ringed members thereover.

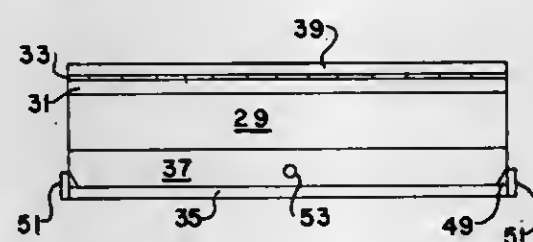
4,283,083

#### VEHICLE-ATTACHED ARTICLE CARRIER

Raymond L. Johnson, Rte. 4 Box 268A, Texarkana, Ark. 75502  
Filed May 30, 1980, Ser. No. 154,662  
Int. Cl.<sup>3</sup> B60R 11/06

U.S. Cl. 296—24 R

13 Claims



1. An article carrier adapted to be mounted on a closure of a vehicle of the type that has a sidewall, said sidewall and said closure defining part of said vehicle, said closure being movable between open and closed positions, said closure also having an inner wall which has an end portion that abuts said sidewall when the closure is in the closed position, said article carrier comprising:

article carrier means comprising (a) a base member which is arranged for attachment to the inner wall of said closure, and (b) a lid which may be opened to gain access to said article carrier means,

said lid having a flange which extends therefrom to a position between a portion of said sidewall and the closure when said base member is attached to said closure and said closure is in the closed position, whereby to securely hold said lid in its closed position.

4,283,084

#### MOTORCYCLE COVER

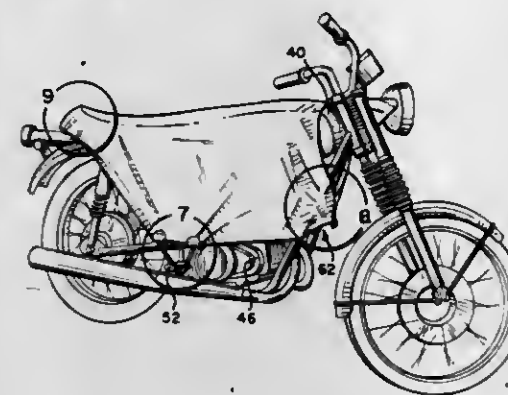
Donald A. Gallagher, Ventura, Calif., assignor to Westworld Enterprises, Ventura, Calif.

Filed Dec. 12, 1978, Ser. No. 968,821

Int. Cl.<sup>3</sup> B62J 19/00

U.S. Cl. 296—78.1

7 Claims



1. A portable protective covering for a motorcycle having a seat located higher than the motorcycle engine and a front frame located forward thereof comprising a foldable sheet having a first end portion generally defined by converging edges each of which merge into a curved-end edge corresponding to the curvature of the back end of said motorcycle seat and adapted to interfit said seat and thereby become frictionally engaged therewith, said first end portion extending into a central portion and an opposing second end portion terminating at a front edge having opposing corners that include corresponding attachment means for releasably connecting said corners to each other across said front framework, said central portion including opposing lateral portions adapted to cover each side of a motorcycle with each lateral portion terminating in a lateral edge having engagement means for releasable connection to a corresponding motorcycle part.

4,283,085

#### PIVOTAL HOOD ARRANGEMENT, ESPECIALLY IN MOTOR VEHICLES

Bruno Sacco, Sindelfingen, and Hermann Renner, Magstadt, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Fed. Rep. of Germany

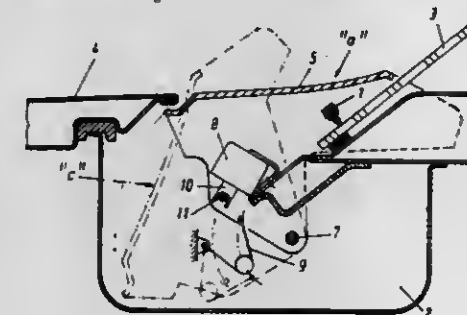
Filed Nov. 17, 1978, Ser. No. 961,690

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753371

Int. Cl.<sup>3</sup> B60J 1/20

U.S. Cl. 296—84 R

11 Claims



1. A pivotal hood-like structure for covering a separate aggregate space underneath an engine hood for the accommodation of a windshield wiper installation, said aggregate space being arranged between the engine space and passenger space of a motor vehicle within the area underneath the windshield thereof, said hood-like structure comprising:

a hood normally covering said separate aggregate space when in a closed position;

means for mounting said hood so as to be pivotal about a pivot axis into a first open position, whereby said wind-

shield wiper installation may be operated, and into a second open position, whereby increased access to said separate aggregate space may be afforded for purposes of maintenance and repair;

a reciprocable piston means for displacing said hood between the closed and first open positions;

means fixedly attached to said hood for enabling the reciprocating motion of the reciprocable piston means to be converted into pivotal motion, said enabling means being adapted to be in operable engagement with said piston means when said hood is in its closed and first open positions; and

means positioned between said vehicle and said hood, for biasing said hood toward said closed position and for biasing said enabling means into operable engagement with said piston means when said hood is in its closed and first open positions.

4,283,086

#### BODY FOR VEHICLES AND VEHICLES CARRYING SAID BODY

Andre M. R. Morin, Chatillon sur Thonet, France, assignor to SOVAM, Parthenay, France

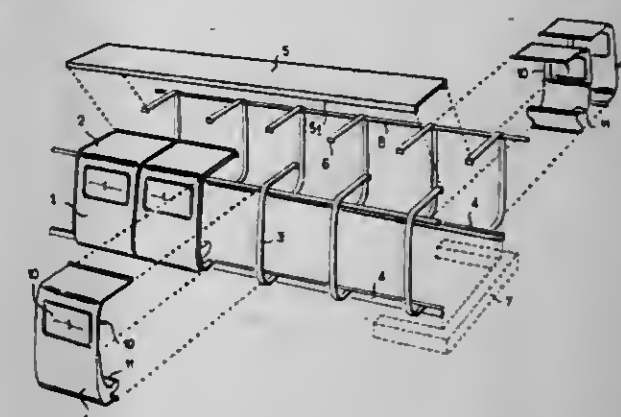
Filed Sep. 12, 1979, Ser. No. 74,746

Claims priority, application France, Sep. 14, 1978, 78 26482; Apr. 17, 1979, 79 09671

Int. Cl.<sup>3</sup> B62D 29/04

U.S. Cl. 296—178

15 Claims



1. A vehicle body comprising a plurality of identical modular elements connected side by side to each other to define one side of the body, additional identical modular elements defining the other side of the body, each of said modular elements including an upper portion that forms part of the roof of the body,

a central beam running longitudinally of the body along the center of the roof of the body, and angles provided on the ends of the modules for connecting the side walls to the beam.

4,283,087

#### SUPPORT UNIT FOR A DRIVER'S CAB IN A UTILITY VEHICLE

Wolfgang Kauss, Berlin, and Ludwig Muncke, Feldkirchen-Westerham, both of Fed. Rep. of Germany, assignors to Fritzmeier AG, Lenzburg, Switzerland

Filed Dec. 12, 1979, Ser. No. 102,661

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853806

Int. Cl.<sup>3</sup> B62D 33/06

U.S. Cl. 296—190

9 Claims

1. An apparatus for compensating relative dynamic movement of the passenger space of a vehicle comprising;

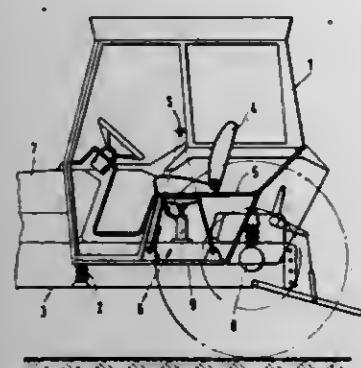
at least one support means mounted to the chassis of the vehicle, the support means having a piston supported by the passenger space by flexible means;

a fluid circuit providing a source of pressure or a non-pressurized return;

a directional control means for connecting the pressure side



of the piston to either the source of pressure or to the non-pressurized return;  
a lever means supported by the passenger space, the lever means having a first arm means for actuating the directional control means and a second arm means; and



an adjusting cylinder means having a piston connected to the second arm means, the pressure side of the adjusting cylinder piston being in fluid connection with the pressure side of the support means piston by an adjustable fluid throttling means.

4,283,088

**THERMAL-MINING METHOD OF OIL PRODUCTION**

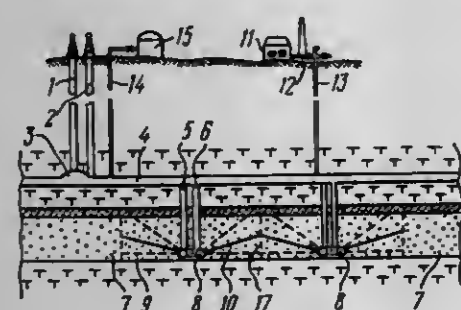
Vladimir P. Tabakov, ulitsa Sofii Kovalevskoi, 4a, kv. 125; Boris P. Kornev, ulitsa Bulatnikovskaya, 1v, korpus 2, kv. 10; Leonid N. Buchenkov, ulitsa Geroev Panfilovtsev, 1, korpus 5, kv. 135; Andrei T. Gorbunov, ulitsa Nagornoaya, 16, korpus 2, kv. 71, all of Moscow; Vladilen E. Kaschavtsev, ulitsa Sovetskaya, 64, kv. 41, Moskovskaya oblast, Noginsk; Viktor P. Pila-tovskiy, 1 Dmitrovsky proezd, 8, kv. 137, Moscow; Evgeniy I. Gurov, ulitsa Mira, 2, kv. 3, Komi ASSR, Ukhta, poselok Yarega; Alexandr I. Obrezkov, ulitsa Neftyanikov, 1, kv. 14, Komi ASSR, Ukhta, poselok Yarega; Gadel G. Vakhitov, Leninsky prospekt, 67, kv. 188, Moscow; Rishad T. Bulgakov, ulitsa Beloglazova, 8, Tatarskaya ASSR, Almetievsk; Vladimir P. Maximov, 1 Dmitrovsky proezd, 8, kv. 162, Moscow; Rafkhat A. Maxatov, Leninsky prospekt, 67, kv. 164, Moscow; Alexandr I. Shnirelman, Uralskaya ulitsa, 6, korpus 6, kv. 45, Moscow; Boris E. Dobroskok, ulitsa Voroshilova, 18, kv. 2; Khalim A. Asfandiyarov, ulitsa Tukaya, 73a, kv. 8, both of Tatarskaya ASSR, Bugulma, Airat K. Fatkullin, deceased, late of ulitsa Tukaya, 75a, kv. 10, Tatarskaya ASSR, Bugulma, by Neili N. Fatkullin, executrix, all of U.S.S.R.

Filed May 14, 1979, Ser. No. 38,407

Int. Cl.<sup>3</sup> E21C 41/10

U.S. Cl. 299-2

31 Claims



1. Method for thermal-mining for the production of oil, which comprises  
digging a combination of underground workings and at least one working tunnel;  
drilling injection and producing wells from said working tunnel;  
introducing a heat carrier into the oil-bearing bed until the same is heated to a temperature at which the oil acquires fluidity;  
then further injecting a heat carrier into the oil-bearing bed

through the injection wells at time intervals calculated by the following relation:

$$t_1 = c\gamma\tau L^2/l$$

wherein  $c$ =heat capacity of the oil-bearing bed J/deg,  
 $l$ =temperature conductivity of the oil-bearing bed,  $m^2/s$ ,  
 $\gamma$ =specific weight of the oil-bearing bed,  $N/m^3$ ,  
 $L$ =graphic scale,  $m$ ,  
 $\tau$ =dimensionless time ( $L < \tau \leq 1$ );  
withdrawing the oil from the producing wells at time intervals  $t_3$  in which the time interval  $t_1$  for injecting the heat carrier into the injection wells is divisible by the time interval  $t_3$  for withdrawing oil from the producing wells, the multiplicity factor  $n$  being:

$$n = \frac{t_1}{t_3} \geq 60 \text{ where } t_3 = \frac{A^2 \mu m (p_1 - p_2) B}{2K \Delta p}$$

$A$ =distance between injection and producing wells  $m$ ,  
 $p$ =pressure drop in the oil-bearing bed between injection and producing wells,  $N/m^2$ ,  
 $\mu$ =oil viscosity,  $N \cdot s/m^2$ ,  
 $m$ =porosity of the oil-bearing bed,  
 $K$ =permeability of the oil-bearing bed,  $D$ ,  
 $p_1 - p_2$ =change per cycle of the oil-bearing bed saturation with heat carrier,  
 $B$ =dimensionless parameter ( $0 < B < \infty$ );  
and injecting the oil from said working tunnel through the underground workings up to the surface.

4,283,089

**PRETREATMENT FOR FRACTURING COAL SEAMS**

Raymond L. Mazza, Morgantown, W. Va.; H. Douglas Dahl, Pittsburgh, Pa., and Ronald W. Umphrey, Fairmont, W. Va., assignors to Conoco, Inc., Ponca City, Okla.

Filed Jun. 12, 1980, Ser. No. 158,669

Int. Cl.<sup>3</sup> E21C 43/00

U.S. Cl. 299-16

6 Claims

1. A method of pretreating and hydraulically fracturing a coal seam comprising:

- injecting a pretreatment material capable of swelling coal into a coal seam to be fractured, said material being injected at less than fracturing pressure;
- allowing the coal seam to swell as a result of contact with said material, thereby reducing the permeability of cleats in the pretreated portion of said coal seam; and
- subsequently subjecting said pretreated portion of said coal seam to hydraulic fracturing.

4,283,090

**CONVEYOR MOUNTED EXCAVATOR**

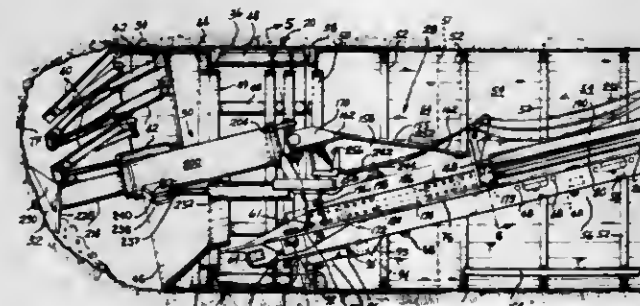
Tyman H. Fikse, Seattle, Wash., assignor to The Robbins Company, Seattle, Wash.

Filed Oct. 1, 1979, Ser. No. 80,408

Int. Cl.<sup>3</sup> E21D 9/10, 9/12

U.S. Cl. 299-33

10 Claims



1. In a tunneling machine having a self-propelled shield, an

elongate boom having a digging tool carrying front end portion, a carriage pivotally supporting the boom, control means carried by the boom support carriage for pivoting the boom up and down and sideways to move the boom about the tunnel face, and the improvement comprising:

- a elongate conveyor;
- support and guideway means disposed along said conveyor for guiding the boom support carriage for longitudinal travel along said conveyor while preventing transverse movement of the carriage relative to said conveyor;
- means for advancing and retracting the carriage along said support and guideway means to move the boom longitudinally relative to said conveyor; and
- connection means for detachably connecting a forward portion of said conveyor to the tunneling shield, said connection means including:
  - first connection means for connecting a forward end portion of said conveyor to the tunneling shield for towing said conveyor with the tunneling shield while simultaneously permitting said conveyor to pivot about a horizontal axis and to a limited degree about a vertical axis relative to the tunneling shield; and
  - second connection means fixedly attached to the tunneling shield and engageable with the forward end portion of said conveyor to vertically support the forward end portion of said conveyor and permit the conveyor to slide longitudinally, rock about a horizontal axis and pivot a limited degree about a vertical axis relative to the tunneling shield, while preventing any appreciable vertical or lateral movement of the conveyor forward end portion relative to the tunneling shield.

4,283,091

**SHOCK PROOF FASTENER ASSEMBLY FOR VEHICLE WHEELS AND OTHER APPLICATIONS**

Max L. Enders, 965 N. Fair Oaks Ave., Pasadena, Calif. 91103

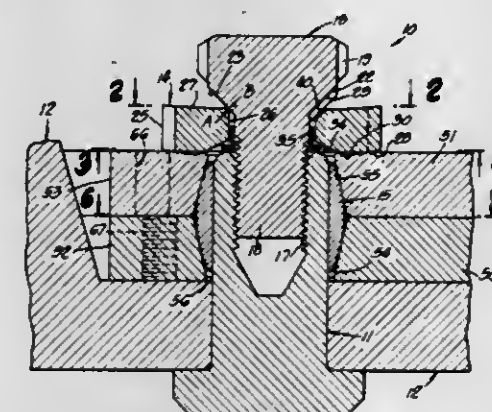
Continuation-in-part of Ser. No. 623,578, Oct. 20, 1975,

abandoned. This application Jun. 5, 1978, Ser. No. 912,566

Int. Cl.<sup>3</sup> B60B 3/16

U.S. Cl. 301-9 DN

27 Claims



- That improvement in a demountable dual wheel and hub assembly for a motor vehicle which comprises:
  - a wheel and brake drum unit having a ring of studs projecting axially from the face of said brake drum each having a threaded well in one end thereof;
  - a resilient split collet having a sliding fit over each of said studs and an axial length corresponding generally to the projecting length of said studs, said collet having the exteriors thereof tapering toward their respective ends at a taper angle of the order of 4 to 1;
  - a pair of wheels having a ring of tapered bores having centers coinciding with the axes of said ring of studs and the taper angle of portions of which bores is of the order of 4 to 1, and sized to intermesh over and contract said collets firmly and rigidly against said studs, the smaller diameter of said bores being substantially greater than the diameter of said studs; and
  - cap screw means having threads mateable with the threaded well of respective ones of said studs effective as the same

are wrenched tight to clamp said wheels immovably to said hub as said collets are contracted rigidly against said studs thereby to isolate the threads of said cap screw means to said threaded wells from radial and torsional load stresses acting between said hub and said wheels when in use.

4,283,092

**VEHICULAR BRAKING SYSTEM UTILIZING A HYDRODYNAMIC BRAKE AND FRICTION BRAKE**

Klaus Sauka, Crailsheim, Fed. Rep. of Germany, and Hertz Muschelkautz, deceased, late of Crailsheim, Fed. Rep. of Germany (by Ingeborg Muschelkautz, beirress), assignors to Voith Turbo GmbH & Co. KG, Fed. Rep. of Germany

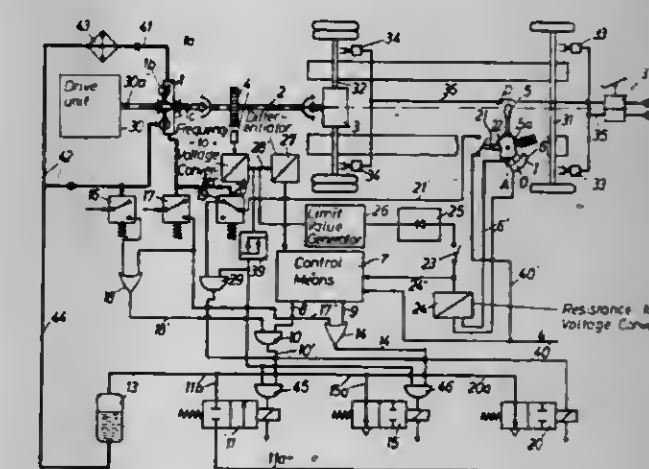
Filed Jun. 1, 1979, Ser. No. 44,457

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 2824909; May 10, 1979, 2918793

Int. Cl.<sup>3</sup> B60T 8/02

U.S. Cl. 303-3

12 Claims



- A braking system for use in a vehicle in which a friction brake is associated with each wheel of the vehicle and a hydrodynamic brake is associated with an axle of the vehicle, said hydrodynamic brake applying a braking torque to said axle, the magnitude of said braking torque and therefore the magnitude of the deceleration of said axle varying as a function of the amount of fluid in said brake, said braking system comprising:
  - reference signal generating means for generating a first signal representative of a desired magnitude of said deceleration of said axle;
  - deceleration measuring means for generating a second signal representative of the actual magnitude of said deceleration of said axle, said deceleration measuring means comprising speed sensing means for generating a speed signal representative of the speed of said axle, and differentiating means for differentiating said speed signal so as to generate said second signal;
  - control means responsive to said first and second signals for varying said amount of fluid in said hydrodynamic brake in such a manner that said actual magnitude of said deceleration of said axle is adjusted towards said desired magnitude of said deceleration; and
  - a first pressure switch means for monitoring the fluid pressure in said hydrodynamic brake and for preventing any rise therein once a given pressure in said hydrodynamic brake is reached.



4,283,093

## TRACK ADJUSTER AND GUARD

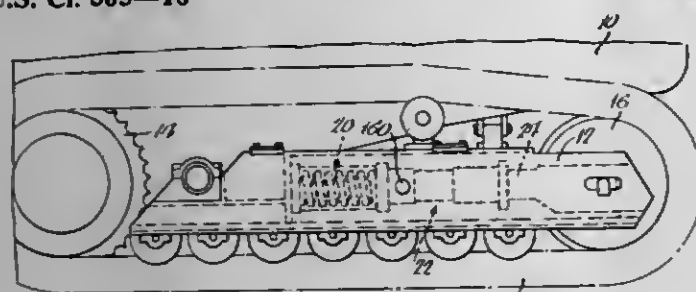
Lawrence R. Cline, Oswego, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 23, 1978, Ser. No. 953,717

Int. Cl.<sup>3</sup> B62D 55/30

U.S. Cl. 305-10

5 Claims



1. A track roller assembly comprising:
  - a track roller frame (12) defining an elongated tunnel;
  - a pair of spaced apart elongated rails (70, 72) extending through said tunnel;
  - a stop (26) at one end of said tunnel;
  - a spring recoil assembly (20) within said tunnel in abutment with said stop and supported by and nesting between said rails, said spring recoil assembly including a housing (28) containing a compression spring (30) and having an opening (32) oppositely from said stop and movable means (36) exposed through said opening and abutting said spring for compressing the same;
  - a hydraulic adjuster assembly (22) within said tunnel and supported by and nesting between said rails in abutment with, but unattached to, said housing, said adjuster assembly comprising a closed hydraulic chamber (100) with a movable piston assembly (104) extending therefrom through said opening and abutting said moveable means; and
  - an idler yoke (24) within said tunnel and supported by said rails and nesting between and abutting, but not attached to, said adjuster assembly oppositely of said spring recoil assembly.

4,283,094

## AIR SUSPENSION SYSTEM FOR VEHICLE TRACK

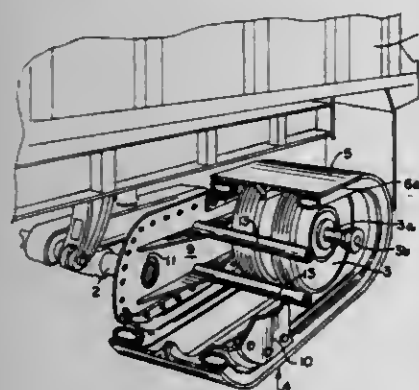
William B. Bertelsen, 2720 31st Ave., Rock Island, Ill. 61201

Filed Aug. 17, 1979, Ser. No. 67,652

Int. Cl.<sup>3</sup> B62D 55/10

U.S. Cl. 305-16

11 Claims



10. An air track apparatus for reducing surface pressure comprising:
  - means forming an endless track adapted to be entrained over the wheels of spaced axes of a vehicle to provide an upper and a lower run,
  - spaced side members cooperating with said means forming an endless track in providing a chamber,
  - pneumatic seal means positioned between said side members

and said means forming an endless track to create a seal therebetween,

air supply means in communication with said seal means to direct pressure to a portion of said seal means thereby forming a pneumatic seal,

means connecting said air supply with said chamber for pressurization thereof to cause a portion of said lower run into contact with a supporting surface therebeneath,

pneumatic seal means includes air jet means in communication with said portion for directing a jet of air against said endless track to create a proximity effect,

said pneumatic seal means includes at least one hollow tubular member,

said portion of said seal means is a chamber defined by the interior of said hollow tubular member,

said air jet means comprises a plurality of aperture means formed through the periphery of the tubular member, and said at least one tubular member is mounted for movement relative to a respective side member.

4,283,095

## CAPSTAN SHAFT THRUST PAD DEVICE

Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

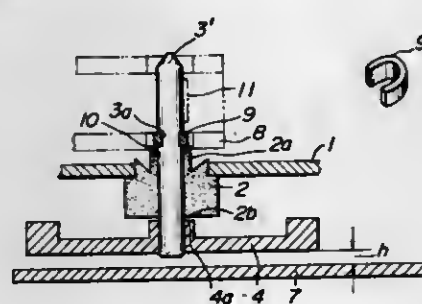
Filed Mar. 16, 1979, Ser. No. 21,189

Claims priority, application Japan, Mar. 17, 1978, 53-30839

Int. Cl.<sup>3</sup> F16C 17/04; B65H 17/02

U.S. Cl. 308-139

2 Claims



1. A capstan shaft thrust pad device for use with a tape cassette having a capstan shaft opening of a certain diameter, comprising a bearing including a generally cylindrical upper bearing portion which forms a first bearing surface, the outer diameter of said upper bearing portion being less than the diameter of the capstan shaft opening so that said upper bearing portion is receivable in the capstan shaft opening, and a lower bearing portion which forms a second bearing surface which is parallel to said first bearing surface, a capstan shaft supported by said bearing for rotation about the axis of said capstan shaft, said capstan shaft extending perpendicular to and beyond said first and said second bearing surfaces in the axial direction of said capstan shaft, a flywheel coaxially fixed to said capstan shaft beyond said second bearing surface, said flywheel having an end surface facing said second bearing surface to prevent axial movement of said capstan shaft in the direction of said lower bearing portion toward said upper bearing portion, and a thrust pad member fixed on said capstan shaft beyond said first bearing surface for preventing axial movement of said capstan shaft in the direction from said upper bearing portion toward said lower bearing portion, said thrust pad member extending radially from said capstan shaft by an amount less than the outer diameter of said upper bearing portion so that said thrust pad member can be received in the capstan shaft opening in the tape cassette together with said upper bearing portion and said capstan shaft.

4,283,096

## INTERSHAFT BEARING

Harrison R. Picard, Granby; Claude P. Rotondo, Middletown; Harold K. Shaffer, Tolland, and Bertrand H. Brown, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

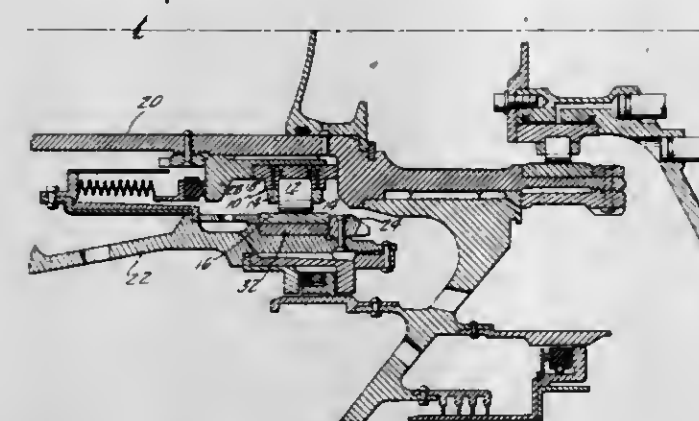
Continuation of Ser. No. 898,607, Apr. 21, 1978, abandoned.

This application Nov. 9, 1979, Ser. No. 92,899

Int. Cl.<sup>3</sup> F16C 19/52

U.S. Cl. 308-207 R

3 Claims



1. In combination bearing means mounted between an inner shaft and an outer shaft in coaxial alignment and said inner and said outer shafts rotating at different speeds, a plurality of circumferentially spaced rollers, an inner race between said inner shaft and said rollers and rotating with said inner shaft and an outer race between said outer shaft and said rollers and rotating with said outer shaft, said outer shaft rotating at a higher speed than said inner shaft, and a ring element for restricting radial growth thereof surrounding said outer race and in intimate contact with said outer shaft and said outer race and being contiguous therewith, said ring element fabricated from metal characterized by having a low thermal coefficient of expansion and a high elastic modulus relative to the material of said bearing means.

4,283,097

## CASSETTE FOR HANDLING BANKNOTES OR THE LIKE

Leif Lundblad, Häradsvägen 102, S-141 41 Huddinge, Sweden

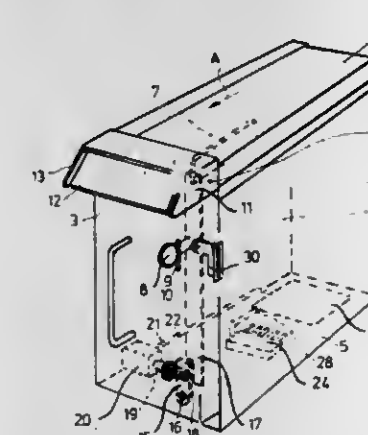
Filed Mar. 19, 1979, Ser. No. 21,696

Claims priority, application Sweden, Mar. 21, 1978, 7803222

Int. Cl.<sup>3</sup> G07F 9/06

U.S. Cl. 312-223

4 Claims



1. A cassette has four side walls (1-4), a bottom (5) and an upper, open side through which banknotes or other valuables can be placed into and removed from said cassette, said cassette being arranged to be placed in a housing (25) and being provided with a displaceable lid (6) arranged to close the said open side of said cassette, a locking means (10) arranged when the cassette is removed from the housing to hold the lid locked; an operating element (8) arranged to co-act with the locking means (10) and with a latching means (15), said latching means being arranged to be released in dependence upon a pre-set

program when an electrical contact means (24) on the cassette co-acts with an electrical contact means (26) on the housing and when released permits the resetting of the operating means, characterized in that a signal circuit (28) is arranged to send a code signal to a detector circuit (23) when said electrical contact means (24, 26) co-act with each other whereby, when said signal coincides with the signal program in the detector circuit there is sent an opening signal for moving the latching means (15) to a non-latching position and when the cassette is located in the housing, the locking means (10) is arranged, subsequent to the latch (15) having been moved to a non-latching position, to simultaneously enable removal of the cassette from the housing to be prevented and to enable the lid (6) of the cassette to be opened to provide access to the contents of the cassette from outside the housing, and in that the lid (6) of the cassette is arranged, in its open position, to prevent said operating element (8) from being manipulated and thereby prevent removal of the cassette from the housing.

4,283,098

## ATTACHE CASE HAVING DRAWER APPARATUS

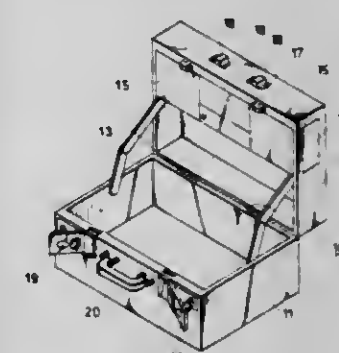
Liang-Hung Sun, 5th Fl., No. 4-1, Lane 186, Tung-Hua St., Taipei, Taiwan

Filed Sep. 19, 1979, Ser. No. 77,003

Int. Cl.<sup>3</sup> A47B 88/20

U.S. Cl. 312-319

6 Claims



1. An improved attaché case comprising:
  - (a) a base,
  - (b) a cover hinged to said base and defining a first compartment,
  - (c) a drawer apparatus provided in a chamber of said cover and defining a second compartment, and
  - (d) a driving means also provided in said chamber of the cover to engage with the drawer apparatus for controlling the moving and opening of the drawer apparatus, said cover and said driving means being independently operable to permit access to said first and second compartments.

4,283,099

## LOCKER CABINET

Thomas A. Burton, Rochester, Minn., assignor to Waters Instruments, Inc., Rochester, Minn.

Filed Jul. 16, 1979, Ser. No. 57,573

Int. Cl.<sup>3</sup> A47B 67/02

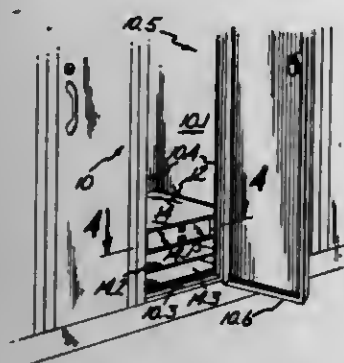
U.S. Cl. 312-351

10 Claims

1. A kit for assembling a cabinet within a standard locker having rear and side walls and front flanges extending inwardly of the side walls to define a locker door opening, the kit comprising side panels for vertical placement against interior surfaces of the side walls of the locker, the side panels having bracket receiving means on their confronting surfaces including upwardly facing surfaces and rearwardly facing surfaces, and at least one shelf panel positionable horizontally between the side panels with its side edges confronting the respective surfaces of the side panels and spacing the side panels apart a sufficient distance as to prevent their forward removal through the locker door opening, the shelf panel having bracket means



including means insertable downwardly into the bracket receiving means, the bracket means having surfaces respectively engageable with the upwardly facing and rearwardly facing



surfaces of the bracket receiving means of the side panels for preventing respective downward and forward movement of the shelf panel with respect to the side panels.

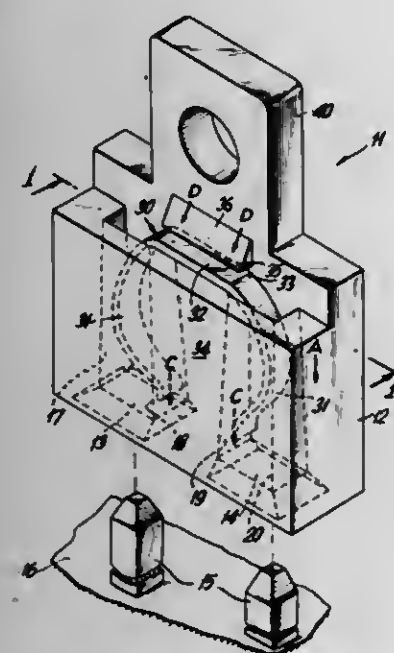
4,283,100

## JUMPER PLUG

Rodney B. Griffin, and William A. Swenson, both of Aurora, Ill., assignors to Western Electric Company, Inc., New York, N.Y.  
Filed Dec. 27, 1979, Ser. No. 107,758  
Int. Cl.<sup>3</sup> H01R 31/08

U.S. Cl. 339—19

2 Claims



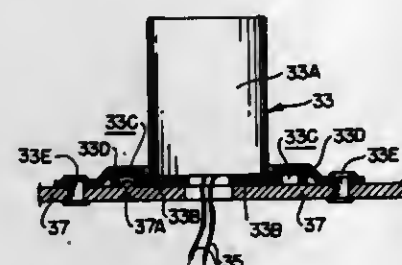
1. A jumper plug for making a secure electrical connection between two terminal pins comprising:
  - an insulating body having two holes extending through the body arranged to accept the two terminal pins,
  - a horseshoe-shaped electrically conductive resilient clip having each of its legs extending into a respective one of the holes to a sufficient length to make contact with a terminal pin inserted into the hole, and
  - means for retaining the clip in the body comprising a channel in the body of the plug, the channel being of sufficient width to accept the portion of the horseshoe-shaped clip which extends between the legs of the clip, for holding the clip within the body when the terminal pins are inserted into the plug, and a tab defining the top of the channel, the tab having a sloped upper wall.
- so that, as the pins are inserted into the holes, the retaining means cooperate with the resilient clip to make a secure electrical connection between each of the inserted terminal pins and a respective leg of the clip.

4,283,101  
**ROTATABLE LAMP SOCKET FOR INCANDESCENT PEDESTRIAN TRAFFIC SIGNAL, OR THE LIKE**  
Samuel Gould, San Pedro, and James S. Gould, Los Angeles, both of Calif., assignors to Indicator Controls Corp., Gardena, Calif.

Filed Aug. 6, 1979, Ser. No. 64,176  
Int. Cl.<sup>3</sup> H01R 13/645

U.S. Cl. 339—2 L

4 Claims



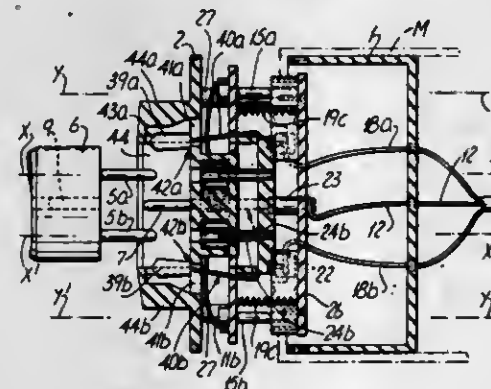
1. In combination: a mounting plate having a detent therein, and a rotatable lamp socket mounted on said mounting plate for supporting an electric lamp, said rotatable lamp socket comprising: a tubular-shaped socket portion for receiving the electric lamp; a flange mounted at one end of the socket portion and extending radially beyond the peripheral surface thereof, said flange having a plurality of detent holes therein for successively receiving the detent in the mounting plate as the socket is rotated; and a mounting ring coaxial with said flange and socket portion and extending over the surface of said flange and radially outwardly beyond the perimeter of said flange; and fastening means attaching said mounting ring to said mounting plate.

4,283,102  
**ELECTRIC SOCKET-OUTLET**  
Paul Richier, Montee Saint-Lazare, Digne, France

Filed Dec. 14, 1978, Ser. No. 23,446  
Claims priority, application France, Dec. 16, 1977, 77 39232; May 22, 1978, 78 16340  
Int. Cl.<sup>3</sup> H01R 13/44

U.S. Cl. 339—42

10 Claims



1. An electric socket-outlet comprising:
  - (a) an insulating casing having at least front and back walls,
  - (b) holes through said front wall for the reception of plug pins,
  - (c) conductive sockets mounted on said front wall aligned with said holes and intended to receive the plug pins,
  - (d) an insulating connection panel within said casing and displaceable parallel with the axes of the said holes,
  - (e) resilient means ensuring the return of the said connection panel to the vicinity of the said front wall on withdrawal of the plug pins,
  - (f) contacts mounted on said back wall and adapted for connection to an electric current source,
  - (g) electrically conductive connection members mounted on

- said displaceable panel extending towards said back wall and aligned with said contacts and spaced from the said contacts when the connection panel is occupying a position close to the front wall,
- (h) means electrically connecting said conductive members with said conductive sockets,
  - (i) apertures in the connecting panel arranged opposite to the conductive sockets,
  - (j) means aligned with said conductive sockets for displacing said connection panel towards the back wall when the plug pins pass through said holes and are engaged in said conductive socket, so as to effect the junction of the said connection members and said contacts on said back wall, and
  - (k) said connection members and said contacts being offset in relation to the axes of the said conductive sockets.

4,283,103

## ELECTRICAL CRIMP CONNECTOR

Horst Forberg, Gunter Hegner, and Anneliese Stoewe, all of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

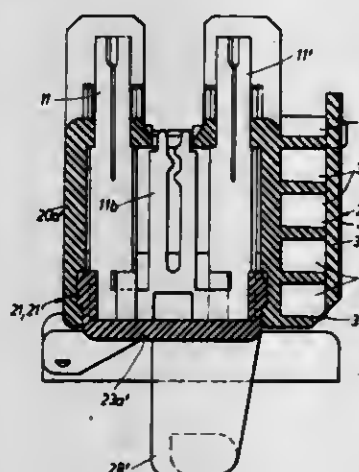
Filed Jan. 24, 1979, Ser. No. 6,032

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804478

Int. Cl.<sup>3</sup> H01R 11/00, 13/58

U.S. Cl. 339—59 M

25 Claims



1. An electrical crimp connector for forming a connection with an insulated wire, comprising:
  - an insulating member formed of a plurality of interconnected clamping elements, each of said clamping elements having a slot extending downwardly from a top surface thereof to a bottom surface thereof;
  - a support strip releasably secured to said bottom surface of said insulating member;
  - a pair of connecting elements associated with each clamping element and being joined by a transverse web, each of said connecting elements being flat, strip-like and resilient and being formed of an electrically conductive material, each of said connecting elements having a slot centrally disposed thereof, each of said slots having a lower portion with a width less than the diameter of an insulated wire and an entry portion having a width greater than the width of the lower portion, said lower portion of said slot having sharp edges along the sides thereof for severing insulation on said insulated wire and contacting the core of said insulated wire for gripping thereof as said insulated wire is inserted into said lower portion of said slot, each of said pairs of connecting elements being insertable into an enclosure formed in an associated clamping element;
  - a multipin connector disposed on said support strip and adapted to receive connecting elements of different configurations, each of said pairs of connecting elements being pluggable into said multipin connector;
  - a wire guide disposed on said insulating member; and

a wire guide disposed on said support strip independently of said insulating member wire guide.

4,283,104

## ELECTRICAL TERMINAL ASSEMBLY

Donald S. Pemberton, Stoke-on-Trent, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 25, 1979, Ser. No. 42,537

Claims priority, application United Kingdom, May 26, 1978, 23447/78

Int. Cl.<sup>3</sup> H01R 13/40, 13/58

U.S. Cl. 339—97 R

10 Claims



1. A terminal assembly for releasably connecting a branch lead to a through lead without disturbing the continuity of the through lead, the terminal assembly comprising an insulating housing assembly, having first and second housing parts releasably interlockable to close the housing assembly, and a conductive terminal member contained within the closed housing assembly, the terminal member being elongated and of unitary sheet metal construction and having at opposite ends first and second terminal portions, the first terminal portion defining contact means for releasable engagement in use by a complementary mating terminal of the branch lead and the first terminal portion and the first housing part having means interengageable to retain the terminal member captive within the first housing part with at least part of the second terminal portion protruding therefrom, the second terminal portion being of open-ended generally tubular shape and having side walls extending from opposite edges of a base wall and turned in towards one another but so as to leave a gap between confronting edges thereof and an open-ended slot aligned with said gap being formed in said base wall, said gap and said slot being of similar width and at the end of said second portion of the terminal member being outwardly flared, the second housing part being shaped as a cap adapted to cover said protruding part of the second terminal portion in the closed housing assembly and having a projection shaped to enter the open end of the second terminal portion, and through-lead locating means for receiving a through lead laid across the second housing part when the latter is disengaged from the first housing part and locating said through lead over said projection and in line with said gap and said slot of said second terminal portion, said second housing part having spaced walls embracing said first housing part in the closed housing assembly, said through-lead locating means comprising, at least in part, open ended notches in said spaced walls, which, in the closed housing assembly align with said gap and said slot in said second terminal portion, the entry of said projection into said open end of said second terminal portion forcing said through lead into said gap and said slot as said housing parts are interengaged, and said second terminal portion being arranged to automatically pierce the insulating sheath of said through lead if necessary and to contact the conductive core of said through lead.



4,283,105

## TERMINAL FOR CROSS CONNECT APPARATUS

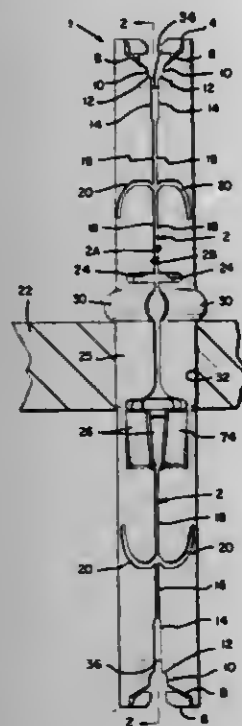
Jess B. Ferrill, Greensboro; Richard L. Hughes, Clemmens, and Melvin A. Soderstrom, Advance, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 7, 1979, Ser. No. 101,373

Int. Cl.<sup>3</sup> H01R 4/24

U.S. Cl. 339—97 R

5 Claims



1. An electrical terminal comprised of a single blank of tubular sleeve form having a wire receiving, longitudinal open seam intersected by at least one slot transversely of said sleeve form and defining tandem pairs of wiring gripping jaws on opposite sides of said seam, said seam further including tandem seam sections each of narrower width than the previous section, a first said section having a progressively converging width initially greater than the width of an insulated wire inserted in said first section, a second said section having a width equal to the midrange diameter of a conductor portion of said insulated wire selected from a range of insulated wire diameters, a third said section having a width less than the width of said second section, a fourth said section having a width less than the width of said conductor portion of said insulated wire, said terminal having a first pair of resilient wire engaging jaws at said fourth section, said seam providing a second pair of resilient wire engaging jaws, spaced apart across a width of said seam which is less than the width of said conductor portion of said insulated wire, said second pair of said jaws being separated from said fourth section by said slot, and metal edge surfaces at each of said first, second and third sections on opposite sides of said seam, and selectively oriented at an angle with respect to the axis of said slot to provide slicing of an insulated portion of said insulated wire and indentation flattening of said conductor portion without cutting the same.

4,283,106

## SYMMETRICAL CONNECTOR FOR SOLAR PANEL ARRAYS

Edward D. Bunnell, Palm Harbor, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 1, 1980, Ser. No. 117,748

Int. Cl.<sup>3</sup> H02B 1/04, 1/12

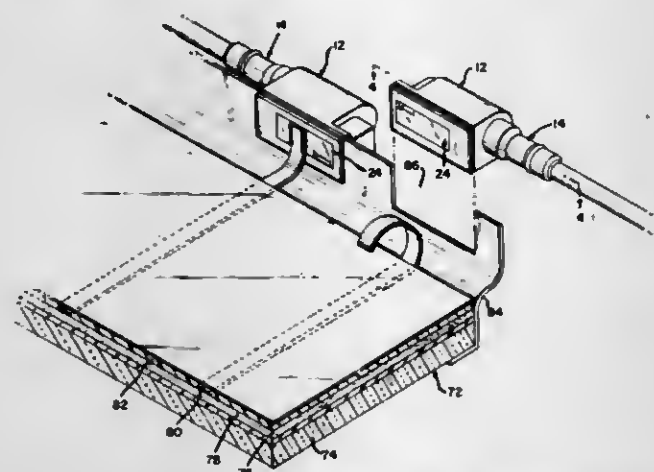
U.S. Cl. 339—125 R

9 Claims

1. An electrical connector capable of being mounted in a

panel with any of a variety of orientations, said connector comprising:

- a receptacle member formed by an elongated body of insulation material defining a planar surface, a profiled bore extending parallel to and spaced from the planar surface, a peripheral groove formed in said member intermediate said bore and said surface and a slot interconnecting said surface with said bore;
- a first terminal having a trunk portion, a blade portion extending at a right angle from said trunk portion and a solder tab extending symmetrically with respect to said trunk and at right angles to the plane formed by said blade and said trunk, said first terminal being mounted in said receptacle member with said blade portion lying in said



- bore, said trunk portion passing through said slot and said solder tab lying adjacent said surface,
- a plug member formed by an elongated body of insulation material matable within the bore of said receptacle member and including an axial bore, sealing means adapted to make wiping engagement with said bore of said receptacle member, a peripheral recess in a rear portion, and a crimp ring mounted in said recess; and
- a second terminal adapted to be crimp therefor to a conductor passed into the bore of said plug member, said terminal having a mating portion adapted to engage said blade of said first terminal, said second terminal being held in said plug member by crimping of said crimp ring which forms an environmentally tight seal about said conductor as well as a strain relief therefore.

4,283,107

## LAMPHOLDER HAVING TERMINALS OF THE INSULATION-DISPLAYING TYPE

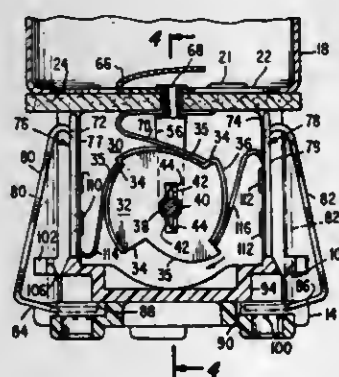
Walter Anthony, Pine Beach, N.J., assignor to GTE Sylvania Wiring Devices Inc., Trenton, N.J.

Filed Aug. 2, 1979, Ser. No. 63,215

Int. Cl.<sup>3</sup> H01R 11/20, 13/639

U.S. Cl. 339—147 R

15 Claims



1. In a lampholder of the type intended for connection to at least two insulated wire conductors and comprising an electrically insulating body having at least two wireways for receiv-

ing the respective conductors, and means on the body for supportably engaging and making the electrical contact with an electric lamp, the improvement comprising:

- (a) connector means of the insulation-displacing type, in the form of elongated members formed of a flat electrically conductive metal material, mounted upon the body adjacent the respective wireways and disposed in electrical contact with said lamp-engaging means, said connector means being adapted for displacing the insulation of the wire conductors to provide an electrical connection between the lamp-engaging means and the respective connectors and being mounted upon the body for swinging movement between retracted positions in which they clear their associated wireways to permit insertion of the conductors therein, and insulation-displacing positions in which they extend into the wireways and displace the insulation of said conductors to effect an electrical connection between the conductors and the respective connector means; and
- (b) means restraining the connector means against retrograde movement from the insulation-displacing to the retracted positions thereof, comprising, for each connector means, at least one resiliently yieldable latch element on the body releasably engaging its associated connector means in response to swinging movement of the connector means to its insulation-displacing position.

4,283,108

## CONTACT BLOCK WITH RESILIENT SOCKET CONTACTS

Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3, Tumlingen, Fed. Rep. of Germany

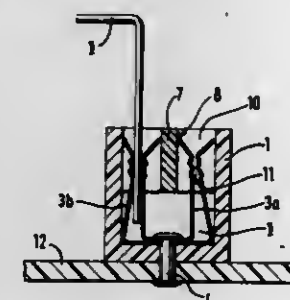
Filed Sep. 19, 1979, Ser. No. 77,089

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841234

Int. Cl.<sup>3</sup> H01R 9/24

U.S. Cl. 339—198 K

12 Claims



1. A contact block of an experimental construction kit for connecting electrical and electronic construction elements, comprising a support element; a plurality of contact units supported by said support element and each composed of two U-shaped contact strips inserted in one another, said strips having base portions connected with one another so as to form a common base, and each of said strips having two lateral portions extending from the base portion of the respective strip, each of said lateral portions having a free end spaced from the base portion and being provided with a slot extending from the free end of the respective lateral portion in the direction toward the base portion of the same strip and over at least a part of the length of the respective lateral portion, so that each of said lateral portions is subdivided into two resilient tongues and thereby each of said contact units comprises eight tongues which form four contacts each composed of two of said eight tongues and arranged to receive a conductor therein; and means for electrically separating said contacts from each other.

4,283,109

## METHOD AND APPARATUS FOR MAKING WIDE EXIT PUPIL VIEWABLE HOLOGRAMS

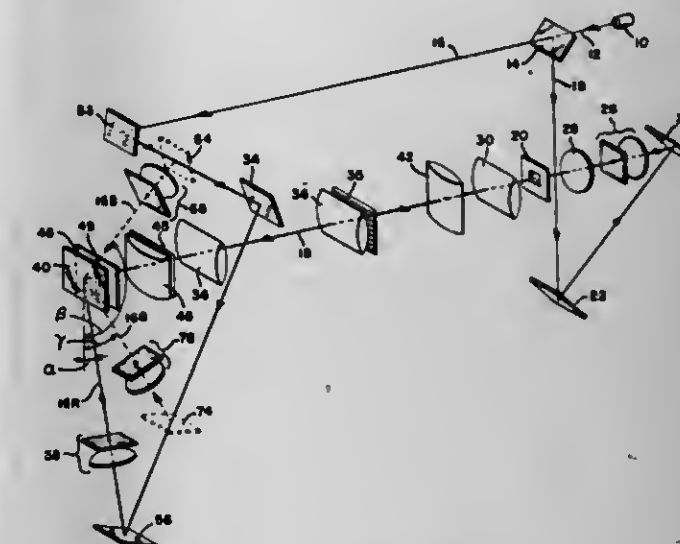
Lloyd Huff, 439 Walsingham Cl., Dayton, Ohio 45429, and Richard L. Fusek, 832 Cliffside Dr., New Carlisle, Ohio 45344

Filed Apr. 10, 1978, Ser. No. 895,121

Int. Cl.<sup>3</sup> G03H 1/30, 1/22

U.S. Cl. 350—3.76

37 Claims



19. Apparatus for recording a holographic image of an object on photosensitive medium including:
- means for generating a coherent beam of light;
  - means for splitting said beam of light into a reference beam and an image beam;
  - means for directing said image beam toward the object to be recorded;
  - a diffuse screen;
  - means for focusing the image of said object in both the vertical and the horizontal planes onto said diffuse screen;
  - means for focusing the image on said diffuse screen in said vertical plane onto or near the plane of said medium while the light from said diffuse screen in the horizontal plane is incident on said medium without being focused thereon; and
  - means for simultaneously directing said reference beam onto said medium at a predetermined angle in the vertical plane.

4,283,110

## OPTICAL SYSTEM FOR DISCUSSION-MICROSCOPE

Ken Yonekubo, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

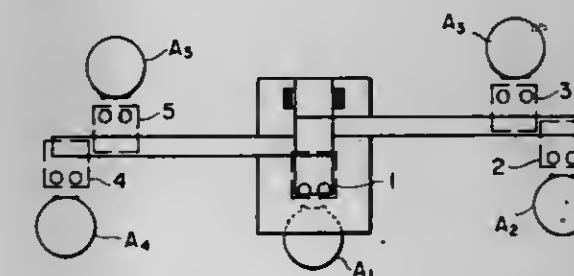
Filed Mar. 24, 1980, Ser. No. 133,359

Claims priority, application Japan, Mar. 30, 1979, 54-37972

Int. Cl.<sup>3</sup> G02B 21/18

U.S. Cl. 350—33

6 Claims



1. An optical system for a discussion-microscope comprising a first ray flux dividing element for dividing a ray flux through an objective lens from an object into a first ray flux passing along the optical axis of the said objective lens and a second ray flux passing in a direction different from the said optical axis, a first optical element for directing the said second ray flux to approximately the same direction as the said first ray



flux, a second ray flux dividing element designed for further dividing the said second ray flux and disposed in the passage of the said second ray flux, a second optical element for directing a third ray flux divided by the said second ray flux dividing element to approximately the same direction as the said first ray flux, and at least one relay lens disposed in the passage of the ray flux directed by the said first ray flux dividing element to a direction different from the optical axis of the said first ray flux, and the said second ray flux dividing element, the said first ray flux dividing element, said first optical element, the said relay lens and the said second optical element being disposed in the common plane.

4,283,111

**MICROSCOPE STAND WITH PROTECTED TURRET**

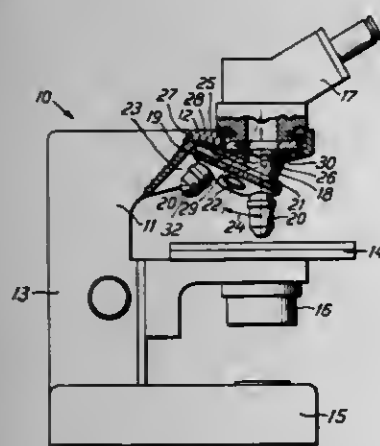
Karl Wieber, Asslar-Berghausen; Heinrich Janke, Braunsfels; Winfried Kraft, Asslar-Werdorf, and Robert Lisfeld, Greifenstein-Ulm, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany  
Filed Jan. 28, 1980, Ser. No. 115,723

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2902962

Int. Cl.<sup>3</sup> G02B 21/24

U.S. Cl. 350—39

7 Claims



1. A microscope including an eyepiece assembly, a rotatable lens turret, at least one objective lens mounted on said lens turret, said microscope further including a microscope stand, said stand having front and rear portions including an eyepiece and lens turret mounting structure, said structure extending generally horizontally in a direction from the rear portion of said stand towards the front portion of said stand, said stand including means defining a recess in a lower surface of said structure, said recess extending towards an upper surface of said structure, said recess defining a recessed surface, said eyepiece assembly mounted on said upper surface and said lens turret rotatably mounted on said recessed surface, said recessed surface recessed from a lower surface of said structure and at an angle with the horizontal, said recessed surface slopes downwardly away from said rear portion of said stand, said recessed surface being sufficiently close to said upper surface such that said lens turret and said eyepiece assembly are operatively mounted to obviate the necessity of an intervening tube lens, said recess contributing to define a weakened portion of said structure, said structure further including means for strengthening said weakened portion, said strengthening means comprises at least one vertical web along said structure, said web having a greater vertical thickness adjacent said recess than the vertical thickness of said structure in said recess.

4,283,112

**TELESCOPE GUIDING SYSTEM**

Thomas C. Venable, 716 Hastings St., Pittsburgh, Pa. 15206  
Filed Apr. 24, 1979, Ser. No. 32,865

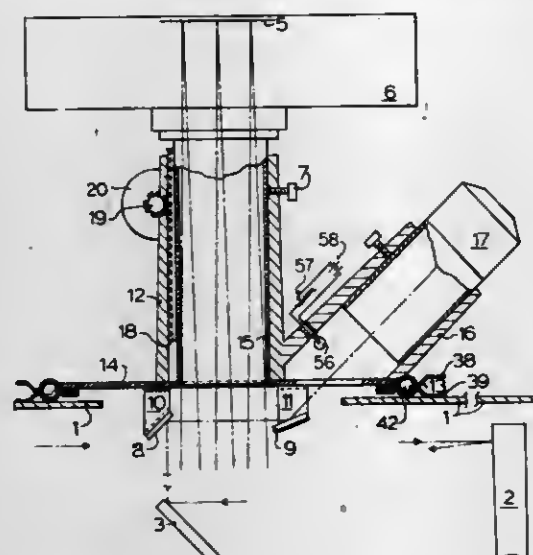
Int. Cl.<sup>3</sup> G02B 23/04

U.S. Cl. 350—80

10 Claims

1. Guide apparatus for a reflecting telescope having a main focusing tube opening out of the wall of the telescope barrel

transversely thereof, first light diverting means positioned in the telescope barrel to divert light into the main focusing tube, a separate guide focusing tube opening out of the wall of the telescope barrel and second light diverting means positioned adjoining the barrel end of the main focusing tube to divert peripheral light from the first light diverting means into the



guide focusing tube, comprising a turntable having a stationary member affixed to the exterior of the telescope barrel by longitudinally extending supporting members spaced from each other transversely of the telescope barrel to straddle the telescope barrel and a rotatable member carrying the main focusing tube, the guide focusing tube and the second light diverting means.

4,283,113

**OPTICAL MODULATION WITH VANADIUM OXIDE THIN FILMS**

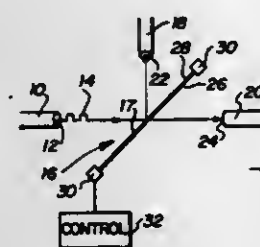
Dayton D. Eden, 6827 Meadow Creek, Dallas, Tex. 75240

Filed Mar. 23, 1979, Ser. No. 23,221

Int. Cl.<sup>3</sup> G02B 5/14; G01C 3/08

U.S. Cl. 350—96.15

11 Claims



1. A substantially lossless switch for switching a light signal between optical fibers comprising:  
an input optical fiber carrying a modulated light signal having a wavelength above the absorption edge of vanadium oxide;  
a vanadium oxide thin film disposed in the path of the light signal, said film being switchable between its semiconductor and metal state and transmitting substantially all of the light signal incident thereon when said film is in its semiconductor state and reflecting substantially all of the light signal incident thereon when said film is switched to its metal state;

first and second output optical fibers for selectively receiving light from said input fiber, said first output fiber oriented relative to said film and also to said input fiber such that a light signal from said input fiber incident on said film in its semiconductor state is transmitted through said film into said first output fiber, said second output fiber oriented relative to said film and also to said input fiber

such that light incident on said film in its metal state is substantially reflected into said second output fiber; and control means for selectively heating or cooling said film above or below its transition temperature to switch said film between its semiconductor and metal states.

4,283,114

**FIBER OPTIC LIGHT VALVE**

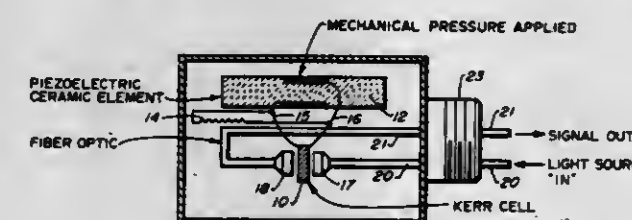
Joseph Wandrack, Groton, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 11, 1980, Ser. No. 139,315

Int. Cl.<sup>3</sup> G02B 5/14

U.S. Cl. 350—96.20

9 Claims



1. A self-powered limit switch for sensing mechanical motion or displacement, comprising:  
a. a sensing element means which responds to pressure to generate an electrical signal;  
b. a Kerr cell means containing a normally opaque fluid that is operable to become transparent in an electrical field;  
c. said sensing element means being electrically connected to said Kerr cell means wherein electrical signals from said sensing element means will render said Kerr cell means transparent to light;  
d. a light source means;  
e. fiber optic means for transmitting light from each light source means to said Kerr cell means and fiber optic means for transmitting light passing through said Kerr cell means back to said light source means.

4,283,115

**BEAM SPLITTERS FOR ENDOSCOPES COMPRISING A DUAL OBSERVATION SYSTEM**

Klaus Fraissl, Forst, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

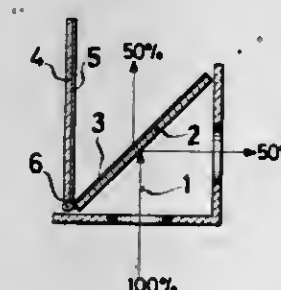
Filed Jul. 5, 1979, Ser. No. 54,668

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1978, 7822629

Int. Cl.<sup>3</sup> G02B 27/14

U.S. Cl. 350—171

5 Claims



1. In an endoscope of the kind comprising a dual observation system whereby the image may optionally be adjusted for different proportions of the light intensity for the observer and the joint observer or a film or television camera by means of the optical system of the endoscope, a beam splitter comprising two thin glass plates each having a partial reflective coating, at least one of said plates being shiftable to bring its partial reflective coating in confrontation to an angled position in the beam path of the endoscope.

4,283,116

**BEAM COMBINER**

John A. Weis, Kennewick, Wash., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

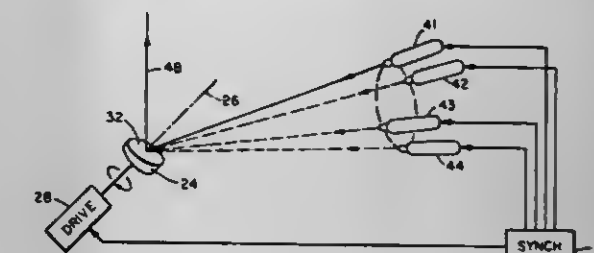
Continuation of Ser. No. 790,017, Apr. 22, 1977, abandoned.

This application May 2, 1979, Ser. No. 35,223

Int. Cl.<sup>3</sup> G02B 27/14

U.S. Cl. 350—174

37 Claims



1. A system for combining beams of pulsed radiation comprising:  
a plurality of pulsed radiation sources for providing spatially separate beams of radiation pulses in a time sequence; the radiation pulses having a finite time duration; the beams of radiation being inclined with respect to and distributed around a central axis so as to lie in a conical surface whose axis is the central axis; each of said beams of radiation being inclined from said axis by a predetermined angle which is a small fraction of a radian; means for receiving the sequence of spatially separate beams of radiation pulses at substantially their point of intersection with said central axis to deflect the separate beams of radiation pulses onto a common path over said finite time duration; said central axis and said common path being inclined to and therefor separate from each other.

4,283,117

**SIDE VIEW MIRROR APPARATUS FOR VEHICLES**

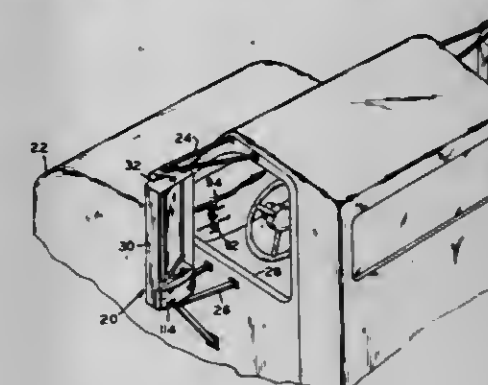
Harold G. Ellis, 4126 Hampton Ave., Fort Wayne, Ind. 46808

Filed Dec. 10, 1979, Ser. No. 101,721

Int. Cl.<sup>3</sup> B60R 1/06; G02B 5/12

U.S. Cl. 350—289

8 Claims



1. A side-view mirror apparatus for vehicles comprising a supporting frame having three vertically spaced horizontally extending mounting members, an upright mirror assembly carried by and between two of said mounting members for rotation about an upright axis, the third mounting member being beneath the lower of said two mounting members, said two lower members having two bushings, respectively, a vertically arranged hollow shaft secured at its upper end to said mirror assembly is journaled for rotation in said two bushings; said mirror assembly including two generally parallel back-to-back mirrors having sandwiched therebetween a planar arranged electrical heating element, an elongated electrical conductor received by the hollow portion of said shaft and connected at one of its two ends to said heating element, said



conductor being insulated from said shaft, and means connected to said shaft for rotatably adjusting said mirror assembly; said means for adjusting said mirror assembly including an electric motor carried by said frame between said two lower mounting members and a worm and wheel drive connected between said motor and said shaft; said frame being in the form of a three sided housing enclosing said mirror assembly, and including a convex mirror mounted on said housing beneath said mirror assembly and juxtaposed with respect to said motor and drive, and said housing enclosing said motor and drive and said convex mirror closing the open side of said housing opposite said motor and drive.

4,283,118

# LIQUID CRYSTAL DISPLAY WITH A SUBSTRATE CARRYING DISPLAY ELECTRODES AND INTEGRATED CIRCUIT CHIP CONNECTED THERETO

Yukihiko Inoue, Kasubihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

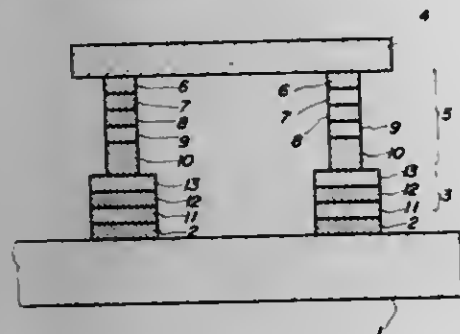
Continuation of Ser. No. 879,392, Feb. 21, 1978, abandoned.

This application Jul. 10, 1980, Ser. No. 168,249

Claims priority, application Japan, Feb. 22, 1977, 52-21659

Int. Cl.<sup>3</sup> G02F 1/133

U.S. Cl. 350—334



1. A liquid crystal display comprising: a glass substrate; a liquid crystal display formed on the glass substrate; a display electrode film provided for the liquid crystal display; multiple soldering layers formed on an extension of the display electrode film, said layers including Cr, Cr-Au alloy, and Au seriatum beginning at said display electrode film; an integrated circuit chip; and bump means disposed on the integrated circuit chip, the bump means being bonded with the Au layer of said multiple soldering layers.

4,283,119

# METHOD OF PRODUCING SPACING ELEMENTS FOR ELECTRO-OPTICAL DISPLAY DEVICES AND SUCH DISPLAY DEVICES

Horst Hofmann, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 13, 1979, Ser. No. 74,991

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841435

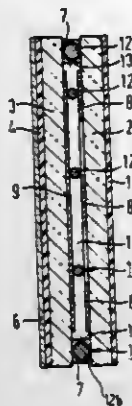
Int. Cl.<sup>3</sup> G02F 1/133

U.S. Cl. 350—344

9 Claims

1. In an indicia display device such as a liquid crystal cell having two plates spaced from one another via at least two spacing elements, the improvement comprising wherein said spacing elements are composed of a metal core enveloped by a layer of a brittle metallic compound, said metal core and layer of brittle metallic compound having identical metal atoms which are selected from the fourth through the sixth adjacent

groups of the Periodic Chart of the Atoms and said compound being selected from the group consisting of a carbide, a boride,



a nitride, and a silicide; said layer of brittle metallic compound having a maximum thickness of about 3 μm.

4,283,120

# LIGHT VALVE PROJECTION SYSTEM WITH OFF AXIS RASTER ORIENTATION

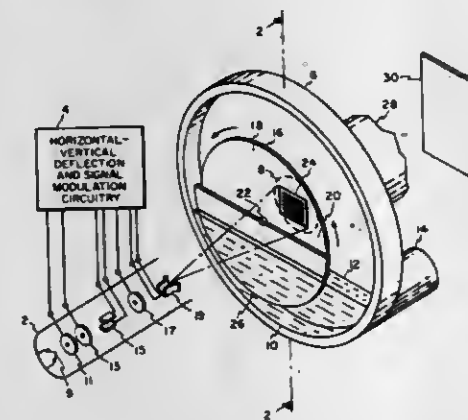
David A. Orser, Liverpool; Howard E. Towilson, Baldwinsville, and Thomas T. True, Camillus, all of N.Y., assignors to General Electric Company, Portsmouth, Va.

Filed Dec. 11, 1978, Ser. No. 968,270

Int. Cl.<sup>3</sup> G02F 1/29

U.S. Cl. 350—361

2 Claims



1. Light valve projection apparatus including electron beam means forming a raster of orthogonally related diffraction gratings on a light modulating fluid to diffract incident light for projection onto a viewing surface, comprising: a housing providing a sump for said fluid, a disk rotatably mounted within said housing so as to rotate about its center, said disk having a portion immersed in said sump so that said fluid coats the nonimmersed portion of at least one surface of said disk upon rotation thereof, means for directing said electron beam means to form on the fluid coating of said disk a raster of deposited charge along parallel scanning lines in a first direction to form a first set of diffraction gratings and at least a second set of diffraction gratings orthogonal to said first set, said means for directing said electron beam means causing said raster to be positioned on the nonimmersed portion of said disk between the offset from horizontal and vertical coordinate axes in the plane of said disk, said coordinate axes intersecting at the rotational center of said disk so as to divide said nonimmersed portion into first and second quadrants, said first set of diffraction gratings being substantially parallel to said horizontal coordinate axis, whereby the concentric generally circular paths traced by elemental portions of said fluid as said disk rotates intersect each of said sets of diffraction gratings and are not tangent to any of said sets of diffraction gratings.

4,283,121

# ELECTROLYTIC DISPLAY CELLS WITH A METAL DEPOSIT

Robert Meyer, Saint Ismier, France, assignor to Commissariat l'Energie, Paris, France

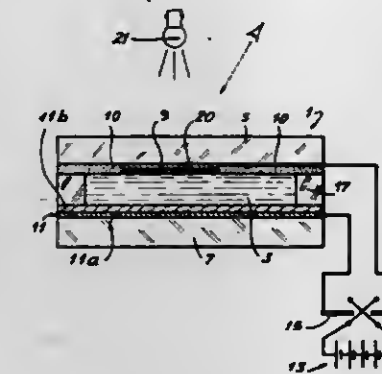
Filed Jun. 22, 1979, Ser. No. 51,031

Claims priority, application France, Jun. 30, 1978, 78 19621

Int. Cl.<sup>3</sup> G02F 1/29

U.S. Cl. 350—363

8 Claims



1. An electrolytic display cell comprising a transparent electrode of a shape suitable for display purposes, a counter-electrode of greater surface area oppositely disposed with respect to said transparent electrode and comprising a supporting member having deposited thereon a first continuous layer of an electrically conductive metal-chemically and electrochemically inert with respect to an electrolyte to be used in the cell under the operating conditions thereof, and an outer continuous layer of a primary metal to be deposited on said transparent electrode and in contact with said electrolyte; an electrolyte disposed between said electrodes to facilitate transfer of said primary metal from said counter-electrode to said transparent electrode and redeposition thereof on said counter-electrode; and means for supplying said electrodes with power to deposit on or dissolve from preselected parts of said transparent electrode a coating of said primary metal.

4,283,122

# LIGHT-BEAM STREAKING EMPLOYING CRYSTAL WITH TRAVELING LENS AND MULTIPLE CROSS-CRYSTAL REFLECTIONS

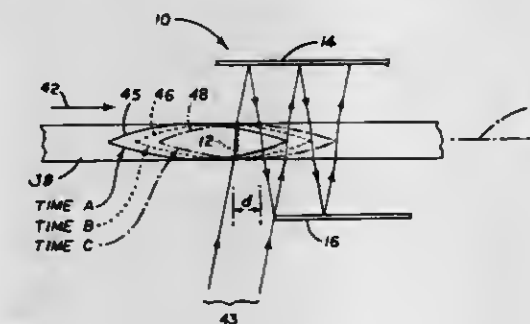
Richard A. Elliott, Beaverton; Gail A. Massey, Cornelius, and John B. Shaw, Aloha, all of Oreg., assignors to Oregon Graduate Center for Study and Research, Beaverton, Oreg.

Filed Oct. 29, 1979, Ser. No. 89,083

Int. Cl.<sup>3</sup> G02F 1/29

U.S. Cl. 350—379

2 Claims



1. Apparatus for streaking a beam of light comprising an electro-optic, electromagnetic-traveling-wave lens device having an elongated lens-traveling axis, said device being adapted to be impinged on a side and toward one end of said axis by a beam of light which is intended to be streaked, means operatively coupled to said device for producing thereadjacent, selectively, an electromagnetic wave which travels along said axis from its said one end toward

1009 O.G.—22

the other end, thus to induce in the device a corresponding, synthesized traveling optical lens, reflector means including at least a pair of opposed, confronting reflective surfaces, disposed on opposite sides of said device in positions capable of producing, with respect to such impinging light beam, multiple cross-reflections through the device between said ends of said axis, whereby the beam impinging said device on a side thereof and adjacent said one end of said axis emerges on a side of said device adjacent said other end of said axis, said surfaces being oriented in such a manner that each wave front in the beam which is reflected by the surfaces successively crosses the axis of said device with a uniform displacement in time, between each crossing, which substantially equals the displacement in time, between such successive crossings, of said traveling lens in said device, and means responsive to the beam of light which impinges said device, operatively connected to said device for coordinating in time the production thereadjacent of the traveling electromagnetic wave with impingement of the device by the beam of light.

4,283,123

# MICROSCOPE OBJECTIVE

Tsutomu Tojyo, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

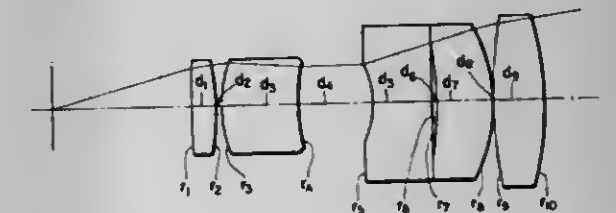
Continuation of Ser. No. 829,574, Aug. 3, 1977, abandoned. This application Aug. 28, 1979, Ser. No. 70,493

Claims priority, application Japan, Sep. 7, 1976, 51-107081

Int. Cl.<sup>3</sup> G02B 9/60, 21/02

U.S. Cl. 350—414

4 Claims



1. A microscope objective comprising a first, second, third, fourth and fifth lenses, said first lens being a positive lens, said second lens being a positive meniscus lens arranged convex toward the object side, said third lens being a negative lens, said fourth lens being a positive meniscus lens arranged concave toward the object side, said fifth lens being a biconvex lens, each of said lens components being a single lens with an air space between each pair of said lens components, and said microscope objective satisfying the following conditions:

$$0.47f < r_2 < 0.49f$$

$$0.4f < r_8 < 0.51f$$

wherein reference symbol  $f$  represents the focal length of the lens system as a whole, reference symbol  $r_2$  represents the radius of curvature of the surface on the image side of the first lens, and reference symbol  $r_8$  represents the radius of curvature of the surface on the image side of the fourth lens.

4,283,124

# EYE FUNDUS CAMERA

Isao Matsumura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 587,661, Jun. 17, 1975, abandoned.

This application Sep. 26, 1978, Ser. No. 945,845

Claims priority, application Japan, Jun. 19, 1974, 49/69949

Int. Cl.<sup>3</sup> A61B 3/10

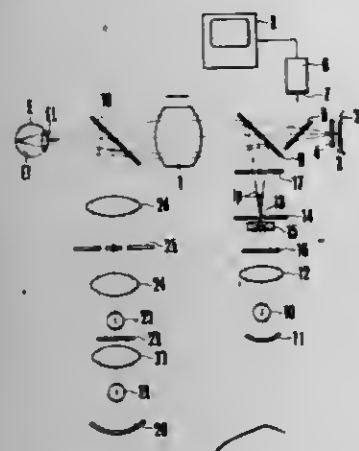
U.S. Cl. 351—7

30 Claims

1. An eye fundus camera, comprising: an optical system including plane means defining a recording plane, optical means between the eye to be inspected and the recording plane for forming an image of the eye fundus of the eye to be inspected on the recording plane;



illuminating means for illuminating the fundus of the eye to be inspected with light ineffective to cause contraction of the pupil of the eye;  
 mark means for defining a mark having a predetermined shape;  
 projecting means holding the mark means and forming a light beam ineffective to cause contraction of the pupil of the eye to be inspected for projecting an image of the mark, said optical means being arranged relative to said projecting means for forming the image of the mark on the eye fundus;



focusing means coupled to said optical system and projecting means for simultaneously adjusting the focus of the image of the eye fundus on the recording plane and the focus of the image of the mark upon the eye fundus; and display means optically coupled with said optical system for forming a visible image of the mark, said display means including sensing means defining a sensing plane for sensing light ineffective to cause contraction of the pupil and coming from the eye fundus through said optical means, and converting means for converting the image formed on the light sensing plane into a visible image.

4,283,125

## FIBER OPTIC CONNECTOR

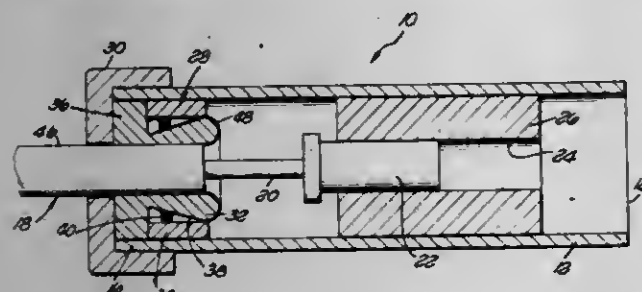
Leslie M. Borsuk, Los Alamitos, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 2, 1979, Ser. No. 53,732

Int. Cl.<sup>3</sup> G02B 5/14; H01R 4/28

U.S. Cl. 350—96.20

5 Claims



1. A connector terminated to a fiber optic cable having a strength member and at least one optical fiber therein comprising:

- a connector body having a front mating end and a rear, said cable extending into said rear of said body;
- fiber optic cable strength member termination means adjacent said rear of said connector body;
- said termination means comprising inner and outer sleeves having opposed, angular and generally cylindrical surfaces and a clamping ring therebetween engaging one of said surfaces;
- said angular surface extending at an angle longitudinally relative to said cylindrical surface with said angle opening rearwardly;
- said cable extending forwardly through said inner sleeve

with its strength member folded back over the forward end of said inner sleeve and extending rearwardly between the other of said surfaces and said clamping ring, whereby a rearwardly directed axial load on said cable will cause said ring to shift forwardly thereby tightly clamping said strength member.

4,283,126

## METHOD AND APPARATUS FOR EYE REFRACTION DETERMINATION

Josef Reiner, Cologne, Fed. Rep. of Germany, assignor to Herbert Schwind GmbH & Co. KG, Aschaffenburg, Fed. Rep. of Germany

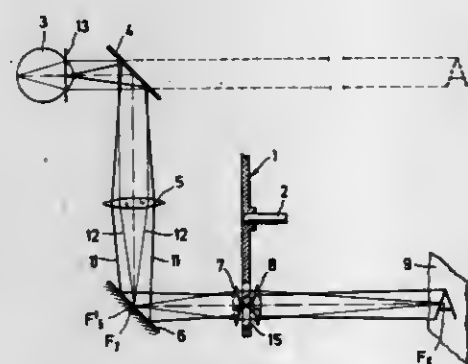
Filed Mar. 30, 1979, Ser. No. 25,643

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815120

Int. Cl.<sup>3</sup> A61B 3/02

U.S. Cl. 351—30

8 Claims



1. A method for determining eye refraction using corrective lenses which method comprises spacing the corrective lens at a distance from the eye to be examined and projecting an image of the corrective lens into the pupil of the eye or at a predetermined spaced relation in front of said pupil by positioning at least one optical element including a beam splitter mirror in the light path between the corrective lens and the eye to be examined with the corrective lens positioned out of the line of vision of the eye to be examined to simulate the positioning of the corrective lens at the selected one of into or in front of the pupil and to simulate vision in free space by the eye to be examined of an optotype imaged on the corrective lens.

4,283,127

## NOVELTY EYEGLASSES

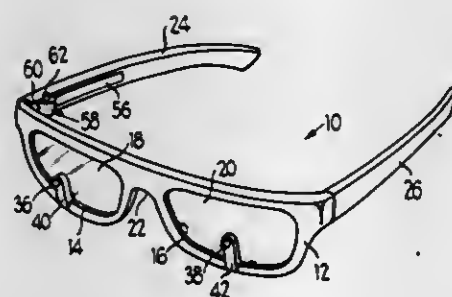
Donald A. Rosenwinkel, Tinley Park, and Harry Disko, S. Barrington, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Nov. 29, 1979, Ser. No. 98,551

Int. Cl.<sup>3</sup> G02C 3/00

U.S. Cl. 351—158

14 Claims



1. A pair of eyeglasses comprising:

- a frame;
- a pair of lens apertures in said frame;
- a pair of earpieces secured to said frame; and
- means for emitting light mounted on said frame, said light

emitting means including an extension of said frame extending into said lens apertures and a light emitting device in each said extension at a location relative to each of said lens apertures to simulate light being emitted from approximately the cornea of the eyes of the user of said eyeglasses.

4,283,128

## PHOTOMICROGRAPHIC SYSTEM FOR FLOWING FLUIDS

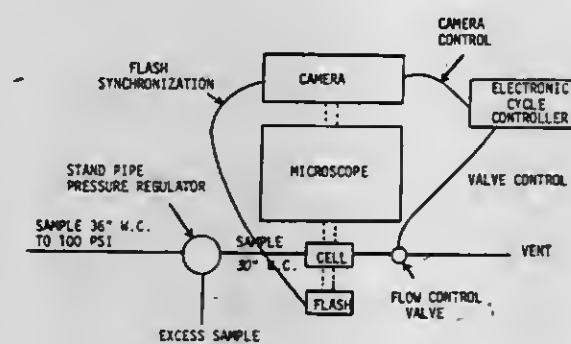
Raymond A. Meyer, Newbury Park, Calif., and Frank J. Freestone, Edison, N.J., assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Filed Jun. 23, 1980, Ser. No. 161,990

Int. Cl.<sup>3</sup> G01T 1/167; G03B 17/48

U.S. Cl. 354—79

10 Claims



1. A photomicrographic system for measuring the number, size distribution, and movement rate of foreign matter entities in a flowing liquid stream, comprising:

- a microscope having a field of view and an optical axis, along which lie an objective lens and a viewing lens, said microscope being disposed such that the plane of its optical axis is horizontal;
- a liquid sample cell disposed within the field of view of said microscope;
- a solenoid valve located downstream of said sample cell and connected thereto, whereby the liquid flow through the cell may be stopped or started;
- a standpipe pressure regulator fed by the flowing liquid stream and connected at its low pressure side to said sample cell, whereby a steadily flowing sample stream at essentially constant pressure is provided at the entrance of the sample cell;
- a flash illuminator disposed such that a flash therefrom illuminates said sample cell; and
- a camera disposed such that the image of said cell formed at the viewing lens of said microscope forms the film image of said camera, the latter being provided with a motor driven film winder.

4,283,129

## CAMERA FOR RECORDING THE OUTPUT OF AN INSTRUMENT

Edward T. Bennick, Jr., Fairfax, Va., assignor to Quality Craft, Inc., Fairfax, Va.

Filed Aug. 3, 1979, Ser. No. 63,595

Int. Cl.<sup>3</sup> G03B 29/00

U.S. Cl. 354—81

34 Claims

1. A camera to be mounted adjacent a cathode ray tube device having a cathode ray tube therein to record an image from a screen of the cathode ray tube, the camera comprising: a generally rectangular film cassette having sheets of rectangular film therein to be exposed, said film cassette having four lateral edges and a pair of oppositely facing sides; an enclosure having an interior and an exterior, said enclosure also having first and second openings to said exterior of said enclosure, said first opening being at least as large in area as the screen of the cathode ray tube, said second

opening being at least as large in area as the area of said film to be exposed;

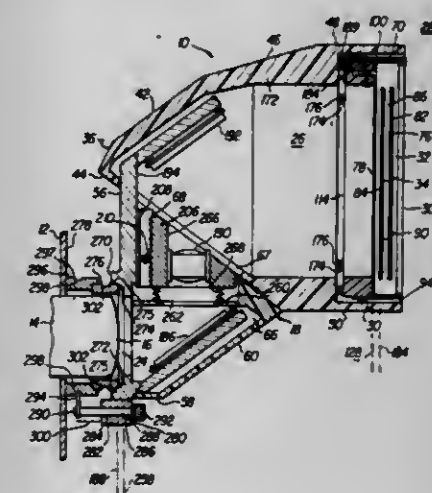
a lens in said enclosure, said lens being disposed between said first and second openings in said enclosure;

means, in the region of said first opening, for mounting said enclosure adjacent the cathode ray tube device and in surrounding relationship with the screen thereof;

means for removably positioning said film cassette adjacent said second opening, said film cassette being removably positioned in a working position across said second opening such that a major portion thereof serves as a closure for closing said second opening between the interior and exterior of the enclosure; said positioning means including:

a stationary holder extending from said enclosure for holding at least one part of said film cassette with respect to said second opening;

movable attaching means including a movable latch, said movable attaching means being coupled with said en-



closure and disclosed for engagement of said movable latch with a part of said cassette other than said one part which is engaged by said holder, said latch having a portion extending outwardly with respect to said enclosure and a catch portion on said outwardly extending portion, said latch being movable between a latched position engaging said cassette and an unlatched position out of engagement with said cassette, thus permitting removal of said cassette from its working position covering said second opening, said movable attaching means including means for biasing said latch into said latched position and means for both holding said latch in said unlatched position after manual movement of said latch into said unlatched position and also for automatically releasing said latch from said unlatched position upon movement of said film cassette into the working position to thereby allow movement of said latch into said latched position and thus into gripping engagement with said film cassette.

4,283,130

## SEQUENCING CAMERA

John R. Lawson, 277 Baker Ave., West Concord, Mass. 01781

Filed Feb. 8, 1980, Ser. No. 119,819

Int. Cl.<sup>3</sup> G03B 1/00

U.S. Cl. 354—120

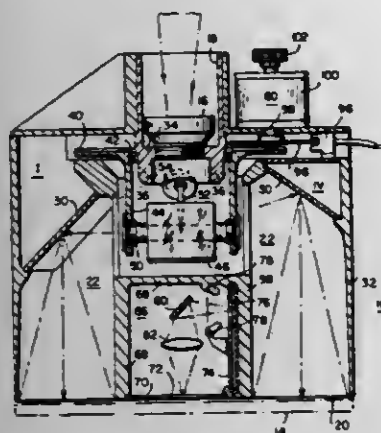
17 Claims

1. A camera for focusing an array of images on a single focal plane at two or more radial distances from the optical axis of a focal light path, said camera comprising:

- a lens arrangement adapted to receive light and direct it into the focal light path in said camera;
- first mirror means arranged to rotate and tilt, said first mirror means being disposed in the focal light path from said lens; and
- second mirror means mounted in communication with said



first mirror means and arranged to direct light from said first mirror means to at least two locations on said focal plane, said locations being displaced from each other in radial disposition from the optical axis of said lens; and



means to maintain a constant focal length by tilting said first mirror means and disposing said second mirror means to accommodate variations in radial positioning of said array of images.

#### 4,283,131 MANUAL FOCUS SETTING APPARATUS FOR PHOTOGRAPHIC CAMERA HAVING AUTOMATIC FOCUS ADJUSTING MECHANISM

Mitsuo Ohnuki, and Masashi Yamada, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

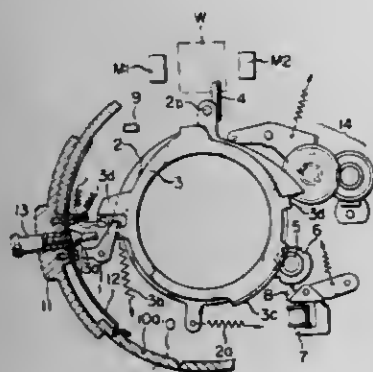
Filed Apr. 11, 1979, Ser. No. 29,035

Claims priority, application Japan, Apr. 12, 1978, 53-47024[U]

Int. Cl.<sup>3</sup> G03B 3/00

U.S. Cl. 354—195

3 Claims



1. In a photographic camera of the type having an automatic focus adjusting mechanism, an actuator member adapted to move simultaneously or in synchronism with movement of a focusing lens along its optical axis, an electromagnet operable in response to a signal from a ranging device to stop movement of said actuator member and said focusing lens; the improvement which comprises a stopper projection on said actuator member, a focus setting member manually movable from a position clear of the path of movement of said stopper projection to a position adapted to engage said stopper projection to limit movement of said actuator member, and switch means operable in response to movement of said focus setting member to the stopper projection engaging position to inhibit operation of said electromagnet.

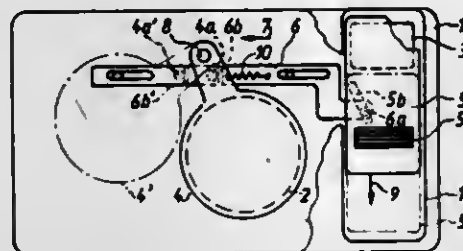
#### 4,283,132 PHOTOGRAPHIC CAMERA Dieter Engelsmann, Unterhaching; Peter Lermann, Naring; Reinhard Nicko, Munich; Herbert Schultes, Munich, and Karl Wagner, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany Filed Jan. 30, 1980, Ser. No. 116,804

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1979, 2904473

Int. Cl.<sup>3</sup> G03B 17/00, 17/04

U.S. Cl. 354—202

13 Claims



1. In a photographic camera, particularly a miniature camera, a combination comprising a housing having a front wall; a view finder having an inlet window at said front wall; a lens also at said front wall; a manually slidable first cover movable to and from a first position in which it covers said inlet window to protect the same, said first cover including a cam; a second cover movable to and from a second position in which it covers said lens to protect the same; and means linking said covers for joint movement to and from said positions in response to manual sliding of said first cover to and from said first position thereof, said means including a slide cooperating with and tracking said cam and being operatively connected with said second cover.

#### 4,283,133 LARGE APERTURE RATIO INTERCHANGEABLE LENS FOR A SINGLE LENS REFLEX CAMERA

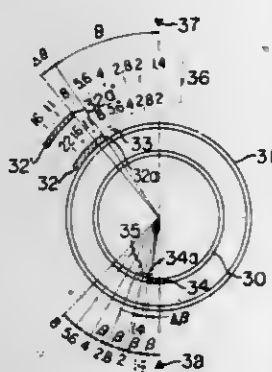
Sunao Ishizaka, Tokyo, and Toru Fukuhara, Isehara, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan  
Filed Sep. 11, 1979, Ser. No. 74,485

Claims priority, application Japan, Sep. 19, 1978, 53-127515[U]

Int. Cl.<sup>3</sup> G03B 9/02

U.S. Cl. 354—270

4 Claims



1. A large aperture ratio interchangeable lens adapted to be mounted on the camera body of a single lens reflex camera of the TTL open photometry type comprising a lens body, a preset aperture ring rotatable with respect to the lens body for varying the lens aperture between an open F-value ( $f_0$ ) inherent to said lens and a desired F-value ( $f$ ) by rotation of the aperture ring, a first signal member operatively associated with the aperture ring for transmitting to the camera body, by virtue of the location of the first signal member, a difference signal ( $f-f_0$ ) corresponding to the difference between the open F-value ( $f_0$ ) and the desired F-value ( $f$ ) set by said aperture ring, the first signal member having a deviation from a prede-

termined position at which the position of the first signal member corresponds to the open F-value ( $f_0$ ) inherent to said lens in order to compensate for the difference between the quantity of light theoretically passing through said lens and the quantity of light actually passing through the lens, and a second signal member for transmitting to the camera body, by virtue of the location of the second signal member, a signal corresponding to said open F-value ( $f_0$ ), the second signal member having a deviation from a predetermined position at which the position of the second signal member indicates the open F-value ( $f_0$ ) of the lens, said deviation of the second signal member being equal to the deviation of the first signal member.

#### 4,283,134 FILM PACK

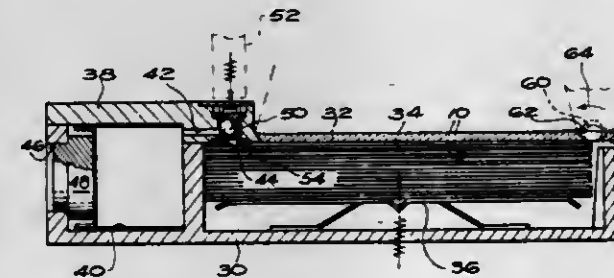
Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1980, Ser. No. 143,229

Int. Cl.<sup>3</sup> G03B 17/26

U.S. Cl. 354—275

8 Claims



1. A film pack comprising:  
a plurality of photographic film units, each of which (1) has means defining an interior enclosure, (2) is processable by a low viscosity fluid and (3) has a small access hole through which a supply of such fluid can be introduced into the enclosure of the film unit;  
an opaque casing housing said film units and having (1) a front wall with a light-transmitting area through which the uppermost film unit can be exposed, (2) an end wall with an elongated slot through which exposed film units can be individually advanced from the casing, and (3) a small cross-sectional area opening with which the access hole of the uppermost film unit is aligned; and  
a container of the low viscosity processing fluid in said casing having fluid passage means interconnecting said container and said opening for introducing processing fluid into each film unit after exposure.

#### 4,283,135 CLOSE-UP PHOTOGRAPHY AID

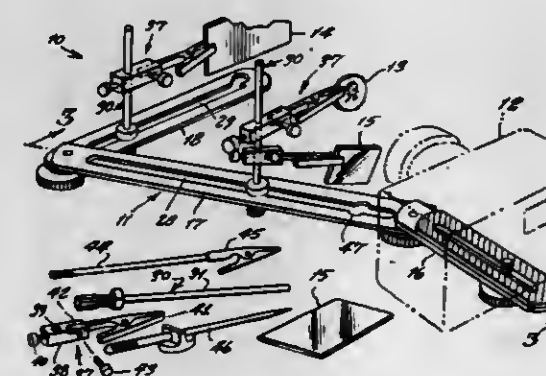
Ben Lupis, 3191 Shore Rd., Oceanside, N.Y. 11572

Filed Nov. 2, 1979, Ser. No. 90,867

Int. Cl.<sup>3</sup> G03B 17/56

U.S. Cl. 354—293

2 Claims



1. A close-up photography aid, comprising in combination, a frame having a plurality of elongated flat arms, a plurality of

screws for pivoting together adjacent ends of said plurality of arms, each of said plurality of screws having an enlarged flat head for resting upon a supporting surface, each of said plurality of arms having an elongate slot along a portion of the length thereof, and an enlarged circular opening along said slot of two of said arms; two posts receivable through said two enlarged circular openings and each being adjustably slidable along the length of a respective one of said two arms; means for adjustably mounting said two posts to their respective arms in which they are mounted; and means affixed to said two posts for mounting thereon photographic equipment.

#### 4,283,136 MICROFICHE READER PRINTER HAVING MULTI-FORMAT CAPABILITIES

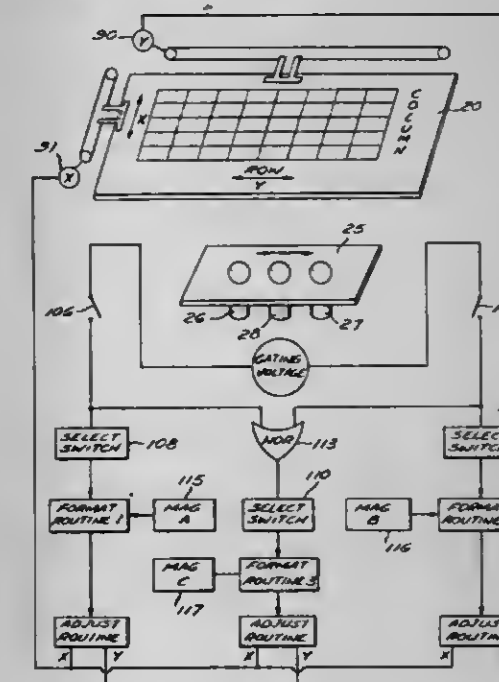
William R. Swift, Placentia; Don W. Herrod, Walnut, and James M. Marsh, Yorba Linda, all of Calif., assignors to AM International, Inc., Los Angeles, Calif.

Filed Sep. 5, 1978, Ser. No. 939,445

Int. Cl.<sup>3</sup> G03B 27/48

U.S. Cl. 355—45

21 Claims



1. In a microfiche reader printer including a light source, a platen for holding a microfiche in the path of the light from the light source, magnifying means in the light path for receiving an image from the microfiche and magnifying the image, the magnifying means comprising a lens support, a plurality of lenses mounted on the lens support, a viewing screen, a copier and light directing means for alternatively directing the image from the microfiche through the magnifying means to the viewing screen where the image may be viewed or to the copier where the image may be copied, the improvement comprising:

mounting means for mounting the lens support for movement to position one of the lenses in the light path, the mounting means comprising a pair of parallel gibs, the lens support being slidably mounted between the gibs whereby sliding the lens support between the gibs positions a chosen lens in the light path;  
sensing means disposed proximate to the lens support for sensing the position of the lens support and determining which lens is in the path of light, the sensing means comprising a first and a second switch, the lens support contacting the first switch when the rightmost lens is in the light path, and contacting the second switch when the leftmost lens is in the light path;  
platen moving means attached to the platen for moving the platen and the microfiche on the platen into the light path for copying successively framed images of the microfiche; and



control means operatively connected to the platen moving means for controlling the platen moving means, and reading whether the lens support is contacting the first switch, the second switch or neither switch and adjusting the platen moving means for different frame-to-frame movements and for adjusting the speed at which the platen moves to scan the frame being copied to compensate for different microfiche formats.

4,283,137

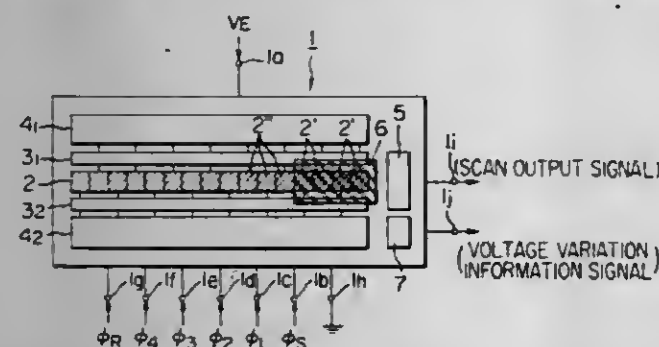
## IMAGE SCANNING SYSTEM

Tokuichi Tsunekawa, Yokohama; Makoto Masunaga, Tokyo; Kazuya Hosoe, Machida; Yukichi Niwa; Mitsutoshi Owada, both of Yokohama, and Noriyuki Asano, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
Filed Mar. 30, 1979, Ser. No. 25,544

Claims priority, application Japan, Mar. 31, 1978, 53/38566  
Int. Cl.<sup>3</sup> G01C 3/08; G03B 7/08

U.S. Cl. 356—4

28 Claims



1. An image scanning system comprising:

- (A) image scanning means arranged to receive an image for providing scanned image signal of the image;
- (B) means for providing a first quantization standard which is variable in accordance with the change in a specific level of said scanned image signal;
- (C) means for providing a fixed second quantization standard; and
- (D) quantization means receiving said scanned image signal to provide quantized data on said image, said quantization means providing first quantized data by quantizing the image signal with said first quantization standard provided by said first quantization standard provision means and providing second quantized data by quantizing the image signal with said second quantization standard provided by said second quantization standard provision means.

4,283,138

## LOW-FLYING OBJECT VELOCITY-POSITION TRACING SYSTEM

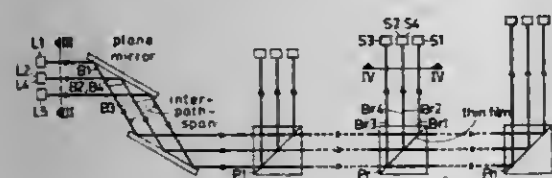
So S. Lai, 16th Floor, Flat C, Brilliant Ct., 27 Chai Wan Rd., Hong Kong, Hong Kong

Filed Sep. 6, 1979, Ser. No. 72,920

Int. Cl.<sup>3</sup> G01P 3/36; G08B 13/18

U.S. Cl. 356—28

1 Claim



1. A set of one or more layers of electro-optical systems for locating and measuring the velocities of low-flying objects approaching or intruding the surveillance region of said set of electro-optical systems, each said electro-optical system comprising

two orthogonally oriented sequences of prism-complexes, each said prism-complex made of two right-angled-isosceles-prisms coupled at hypotenuse planes thereof by a

thin film having a refractive index deviated from that of said prisms and an adjusted reflection coefficient, each said prism-complex accompanied remotely horizontally side-by-side by

a light-sensor-quadruplet, thereby each of said two orthogonally oriented prism-complex sequences is accompanied by a dual-in-line light-sensor-quadruplet sequence, each said light-sensor-quadruplet being an erect rhombic configuration of four light sensors, each said prism-complex sequence accompanied by

an erect rhombic configuration of four lasers emitting therefrom four parallel horizontal laser beams forming a beam-quadruplet having the axis thereof normal to the plane of said erect rhombic configuration of said four lasers, said laser beams being intercepted successively by said sequence of prism-complexes whereby small portions of said laser energy are reflected by said thin films to impinge corresponding said light sensors thereof, said laser beams being sufficiently fine that normal impingements thereof at said light sensors are interrupted when said laser beams are sufficiently deflected aerodynamically by said low-flying objects, thereby producing electrical output signals,

parallel pairs of planar reflecting means for directing said laser beams to follow desired ray paths whereinto are inserted said reflecting means, thereby preserving inter-path-spans within each said beam-quadruplet,

rectangular sectioned tubes having lateral apertures as outlets for said reflected laser beams and enclosing said prism-complexes and said planar reflecting means thereby shielding said beam-quadruplets,

a monostable multivibrator having the input thereof connected to a first light sensor of the horizontal pair of any one of said light-sensor-quadruplets responsive to the electrical output signal therefrom, and

a first AND gate having one input thereof connected to the inverted output Q of said monostable multivibrator and another input thereof to a second light sensor of the same pair of said first light sensor, thereby producing electrical output signals dependent of the orders of arrivals of electrical signals from said first and second light sensors,

a RS-flip-flop having a set input S thereof connected to the output of said first AND gate thereby registering the electrical output signals therefrom, thereby registering the moving directions of a said low-flying object by the output Q thereof,

a first OR gate having one input thereof connected to said first light sensor and another input thereof connected to said second light sensor responsive to the electrical output signals therefrom producing an electrical output signal,

a T-flip-flop having a trigger input T thereof connected to the output of said first OR gate responsive to the electrical output signal therefrom producing a high level at the output Q thereof for a transient period between the arrivals of said electrical output signals from said light sensors, and

a counter having a clock pulse input CP thereof connected to a first clock bus and fed by clock pulses therefrom, said counter further having a count-enable input CE thereof connected to the output Q of said T-flip-flop responsive to the high level thereof, thereby counting the clock pulses fed thereto a period inversely proportional to the velocity of a said low-flying object, said counter further having an overflow output OVF thereof connected to an input of said first OR gate to produce a high level at the output thereof to reset said T-flip-flop whenever there is an overflow of said counter, thereby ignoring sufficiently slow low-flying objects,

an AND gate group having inputs thereof connected to the outputs of said counter, a first control input thereof connected to the overflow output of said counter, a second control input thereof connected to the inverted output Q of said T-flip-flop, thereby the Count appearing at the outputs of said counter is ready to be clocked to appear at

the outputs thereof whenever there is no overflow of said counter and said counter is not counting,

a second AND gate having a first input connected to the output Q of said RS-flip-flop to gate the transfer of the sign registered thereat,

a second OR gate having inputs thereof connected to all outputs of said counter, thereby producing a high level at the output thereof whenever the Count of said counter is non-zero,

a third AND gate having an input thereof connected to the output of said second OR gate responsive to the high level signal therefrom to gate the transfer of a clock pulse fed from a second clock bus to a second input thereof, thereby having the possibility of producing a transferred pulse,

a first delay-element-group having inputs thereof connected to the outputs of said AND gate group and said second and third AND gates, said first delay-element-group further having outputs thereof respectively coupled to the data buses and sign bus and jumpered onto the address buses, thereby transferring thereto said Count, sign and transferred pulse with a delay upon the arrival of a clock pulse fed from said second clock bus, said delay being present at an integer units of time base, said integer being the counted-towards-console numbering of the particular stage of above-described electronic circuit,

a first plurality of diodes coupled between said outputs of said first delay-element-group and said data buses, sign bus and address buses to perform an OR function with respect thereto,

a second plurality of diodes cascaded into said data buses, sign bus and address buses facilitating unidirectional information flow towards said console,

a plurality of amplifiers cascaded into said data buses, sign bus and address buses compensating transmission line losses,

a plurality of repeated above-described apparatuses and couplings in connection with the remaining horizontal pairs of light sensors of said light-sensor-quadruplet sequence, and also

a plurality of identical apparatuses and couplings described afore in connection with all said vertical pairs of light sensors of said light-sensor-quadruplet sequences, the outputs of the OR gates corresponding to said second OR gate being coupled to the inputs of AND gates in said repeated apparatuses for horizontal light sensor pairs corresponding to a second input IN of said third AND gate,

said first clock bus connected to the clock pulse inputs of said counters of said plurality of apparatuses in connection with both said horizontal and vertical pairs of light sensors transmitting thereto clock pulses of a first frequency,

a first clock connected to said first clock bus feeding thereto clock pulses of said first frequency,

said second clock bus connected to a second input of said second AND gate, a third control input of said AND gate group and a third input of said third AND gate transmitting thereto clock pulses of a second frequency lower said first frequency, thereby releasing said Sign, Count and transferred pulse to reach said sign bus, data buses and address buses synchronously forming a travelling information-pulse-group, said second clock bus further connected identically to said plurality of apparatuses, thereby the information thereof being released stage by stage consecutively starting from the stage far most from said console forming an ordered information-pulse-group-sequence having the wave front thereof being the information-pulse-group generated by the stage far most from said console, duty-cycle pulse width of said clock pulses of said second frequency being sufficiently less than said time base of said first delay-element-group ensuring non-overlapping of said information-pulse-group, said second frequency tuned to an optimum facilitating non-overlapping and compactness of a train of said information-pulse-group-sequences generated by a train of said clock pulses of said second frequency, said second clock bus further

coupled to the reset inputs R of the RS-flip-flops of said plurality of apparatuses and to the RESET inputs of said counters facilitating recurrent auto-reset thereto,

a second clock connected to said clock bus feeding thereto clock pulses of said second frequency,

a reset bus connected to the reset inputs of the T-flip-flops of said plurality of apparatuses for clearing the outputs thereof whenever there are errors,

a reset button connected to said reset bus for manual operations,

said data buses coupling the Count part of said outputs of said first delay-element-groups of said plurality of apparatuses to the inputs of a read-only-memory in said console, said read-only-memory for decoding said Counts into Velocities appearing at the outputs thereof,

said sign bus coupling the Sign outputs of said first delay-element-groups to one input of a second delay-element-group in said console,

said address buses coupling the transferred-pulse-outputs of said first delay-element-groups to the remaining inputs of said second delay-element-group,

said second delay-element-group for compensating the timing of said signs and addresses to appear at the outputs thereof in parallel with said Velocities.

4,283,139

## INSTRUMENT FOR OPTICALLY MEASURING SOFT CONTACT LENS PARAMETERS

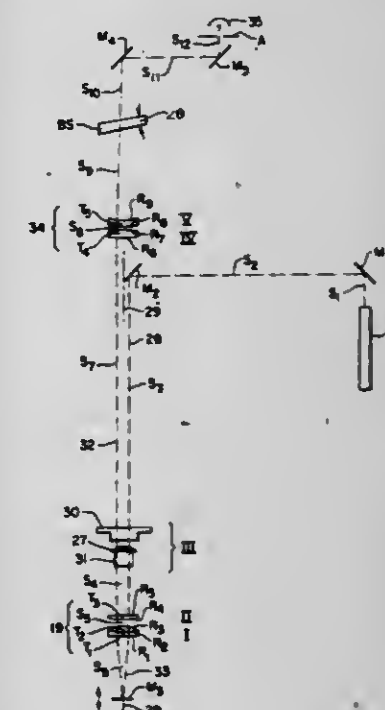
C. Hermas Swope, Westborough, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 4, 1980, Ser. No. 118,274

Int. Cl.<sup>3</sup> G01B 9/00

U.S. Cl. 356—125

11 Claims



1. An optical system having a center line for accurately measuring parameters of a soft contact lens supported on a pedestal and submerged in a liquid which comprises,

a source of collimated light,

means for directing light from said source toward one side of the lens along a first path parallel to and spaced from the center line,

first objective means for imaging light on said center line, said first objective means being selectively positionable on the center line between said means and the lens,

second objective means for imaging light on the center line, said second objective means being located on the other side of said lens,

reflection means for reflecting light received from said second objective means along a second path, a plane common



to said first path, said second path and the center line, and said center line being located between said first and second paths, a portion of said second path being parallel to said center line, and  
detection means for determining when said portion is spaced from said center line the same as said first path.

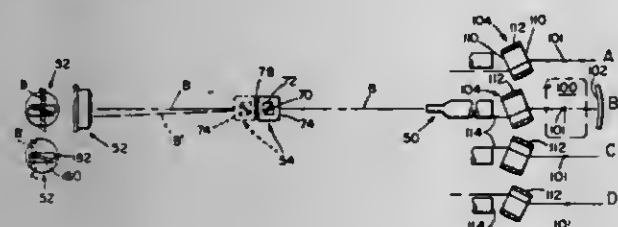
4,283,140

**SPATIALLY HOMOGENIZING OPTICAL MODULATOR**  
William W. Carson, Mendon, Mass., assignor to Waters Associates, Inc., Milford, Mass.

Filed Jun. 25, 1979, Ser. No. 51,812  
Int. Cl.<sup>3</sup> G01N 21/41

U.S. Cl. 356—130

21 Claims



1. In apparatus of the type including a light source directing a light beam through a measurement zone to a detector, wherein movement of said beam in a measurement direction with respect to said detector gives an indication of the measurement made in said zone, the improvement comprising:

means for modulating, through a preselected amplitude in a first modulation direction, the position of said beam with respect to said measurement zone, said amplitude being independent of light beam movements at said light source or in the path of said beam between said source and said modulating means,

whereby said measurement can be made substantially independent of said beam movements in said modulation direction.

4,283,141

# **SAMPLE CELL AND STIRRER FOR SPECTROPHOTOMETRY**

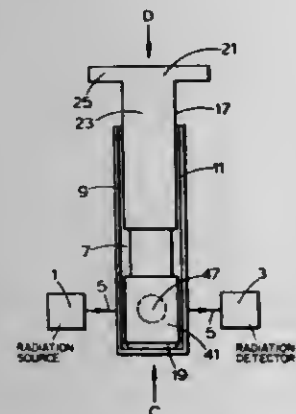
Trevor J. Stockdale, and Anthony R. L. Moss, both of Cambridge, England, assignors to Pye (Electronic Products) Limited, Cambridge, England

Filed Feb. 5, 1979, Ser. No. 9,211  
Claims priority, application United Kingdom, Feb. 13, 1978, 05620/78

Int. Cl.<sup>3</sup> G01N 1/00

U.S. Cl. 356—246

17 Claims



1. A cell arrangement for spectrometric instruments comprising a sample cell positioned in a radiation path for permitting passage of radiation; a one-piece plastic stirrer positioned in a radiation transmissive region of said sample cell, said stirrer comprising: a body portion having opposed limbs extending exterior to said sample cell, said body portion including a flange at its outer end having an aperture therein to provide a path for fluid to communicate freely with the interior

of said sample cell; said flange designed to permit reciprocating said stirrer in said sample cell in a direction perpendicular to the direction of the radiation path; said opposed limbs including, within the interior of said sample cell, an intermediate region of reduced cross-sectional dimensions, and an inner-end-region of substantially increased cross-sectional dimensions; said inner-end-regions of said opposed limbs being spaced apart to permit radiation to pass therethrough and including a chamfered end-portion for contacting closed end of said sample cell.

4,283,142

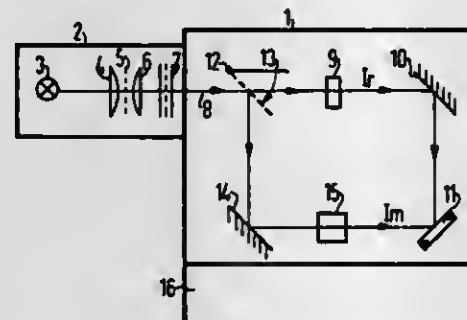
**TWO BEAM ALTERNATING LIGHT COLORIMETER**  
Hubert De Steur, Drongen; Chris Vandebossche, Zwijnaarde, and Guido Heyneman, Knokke, all of Belgium, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 31, 1979, Ser. No. 108,461  
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1979, 2905230

Int. Cl.<sup>3</sup> G01J 3/08, 3/42; G01N 21/27

U.S. Cl. 356—319

6 Claims



1. A two beam colorimeter, comprising:  
a light source producing a light beam which passes through an illuminating lens system;  
beam control means receiving the light beam after the illuminating lens system and for producing first and second measuring beams, said beam control means comprising a pivotable mirror positioned to pivot into the light beam so as to produce one of the first or second measuring beams; the first measuring beam passing through a first measuring cell and the second measuring beam passing through a second measuring cell;  
reflecting mirror means for guiding the first and second measuring beams to a common photo sensitive element which creates first and second output signals;  
switching means synchronized with the pivotable mirror for connecting the first output signal to an analog memory at a time when a position of the pivotable mirror permits the first measuring beam to pass through the first measuring cell, and which disconnects the analog memory in correspondence with a position of the pivotable mirror which results in the second measuring beam passing to the second measuring cell; and  
computing means connected to receive the second output signal and the first output signal via an output of the analog memory for evaluating these signals.

4,283,143

**OPTICAL CHARACTERIZATION OF A SUSPENSION**  
James A. Patterson, Los Altos, Calif., assignor to Amco Standards International, Mountain View, Calif.

Filed Nov. 19, 1979, Ser. No. 95,578

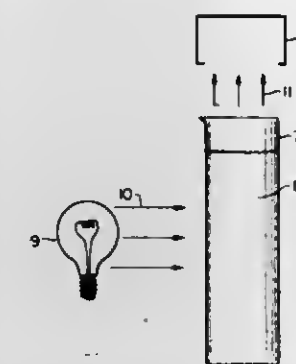
Int. Cl.<sup>3</sup> G01M 15/02

U.S. Cl. 356—336

2 Claims

1. A method of determining the particle size distribution of an unknown liquid suspension comprising:

- determining the nephelometric turbidity reading for a known standard liquid suspension;
- determining the nephelometric turbidity reading for an unknown liquid suspension;
- measuring the light scattering energy of the standard and unknown liquid suspensions;



- correcting the light scattering energy of the unknown liquid suspension for the physical characteristics of the suspended solids and liquid media; and
- comparing the corrected light scattering energy of the unknown liquid suspension with the light scattering energy of the standard suspension.

4,283,144

# **METHOD OF FIBER INTERFEROMETRY ZERO FRINGE SHIFT REFERENCING USING PASSIVE OPTICAL COUPLERS**

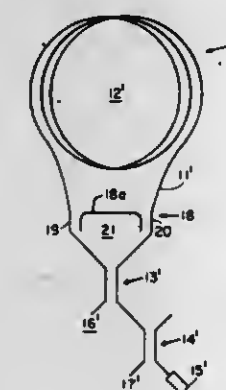
Matthew N. McLandrich, Carlsbad, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 16, 1979, Ser. No. 30,202

Int. Cl.<sup>3</sup> G01C 19/64

U.S. Cl. 356—350

4 Claims



1. A method of zero fringe referencing a fiber interferometer gyro having its single mode optical fiber arranged in a loop about an area comprising:  
energizing by pulsing a source of laser energy;  
coupling the pulsed laser energy to effect the simultaneous bidirectional travel thereof in the loop around the area;  
splitting off portions of the simultaneously traveling bidirectional pulsed laser energy before it enters the loop around the area;  
generating zero rotation rate signals representative of the effects the pulsed laser energy source response and the photodetector response have on the split off portions of the bidirectional pulsed laser energy;  
generating unknown rotation rate signals representative of the effects the rotation of the loop, pulsed laser energy source response and photodetector response have on the bidirectional laser energy traveling through the loop the generation of the zero rotation rate signals are first in repetitive sequence to the generation of the unknown rotation rate signals; and

referencing the unknown rotation rate signals to the zero rotation rate signals to allow for responsive compensation.

4,283,145

# **OPTICAL SYSTEM FOR THE DETECTION OF FLAWS IN BOTTLES OR THE LIKE**

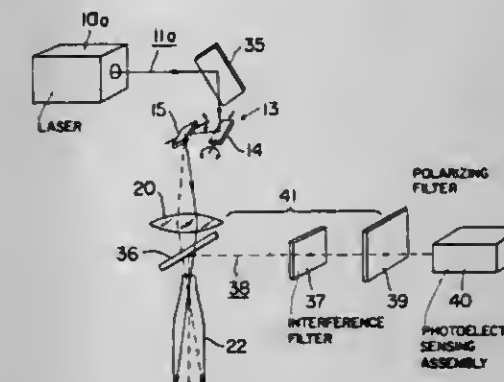
Takashi Miyazawa, Funabashi, Japan, assignor to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1979, Ser. No. 11,813

Int. Cl.<sup>3</sup> G01N 21/01

U.S. Cl. 356—364

10 Claims



1. In a system for detecting flaws in bottles or like articles having a neck or constricted area near the top thereof, said system including a light beam generating means, a device for causing scanning motion of said light beam through an article to be tested, and a photoelectric detecting means adapted for detecting variation of said scanned light beam thereby to detect a flaw in the article the improvement wherein said system comprises: a laser beam generating means for generating a narrow beam of light; mirror means comprising two mirrors having respective reflective surfaces arranged so as to reflect said laser beam one after the other and supported so as to be oscillated about respective axes at right angles to each other and lying in respective planes which substantially coincide with the respective reflective surfaces for generating a scanning motion of the laser beam; means for imparting correlated oscillations to said two mirrors whereby the beam is angularly scanned in a spiral path; a positive lens for receiving said scanned beam and for redirecting it through a cross-over point or small region positioned within said bottle or article at said neck or constricted area; and, a photoelectric detector means adapted for receiving said spirally scanned laser beam after it has passed through or been reflected by said article thereby to detect a flaw in the article to be tested.

4,283,146

# **OPTICAL DETECTOR**

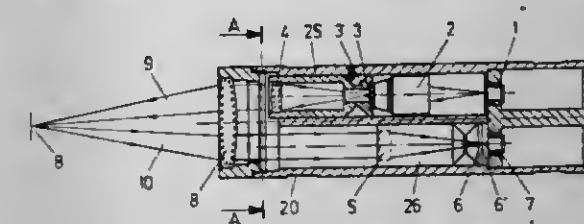
Philippe Roussel, Thun, Switzerland, assignor to Lasag S.A., Thun, Switzerland

Filed Nov. 30, 1978, Ser. No. 964,884

Int. Cl.<sup>3</sup> G01N 21/55; G01B 11/00

U.S. Cl. 356—445

23 Claims



1. An optical detector for the detection of very small objects comprising:  
(a) a first optical system defining an optical path and being operable to transmit electromagnetic radiation;  
(b) a second optical system defining an optical path parallel to said optical path of said first optical system and being



operable to receive said electromagnetic radiation after diffusion by an object; and

(c) a converging lens associated in common with said first and second optical systems and arranged such that said optical paths of said first and second optical systems are parallel to and symmetrical about the axis of said converging lens on one side thereof, wherein

(d) said first optical system comprises means for transmitting said electromagnetic radiation to said converging lens in a parallel beam, said means for transmitting said electromagnetic radiation comprising a positive lens preceded in said first optical system by a source of said electromagnetic radiation, a condenser for collecting said electromagnetic radiation, and interchangeable diaphragms, each diaphragm having a hole of a different size whose image is transmitted by said electromagnetic radiation to the focal point of said positive lens, said hole being situated at the focus of said condenser.

4,283,147

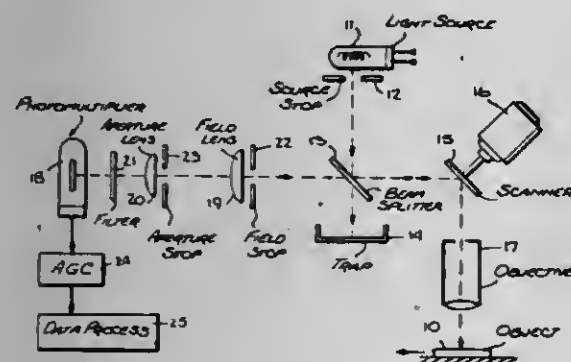
## ELECTRO-OPTICAL SCANNING SYSTEM

Marc G. Dreyfus, Old Greenwich, and Arnold Pellman, Stamford, both of Conn., assignors to Dreyfus-Pellman, Stamford, Conn.

Filed Jan. 14, 1979, Ser. No. 48,632  
Int. Cl.<sup>3</sup> G01N 21/55

U.S. Cl. 356-445

7 Claims



1. A defocusable electro-optical system for scanning the quasi-specular surface of an object to be examined with a light beam to produce a reflection light pattern that depends on the relative reflectivity of the different components which make up the surface, said system comprising:

A. a light source producing an illumination beam;

B. an objective for focusing light on said object surface;

C. a scanning mechanism to direct said illumination beam through said objective to focus said beam onto said surface when said surface lies in the focal plane which is perpendicular to the optical axis of the objective, said object being subject to axial displacement relative to said plane;

D. a photodetector;

E. means to direct the beam reflected from said surface through a field stop onto said photodetector which yields a signal depending on the relative reflectivity of said components as the illustrated beam scans across said surface, said field stop limiting the size of the viewed area when the object surface lies in the focal plane; and

F. means illuminating the viewed object surface in a manner imaging thereon an image of the light source comparable in size to the field stop whereby, when the object surface lies in the focal plane, the light source image is coincident therewith, and when the object surface is axially displaced from the focal plane and is out of focus, the light source image assumes an aerial position between the objective and the object surface and is relayed by the objective to function as a virtual stop, said virtual stop serving to delete that portion of the rays reflected from the object surface which otherwise would cause the image of the

object to blur, thereby to limit defocus-blurring of the object image.

4,283,148

## APPARATUS AND METHOD FOR SOLID PARTICLE BULK DENSITY MEASUREMENTS

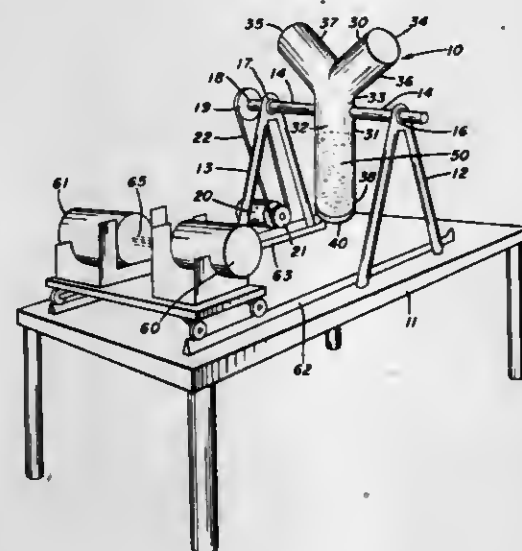
Richard W. Peterson, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 12, 1979, Ser. No. 56,802

Int. Cl.<sup>3</sup> B01F 9/00

U.S. Cl. 366-142

5 Claims



1. Apparatus for blending a multiplicity of solid particles having a plurality of different particle sizes into a homogeneous mass, comprising:

(a) a container including

(i) an elongated hollow principal section enclosing an elongated compartment, said principal section having a first end portion and a second end portion opposed to said first end portion;

(ii) a hollow first leg section attached to the first end portion of the principal section and extending axially and radially outwardly thereof at an obtuse angle to the principal section, said first leg section enclosing a first chamber communicating with the compartment in the principal section;

(iii) a hollow second leg section attached to the first end portion of the principal section and extending axially and radially outwardly thereof at an obtuse angle to the principal section, said second leg section enclosing a second chamber communicating with the first chamber in the first leg section and with the compartment in the principal section;

(iv) a hollow third leg section attached to the second end portion of the principal section and extending axially and radially outwardly thereof at an obtuse angle to the principal section, said third leg section enclosing a chamber communicating with the compartment in the principal section; and

(v) a hollow fourth leg section attached to the second end portion of the principal section and extending axially and radially outwardly thereof at an obtuse angle to the principal section, said fourth leg section diverging from the third leg section at an angle of less than 180°, said fourth leg section enclosing a chamber communicating with the chamber in the third leg section and with the compartment in the principal section; and

(b) pivot means attached to the container, said container being rotatable about said pivot means to blend a multiplicity of solid particles contained therein into a homogeneous mass.

4,283,149

## PAPER TRANSPORTING DEVICE FOR CASH REGISTERS, DATA PROCESSING MACHINES OR THE LIKE

Gerhard Rethmeier, Bielefeld, Fed. Rep. of Germany, assignor to Control Commerce AG, Ilanz, Bräuoden, Switzerland

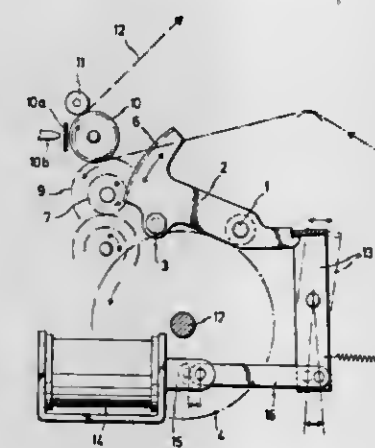
Filed Jan. 21, 1980, Ser. No. 113,764

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1979, 2902654

Int. Cl.<sup>3</sup> B41J 19/78, 11/14

U.S. Cl. 400-617

6 Claims



1. Paper transporting device, comprising a motor driven cam disc having a contoured surface and a plurality of depressions of varying depth formed therein, a gear segment lever pivotally mounted about a fixed axis, gear teeth and a roller integral with said gear segment lever, said roller being operable to contact said cam disc, a gear operable to mesh with said gear teeth of said gear segment lever, a free running clutch driveable by said gear, a paper transport roller driveable by said free running clutch, means for locking said gear segment lever in a swung-out position, and a pivotable curved lever having a free end, said curved lever being disposed in one of said depressions formed in said cam disc and being rotatable therewith, said free end of said curved lever being biased against said contoured surface of said cam disc.

4,283,150

## TYPEWRITER

Masami Hanazono; Tomoyoshi Watanabe; Toshio Nakai; Susumu Kuzuya; Akira Asai; Takayuki Iwase; Kazuo Nakamura, and Hiroshi Onoda, all of Nagoya, Japan, assignors to Brother Kogyo Kaisha, Aichi, Japan

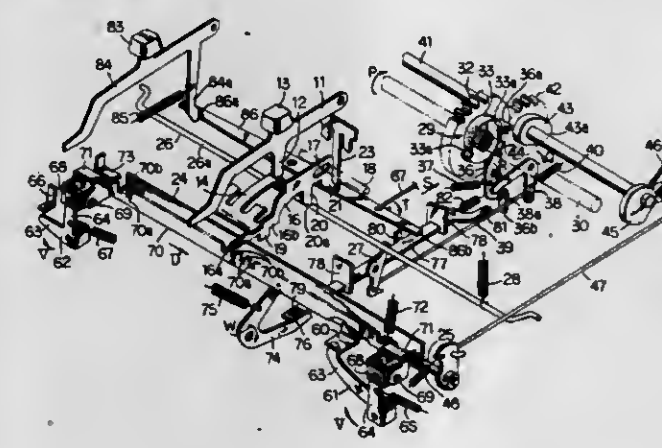
Filed May 14, 1979, Ser. No. 38,845

Claims priority, application Japan, May 27, 1978, 53-63662

Int. Cl.<sup>3</sup> B41J 5/22, 23/02

U.S. Cl. 400-666

5 Claims



1. In an electric typewriter having a keyboard with a plurality of keys, a continuous rotating motor and a printing mechanism including a character selecting mechanism, the improvement which comprises:

a plurality of interposers movably supported beneath said

keyboard, each of said interposers being depressible by respective one of said keys of said keyboard;

a common drive member located adjacent to all of said interposers and actuating any depressed one of said interposers for operating said character selecting mechanism in said printing mechanism;

a clutch disposed between said motor and said drive member;

a regulating lever, disposed adjacent to said clutch, being movable between a first position for keeping said clutch in a disengaged condition and a second position for allowing said clutch to be engaged;

holding means disposed between said regulating lever and each of said interposers, said holding means normally holding said regulating lever in said first position and permitting movement of said regulating lever from said first position to said second position when any of said interposers is depressed;

a cam member rotated for returning said regulating lever to said first position upon engagement of said clutch;

a sensing member movably supported in parallel to and operatively connected with said drive member for being reciprocally moved in a first direction, said sensing member being further moved in a second direction by a second one of said interposers depressed subsequently while said sensing member is still in a course of the reciprocal movement caused by a previously depressed one of said interposers;

a lock member disposed engageably with said regulating lever in said first position for locking said clutch in the disengaged condition;

a latch member operatively engaged with said sensing member and said lock member respectively, said latch member being normally kept in a latching position to hold said lock member away from said regulating lever and being moved from the latching position by said sensing member when said sensing member is moved in the second direction;

a spring for pulling said lock member toward said regulating lever when said latch is moved from the latching position; and

returning means connected with at least one special key of said keyboard for returning said lock member to the position normally held away from said regulating lever.

4,283,151

## COMPOUND WRITING INSTRUMENT

Kazuhiko Sekiguchi, Tokyo, Japan, assignor to Zebra Co., Ltd., Tokyo, Japan

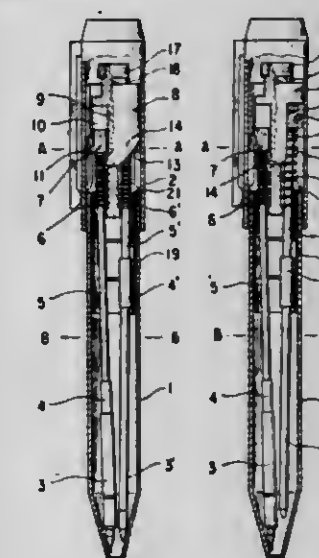
Continuation of Ser. No. 972,484, Dec. 22, 1978, abandoned.

This application Mar. 6, 1980, Ser. No. 127,982

Int. Cl.<sup>3</sup> B43K 27/14

U.S. Cl. 401-33

4 Claims



1. A compound writing instrument comprising a lower barrel accommodating a retractable mechanical pencil unit and a



ball point pen unit; an upper barrel rotatable in one or both directions relative to said lower barrel around its axis and overlapping the upper portion of said lower barrel; a cam mechanism in said upper barrel including a curved casing engaging said units for selectively shifting said units in the axial direction into a writing position when said upper barrel is rotated, said cam mechanism permitting said upper barrel to shift relative to said lower barrel in the axial direction enough to feed out the lead in said mechanical pencil unit when this unit is in the writing position, while said upper barrel is made non-shiftable relative to said lower barrel when said ball point pen unit is in the writing position.

4,283,152

## HAND AND GUARD RAILS

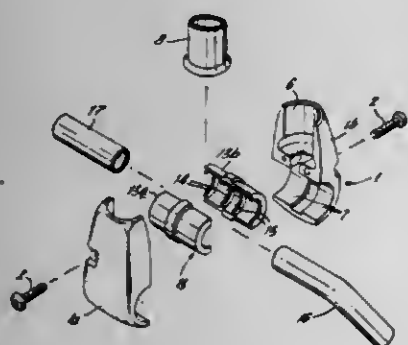
Sydney J. Smith, and Peter F. Chambers, both of Nr. Preston, England, assignors to British Leyland UK Limited, London, England

Filed Mar. 14, 1977, Ser. No. 777,144

Int. Cl.<sup>3</sup> F16B 7/08

U.S. Cl. 403—3

2 Claims



1. An assembly for use in constructing a hand and/or guard rail characterized by:

- (a) a clamp member (1) comprising two identical elements, each element having two semi-circular sectioned portions (6,7) at right angles to one another and the two elements being detachably connected to each other by securing means (2) so that each of the two corresponding semi-circular portions cooperate to form two tubular portions at right angles to each other; and

- (b) a tubular rail member (4) having an external diameter substantially the same as the internal diameter of the tubular portions (6) of the clamp member (1) and adapted to fit in the tubular portion (6) to be clamped therein by the securing means,

and further comprising a two-piece generally cylindrical adaptor (13) which is split axially to form two portions (13a, 13b) which are of substantially semi-circular cross-section, each portion having at least two internal webs (14, 15) of different diameter so that when the adaptor is fitted within the clamp member (1) it can grip the ends of two tubes of different diameters within the clamp member.

4,283,153

## COMPLIANT APPARATUS WITH REMOTE SMEARED CENTERS

David A. Brendamour, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 21, 1978, Ser. No. 971,850

Int. Cl.<sup>3</sup> G01B 5/25

U.S. Cl. 403—53

5 Claims

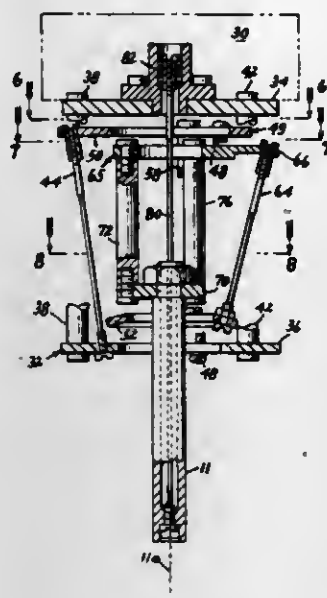
1. An apparatus with remote multiple rotational centers, comprising:

- (a) a base;
- (b) a first intermediate support member;
- (c) a first set of rotational supports obliquely extending from said base to said intermediate support member, each of said rotational supports in said first set having lines of

action along spherical radii on a first sphere having a first remote center;

- (d) a second intermediate support member;

- (e) a second set of rotational supports obliquely extending from said first intermediate support member to said second intermediate support member, each of said rotational



supports in said second set having lines of action along spherical radii of a second sphere having a second remote center noncoincident with said first remote center; and

(f) an end-effector connected to said second intermediate support member, said end-effector being rotatable about a remote pivot point which lies between said first and said second centers.

4,283,154

## COUPLING DEVICE

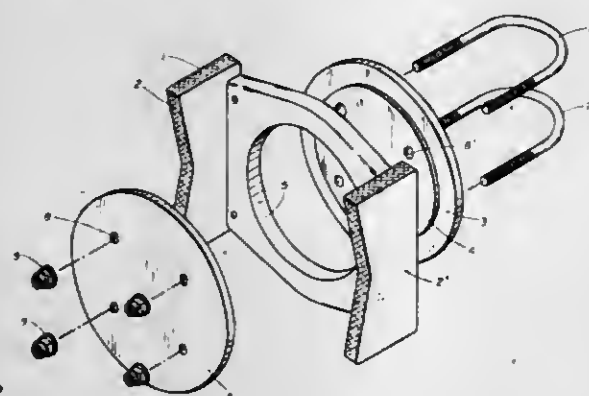
Joel D. Shepberd, 7441 E. 84th St., Tulsa, Okla. 74133

Filed Aug. 13, 1979, Ser. No. 66,034

Int. Cl.<sup>3</sup> F16D 1/12

U.S. Cl. 403—78

5 Claims



1. A coupling device comprising a first base plate with at least two attached segments, each of the said segments positioned approximately perpendicular on the opposite ends of the said first base plate, the said first base plate having a circular opening, the said opening being suitable for housing a slidable second plate, the said second plate being structured with a recessed surface on one side so that the said second plate is slidable mounted on the said first base plate, the said second plate having at least one U-bolt passing through it for holding the said second plate in selected positions on the circular opening of the said first plate, the said U-bolt passing through a pair of drilled holes in the said slidable second plate and through a second pair of drilled holes in a third plate, the said U-bolt being fastened securely by a pair of lock washers and nuts.

4,283,155

## APPARATUS FOR CONNECTION OF OPERATING ROD

Haruo Yamazaki; Masaharu Matsumoto, both of Yokohama, and Shigeru Kimura, Kamakura, all of Japan, assignors to Nifco Inc. and Ohi Seisakusho Co., Ltd., both of Kanagawa, Japan

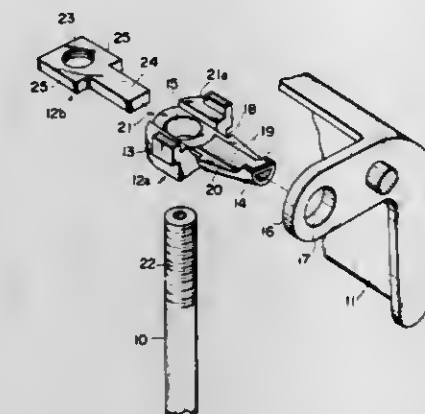
Filed Dec. 26, 1979, Ser. No. 106,459

Claims priority, application Japan, Dec. 23, 1978, 53-175467[U]

Int. Cl.<sup>3</sup> F16C 11/00

U.S. Cl. 403—163

5 Claims



1. An apparatus for rotatably connecting an operating rod to a fitting having a hole therein, which apparatus comprises:
- a one piece main plastic connection member including a head portion having retention means provided thereon for retaining said operating rod extending in one direction and having opposed surfaces defining an opening there-through; an engaging leg portion extending transversely of said one direction from a side of said head portion for insertion into said fitting hole, said leg portion having shoulder means on a peripheral surface thereof for engaging said fitting and having means defining a hollow portion therein in communication with the opening of said head portion; and
- a metallic insertion member removably insertable in said opening and said hollow portion, said insertion member including female screw hole means in alignment with said retention means for helical union with a male screw formed on a peripheral surface of said operating rod.

4,283,156

## JOINT FOR SPACE FRAMES

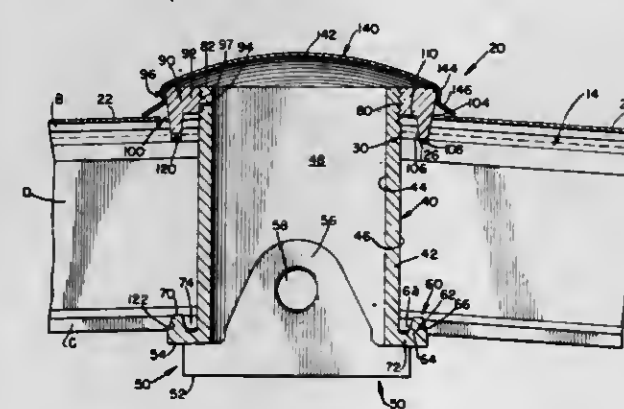
George C. Harper, Jr., Coraopolis, Pa., assignor to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed Apr. 8, 1980, Ser. No. 138,526

Int. Cl.<sup>3</sup> F16B 1/00

U.S. Cl. 403—218

5 Claims



1. A joint connector for use in space frames to connect a plurality of struts together, comprising:
- an integral, tubular hub having a wall, and first and second ends with a gripping jaw being located on said first end, and hub fastening means being located on said second end,

said gripping jaw including a flange spaced from said hub wall and surrounding said hub wall;

a clamping ring having fastening means for cooperating with said hub fastening means to releasably secure said clamping ring to said tubular hub, said clamping ring including a flange which is spaced from said hub wall and extending toward said gripping jaw flange when said clamping ring is secured to said hub;

a lifting stirrup attached to said first end and including a base spanning said first end and an ear attached to said base and terminating in said hub, said ear having attaching means defined therein for attaching a lifting device to said stirrup; and

said clamping ring and gripping jaw sandwiching a strut therebetween to attach such strut to said hub.

4,283,157

## CONNECTOR

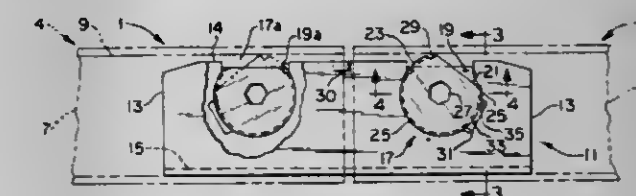
Joseph W. Kowalski, Florissant, Mo., assignor to B-Line Systems, Inc., Highland, Ill.

Filed Oct. 4, 1979, Ser. No. 81,652

Int. Cl.<sup>3</sup> F16D 1/00

U.S. Cl. 403—297

22 Claims



1. A connector in combination with a channel having a web and side flanges with inwardly turned lips defining a slot therebetween, said connector comprising,
- an elongate connecting member having a pair of side walls, said member being axially inserted inside the channel with an open side of the member toward the channel slot and the side walls of the member adjacent and parallel to the side flanges of the channel, and
- cam means mounted in at least one side wall of the member for movement from a retracted position to a locking position in which, with the member inside the channel, the cam means engages a lip of the channel to force the member toward the web of the channel for engagement therewith thereby rigidly to secure the channel to the member.

4,283,158

## COUPLING DEVICE

Kenichi Takahata, Tokyo, Japan, assignor to Matsui Universal Joint Mfg. Co., Tokyo, Japan

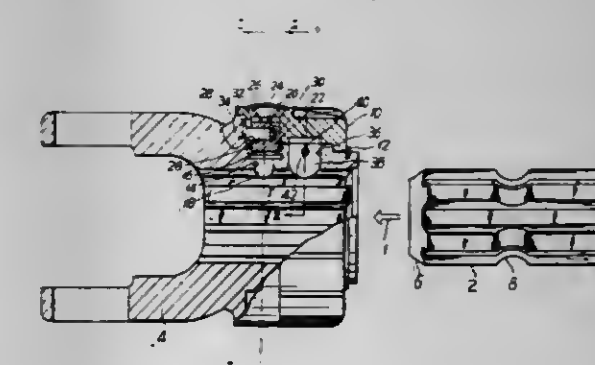
Filed Dec. 29, 1978, Ser. No. 974,346

Claims priority, application Japan, Jun. 15, 1978, 53-71442

Int. Cl.<sup>3</sup> F16B 7/00

U.S. Cl. 403—322

10 Claims



1. A coupling device including a male member having a tapered tip portion and a lock groove and a female member for receiving said male member, comprising a lock pin resiliently

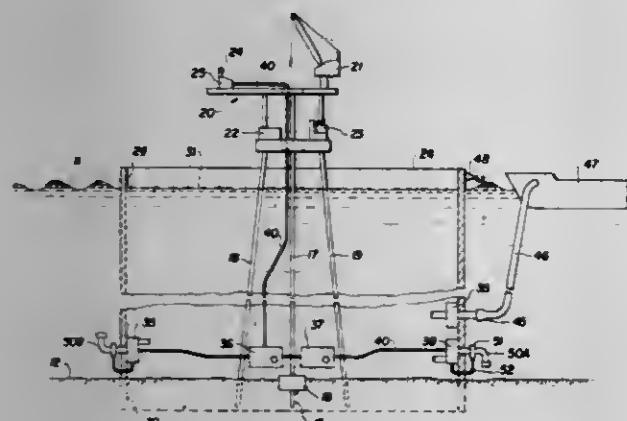


urged toward said male member by means of spring means such that when said male member is inserted into said female member said lock pin is forced away from said male member by a camming action of the tapered tip portion of the male member and extends into said lock groove when said lock pin is placed in opposition to said lock groove by a further insertion of the male member into said female member; an outer race rotatively resiliently urged in one direction relative to said female member by outer race spring means and formed with a recess for receiving a part of said lock pin to enable its removal from said lock groove of said male member, said outer race being rotated by said outer race spring means when said lock pin extends into said lock groove of said male member to locate said recess of the outer race in a position remote from said lock pin to lock it relative to said male member; a slide pin for locking said outer race relative to said female member when said male member is not in said female member and releasing said outer race relative to said female member by a movement of said slide pin when said male member is inserted in said female member; and an outer race lock pin urged by outer race lock pin spring means to lock said outer race relative to said female member when the outer race is rotated to bring said recess in alignment with said lock pin for removing said male member from said female member.

4,283,159

**PROTECTIVE SHROUD FOR OFFSHORE OIL WELLS**  
Albert O. Johnson, Rte. 8, Box 1052, Livingston, Tex. 77351,  
and David Personette, 13307 Barryknoll, Houston, Tex.  
77079

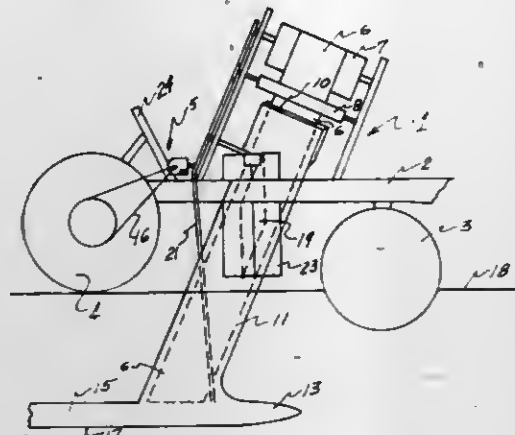
Filed Oct. 1, 1979, Ser. No. 80,234  
Int. Cl.<sup>3</sup> E02B 3/00, 15/04, 17/02; E21B 43/01  
U.S. Cl. 405—60 27 Claims



1. An oil rig instrumentality comprising a protective shroud member comprising a generally cylindrically shaped structure of a length sufficient to extend from the bottom of a body of water and out of the water at the surface, and of sufficient diameter to encompass an oil wellhead and attendant rigging servicing an underwater well, said structure having near its bottom in a position assuming an underwater location above and near the bottom of said body of water a plurality of pumping means distributed about the circumference of said structure for pumping liquids with said pumps coupled to water jet structure outside the cylinder, and including control means individually controlling operation of each of said pumping means, thereby to provide controlled water jet motive forces for moving said structure relative to said bottom of the body of water.

#### 4,283,160 CORRUGATED PIPE FABRICATOR AND INSTALLER DEVICE AND METHODS OF MAKING AND USING THE SAME

William M. Angle, 219 N. John, Troy, Mo. 63379  
Filed Mar. 7, 1979, Ser. No. 18,155  
Int. Cl.<sup>3</sup> E02D 29/10; E02F 5/10; F16L 1/02  
U.S. Cl. 405—156 5 Claims



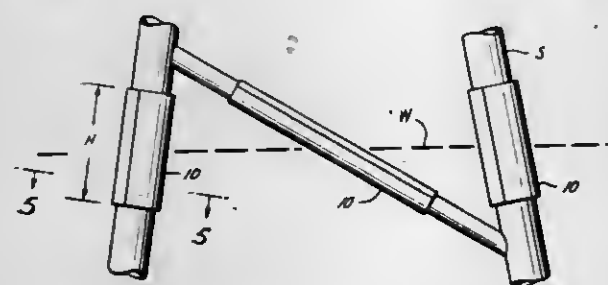
1. A corrugated pipe fabricator and installer device comprising,  
frame means,  
a mole plow operably mounted on the frame means, said mole plow provided with an upper portion and base portion,  
a rotating cylinder operably coupled to said mole plow, and disposed in the base portion of said mole plow,  
spool means operably mounted on said frame means,  
roller means operably mounted on said frame means,  
corrugated sheet material mounted on said spool means and passed between said roller means and then passed about said rotating cylinder,  
driving means for rotating said spool means, said roller means and said rotating cylinder operably mounted on said frame means.

4,283,161

**METHOD AND APPARATUS FOR A GUARD**  
Orde R. Evans; William D. Rhodes, and Joseph O. Trahan, all of Lafayette, La., assignors to Oreco III, Inc., Lafayette, La.  
Continuation-in-part of Ser. No. 784,585, Apr. 4, 1977,  
abandoned. This application Jun. 2, 1978, Ser. No. 911,909  
Int. Cl.<sup>3</sup> E02D 5/60 6 Claims

U.S. Cl. 405—216

6 Claims



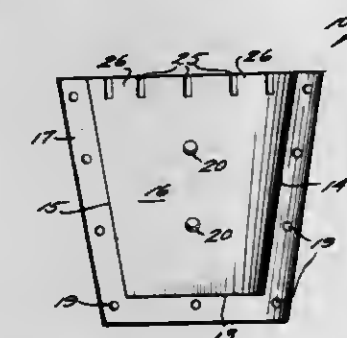
1. A guard for protecting existing offshore structures, platforms, legs and the like from environmental conditions in the wave action area, including:  
(a) an epoxy mounted around the periphery of the existing structure in the wave action area; and  
(b) a body of flexible material mounted with said epoxy on the structure suitable for protecting existing structures from environmental conditions.  
(c) said body having  
(i) a width sufficient to extend throughout the wave action area,

(ii) a length sufficient to enable said body to overlap when wrapped around the structure, and  
(iii) at least two cut-away areas on opposite sides of said body for overlapping one another.  
(d) said cut-away areas of said body being of less thickness than the thickness of the non-overlap portion of said body while having complimentary thicknesses to enable said body to be of the same thickness when mounted with the existing structures.

#### 4,283,162 PILING ANCHORING

Eugene R. Parker, Jr., 715 Edgewater Ave., Ocean City, and  
Melvin B. Bryant, Old Ocean City Rd., West Ocean City,  
both of Md. 21842

Filed Aug. 15, 1979, Ser. No. 66,825  
Int. Cl.<sup>3</sup> E02D 5/54 21 Claims



1. A piling assembly comprising an elongated piling having first and second ends;  
first, second, third, and fourth anchors, each anchor having a circumferential extent less than one-half the circumference of said piling, and extending radially outwardly from the piling, and having a given axial extent;  
said anchors being attached to said piling so that said first and second anchors are disposed opposite each other at a first position adjacent, but spaced from, said piling first end, and said third and fourth anchors being disposed opposite each other at a second position adjacent, but spaced from, said piling first end a greater distance than the sum of the distance said first position is spaced from said piling first end and the axial length of an anchor; and said third and fourth anchors being circumferentially displaced from said first and second anchors around said piling; and  
each of said anchors comprising a pocket member of rigid material defined by a plate and a hollow, open-based, truncated pyramid section extending along said plate with the height of said pyramid section generally coincident with the axial extent of said anchor.

#### 4,283,163 CUTTING TOOL WITH REPLACEABLE EDGE CUTTING BIT

Werner Gräfe, Reutlingen, and Willy Schlöterer, Nehren, both of Fed. Rep. of Germany, assignors to Montanwerke Walter GmbH, Tübingen, Fed. Rep. of Germany  
Filed Jan. 29, 1980, Ser. No. 116,536

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906148

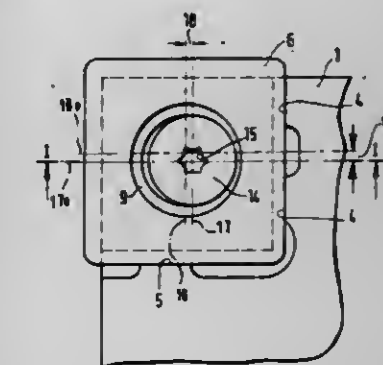
Int. Cl.<sup>3</sup> B26D 1/12 9 Claims

U.S. Cl. 407—104

9 Claims

1. Cutting tool to hold a replaceable, rotatable cutting bit (6) having  
a cutter body (1) formed with  
a plane support surface (3) to support the bit (6);  
lateral abutment surfaces (4, 5) to position the bit there-against;  
a bore (10) extending into the cutter body from the support surface in a direction at least generally perpendicular to

the support surface and being formed with an enlarged recess portion (19);  
and a clamping bolt (12) to releasably clamp the bit (6) on the support surface and against the abutment surfaces, screwed into the bore (10), said clamping bolt having an at least part-conical clamping head (13, 14, 15) fitting into a clamping opening (8, 9) formed in the bit, and an enlarged conical intermediate portion (25), radially projecting from the shank (25a, 25b) of the bolt and fitting into the enlarged recess portion (19) of the bore (10) in the cutter body (1);  
and wherein, in accordance with the invention, the enlarged portion (19) is of elongated shape having a length which is greater than the diameter of the conical intermediate portion (25) of the clamping bolt (12),



a subportion of said enlarged conical portion extending over part only of said enlarged portion having circular cross section and a circle axis which coincides with the axis (17) of the bore (10) to provide for part-circumferential surface guidance of the conical intermediate portion (25) of the bolt (12);  
and wherein the length axis (24) of the elongated enlarged portion extending transverse to the axis (17) of the bore is directed towards at least one of the lateral abutment surfaces (4, 5) of the body to draw the bit, upon tightening of the bolt (12) in the bore, against the support surface and against the abutment surface, the elongated enlarged portion permitting resilient deflection of the bolt between the part thereof which is screwed into the bore and the clamping head.

4,283,164

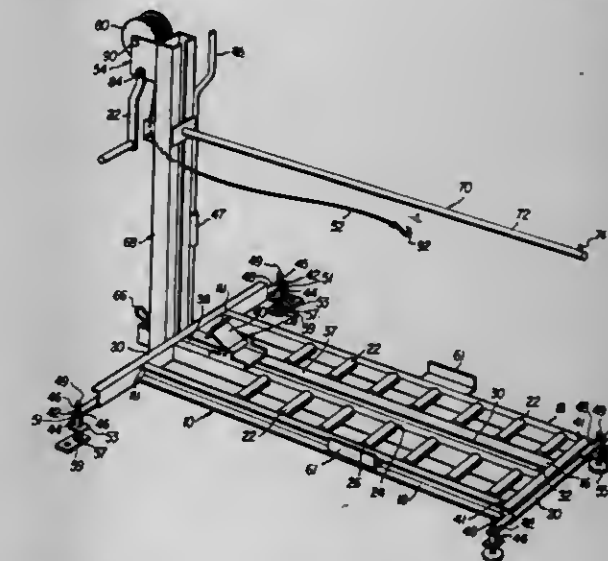
#### BATTERY MOVER

Lawrence A. Reaney, 3713 38th Ave., Brentwood, Md. 20722  
Filed Nov. 26, 1979, Ser. No. 97,175

Int. Cl.<sup>3</sup> B65G 67/04, 67/24 10 Claims

U.S. Cl. 414—396

10 Claims



1. A battery mover comprising:  
(a) a horizontal frame having a longitudinal axis along which are disposed a plurality of rotatable elements which per-



mit a battery disposed on the frame to be moved along the longitudinal axis, the horizontal frame member having a section which is adapted to be disposed in contact with a battery compartment,

- (b) a vertical section joined to the horizontal frame,
- (c) a locating means for aligning the horizontal frame with respect to a battery compartment which contains a battery to be moved and for preventing movement of the horizontal frame with respect to the battery compartment when the section of the horizontal frame is disposed in contact with the battery compartment,
- (d) a winch disposed on the vertical member for reeling and unreeling a cable,
- (e) a pusher slidably mounted in the horizontal frame which is movable between first and second longitudinal positions along the horizontal frame, the pusher engaging the edge of a battery disposed on the horizontal frame during movement of a battery toward the first longitudinal position,
- (f) means mounted on the battery mover for coupling the pusher to the cable for causing the pusher to move longitudinally along the horizontal frame member toward the first longitudinal position during rotation of the winch, and
- (g) means for coupling the cable to a battery for causing a battery to be moved along the horizontal frame toward the section position during rotation of the winch.

4,283,165

#### MOTORIZED MANIPULATOR OF THE CABLE TRANSMISSION TYPE HAVING AN INCREASED FIELD OF ACTION

Jean Vertut, Issy-les-Moulineaux, France, assignor to Commissariat à l'Energie Atomique, Paris, France

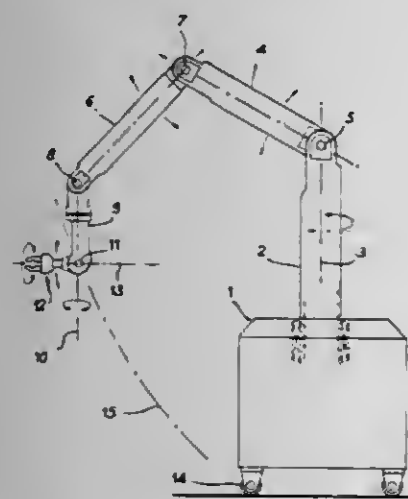
Filed Sep. 4, 1979, Ser. No. 72,246

Claims priority, application France, Sep. 4, 1978, 78 25413

Int. Cl.<sup>3</sup> B25J 5/00

U.S. Cl. 414—733

13 Claims



1. A manipulator, wherein it comprises a body, a shaft which rotates about its longitudinal axis with respect to said body, an upper arm articulated to the end of the shaft about a shoulder axis orthogonal to the longitudinal axis of the shaft and to the longitudinal axis of the arm, an intermediate arm directly articulated to the end of the upper arm about an elbow axis parallel to the shoulder axis, a forearm articulated to the end of the intermediate arm about a third axis parallel to the elbow axis, said forearm being able to rotate about its longitudinal axis, a tool having a longitudinal axis mounted in pivotal manner at the end of said forearm about an axis perpendicular to the plane defined by the longitudinal axes of the forearm and tool, the tool being able to rotate about its longitudinal axis and a plurality of motors fixed to the body and transmission means by cables and pulleys for transmitting the control movements of the motors to the corresponding moving members of the manipulator, wherein the body is mounted on wheels and wherein

it comprises a drive motor for rotating the said shaft with respect to the body about its longitudinal axis and transmission means for linking the rotation of said shaft with the rotation of said wheels about their vertical pivot axes in such a way that the common direction taken by the wheels coincides with the projection on the displacement plane of the manipulator of the direction of the longitudinal axis of the arm.

4,283,166

#### FLUID SUCTION AND DISCHARGE APPARATUS

Masaharu Hiraga, Isesaki, Japan, assignor to Sankyo Electric Company, Limited, Isesaki, Japan

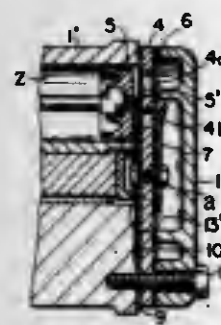
Filed Jan. 23, 1979, Ser. No. 5,917

Claims priority, application Japan, Jan. 24, 1978, 53-5800

Int. Cl.<sup>3</sup> F04B 1/12

U.S. Cl. 417—269

3 Claims



1. In a fluid suction and discharge apparatus including a cylinder block formed with a plurality of cylinders in parallel with one another and in spaced annular relation around a center axis thereof, said cylinder block being formed with a spot faced recess in one end surface thereof at the central region which connects all cylinders, pistons slidably reciprocable in said cylinders for fluid suction and discharge, a valve plate secured to said cylinder block at the end thereof with inlet and outlet openings in registry with each of said cylinders, discharge valve means, a sheet of suction reed valve formed from a metal sheet having a smaller diameter than said valve plate and comprising a central portion and a plurality of suction reeds extending radially outwardly therefrom corresponding to respective said cylinders, said suction reed valve means being received in said recess and held between said cylinder block and said valve plate, and a gasket of similar extent as said valve plate being placed between, and being in contact with, said cylinder block and said valve plate at the peripheral portion thereof, and said cylinder block and said suction reed valve means at the central portion thereof, the improvement comprising: said suction reeds intersecting the outer periphery of said cylinders at a point  $P_2$ , the center of each cylinder being at a point  $c$ , a line  $c-c$  extending between said cylinders, the center of said cylinder block being at a point  $O_1$ , a point  $P_1$  being defined as a point on the outer periphery of said cylinder symmetrical about line  $c-c$  on the other side thereof, the radius of said spot faced recess being  $R$ , wherein  $a < R < b$  in which  $a$  is the distance between points  $O_1$  and  $P_1$  and  $b$  is the distance between  $O_1$  and  $c$  plus the radius of said cylinder, and said suction reed valve means being formed with a plurality of radial fingers each of which extends radially outwardly from said central portion to the peripheral edge of said spot faced recess between adjacent two reeds covering said cylinder block end surface region between adjacent cylinders.

#### 4,283,167 COOLING STRUCTURE FOR AN OIL SEALED ROTARY VACUUM PUMP

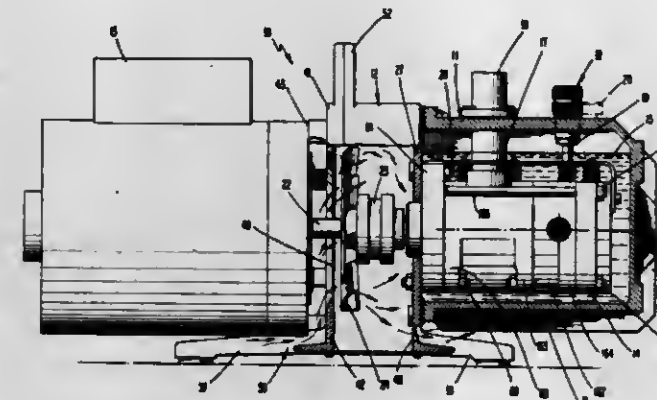
Benjamin Bassan, Framingham, and Michael A. Grandinetti, Stoughton, both of Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Apr. 26, 1979, Ser. No. 33,631

Int. Cl.<sup>3</sup> F04C 25/02, 27/02, 29/02, 29/04

U.S. Cl. 418—13

11 Claims



1. An oil sealed, mechanical rotary vane vacuum pump having high vacuum and low vacuum stages for a pumped gas, each of said stages being located in a housing immersed in an oil pool, a casing in which the housing and oil pool are located, each of said stages including a rotor for vanes cyclically driven about a common axis that is eccentric to a cylinder of a stator, the stator of each stage including an inlet and outlet for the pumped gas, an oil seal between the inlet and outlet of the stages in a narrow gap between the stator and rotor, an interstage structure being the high and low vacuum stages, said interstage structure including a flow path between the stages for the pumped gases and a first shaft drivingly connecting the rotors of the high and low vacuum stages, an oil flow path between the pool and the stages comprising a first passage through the interstage structure leading radially to the shaft from a source of oil, said first passage having a first orifice into a bore in the interstage structure through which the shaft extends, the shaft including a recess longitudinally aligned with the first orifice so that oil is metered to the recess as the shaft is rotated, a second passage through the interstage structure longitudinally aligned with the recess and leading from the bore to one face of the cylinder of the low vacuum stage so oil metered to the recess flows to the cylinder of the low vacuum stage to form the oil seal and lubricate surfaces between the rotor and stator, the interstage structure including a third oil passage enabling oil to be sucked from the low vacuum stage to the high vacuum stage, said third passage having an inlet from the low vacuum stage on a first face of the low vacuum stage cylinder adjacent the interstage structure, the second passage having an orifice on a second face of the low vacuum stage cylinder opposite the first face, a conduit extending from a casing inlet through the oil pool to a housing inlet and thence to the high vacuum stage inlet, another shaft extending through the casing and housing to drive the high vacuum stage rotor and the low vacuum stage rotor via the first shaft, a motor having an output shaft aligned with and connected to the drive shaft for the pumping structure, the oil in the pool having a tendency to be heated as it flows from the pool to the interior of the housing, means for cooling the oil including: a fan mounted on the motor shaft and positioned between the motor and the casing for providing an air flow axially of the shaft without substantial centrifugal components, a shroud having a first opening for providing an axial air flow into the shroud away from the casing and toward the housing in response to the fan being driven by the motor, said shroud including outlets for providing axial flow from the bottom and sides of the shroud toward the casing for air pumped by the fan, the casing having vertically and horizontally extending fins respectively extending from bottom and side surfaces

thereof, said fins being in heat exchange relation with air pumped by the fan through the shroud outlets.

4,283,168

#### THERMOPLASTIC FILM EXTRUSION APPARATUS

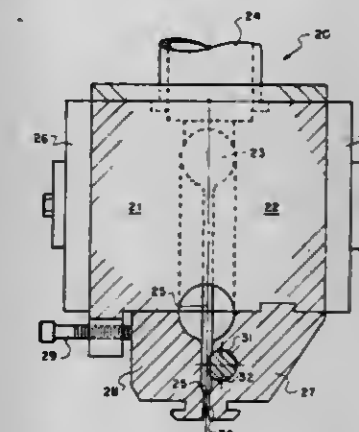
Douglas C. Miller, and Terry W. Wolfe, both of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Filed Sep. 13, 1979, Ser. No. 75,229

Int. Cl.<sup>3</sup> B29D 7/04; B29F 3/04

U.S. Cl. 425—465

10 Claims



1. A thermoplastic film extrusion die having a viscous flow channel between a pair of opposed die jaw faces, one such jaw having a bore channel formed longitudinally therein to receive an axially elongated cylindrical rod means therewithin having a substantially smooth cylindrical surface, a chordal segment of the circular section of said rod projecting beyond said one jaw face partially into said flow channel to form a zone of open but restricted flow area extended continuously along the length of said flow channel between said smooth cylindrical surface and said other jaw face, said smooth cylindrical surface being interrupted at select locations along the length thereof by chordal flat means to increase the flow area and reduce the restriction to thermoplastic flow in said channel past said rod means in regions of said channel adjacent said chordal flat means.

4,283,169

#### HAND OPERABLE EMERGENCY SIGNALING DEVICE

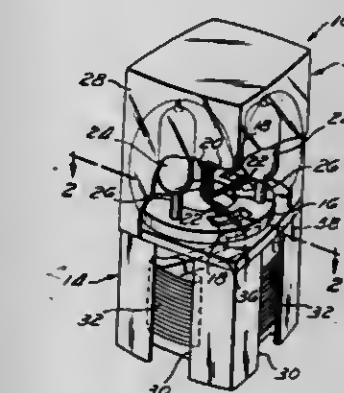
Leo A. Tuomala, 1585 E. Cipres Ct., Camarillo, Calif. 93010

Filed May 18, 1979, Ser. No. 40,327

Int. Cl.<sup>3</sup> F21K 5/02

U.S. Cl. 431—359

2 Claims



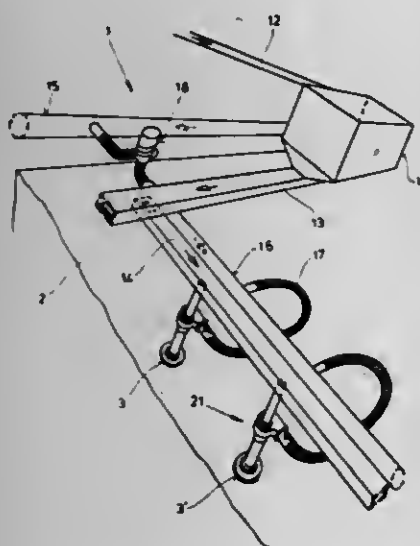
1. A distress and emergency signaling device comprising: a flash cube constructed of a plurality of flash bulbs, each said flash bulb being separately activatable by activation means, said flash cube being polygonal shaped forming four in number of sides, there being a separate flash cube for each said side, said activation means for each said bulb comprising a cocked member under a continuous spring bias; and



a base fixedly attached to said flash cube, said base having a cross-sectional size substantially equal to the cross-sectional size of said flash cube, said base including manually operable actuation means, said actuation means comprises a separate actuation member for each said flash bulb with there being four in number of said actuation members, each said actuation member to connect with a separate said cocked member, each said actuation member being slidably mounted for lineal movement within a groove formed within a said base with there being a separate said groove for each said actuation member, said lineal movement for each said actuation member being directly in line with its respective said flash bulb, each said groove being sufficiently recessed so each said actuation member is totally recessed within said base to prevent accidental operation of said actuation members, upon manual operation of a said actuation member the said cocked member for the respective said flash bulb is activated which causes flashing of the said flash bulb.

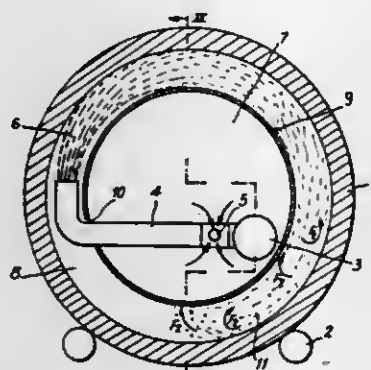
#### 4,283,170 METHOD OF FIRING A TUNNEL KILN WITH COAL, AND COAL FIRING INSTALLATION FOR TUNNEL KILNS

Manfred Leisenberg, Giessener Strasse 46, 6312 Laubach, Hessen, Fed. Rep. of Germany  
Filed Sep. 10, 1979, Ser. No. 73,638  
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801193  
Int. Cl.<sup>3</sup> F27D 7/00; F27B 9/26; F23K 3/02  
U.S. Cl. 432—1 14 Claims



1. A method of firing a tunnel kiln with coal, the tunnel kiln being of the type having an air-tight bunker for accumulating a supply of coal, injectors at spaced locations over the firing zone of the kiln, an air-tight enclosed conveyor connecting the air-tight bunker and the injectors, and means for injecting air under pressure through an opening in the injectors in pulses, which comprises the steps of accumulating a supply of coal in the air-tight bunker, transporting the coal by means of the air-tight enclosed conveyor to the coal injectors, and selectively injecting air under pressure through the opening in the injectors in pulses to blow the coal therefrom in metered quantities into the firing zone.

4,283,171  
HEATING DEVICE  
Jean A. L. Bronnec, Brest, France, assignor to Etablissements  
Generaux de Mecanique de l'Ouest, Brest, France  
Filed Jul. 17, 1979, Ser. No. 58,277  
Claims priority, application France, Jul. 26, 1978, 78 22097  
Int. Cl.<sup>3</sup> F27B 6/08  
U.S. Cl. 432—112 9 Claims

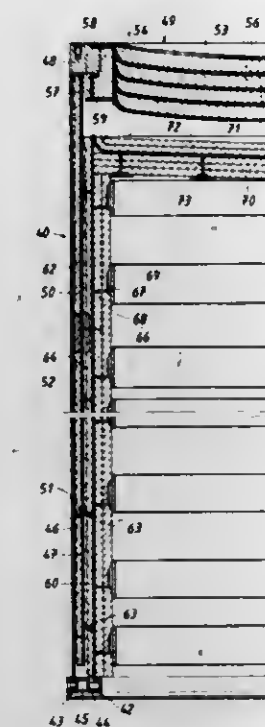


1. A heating device comprising:  
(a) at least one drum having a drum wall open at both ends thereof, said drum being positioned along an axis and being adapted to rotate continuously around a substantially horizontal axis;  
(b) at least one burner arranged within said drum, said burner comprising:  
(i) a nozzle adapted to direct a flame substantially perpendicular to a diametral plane of said drum; whereby heated gas is circulated adjacent to the wall of said drum; and  
(ii) an air inlet for providing oxygen to said burner;  
(c) a divider which is fixed with respect to said drum and is arranged to divide the interior space of said drum into a central space, and an exterior space positioned between said divider and said drum; and  
whereby said burner nozzle is positioned in said exterior space while said air inlet to said burner is positioned within said central space.

4,283,172  
HOT ISOSTATIC PRESSURE FURNACE WITH  
ENHANCED INSULATION PROPERTIES  
Pertti Syväkari, Helsingborg, Sweden, assignor to ASEA Ak-  
tiebolag, Vasteras, Sweden  
Filed Sep. 4, 1979, Ser. No. 72,316  
Claims priority, application Sweden, Sep. 6, 1978, 7809364  
Int. Cl.<sup>3</sup> F27D 1/00, 23/00; F27B 5/04  
U.S. Cl. 432—247 7 Claims

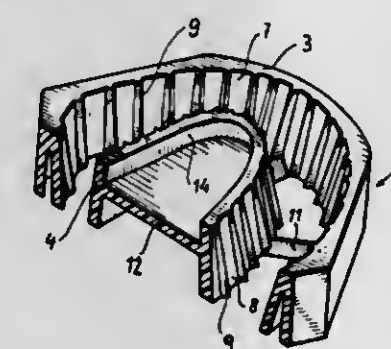
1. In a cylindrical, elongated furnace for the treatment of materials at high temperatures and in a gaseous atmosphere under high pressure, said furnace comprising a cylindrical pressure chamber which includes a high-pressure cylinder in which is located a furnace space; end closures projecting into the opposite ends of the high-pressure cylinder; force-absorbing members for absorbing axial forces exerted on the end closures; and an insulating mantle positioned between the high-pressure cylinder and the internally-located furnace space, said insulating mantle including an innermost concentric tube nearest said furnace space, at least one outermore concentric tube enclosing said innermost concentric tube, an insulating material located between said innermost concentric tube and the nearest said outermore concentric tube, an insulating lid and an insulating bottom, the improvement wherein the said innermost concentric tube includes a number of clamping rings

on the inner side thereof facing said furnace space and wherein at least one layer of felt-like insulating material is positioned



against said inner side of said innermost concentric tube by said clamping rings.

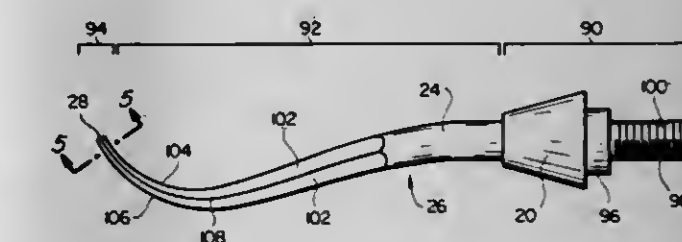
4,283,173  
DEVICE FOR THE PRODUCTION OF A DENTAL  
WORKING MODEL FOR THE PREPARATION OF  
PROSTHETIC WORKS  
Laurence S. Browne, Godalming, England; Frank D. Braun, and  
Walter Witt, both of Cologne, Fed. Rep. of Germany, assign-  
ors to Jet-Ceramic Dental GmbH & Co. KG, Cologne, Fed.  
Rep. of Germany  
PCT No. PCT/DE 78/00015, § 371 Date Apr. 1, 1979, § 102(e)  
Date Mar. 28, 1979, PCT Pub. No. WO 79/00076, PCT Pub.  
Date Feb. 22, 1979  
This PCT application filed Jul. 26, 1978, Ser. No. 24,862  
Claims priority, application United Kingdom, Aug. 1, 1977,  
32133/77  
Int. Cl.<sup>3</sup> A61C 19/00  
U.S. Cl. 433—34 12 Claims



1. Device for production of a dental working model for preparation of a prosthetic work comprising:  
a one-part base mould which functions as a model base;  
said base mould including a substantially semicircularly shaped outside wall spaced from a substantially parabolically shaped inner wall, and a rear wall connecting said inner and outside walls for closing off a rear side of said base mould;  
said outside, inner and rear walls providing a hollow space which is completely surrounded by said outside, inner and rear walls;  
said hollow space enlarging upwardly from a bottom of said base mould to a top of said base mould;  
said hollow space including first opening means through said base mould bottom and also including second opening means through said base mould top to provide an open elongated passageway through said base mould, said first

and second opening means extending substantially along a major longitudinal length of said hollow space from one portion of said rear wall on one side of said base mould to an opposing portion of said rear wall on an opposite side of said base mould to define said open elongated passageway for permitting removal of a casted plaster model from said hollow space of said base mould;  
rib means disposed on facing wall surfaces of said hollow space for providing retention marks on the plaster model, said rib means including ribs extending outwardly from said outside and inner walls into said hollow space; and  
said outside and inner walls being of equal height with each of said ribs having a length equal to said height so that said ribs extend from within said first opening means of said base mould bottom to within said second opening means of said base mould top.

4,283,174  
DENTAL SCALER HAVING SCALING TIP  
PARTICULARLY SUITABLE FOR CIRCULAR OR  
ELLIPSOIDAL PATTERNS OF VIBRATION  
Anthony T. Sertich, 30 Dover Green, Staten Island, New York,  
N.Y. 10312  
Filed Nov. 5, 1979, Ser. No. 91,013  
Int. Cl.<sup>3</sup> A61C 1/07  
U.S. Cl. 433—119 23 Claims



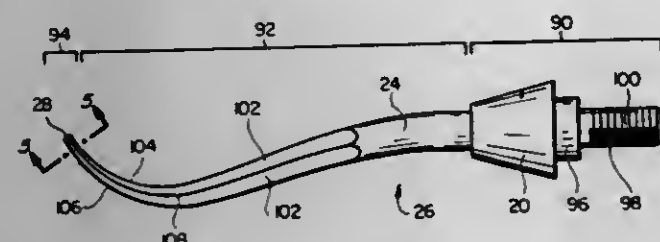
1. A dental scaler comprising:  
elongated casing means having a proximal end and a distal end;  
resilient support means within said casing means;  
a rigid shaft supported within said elongated casing means by said resilient support means;  
means for imparting vibration to said resiliently supported rigid shaft when said scaler is energized to provide vibratory movement to a work tool connected to said rigid shaft; and  
a work tool connected to the distal end of said rigid shaft, said work tool comprising a rigid shank having an operative end and an end adapted to be connected to said rigid shaft, said operative end terminating in a curved free end, said operative end having a plurality of generally planar sides extending over a portion of the length thereof, a perpendicular cross-section of said operative end at any point along said portion thereof being a multi-sided figure, said curved free end lying in a plane passing through the longitudinal dimension of said work tool, said operative end being symmetrical about the plane passing through the longitudinal dimension of said work tool, the plane also passing through at least one junction formed by the intersection of an adjacent pair of two of said sides.

4,283,175  
DENTAL SCALER HAVING SCALING TIP WITH  
ROUNDED EDGE WORK SURFACES PARTICULARLY  
SUITABLE FOR CIRCULAR OR ELLIPSOIDAL  
PATTERNS OF VIBRATION  
John E. Nash, Downingtown, Pa., assignor to Syntex (U.S.A.)  
Inc., Palo Alto, Calif.  
Filed Nov. 5, 1979, Ser. No. 91,018  
Int. Cl.<sup>3</sup> A61C 1/07  
U.S. Cl. 433—119 61 Claims

1. A dental scaler comprising:



elongated casing means having a proximal end and a distal end;  
resilient support means within said casing means;  
a rigid shaft supported within said elongated casing means by said resilient support means;  
means for imparting vibration to said resiliently supported rigid shaft when said scaler is energized to provide vibratory movement to a work tool connected to said rigid shaft;  
a work tool connected to the distal end of said rigid shaft, said work tool comprising a rigid shank having an operative end and an end adapted to be connected to said rigid



shaft, said operative end terminating in a curved free end, said operative end having a plurality of sides extending over a portion of the length thereof, a perpendicular cross-section of said operative end at any point substantially along the entire longitudinal dimension thereof being a multisided figure;  
said multi-sided figure having a plurality of edges, each of said edges provided by an intersection of a pair of adjacent sides of said plurality of sides, said edges extending over a portion of the length of said free end, each of said edges having a radius of curvature in the range from about 0.001 inch to about 0.005 inch.

4,283,176

**ENDODONTIC-PROSTHETIC STABILIZATION SYSTEM**  
Tibor T. Vajda, 92 Edgecliff Rd., Woollahra, N. S. W., Australia  
Filed Feb. 21, 1979, Ser. No. 13,115  
Claims priority, application Australia, Feb. 25, 1978, PD6099  
Int. Cl.<sup>3</sup> A61L 00/00  
U.S. Cl. 433-173  
6 Claims



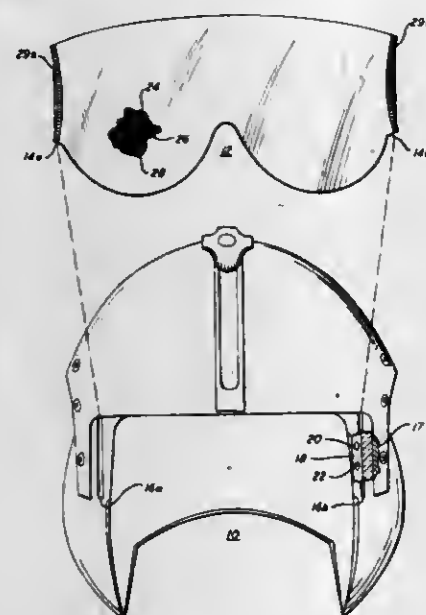
1. An endodontic implant for stabilizing a tooth which comprises a smooth non-threaded partially tapered shank having first and second ends, and a crown portion of circular cross-section integral with said first end of the shank, the shank comprising two tapered sections separated by a section of constant diameter, the first tapered section having a length of substantially 3 mm and tapering from the crown portion towards said constant diameter section and the second tapered section tapering from said constant diameter section towards said second end of the shank, the second tapered section having a length of substantially 16 mm and tapering constantly along its length such that its diameter where it meets said constant diameter section is substantially 0.3 mm greater than its diameter at said second end; the shank being adapted for implantation in a root canal of a tooth stump and being of a length such that the second tapered section passes through the apex of said root canal into the adjacent jawbone of a patient,

whereby the tooth may be immobilized for supporting in a rigid manner an artificial tooth crown or a means for supporting a denture, the tapers of the implant shank being such that when implanted in the root canal of a tooth the whole of the root canal cavity is occupied by the shank.

4,283,177

**VISION LOSS SIMULATOR**

Gerald J. Kron, Binghamton, and Timothy E. Hale, Vestal, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.  
Filed Mar. 5, 1979, Ser. No. 17,645  
Int. Cl.<sup>3</sup> G09B 9/08  
U.S. Cl. 434-59  
28 Claims



1. Apparatus for simulating vision loss in a subject, comprising:  
(a) an optical element for use within the field of view of the subject which has a range of variable optical transmission characteristics;  
(b) first means for varying at selectable locations the optical transmission characteristics of said optical element; and  
(c) second means for monitoring the line of sight of an eye of the subject and providing an output signal representative of said line of sight; and  
(d) control means responsive to said second means for controlling according to a predetermined schedule said first means to produce a dynamic pattern of said optical transmission characteristics in said optical element by the application of a control parameter at selected locations therein, said pattern being defined with respect to the instantaneous line of sight of at least one eye of the subject, whereby the visual effects associated with vision loss are simulated for the subject.

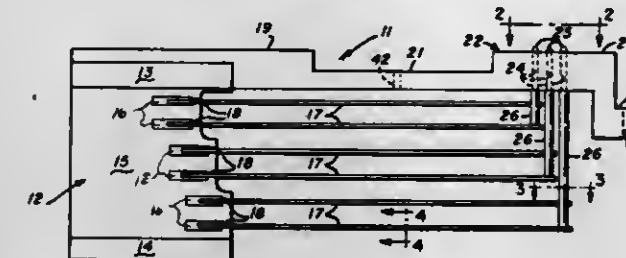
4,283,178

**ELECTROMECHANICAL BRAILLE CELL**

James F. Tetzlaff, Woodside, Calif., assignor to Telesensory Systems, Inc., Palo Alto, Calif.  
Filed Jul. 2, 1979, Ser. No. 53,991  
Int. Cl.<sup>3</sup> G09B 21/00  
U.S. Cl. 434-114  
6 Claims

1. In an electromechanical braille cell having a plurality of braille indicia:  
reed means comprising a stack of piezoelectric reeds cantilevered from a support structure for bending movement about a fulcrum at the support structure in response to the application of an operating voltage to respective ones of said piezoelectric reeds;  
sensing rod means for mechanical operative association with respective ones of said reed means for selective movement of respective ones of said rod means along the direction of

elongation of said rod means in response to bending movement of respective ones of said reed means;  
reading means having a plurality of openings therethrough intersecting with a braille reading surface to be scanned by the fingers of the braille reader to define a braille character, respective ones of said rod means being operative within respective ones of said openings in said reading means and for being elevated in one operative position above the surface of said reading surface to be sensed by the fingers of the reader and for retraction relative to said elevated position in another operative position; and

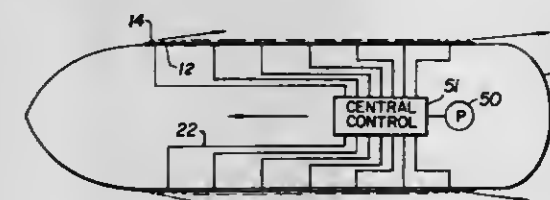


each of said reed means being relatively broad having a pair of opposed broad faces and a pair of narrow side faces and being stacked with their respective broad faces in mutually opposed relation and with a plurality of said reed means having their free end portions extending beyond the terminus of a plurality of said other ones of said reed means, and at least one of said reed means having an opening extending therethrough from one broad face to the other to accommodate passage therethrough of one of said rod means.

4,283,179

**DETACHABLE JET PROPULSION UNIT FOR WATER CRAFT AND METHOD OF CYCLIC PROPULSION**

Allan L. Tarr, P.O. Box 521, Marion, Va. 24534  
Filed Aug. 22, 1979, Ser. No. 68,776  
Int. Cl.<sup>3</sup> B63H 11/00  
U.S. Cl. 440-38  
6 Claims



1. A method of propelling a water craft having a plurality of propulsion units mounted one behind the other on the exterior hull of said water craft between the bow and stern thereof, each of said propulsion units comprising:

(a) a base, a first side of which is shaped to conform closely to the exterior of the hull of the water craft, said base containing a plenum for water maintained at high pressure;  
(b) first means for introducing water at a high pressure into the plenum in said base;  
(c) a plurality of jet nozzles carried by said base on a second side thereof opposite from the first side, said nozzles being in fluid communication with the plenum in said base; and  
(d) second means for detachably mounting said base on the exterior hull of the water craft,

said method comprising the step of cyclically introducing water at high pressure into said propulsion units sequentially from the bow to the stern of the water craft, whereby a rippling effect of the water expelled through said jet nozzles is achieved.

3. A detachable jet propulsion unit adapted to be externally mounted on the hull of a water craft without piercing the hull of the water craft, said propulsion unit comprising:

(a) a base generally in the shape of a rectangular parallelepiped, said base having a first side which is shaped to con-

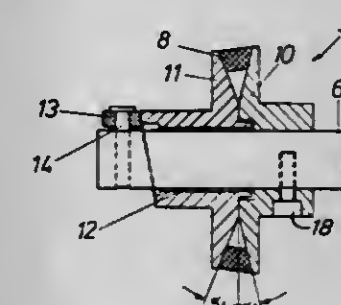
form closely to the exterior hull of a water craft and a second side which is spaced from said first side to define a plenum for water maintained at high pressure, the dimension of said base between said first and second sides being small relative to the other dimensions;

(b) first means for introducing water at a high pressure into the plenum in said base;  
(c) a plurality of jet nozzles carried by said base on the second side thereof, said nozzles being in fluid communication with the plenum in said base;  
(d) channelization means in the plenum in said base to guide water from said first means to said nozzles; and  
(e) second means for detachably mounting said base on the exterior hull of the water craft.

4,283,180

**BELT DRIVE FOR A WINDING MACHINE AND A PULLEY FOR GENERATING A PERIODICALLY CHANGING DRIVE SPEED**

Friedbert Rohner, Kukenthalstrasse 12 a, D-8630 Coburg, Fed. Rep. of Germany  
Filed May 15, 1979, Ser. No. 39,140  
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2830944  
Int. Cl.<sup>3</sup> F16H 55/52  
U.S. Cl. 474-8  
10 Claims



1. A belt drive for a winding machine comprising a rotatable shaft;  
a V-shaped pulley belt for driving said shaft;  
a divided self-adjusting pulley mounted on said shaft, said pulley including a first disc fixed to said shaft for rotation therewith, said first disc having a conical surface of a given angle on one side receiving an edge of said pulley belt for rotation therewith and a second disc mounted on said shaft for free relative rotation therewith and for relative axial movement, said second disc having a conical surface of an angle different from said given angle on a side facing said first disc receiving an opposite edge of said pulley belt for rotation therewith;  
cam means for reciprocating said second disc axially to said shaft during relative rotation of said discs to move said belt radially of said discs and to change the speed of said shaft; and  
means for driving said belt to rotate said discs at a differential speed relative to each other.

4,283,181

**HYDRAULIC BELT TENSIONER CONSTRUCTION**

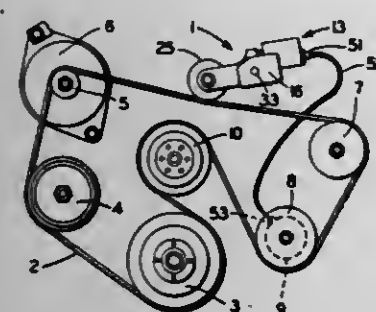
Nolte V. Sproul, Canton, Ohio, assignor to Dyneer Corporation, Westport, Conn.  
Filed Jul. 18, 1979, Ser. No. 58,362  
Int. Cl.<sup>3</sup> F16H 7/12  
U.S. Cl. 474-110  
12 Claims

1. A hydraulic belt tensioner construction for use with the hydraulic system of a vehicle for automatically tensioning an endless belt of the drive system for the vehicle accessories, said construction including:

(a) a hydraulic cylinder having a chamber formed therein, and a piston slidably mounted in said chamber, said cylin-



- der being adapted to be fixedly mounted with respect to the drive belt;
- (b) bellcrank means pivotally mounted directly on the cylinder, said bellcrank means having first and second levers, each with an extended end, with said first lever end being engaged by the piston for imparting pivotal movement to the bellcrank means upon actuation of said piston;
- (c) idler pulley means rotatably mounted on the second lever end and engageable with the endless belt to apply tension thereto;
- (d) means connecting the cylinder to the hydraulic system of



the vehicle for automatically supplying hydraulic fluid to the cylinder chamber for slidably moving the piston out of said chamber and into engagement with the first lever end; and

- (e) check valve means formed integrally within the hydraulic cylinder for automatically controlling the flow of hydraulic fluid into and out of the cylinder chamber to provide the entire belt tensioning force by maintaining a constant predetermined amount of pressure on the piston and, correspondingly, on the belt, whether the vehicle engine is on or off, and to provide a shock-absorbing damping effect for the idler pulley.

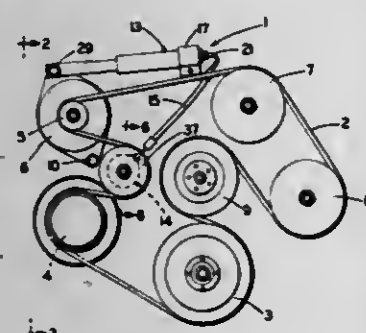
4,283,182

**HYDRAULIC BELT TENSIONER CONSTRUCTION**  
Derald H. Kraft, Canton, Ohio, assignor to Dyneer Corporation, Westport, Conn.

Filed Aug. 3, 1979, Ser. No. 63,205  
Int. Cl.<sup>3</sup> F16H 7/12

U.S. Cl. 474-110

19 Claims



1. A hydraulic belt tensioner construction for automatically tensioning an endless belt of the drive system for vehicle accessories, in which one of the vehicle accessories is pivotally mounted with respect to the vehicle engine and operatively engaged with and driven by the endless belt, said tensioner construction including:

- (a) self-contained hydraulic fluid supply and pump means adapted to be mounted in a fixed position with respect to the vehicle engine;
- (b) an idler pulley drivingly engaged with the fluid supply and pump means for actuation of said pump means upon rotation of said pulley, with said pulley being adapted to be operatively engaged with and driven by the endless drive belt; and
- (c) piston means operatively connected to the fluid supply and pump means for hydraulic actuation of said piston means, said piston means being adapted to be operatively engaged with the vehicle accessory for pivotally moving

said accessory to tension the drive belt engaged therewith upon actuation of the pump means by the idler pulley.

4,283,183

**CHAIN WHEEL SYSTEM**

Wolfgang Janzen, Wilnsdorf, and Ludger Frenker-Hackfort, Herkersdorf, both of Fed. Rep. of Germany, assignors to Amsted-Siemag Kette GmbH, Betzdorf-Sieg, Fed. Rep. of Germany

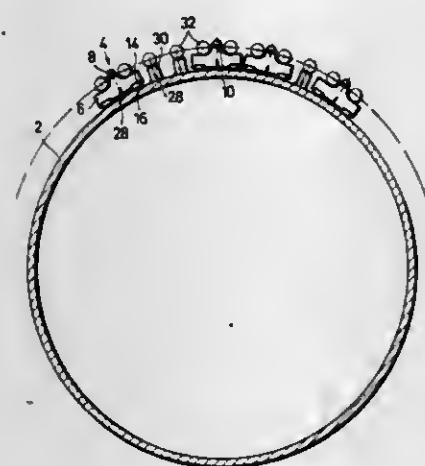
Filed Apr. 25, 1979, Ser. No. 33,383

Claims priority, application Fed. Rep. of Germany, May 10, 1978, 2820284

Int. Cl.<sup>3</sup> F16H 55/12

U.S. Cl. 474-162

14 Claims



1. Chain wheel system comprising a drum having a circumferential periphery, tooth blocks secured to the circumferential periphery of said drum, a mating chain for engagement with said tooth blocks for driving said drum, said mating chain having spaced means for engaging said tooth blocks and driving said drum, wherein the improvement comprises that said tooth blocks are screwed to the circumferential periphery of said drum, said tooth blocks have a length in the circumferential periphery of said drum corresponding to at least one spacing of said spaced means, each said tooth block has a tooth crest located intermediate the ends thereof in the circumferential direction of said drum, the side of said tooth block facing said drum having a pair of grooves therein parallel to the axis of said drum, spacers fastened to the circumferential periphery of said drum and fitted into said grooves in said tooth blocks for adjusting the radially outer dimension of said tooth blocks relative to the axis of said drum, said spacers having a height dimension in the radial direction of said drum at least equal to the depth of said grooves into said tooth block, and said spacers are each of equal height and compensate for the difference between the diameter of said drum and the diameter required for a whole number of said tooth blocks.

4,283,184

**NON-METALLIC SILENT CHAIN**

Winfred M. Berg, East Rockaway, N.Y., assignor to Winfred M. Berg, Inc., East Rockaway, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,554

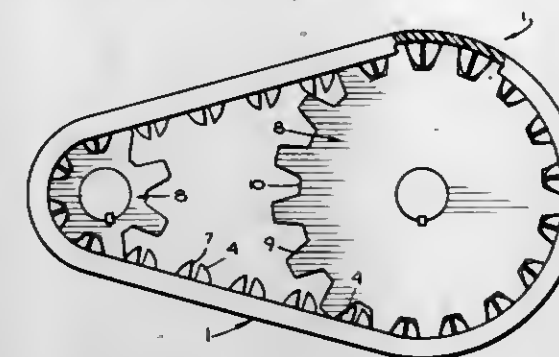
Int. Cl.<sup>3</sup> F16G 1/28

U.S. Cl. 474-203

5 Claims

1. A composite drive chain for coupling with toothed sprockets comprising the combination of an elongated unitary molded plastic body portion, projecting flanges at the two opposite edges of said plastic body portion, spaced sprocket engaging teeth extending outwardly from said plastic body portion, said sprocket engaging teeth having rounded sprocket engaging surfaces at their outer ends, said sprocket engaging teeth being spaced from both of said flanges and having a height above said plastic body portion substantially greater than the height of said flanges, a plurality of metallic cables

embedded longitudinally in said plastic body portion at said flanges, and said sprocket engaging teeth having central out-



wardly flared lateral slots and extending a substantial portion of the height of the sprocket engaging teeth for providing a resilient fit with the sprocket teeth.

4,283,185

**STACKER CONVEYOR RUN SEPARATION CONTROL**

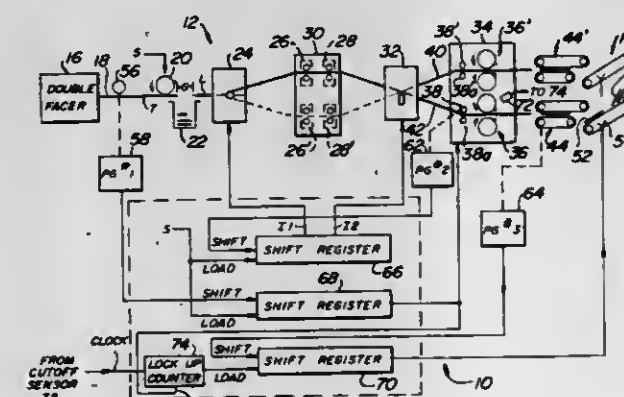
A. Brent Woolston, Palmyra, and Donald J. Evans, Cherry Hill, both of N.J., assignors to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Oct. 9, 1979, Ser. No. 82,846

Int. Cl.<sup>3</sup> B31B 1/16

U.S. Cl. 493-15

10 Claims



1. A method of creating a separation between box blanks transported on a stacker conveyor wherein said box blanks are cut by a cut-off machine from a moving web previously severed into leading and trailing portions, comprising:

- detecting the leading edge of said trailing portion of said severed web at said cut-off machine,
- detecting the trailing edge of the first box blank cut from said trailing portion of said severed web at a first position relative to said stacker conveyor,
- detecting the trailing edge of said first box blank at a second position on said stacker conveyor, and
- retarding movement of said first box blank relative to said stacker conveyor in response to said detecting steps.

4,283,186

**METHOD OF FORMING CIGARETTE FILTER MATERIAL**

Charles H. Keith, Charlotte, and Richard O. Tucker, Locust, both of N.C., assignors to Celanese Corporation, New York, N.Y.

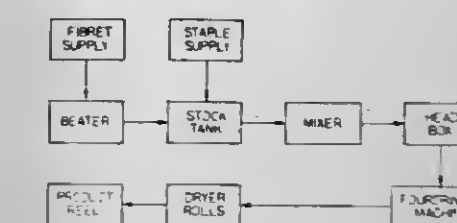
Division of Ser. No. 730,039, Oct. 6, 1976, abandoned. This application Aug. 28, 1978, Ser. No. 937,229

Int. Cl.<sup>3</sup> B01D 27/00

U.S. Cl. 493-42

3 Claims

1. A method of producing a cigarette filter rod comprising preparing a coherent self-supporting filter sheet material of cellulose ester staple fibers having from about 5% to about 35% of cellulose ester fibrils incorporated therein, said filter



and then securing the folded sheet in rod-like form by means of a wrapping strip.

4,283,187

**APPARATUS FOR FORMING COMPOSITE RODS**  
Desmond W. Molins, and Michael J. Soborowski, both of London, England, assignors to Molins Limited, London, England

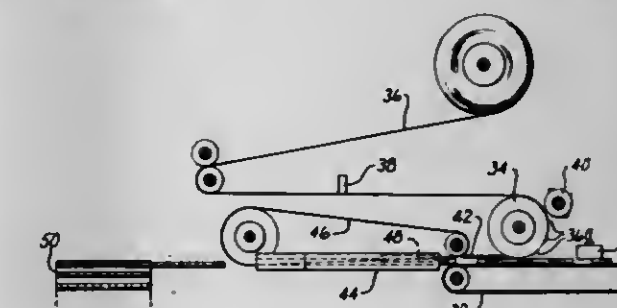
Filed Apr. 25, 1978, Ser. No. 900,003

Claims priority, application United Kingdom, Apr. 30, 1977, 18187/77

Int. Cl.<sup>3</sup> A24C 5/50

U.S. Cl. 493-48

18 Claims



1. Apparatus for forming composite filter rods, comprising conveyor means for moving a stream of axially aligned component filter portions in predetermined sequence on an axial path; means for assembling predetermined groups of filter portions from said stream; means for feeding said groups of filter portions forward at predetermined intervals; means for conveying a continuous wrapper; means for severing said wrapper into separate wrapper portions; means synchronised with said feeding means for applying at least one wrapper portion while one group of said predetermined groups of filter portions is being conveyed axially so that each of the junctions between component portions of a group of filter portions is spanned by a wrapper portion; and means for wrapping and sealing said at least one wrapper portion around said group of filter portions to unite it into a composite filter rod, said severing and applying means being arranged so that no wrapper portion spans more than one of said groups so that said groups are converted into a series of separate composite filter rods while moving in an axial direction.



4,283,188

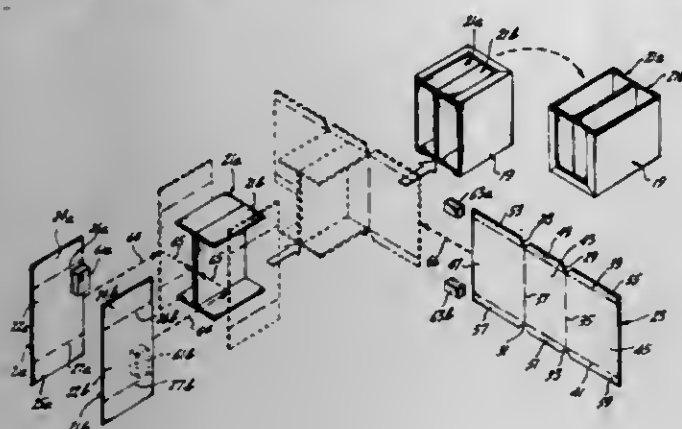
**H-SECTION CARTON FORMING MACHINE**

Conrad C. Wingerter, and J. Thomas Bassett, both of Yakima, Wash., assignors to Marq Packaging Systems, Inc., Yakima, Wash.

Filed Apr. 13, 1979, Ser. No. 29,633  
Int. Cl.<sup>3</sup> B31B 7/02, 7/26

U.S. Cl. 493—89

28 Claims



1. An H-section carton forming machine for forming an H-section carton from two section blanks and a main body blank, said H-section carton forming machine comprising:
  - (A) section forming means for forming two section blanks into U-shapes and affixing the backs of the cross-members of the U-shapes together to form an H-section, said section forming means comprising:
    - (1) first glue means for applying glue to one surface of the portions of said section blanks that define the cross-members of said U-shapes;
    - (2) pickoff means for moving said two section blanks past said first glue means; and,
    - (3) bending and attaching means for bending said two section blanks into U-shapes and pressing the cross-members of the U-shapes together; and,
  - (B) combining means for wrapping a main body blank around said H-section.

4,283,189

**METHOD OF MAKING AND SEAM SEALING A PAPER CONTAINER**

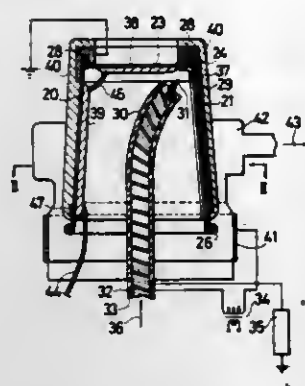
Tsutomu Itoh, Tokyo, Japan, assignor to Onoda Cement Co., Ltd., Yamaguchi, Japan  
Division of Ser. No. 967,988, Dec. 11, 1978, Pat. No. 4,211,339, which is a division of Ser. No. 858,738, Dec. 8, 1977, Pat. No. 4,168,676. This application Dec. 10, 1979, Ser. No. 101,872  
Claims priority, application Japan, Dec. 13, 1976, 51-148728  
Int. Cl.<sup>3</sup> B31B 17/74

U.S. Cl. 493—109

2 Claims

1. The method of making a paper container resistant to liquids consisting of paper material having a non-paper laminate forming an inner facing, said container including one sheet for the sidewall and a second sheet for the bottom, forming said one sheet into said sidewall and overlapping its ends to form a vertical seam, forming a downwardly extending peripheral lip on said bottom sheet and wrapping the bottom portion of said one sheet about said lip to form a bottom peripheral seam, said method including the steps of generating an electric field adjacent said sidewall at and aligned with the vertical seam and also at and aligned with the bottom peripheral seam and on both sides of said lip, causing said electric field to extend through said sheets between their inner and outer faces,

providing adjacent said inner face at both said side and bottom peripheral seams powder of a substance capable of adhering to the laminate of the inner facing, charging said powder to have a polarity to be attracted to and deposited on said laminate at



each of said seams in the effective area of said electric field, heating said powder sufficiently to cause it to flow and adhere to said laminate to form a moisture-tight seal at each of said seams.

4,283,190

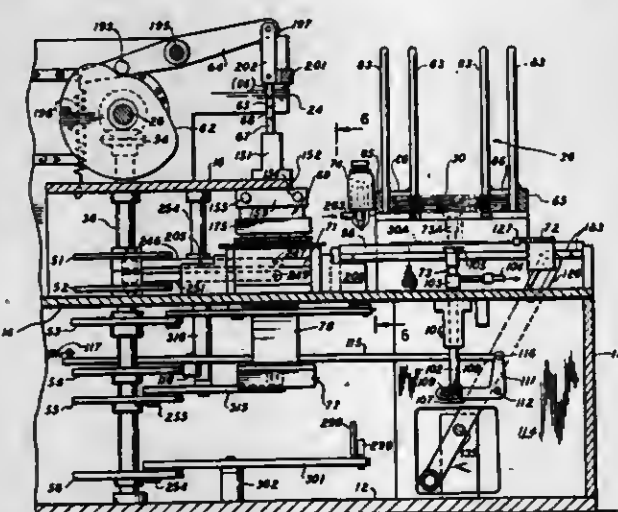
**METHOD FOR FORMING PAPER BOXES AND THE LIKE**

Donald F. Williams, 15 W. Mason St., Santa Barbara, Calif. 93102, and Charles L. Phy, Rte. 2, Box 143, McEwen, Tenn. 37101

Division of Ser. No. 786,955, Apr. 12, 1977, Pat. No. 4,194,441.  
This application Jan. 30, 1980, Ser. No. 116,897  
Int. Cl.<sup>3</sup> B31B 9/26

U.S. Cl. 493—131

10 Claims



1. A method for forming a box having a bottom, side flaps, and end flaps with inner and outer portions, the method including the steps of inserting a box blank in the path of a forming head, impelling the blank by means of the forming head to traverse a former matrix bending the side flaps and end flaps with respect to the bottom into a tray configuration, securing the side flaps to the end flaps, doubling the end flaps to overlap the inner and outer portions of each end flap, distorting the overlapped end flaps into a concave non-planar configuration with respect to the tray, and adhering the portions of each of the distorted flaps together.

## CHEMICAL

4,283,191

**PREPARATION FOR SHRINKPROOFING WOOL**

Götz Koerner; Friedhelm Nickel, and Günter Schmidt, all of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Mar. 19, 1980, Ser. No. 131,781

Claims priority, application United Kingdom, Mar. 23, 1979, 10341/79

Int. Cl.<sup>3</sup> D06M 3/02

U.S. Cl. 8—128 A

12 Claims

1. A preparation for shrinkproofing wool comprising:
  - (a) 1 to 50 weight percent of organopolysiloxanes consisting of
    - (a<sub>1</sub>) 90 to 99.8 mole percent of units having the formula
 
$$R_2^1SiO, \text{ and}$$
    - (a<sub>2</sub>) 0.2 to 10 mole percent of units having the formula
 
$$R^2SiO_{1.5}$$

in which R<sup>1</sup> and R<sup>2</sup> are composed of

- 0.1 to 10 mole percent of polyoxyalkylene substituents and a wool substantive substituent selected from the group consisting of
  - 0.03 to 3 mole percent of mercaptoalkyl or mercaptoaryl substituents;
  - 0.06 to 6 mole percent of aminoalkyl substituents, and
  - 0.1 to 10 mole percent of anionic groups, which are linked to silicon atoms through carbon atoms,
 the remaining portions of R<sup>1</sup> and R<sup>2</sup> groups being methyl groups, up to 10 mole percent of which may be replaced by alkyl substituents of longer chain length, by aryl substituents or by hydrogen atoms, while at the same time up to 5 mole percent of the oxygen atoms, which are linked to silicon, may in each case be replaced by two lower alkoxy or hydroxy terminal groups, and
- (b) 50 to 99 weight percent of water.

4,283,192

**N-SUBSTITUTED SHORT CHAIN CARBOXAMIDES AS ANTISTATIC AGENTS FOR LAUNDERED FABRICS**

Robert A. Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 26, 1979, Ser. No. 97,467

Int. Cl.<sup>3</sup> D06M 13/40; C11D 3/32; B08B 3/00

U.S. Cl. 8—137

12 Claims

1. An antistatic composition for laundering fabrics comprising about 2–25% by weight of a carboxamide antistatic agent substituted on the nitrogen atom and having the formula:



wherein R is a secondary aliphatic hydrocarbon chain containing at least 8 carbons and R' is a hydrogen or an alkyl group containing 1–3 carbons, and a detergent selected from the group consisting of anionic, nonionic, cationic, ampholytic and zwitterionic detergent materials.

4,283,193

**PROCESS FOR DYEING CELLULOSE MATERIALS WITH REACTIVE DYESTUFFS BY THE EXHAUSTION METHOD**

Dietrich Hildebrand, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 20, 1980, Ser. No. 132,053

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914111

Int. Cl.<sup>3</sup> D06P 3/66, 5/00

U.S. Cl. 8—400

8 Claims

1. Process for dyeing cellulose fibres and textile materials containing cellulose fibres with water-soluble reactive dyestuffs by the exhaustion method, characterised in that it is

carried out using dye liquors, the particular fibre-reactive dyestuff content of which is less than 10% of the total content of fixed dyestuff in the end dyeing.

4,283,194

**BRUSHED STRETCH DENIM FABRIC AND PROCESS THEREFOR: INDIGO DYEING**

Edward W. Teague, Raleigh; Max H. Hance, Coats, and Carl R. Neal, Mooresville, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Aug. 20, 1979, Ser. No. 68,277

Int. Cl.<sup>3</sup> C09B 7/00

U.S. Cl. 8—494

15 Claims

1. An improved indigo dyeing process comprising the steps of preparing an aqueous solution of a completely reduced indigo dye, caustic and hydrosulfite having an oxidation reduction potential ranging from about 850 mv to about 1200 mv, forming a dye bath and heating the dye bath to a temperature within the range of about 130° F. to about 190° F., and while maintaining a substantially constant level of indigo dye concentration and substantially the desired oxidation reduction potential of the aqueous solution, immersing a relatively dry cellulose-containing textile product into the aqueous solution for a period of time sufficient to substantially penetrate the textile product.

4,283,195

**DYESTUFF COMPOSITION FOR DYEING OR PRINTING CELLULOSE FIBER MATERIALS**

Kiyoharu Nakatsoka, and Sadaharu Abeta, both of Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 7, 1980, Ser. No. 109,856

Claims priority, application Japan, Feb. 13, 1979, 54/15788; Nov. 13, 1979, 54/147505

Int. Cl.<sup>3</sup> D06P 67/02; C09B 62/00

U.S. Cl. 8—524

7 Claims

1. A dye composition containing C.I. Reactive Blue 19 and an alkylnaphthalenesulfonic acid/formaldehyde condensate, the sulfonation degree and average condensation degree of said condensate being 50 to 150% and 1.1 to 3.0, respectively.

4,283,196

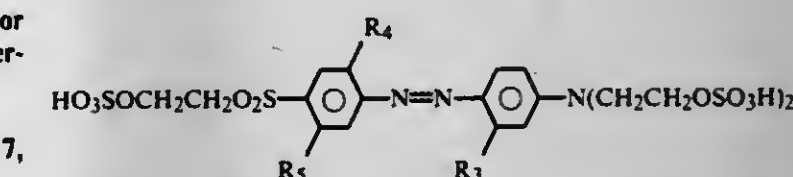
**PROCESS FOR COLORING FIBER MATERIALS WITH AZO DYESTUFF CONTAINING —SO<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>OSO<sub>3</sub>H AND —N(CH<sub>2</sub>CH<sub>2</sub>OSO<sub>3</sub>H)<sub>2</sub> GROUPS**

Johann Wenghoefer, E. Greenwich; Dennis G. Messier, W. Greenwich, and James E. Thompson, Coventry, all of R.I., assignors to American Hoechst Corporation, Somerville, N.J.  
Division of Ser. No. 65,791, Aug. 13, 1979, Pat. No. 4,271,072, which is a continuation of Ser. No. 862,317, Dec. 20, 1977, abandoned. This application Oct. 27, 1980, Ser. No. 200,726  
Int. Cl.<sup>3</sup> D06P 3/82; C09B 62/00, 29/01

U.S. Cl. 8—531

5 Claims

1. A process for coloring a fiber material selected from the group consisting of cellulose, natural or synthetic polyamides and mixtures thereof, comprising applying to said fiber material a water soluble dyestuff which, in the form of the free acid, has the formula:



wherein R<sub>3</sub> is halogen and R<sub>4</sub> and R<sub>5</sub> are each independently selected from hydrogen, methyl, ethyl, methoxy, and ethoxy, and fixing said dyestuff on said fiber material by the action of an alkaline agent.



4,283,197

# PROCESS FOR WHITENING POLYESTER FIBRES BY THE EXHAUST METHOD

Willy Schürings, Basel; Italo Anceschi, Muttentz, and Gerhard Rehnert, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,949

Claims priority, application Switzerland, Mar. 29, 1979, 2919/79

Int. Cl.<sup>3</sup> C09K 11/06

U.S. Cl. 8—638

10 Claims

1. A process for whitening polyester fibres by the exhaust method by treating said fibres in an aqueous dispersion containing one or more fluorescent whitening agents for polyester which have affinity for the substrate and are stable under the application conditions, and a small amount of a blue or violet disperse dye, or a mixture thereof, as shading dye, which process comprises carrying out the treatment in said dispersion at a pH value above 9.

4,283,198

# INERT ATMOSPHERE INDIGO DYEING

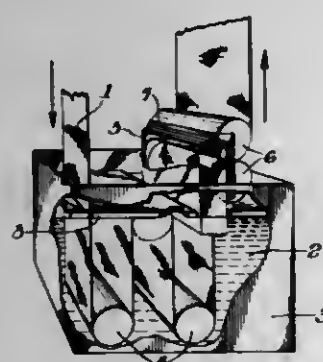
John M. Fletcher, Rte. 3, Box 376, Opelika, Ala. 36801

Filed Jan. 11, 1980, Ser. No. 111,337

Int. Cl.<sup>3</sup> C09B 7/00

U.S. Cl. 8—653

5 Claims



1. In the continuous process of dyeing cellulosic fibers with indigo wherein said fibers are passed through a train of dip vats each having a squeeze roll assembly and bath liquor comprising leuco indigo, sodium hydrosulfite and sodium hydroxide, the improvement wherein at least a part of the air-liquor interface is enclosed whereby enclosed air is depleted of oxygen by reaction with the components of the bath liquor.

4,283,199

# METHOD OF RESOLVING BIOLOGICAL SOLUTIONS

Elek I. Szabo, Brighton, Mass., assignor to Forsyth Dental Infirmary for Children, Boston, Mass.

Filed Aug. 20, 1979, Ser. No. 67,947

Int. Cl.<sup>3</sup> B01D 15/00, 15/08; G01N 31/06, 33/48

U.S. Cl. 23—230 B

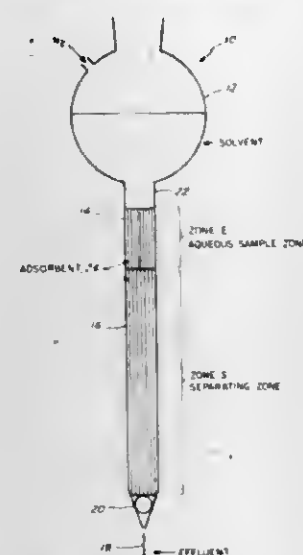
14 Claims

1. A one-step method for the extraction and separation of an aqueous complex solution of biological origin into all of its constituent fractions in a single column, which method comprises:

- introducing a predetermined volume of an aqueous solution of biological origin, having a plurality of organic compounds and inorganic salts therein, into the top of the column, which column contains a water-adsorbent support material, to provide an upper extraction zone and a lower separation zone in the column, with the water of the solution adsorbed onto the support material to form the extraction zone;
- introducing into the top of the column successive predetermined volumes of solvents as eluents, the solvents of selected and sequentially increasing polarity to pass the solvents through the extraction zone to form, below the

lower aqueous boundary layer of the extraction zone, a chromatographic separation zone in the column;

- adsorbing the water of the aqueous solution onto the support material in the extraction zone and sequentially extracting in the extraction zone, by the successive volumes of solvents through liquid partitioning, discrete, moving, solute fractions of increasing polarity;
- directly introducing the successive solute fractions into the lower separation zone from the upper extraction zone, to provide for the chromatographic resolution of the



solute fractions into solute-eluent fractions of increasing polarity in the separation zone, the resolution of the solute fractions initially occurring by chromatographic adsorption and later with solute fractions of increasing polarity, resolution of the solute fractions by liquid-partition chromatography; and

- removing the resolved eluent fractions of defined increasing polarity from the lower portion of the separation zone, thereby providing for the simple, effective and quantitative extraction and resolution of the solution into eluent fractions.

4,283,200

# METHOD AND APPARATUS FOR DETECTING CORROSION IN STEAM TURBINE INSTALLATIONS

Maurice A. Bodmer, Nussbaumen, and Robert Svoboda, Wettigen, both of Switzerland, assignors to BBC Brown, Boveri & Co. Ltd., Baden, Switzerland

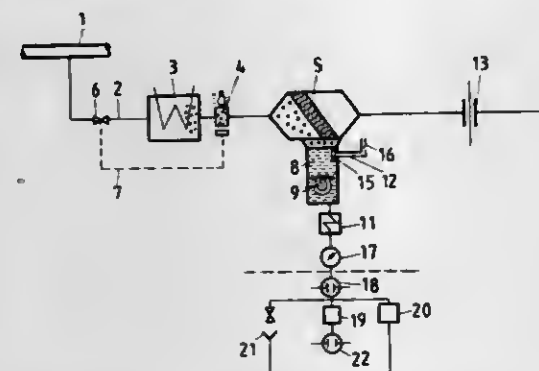
Filed Nov. 1, 1979, Ser. No. 90,250

Claims priority, application Switzerland, Nov. 9, 1978, 115241/78

Int. Cl.<sup>3</sup> G01N 17/00

U.S. Cl. 23—230 C

17 Claims



1. A method of detecting the occurrence of corrosion in a steam turbine during operation, comprising the steps of: continuously withdrawing a representative sample of working steam from the turbine; condensing a portion of the working steam sample to form a condensate; controlling the quantity of said working steam sample which is condensed such that a predetermined percentage of the sample is condensed;

separating the condensate from the remaining steam; determining the quantity of the remaining steam; continuously testing the condensate for corrosivity; and returning the remaining steam to the turbine.

7. An apparatus for detecting corrosion in a steam turbine during operation comprising:

- first line means for continuously withdrawing a representative sample of working steam from the steam turbine at a predetermined point in the steam turbine;
- condenser means for condensing a portion of the steam sample received through the first line means to form a condensate;
- separator means for separating the condensate from the remaining steam;
- testing means for continuously testing the condensate for corrosivity;
- second line means for returning the remaining steam to the turbine;
- a flow meter for determining the quantity of remaining steam arranged in the second line means; and
- control means for controlling the quantity of said working steam sample which is condensed such that a predetermined percentage of the sample is condensed.

4,283,201

# METHOD AND APPARATUS SUITABLE FOR REPEATED, ACCURATE CHEMICAL ANALYSES

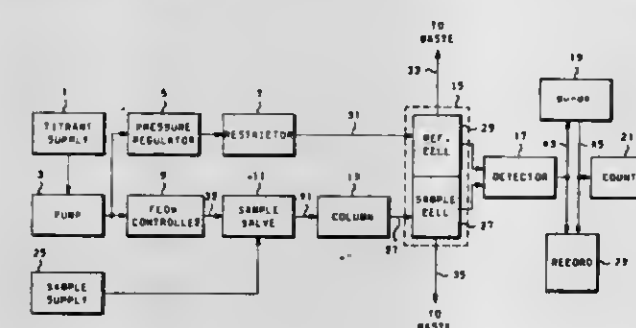
Donald D. DeFord, Glenview, Ill.; Edwin K. Clardy, and Edward N. Fuller, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 2, 1979, Ser. No. 90,838

Int. Cl.<sup>3</sup> G01N 1/14, 31/08, 31/16, 35/08

U.S. Cl. 23—230 A

29 Claims



BLOCK DIAGRAM COLUMN TITRATION APPARATUS

1. A method for effecting a repeated chemical analysis of a process stream which comprises establishing a first flow of a stream of a first reactant into a reaction zone, retaining in said zone first reactant entering said zone, continuing said first flow until there is established in said zone a quantity of first reactant sufficient to effect in said zone a reaction therewith and with a second reactant when the latter has entered said zone, then momentarily discontinuing said first flow and simultaneously initiating a second flow of a predetermined quantity of said second reactant into said zone, then immediately upon the termination of said second flow recommencing said first flow, removing reaction product from said reaction zone, and determining at least one of the amount of and nature of reaction product thus formed and removed from said zone.

4,283,202

# METHOD AND APPARATUS FOR BURNING CaCO<sub>3</sub> AND MgCO<sub>3</sub> MATERIALS

J. Friis-Hansen, 77 Vigerslev Alle, DK-2500 Valby Copenhagen, Denmark

Filed May 4, 1979, Ser. No. 36,230

Claims priority, application United Kingdom, May 8, 1978, 18227/78

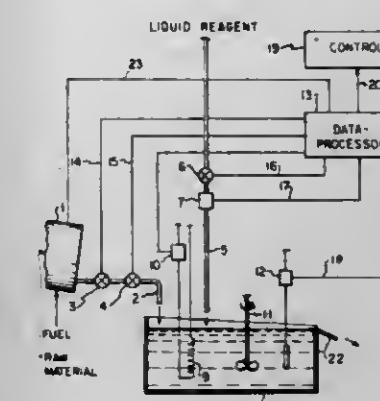
Int. Cl.<sup>3</sup> G01N 33/38, 27/00

U.S. Cl. 23—230 A

21 Claims

1. A method for controlling burning of materials selected from CaCO<sub>3</sub>, MgCO<sub>3</sub> and mixtures thereof in a kiln comprising

ing burning in a kiln; feeding a flow of burnt material and a flow of liquid reagent, in an aqueous solution, to a reaction chamber; maintaining a residence time less than the time required to reach equilibrium in the reaction chamber and maintaining a substantially constant temperature in the reaction chamber; agitating said burnt material and liquid reagent; measuring the temperature and feed rate of said two flows fed



to the reaction chamber; measuring the temperature of said agitated burnt material and liquid reagent; determining reactivity, a measure of the amount of heat per unit weight burnt material per unit of time liberated by reaction between said burnt material and said liquid reagent; and using said reactivity as a control parameter for said burning of CaCO<sub>3</sub> and MgCO<sub>3</sub> materials.

4,283,203

# PETROLEUM FUEL COMPOSITION CONTAINING AN ANTI-HAZE ADDITIVE

Abraham A. Zimmerman, Summit, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 886,721, Mar. 15, 1978, abandoned.

This application Apr. 4, 1980, Ser. No. 137,423

Int. Cl.<sup>3</sup> C10L 1/18

U.S. Cl. 44—62

25 Claims

1. A fuel composition comprising a major amount of gasoline and from about 1 to about 30 ppm by weight of an anti-haze additive selected from the group consisting of an hydroxylated resin acid and a metal resinate salt wherein said metal is selected from the metals of Group II to IV, VII and VIII of the Mendeleev periodic table.

4,283,204

# PROCESS FOR THE SEPARATION OF CONTAMINANTS FROM FEED STREAMS USING MAGNETIC BEDS

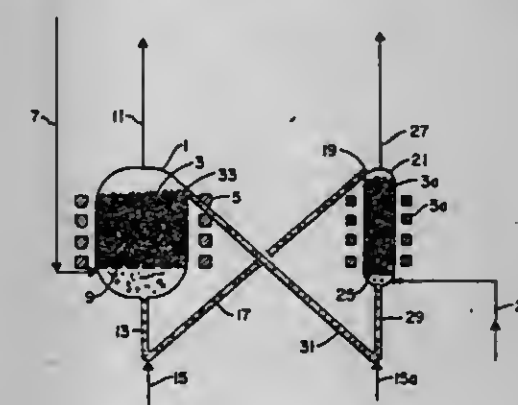
David W. Savage, Summit, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 73,481, Sep. 7, 1979, abandoned. This application Sep. 2, 1980, Ser. No. 182,937

Int. Cl.<sup>3</sup> B01D 50/00

U.S. Cl. 55—3

16 Claims



1. In a process for the selective separation of contaminants from a mixture in a feedstream containing the same within an external force field, said process comprises the steps of:

- adsorbing a portion of said contaminants from said feedstream by contacting said feedstream with a bed compris-



ing adsorbent particles capable of adsorbing said contaminants from said feedstream; and  
(b) desorbing at least a portion of said contaminant from said adsorbent particles in step (a) to regenerate at least a portion of said adsorbent particles;

the improvement which comprises:

- (1) providing a magnetizable component with said adsorbent particles and applying a magnetic field to said magnetizable component and adsorbent particles along the direction of said external force field and at a strength sufficient to prevent and/or suppress gross solids back-mixing and fluid by-passing;
- (2) expanding or levitating said adsorbent particles and magnetizable component by countercurrently contacting said adsorbent particles and magnetizable component with said feedstream; and
- (3) carrying out said adsorption and desorption steps at substantially the same pressure.

4,283,205

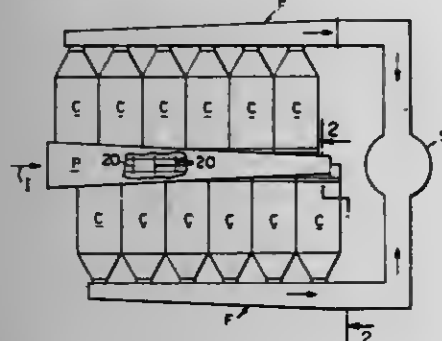
# INLET FLUE SYSTEM FOR BANKS OF ELECTROSTATIC PRECIPITATOR CHAMBERS

John L. Schumann, 150 Queens Dr. South, Little Silver, N.J. 07739

Filed Apr. 6, 1979, Ser. No. 27,938  
Int. Cl.<sup>3</sup> B03C 3/00

U.S. Cl. 55—128

13 Claims



1. An inlet flue system for conducting particulate-containing gases to the inlet nozzles of a multiplicity of electrostatic precipitator chambers comprising an elongated plenum located generally above and laterally of the nozzles and associated precipitator chambers and having top and side walls and being substantially entirely open at the bottom, the bottom being essentially free of upwardly facing horizontal or substantially horizontal surfaces where particulates might settle out and collect, and a generally downwardly directed branch duct leading from the bottom of the plenum directly to each inlet nozzle for substantially downward flow of the gases directly to the respective inlet nozzles without substantial settlement and collection of particulates in the plenum or ducts, the inlet end of the perimeter walls of each branch duct defining an outlet opening from the plenum.

4,283,206

# COMPONENT FOR DE-SPINNING A FLOW OF DRY VAPOR OR GAS AND LIQUID AND FOR SEPARATING THE LIQUID FROM THE VAPOR OR GAS

Jean Andro, La Celle Saint-Cloud; Roger Bessouat, Paris; Jean-Pierre Cerdan, Houilles, and Patrick Talieu, Chatou, all of France, assignors to Stein Industrie, Velizy-Villacoublay and Electricite de France, Paris, both of France

Filed May 7, 1979, Ser. No. 36,701  
Claims priority, application France, May 12, 1978, 78 14213; Apr. 6, 1979, 79 08783

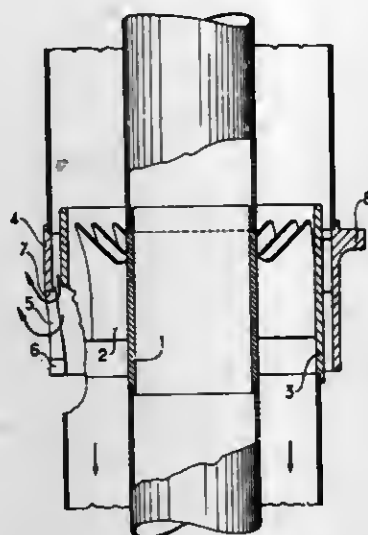
Int. Cl.<sup>3</sup> B01N 45/04

U.S. Cl. 55—187

7 Claims

1. A component for de-spinning a flow of dry vapour or gas and for separating liquid from vapour or gas, said component including concentrically, in inverse order, an outer vertical tube for admission of the vapour or gas and liquid mixture to be separated and travelling in a downward spinning flow, a coax-

ial inner tube for collecting dry vapour or gas, and an inner sleeve, said inner and outer tubes being cylindrical of circular cross-section, means positioned between the inner tube and said inner sleeve for de-spinning the flow of said dry vapour or



gas, the lower edge of the outer tube being separate from the inner tube and at a level lower than that of the upper edge, and said lower edge of said outer tube being provided with upwardly extending orifices circumferentially spaced on its periphery, whose width decreases upwards.

4,283,207

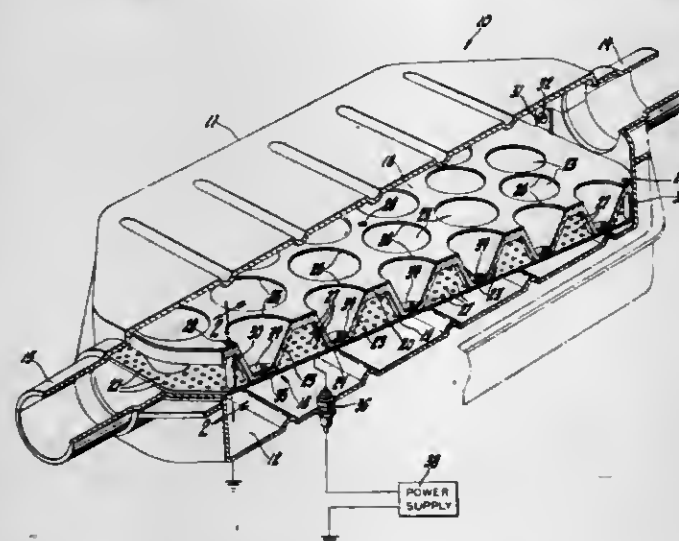
# DIESEL EXHAUST FILTER-INCINERATOR

Ernest T. Martyniuk, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 19, 1980, Ser. No. 161,032  
Int. Cl.<sup>3</sup> B01D 46/24, 46/42

U.S. Cl. 55—282

5 Claims



1. In a particulate trap for collecting and burning combustible particulates, the combination comprising  
a high temperature electrically insulative filter medium positioned across a gas flow path and capable of collecting on an upstream facing surface substantial amounts of electrically conductive combustible particulates borne by gas passed through the filter medium and capable of defining a current flow path between spaced points on said surface,  
means for applying between said spaced points of the filter medium surface a sufficient electric voltage to cause an arc-like current to pass through collected conductive particulates on said filter surface between said spaced points,  
whereby substantial collections of combustible particulates on the filter surface are removed by incineration and electrical power is consumed by the apparatus only during the incineration of particulates.

4,283,208

# FILTER BAG CLEANING SYSTEM

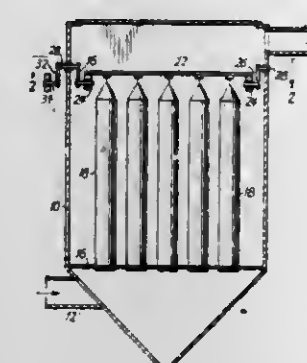
James U. R. Fernando, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed May 12, 1980, Ser. No. 149,099

Int. Cl.<sup>3</sup> B01D 46/04

U.S. Cl. 55—304

3 Claims



1. Filtration apparatus for removing entrained dust particles from a gas stream comprising a housing having an inlet port for dust entrained gas and an outlet port for the exhaust of clean gas therefrom, an apertured tube sheet intermediate the inlet and outlet ports arranged to divide the housing into inlet and outlet sections, a plurality of porous filter bags each having an open end and a closed end with the open end thereof attached to the tube sheet around each aperture thereof to permit the flow of clean gas therethrough while retaining dust particles on the surface of the filter, cleaning means for said filter bags comprising a linear force electromagnetic motor having oppositely extending slider rods connected to said filter bags so as to move horizontally to shake each filter bag, a source of electric current connected to the linear force motor, and means for controlling the current being supplied to the linear force motor to modulate the frequency and amplitude of movement of the slider rods to vary the cleaning effect of said cleaning means.

4,283,209

# SEPARATOR FOR SEPARATING OUT PARTICLES OF FATTY SUBSTANCES FROM A GAS CURRENT, MORE SPECIFICALLY FROM WASTE AIR FROM KITCHENS, AND A WASTE AIR DUCT FOR THE SEPARATOR

Markus Schmalhofer, 8351 Aholming, Bundesrepublik Deutschland, Fed. Rep. of Germany

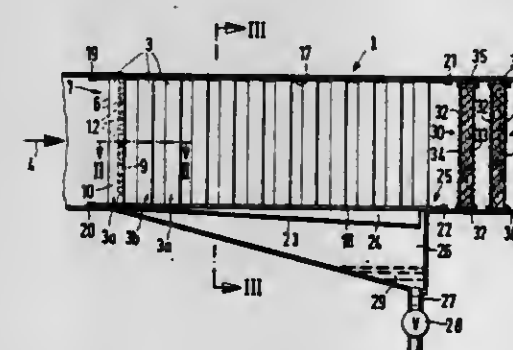
Filed Feb. 6, 1979, Ser. No. 9,973

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1978, 2832864

Int. Cl.<sup>3</sup> B01D 50/00; F24C 15/20

U.S. Cl. 55—325

15 Claims



1. A separator for removing fatty or oily particles from a current of waste gas, comprising: a frame having an inlet open end and an outlet open end, and a plurality of rods mounted in the frame substantially parallel to each other and over at least the full cross-section of the frame in rows extending normal to the longitudinal axis of the frame between said inlet end and said outlet end, each rod configured to define a trough facing opposite the inlet open end and spaced apart by a distance at

most twice the breadth of an individual rod, wherein the rods of one row are staggered with respect to the rods of the adjacent rows and the spacing between diagonally adjacent rods is at least approximately equal to the spacing between the rods in each row and wherein each rod comprises means for controlling the flow of waste gas through the separator to effect the flow of waste gas into the trough thereof comprising at least one elongated hole extending along the longitudinal axis of the rods in a wall of the trough.

4,283,210

# CERAMIC HONEYCOMB FILTER AND A METHOD OF PRODUCING THE SAME

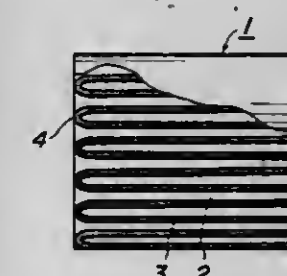
Shigeru Mochida, Kasugai, and Takayuki Ogasawara, Konan, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Jul. 14, 1980, Ser. No. 167,747

Claims priority, application Japan, Jun. 16, 1980, 55-080109  
Int. Cl.<sup>3</sup> C04B 21/00

U.S. Cl. 55—523

7 Claims



1. A ceramic honeycomb filter consisting of a porous ceramic honeycomb structural body having a large number of channels extending therethrough, wherein given channels at one of the opening end surfaces of the honeycomb structural body have sealing portions formed by bending and bonding thin partition walls forming the opening end portion of the channels, and the remaining channels have sealing portions formed by bending and bonding thin partition walls forming another opening end portion of the channels.

3. A method of producing ceramic honeycomb filters, comprising bending and bonding thin partition walls of given channels at one of the opening end surfaces of a ceramic honeycomb structural body having a large number of parallel channels extending therethrough to seal the channels while the honeycomb structural body still has plasticity, bending and bonding thin partition walls of the remaining channels at another opening end surface of the body to seal the remaining channels, and firing the above treated honeycomb structural body.

4,283,211

# POWER GENERATION BY EXCHANGE OF LATENT HEATS OF PHASE TRANSITION

Stefan Ehrlich, Columbus, Ohio, and William L. Levenson, Beaver Falls, Pa., assignors to Levor, Incorporated, New Brighton, Pa.

Filed Apr. 9, 1979, Ser. No. 28,720

Int. Cl.<sup>3</sup> F25D 5/00; F01K 25/08; F25C 1/00

U.S. Cl. 62—4

13 Claims

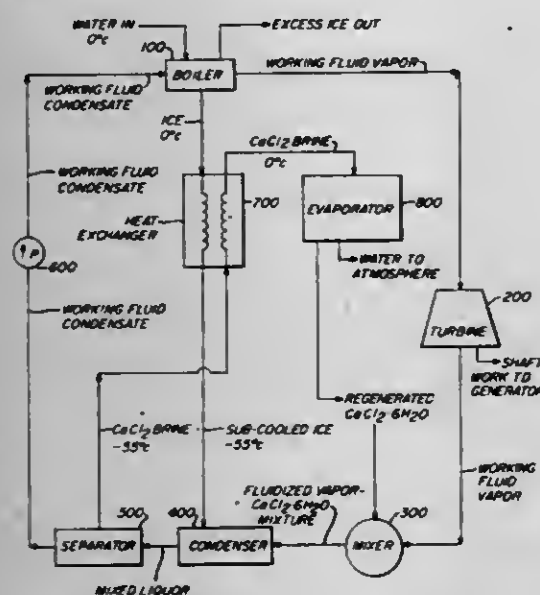
1. A self sustaining process of recovery of the heat content of water and of fresh water therefrom, and of conversion of said heat content to available kinetic energy, the said process comprising:

bringing water existing in a state selected from the group consisting of saline water, brackish water and contaminated water into heat-exchange contact at a temperature of at least 0° C. with a liquid working fluid having a boiling point below 0° C. and thereby boiling the working fluid under autogenous pressure and freezing the water to form ice consisting of frozen fresh water;



releasing the so-vaporized working fluid from said autogenous pressure in an expansion engine and thus expanding adiabatically the said vaporized fluid, cooling the same and converting heat absorbed from the water into available kinetic energy;

withdrawing the expanded and cooled working-fluid vapor from said engine and condensing the vapor by heat-exchange contact with a eutectic composition of a eutectic-forming substance and the ice formed in the first-said



heat exchange less product ice in an amount equivalent to the cooling of expanded vapor of working fluid in the expansion engine; removing product ice from the first-said heat exchange, washing the same with an increment of melt, and recovering the remainder as fresh water; and pumping the so-condensed working fluid into heat-exchange contact with an additional quantity of water in a selected state and against the said autogenic vapor pressure of the working fluid at substantially the water temperature.

4,283,212

## TREATMENT OF GAS STREAMS

David J. Graham, Diseworth, and John W. Armond, Buckhurst Hill, both of England, assignors to BOC Limited, London, England

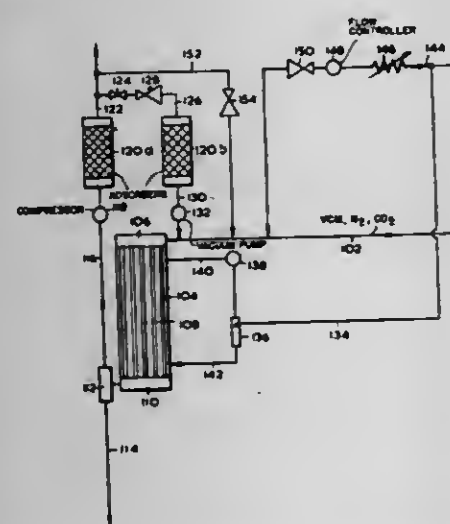
Filed Apr. 6, 1979, Ser. No. 27,588

Claims priority, application United Kingdom, Apr. 7, 1978, 13820/78

Int. Cl.<sup>3</sup> F25J 3/00

U.S. Cl. 62-18

3 Claims



1. A method of treating a gas mixture comprised of a carrier gas and a minor fraction of vinyl chloride monomer comprising the steps of:

(a) passing said gas mixture in heat exchange relation with a

- refrigerant in a condensation device to condense at least a part of the vinyl chloride monomer;
- (b) recovering condensed vinyl chloride monomer from the condensation device;
- (c) supplying the non-condensed portion of said gas mixture from the condensation device to an adsorption unit;
- (d) preferentially adsorbing vinyl chloride monomer from the non-condensed gas mixture in the adsorption unit;
- (e) desorbing the adsorbed vinyl chloride monomer from the adsorption unit;
- (f) passing said desorbed, vinyl chloride monomer to said condensation device thereby increasing the concentration of said vinyl chloride monomer in said condensation device and reducing the refrigeration required to condense a given amount of said vinyl chloride monomer; and
- (g) continuously adding nitrogen gas to the gas mixture upstream of the addition of desorbed vinyl chloride monomer to the gas mixture.

4,283,213

## METHOD OF FABRICATION OF SINGLE MODE OPTICAL FIBERS OR WAVEGUIDES

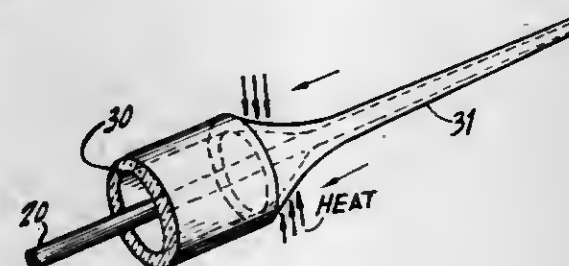
Francis I. Akers, and Mokhtar S. Maklad, both of Roanoke, Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,856

Int. Cl.<sup>3</sup> C03C 25/02

U.S. Cl. 65-3 A

15 Claims



1. A method for fabricating an optical fiber comprising the steps of: forming a first solid glass preform having a central core region of a first diameter, a cladding layer surrounding said core and a substrate layer surrounding said cladding layer; heating and drawing said first solid preform into a first fiber having a core of a second diameter smaller than said first diameter; collapsing a glass tube about said first fiber by heat shrinking to form a second solid preform having a core of the second diameter; heating and drawing said second solid preform into a second fiber having a core of a third diameter substantially smaller than the second diameter of said first fiber, whereby said second fiber is capable of single mode operation.

4,283,214

## GOB FEED DIAL FOR DUAL GLASS BASE MACHINE

Phillip A. Livera, Bloomfield, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 8, 1980, Ser. No. 119,684

Int. Cl.<sup>3</sup> C03B 7/08

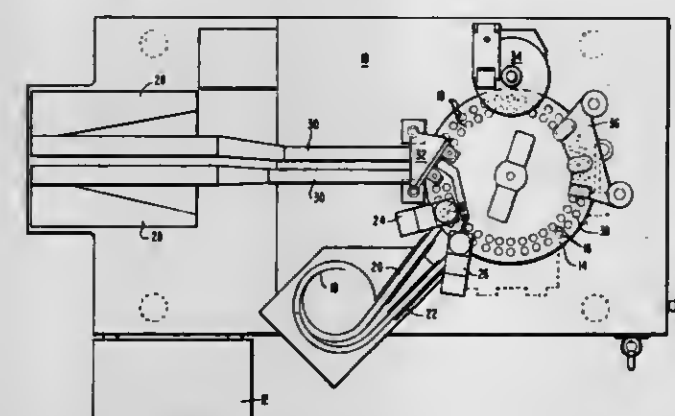
U.S. Cl. 65-70

10 Claims

1. The method of delivering insulating glass to a lamp base making machine comprising the steps of: repetitively severing a continuous stream of molten glass into gobs of uniform weight and size with a continuously rotating dial having a plurality of apertures in the upper surface thereof; forming said gobs of uniform weight and size into a ball-like shape while conveying said gobs sequentially to a pair of radially different discharge locations, a first of said radi-

ally different discharge locations being spaced the same radial distance from the center of said dial as said plurality of apertures in said upper surface and the other of said radially different discharge locations being radially outward of said first radially different discharge location; and blowing air into said apertures in the upper surface of said rotating dial when discharging said ball-like gobs from said rotating dial at said pair of radially different discharge locations.

5. An apparatus for forming and delivering insulating glass to a lamp base making machine, said apparatus comprising: a circular dial having top and bottom surfaces and a plurality of chambers therein, each of said chambers having an opening in said top and bottom surfaces, said openings in said top surface of said dial being located on a first circular locus radially equidistant from the center of said dial, said openings in said bottom surface being alternately located on said first circular locus and on a second circular locus



which is radially equidistant from the center of said dial but being a greater distance from the center of said dial than said first circular locus; a dial support having a wear plate mounted to the top thereof and a central aperture through said dial support and said wear plate; a dial drive shaft extending through said aperture in said dial support and said wear plate having said dial mounted thereon for rotation therewith; glass stream receiving means positioned over said first locus on said dial for receiving and directing a continuous stream of glass into said openings in said top surface of said dial, said wear plate being constructed and arranged to close off the openings in said bottom surface of said dial for a portion of the rotation thereof thereby containing said insulating glass within said chambers for a portion of said rotation. With the intersection of said openings in said bottom surface and an edge of said wear plate defining a pair of glass discharge locations.

4,283,215

## TWO-PIECE BOTTOM PLATE FOR MAKING CROWN BOTTOM GLASSWARE ON THE HE-28 MACHINES

James E. Sherman, Temperance, Mich., assignor to Owens-Illinois Inc., Toledo, Ohio

Filed Dec. 20, 1977, Ser. No. 862,270

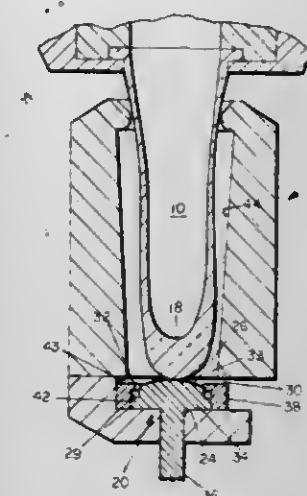
Int. Cl.<sup>3</sup> C03B 9/197, 9/335

U.S. Cl. 65-79

7 Claims

5. A method of forming blown drinking glasses having a crowned bottom comprising the steps of: forming a hollow molten glass parison having a thick bottom section, placing the parison in a paste mold having a two-piece bottom plate assembly, rotating the parison about a vertical axis while allowing it to sag into partial contact with the glass contacting surfaces of a domed central member and a surrounding annular member of said bottom plate assembly while said domed member is in a retracted position relative to said annular member, advancing said domed member vertically so as to bring its glass contacting surfaces into full contact with said parison, engaging an abutment on said annular member with a corresponding abutment on said central member, advancing both of said bottom

plate members upwardly in unison, thereby bringing the glass contacting surfaces of said annular member into full contact with said parison, blowing the hollow parison into its finished



shape during the advancement of said domed member, lowering the bottom plate assembly and removing the blown drinking glass.

4,283,216

## PRODUCING GLASS SHEETS OF REQUIRED CURVED SHAPE

Paul A. Brereton, Birmingham, England, assignor to Triplex Safety Glass Company Limited, Birmingham, England

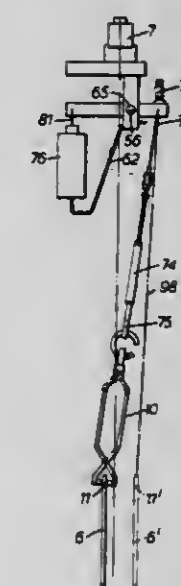
Filed Dec. 10, 1979, Ser. No. 102,228

Claims priority, application United Kingdom, Dec. 11, 1978, 47920/78

Int. Cl.<sup>3</sup> C03B 23/03

U.S. Cl. 65-106

28 Claims



1. A method of producing a curved glass sheet, comprising suspending a hot glass sheet at forming temperature at a series of gripping locations spaced along the upper margin of the sheet, subjecting the hot glass sheet to individual forces at those gripping locations, at least some of which individual forces have components out of the plane of the sheet and which individual forces each have a magnitude and direction dependant on the weight and shape of the glass, to ensure that the freely suspended hot glass sheet adapts towards a predetermined curved shape as the magnitudes and directions of the forces vary during the change of shape of the glass, and permitting the magnitudes and directions of the forces to vary so that the influence of the total force system acting on the sheet in changing the shape of sheet diminishes as the sheet approaches the predetermined curved shape.



19. A method of producing a curved glass sheet, comprising the steps of:

- suspending a flat glass sheet at a series of gripping locations spaced along the upper margin of the sheet;
- subjecting the glass sheet to individual forces at those gripping locations, at least some of which individual forces have components acting out of the plane of the sheet and which individual forces each have a magnitude and direction dependant on the weight and shape of the glass to ensure that the freely suspended glass sheet is subjected to a total force system initially seeking to change its shape towards a first predetermined curved shape;
- heating the glass sheet above its strain point to permit change of shape under the influence of said total force system which includes gravitational forces acting on the sheet to a shape close to said first predetermined curved shape;
- permitting the magnitudes and directions of said individual forces to vary so that the influence of the total force system acting on the sheet in changing the shape of the sheet diminishes as the sheet approaches said first predetermined curved shape;
- applying shaped bending dies to the hot glass sheet to bend the sheet to a second predetermined curved shape;
- releasing the dies to allow the bent sheet to become freely suspended; and
- submitting the bent glass sheet to further thermal treatment including cooling the sheet to a temperature at which the sheet is sufficiently stiffened for its shape to be unaffected by any forces acting at the gripping points, within a time period which is sufficiently short to render negligible any shape changes occurring in the period.

4,283,217

#### METHOD OF FORMING A SHAPED FLUORESCENT LIGHT BULB ENVELOPE

Osamu Kawamura, Kogaehara No. 2-13-13, Matsudo-Shi, Chiba-Ken, Japan

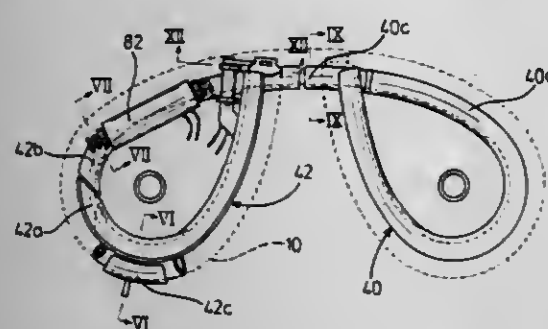
Continuation of Ser. No. 798,014, May 18, 1977, abandoned.

This application Aug. 31, 1979, Ser. No. 71,185

Int. Cl.<sup>3</sup> C03B 29/00

U.S. Cl. 65—108

5 Claims



1. A method of forming a shaped fluorescent light bulb comprising the steps of supporting a tubular envelope blank of defined length at each of its ends within a respective holder, heating said elongated envelope blank to a degree permitting the bending of the ends with respect to its central portion, maintaining one of said holders in stationary position and moving the other of said holders relative to said one holder in a planetary path of approximately 250° with respect to the stationary holder by which the associated ends of said tubular envelope blank are turned in the same direction, relatively inward in opposition to each other and are directed toward said center portion and out of the plane of the center portion, continuing the movement of said other holder until the ends of said tubular envelope blank at least in part overlie the center portion, are symmetrical and lie at least in part parallel to each other, removing said envelope blank from said holders and

thereafter installing electrical connectors to each end and sealing said envelope blank to form a light bulb.

4,283,218

#### MOLD MECHANISM

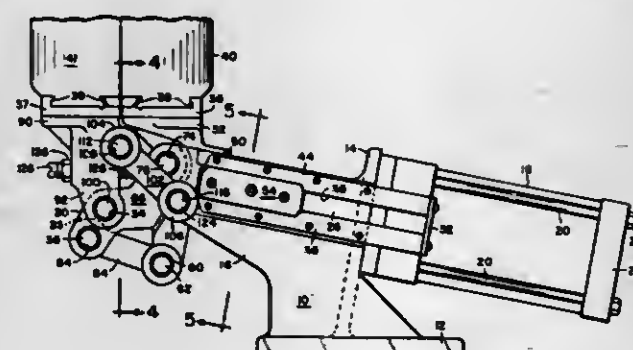
Warren D. Staley, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,329

Int. Cl.<sup>3</sup> C03B 9/40, 11/16

U.S. Cl. 65—360

9 Claims



1. Apparatus for opening and closing mold segments of a two-part mold which comprises, support means, first mold mounting means for retaining a first mold segment mounted for sliding movement on said support means, second mold mounting means for retaining a second mold segment pivotally mounted with respect to said support means, means for reciprocally moving said first mold mounting means linearly along said support means for opening and closing said mold mounting means, pivotal link means connecting said first mold mounting means to said second mold mounting means and said second mold mounting means to said support means for pivotally opening and closing said second mold mounting means simultaneously with and in response to the sliding linear opening and closing of said first mold mounting means for opening and closing the mold segments carried by said mold mounting means; and said pivotal link means including central pivot link means for pivotally connecting said second mold mounting means to said support means, and lower link means connecting said first mold mounting means to said central pivot link means for rotating said central pivot link means about a pivot on said support means and simultaneously pivoting said second mold mounting means into an open or closed position in response to the linear movement of said first mold mounting means along said support means by said moving means.

4,283,219

#### AGROCHEMICAL AGENTS AND THEIR USE

Kuno Wagner, Johannes Niggemann, both of Leverkusen; Kurt Findeisen, Odenthal, and Hans Scheinpflug, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 3, 1979, Ser. No. 63,602

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836155

Int. Cl.<sup>3</sup> C05C 9/00

U.S. Cl. 71—28

34 Claims

1. A method of supplying plants with nutrients comprising applying to the plants or a plant habitat a composition comprising as active ingredient a stabilized reaction product of (a) an azulmic acid with (b) a nitrogen-containing aminoplast-forming agent and a carbonyl compound or with a condensation product of said aminoplast-forming agent and said carbonyl compound.

4,283,220

#### IMIDAMIDES DERIVED FROM 2-OXO-3-BENZOTHAZOLINE ACETIC ACID PLANT GROWTH REGULANTS

John J. D'Amico, Olivette, and John T. Marvel, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

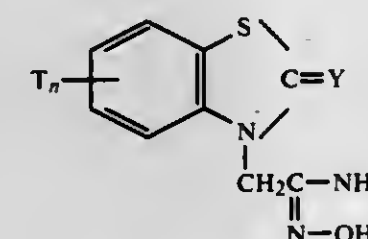
Filed Aug. 23, 1979, Ser. No. 68,993

Int. Cl.<sup>3</sup> A01N 43/28

U.S. Cl. 71—90

14 Claims

1. A method of regulating the growth of leguminous plants which comprises applying to the plant locus a plant growth regulating effective amount of a compound having the formula



wherein T is halogen or trifluoromethyl, n is 0, 1 or 2 and Y is oxygen or sulfur.

4,283,221

#### PLANT GROWTH REGULATING AGENT

Christian Vogel, Binningen, and Rudolf Aebi, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 548,041, Feb. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 328,202, Jan. 31, 1973, abandoned. This application May 21, 1976, Ser. No. 688,868

Claims priority, application Switzerland, Feb. 7, 1972, 1739/72; Feb. 16, 1972, 7203/72

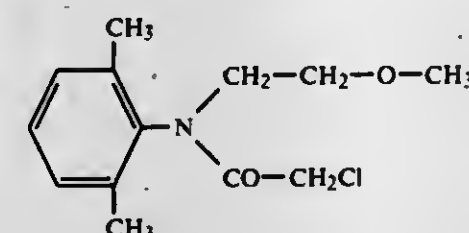
The portion of the term of this patent subsequent to Feb. 10, 1993, has been disclaimed.

Int. Cl.<sup>3</sup> A01N 37/22; C07C 103/32

U.S. Cl. 71—118

4 Claims

1. The compound 2-chloro-2',6'-dimethyl-N-(2-methoxyethyl)-acetanilide of the formula



4,283,222

EMULSIFIABLE CONCENTRATE FOR WEED CONTROL  
Fumio Horide, Osaka, and Kozo Tsuji, Fukazawahonmachi, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 67,457, Aug. 17, 1979, abandoned. This application May 20, 1980, Ser. No. 151,576

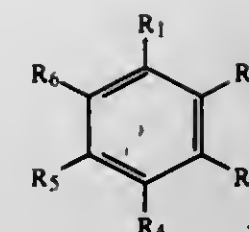
Claims priority, application Japan, Aug. 29, 1978, 53-106107; Brazil, Aug. 28, 1979, 7905536

Int. Cl.<sup>3</sup> A01N 47/30

U.S. Cl. 71—120

6 Claims

1. An emulsifiable concentrate for weed control, consisting essentially of 10 to 20 parts by weight of N'-[4-(4-methylphenoxy)phenyl]-N-methoxy-N-methylurea, 5 to 15 parts by weight of an emulsifier, 10 to 70 parts by weight of at least one aromatic hydrocarbon solvent of the formula:



wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub> and R<sub>6</sub> are each hydrogen or alkyl having 1 to 3 carbon atoms and 15 to 75 parts by weight of at least one ketonic solvent having not more than 9 carbon atoms and having a water solubility of not more than 10% by weight at room temperature, said emulsifier being a mixture of at least one anionic surfactant selected from the group consisting of the calcium or sodium salt of an alkylbenzenesulfonic acid and at least two non-ionic surfactants selected from the group consisting of polyoxyethylene alkyl ether, polyoxyethylene alkyl aryl ether, polyoxyethylene styryl aryl ether, polyoxyethylene styryl aryl ether polymer, polyoxyethylene fatty acid ester, oxyethylene oxypropylene polymer, and mixtures thereof.

4,283,223

#### PROCESS FOR TREATING SMOKE FROM STEEL PLANTS

Francois Billard, Paris, France, assignor to Air Industrie, Courbevoie, France

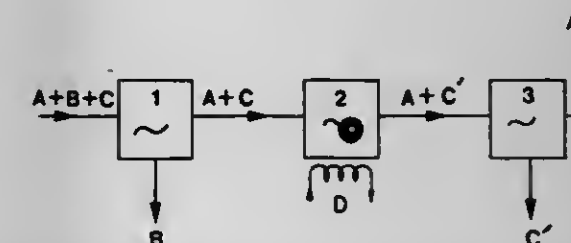
Filed Sep. 24, 1979, Ser. No. 78,182

Claims priority, application France, Oct. 9, 1978, 78 28961

Int. Cl.<sup>3</sup> C21B 3/04

U.S. Cl. 75—25

6 Claims



1. A method for treating smoke from steel plants, said smoke comprising a carrier gas, iron and iron oxides dust and non-ferrous metals in vapor form, said smoke being at a temperature higher than the vaporization temperature of said non-ferrous metals, said method comprising the following steps, in sequence:

- effecting, while the smoke is in the hot state, without noticeable cooling thereof, a first, dry separation between, on the one hand, said iron and iron oxides dust and, on the other hand, said carrier gas mixed with said non-ferrous metals in vapor form;
- cooling said carrier gas and non-ferrous metals to a temperature lower than the solidification temperature of the non-ferrous metals so as to produce cooling of said carrier gas and solidification of said non-ferrous metals; and
- effecting a second separation, between the cooled carrier gas and the solidified non-ferrous metals.

4,283,224

#### SEPARATIVE TREATMENT OF ANODE SLIME

Maxson L. Stewart, Bremen, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed May 5, 1980, Ser. No. 146,883

Int. Cl.<sup>3</sup> C22B 11/04, 13/04, 25/00

U.S. Cl. 75—99

9 Claims

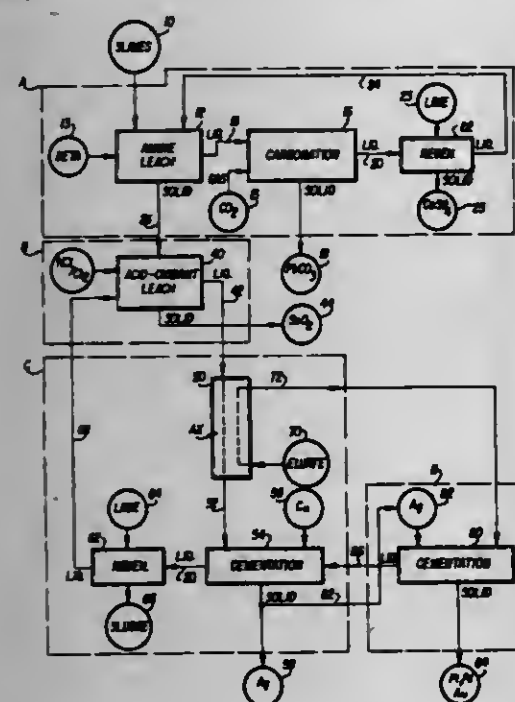
1. A hydrometallurgical process for separative treatment of electrometallurgical anode slime containing substantial amounts of tin and lead, comprising:

- providing as a starting material a precious metal-bearing



anode slime having substantial amounts of lead sulfate and tin dioxide;

- (b) recovering lead by (1) leaching said slime in an alkylene amine aqueous solution to solubilize said lead sulfate as lead-polyamine-sulfate complexes, said amine being sufficient in amount to combine with the lead present; and (2) after separating said leach solution from undissolved residue, carbonating said solution to precipitate lead carbonate;
- (c) recovering tin by leaching the undissolved residue from step (b) in an aqueous solution of hydrochloric acid and chlorine to solubilize substantially all of said residue, including precious metals as anionic chlorine complexes, except tin dioxide; followed by separating the tin dioxide residue;



- (d) recovering silver by (1) contacting the leach solution from step (c) with an anion exchange resin substantially selective to platinum, palladium, and gold adsorption to load said resin accordingly; and (2) after separating the depleted leach solution from said resin, cementing silver from said solution by the addition of copper; and
- (e) recovering a mixture of platinum, palladium, and gold by (1) elutriating said loaded resin with an aqueous solution of thiourea and hydrochloric acid; then (2) cementing said precious metal mixture from the loaded eluate by the addition of silver from step (d) (2); and (3) after separating the precious metal mixture from the eluate, adding the silver-enriched eluate to the leach solution of step (d) (2) for cementation of silver.

4,283,225

#### PROCESS FOR FABRICATING HOMOGENEOUS, DUCTILE BRAZING FOILS AND PRODUCTS PRODUCED THEREBY

Peter Sexton, Randolph, and Nicholas J. De Cristofaro, Madison, both of N.J., assignors to Allied Chemical Corporation, Morris County, N.J.

Division of Ser. No. 912,667, Jun. 5, 1978, Pat. No. 4,148,973, which is a continuation of Ser. No. 751,000, Dec. 15, 1976, abandoned. This application Nov. 13, 1978, Ser. No. 959,974

Int. Cl.<sup>3</sup> C22C 19/03

U.S. Cl. 75—170

3 Claims

1. A process for fabricating homogeneous, ductile brazing foil composed of metastable material having at least 50 percent glassy structure, said foil having a composition consisting essentially of 0 to about 4 atom percent iron, 0 to about 8 atom percent chromium, 7 to about 15 atom percent boron, 5 to about 10 atom percent silicon and the balance essentially nickel and incidental impurities, wherein the composition is such that the total of iron, chromium and nickel ranges from about 78 to 84 atom percent and the total of boron and silicon ranges from

about 16 to 22 atom percent, which process comprises forming a melt of the composition and quenching the melt on a rotating chill wheel at a rate of at least about  $10^5$ ° C./sec.

3. The product produced according to the process of claim 1.

4,283,226

#### METHOD OF PREPARING TITANIUM IRON-CONTAINING MATERIAL FOR HYDROGEN STORAGE

Harmannus H. van Mal; Hendrik A. van Esveld; Johannes S. van Wieringen, and Kurt H. J. Buschow, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

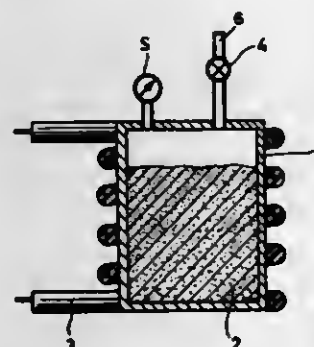
Filed Nov. 8, 1976, Ser. No. 739,700

Claims priority, application Netherlands, Nov. 11, 1975, 7513159

Int. Cl.<sup>3</sup> C22C 30/00, 22/00, 38/12

U.S. Cl. 75—175.5

4 Claims



1. A method of preparing a material for storing hydrogen, comprising the steps of:
- fusing titanium and iron, in a mutual ratio in gram-atoms of between 4:1 and 0.67:1, in combination with 5–30 atom % of at least one metal selected from the group consisting of chromium, zirconium and vanadium; and
- activating the material obtained by exposing it to a hydrogen atmosphere at ambient temperature.

4,283,227

#### ZNO—SeO<sub>2</sub>—R<sub>2</sub>O SOLUBLE GLASS

Cyril F. Drake, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,617

Claims priority, application United Kingdom, Sep. 26, 1978, 38222/78

Int. Cl.<sup>3</sup> C03C 3/12; A61K 33/04

U.S. Cl. 106—47 R

6 Claims

1. A water soluble glass composition adapted to release trace amounts of selenium into an aqueous solution, the composition including a fused mixture of 40 to 60 mol % selenium dioxide (SeO<sub>2</sub>) as a glass-forming oxide and 35 to 60 mol % zinc oxide (ZnO) as a glass-modifying oxide as its major constituents and at least one alkali metal oxide as a minor constituent for modifying the selenium release rate, wherein the alkali metal oxide molar concentration is at least as low as 13.1%.

4,283,228

#### LOW TEMPERATURE DENSIFICATION OF PZT CERAMICS

Relva C. Buchanan, and Dale E. Wittmer, both of Champaign, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Dec. 5, 1979, Ser. No. 100,340

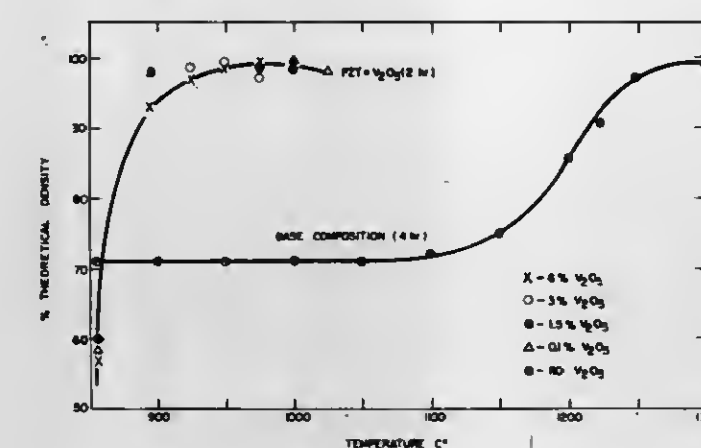
Int. Cl.<sup>3</sup> C04B 35/46, 35/48

U.S. Cl. 106—73.3

6 Claims

1. A fired PZT ceramic composition characterized by a density of at least 98% of theoretical density which composi-

tion consists essentially of a major amount of lead zirconate-lead titanate having the formula  $Pb(ZrTi)O_3$  wherein the Zr:Ti



molar ratio ranges from about 65:35 to about 35:65, and from about 0.1 to about 6.0% by weight of V<sub>2</sub>O<sub>5</sub>.

4,283,229

#### PROCESS FOR THE PREPARATION AND USE OF STABLE CELLULOSE ETHER SUSPENSIONS

Friedrich Girg, Idstein, and Volker Kattell, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 9, 1979, Ser. No. 10,809

Int. Cl.<sup>3</sup> C04B 13/00; C08L 1/26

U.S. Cl. 106—171

5 Claims

1. In the process for the preparation of a stable aqueous electrolyte-containing cellulose ether suspension, wherein an inherently water-soluble cellulose ether is added, in the form of solid particles, to an aqueous solution of an electrolyte and uniformly distributed therein,

the improvement comprising using a non-ionogenic cellulose ether and adding alumina to the suspension, and wherein the amounts of the components of said suspension are about 0.5 to 40 percent by weight of said non-ionogenic cellulose ether, about 4 to 12 percent by weight of electrolyte and about 0.1 to 10 percent by weight of alumina, calculated on the weight of the electrolyte solution.

4,283,230

AIR-TREATED PROPANE-PRECIPITATED ASPHALT  
Dominick Clementoni, Union, and Luke W. Corbett, Mountainside, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 10, 1980, Ser. No. 111,030

Int. Cl.<sup>3</sup> C08L 95/00

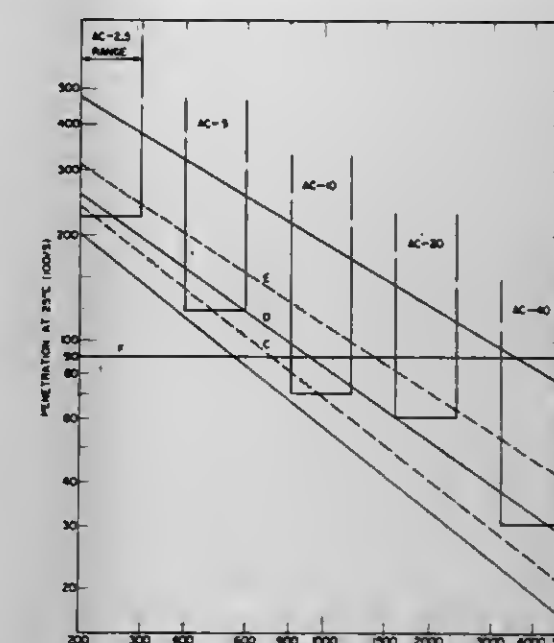
U.S. Cl. 106—274

13 Claims

1. A process for preparing an asphalt cement composition comprising the step of:

blending a propane-precipitated asphalt base, air-treated at elevated temperature and having a softening point of about 65°–300° C. as measured by ASTM D 36-76, with about 5–60 wt. %, based on the total weight of said asphalt base, of a 1–10 wt. % sulfur-treated liquid petroleum fraction having an atmospheric equivalent boiling range, of about 370°–500° C., thereby producing an asphalt cement composition being of ASTM viscosity grade AC-2½, AC-5, AC-10, AC-20 or AC-40 and meeting the requirements of ASTM D 3381-76 or AASHTO M 226-73, and exhibiting a higher viscosity at 60° C., as measured by the procedure of ASTM STP 532 (1973), in which said viscos-

ity is interpolated at a penetration level of 90 decimillimeters at 25° C., than a comparative non-air treated composi-



tion derived from the same propane-precipitated asphalt, whose softening point has not been increased.

4,283,231

#### SULFUR-TREATED PROPANE-PRECIPITATED ASPHALT

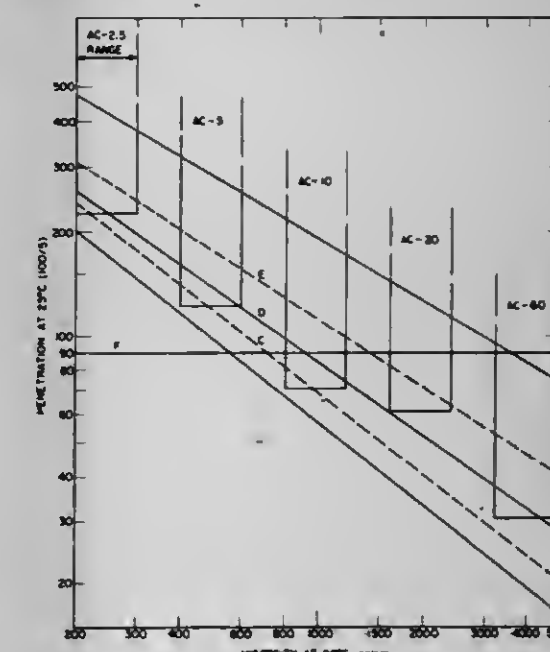
Dominick Clementoni, Union, and Luke W. Corbett, Mountainside, both of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Jan. 10, 1980, Ser. No. 111,036

Int. Cl.<sup>3</sup> C08L 95/00

U.S. Cl. 106—274

17 Claims



1. A process for preparing an asphalt cement composition comprising the steps of:

(a) heating a mixture consisting essentially of a propane-precipitated asphalt, derived from a residuum of a crude oil, having a gravity of above about 20° API, and 0–60 weight percent, based on the total weight of said asphalt, of a liquid petroleum fraction, having an atmospheric equivalent boiling range of about 370°–500° C., and about 1 to 15 wt. % elemental sulfur, based on the total weight of said asphalt, at a temperature in the range of about 140° to 300° C., until hydrogen sulfide evolution ceases, thereby resulting in a sulfur-treated asphalt base having an increased softening point, compared to that of said propane-precipitated asphalt, and being in the temperature range of about 65°–300° C. as measured by ASTM D 36-76; and



(b) blending said sulfur-treated asphalt base with about 0-60 weight percent, based on the total weight of said asphalt base, of said liquid petroleum fraction, such that the total amount of said petroleum fraction present is about 5-60 weight percent of said asphalt base, thereby producing an asphalt cement composition, being of ASTM viscosity grade AC-2½, AC-5, AC-10, AC-20 or AC-40 and meeting the requirements of ASTM D 3381-76 or AASHTO M 226-73, and exhibiting a higher viscosity at 60° C. (ASTM D 2171-66), as measured by the procedure of ASTM STP 532 (1973), in which said viscosity is interpolated at a penetration level of 90 decimillimeters at 25° C., than a comparative non-sulfur treated composition, derived from the same propane-precipitated asphalt whose softening point has not been increased.

4,283,232

# PROCESS AND APPARATUS FOR USE IN TREATING MATERIALS IN HYDROCYCLONES

Ijsbrand Best, Bergen, Netherlands, assignor to Wessanen Nederland B.V., Amstelveen, Netherlands

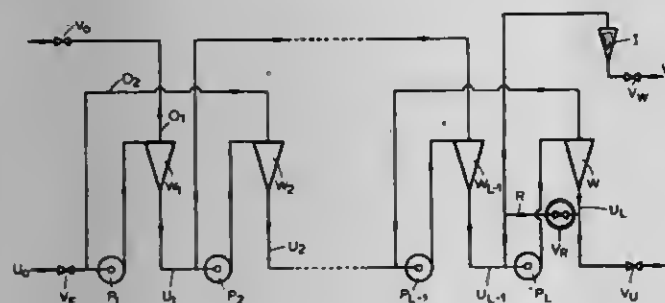
Filed May 23, 1979, Ser. No. 42,601

Claims priority, application United Kingdom, May 24, 1978, 22187/78

Int. Cl.³ C13L 1/00

U.S. Cl. 127—71

4 Claims



1. A process of upgrading a particulate starch product by subjecting it to a counter-current washing process with water in a system of hydrocyclones operating in cascade with introduction of wash water into the final stage, in order to remove contaminating substances, in which process a suspension of a starch product in water containing dissolved contaminants is fed continuously into the first of a plurality of hydrocyclone washing stages each of which operates to discharge an underflow stream and an overflow stream the former of which contains a higher proportion of the starch product particles than the overflow stream; the underflow stream from each stage except the last is pumped directly via a feed line into the next hydrocyclone stage, and the overflow stream from each hydrocyclone stage except the first is introduced into the feed-line to the previous hydrocyclone stage at a point at the inlet side of the pump in that line whereas the overflow stream from the first stage, which stream contains removed contaminants, is removed from the system; the whole series of hydrocyclone stages being operated as a totally enclosed system so that the different stages function interdependently; with the improvement that the final stage underflow stream which contains the washed starch product is in part directly removed from the system and in part recycled directly to that final stage by conducting that part into the feed-line to that stage at the inlet side of the pump in that feed-line.

## 4,283,233 METHOD OF MODIFYING THE TRANSITION TEMPERATURE RANGE OF TINI. BASE SHAPE MEMORY ALLOYS

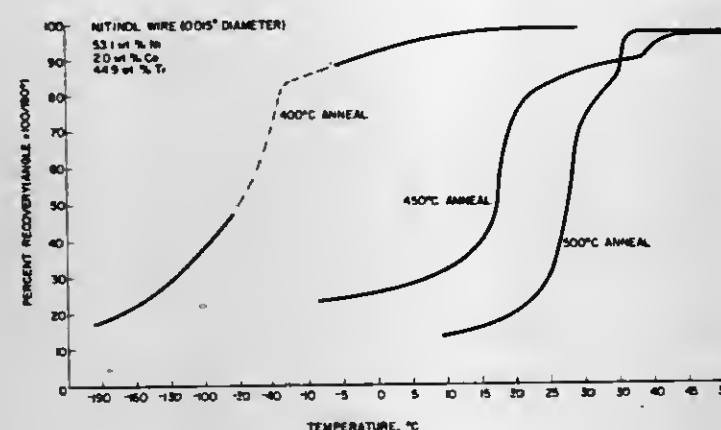
David Goldstein, Adelphia; Richard E. Jones, and Robert S. Sery, both of Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 7, 1980, Ser. No. 128,326

Int. Cl.³ C22F 1/10

U.S. Cl. 148—11.5 R

4 Claims



1. In the process of forming an article with a shape change memory from a nickel-titanium based shape change memory alloy by annealing the object at a temperature above the transition temperature range (TTR) while the object is restrained in its permanent shape and then reshaping the object into another shape at a temperature below the transition temperature range, the improvement comprising:

determining the annealing temperature which produces the desired transition temperature range for the article by performing the following steps in order:

- (1) forming the alloy into the desired permanent shape of the article;
- (2) restraining the article in this permanent shape;
- (3) annealing the article at a temperature above the TTR;
- (4) cooling the alloy down to a temperature below the TTR;
- (5) removing the restraint from the article;
- (6) forming the article into an intermediate shape taking care not to cause more than 7 percent deformation in the material;
- (7) determining the TTR by slowly heating up the article and observing the temperature range over which it recovers its permanent shape; and
- (8) deciding the next steps as follows:
  - (a) if the TTR is lower than that desired, steps (2) through (8) are repeated using a higher annealing temperature in step (3);
  - (b) if the TTR is higher than that desired, steps (1) through (8) are repeated using fresh alloy and a lower annealing temperature in step (3); but
  - (c) if the TTR is that desired, the annealing temperature last used in step (3) is used in the process.

4,283,234

# GAS TURBINE NOZZLE

Yutaka Fukui, and Hiromi Kagohara, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,828

Claims priority, application Japan, Dec. 15, 1978, 53-157234

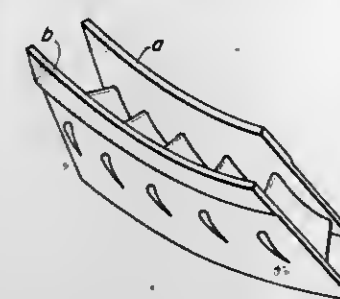
Int. Cl.³ C22C 19/05

U.S. Cl. 148—32.5

13 Claims

1. A gas turbine nozzle made of a cast material having a chemical composition which consists essentially of 0.2 to 1 wt% carbon, 0.1 to 2 wt% silicon, 0.1 to 2 wt% manganese, 20 to 40 wt% chromium, 0.001 to 0.1 wt% boron, 5 to 20 wt% of

at least one of tungsten and molybdenum and the remainder nickel, said material having a heat-treated structure in which



eutectic carbides and secondary carbides are dispersed in the matrix.

4,283,235

# DIELECTRIC ISOLATION USING SHALLOW OXIDE AND POLYCRYSTALLINE SILICON UTILIZING SELECTIVE OXIDATION

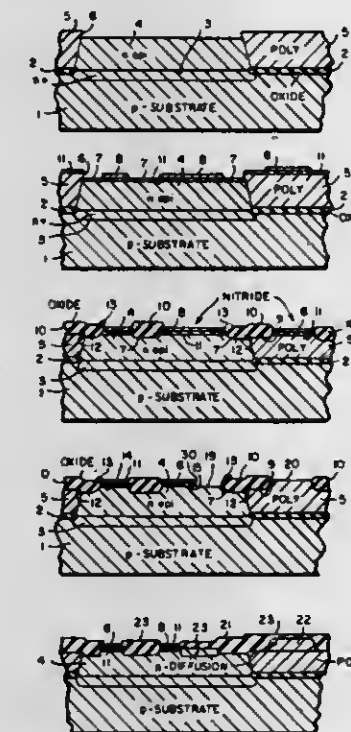
Jack I. Raffel, Lexington, and Stephen E. Bernacki, Worcester, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 61,374, Jul. 27, 1979, Pat. No. 4,231,819, which is a division of Ser. No. 773,637, Feb. 28, 1977, Pat. No. 4,184,172, which is a continuation-in-part of Ser. No. 747,743, Dec. 6, 1976, abandoned. This application May 15, 1980, Ser. No. 150,067

Int. Cl.³ H01L 21/20, 21/302, 21/76

U.S. Cl. 148—175

7 Claims



1. A method for achieving isolation of integrated circuits comprising:

- depositing a layer of oxide on a silicon substrate leaving open areas on which devices are to be subsequently made over the exposed silicon substrate,
- growing simultaneously a layer of polycrystalline silicon on the oxide regions and a layer of epitaxial silicon on the exposed silicon regions of the substrate,
- selectively forming a thick oxide layer on the surface of said polycrystalline and said epitaxial silicon layers leaving open those regions of the polycrystalline layer where resistors are to be made and those regions of the epitaxial silicon where junction devices are to be made,
- the thickness of the oxide being such that the bottom of the oxide extends below the junction depth of junctions to be subsequently formed in said epitaxial silicon open regions and less than the thickness of the epitaxial layer, and

forming said junction devices in said epitaxial layer open regions, at least one junction abutting the thick oxide layer beneath the surface of the epitaxial silicon, whereby said oxide forms an oxide isolation between the junctions and said polysilicon layer surrounding the epitaxial silicon.

4,283,236

# METHOD OF FABRICATING LATERAL PNP TRANSISTORS UTILIZING SELECTIVE DIFFUSION AND COUNTER DOPING

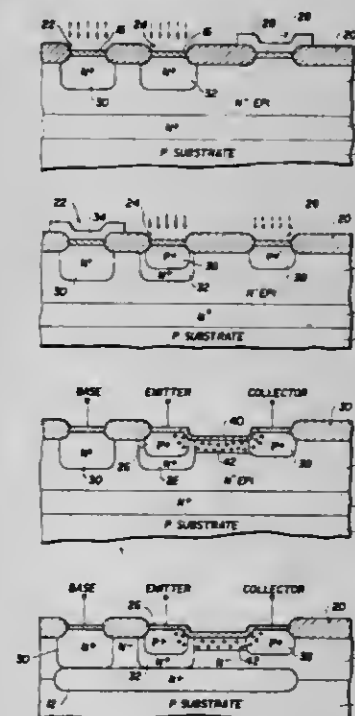
Ramesh M. Sirsi, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Sep. 19, 1979, Ser. No. 77,234

Int. Cl.³ H01L 21/22, 21/31

U.S. Cl. 148—187

11 Claims



1. A method of fabricating lateral PNP transistors comprising:

- introducing N type impurities into a low impurity concentration N type base region to form high impurity concentration N type base and base contact regions;
- introducing P type impurities into said low impurity concentration base region to form P type collector region and into said high impurity concentration base region to form P type emitter region; and
- introducing P type impurities into the region between said collector and emitter regions of sufficient concentration to counter dope the low impurity concentration base region between said collector region and said high impurity concentration base region without converting said high impurity concentration base region.

4,283,237

# METHOD OF MAKING A GUN PROPELLANT COMPOSITION

Russell Reed, Jr., and Raymond M. Price, both of Ridgecrest, Calif., assignors to Thiokol Corporation, Newtown, Pa.

Continuation-in-part of Ser. No. 329,258, Jan. 17, 1973, abandoned. This application Apr. 3, 1975, Ser. No. 565,428

Int. Cl.³ C06B 45/10

U.S. Cl. 149—19.91

14 Claims

1. The method of making a propellant which comprises preparing an extrudable mixture consisting essentially of a major amount of cyclotetramethylene tetranitramine and a minor amount of a curable binder, said binder comprising at least one alkyl acrylate or alkyl methacrylate of 14 to 24 carbon atoms, a polyacrylate cross-linking agent and a free radical



catalyst, and extruding said mixture into hot water at a temperature sufficient to cure said binder and to form cured pellets of said propellant.

4,283,238

# METHOD OF RECONSTITUTING THE EXTERNAL CONDUCTOR OF A COAXIAL CABLE AND CABLE THUS RECONSTITUTED

Patrick Jacquemart, Calais, France, assignor to Les Câbles de Lyon, Lyons, France

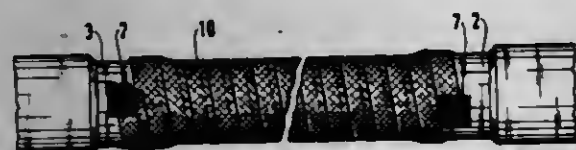
Filed Jun. 2, 1978, Ser. No. 912,148

Claims priority, application France, Jun. 28, 1977, 77 19743

Int. Cl.<sup>3</sup> H02G 1/14; B21F 15/06

U.S. Cl. 156—49

3 Claims



1. A method of repairing an aluminum outer conductor of a coaxial cable which includes a portion of bared dielectric between two ends of said outer conductor which ends are to be mechanically and electrically connected together, said method of repairing said cable producing a crack resistant mend at said portion of bared dielectric, said mend further having a low impedance, said method comprising (i) winding at least one conductive tape made of aluminum gauze in a helix, the edges of successive turns of said tape overlapping to cover said bared dielectric and said ends of said outer conductor; and (ii) sticking the ends of said conductive tape to the outer conductor by means of an electrically conductive adhesive selected from the group consisting of epoxy and polyester resins having conductive particles added thereto.

4,283,239

# BRACING METHOD

Nicholas T. Corke, Linden, and Christian A. M. Debbaut, Lubbeek, both of Belgium, assignors to N.V. Raychem S.A., Kessel-Lo, Belgium

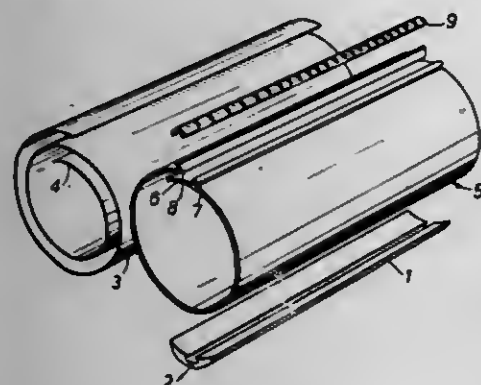
Filed Feb. 14, 1979, Ser. No. 12,016

Claims priority, application United Kingdom, Feb. 21, 1978, 6906/78

Int. Cl.<sup>3</sup> B29C 27/00; B32B 31/00

U.S. Cl. 156—85

21 Claims



1. A method of bracing a junction between cables which, in use, are pressurized, which comprises the steps of applying to the junction, in the order listed, a first sleeve, a substantially gas-impermeable member, which is subject to distortion by the internal pressure, a reinforcing member comprising a fibrous mat impregnated with a meltable material, and a second, heat-shrinkable sleeve, the reinforcing member being radially inwardly deformable at least at the recovery temperature of the second sleeve, and heating to recover the second sleeve.

# METHOD FOR REPAIRING GRAINED OR EMBOSSED VINYL SHEETING WITH IMPRINTED VINYL MOLDS

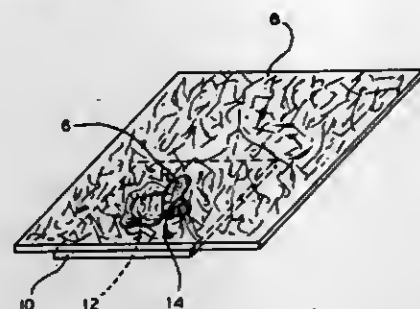
Lawrence L. Speer, 7177 State Rd., Wadsworth, Ohio 44281

Filed Mar. 24, 1980, Ser. No. 133,455

Int. Cl.<sup>3</sup> B29D 9/00

U.S. Cl. 156—98

9 Claims



1. A method for repairing a damaged area of grained or embossed vinyl sheeting comprising the sequential steps of:

- (a) forming an imprinted vinyl mold or matrix of the grained or embossed vinyl sheeting to be repaired;
- (b) trimming the edges of the damaged area of vinyl sheeting;
- (c) disposing an adhesive backing under the damaged area to form a cavity;
- (d) filling the cavity with a vinyl repair compound;
- (e) heating the vinyl repair compound with a heat source until the compound is sufficiently soft to accept an imprint but insufficiently soft to cause permanent bonding with the vinyl mold or matrix, or to cause loss of the imprint on the vinyl mold;
- (f) placing the relatively cool imprinted vinyl mold in contact with the soft vinyl compound without pressure being applied, so that the mold removably adheres to the compound and the compound accepts the grain of the mold;
- (g) allowing the soft compound to cool to about room temperature while in contact with the vinyl mold; and
- (h) stripping the vinyl mold from the repair area.

4,283,241

# METHOD OF PRODUCING A TIRE FOR A PNEUMATIC TIRE ARRANGEMENT

Josef G. Hollmann, Munich, Fed. Rep. of Germany, assignor to Hirschmann Technik AG, Zürich, Switzerland

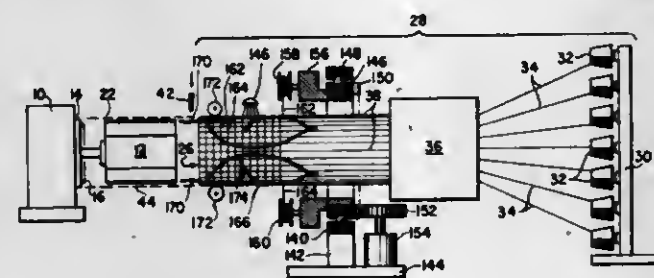
Continuation-in-part of Ser. No. 853,172, Nov. 21, 1977, abandoned. This application Jun. 15, 1979, Ser. No. 48,738

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1976, 2653022

Int. Cl.<sup>3</sup> B29H 17/00, 17/26

U.S. Cl. 156—117

10 Claims



1. A method of preparing blanks for radial-ply tires having a predetermined bead core diameter comprising the steps of:

- (a) extrusion coating individual, elongated, reinforcing members aligned in a tubular array with a vulcanizable rubber composition;
- (b) longitudinally moving the coated members aligned in a tubular array in a common direction while circumferentially spaced about an axis extending in said direction;
- (c) interconnecting the moving members by circumferen-

tially extending deformable connecting means, thereby forming a tube about said axis, said tube having a diameter substantially equal to said bead core diameter;

- (d) severing said tube into axially consecutive sections;
- (e) mounting the tube sections on a building drum;
- (f) incorporating bead rings into the axial terminal portions of said sections; and
- (g) radially expanding the axially central portion of each section while substantially maintaining the diameter of the axially terminal portions of each section, so as to form a toroidally shaped tire blank;
- (h) said deformable connecting means in said axially central portion being circumferentially deformed during said step of radially expanding so that the circumferential distance of said reinforcing members is increased in said axially central portion.

4,283,242

# PROCESS FOR CEMENTING SEMICONDUCTOR DISCS ONTO A CARRIER PLATE

Dieter Regler, Bruno Meissner, and Alfred Moritz, all of Burg-hausen, Fed. Rep. of Germany, assignors to Wacker-Chem-tronic Gesellschaft für Elektronik-Grundstoffe mbH, Burg-hausen, Fed. Rep. of Germany

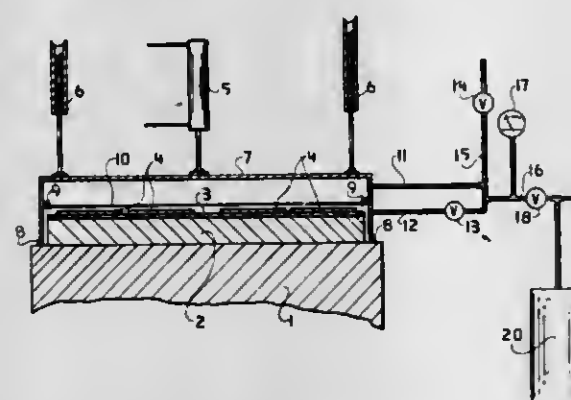
Continuation of Ser. No. 884,459, Mar. 8, 1978, abandoned. This application Sep. 7, 1979, Ser. No. 73,415

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712521

Int. Cl.<sup>3</sup> B32B 31/22

U.S. Cl. 156—154

3 Claims



1. A process for cementing semiconductor wafers temporarily onto a carrier plate of a polishing machine so as to permit semiconductor wafers of relatively different thicknesses to be reliably pressed into a cement layer without the occlusion of air bubbles, and such that the upper surfaces of said wafers extend above the cement layer and lie substantially in the same plane, comprising the steps of:

- coating the carrier plate totally with an even layer of cement substance;
- applying the wafers to the cement substance on the carrier plate;
- placing a vacuum-tight sealing dome over the carrier plate, so as to define a sealed hollow space;
- clamping an elastic, chemically-inert diaphragm within said dome 0.2 to 1.5 mm above the free surface of the wafers, said diaphragm dividing the hollow space into two sub-chambers;
- simultaneously evacuating the entire hollow space defined by said two subchambers to a pressure of 10 to 10<sup>-5</sup> torr;
- subsequently applying air pressure in the subchamber between the diaphragm and the top of the dome by venting said space to an outside air source, so that the wafers are pressed by the diaphragm onto the cement layer;
- thereafter feeding air pressure to the subchamber between the cement layer and the diaphragm, and, removing the dome from the carrier plate;
- allowing said cement layer to set;
- polishing said wafers in a polishing machine; and
- removing absolutely wave-free wafers from said polishing machine.

4,283,243

# USE OF PHOTSENSITIVE STRATUM TO CREATE THROUGH-HOLE CONNECTIONS IN CIRCUIT BOARDS

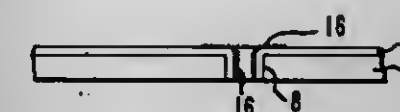
Sam Andreades, Red Bank; Grant A. Beske, Princeton Junction, and John W. Lott, Tinton Falls, all of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 954,085, Oct. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 878,878, Feb. 17, 1978, abandoned. This application Mar. 20, 1980, Ser. No. 132,154

Int. Cl.<sup>3</sup> B44C 00/00

U.S. Cl. 156—237

40 Claims



1. A method for treating the surface of a through-hole in a substrate in preparation for rendering that surface electroconductive comprising the steps:

- (a) laminating a supported plastic photosensitive toner-receptive stratum to a surface of the substrate whereby the through-hole is covered by the supported stratum;
- (b) removing the support from the stratum and applying a pressure differential across the stratum by subjecting the stratum to vacuum via the through-hole;
- (c) maintaining the pressure differential across the stratum by which the stratum covering the through-hole collapses into the through-hole and adheres to the walls thereof;
- (d) optionally exposing the photosensitive stratum image-wise by which selected areas thereof, excluding the areas covering the through-hole, are rendered toner nonreceptive;
- (e) applying finely divided metal alloy or plating catalyst to the toner-receptive surface of the collapsed stratum within the through-hole;
- (f) optionally hardening or curing the metallized or catalyzed areas;
- step-(g) converting the metallized or catalyzed areas to electrically conductive areas and electrically conductive through-holes.

4,283,244

# METHOD OF MAKING FABRIC-LINED ARTICLES

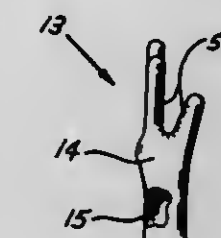
Tas Hashmi, Willard, Ohio, assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed Oct. 1, 1979, Ser. No. 80,858

Int. Cl.<sup>3</sup> B29B 13/04

U.S. Cl. 156—242

23 Claims



1. A method of making a lined elastomeric article comprising the steps of applying a coating of adhesive in liquid state to an elastomeric article on a form, drying the adhesive on the article, thereafter applying a preformed lining over the article and the adhesive coating to adhesively connect the lining to the article including the steps of employing a lubricant between the adhesive coating and the inner surface of the lining to facilitate applying the lining over the adhesive coating and article, and thereafter drying the lining and the article on the form, and removing the article with the lining from the form to provide the lined elastomeric article.



4,283,245

**BOTTLE LABELLING APPARATUS**

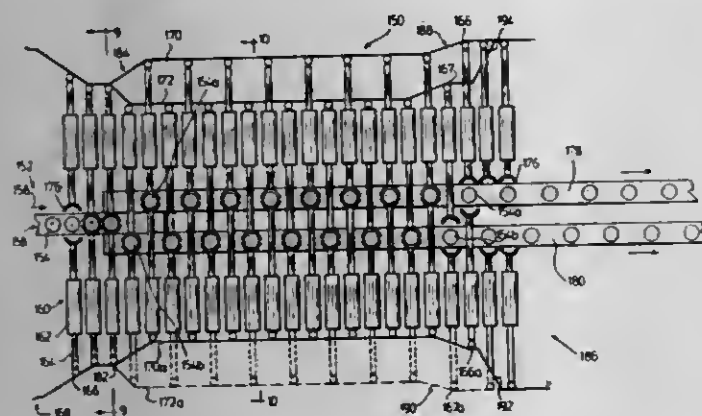
Horst A. Benoit, 510 Richey Crescent, Mississauga, Ontario, Canada (L5G 1N4)

Continuation-in-part of Ser. No. 844,595, Oct. 25, 1977, abandoned. This application Apr. 17, 1979, Ser. No. 30,770  
Claims priority, application Canada, Oct. 18, 1977, 288967;  
United Kingdom, Sep. 29, 1978, 38678/78

Int. Cl.<sup>3</sup> B65C 9/02, 9/06

U.S. Cl. 156—476

41 Claims



1. In container conveying apparatus, means for conveying containers, container registration means for evenly spacing such containers on said means for conveying, and means which travels with said means for conveying for individually engaging such containers to maintain container even spacing and shifting such conveyed engaged containers laterally a predetermined extent on said means for conveying.

4,283,246

**CONTINUOUS LAMINATING MACHINE**

Kurt Held, Alte Strasse 1, D-7218 Trossingen 2, Fed. Rep. of Germany

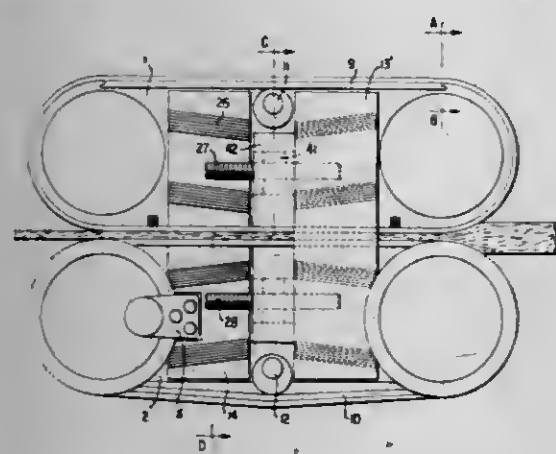
Filed Jan. 23, 1980, Ser. No. 114,673

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1977, 2737629

Int. Cl.<sup>3</sup> B30B 5/06

U.S. Cl. 156—555

5 Claims



1. In a continuous laminating machine for exerting a pressure over an area on a moving panel of material, which machine includes a stationary supporting structure composed of two supporting elements, each supporting element presenting a parallel pair of planar outer faces and semicylindrical outer end faces extending between the planar faces, two steel pressing belts each supported by a respective supporting element and each disposed to press against a respectively opposite side of such a panel in the region of one planar outer face of a respective supporting element for applying such pressure thereto, bearing means providing a rolling bearing between each pressing belt and its respective supporting element, and clamping plates connecting the supporting elements together, the improvement wherein: said bearing means comprise a plurality of cylindrical rolling elements and a plurality of spacer profiles alternating with said rolling elements and provided with arcuate recesses adapted to the configuration of said rolling elements so that each spacer profile forms a slide bearing cup for one side of an adjacent one of said rolling elements, said rolling elements and spacer profiles being disposed between each said pressing belt and its respective supporting element such that the compression reaction forces produced by such a panel are transferred from said rolling elements under the influence of rolling friction to said supporting elements and into said clamping plates; said clamping plates are provided with support surfaces inclined to said planar outer faces of said supporting elements and said supporting elements are provided with support countersurfaces parallel to, and engaging, said support surfaces; and said machine further comprises adjusting means including threaded spindles threadably engaging said clamping plates for moving said clamping plates in mutually opposite directions in a manner to vary the spacing between said supporting elements over a continuous range.

4,283,247

**LIQUID PHASE EPITAXIAL PROCESS FOR MAGNETIC GARNET**

Rodney A. Roques, Austin, Tex., and Gene F. Wakefield, Chatsworth, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 21, 1979, Ser. No. 50,587

Int. Cl.<sup>3</sup> C30B 19/02

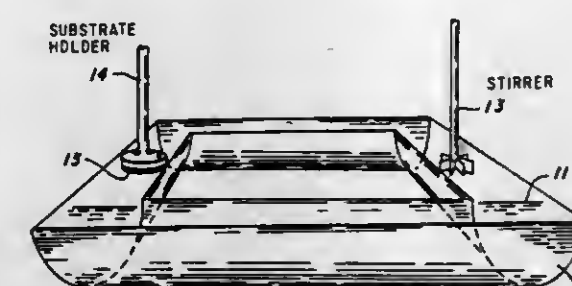
U.S. Cl. 156—601

3 Claims

1. A method for the liquid phase epitaxial growth of a crystalline magnetic garnet material on a suitable substrate comprising the steps of:

- (a) providing a circulating  $P_2O_5-B_2O_3$  flux solution of a magnetic garnet;
- (b) selectively controlling the temperature within separated zones of said solution to provide a first zone maintained at a temperature higher than the saturation point; and a second zone remote from said first zone, maintained at a temperature below the saturation point; and third and fourth intermediate zones wherein said solution is circulated, while cooling, from said first zone to said second zone, and is returned from said second zone to said first zone at increasing temperatures, respectively, each of said zones having a common surface level;

- (c) preheating the substrate to a suitable growth temperature;



- (d) and placing a surface thereof in contact with the surface of said second zone for a time sufficient to deposit an epitaxial layer of said solute material thereon.

4,283,248

**ETCHING SOLUTION FOR TIN-NICKEL ALLOY AND PROCESS FOR ETCHING THE SAME**

Takeshi Kakubashi, and Kazuo Fukunaga, both of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

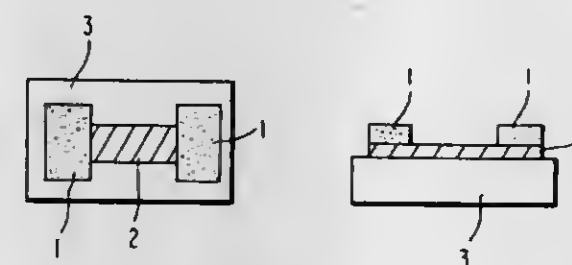
Filed Feb. 1, 1980, Ser. No. 117,692

Claims priority, application Japan, Feb. 1, 1979, 54-10844; Nov. 26, 1979, 54-152647

Int. Cl.<sup>3</sup> C09K 13/06; C23F 1/00

U.S. Cl. 156—637

45 Claims



Claim 1 (Amended). A process for etching a tin-nickel alloy which comprises etching the alloy at a temperature of greater than about 80° C with a solution containing at least one phosphoric acid compound selected from the group consisting of 0.1 mol/l or more phosphoric acid, 0.05 mol/l or more pyrophosphoric acid, 0.1 mol/l or more phosphorous acid, 0.1 mol/l or more of a mixture of phosphoric, pyrophosphoric and/or phosphorous acids; molten phosphoric acid, molten pyrophosphoric acid, molten phosphorous acid [or] and a molten mixture of phosphoric, pyrophosphoric and/or phosphorous acids.

4,283,249

**REACTIVE ION ETCHING**

Linda M. Ephrath, Danbury, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 35,176, May 2, 1979, abandoned, which is a continuation of Ser. No. 840,085, Oct. 6, 1977, abandoned. This application Aug. 17, 1979, Ser. No. 67,261

Int. Cl.<sup>3</sup> H01L 21/306; B44C 1/22; C23F 1/00

U.S. Cl. 156—643

35 Claims



1. A method for reactive ion etching an article which comprises a substrate and a surface thereon selected from the group

of silicon oxides, silicon nitride, silicon oxynitride, and mixtures thereof which comprises:

- positioning the article to be etched on a cathode;
- enclosing in a container, the cathode and the surface to be etched;
- introducing an etchant gas into said container wherein said gas is a mixture of gaseous fluorocarbon which is capable of supplying  $CF_3$ , and a second gas capable of supplying hydrogen selected from the group consisting of hydrogen,  $NH_4$ , gaseous saturated aliphatic hydrocarbons, and mixtures thereof, wherein the fluorocarbon is present in an amount sufficient to provide etching of said surface and the second gas is present in an amount sufficient to provide at least about 10%  $H_2$  based on the total molecular flow rate of the gases as measurable by volume per unit time and being sufficient to selectively etch said surface at a greater rate than said substrate without causing polymerization on said substrate, wherein the gases are regulated by individual molecular flow rates prior to mixing together; and
- applying an AC potential to the cathode to disassociate the reactive gases and to accelerate chemically reactive etchant gas ions toward said cathode.

4,283,250

**SOLUTION-CONCENTRATING APPARATUS**

Carl-Hugo Abrahamson, Batmanskroken 5, S-126 57 Hägerssten, and Björn Heed, Utlandagatan 19, S-412 61 Göteborg, both of Sweden

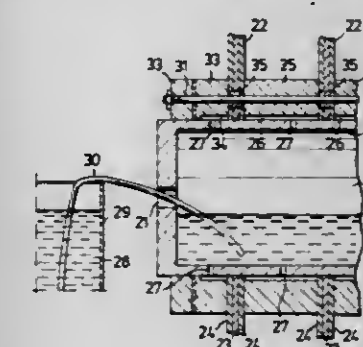
Filed Feb. 6, 1980, Ser. No. 118,911

Claims priority, application Sweden, Feb. 9, 1979, 7901174

Int. Cl.<sup>3</sup> B01D 1/24

U.S. Cl. 159—9 R

7 Claims



1. An apparatus for concentrating a liquid solution, comprising a plurality of spaced apart plates arranged for rotation about a substantially horizontal axis extending through a centre region of said plates, each of said plates having at least one outer layer comprising an open-pore material having the ability to absorb such solution; means for supplying solution to the surfaces of said plates, said surfaces being arranged to be exposed to heat and/or a flowing gas for the purpose of vaporizing a relatively vaporizable constituent from the solution supplied to said surfaces; and means for collecting concentrated products, wherein the radially inner region of said outer layer extends into a storage space for solution to be concentrated, said storage space being shielded by shielding means from the parts of said outer-surfaces exposed to said heat and/or said gas.

4,283,251

**OZONE EFFLUENT BLEACHING**

Rudra P. Singh, Brookhaven, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Jan. 24, 1980, Ser. No. 115,065

Int. Cl.<sup>3</sup> D21C 3/26

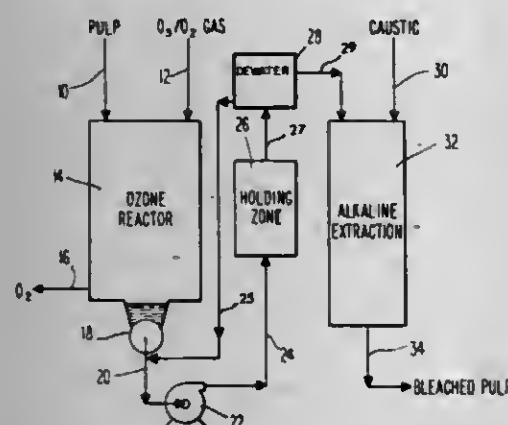
U.S. Cl. 162—17

10 Claims

1. In a pulp bleaching process employing a sequence of pulp treatments including a gaseous ozone bleaching treatment at a



pulp consistency of from about 20% to about 45% and at an acidic pH followed by an alkaline treatment at a pH above 7 and at a pulp consistency lower than the pulp consistency in the ozone bleaching treatment; wherein the improvement comprises, employing a low consistency acidic retention treatment between the ozone bleaching treatment and the alkaline treatment, said low consistency acidic retention treatment comprising lowering the consistency of the pulp obtained from the ozone bleaching treatment by the addition of water to the pulp to a consistency of 12% or less by weight while maintaining the pulp at an acidic pH, retaining said ozone bleached pulp at said lower consistency and at said acidic pH for a retention



time of at least ten minutes, whereby bleaching of the pulp is achieved during the retention treatment by peroxygen values available in the water associated with the pulp from the ozone bleaching treatment.

2. The process of claim 1 performed continuously and with countercurrent recycle of water obtained by dewatering pulp; comprising removing water from the pulp after said retention time, taking said removed water and combining said water with ozone bleached pulp entering the low consistency acid retention treatment to lower the consistency of the ozone bleached pulp whereby the use of peroxygen and acid values contained in the recycled water is maximized for bleaching pulp in the low consistency acid retention treatment.

4,283,252

#### METHOD AND APPARATUS FOR PRODUCING FIBER PULP FROM FIBROUS LIGNOCELLULOSE CONTAINING MATERIAL

Rolf B. Reinball, P.O. Box 3847, Bellevue, Wash. 98009  
Continuation of Ser. No. 937,411, Aug. 28, 1978, abandoned, which is a continuation of Ser. No. 777,624, Mar. 15, 1977, abandoned. This application Jun. 17, 1980, Ser. No. 160,253  
Claims priority, application Sweden, Mar. 19, 1976, 7603464  
Int. Cl.<sup>3</sup> D21B 1/14; B02C 23/24

U.S. Cl. 162-23

3 Claims

1. In the method of producing thermo-mechanical pulp in which ligno-cellulose fiber material such as wood chips is disintegrated in a grinding space defined between a pair of grinding discs which rotate relatively to one another under axial pressure within a defibrating housing in a steam environment of superatmospheric pressure and elevated temperature about 100° C., the wood chips being conveyed through the inlet in the grinding housing into a central opening between the grinding discs, from which the material is propelled radially outwards into the grinding space by the centrifugal force created by the rotating discs, the resultant ground pulp material being discharged from the defibrating housing through valve means which are controlled to maintain a predetermined pressure and temperature within the housing, the improvement in said method providing enhanced fibrillation with reduced energy consumption, comprising the steps of:

- conveying the wood chips into a passage to the inlet of the grinding space;
- compressing and dewatering the chips to a sufficient consistency to form a steam-tight plug at the inlet to said

- grinding housing to seal the latter against blow-back of pressurized steam into said passage;
- advancing said steam-tight plug through said inlet into said central opening at a temperature below 100° C.;
- breaking up said steam-tight plug at the grinding disc opposite the incoming plug before propelling the resultant fiber material into the grinding space; and
- maintaining the temperature in the radial inner portion of the grinding space up to the softening point of the middle lamella to cause the pulp fiber walls to unravel and separate without any substantial fibrillation thereof as they are propelled through said inner radial portion of the grinding space to be subsequently fibrillated under the generation of high-temperature steam as they are propelled further through an outer radial portion of the grinding space.

4,283,253

#### METHOD AND APPARATUS FOR PROCESSING FILLING GAS FROM A COKE OVEN BATTERY

Joachim Polenz, Essen, and Hans Wagner, Kettwig, both of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

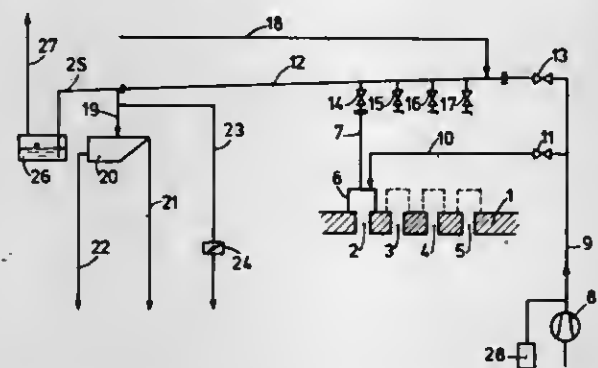
Filed Sep. 18, 1980, Ser. No. 188,281

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942962; Dec. 6, 1979, 2949016

Int. Cl.<sup>3</sup> C10B 27/04

U.S. Cl. 201-30

21 Claims



- An improved method for production of coke and by-products comprising filling with coal a coke oven chamber of a coke oven battery having horizontal chambers and a coke oven gas off-take main; withdrawing the filling gas generated during coking of said coal generated during filling separately from the coke oven gas; adding flue gas to the filling gas for rendering the resulting gas mixture of the filling gas and the flue gas relatively inert; withdrawing said gas mixture through a filling gas conduit fed with flushing liquor withdrawn from the coke oven gas off-take main; admixing said gas mixture of the filling and flue gas to the raw coke oven gas; feeding the tar and coal containing flushing liquor coming from said filling gas conduit into a thick tar separator; and returning the flushing liquor after separation of tar and coal to the flushing liquor coming from the gas off-take main.

4,283,254

#### METHYLAMINES PURIFICATION BY DISTILLATION AND PURGE

Douglas E. Binau, Charleston, and Emmett J. Speicher, Elkview, both of W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 3, 1980, Ser. No. 136,998

Int. Cl.<sup>3</sup> B01D 3/14; C07C 85/26

U.S. Cl. 203-4

5 Claims

- In the process of distilling crude methylamines by feeding

4,283,256

#### METHOD AND APPARATUS FOR MEASURING THE STRENGTH OF THE AIR/FUEL MIXTURE SUPPLIED E.G. TO AN I.C. ENGINE

Peter Howard, Chelsea, Mich., and David Weetman, Seaford, England, assignors to Ricardo Consulting Engineers Limited, Shoreham-by-Sea, England

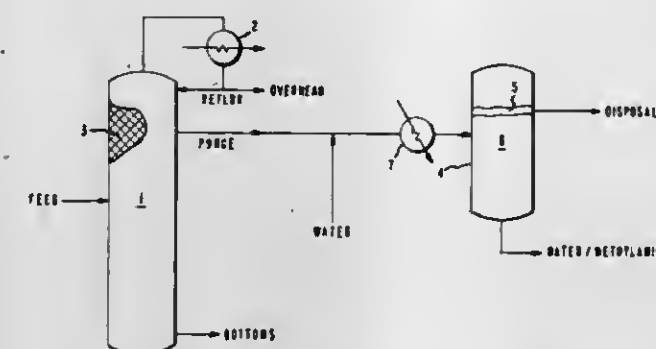
Filed Mar. 7, 1980, Ser. No. 128,314

Claims priority, application United Kingdom, Mar. 15, 1979, 09084/79

Int. Cl.<sup>3</sup> G01N 27/58

U.S. Cl. 204-1 T

21 Claims



phase containing impurities and a water phase containing methylamines, the amount of water added being sufficient to keep the methylamines content of the water phase below 25% by weight;

- cooling the phases to a temperature below the boiling point of the impurities and aqueous methylamines;
- separating the two phases; and
- recycling the water phase for recovery of its methylamines content.

4,283,255

#### MASS TRANSFER PROCESS

Colin Ramshaw, and Roger H. Mallinson, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

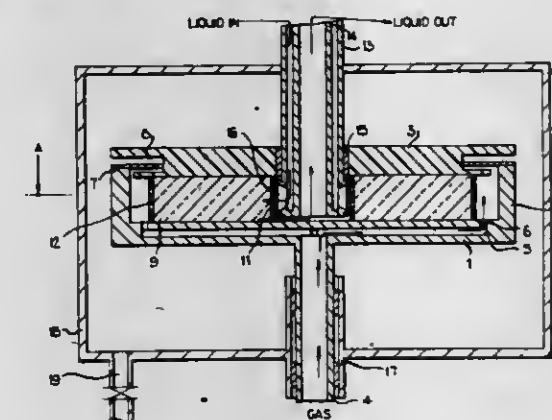
Filed Nov. 27, 1978, Ser. No. 963,886

Claims priority, application United Kingdom, Dec. 1, 1977, 50072/77

Int. Cl.<sup>3</sup> B01D 3/30

U.S. Cl. 203-49

13 Claims



- A process for effecting mass transfer between two fluid phases, the first of which is a liquid, which process comprises the steps of:

- charging the said fluids to an element which has an interfacial area of more than 1500 m<sup>2</sup>, is permeable to the fluids and has pores which present a tortuous path to the fluids;
- rotating the said element about an axis such that the fluids flow through the said pores with the first fluid flowing radially outwards away from the said axis; and
- collecting at least a proportion of one of the fluids discharged from the said element.

- An instrument for providing an indication of the ratio of air to fuel of a combustible mixture being supplied to a combustion system which operates on hydrocarbon fuel, for combustion therein, which instrument comprises:

means for effecting the continuous complete combustion of a controlled supply of a hydrocarbon heating fuel with a controlled supply of an oxygen-containing gas to produce heat and a reference gas, said reference gas being a continuous supply of gaseous combustion products containing a known proportion of free oxygen,

means for mixing a sample flow of exhaust gas from said combustion system with at least a sample flow of said reference gas in a controlled proportion, and means for effecting a catalytic oxidation reaction of the mixture of the sample flows of exhaust gas and reference gas to oxidise any unburnt components derived from the sample flow of said exhaust gas in the mixture, said means for effecting a catalytic oxidation reaction receiving said heat generated by the combustion of said heating fuel and said oxygen-containing gas to maintain said catalytic oxidation reaction.

- A method of measuring the ratio of air to fuel of a combustible mixture being supplied to a combustion system operating on hydrocarbon fuel, for combustion therein, which method comprises the steps of:

effecting the continuous complete combustion of a controlled supply of a hydrocarbon heating fuel with a controlled supply of an oxygen-containing gas to produce heat and a reference gas, said reference gas being a continuous supply of gaseous combustion products containing free oxygen in a known proportion, mixing a sample flow of exhaust gas from said combustion system with a sample flow of said reference gas in a controlled proportion, effecting a catalytic oxidation reaction of said mixture of said exhaust gas and said reference gas, to oxidise any unburnt components derived from the sample flow of said exhaust gas in the mixture, said reference gas ensuring the presence of a proportion of free oxygen in the gaseous combustion products of said catalytic oxidation reaction over the range of air/fuel ratios of said combustible mixture, utilising the heat of combustion of said mixture of said heating fuel and said air to maintain said catalytic oxidation reaction, using a quick-response oxygen-sensing cell of the solid-oxide electrolyte type to measure the proportion of free oxygen



in the gaseous reaction products of said catalytic oxidation reaction, and  
 deriving an air/fuel ratio of the combustible mixture being supplied to the combustion system in accordance with predetermined data and the results of said measuring step.

4,283,257

# PROCESS FOR PREPARING AMMONIUM METATUNGSTATE

Clarence D. Vanderpool, and Martin B. MacInnis, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 9, 1980, Ser. No. 157,571  
 Int. Cl.<sup>3</sup> C25B 1/00

U.S. Cl. 204—86

9 Claims

1. A process for producing ammonium metatungstate from ammonium paratungstate comprising: introducing ammonium paratungstate into an anode chamber of an electrolytic cell having an anode in an anode chamber and a cathode in a cathode chamber, said cell containing an aqueous electrolyte and including an inert liquid permeable media separating the anode chamber from the cathode chamber, passing a direct electric current through said cell for transporting ammonium ions from the anode chamber through the liquid permeable media to increase the concentration of ammonium metatungstate in the electrolyte within the anode chamber, and withdrawing ammonium metatungstate from the anode chamber.

4,283,258

# RECOVERY OF TUNGSTEN FROM HEAVY METAL ALLOYS

Clarence D. Vanderpool, Towanda, and Robert P. McClintic, Monroeton, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 27, 1980, Ser. No. 163,467  
 Int. Cl.<sup>3</sup> C25B 1/00, 5/00

U.S. Cl. 204—102

3 Claims

1. A process for producing ammonium paratungstate from a heavy metal alloy containing tungsten comprising introducing the heavy metal alloy into an electrolytic cell as an anode, said cell comprising an inert cathode and an aqueous electrolyte solution comprising ammonium hydroxide and ammonium nitrate, passing a direct electric current through said cell, said ammonium hydroxide and ammonium nitrate being maintained at a suitable concentration for oxidizing tungsten and forming ammonium paratungstate.

4,283,259

# METHOD FOR MASKLESS CHEMICAL AND ELECTROCHEMICAL MACHINING

Robert L. Melcher, Yorktown Heights; Lubomyr T. Romankiw, Briarcliff Manor, and Robert J. von Gutfeld, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

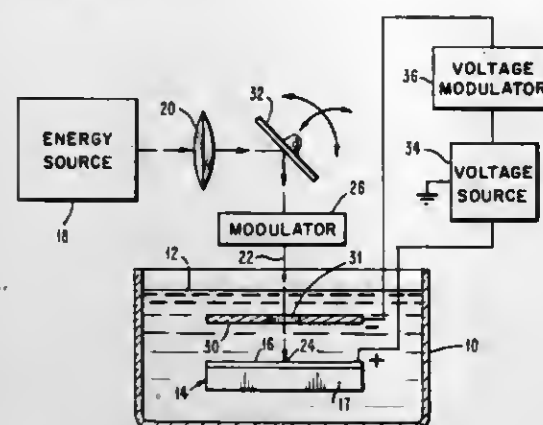
Filed May 8, 1979, Ser. No. 37,074  
 Int. Cl.<sup>3</sup> B23P 1/00; C25F 3/02

U.S. Cl. 204—129.3

7 Claims

1. A method of selectively electrochemical machining regions of a surface of a non-photolytically active workpiece comprising the following steps:  
 placing the surface to be machined in an electrolyte;  
 placing a cathode in electrolyte;  
 focusing an energy beam having an intensity of between about  $10^2$  W/cm<sup>2</sup> and  $10^6$  W/cm<sup>2</sup> onto the workpiece to

locally heat the regions of the surface where preferential machining is sought;



and establish an electric potential between the workpiece serving as an anode and said cathode.

4,283,260

# METHOD AND SYSTEM FOR REGULATING THE DISCHARGE PROCESS IN A CATHODE SPUTTERING APPARATUS

Friedrich W. Thomas, Hasselroth, and Konrad Priess, Hahl am Main, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus, Cologne, Fed. Rep. of Germany

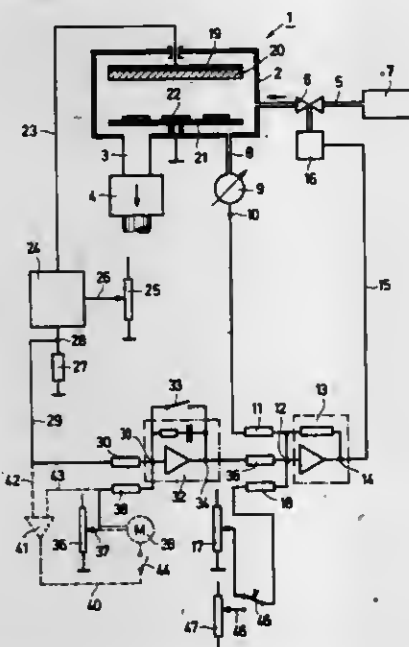
Filed May 2, 1979, Ser. No. 35,363

Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821119

Int. Cl.<sup>3</sup> C23C 15/00

U.S. Cl. 204—192 R

7 Claims



1. In a cathode sputtering process; a method for regulating the discharge current, comprising: providing a vacuum chamber with a cathode and at least one counterelectrode therein; initially establishing a substantially constant sputtering pressure in the vacuum chamber; establishing and maintaining a substantially constant sputtering voltage; sensing the actual discharge current across the electrodes; comparing the actual discharge current with a desired reference current value to obtain a difference value if any; sensing the actual sputtering pressure in the chamber; comparing the actual sputtering pressure with a desired reference pressure value to obtain a difference value if any, and adjusting the sputtering pressure from its initial level in response to a deviation of the discharge current from the reference current value and in response to a deviation of the sputtering pressure from the reference pressure value to effect a desired change in the sputtering pressure, whereby the discharge current is stabilized.

4,283,261

# ELECTROCHEMICAL SENSOR STRUCTURE TO DETERMINE OXYGEN CONTENT IN COMBUSTION EXHAUST GASES

Helmuth Maurer, Schwieberdingen; Klaus Müller, Tamm; Franz Rieger, Aalen-Wasseraffingen; Ernst Linder, Mühlacker; Hermann Dietz, Gerlingen; Karl-Hermann Friese, Leonberg, and Bodo Ziegler, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

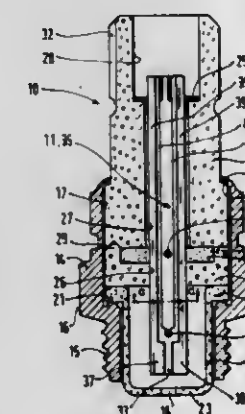
Filed Dec. 4, 1979, Ser. No. 100,256

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2855012

Int. Cl.<sup>3</sup> G01N 27/46

U.S. Cl. 204—195 S

26 Claims



1. Electrochemical sensor to determine the oxygen content in gases, more particularly of combustion exhaust gases, and especially for exhaust gases from automotive-type engines, comprising, the structural arrangement of  
 a metal housing (14, 70);  
 a sensor element (11, 43, 51, 55, 61, 68, 69, 74) which includes an elongated solid electrolyte plate (33, 44, 56, 62, 72, 73, 75, 76) longitudinally positioned in the housing, the sensor element having a holding end portion located and secured in the housing and  
 a sensing end portion exposed to the exhaust gases and at least one electrode pair (37, 38; 46, 47; 52, 54; 57, 58; 63, 64; 68, 69, 79, 80) located and secured on a single surface (36, 45) of the solid electrolyte plate, adjacent said sensing end portion exposed to the gas; the electrodes (46, 47; 52, 54; 57, 58) of the pairs facing each other across a gap (48, 60);  
 the facing edges of the electrodes being formed with extending projections extending towards the other electrode in interdigitated relationship;  
 and electrically conductive connecting tracks (39, 39'; 50, 50') in electrical contact with respective electrodes of at least one electrode pair secured to and applied on said single surface of the solid electrolyte plate, and extending essentially for the length thereof from the electrodes to the holding end portion and forming, adjacent the end of the plate, connecting terminals.

4,283,262

# ANALYSIS SYSTEM

Alan D. Cormier, Newburyport; Milo E. Webster, Braintree; John D. Czaban, Bradford; Neil D. Silverman, Framingham, and Lynn W. Noble, Acton, all of Mass., assignors to Instrumentation Laboratory Inc., Lexington, MA

Filed Jul. 1, 1980, Ser. No. 165,051

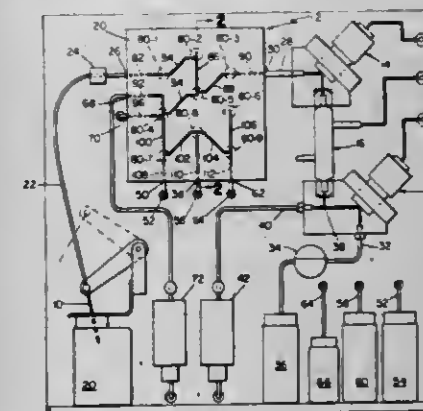
Int. Cl.<sup>3</sup> G01N 27/28, 35/08

U.S. Cl. 204—195 M

28 Claims

1. A system for analyzing a biological fluid or the like comprising  
 an analysis chamber, a measuring system connected in sensing relation to said analysis chamber,  
 a flow network for connecting a sample inlet port and an auxiliary fluid reservoir to said analysis chamber, and a

pump connected between said analysis chamber and an outlet port, said flow network including  
 a sample flow path connected between said sample inlet port and said analysis chamber,  
 an auxiliary fluid manifold for connection to said auxiliary fluid reservoir,  
 a valved T-connection between said sample flow path and said manifold,  
 an inlet isolation valve in said sample flow path between said sample inlet and said valved T-connection,



a chamber isolation valve in said sample flow path between said valved T-connection and said analysis chamber,  
 a sample line vent valve between said inlet and chamber isolation valves, and  
 a manifold vent valve connected to said manifold.  
 5. The system of claim 1 wherein said measuring system includes an electrochemical electrode with an ion selective membrane that is arranged for exposure to sample in said sample flow path.

4,283,263

# COVER FOR ELECTROLYTIC CELLS

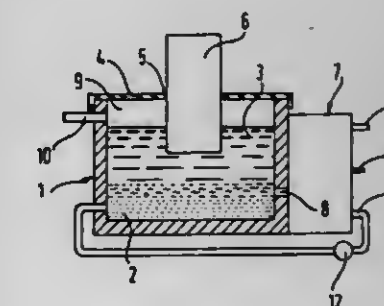
Bruno Mirabelli, Varese, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Mar. 6, 1980, Ser. No. 127,723

Claims priority, application Italy, Mar. 6, 1979, 20762 A/79  
 Int. Cl.<sup>3</sup> C25B 1/40, 9/00

U.S. Cl. 204—219

7 Claims



1. A cover for an electrolytic cell for producing chlorine comprising a laminated plate, a tension resistant insert member imbedded in the laminated plate, said laminated plate consisting essentially of overlapping sheets firmly joined face to face to each other, that sheet of the laminated plate which has a surface exposed outwardly of the cell being an elastomeric composition which is resistant to heat and ozone and the surface of the plate facing the inside of the cell being neoprene vulcanized with lead oxide.



4,283,264

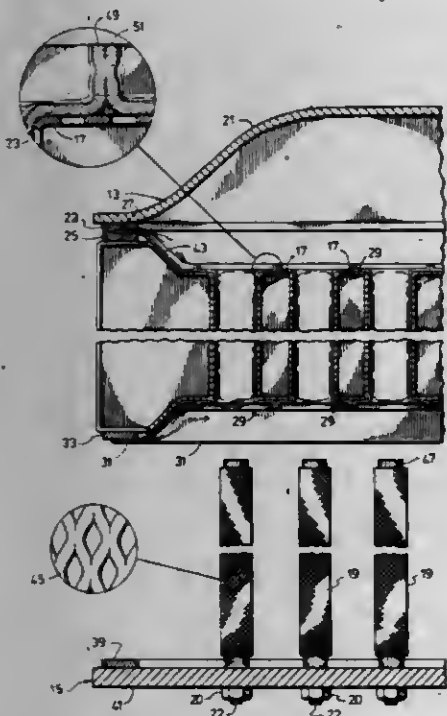
# **ELECTROLYTIC CELL SEPARATOR, TUBULAR MEMBER COMPONENT THEREOF AND METHODS FOR MANUFACTURING AND USING SUCH SEPARATOR AND COMPONENT**

Richard D. Darling, Youngstown, and Christine A. Lazarz, Niagara Falls, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,489

Int. Cl.<sup>3</sup> C25B 9/00, 13/02, 13/08; B29D 23/10

U.S. Cl. 204—252 32 Claims



26. An electrolytic cell comprising a plurality of anodes and cathodes in alternating arrangement, separated by a microporous polymeric separator into anolyte and catholyte compartments, said separator encasing a plurality of the anodes or a plurality of the cathodes and being fastened to the electrolytic cell structure by means of a flange at an end thereof which, when fastened in place, does not strain or tear the separator material and has no cuts or openings in it for direct passage of the electrolyte or gas through it, said flange having projection(s) or point(s) to assist in aligning the separator in the cell.

4,283,265

## **EXPANDABLE ELECTRODE**

Geoffrey C. M. Byrd, Frodsham, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 21, 1980, Ser. No. 141,916

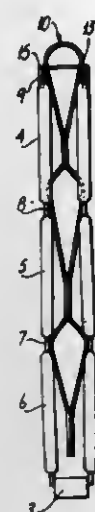
Claims priority, application United Kingdom, May 2, 1979, 15226/79

Int. Cl.<sup>3</sup> C25B 11/02

U.S. Cl. 204—252 20 Claims

1. An expandable electrode suitable for use in an electrolytic cell of the diaphragm or membrane type, and comprising a pair of electrode plates bridged along one edge of each plate, and located between the plates in a plane essentially perpendicular to the faces of the plates at least one spacing member which in profile is in the form of one or more substantially wedge-shaped sections and which is movable relative to the electrode plates, the electrode plates being provided with one or more transverse members which upon movement of the spacing member relative to the plates is or are engaged by the wedge-

shaped section(s) of the spacing member(s) to control the spacing between the electrode plates.



20. An electrolytic cell comprising one or more expandable electrodes as claimed in claim 1.

4,283,266

## **METHOD AND APPARATUS FOR CONTROLLING HALOGEN ION CONCENTRATION IN A PHOTOGRAPHIC PROCESSING SOLUTION**

Hiroynuki Hirai; Sachio Matsushita; Isao Tsuyuki, and Kazumi Watase, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

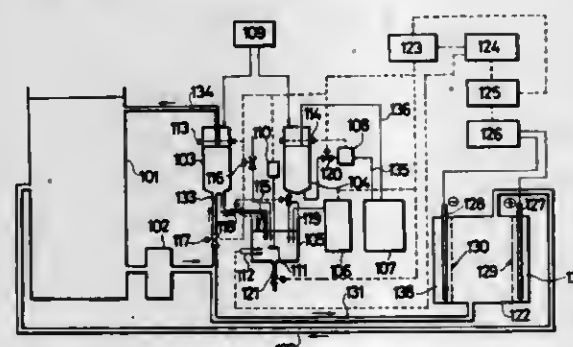
Division of Ser. No. 935,391, Aug. 21, 1978, Pat. No. 4,207,157.

This application Nov. 8, 1979, Ser. No. 92,776

Claims priority, application Japan, Aug. 30, 1977, 52/104011

Int. Cl.<sup>3</sup> B01D 13/02; C25B 9/00, 15/08

U.S. Cl. 204—263 6 Claims



1. An apparatus for controlling the concentration of halogen ions in a photographic processing solution, comprising:

- (a) means for sampling a photographic processing solution,
- (b) means for determining concentration of the halogen ions in the sampled processing solution according to the change in electric potential caused by the addition of silver ions,
- (c) means for removing halogen ions from the processing solution, and
- (d) means for controlling the halogen ion removing means in response to the output of the halogen ion determining means.

4,283,267

## **STAGED TEMPERATURE HYDROGEN-DONOR COAL LIQUEFACTION PROCESS**

Peter S. Maa, and Lonnie W. Vernon, both of Baytown, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 11, 1978, Ser. No. 904,826

Int. Cl.<sup>3</sup> C10G 1/00, 1/06

U.S. Cl. 208—8 LE 12 Claims

1. A hydrogen-donor liquefaction process for converting

coal or similar liquefiable carbonaceous solids into lower molecular weight liquid hydrocarbons which comprises:

- (a) contacting said carbonaceous solids with a hydrogen-donor solvent in the absence of an added hydrogenation catalyst under liquefaction conditions in a plurality of liquefaction zones arranged in series and operated such that (1) the temperature in each zone increases from the initial to the final zone of the series, (2) substantially all of the liquids, unconverted carbonaceous solids and mineral matter exiting each zone is passed to the next succeeding zone and (3) the total residence time for all of said zones combined excluding the final zone is greater than the residence time in said final zone, wherein said carbonaceous solids are partially converted to lower molecular weight liquid hydrocarbons in each of said liquefaction zones and said initial zone is operated at a temperature of at least 670° F.; and
- (b) recovering liquid hydrocarbonaceous products from the effluent of said final liquefaction zone.

4,283,268

## **TWO-STAGE COAL LIQUEFACTION PROCESS WITH INTERSTAGE GUARD BED**

Joel W. Rosenthal, El Cerrito, and Christopher W. Kuehler, Larkspur, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 18, 1978, Ser. No. 943,586

Int. Cl.<sup>3</sup> C10G 1/00, 1/06, 45/00, 25/00

U.S. Cl. 208—8 LE 9 Claims

1. A process for the liquefaction of coal comprising the steps of

- (a) substantially dissolving subdivided coal in a dissolving stage with a solvent in the presence of hydrogen at a temperature in the range of about 400° C. to 480° C. and a pressure of about 35 to 680 atmospheres to form a first effluent mixture containing solvent, dissolved coal, and insoluble solids;
- (b) passing solvent, dissolved coal and the insoluble solids from said first effluent mixture with hydrogen through a guard bed of solid porous contact material to substantially reduce the metals content of said first effluent by hydrogenation, to provide a second effluent containing solvent, dissolved coal, and insoluble solids;
- (c) passing a slurry containing solvent, dissolved coal and the insoluble solids from said second effluent to a hydrocracking stage containing hydrocracking catalyst and operating under hydrocracking conditions, including a temperature in the range of about 340° to 425° C., a pressure in the range of about 35 to 680 atmospheres and a hydrogen rate of 355 to 3550 liters per liter of slurry.

4,283,269

## **PROCESS FOR THE PRODUCTION OF A FEEDSTOCK FOR CARBON ARTIFACT MANUFACTURE**

Sydney H. J. Greenwood, Sarnia, Canada, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 29,760, Apr. 13, 1979. This

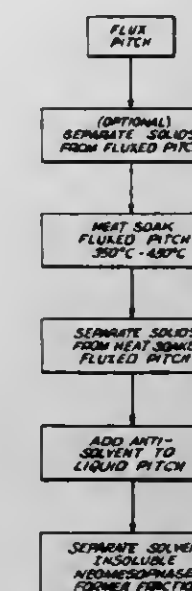
application Jan. 25, 1980, Ser. No. 115,299

Int. Cl.<sup>3</sup> C10C 3/08

U.S. Cl. 208—45 10 Claims

- 1. A process for treating a carbonaceous pitch comprising:
- (a) mixing said pitch with an organic fluxing liquid to form a fluid pitch;
- (b) heating said fluid pitch at temperatures in the range of from about 350° C. to about 450° C.;
- (c) separating solids suspended in said heated, fluid pitch;
- (d) treating said fluid pitch with an organic solvent system having a solubility parameter at 25° C. of between about 8.0 and about 9.5, said treating being at a temperature and

with an amount of organic solvent system sufficient to provide a solvent insoluble fraction thermally convertible



into a deformable pitch containing greater than 75% of an optically anisotropic phase; and (e) recovering said solvent insoluble fraction.

4,283,270

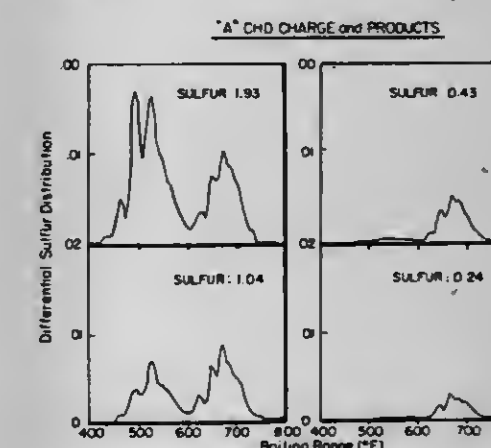
## **PROCESS FOR REMOVING SULFUR FROM PETROLEUM OILS**

William D. McHale, Swedesboro, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 25, 1980, Ser. No. 163,008

Int. Cl.<sup>3</sup> C10G 7/00, 45/00

U.S. Cl. 208—50 10 Claims



1. A process for desulfurizing a hydrocarbon oil containing sulfur components and having a boiling range of: about 350° to 1000° F., said process comprising the steps of fractionating said hydrocarbon oil to selectively remove a portion of said hydrocarbon boiling in the range of from about 650° to 700° F.; recombining the fractions of said oil formed by said fractionation and from which said 650° to 700° F. fraction has been removed, and introducing said recombined hydrocarbon oil and hydrogen into a reaction zone containing a hydrogenation catalyst and maintaining said reaction zone under hydrodesulfurization conditions including a hydrogen pressure of up to 3000 p.s.i.g. and a temperature of about 600° to about 900° F.

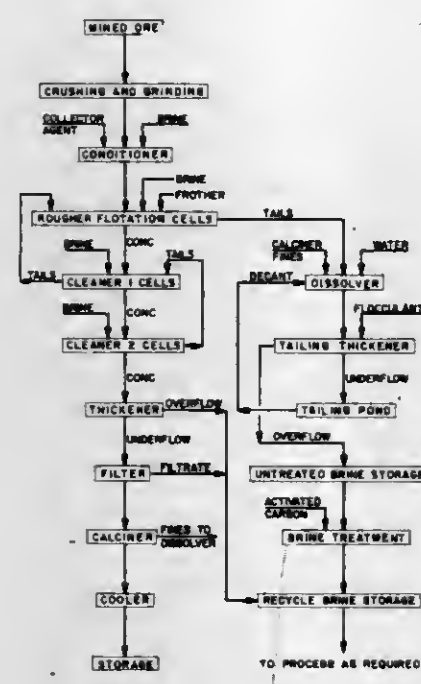
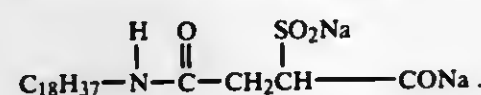






the holes of said second sieve plate being larger in size than the holes of said first sieve plate;  
 an auxiliary circulation system containing line means operatively connected with the larger holes of said second sieve plate;  
 said line means leading back to said stock pulper; and  
 at least one device provided for said auxiliary circulation system for the removal of undesired constituents from said stock suspension.

the trona from the slurry using as the flotation collector a compound having the structural formula



4,283,276

### ROTOR FOR SEDIMENTATION FIELD FLOW FRACTIONATION

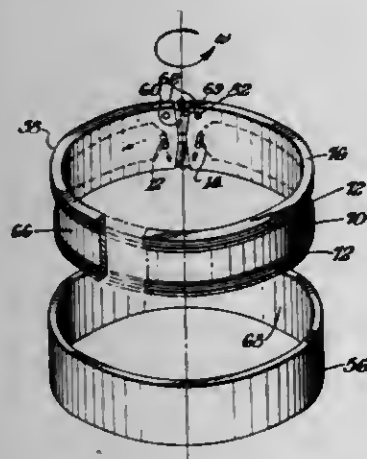
John W. Grant, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 29, 1980, Ser. No. 125,855

Int. Cl.<sup>3</sup> B03B 5/62

U.S. Cl. 209—155

11 Claims



1. In an apparatus for separating particulates suspended in a fluid medium according to their effective masses, said apparatus having an annular cylindrical channel with a cylinder axis, means for rotating said channel about said axis, means for passing said fluid medium circumferentially through said channel, and means for introducing said particulates into said medium for passage through said channel, the improvement wherein said channel comprises:

an outer support ring having a constant inner radius, and a unitary inner ring, separated at one point along its circumference, mating with said outer ring to define said channel there between.

4,283,277

### BENEFICIATION OF TRONA BY FLOTATION

Robert J. Brison, and John C. Gathje, both of Arvada, Colo., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 30, 1979, Ser. No. 34,527

Int. Cl.<sup>3</sup> B03D 1/02

U.S. Cl. 209—166

6 Claims

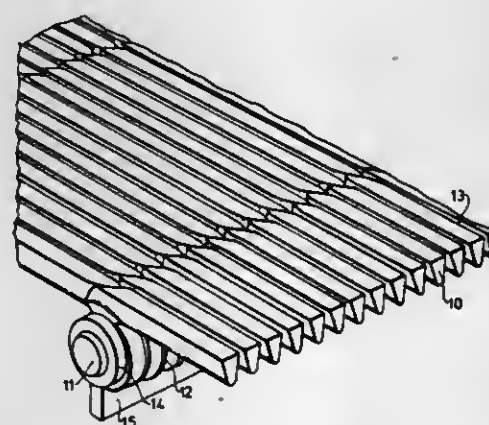
1. A method for the froth flotation separation of trona from ground trona ore slurried in a saturated brine solution of sodium carbonate and sodium bicarbonate comprising floating

1. An apertured panel comprising a screen constituted by, in combination:

(i) a plurality of wire members each having a plurality of loops formed therein with the individual loops being disposed at intervals along the length of the wire member, the wire members being disposed side by side and at a spacing so as collectively to present a major face of the screen having slit apertures defined between adjacent wires, the loops extending from the opposite major face of the screen,

(ii) at least one tie element positioned through aligned respective loops disposed side by side of wire members of the plurality of wire members, and tied to said plurality of wire members, and

(iii) at least one rib member secured to said aligned loops by at least one weld and extending therefrom in a direction away from said opposite major face.

4,283,278  
SCREENS

Norman Savage, Oldham, and Douglas A. Sumner, Newton-le-Willows, both of England, assignors to N. Greening Limited, England

Filed Mar. 22, 1979, Ser. No. 22,752

Claims priority, application United Kingdom, Mar. 23, 1978, 11558/78

Int. Cl.<sup>3</sup> B07B 1/46

U.S. Cl. 209—395

19 Claims

4,283,279

### METHOD AND APPARATUS FOR RECLAIMING DRYCLEANING FLUID

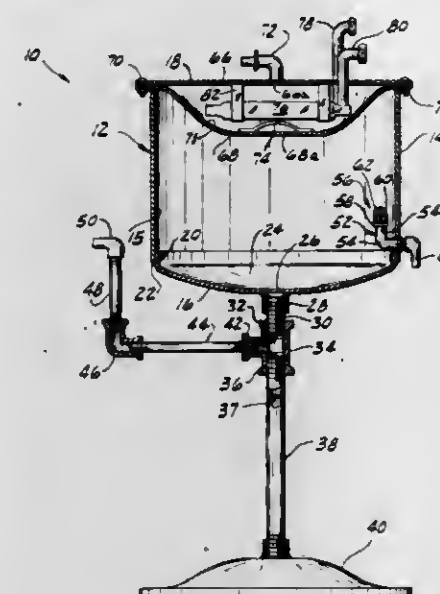
Robert G. Smith, Chesterfield, Mo., assignor to Kleen-Rite, Inc., St. Louis, Mo.

Filed Jul. 18, 1980, Ser. No. 170,277

Int. Cl.<sup>3</sup> B01D 5/00

U.S. Cl. 210—123

7 Claims



1. An apparatus for recovering drycleaning fluid from a mixture of drycleaning fluid vapor and water vapor comprising:

a closed container;

means for causing a mixture of drycleaning fluid vapor and water vapor to enter said container at the top thereof; condensing means mounted in said container for condensing said mixture;

means for supplying a cooling medium from the exterior of said container to said condensing means;

first outlet means for removing drycleaning fluid from said container and means associated with said first outlet means for preventing the level of drycleaning fluid in said container from declining below a predetermined minimum level;

second outlet means located above said first outlet means for removing water from said container;

said second outlet means including a valve which automatically opens said second outlet means only when the level of liquid in said container is above said second outlet means, thereby preventing the escape of vapors through said second outlet means.

4,283,280

### CARTRIDGE TYPE SEPARATION COLUMN AND HOLDER ASSEMBLY FOR LIQUID CHROMATOGRAPHS

Robert Brownlee, Santa Clara, Calif., assignor to Brownlee Labs, Inc., Santa Clara, Calif.

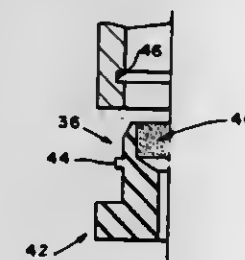
Continuation of Ser. No. 936,400, Aug. 24, 1978, abandoned.

This application Jan. 29, 1980, Ser. No. 116,466

Int. Cl.<sup>3</sup> B01A 15/08

U.S. Cl. 210—198.2

10 Claims



1. In a liquid chromatograph (LC) system in which a liquid

is delivered under pressure from a pump to an LC column, a replaceable column cartridge and holder assembly adapted for removal, shipment, and handling as a self-contained unit including an elongate cylindrical metal tube, a sorbent filling said tube, a pair of plastic seal plugs for closing the ends of said tube, each of said plugs being of T-shape in cross-section with a leg constructed to extend into a respective end of the tube and having a laterally extending end flange portion overlapping the tube at each end to its outer diameter, said tube, seal plugs and said sorbent together forming self-supporting replaceable LC cartridge, fittings for interconnecting the cartridge in the LC output line between the pump output and the LC detector system, each fitting having a cartridge receiving recess therein formed within the body of said fitting and so dimensioned as to receive the same in close fitting relation so that each recess extends at least over the flange portions of said plugs so that the latter totally confined within the recesses by their sidewalls and are axially confined between the cartridge tube and the floor of recess, means for supporting said cartridge and for yieldably urging the cartridge under pressure into sealing engagement between the fittings, the sealing surfaces comprising the floor of each recess, the tube ends, and the interposed seal plug flange, all of which are oriented in direct opposition to leakage forces, said means for urging the column into sealing engagement within said fittings including a holder having an effective length together with said fittings to extend somewhat less than the length of the column, and having threaded portions formed at each end thereof, cap nuts having an open end provided with an associated recess therein having threaded portions for engaging the threaded portions of each end of the holder, the other end of said nut being partially closed to form a cap having an aperture therethrough, said end fittings having a projection extending through the respective aperture and a body contained within said cap recess, and spring means interposed between at least one cap nut and associated end fitting for yieldably urging the latter into engagement with the interposed cartridge as the cap nuts are taken up against said spring means so that said cartridge is placed end to end compression by said holder, cap nuts, and interposed spring means.

4,283,281

### HIGH PRESSURE FILTER VESSEL

Leo M. Cogan, Skokie, Ill., assignor to Textile Industries, Inc., Chicago, Ill.

Filed Oct. 29, 1979, Ser. No. 89,282

Int. Cl.<sup>3</sup> B01D 29/10

U.S. Cl. 210—232

11 Claims

1. A filter vessel for retaining a filter bag in a fluid path for filtering fluid passing through the vessel under pressure, said vessel comprising:

(1) an otherwise closed vessel defined by an upstanding, circumferential sidewall having an open upper end and a fluid outlet port remote from said upper end;

(2) removable cap means installed over said upper end;

(3) flange support means secured to the sidewall on the interior of the vessel;

(4) a reticulated basket for retaining a filter bag suspended therein;

(5) said basket having annular flange means cooperatively engaged with the flange support means for supporting the basket in the vessel and defining a perimetric entrance into the filter bag suspended in the basket;

(6) said vessel having collar means mounted on the sidewall adjacent said upper end and defining said fluid path;

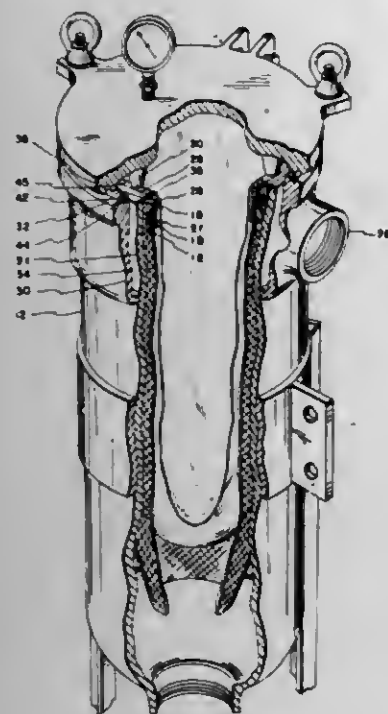
A. said collar means including a fluid inlet port;

B. said fluid path extending substantially uninterrupted from said inlet port around the circumference of said sidewall and over said upper end below said cap means, said fluid inlet port and said fluid path cooperating to discharge said fluid under pressure into the filter bag over substantially the entire perimetric entrance of said



basket for efflux thereafter from the vessel through said outlet port; and

- (7) wherein said cap means has a plurality of depending projections in registry with said filter support means for engaging a filter bag supported on said flange support



means to retain the filter bag securely suspended in the basket, said plurality of depending projections cooperating with said flange support means to position the filter bag such that said cap means is entirely spaced above the filter bag.

4,283,282

# **FILTER HAVING VERTICAL FILTER ELEMENTS**

Gilbert Saint-Dizier, Rueil Malmaison; Jean Le Fur, Garcbes, and Robert Louboutin, Crespiers, all of France, assignors to Degremont, Malmaison, France

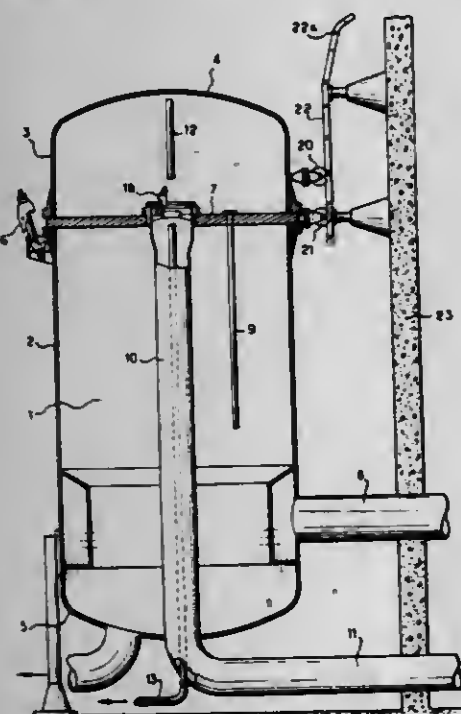
Filed Apr. 16, 1980, Ser. No. 140,794

Claims priority, application France, Apr. 20, 1979, 79 10717

Int. Cl.<sup>3</sup> B01D 29/32

U.S. Cl. 210—236

4 Claims



1. A filter comprising a vertically disposed filter housing, a support plate, vertical filter elements fixed at their upper ends to the support plate and supported thereby in the housing, a water inlet in the lower portion of the filter, a water outlet pipe passing through the support plate and exiting at the base of the

filter, two flanges connecting the support plate to the water outlet pipe in leak-tight manner, one of said flanges being fixed to the pipe and the other flange being fixed to one end of a bellows fixed at its other end to the plate, an O ring interposed between the flanges, and locking clamps disposed inside the pipe and provided to urge the two flanges together, a protective housing positioned around the filter housing, guide rails fixed to the protective housing, and castors carried by the support plate and the upper portion of the filter and being disposed in at least two different planes and movable in the guide rails.

4,283,283

# **WATER FILTER**

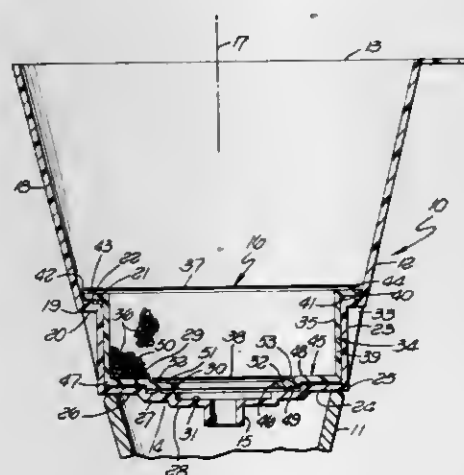
George M. Zimmerman, San Gabriel, Calif., assignor to Bon Aqua, Temecula, Calif.

Filed Mar. 20, 1980, Ser. No. 132,318

Int. Cl.<sup>3</sup> B01D 27/02

U.S. Cl. 210—282

9 Claims



1. A water filter comprising:

a cup having a top opening through which water may be filled into the cup, and having a bottom outlet through which filtered water discharges; and

a replaceable filter cartridge removably received within a lower portion of said cup and through which the water flows to said outlet;

said replaceable cartridge including a hollow body adapted to be removably placed in said lower portion of the cup and containing a chamber and a top opening through which water flows downwardly into the chamber and a bottom opening through which water discharges from the chamber toward said outlet;

said replaceable cartridge including a first sheet of filter material extending across said top opening of the cartridge body and peripherally sealed to the body about said top opening, a second sheet of filter material extending across said bottom opening of the cartridge body and peripherally sealed to the body about said bottom opening, and a mass of activated carbon contained within said chamber between said first and second sheets of filter material and retained in the chamber by said sheets;

said lower portion of the cup having a cylindrical vertically extending side wall, an annular bottom wall extending inwardly at the lower end of said side wall and containing said outlet at its center, and an annular essentially horizontal flange extending horizontally outwardly from and about the upper end of said side wall and connected peripherally to an upper portion of said cup;

said body of the replaceable cartridge having a vertical cylindrical side wall extending about said chamber and having an outer surface of greater diameter than the internal diameter of said side wall of the lower portion of the cup to be forced fit therein frictionally retaining the cartridge in the cup while permitting it to be forced therefrom for replacement;

said body of the cartridge having an annular bottom wall extending horizontally inwardly from the lower extremity of said side wall of the cartridge body and containing said bottom opening, said second sheet of filter material being received at the upper side of said bottom wall of the cartridge body and being peripherally fusion sealed thereto;

said body of the cartridge having an annular horizontal flange extending outwardly from and about the upper extremity of said side wall of the cartridge body and fusion sealed to the periphery of said first sheet of filter material;

said bottom opening of the cartridge body and said second sheet of filter material being smaller than said upper opening of the cartridge body and said first sheet of filter material, and being larger than said bottom outlet of the cup.

4,283,284

# **HOLLOW FIBER DIALYZER END SEAL SYSTEM**

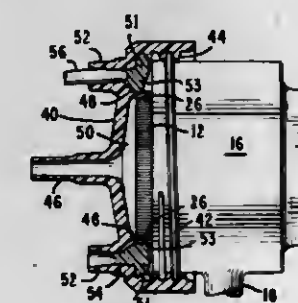
William J. Schnell, Wheeling, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jul. 18, 1979, Ser. No. 58,589

Int. Cl.<sup>3</sup> B01D 31/00

U.S. Cl. 210—321.3

22 Claims



1. In a hollow fiber diffusion device which comprises a bundle of hollow fibers enclosed in a generally rigid tubular housing, said housing having relatively diametrically enlarged manifold members adjacent opposite housing ends, and being sealed at said opposite ends, the improvement comprising, in combination:

a relatively resilient plastic sleeve member carried at each end of said housing and sealed thereto, each sleeve member carrying an integral added inner sleeve of less inner diameter than the inner diameters of the manifold members, said inner sleeves being spaced radially inwardly of the remainder of said plastic sleeve member to define a space therebetween open at one end and coaxially positioned with said housing to receive, hold and center the ends of said bundle, said inner sleeve containing a mass of potting compound which is interspersed throughout the exterior surfaces of the fibers of said bundle, said inner sleeve being made of a material which sealingly adheres to said potting compound.

4,283,285

# **APPARATUS FOR THE PRODUCTION OF MOLDED BODIES FROM FILTER CAKES**

Peter Paschen; Chatty Rao, both of Bergisch-Gladbach, and Helmut Preuss, Bornheim-Walberberg, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation of Ser. No. 936,750, Aug. 25, 1978, abandoned.

This application Aug. 27, 1979, Ser. No. 69,793

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738239

Int. Cl.<sup>3</sup> B01D 33/08

U.S. Cl. 210—326

1 Claim

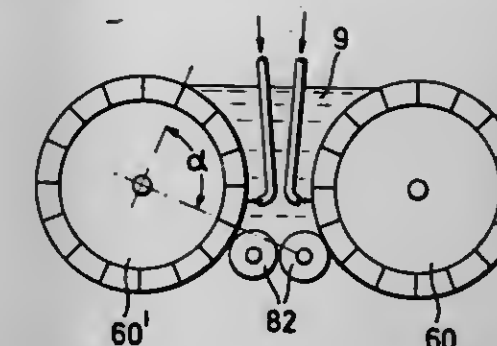
1. An apparatus for producing agglomerates from an abrasive ore sludge which comprises:

a pair of spaced oppositely rotating filter drums; two perforate filter means respectively trained about the peripheries of said filter drums;

a means for applying vacuum inwardly of each said filter means;

two multi-cavity molding members respectively disposed over said filter means and each having cavities communicating with said means for applying vacuum;

a pair of rollers composed of soft elastic material and engaging each other and each roller also engaging a respective one of said filter drums;



said filter drums and said rollers forming a compartment between said filter drums and above said rollers for storage of sludge to be filtered adjacent said molding members; and

a sludge discharge means extending into the sludge confined in said compartment and positioned therein to direct sludge into each said molding cavity in a direction of solid sedimentation thereby to direct heavier, more readily settling particles in the sludge into the molding cavities prior to lighter particles contained in the sludge.

4,283,286

# **CENTRIFUGE WITH PRODUCT ACCELERATOR**

Helmut Wilkesmann, Munich, Fed. Rep. of Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

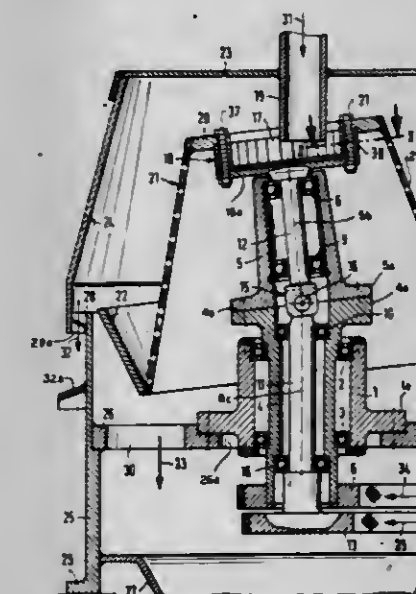
Filed Jan. 16, 1980, Ser. No. 112,459

Claims priority, application United Kingdom, Jan. 17, 1979, 2901643

Int. Cl.<sup>3</sup> B01D 33/02

U.S. Cl. 210—365

11 Claims



1. In a centrifuge having a housing, a centrifuge drum rotatable in said housing, a drive shaft rotatable in said housing, and operatively connected to said drum, drive means connected to said drive shaft for rotating same to cause a product to be centrifuged in said drum, and inlet opening into said housing for delivering said product to said drum, and a distributor operatively connected to said drive shaft for receiving said



product from said inlet and distributing said product uniformly onto said drum, the improvement wherein:

said distributor is disposed between said drive shaft and said drum and comprises a circular array of angularly equispaced scoop-shaped ribs forming blades accelerating said product in the direction of rotation of said drum and radially directing said product onto the interior of said drum, said ribs having progressively decreasing thicknesses inwardly, said ribs having product displacing surfaces of concave curvature extending radially inwardly and including respective acute angles with a circle centered on the axis of said array and pointing in the direction of rotation along the inner part of said array, said drum being connected by the product-accelerating distributor to said drive shaft, said ribs having front and rear surfaces with respect to said direction terminating at a common edge at said circle.

9. In a centrifuge having a housing, a centrifuge drum rotatable in said housing, a drive shaft rotatable in said housing, and operatively connected to said drum, drive means connected to said drive shaft for rotating same to cause a product to be centrifuged in said drum, an inlet opening into said housing for delivering said product to said drum, and a distributor operatively connected to said drive shaft for receiving said product from said inlet and distributing said product uniformly onto said drum, the improvement wherein:

said distributor comprises a circular array of angularly equispaced scoop-shaped ribs accelerating said product in the direction of rotation of said drum and radially directing said product onto the interior of said drum, said ribs having product-displacing surfaces of concave curvature extending radially inwardly and including respective acute angles with a circle centered on the axis of said array and pointing in the direction of rotation along the inner part of said array, said distributor comprising a support disk, each of said ribs being attached to said support disk by a respective bolt, said drum being mounted on said ribs by said bolts.

4,283,287

# STABLE NON-CAKING AQUEOUS SLURRY OF SODIUM CHLORATE AND SODIUM CHLORIDE AND METHOD OF MAKING

Theodore H. Dexter, Lewiston, and Willard A. Fuller, Grand Island, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Dec. 13, 1979, Ser. No. 103,257

Int. Cl.<sup>3</sup> C01B 11/02; C11D 3/395, 7/54; D06L 3/06

U.S. Cl. 252—187 R

8 Claims

1. A flowable non-caiking aqueous slurry stable at 20° C. of sodium chlorate and sodium chloride in a weight ratio ranging from about 0.55 to 0.65 sodium chlorate to 1.0 sodium chloride, said slurry containing from about 28 to about 33 percent by weight sodium chlorate, from about 15 to about 21 percent by weight sodium chloride, and from about 45 to about 58 percent by weight water, said slurry having a solid phase substantially entirely of finely divided sodium chloride.

4,283,288

# OXIDATION OF BUTANE TO MALEIC ANHYDRIDE

Carl A. Udovich, Joliet, and Bernard L. Meyers, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 14, 1980, Ser. No. 149,842

Int. Cl.<sup>3</sup> B01J 27/14

U.S. Cl. 252—437

7 Claims

1. A catalyst for the production of maleic anhydride by the oxidation of butane which comprises a phosphorus-vanadium mixed oxide, the atomic ratio of vanadium to phosphorus being in the range of 0.5:1 to 1.25:1 wherein the catalyst has a charac-

teristic powder X-ray diffraction pattern using copper K alpha radiation as follows:

angstrom	Line Position 2θ degrees	Intensity
5.7	15.6	67
4.5	19.7	47
3.7	24.3	36
3.3	27.1	53
3.1	28.8	26
2.9	30.5	100
2.8	32.2	17
2.7	33.7	20

4,283,289

# BLOOD FILTER FOR LEUKOCYTES

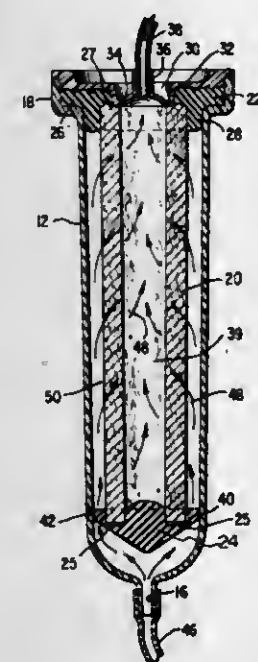
Richard P. Meyst, Crystal Lake, and Ronald M. Porten, Mundelein, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 22, 1979, Ser. No. 68,829

Int. Cl.<sup>3</sup> B01D 27/06, 39/08

U.S. Cl. 210—448

12 Claims



1. In a leukocyte filter for blood a housing defining a blood inlet and an outlet at respective ends thereof, said housing enclosing and carrying a tubular, non-woven fiber filter element with one of said inlet and outlet communicating with the interior of said tubular filter element, and the other of said inlet and outlet communicating with the exterior of said tubular filter element, the improvement comprising, in combination:

said tubular fiber filter element constituting a depth filter having a thickness of 0.2 to 0.6 inch, essentially all of said fibers defining diameters of 10 to 100 microns, from 10 to 70 percent by weight of said fiber defining fiber diameters of from 10 to 20 microns, and at least 50 percent by weight of said fibers having diameters of no more than 35 microns, said fibers being bonded together to define a generally fixed average interstitial spacing which is less at the inner surface of said tubular filter element than at the outer surface thereof, the air permeability of one square foot of said filter being from essentially 15 to 45 SCFM at  $\frac{1}{4}$  inch of water.

4,283,290

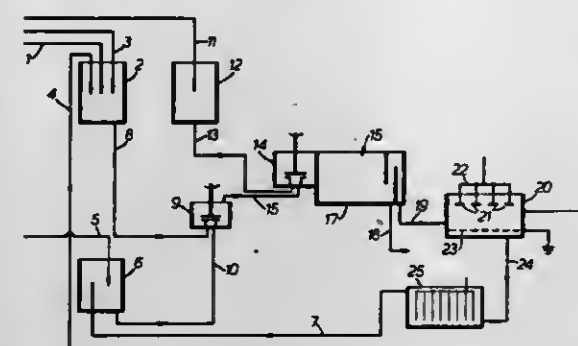
# PURIFICATION UTILIZING LIQUID MEMBRANE WITH ELECTROSTATIC COALESCENCE

Graham A. Davies, Alderley Edge, England, assignor to Davy International (Oil & Chemicals) Ltd., London, England  
Continuation of Ser. No. 921,721, Jul. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 857,821, Dec. 5, 1977, abandoned. This application Oct. 15, 1979, Ser. No. 84,550  
Claims priority, application United Kingdom, Jul. 6, 1977, 28317/77

Int. Cl.<sup>3</sup> B01D 13/00

U.S. Cl. 210—643

20 Claims



1. In a liquid membrane process for the recovery of a dissolved species from an aqueous solution thereof which comprises:

providing an emulsion comprising droplets of an aqueous interior phase surrounded by a hydrophobic exterior phase which is immiscible with the aqueous solution, which is permeable to said species, and which contains a non-ionic oil-soluble surfactant, the aqueous interior phase comprising a component capable of rendering said species non-permeable;

mixing the aqueous solution with the emulsion thereby to effect intimate contact therebetween and to permit said species to permeate the exterior phase, to desorb from the exterior phase into the interior phase, and to be rendered non-permeable in the interior phase;

separating the emulsion from the aqueous solution now depleted in said species;

breaking the separated emulsion thereby to effect coalescence of the aqueous interior phase; and recovering coalesced interior phase containing said species, the improvement comprising:

forming the emulsion by emulsifying the aqueous interior phase in the hydrophobic exterior phase under controlled shear conditions so as to produce droplets of interior phase in the hydrophobic exterior phase substantially all of a size lying in the range of from about 0.3 to about 10 micrometers with the majority of the droplets distributed over the range of from about 0.8 to about 3 micrometers; and breaking the separated emulsion by subjection to an electrostatic field.

4,283,291

# CORONA REACTION METHOD AND APPARATUS

Frank E. Lowther, Severna Park, Md., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 762,053, Jan. 24, 1977, abandoned, which is a division of Ser. No. 632,580, Nov. 17, 1975, Pat. No. 4,038,165, which is a continuation-in-part of Ser. No. 558,046, Mar. 13, 1975, Pat. No. 4,016,060. This application Jun. 18, 1979, Ser. No. 49,554

Int. Cl.<sup>3</sup> C01B 13/11

U.S. Cl. 250—536

5 Claims

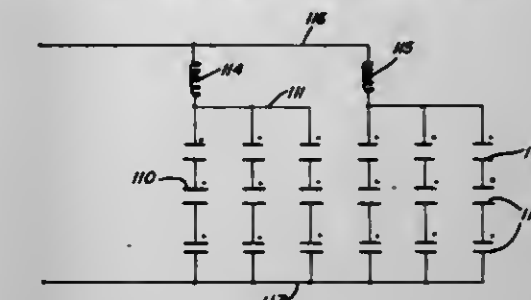
1. A corona discharge generator system for multiple corona cells with each cell having a discharge gap comprising: power supply means for generating a DC output voltage of substantial magnitude in a range of between 5000 to 30,000 volts DC;

means for converting said high DC output voltage into a

series of narrow DC pulses at a pulse rate of between 0.1 to 100 KHz with each of said DC pulses having a predetermined maximum pulse width of less than about the gas ion transit time across the discharge gap of any of the corona cells;

means for superimposing a bias potential upon said series of narrow DC pulses;

at least one bank of corona cells having at least two parallel branches with each branch having at least two series



connected corona cells with the number of parallel branches and number of series cells selected to establish a predetermined capacitance for said bank to control said predetermined pulse width;

means for coupling said narrow pulses to said bank of corona cells, said coupling means including an inductive impedance in series circuit relationship with said bank of corona cells and having a magnitude in a range of between 1-100 microhenry.

4,283,292

# SOIL RESISTANT YARN FINISH FOR SYNTHETIC ORGANIC POLYMER YARN

Robert M. Marshall, Chester, and Klmon C. Dardoufas, Richmond, both of Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 974,203, Dec. 28, 1978, Pat. No. 4,192,754. This application Dec. 12, 1979, Ser. No. 102,588

The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.

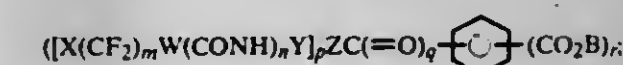
Int. Cl.<sup>3</sup> D06M 13/34

U.S. Cl. 252—8.8

51 Claims

1. An emulsion, comprising:

- approximately 75 to 98.5 weight percent of water; and
- approximately 1.5 to 25 weight percent of a composition, said composition comprising:
  - about 15 to 80 weight percent of a solution of a salt of dioctyl sulfosuccinate, propylene glycol and water; and
  - about 20 to 85 weight percent of a fluorochemical compound having the formula



wherein the attachment of the fluorinated radicals and the radicals CO<sub>2</sub>B to the nucleus is in asymmetrical positions with respect to rotation about the axis through the center of the nucleus; wherein "X" is fluorine, or perfluoroalkoxy of 1 to 6 carbon atoms, and m has arithmetic mean between 2 and 20; n is zero or unity; "W" and "Y" are alkylene, cycloalkylene or alkyleneoxy radicals of combined chain length from 2 to 20 atoms; (CF<sub>2</sub>)<sub>m</sub> and "Y" have each at least 2 carbon atoms in the main chain; "Z" is oxygen and p is 1, or "Z" is nitrogen and p is 2; q is an integer of at least 2 but not greater than 5; "B" is CH<sub>2</sub>RCHOH or is CH<sub>2</sub>RCHOCH<sub>2</sub>RCHOH where "R" is hydrogen or methyl, or "B" is CH<sub>2</sub>CH(OH)CH<sub>2</sub>Q where Q is halogen, hydroxy, or nitrile; or "B" is CH<sub>2</sub>CH(OH)CH<sub>2</sub>OCH<sub>2</sub>CH(OH)CH<sub>2</sub>Q; and r is an integer of at least 1 but not greater than q; and X(CF<sub>2</sub>)<sub>m</sub>, W



and Y are straight chains, branched chains or cyclic; and wherein the substituent chains of the above general formulas are the same or different.

4,283,293

## METAL WORKING LUBRICANT COMPOSITIONS

John W. Schick, Cherry Hill; Robert H. Davis, Pitman, and Harry J. Andress, Wenonah, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 7, 1978, Ser. No. 931,575

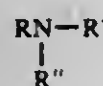
Int. Cl.<sup>3</sup> C10M 3/06

U.S. Cl. 252—32

22 Claims

1. An emulsifiable lubricant composition comprising, in the neat form, a sulfurized olefin or sulfurized mineral oil and from about 0.5% to about 95% by weight thereof of

(a) the reaction product made by reacting a C<sub>12</sub> to C<sub>20</sub> monocarboxylic acid or a dimer thereof or an alkenylsuccinic anhydride or acid wherein the alkenyl is derived from a mixture of C<sub>16</sub>–C<sub>28</sub> olefins with (1) a hydroxyalkylamine containing 2 to 100 carbon atoms, or (2) a hydroxypolyetheramine of the formula



wherein R is a C<sub>8</sub> to C<sub>18</sub> hydrocarbyl group and x is from 1 to 50, R' is a  $-(\text{CH}_2\text{CH}_2\text{O})_x\text{CH}_2\text{CH}_2\text{OH}$  group or a  $-(\text{CH}_2\text{CH}_2\text{CH}_2\text{O})_x\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$  group and R'' is selected from R and R'; or

(b) the reaction product of (a) (2) and a rosin soap; or

(c) the product of (a) or (b) and from about 0.5% to about 15% by weight thereof of a C<sub>2</sub> to C<sub>10</sub> monocarboxylic acid.

4,283,294

## LUBRICATING OIL COMPOSITION

Christopher T. Clarke, Oxford, England, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 12, 1979, Ser. No. 84,364

Claims priority, application United Kingdom, Oct. 13, 1978, 40427/78

Int. Cl.<sup>3</sup> C10M 1/48

U.S. Cl. 252—32.7 R

13 Claims

1. A lubricating oil composition comprising 60 to 85 parts by weight of lubricating oil, 0.2 to 5 parts by weight of an antioxidant and 15 to 30 parts by weight of a mixture of more than 50 wt.% of group 11a metal overbased detergent and up to 50 wt.% of a Group 1a metal overbased detergent, provided the weight ratio of the overbased detergent mixture to antioxidant lies between 7.5:1 and 50:1, all parts by weight referring to the total active matter of the additive.

4,283,295

## PROCESS FOR PREPARING A SULFURIZED MOLYBDENUM-CONTAINING COMPOSITION AND LUBRICATING OIL CONTAINING SAID COMPOSITION

Louis deVries, Greenbrae, and John M. King, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 28, 1979, Ser. No. 52,700

The portion of the term of this patent subsequent to Mar. 31, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> C10M 1/32, 1/38, 1/44, 1/54

U.S. Cl. 252—46.4

15 Claims

1. A process for preparing a sulfurized molybdenum-containing composition which comprises reacting ammonium tetrathiomolybdate and a basic nitrogen compound selected from the group consisting of a succinimide, carboxylic acid amide, hydrocarbyl monoamine, hydrocarbon polyamine, Mannich base, phosphonamide, thiophosphonamide, phosphoramidate, or dispersant viscosity index improvers, or mixtures thereof,

wherein from 0.01 to 2.00 atoms of molybdenum are present per basic nitrogen atom, in the presence of a polar promoter wherein from 0.1 to 50 mols of promoter are present per mol of molybdenum, in order to form a sulfur and molybdenum-containing composition.

4,283,296

## AMINE SALT OF N-TRIAZOLYL-HYDROCARBYL SUCCINAMIC ACID AND LUBRICATING OIL COMPOSITION CONTAINING SAME

John W. Nehzdoski, Pittsburgh, Pa., and Edwin L. Patmore, Fishkill, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 935,237, Aug. 21, 1978,

abandoned, which is a continuation of Ser. No. 776,689, Mar. 11, 1977, abandoned, which is a continuation of Ser. No. 317,446,

Dec. 22, 1972, abandoned. This application Dec. 17, 1979, Ser.

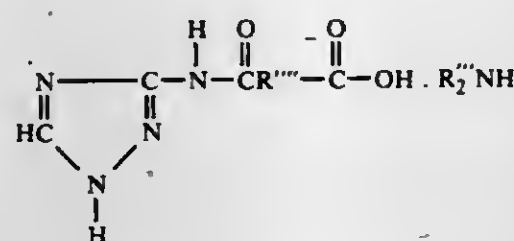
No. 104,487

Int. Cl.<sup>3</sup> C10M 1/46

U.S. Cl. 252—49.9

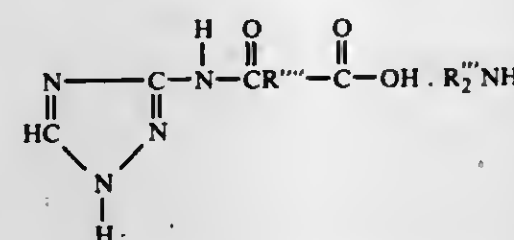
20 Claims

1. An amine salt of N-triazol hydrocarbyl succinamic acid represented by the formula



in which R''' is an alkylene radical having 2 carbon atoms and R'' is hydrogen or an aliphatic hydrocarbon radical having from 1 to 24 carbon atoms, at least one R''' being a hydrocarbon radical.

10. A lubricating oil composition comprising a major portion of a base oil having lubricating properties and from about 0.01 to 5 weight percent of an amine salt of N-triazolyl hydrocarbyl succinamic acid represented by the formula:



in which R''' is an alkylene radical having 2 carbon atoms and R'' is hydrogen or an aliphatic hydrocarbon radical having from 1 to 24 carbon atoms, at least one R''' being a hydrocarbon radical.

4,283,297

## DE-ICING COMPOSITION ON THE BASIS OF ETHYLENE GLYCOL AND/OR PROPYLENE GLYCOL, WATER AND UREA

Heinrich Peters, Burghausen, and Erich Surma, Winhöring, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 30, 1979, Ser. No. 61,939

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834225

Int. Cl.<sup>3</sup> C09K 3/18

U.S. Cl. 252—70

9 Claims

1. Thawing product for liberating areas covered by ice and/or snow which consists of the following components in percent by weight, each relative to their total weight:

60 to 79% by weight of propyleneglycol

0 to 5% by weight of ethyleneglycol

5 to 15% by weight of water

5 to 20% by weight of urea and

1 to 5% by weight of monohydric aliphatic alcohols having from 1 to 7 carbon atoms.

4. Thawing product for liberating areas covered by ice and/or snow which consists of the following components in percent by weight, each relative to their total weight:

70 to 85% by weight of ethyleneglycol

0 to 10% by weight of propyleneglycol

5 to 15% by weight of water

5 to 20% by weight of urea

1 to 5% by weight of monohydric aliphatic alcohols having from 1 to 7 carbon atoms.

4,283,298

HYDRATED  $\text{Mg}(\text{NO}_3)_2/\text{NH}_4\text{NO}_3$  REVERSIBLE PHASE CHANGE COMPOSITIONS

George A. Lane, and Harold E. Rossow, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 2, 1979, Ser. No. 90,729

Int. Cl.<sup>3</sup> C09K 5/06

U.S. Cl. 252—70

13 Claims

1. A reversible liquid/solid phase change composition comprising hydrated  $\text{Mg}(\text{NO}_3)_2/\text{NH}_4\text{NO}_3$ , and as a nucleator, one or more of  $\text{MgO}$ ,  $\text{CaO}$ ,  $\text{Mg}(\text{OH})_2$ , or  $\text{Ca}(\text{OH})_2$ , added to the composition in an amount effective to suppress average supercooling of the hydrated  $\text{Mg}(\text{NO}_3)_2/\text{NH}_4\text{NO}_3$  liquid phase to about 2° C. or less.

4,283,299

## PRODUCTION OF DETERGENT COMPOSITIONS

Gert Becker, Weinheim; Johann U. Oesch, Hockenheim; Horst Poeselt, Bensheim, all of Fed. Rep. of Germany; Alan D. Tomlinson, Vlaardingen, Netherlands, and Kurt Walz, Hockenheim, Fed. Rep. of Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,845

Claims priority, application United Kingdom, Oct. 3, 1978, 39074/78

Int. Cl.<sup>3</sup> C11D 3/06, 11/0, 11/02, 17/06

U.S. Cl. 252—90

15 Claims

1. A process for preparing a particulate alkaline detergent composition which contains at least about 5% by weight of a synthetic detergent active compound or mixture thereof, at least about 5% of an alkali metal tripolyphosphate and about 3% to about 10% of an alkali metal orthophosphate with a total amount of the tripolyphosphate and orthophosphate of from about 15% to about 25% by weight and no more than 2.5% by weight of alkali metal pyrophosphate, comprising the steps of spray drying a detergent base powder containing some or all of the detergent active compound or compounds and some or all of the alkali metal orthophosphate, and admixing at least about 5% by weight of the alkali metal tripolyphosphate in particulate form with the spray dried base powder, with the remainder if any of the alkali metal tripolyphosphate being spray-dried in the base powder, the percentages being based on the total composition.

15. A method of reducing inorganic deposits in washing machines comprising the steps of adding an effective amount of a particulate alkaline detergent composition to the washing machine to form a wash solution, washing fabrics in said wash solution and then draining the wash solution from the washing machine after the completion of the washing process; said particulate alkaline detergent composition containing at least about 5% by weight of a synthetic detergent active compound or mixture thereof, at least about 5% of an alkali metal tripolyphosphate; about 3% to about 10% of an alkali metal orthophosphate with a total amount of tripolyphosphate and orthophosphate of from about 15% to about 25% by weight and no more than 2.5% by weight of alkali metal pyrophosphate, comprising the steps of spray drying a detergent base powder containing some or all of the detergent active compound or compounds and some or all of the alkali metal orthophosphate, and admixing at least about 5% by weight of the alkali metal

tripolyphosphate in particulate form with the spray dried base powder, with the remainder if any of the alkali metal tripolyphosphate being spray dried in the base powder, the percentages being based on the total composition.

4,283,300

## METHOD AND COMPOSITION TO INHIBIT STAINING OF PORCELAIN SURFACES BY MANGANESE

James L. Kurtz, Sharonville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 9, 1979, Ser. No. 28,612

Int. Cl.<sup>3</sup> C11D 3/395, 7/54

U.S. Cl. 252—95

7 Claims

1. A method of inhibiting the staining of surfaces in contact with water which contains at least about 50 ppb of manganese II ions and an oxidizing agent which would oxidize said manganese (II) ions to form staining manganese (IV) ions; said method comprising the step of independently dispensing into said water which contains said manganese (II) ions and said oxidizing agent, from about 0.1 ppm to about 10 ppm of water-soluble, partially hydrolyzed polyacrylamide material having an average molecular weight of from 2000 to 10,000 atomic mass units, and wherein the polyacrylamide contains amide groups which were hydrolyzed to carboxylate/carboxylic acid moieties.

4,283,301

## BLEACHING PROCESS AND COMPOSITIONS

Francis L. Diehl, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 2, 1980, Ser. No. 165,461

Int. Cl.<sup>3</sup> C11D 7/54

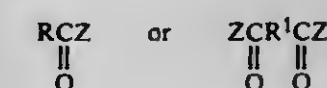
U.S. Cl. 252—102

19 Claims

1. A bleaching composition consisting essentially of:

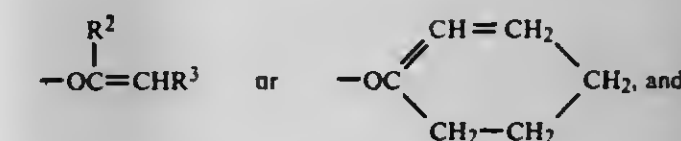
(a) from about 1% to about 70% by weight of a peroxygen bleaching compound selected from the group consisting of hydrogen peroxide, urea peroxide, and alkali metal peroxides, perborates, percarbonates, and perphosphates, and mixtures thereof; and

(b) from about 1% to about 90% by weight of a bleach activator compound of the formula



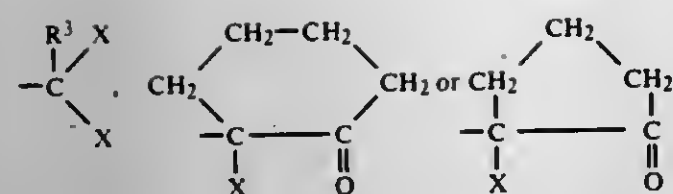
wherein R is a hydrocarbyl group containing from about 5 to about 13 carbon atoms and additionally containing from 0 to about 10 ethylene oxide groups, provided that when R contains greater than about 9 carbon atoms it must contain at least 2 ethylene groups, R<sup>1</sup> is a hydrocarbyl group containing from about 4 to about 24 carbon atoms and additionally containing from 0 to about 10 ethylene oxide groups, provided that when R<sup>1</sup> contains greater than about 12 carbon atoms it must contain at least 2 ethylene oxide groups, and each Z is a leaving group, having a pKa of from about 5 to about 20 and a molecular weight of less than about 175, selected from the group consisting of:

(1) enols of the formula

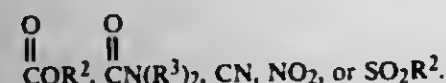


(2) carbon acids of the formula





wherein each R<sup>2</sup> is a C<sub>1</sub>-C<sub>9</sub> alkyl group, each R<sup>3</sup> is hydrogen or a C<sub>1</sub>-C<sub>8</sub> alkyl group, and each X is



4,283,302

## PARTICULATE BLEACH COMPOSITIONS

Roger Foret, Haubourdin, France, and Philippus C. van der Hoeven, Prinsenbeek, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,639

Claims priority, application United Kingdom, Jan. 6, 1979, 23765/79

Int. Cl.<sup>3</sup> C11D 7/54

U.S. Cl. 252-102

6 Claims

1. A particulate bleach composition comprising 3-99.5% by weight of a particulate inorganic peroxybleach compound, and 0.25-50% by weight of tetraacetyl ethylene diamine (TAED), said TAED having the following particle size distribution as determined by sieve analysis:

0-20% < 150 μm

10-100% > 100 μm < 150 μm

0-50% < 75 μm

0-20% < 50 μm

and being contained in granules in combination with a granulating agent selected from the group consisting of an organic and inorganic carrier material said granules having a particle size ranging from 100 to 2000 μm and comprising 10-99% by weight of said TAED.

4,283,303

## PROCESS FOR MANUFACTURE OF STABLE SODIUM DITHIONITE SLURRIES

Leonard C. Ellis, Chesapeake, Va., assignor to Virginia Chemicals Inc., Norfolk, Va.

Filed Jun. 5, 1980, Ser. No. 156,744

Int. Cl.<sup>3</sup> C01B 17/66

U.S. Cl. 252-188

9 Claims

1. A process for producing a substantially stable sodium dithionite slurry having a sodium dithionite content of 25-45%, comprising:

A. evaporating a sodium dithionite solution in an evaporator or crystallizer under a vacuum of 25-30 inches Hg, a steam heating jacket temperature of 220°-250° F., and a slurry temperature of 110°-155° F. to create a hot slurry; and

B. cooling said hot slurry promptly while under agitation to create said stable slurry, wherein NaOH is either added to said solution before said evaporating or added immediately following said evaporating of said solution in an amount of 4-5% by weight of said sodium dithionite.

4,283,304

## PROCESS FOR REMOVING TRIORGANOPHOSPHINE FROM A LIQUID COMPOSITION

David R. Bryant, and Richard A. Galley, both of South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 40,913, May 21, 1979, abandoned. This application Dec. 28, 1979, Ser. No. 108,279

Int. Cl.<sup>3</sup> B01J 31/40, 31/24; C07F 9/50; C07C 45/50

U.S. Cl. 252-413

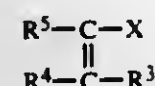
43 Claims

1. A process for removing triorganophosphine selected from the class consisting of triarylphosphine and alkyl substituted phosphine of the formula



wherein R is an alkyl radical, R' is an alkyl or aryl radical and R'' is an aryl radical from a liquid rhodium containing composition or a rhodium containing concentrate of said composition, said process comprising

(1) mixing (a) a rhodium containing composition comprising a rhodium complex hydroformylation catalyst, triarylphosphine and alkyl substituted phosphine of formula (I) above, or (b) a rhodium containing concentrate of said composition, with an α,β-unsaturated compound selected from the group consisting of compounds having the formula



wherein X is a radical selected from the group consisting of



—CN, —Cl, —Br, —I, —NO<sub>2</sub>, and —OR<sup>7</sup>; R<sup>6</sup> is a radical selected from the group consisting of hydrogen, alkyl, aryl, hydroxy, alkoxy, amino and halogen; R<sup>7</sup> is an alkyl or aryl radical; and R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> are each individually radicals selected from the group consisting of hydrogen, alkyl, aryl, X radicals as defined above and —CH<sub>2</sub>X radicals wherein X is the same as defined above; and wherein R<sup>4</sup> and R<sup>5</sup> taken together can form an alkylene group having from 2 to 8 carbon atoms; and anhydrides of the carboxylic acids of said α,β-unsaturated formula compounds;

(2) allowing an aqueous mixture of said step (1) to settle into two distinct liquid phases, and

(3) separating the aqueous phase which contains the solubilized reaction products of the alkyl substituted phosphine and/or triarylphosphine present in said composition or concentrate with said α,β-unsaturated compound from the non-aqueous liquid phase resulting from said steps (1) and (2); and wherein the molar ratio of the amount of said α,β-unsaturated compound employed to the total amount of the alkyl substituted phosphine and/or triarylphosphine present in said composition or concentrate is at least 0.1 to 1; and wherein the amount of water employed is at least sufficient to solubilize that amount of the reaction products of said phosphines with said α,β-unsaturated compound resulting from said steps (1) and (2).

2. A process as defined in claim 1 wherein a rhodium containing composition comprising a rhodium complex hydroformylation catalyst, triarylphosphine and alkyl substituted phosphine of formula (I) is mixed, in the presence of water, with said α,β-unsaturated compound.

3. A process as defined in claim 2, wherein the molar ratio of

the amount of said α,β-unsaturated compound employed to the total amount of said alkyl substituted phosphine present in said rhodium containing composition is at least about 0.1 to 1, while the molar ratio of said α,β-unsaturated compound employed to the total amount of said triarylphosphine present in said rhodium containing composition is less than 1 to 1.

4,283,305

## CATALYST COMPOSITION AND ITS USE FOR OLIGOMERIZING OLEFINS

Yves Chauvin, Le Pecq; Dominique Commereuc, Meudon; Jean Gaillard, Lyons; Gerard Leger, Saint Genis les Ollieres, and Nhu Hung Phung, Antony, all of France, assignors to Institut Francais du Pétrole, Rueil-Malmaison, France

Filed Dec. 11, 1979, Ser. No. 102,488

Claims priority, application France, Dec. 11, 1978, 78 35011

Int. Cl.<sup>3</sup> B01J 31/14, 31/04

U.S. Cl. 252-431 C

9 Claims

1. A catalyst composition obtained by contacting, in any order, at least one bivalent nickel compound with at least one hydrocarbylaluminum halide of the formula AlRCl<sub>2</sub> wherein R is a monovalent hydrocarbon group, has, and at least one organic Bronsted acid whose pK<sub>a</sub> at 20° C. is at most equal to 3.

4,283,306

## CRYSTALLINE SILICA AND USE IN ALKYLATION OF AROMATICS

Frank E. Herkes, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 032,001, Apr. 20, 1979. This application Mar. 26, 1980, Ser. No. 129,272

Int. Cl.<sup>3</sup> B01J 21/02

U.S. Cl. 252-432

10 Claims

1. A process for preparing a promoted crystalline silica catalyst comprising contacting crystalline silica with a member selected from the group consisting of arsenic oxide, phosphorus oxide, magnesium oxide, boron oxide, antimony oxide, amorphous silica, alkaline earth metal oxides, alkaline earth metal carbonates and mixtures and precursors of the foregoing, and thermally activating the resulting crystalline silica/promoter combination.

4,283,307

## CATALYST STRUCTURE FOR THE PARTIAL OXIDATION OF N-BUTANE TO PRODUCE MALEIC ANHYDRIDE

Bruno J. Barone, Houston, and Gaylon T. Click, Pearland, both of Tex., assignors to Denka Chemical Corporation, Houston, Tex.

Filed Jun. 2, 1980, Ser. No. 155,556

Int. Cl.<sup>3</sup> B01J 23/22 B01J 27, B01J 27/18

U.S. Cl. 252-432

9 Claims

1. A normal butane partial oxidation catalyst structure comprising a cylinder having a bore therethrough, said cylinder consisting essentially of catalytic material, which is comprised of a phosphorus, vanadium, oxygen complex.

4,283,308

## AUTO EXHAUST GAS CATALYST, AND PROCESS FOR PRODUCTION THEREOF

Takashi Ohara, Nishinomiyu; Tetsuji Ono, Amagasaki; Kiyoshi Yonehara, Takatsuki, and Shin Yamauchi, Ikeda, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 43,484, May 29, 1979, abandoned. This application Nov. 6, 1979, Ser. No. 91,401

Claims priority, application Japan, Jul. 12, 1978, 53-84023; Aug. 8, 1978, 53-95815

Int. Cl.<sup>3</sup> B01J 27/14, 23/10, 8/08

U.S. Cl. 252-435

19 Claims

1. A process for producing an auto exhaust gas catalyst

capable of simultaneously removing hydrocarbons, carbon monoxide and nitrogen oxides, said catalyst consisting essentially of cerium, rhodium and platinum, and optionally, at least one additional element selected from the group consisting of iron, lanthanum, palladium and phosphorus, said process comprising first, simultaneously, depositing on a refractory inorganic support 0.5 to 30 g of cerium, 0 to 20 g of iron and 0 to 10 g of lanthanum, as elements, per liter of the finished catalyst, and thereafter depositing thereon, in any desired sequence, 0.005 to 0.3 g of rhodium, 0.05 to 3.0 g of platinum, 0 to 1.2 g of palladium and 0 to 0.5 g of phosphorus as elements, per liter of the finished catalyst, thereby causing rhodium to be present mainly on the surface layer of the catalyst.

4,283,309

## HYDROCARBON CONVERSION CATALYST

Elroy M. Gladrow, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 1,722, Jan. 8, 1979, which is a

continuation-in-part of Ser. No. 746,188, Nov. 30, 1976, abandoned, which is a continuation-in-part of Ser. No. 626,225, Oct. 28, 1975, abandoned. This application Oct. 1, 1979, Ser. No. 81,275

Int. Cl.<sup>3</sup> B01J 29/08

U.S. Cl. 252-455 Z

14 Claims

1. A catalyst comprising: (1) a crystalline aluminosilicate zeolite, (2) a catalytic inorganic oxide gel, and (3) a porous inorganic oxide initially having a surface area greater than about 200 square meters per gram and having at least 0.2 cubic centimeter per gram of its pore volume in pores ranging in diameter from about 90 to about 200 angstroms, said catalyst having at least 0.4 cubic centimeter per gram of its pore volume in pores greater than 90 angstroms in diameter.

2. The catalyst of claim 1 wherein said porous inorganic oxide is selected from the group consisting of alumina, silica, titania, zirconia, magnesia and mixtures thereof.

4,283,310

P.V.C. COMPOSITIONS FOR EXTRUSION MOULDING  
Kenneth James, Reading, and Frederick J. Smith, Prescott, both of England, assignors to Talres Development (N.A.) N.V., Netherlands Antilles

Filed Nov. 6, 1979, Ser. No. 91,396

Claims priority, application United Kingdom, Nov. 9, 1978, 43935/78

Int. Cl.<sup>3</sup> C08K 5/09, 5/10; C08L 27/06

U.S. Cl. 260-23 XA

12 Claims

1. A lead-free stabilised PVC composition for extrusion molding containing as the only stabiliser an alkaline earth metal or zinc soap of one or more fatty acids having an iodine value of from 20-60, and containing a lubricant.

10. A composition according to claim 5, in which the lubricant comprises montan wax.







4,283,318

## NON-AQUEOUS COMPOSITE GEL AND PROCESS FOR PRODUCTION THEREOF

Yoshikazu Musa, and Isao Mune, both of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

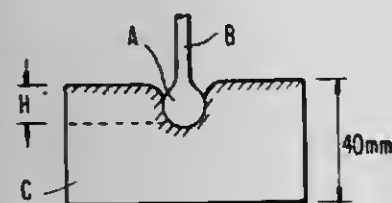
Filed Sep. 29, 1980, Ser. No. 191,619

Claims priority, application Japan, Sep. 29, 1979, 54-126268

Int. Cl.<sup>3</sup> C08L 91/08; C08K 5/03; C08L 7/00

U.S. Cl. 260—28.5 B

22 Claims



1. A substantially stable non-aqueous composite gel containing emulsified high boiling point hydrophilic liquid particles, said composite gel consisting of an O/O emulsion comprising from 15 to 99% by weight of a continuous phase composed of a cross-linked rubber component and an oil component, said rubber component being derived from rubber containing an unsaturated double bond or bonds in the molecules thereof, and from 85 to 1% by weight of a dispersed phase composed of a high boiling point hydrophilic liquid uniformly emulsified in the continuous phase by an emulsifier.

10. A process for producing a non-aqueous composite gel containing emulsified high boiling point hydrophilic liquid particles, said process comprising dissolving a rubber component containing an unsaturated double bond or bonds in the molecules thereof in an excess amount of an oil component to form a solution, adding a cross-linking agent at a temperature below the decomposition temperature thereof and an emulsifier to the solution, uniformly emulsifying a high boiling point hydrophilic liquid in the resulting solution to form an O/O emulsion comprising from 15 to 99% by weight of a continuous phase composed of the rubber component and the oil component and from 85 to 1% by weight of a dispersed phase of the emulsified high boiling point hydrophilic liquid, and cross-linking the rubber component to achieve the gelation thereof.

4,283,319

## PROCESS FOR PREPARING FOUNDRY CORES OR MOLDS AND BINDER MATERIALS USED THEREFOR

Susumu Konii; Shigeo Sase; Masatoshi Yoshida; Shoji Koroda, and Takeshi Sumi, all of Shimodate, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Nov. 7, 1979, Ser. No. 92,022

Claims priority, application Japan, Nov. 13, 1978, 53-139733

Int. Cl.<sup>3</sup> C08L 61/12

U.S. Cl. 260—29.3

18 Claims

1. A foundry binder material to be cured with carbon dioxide which comprises (a) an alcohol-soluble phenolic resin selected from the group consisting of resoles, novolacs, N-methylene-resoles, dimethylene ether-type resoles, formal-type resoles and mixtures thereof, (b) 10 to 300 parts by weight of a hydroxide and/or oxide of a polyvalent metal selected from the group consisting of an alkaline earth metal, aluminum, zinc, iron, nickel, titanium, silicon, tin, and a mixture thereof, (c) 100-500 parts by weight of water, (d) 1 to 100 parts by weight of an organic solvent selected from the group consisting of an alcohol, an aromatic hydrocarbon, a ketone, an acetic ester, a phthalic ester, an ether, a cellosolve, dimethylformamide, dimethyl sulfoxide and a mixture thereof, and (e) 0.1 to 50 parts by weight of an alkali metal hydroxide, said parts by weight

being based on 100 parts by weight of said alcohol-soluble phenolic resin.

4,283,320

## SEMI-GLOSS LATEX PAINT

Howard E. Carroll, Grafton, and Gerald M. Sweitzer, North Ridgeville, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,239

Int. Cl.<sup>3</sup> C08L 33/02

U.S. Cl. 260—29.6 RW

3 Claims

1. An aqueous latex dispersion paint composition which coalesces at an ambient coalescing temperature into a semi-gloss hardened continuous paint film, said latex paint having about 30% to 70% by weight total solids and comprising on a dry solids volume basis:

55% to 70% of a film-forming latex binder having a major weight portion of polymer particles between about 500 Å and 5000 Å and having a glass transition temperature at least about 5° C. below said coalescing temperature whereby said binder particles will coalesce into a binding matrix, said binder particles being a vinyl copolymer comprising by weight at least 40% polymerized vinyl unsaturated monomers;

10% to 25% of solid, non-cellular, non-film-forming polymer particles having a weighted average diameter between about 1000 Å and 5000 Å and having a glass transition temperature at least about 30° C. above the glass transition temperature of said binder, said non-film-forming polymer particles being polymerized ethylenically unsaturated monomers containing between 0.2% and 2% of copolymerized acid monomer selected from acrylic acid or methacrylic acid;

5% to 20% opacifying pigment having a refractive index of at least about 1.8;

0% to 15% of non-opacifying pigment; and said latex paint having a pigment-volume-content (PVC) between about 30% and 45% PVC but less than critical-PVC as measured by opacity.

4,283,321

## ALKYL ARYL ETHYLENEOXY SULFONATE SURFACTANTS FOR VINYL ACETATE POLYMERIZATION

Paritosh M. Chakrabarti, Wayne, and Darrell G. Kirchner, Fairlawn, both of N.J., assignors to GAF Corporation, New York, N.Y.

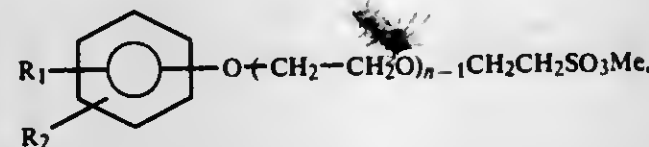
Filed Oct. 3, 1979, Ser. No. 81,367

Int. Cl.<sup>3</sup> C08L 31/04

U.S. Cl. 260—29.6 MQ

8 Claims

1. The method of producing aqueous polymer emulsions comprising: contacting a mixture of water, vinyl acetate monomer and at least about 0.1 percent by weight of the vinyl acetate monomer of a surfactant having the formula:



wherein:

R<sub>1</sub> is an alkyl group having from 6 to 18 carbons;R<sub>2</sub> is H or an alkyl group having from 6 to 12 carbons;

n is greater than 9; and

Me is a monovalent cation selected from the group consisting of NH<sub>4</sub>, Na, Li and K,

the weight ratio of water to vinyl acetate being predetermined such that the resultant emulsion contains at least 40% by weight of solids.

4,283,322

## EMULSION COMPOSITION AND METHOD FOR USE IN TREATING GLASS FIBERS

Chester S. Temple, McKees Rocks, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 11,454, Feb. 12, 1979, Pat. No.

4,240,944. This application Mar. 11, 1980, Ser. No. 129,510

The portion of this patent subsequent to Dec. 23, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> C08L 23/12

U.S. Cl. 260—29.6 WB

29 Claims

1. An aqueous emulsion composition for use in a size composition for application to glass fibers, comprising: isotactic carboxylated polypropylene, amorphous carboxylated polypropylene, where both the isotactic and amorphous carboxylated polypropylene are prepared by modifying isotactic and amorphous polypropylene with ethylenically substituted polycarboxylic acid or anhydride, amide, or lower alkyl ester thereof, a base, a surfactant selected from the group consisting of cationic, anionic and nonionic, and water in amounts sufficient to make a composition having about 20 to about 40 percent solids by weight.

4,283,323

Patent Not Issued For This Number

4,283,324

## NAIL ENAMEL COMPOSITION

John A. Duffy, West Milford, N.J., assignor to Avon Products, Inc., Suffern, N.Y.

Filed Dec. 4, 1979, Ser. No. 100,241

Int. Cl.<sup>3</sup> C08F 61/00; C09D 3/48; C08F 216/00

U.S. Cl. 260—31.2 N

5 Claims

1. A nitrocellulose-free nail enamel composition comprising a polyvinyl butyral resin, an aryl-sulfonamide-formaldehyde resin, and a compatible solvent; said solvent being the major constituent of the composition.

4,283,325

## HYDROPHOBIC SUBSTRATE WHICH IS ABLE TO RELEASE A CHEMICAL SUBSTANCE

Jeanne Berthet, Velizy Villacoublay, and Gilbert Gaussens, Meudon, both of France, assignors to Commissariat à l'Energie Atomique, Paris, France

Filed Aug. 15, 1979, Ser. No. 66,521

Claims priority, application France, Aug. 25, 1978, 78 24678

Int. Cl.<sup>3</sup> A61F 5/46

U.S. Cl. 260—37 M

26 Claims

1. A hydrophobic substrate adapted to release therefrom at least one chemical substance comprising, a hydrophobic polymer matrix, first inclusions and second inclusions homogeneously distributed in the polymeric matrix, said first inclusions comprising a polymeric material which is different from the polymer matrix and forms a stable and continuous system in

contact with said inclusions, said second inclusions comprising at least one solid state chemical substance.

4,283,326

## PBT MOLDING COMPOSITIONS CONTAINING MICA AND A COMPOSITE POLYMER

John J. Charles, Bloomingdale, and Robert C. Gasman, West Milford, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 4,596, Jan. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 814,535, Jul. 11, 1977, Pat. No. 4,140,670. This application Dec. 26, 1979, Ser. No. 101,950

Int. Cl.<sup>3</sup> C08L 67/02, 63/00

U.S. Cl. 260—40 R

20 Claims

1. Polyester molding composition consisting essentially of at least about 40 wt% poly (C<sub>2</sub>-C<sub>4</sub> alkylene terephthalate) with at least about 50 wt% of such poly (C<sub>2</sub>-C<sub>4</sub> alkylene terephthalate) being polybutylene terephthalate having an intrinsic viscosity between about 0.5 and about 2.0 dl/g, such composition containing:

- between about 1 and about 40 wt% based on total molding composition of phlogopite mica flakes having an average particle size between about 40 and 325 mesh with at least 90% of all mica flakes present in the composition having particle sizes between about 40 and about 200 mesh; and
- between about 5 and about 30 wt% based on total molding composition of a multiphase composite polymer comprising:
  - about 25 to about 95 wt% of a first elastomeric phase polymerized from a monomer system comprising about 75 to 99.8% by weight C<sub>1</sub> to C<sub>6</sub> alkyl acrylate, 0.1 to 5% by weight crosslinking monomer, and 0.1 to 5% by weight graftlinking monomer, said crosslinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups all of which polymerize at substantially the same rate of reaction, and said graftlinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups, at least one of which polymerizes at a substantially different rate of polymerization from at least one other of said reactive groups; and
  - about 75 to 5 wt% of a final, rigid thermoplastic phase polymerized in the presence of said elastomeric phase.

4,283,327

## 2-(2-HYDROXY-3,5-DI-TERT-OCTYLPHENYL)-2H-BENZOTRIAZOLE STABILIZED COMPOSITIONS

Martin Dexter, Briarcliff Manor, and Roland A. E. Winter, Armonk, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

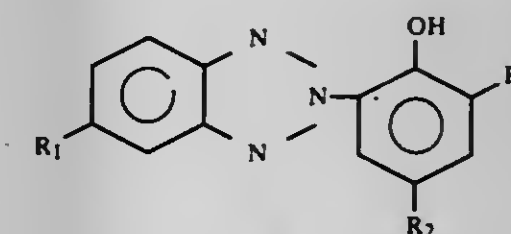
Continuation of Ser. No. 6391, Jan. 25, 1979, abandoned. This application Aug. 20, 1979, Ser. No. 68,275

Int. Cl.<sup>3</sup> C08K 5/27, 5/34

U.S. Cl. 260—45.8 NT

6 Claims

1. A composition of matter comprising an organic polymer, subject to light-induced deterioration, selected from the group consisting of thermoset acrylic resins, thermoplastic acrylic resins, alkyd/acrylic resins, alkyd resins and polycarbonates, stabilized with from 0.1 to 5% by weight of a compound of the formula





wherein R<sub>1</sub> is hydrogen or chloro, and R<sub>2</sub> is tert-octyl.

4,283,328

## PREPARATION OF DEHYDROPEPTIDES

Charles H. Stammer, Athens, Ga., assignor to Research Corporation, New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,210

Int. Cl.<sup>3</sup> C07C 103/52; A61K 37/00

U.S. Cl. 260—112.5 R

3 Claims

1. A method of stabilizing peptides to enzymatic degradation comprising introducing a dehydrophenylalanine group into the peptide chain so as to produce a dehydropeptide selected from the group consisting of:

aspartyl-dehydrophenylalanine methyl ester; tyrosyl-D-alanyl-glycyl-dehydrophenylalanine methionine amide; arginyl-prolyl-prolyl-glycyl-dehydrophenylalanylseryl-prolyl-phenylalanine-arginine; N-carbobenzoxyl-prolyl-dehydrophenylalanine histidyl-leucine, and its stereoisomers; leucyl-dehydrophenylalanine valyl-phenylalanine methyl ester; —N-t-butoxy carboxyl-D-alanyl-glycyldehydrophenylalanine-methionine amide; and tyrosyl-D-alanyl-glycyl-dehydrophenylalanine methionine amide acetate.

4,283,329

## PHARMACOLOGICALLY ACTIVE PEPTIDES

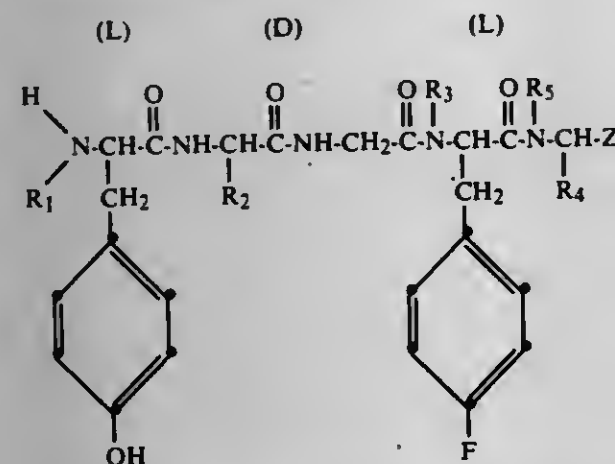
Paul D. Gesellchen, Indianapolis, and Robert T. Shuman, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 17, 1979, Ser. No. 104,348

Int. Cl.<sup>3</sup> C07C 103/52; A61K 37/00

U.S. Cl. 260—112.5 R

1. A compound of the formula



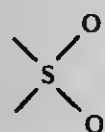
and pharmaceutically acceptable non-toxic acid addition salts thereof, in which L and D define the chirality;

R<sub>1</sub> is C<sub>1</sub>–C<sub>3</sub> primary alkyl;

R<sub>2</sub> is C<sub>1</sub>–C<sub>4</sub> primary or secondary alkyl, allyl, cyclopropylmethyl, C<sub>1</sub>–C<sub>2</sub> hydroxyalkyl, or —(CH<sub>2</sub>)<sub>m</sub>—U—CH<sub>3</sub> in which U is —S— or >S—O and m is 1 or 2;

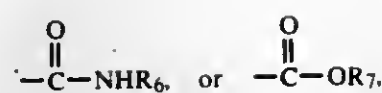
R<sub>3</sub> is hydrogen

R<sub>4</sub> is hydrogen, C<sub>1</sub>–C<sub>5</sub> primary or secondary alkyl, —(CH<sub>2</sub>)<sub>n</sub>—X—(CH<sub>2</sub>)<sub>p</sub>—CH<sub>3</sub> in which X is —O—, —S—, >S—O or



n is 1 or 2, and p is 0 or 1, phenyl, or monosubstituted phenyl in which the substituent is halo, hydroxy, C<sub>1</sub>–C<sub>3</sub> alkoxy, nitro, C<sub>1</sub>–C<sub>3</sub> alkyl, or trifluoromethyl; R<sub>5</sub> is hydrogen or C<sub>1</sub>–C<sub>4</sub> primary alkyl; and

Z is —CH<sub>2</sub>OR<sub>6</sub>.



in which R<sub>6</sub> is hydrogen or C<sub>1</sub>–C<sub>3</sub> alkyl and R<sub>7</sub> is C<sub>1</sub>–C<sub>3</sub> alkyl.

4,283,330

## PHARMACOLOGICALLY ACTIVE PEPTIDES

Robert T. Shuman, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

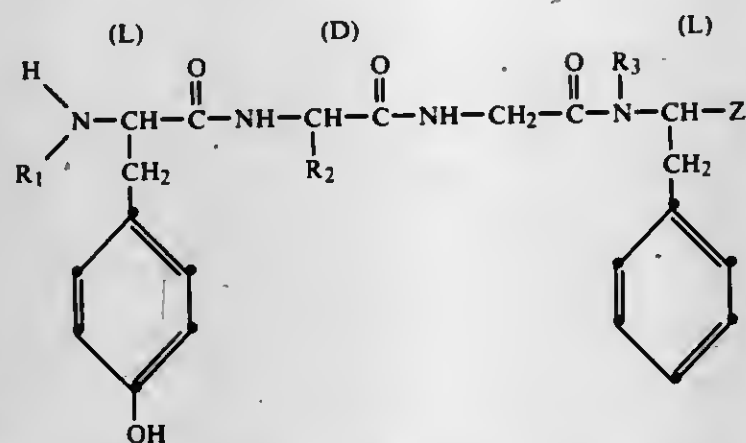
Filed Dec. 17, 1979, Ser. No. 104,349

Int. Cl.<sup>3</sup> C07C 103/52; A61K 37/00

U.S. Cl. 260—112.5 R

13 Claims

1. A compound of the formula



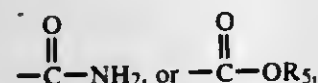
and pharmaceutically acceptable non-toxic acid addition salts thereof, in which L and D define the chirality;

R<sub>1</sub> is hydrogen or C<sub>1</sub>–C<sub>3</sub> primary alkyl;

R<sub>2</sub> is C<sub>1</sub>–C<sub>4</sub> primary or secondary alkyl, allyl, cyclopropylmethyl, C<sub>1</sub>–C<sub>2</sub> hydroxyalkyl, or —(CH<sub>2</sub>)<sub>m</sub>—U—CH<sub>3</sub> in which U is —S— or >S—O and m is 1 or 2;

R<sub>3</sub> is cyclopropylmethyl; and

Z is —CH<sub>2</sub>OR<sub>4</sub>.



in which R<sub>4</sub> is hydrogen, acetyl, or acetoxymethyl and R<sub>5</sub> is C<sub>1</sub>–C<sub>3</sub> alkyl.

4,283,331

## AZO DYES, THEIR PREPARATION AND USE

Karl Seitz, Oberwil, and Dieter Mäusezahl, Biel-Benken, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,958

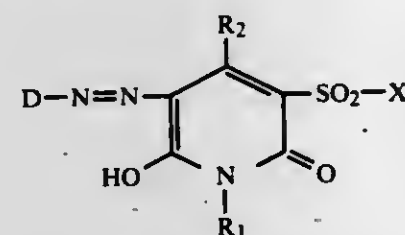
Claims priority, application Switzerland, Jan. 25, 1978, 805/78

Int. Cl.<sup>3</sup> C09B 29/22, 29/36, 31/14

U.S. Cl. 260—153

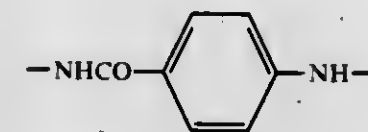
8 Claims

1. An azo dye of the formula

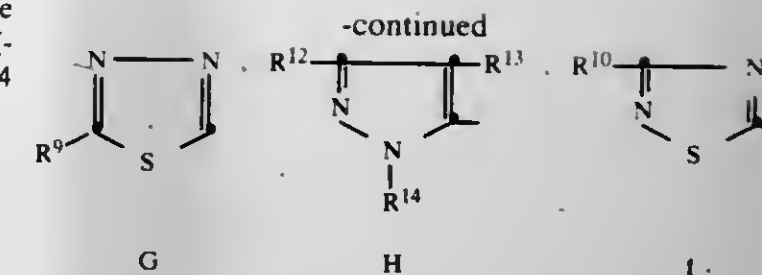


wherein D is a diazo component of the benzene or naphthalene series which contains a sulfonic acid group and a

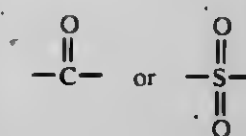
fiber-reactive radical, capable of reacting with the hydroxyl groups of cellulose or with the amino groups of natural or synthetic polyamides with the formation of covalent chemical bonds therewith, said fiber-reactive radical bonded to a ring carbon atom of D via an —N(R)—group, in which R is hydrogen or alkyl of 1 to 4 carbon atoms, a —CH<sub>2</sub>—NH—bridge or an



bridge, R<sub>1</sub> is hydrogen or an alkyl radical having 1 to 4 carbon atoms, R<sub>2</sub> is an alkyl radical having 1 to 4 carbon atoms and X is a substituted or unsubstituted alkyl or alkenyl radical.



wherein one or two substituents R<sup>1</sup> through R<sup>13</sup> on each radical is an ester group of the structure —Z—O—R wherein Z is either



4,283,332

## AZO DYES CONTAINING FLUORINATED CARBOXYLIC OR SULFONIC ESTER GROUPS ON THE DIAZO MOIETY

Robert N. Gourley, Formby, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,723

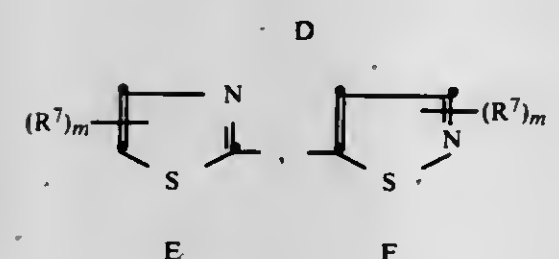
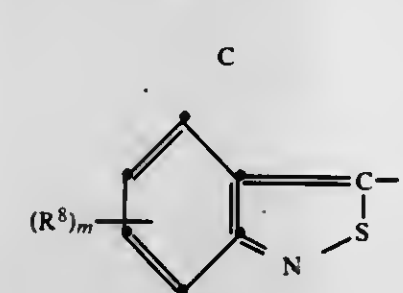
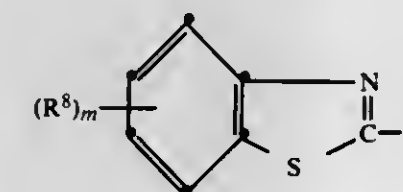
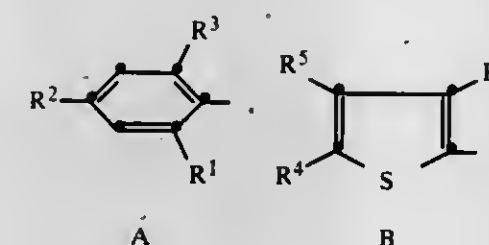
Claims priority, application United Kingdom, Nov. 6, 1979, 38335/79

Int. Cl.<sup>3</sup> C09B 29/085, 29/26, 29/36, 29/44

U.S. Cl. 260—155

7 Claims

1. An azo compound of the structure X—N=N—C' wherein X is selected from



and R is a lower alkyl group, straight chain, branched chain or alicyclic, and which is substituted with 1–3 fluorine atoms;

R<sup>1</sup> is hydrogen, halogen, cyano, nitro, formyl, lower alkanoyl, benzoyl, lower alkoxy carbonyl, lower alkylsulfonyl, sulfamoyl, lower alkylsulfamoyl, carbamoyl, lower alkylcarbamoyl, or trifluoromethyl;

R<sup>2</sup> is halogen, cyano, lower alkylsulfonyl, formyl, lower alkanoyl, benzoyl, lower alkoxy carbonyl, sulfamoyl, lower alkylsulfamoyl, carbamoyl, lower alkylcarbamoyl, trifluoromethyl, or nitro;

R<sup>3</sup> is hydrogen, halogen, cyano or nitro;

R<sup>4</sup> is cyano, nitro, aryl, lower alkanoyl, aroyl, lower alkoxy carbonyl, lower hydroxyalkoxy carbonyl, lower alkoxy lower-alkoxy carbonyl, or the group 13 CONR<sup>4</sup>R<sup>5</sup> in which R<sup>4</sup> individually is hydrogen, lower alkyl, cyclohexyl, lower alkylcyclohexyl, cyclohexylmethyl, lower alkylcyclohexylmethyl, lower hydroxyalkylcyclohexylmethyl, aryl-lower-alkyl, or aryl; R<sup>5</sup> individually is hydrogen or lower alkyl; and R<sup>4</sup> and R<sup>5</sup> in combination are pentamethylene or ethyleneoxyethylene;

R<sup>5</sup> is hydrogen, lower alkyl, lower alkoxy, aryl-lower-alkyl or aryl;

R<sup>6</sup> is selected from R<sup>1</sup>, lower alkyl, thiocyanato and arylazo; R<sup>7</sup> is hydrogen, lower alkyl, lower alkoxy, nitro, halogen, lower alkylsulfonyl, carbamoyl, lower alkylcarbamoyl, lower alkoxy carbonyl, sulfamoyl, lower alkylsulfamoyl, cyano, thiocyanato, trifluoromethyl or phenyl;

R<sup>8</sup> is hydrogen, lower alkyl, lower alkoxy, nitro, halogen, lower alkylsulfonyl, substituted lower alkylsulfonyl, carbamoyl, lower alkylcarbamoyl, lower alkoxy carbonyl, sulfamoyl, lower alkylsulfamoyl, cyano, thiocyanato, lower alkylthio, cyclohexylthio, phenylthio or trifluoromethyl;

R<sup>9</sup> and R<sup>10</sup> are fluorinated ester groups of the formula —Z—O—R;

R<sup>12</sup> is hydrogen, cyano, or lower alkyl;

R<sup>13</sup> is cyano, carbamoyl, nitro, or lower alkoxy carbonyl;

R<sup>14</sup> is hydrogen, lower alkyl, phenyl, phenyl substituted with halogen, lower alkyl, lower alkoxy, lower alkanoylamino, cyano, or lower alkoxy carbonyl, lower alkylsulfonyl, phenylsulfonyl, phenylsulfonyl substituted with halogen, lower alkyl, lower alkoxy, lower alkanoylamino, cyano, or lower alkoxy carbonyl; and m is 1 or 2; and C' is an aniline, tetrahydroquinoline, or benzomorpholine type coupler selected from those of the formulae







4,283,336  
PROCESS FOR THE PREPARATION OF  
3-AMINO-2-(5-FLUORO AND  
5-METHOXY-1H-INDOL-3-YL)PROPANOIC ACID  
DERIVATIVES

Robert N. Schut, Edwardsburg, Mich.; Max E. Safdy, Elkhart, Ind., and Enrique Hong, Mexico City, Mexico, assignors to Miles Laboratories, Inc., Elkhart, Ind.

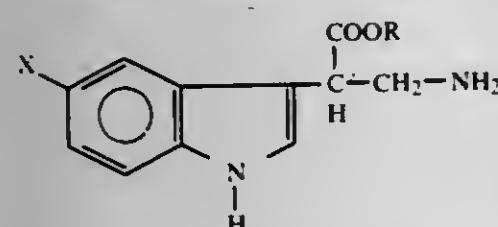
Division of Ser. No. 915,735, Jun. 15, 1978, abandoned. This application Oct. 17, 1979, Ser. No. 85,915

Int. Cl.<sup>3</sup> C07D 209/18, 209/20

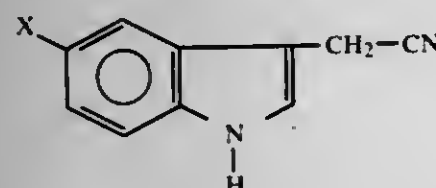
U.S. Cl. 260—326.14 R

5 Claims

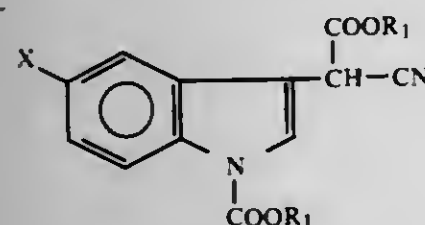
1. A process for preparing a compound having Formula I.



wherein R is a hydrogen atom or a methyl group and X is fluorine or a methoxy group, comprising the steps of:  
(a) reacting a compound having Formula II

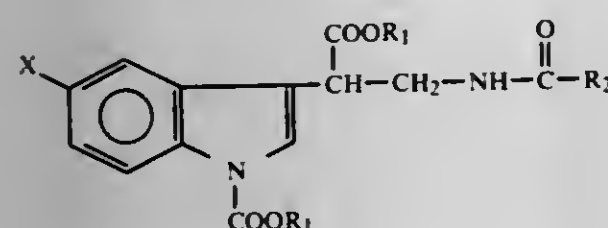


wherein X is fluorine or a methoxy group, with an alkali metal base selected from the group of sodium metal, lithium hydride, sodium ethoxide or potassium t-butoxide and an acyloxylating agent selected from the group of diethyl carbonate, dimethyl carbonate, dibenzyl carbonate, ethyl chloroformate or methyl chloroformate in a suitable solvent at a temperature in the range of from about 0° to 110° C. to produce a compound having Formula III



wherein X is as above and R<sub>1</sub> is a lower alkyl group of from 1 to 3 carbon atoms or a phenyl group;

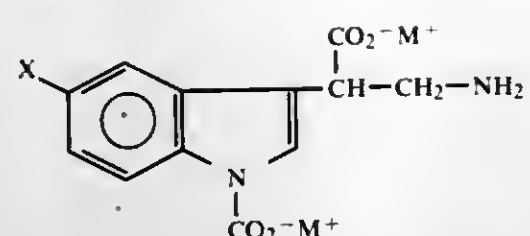
(b) separating compound III from the reaction mass;  
(c) hydrogenating the compound having Formula III under pressure, in the presence of a catalyst, in a suitable solvent selected from the group of acetyl chloride, acetic anhydride, propionyl chloride or benzoyl chloride to produce a compound having Formula IV.



wherein R<sub>1</sub> and X are as defined above and R<sub>2</sub> is methyl, ethyl or phenyl;

(d) separating Compound IV from the reaction mass;  
(e) hydrolyzing the compound having Formula IV with an aqueous alkali metal hydroxide at a concentration from about 3 N to 10 N for about 1 to 15 hours, at a temperature

of from about 50° C. to 100° C. to produce a compound having Formula V.



wherein M<sup>+</sup> is an alkali metal cation and X is as defined above;

(f) decarboxylating the compound having Formula V with an aqueous acid at a temperature from about 50° C. to 100° C. and isolating the compound having Formula I wherein R is a hydrogen atom and X is as defined above, and  
(g) optionally esterifying the compound having Formula I, wherein R is a hydrogen atom and X is as defined above, with methanol in the presence of an acid catalyst to produce the compound having Formula I wherein R is a methoxy group and X is as defined above.

4,283,337  
PROCESS FOR THE PURIFICATION OF  
TRYPTOPHANE AND DERIVATIVES OF  
TRYPTOPHANE

Theodor Lussling, Constance; Alfred Maierhofer, Allensbach, and Paul Scherberich, Constance, all of Fed. Rep. of Germany, assignors to Deutsche Gold und Silber-Scheideanstalt Vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Nov. 15, 1979, Ser. No. 94,801

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850074

Int. Cl.<sup>3</sup> C07D 209/20

U.S. Cl. 260—326.14 T

14 Claims

1. In a process for purifying a substance which is (1) tryptophane or (2) tryptophane substituted in the 2 or 5 position of the ring by chlorine, bromine, fluorine, alkyl of 1-4 carbon atoms, hydroxy or benzyloxy or (3) tryptophane substituted on the NH<sub>2</sub> group by formyl, acetyl, chloroacetyl, fluoroacetyl, benzoyl, phthaloyl toluenesulfonyl or carbobenzoxy, the improvement consisting essentially of treating the substance to be purified in a solvent inert under the conditions of purification at a temperature between about 20° C. and the boiling point of the mixture with an alkali metal dithionite.

4,283,338  
PROCESS FOR PRODUCING O,O-DIALKYL  
DITHIOPHOSPHORIC ACID ESTERS

James Minn, Hattiesburg, Miss., assignor to Boots Hercules Agrochemicals Co., Wilmington, Del.

Filed Feb. 22, 1980, Ser. No. 123,548

Int. Cl.<sup>3</sup> C07D 209/48; C07F 9/173; C07D 319/12

U.S. Cl. 260—326 E

6 Claims

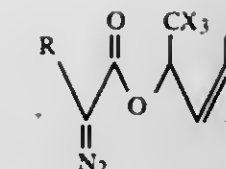
1. In the process defined by the reaction:



where R is an alkyl group having 1 to 4 carbon atoms and R'Cl is an organic chloride which contains at least one acid-replaceable chlorine atom on a carbon atom attached to oxygen, sulfur or nitrogen by a single bond, which reaction is effected in the presence of a catalytic amount of zinc chloride, ferrous chloride or stannous chloride and in the absence of a sequestering agent for the hydrogen chloride liberated by the reaction, the improvement which comprises conducting said reaction under

sufficient pressure to maintain the liberated hydrogen chloride in the system during the course of the reaction.

6. The process of claim 2 in which the organic chloride is N(1,2-dichloroethyl)phthalimide.



4,283,339

PREPARATION OF DIOXANE AND CO-PRODUCTS  
Norman B. Godfrey, Austin, Tex., assignor to Highland Resources, Inc., Houston, Tex.

Filed Jun. 29, 1979, Ser. No. 53,558

Int. Cl.<sup>3</sup> C07D 319/10

U.S. Cl. 260—340.6

22 Claims

1. A method of making dioxane comprising the steps of:  
(a) providing a reaction zone at temperatures in the range of from about 225° C. to about 275° C. containing a reaction medium comprising a mixture of partial phosphate esters of a polyethylene glycol and ammonium salts of partial esters of a polyethylene glycol; and  
(b) reacting a liquid polyethylene glycol in the reaction zone to form dioxane.  
4. A method of making dioxane comprising the steps of:  
(a) heating in a reaction zone a mixture of ammonium dihydrogen phosphate and a liquid polyethylene glycol, while distilling therefrom a mixture of water and ammonia, thereby forming in the reaction zone a reaction medium; and  
(b) reacting a liquid polyethylene glycol in a heated reaction zone containing the reaction medium to form dioxane.

4,283,340

ASCORBIC ACID INTERMEDIATES

Thomas C. Crawford, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 805,880, Jun. 13, 1977, Pat. No. 4,232,168. This application May 5, 1980, Ser. No. 146,239

Int. Cl.<sup>3</sup> C07D 319/04

U.S. Cl. 260—340.7

6 Claims

1. Methyl 3,5,4,6-di-O-benzylidene-L-gulonate.  
4. Ethyl 3,5,4,6-di-O-benzylidene-2-nitrato-L-gulonate.  
5. Ethyl 3,5,4,6-di-O-benzylidene-L-xylo-hexulosanate.

4,283,341

PROCESS TO BICYCLIC LACTONES

Kiyosbi Kondo; Toshiyuki Takashima, and Daiei Tunemoto, all of Kanagawa, Japan, assignors to FMC Corporation, Philadelphia, Pa.

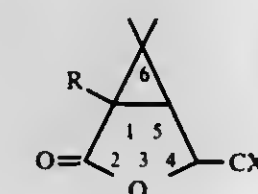
Division of Ser. No. 49,826, Jun. 18, 1979, Pat. No. 4,254,282, which is a continuation-in-part of Ser. No. 736, Jan. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 875,649, Feb. 6, 1978, abandoned. This application Oct. 30, 1979, Ser. No. 89,683

Int. Cl.<sup>3</sup> C07D 307/93

U.S. Cl. 260—343.3 R

5 Claims

1. A process for preparing a lactone of the formula



wherein each X is a chlorine or bromine atom, R is hydrogen or a lower alkoxy carbonyl group, and the lactone is the (1R,4R,5S) isomer, the (1S,4S,5R) isomer, or a mixture thereof, which comprises cyclizing a diazo ester of the formula

by heating in the presence of a copper-containing catalyst, thereby producing said lactone.

4,283,342

ANTICANCER AGENTS AND METHODS OF  
MANUFACTURE

Seymour Yolles, Newark, Del., assignor to University of Delaware, Newark, Del.

Filed Jan. 31, 1980, Ser. No. 117,378

Int. Cl.<sup>3</sup> C07D 309/00, 311/00; C07F 15/00

U.S. Cl. 260—345.1

9 Claims

1. A metal coordination compound comprising, as a therapeutic portion,  
(a) A multi-ring quinone having at least one hydroxy group in a ring fused to the quinone ring as ligand,  
(b) chelated at keto and hydroxy groups with the platinum metal  
(c) in a cis-dichloro platinum (II) compound having two platinum metal coordinate bonds each joined to a member of the group consisting of ammonia, mono-substituted ammonia and ammonia radicals connected one to the other by single valence bonds through adjacent carbons of a carbon ring compound, and  
(d) additional cis-dichloro platinum (II) compound not bonded to the hydroxy quinone but coordinated to said platinum which is bonded to said hydroxy quinone, and, as a non-therapeutic portion,  
(e) excess platinum in the form of tetrachloro-platinate anion.

4,283,343

PROCESS FOR PRODUCING LIQUID DIBASIC ACID  
ANHYDRIDES

Motoyuki Yamato, Kamakura, and Tadao Natsunome, Yokosuka, both of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,247

Claims priority, application Japan, Dec. 28, 1978, 53-164297

Int. Cl.<sup>3</sup> C07D 307/89

U.S. Cl. 260—346.3

9 Claims

1. A process for producing a dibasic acid anhydride which is liquid at 0° C., comprising heat-treating in the presence of a stereoisomerization catalyst a structural isomeric mixture of methyltetrahydrophthalic anhydride resulting from the shifting of its double bond.

4,283,344

PROCESS FOR PRODUCING  
1,1,3,3-TETRAFLUORO-1,3-DIHYDRO-ISOBENZOFU-  
RAN

Tsumoru Kodaira, Takatsuki; Yoshiro Kobayashi, Tokyo, and Hitoshi Kuroso, Toyonaka, all of Japan, assignors to Nihon Nobyaku Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1980, Ser. No. 128,190

Claims priority, application Japan, Mar. 9, 1979, 54-27312

Int. Cl.<sup>3</sup> C07D 307/78

U.S. Cl. 260—346.22

2 Claims

1. A process for producing 1,1,3,3-tetrafluoro-1,3-dihydro-isobenzofuran, which is characterized by reacting  $\alpha,\alpha,\alpha$ -trichloro-o-toluidic chloride with anhydrous hydrogen fluoride at an amount ratio of 4 moles or slight excess of the latter to 1 mole of the former.



4,283,345

## PROCESS FOR THE PREPARATION OF MONONITRO-1,2,3,4-TETRAHYDROANTHRAQUINONES

Serge Y. Delavarenne, Francheville le Haut; Bernard Dubreux, Francheville le Bas, and Pierre Tellier, Sainte Foy les Lyon, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Jan. 14, 1980, Ser. No. 112,001

Claims priority, application France, Jan. 19, 1979, 7901325  
Int. Cl.<sup>3</sup> C07C 50/18

U.S. Cl. 260—369

27 Claims

1. A process for the preparation of mononitro derivatives of 1,2,3,4-tetrahydro-anthraquinones from 1,4,4a,9a-tetrahydro-anthraquinone which comprises effecting a thermal pretreatment of the 1,4,4a,9a-tetrahydro-anthraquinone in the presence of a hydrogenation catalyst in an inert atmosphere and in the absence of oxidizing or reducing agents which leads to a mixture of anthraquinone, 1,2,3,4-tetrahydro-9,10-anthracenediol and 1,2,3,4-tetrahydro-anthraquinone, separating the anthraquinone by-product and the catalyst and subjecting the mixture of 1,2,3,4-tetrahydro-9,10-anthracenediol and 1,2,3,4-tetrahydro-anthraquinone obtained to a nitration reaction to obtain 5-nitro-1,2,3,4-tetrahydro-anthraquinone and 6-nitro-1,2,3,4-tetrahydro-anthraquinone.

4,283,346

## TREATMENT OF AN OIL-CONTAINING CLAY

Hiroo Ouchi, Yokohama, and Noriyasu Saito, Yokosuka, both of Japan, assignors to The Nisshin Oil Mills, Ltd., Tokyo, Japan  
Continuation of Ser. No. 776,043, Mar. 9, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 1,575

Int. Cl.<sup>3</sup> C11B 3/04, 3/06

U.S. Cl. 260—424

8 Claims

1. A process for the recovery of oil from an oil-containing clay which has been by-produced in the decoloration of an animal and vegetable fat and oil with a decoloring agent consisting mainly of said clay, which comprises adding to said oil-containing clay, water and an alkali in an amount corresponding to at least the saponification value relative to the oil content thereof to obtain a slurry, treating the slurry at high temperature of about 110° C. or more under high pressures of more than about 5 kg/cm<sup>2</sup> to strip the oil portion, then adding an acid in an amount sufficient for neutralization to cause formation and surfacing of the oil portion primarily as fatty acids, separating and recovering the floating fatty acids and oil, and separating the clay-containing aqueous lower phase into clay sludges and waste water.

4,283,347

## PARA-MENTH-1-ENE-7-SULFONIC ACID AND SALTS THEREOF

Bernard J. Kane, Atlantic Beach, and Sean G. Traynor, Jacksonville, both of Fla., assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 29,858, Apr. 13, 1979, Pat. No. 4,224,240, which is a continuation of Ser. No. 879,127, Feb. 21, 1978, abandoned. This application Feb. 27, 1980, Ser. No. 125,151  
Int. Cl.<sup>3</sup> C07C 143/22

U.S. Cl. 260—429.9

4 Claims

1. The para-menth-1-ene-7-sulfonate salt of an alkali metal, alkaline earth metal, amine, zinc, or aluminum.

4,283,348

## METHOD OF PREPARING 2-ARYL-3-CYCLOPENTANEDIONE COMPOUNDS

Thomas N. Wheeler, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

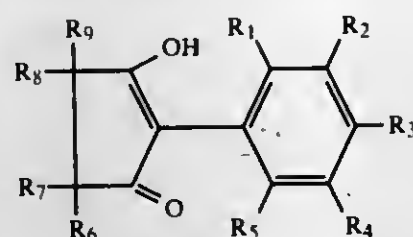
Division of Ser. No. 944,995, Sep. 22, 1978, This application Sep. 26, 1979, Ser. No. 78,923

Int. Cl.<sup>3</sup> C07C 49/707, 121/76, 147/10

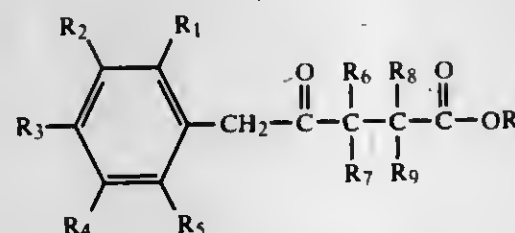
U.S. Cl. 260—465 D

2 Claims

1. A method of preparing a compound of the formula:



which comprises reacting in a toluene solvent a compound of the formula:



with a sodium ethoxide base; wherein:

R is a C<sub>1</sub>—C<sub>4</sub> alkyl group;

R<sub>1</sub> is an alkyl, haloalkyl, halogen or polyhaloalkyl group;

R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, and R<sub>5</sub> are individually hydrogen, or a nitro, polyhaloalkyl, halogen, cyano, alkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoyl, amido, amino or haloalkyl group;

R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, and R<sub>9</sub> are individually hydrogen, or either an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, cycloalkenyl or phenyl group wherein the permissible substituents are one or more alkyl, alkanoyl, cycloalkyl, cycloalkenyl, cyano, halogen, nitro, alkoxy, aryloxy, alkylthio, arylthio, alkylsulfinyl, alkylsulfonyl, acylamido or dialkylamino groups;

with the provisos that R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub> and R<sub>9</sub> substituents individually may not include more than ten aliphatic carbon atoms.

4,283,349

## NOVEL OXIODINIUM AND THIAIODINIUM COMPOUNDS

William N. Cannon, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 337,345, Mar. 2, 1973, Pat. No. 4,193,935, which is a continuation-in-part of Ser. No. 16,589, Mar. 4, 1970, abandoned, which is a continuation-in-part of Ser. No. 270,545, Apr. 4, 1963, abandoned, and Ser. No. 654,656, Jul. 19, 1967, Pat. No. 3,506,719. This application May 21, 1979, Ser. No. 41,283

Int. Cl.<sup>3</sup> C07C 143/24, 59/08; A01N 37/00

U.S. Cl. 260—505 R

2 Claims

1. The compound dibenz[be][1,4]oxiodinium 3,4-dichlorobenzene sulfonate.  
2. The compound 3,7-dichloro-dibenz[be][1,4]oxiodinium lactate.

4,283,350

19,20-DIDEHYDRO-PG<sub>2</sub> AMIDES

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

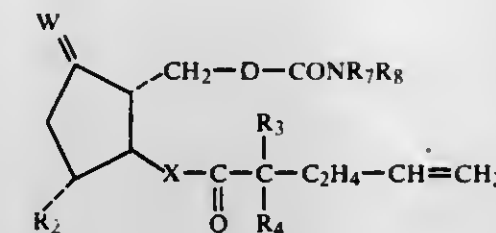
Division of Ser. No. 26,066, Apr. 2, 1979, Pat. No. 4,243,611.

This application Oct. 17, 1979, Ser. No. 85,738

Int. Cl.<sup>3</sup> C07C 177/00, 103/19

U.S. Cl. 564—189

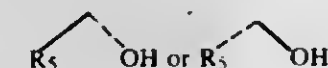
1. A compound of the formula



wherein D is

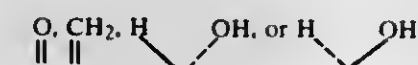
- (1) cis-CH=CH-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>8</sub>-CH<sub>2</sub>—,
- (2) cis-CH=CH-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>8</sub>-CF<sub>2</sub>—,
- (3) cis-CH<sub>2</sub>-CH=CH-CH<sub>2</sub>-CH<sub>2</sub>—,
- (4) trans-(CH<sub>2</sub>)<sub>3</sub>-CH=CH—,

wherein Q is



wherein R<sub>5</sub> is hydrogen or methyl, wherein R<sub>7</sub> and R<sub>8</sub> are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different. wherein R<sub>2</sub> is hydrogen, hydroxyl, or hydroxymethyl; wherein R<sub>3</sub> and R<sub>4</sub> are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is fluoro only when the other is hydrogen or fluoro;

wherein W is



and wherein X is cis- or trans-CH=CH- or —C≡C—.

4,283,351

19,20-DIDEHYDRO-13,14-DIHYDRO-PG<sub>2</sub> AMIDES

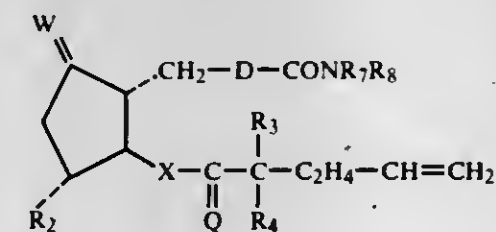
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 26,066, Apr. 2, 1979, This application Oct. 17, 1979, Ser. No. 85,739

Int. Cl.<sup>3</sup> C07C 177/00, 103/19

U.S. Cl. 564—189

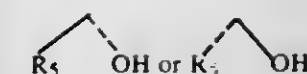
1. A compound of the formula



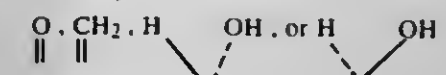
wherein D is

- (1) cis-CH=CH-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>8</sub>-CH<sub>2</sub>—, (2) cis-CH=CH-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>8</sub>-CF<sub>2</sub>—,
- (3) cis-CH<sub>2</sub>-CH=CH-CH<sub>2</sub>-CH<sub>2</sub>—,
- (4) trans-(CH<sub>2</sub>)<sub>3</sub>-CH=CH—,

wherein Q is



wherein R<sub>5</sub> is hydrogen or methyl, wherein R<sub>7</sub> and R<sub>8</sub> are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different; wherein R<sub>2</sub> is hydrogen, hydroxyl, or hydroxymethyl; wherein R<sub>3</sub> and R<sub>4</sub> are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is fluoro only when the other is hydrogen or fluoro; wherein W is



and wherein X is —CH<sub>2</sub>CH<sub>2</sub>—

4,283,352

## METHOD FOR THE PRODUCTION OF α-TETRALONE

Takashi Yamauchi, Tokyo, and Hirofumi Nanbu, Urawa, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

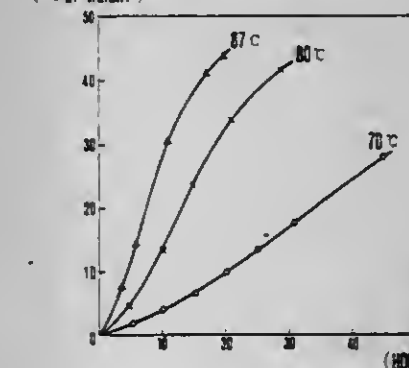
Continuation-in-part of Ser. No. 817,597, Jul. 21, 1977, abandoned, which is a continuation of Ser. No. 703,776, Jul. 9, 1976, abandoned. This application Jan. 3, 1979, Ser. No. 800  
Claims priority, application Japan, Jul. 14, 1975, 50/85242

Int. Cl.<sup>3</sup> C07C 45/02

U.S. Cl. 568—311

4 Claims

( % BY WEIGHT )



1. A method for the production of alpha-tetralone comprising:

oxidizing tetralin in the absence of any catalysts at a temperature of from 50° to 100° C. to an extent that the conversion of tetralin into tetralin hydroperoxide is 25 to 35% by weight, thereby producing a solution of tetralin hydroperoxide in tetralin; and decomposing the thus formed tetralin hydroperoxide into alpha-tetralone at a temperature of from about 0° to 90° C. in the presence of an added catalyst to the solution thus obtained, which catalyst comprises a mixture of (1) an iron salt selected from the group consisting of ferrous sulfate, ferrous ammonium sulfate, ferrous chloride, ferric chloride, ferrous nitrate and ferric nitrate, and (2) a copper salt selected from the group consisting of cuprous chloride, cupric chloride and cupric sulfate, the molar ratio of the iron salt to the copper salt in the mixture being in the range of from 0.1 to 10.

4,283,353

## TAMPER PROOF SEALING PLUG

Robert J. Miller, Warren, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed May 15, 1979, Ser. No. 39,192

Int. Cl.<sup>3</sup> F16K 35/00; F16L 55/10

U.S. Cl. 261—41 D

15 Claims

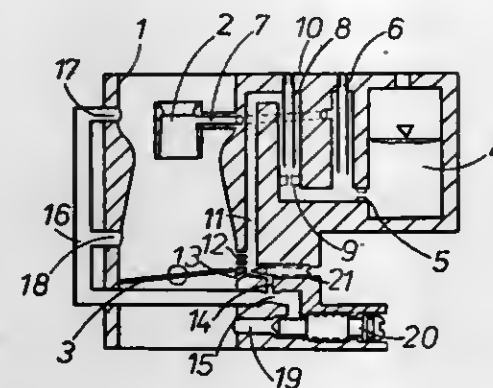
1. Closure means for effectively closing access passage



means to prevent unauthorized access through said passage means, said closure means comprising retainer means adapted to be fixedly retained within said passage means, and a closure member operatively retained by said retainer means against withdrawal of said closure member from said passage means, said closure member being rotatable with respect to said passage means and said retainer means, said retainer means comprising a cup-like caging member having an open end, said closure member being of generally annular configuration and received within said cup-like caging member, and said open end of said caging member being formed generally radially inwardly and over said closure member as to thereby preclude withdrawal of said closure member from said caging member.

8. A fuel metering system effective for metering the rate of fuel flow to an associated combustion engine, comprising body means, conduit means formed in said body means communicating with a source of fuel, orifice means formed generally in said body means for receiving fuel from said conduit means and discharging said fuel into induction passage means associated

the suction pipe (1) from the no-load channel (11) at a point lying downstream of the closed, randomly actuatable throttle valve, and further characterized by an adjusting screw (20) by which the cross section of the bypass line (16) is determined downstream of the narrow point (15) before it enters the suction pipe (1), whereby the cross sections of nozzles and bores



determining the supply of emulsified fuel through this bore (13) are adjusted so that the fuel supply is effected super-critically, while the cross sections determining the supply of emulsified fuel through the connecting channel (14) to the narrow point (15) of the bypass line are adapted so that the fuel supply into the bypass line is effected sub-critically.

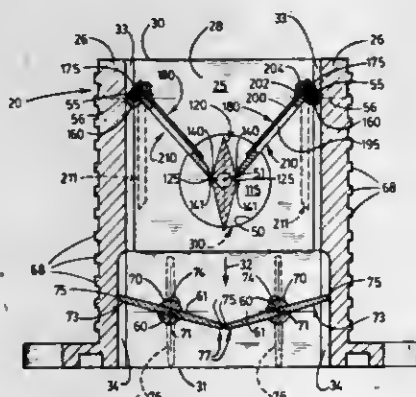
#### 4,283,355 CARBURETOR

William H. Herd, Jr., Fresno; Stanley F. Curtis, Exeter; Vernon T. Mollican, and Robert W. Jones, both of Porterville, all of Calif., assignors to Pollution Controls Industries, Inc., Tulare, Calif.

Filed Sep. 24, 1979, Ser. No. 78,568  
Int. Cl.<sup>3</sup> F02M 7/22

U.S. Cl. 261-44 F

5 Claims



1. In a carburetor adapted for connection to an internal combustion engine:

- A. a housing having an elongated mixing passage adapted to have air drawn therethrough in a predetermined direction by the engine;
- B. an elongated spray bar mounted transversely in the passage in substantially equally spaced relation to opposite sides thereof;
- C. a pair of venturi plates;
- D. substantially parallel shafts mounted in the housing on opposite sides of the spray bar, parallel thereto and upstream thereof individually mounting the venturi plates for pivotal movement between positions convergent downstream to the spray bar and positions pivoted outwardly from their convergent positions downstream on opposite sides of the spray bar, the spray bar having orifices therein oppositely disposed at positions adjacent to the venturi plates when in the convergent positions;
- E. arms individual to the shafts oppositely radially extended from their respective shafts;
- F. a pitman interconnecting the extended ends of the arms

#### 4,283,354

#### CARBURETOR FOR INTERNAL-COMBUSTION ENGINES

Walter Schauer, Neuss, and Josef Rösger, Grevenbroich, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed Dec. 19, 1979, Ser. No. 105,472

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855683

Int. Cl.<sup>3</sup> F02M 3/08

U.S. Cl. 261-41 D

5 Claims

1. Carburetor for internal-combustion engines, with a suction pipe with Venturi tube, in which the main injection system terminates, as well as with a randomly actuatable throttle valve and a bypass line bypassing this throttle valve as well as with a no-load system which is supplied with emulsified fuel by an emulsifying system and which has bores terminating in the suction pipe in the region of the randomly actuatable throttle valve, characterized in that the bypass line (16) has a constant non-adjustable narrow point (15) into which a channel (14) carrying emulsified fuel emerges and in that a bore (13) enters

for concurrent opposite pivotal movement of the venturi plates;

G. resilient means urging the plates into their convergent positions;

H. a source of fuel under pressure;

I. a plunger actuated valve having an intake connected to the source and an outlet connected to the spray bar;

J. a cam;

K. a journal substantially parallel to the shafts mounting the cam for rotation adjacent to the valve, said cam having an eccentric convex cam surface in engagement with the plunger of the valve whereby opposite rotation of the cam opens and closes the valve;

L. means mounting the journal for adjustable movement toward and from the plunger of the valve whereby the extent of opening and closing of the valve incident to the cam rotation is regulated;

M. a lever extended from one of the shafts adjacent to the cam;

N. a push-pull link pivotally interconnecting the lever and the cam for corresponding rotational movement; and

O. control means for rotating the cam to open and to close the valve in response to pivotal movement of the venturi plates to regulate the air-fuel mixture in the passage.

#### 4,283,356 CARBURETOR FOR INTERNAL COMBUSTION ENGINES

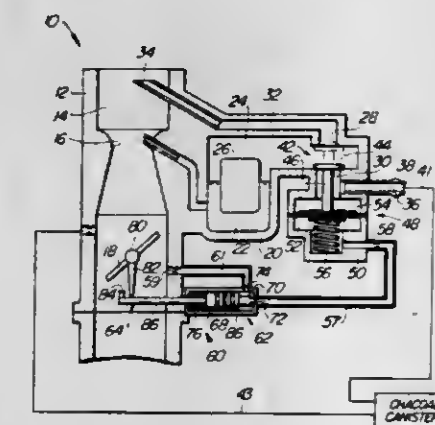
Hisabaru Arai, Nagoya, and Kunio Kadowaki, Oobu, both of Japan, assignors to Aisan Industry Co., Ltd., Oobu, Japan

Filed Apr. 30, 1979, Ser. No. 34,669

Claims priority, application Japan, May 16, 1978, 53-57855  
Int. Cl.<sup>3</sup> F02M 5/08

U.S. Cl. 261-72 R

5 Claims



1. In a carburetor for an internal combustion engine having an intake passage with a throttle valve therein, a float chamber, a first vent passage extending between the float chamber and the intake passage and a second vent passage communicating between the float chamber and a fuel vapor absorption device wherein the improvement comprises first valve means operable between a first position when no vacuum is applied where the first passage is closed and the second passage is open and a second position when vacuum is applied, respectively, opening and closing the first and second passages, conduit means for operatively connecting said first valve means to said intake passage, second valve means located within said conduit means and operatively connected to said throttle valve for opening said conduit means when said throttle valve is closed and closing said conduit means when the throttle valve is opened to a predetermined degree so that said conduit means and said second valve means provide an open passage between the intake passage and said first valve means when said engine is off and a closed passage after said throttle valve opens a predetermined amount whereby vacuum applied along said conduit means is maintained therein after said second valve closes.

#### 4,283,357

#### DEVICE FOR DISTRIBUTION OF A GAS IN A LIQUID MEDIUM

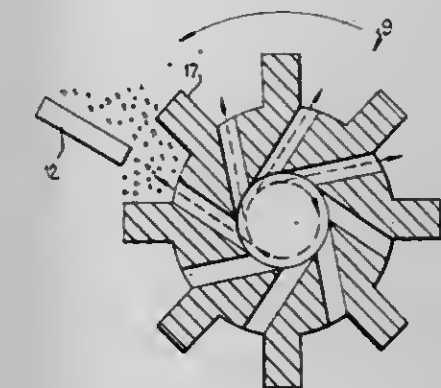
David Sidery, Trondheim, Norway, assignor to Trodhjems Mek. Versted A/S, Trondheim, Norway

Continuation of Ser. No. 12,737, Feb. 16, 1979, abandoned. This application Apr. 25, 1980, Ser. No. 143,893

Claims priority, application Norway, Feb. 28, 1978, 780694  
Int. Cl.<sup>3</sup> B01F 3/04

U.S. Cl. 261-87

8 Claims



1. A rotatable rotor device for the introduction and dispersion of a gas in a liquid medium which comprises an elongated boss portion having a top surface, a bottom surface and an outer side surface, as well as an axial hollow area therein for the introduction of air under pressure. a number of spaced apart, radially-projecting wings connected to the outer side surface of said boss and extending between the top surface and bottom surfaces of said boss, each of said wings, when viewed in horizontal cross section, having a rectangular cross section, and a separate air conduit extending between said hollow area in said boss and the outer side surface of said boss between each pair of wings; the exit mouth of each air conduit communicating with the outer surface of the boss immediately adjacent an associated wing, each exit mouth of each air conduit being positioned on a corresponding side of an associated wing, and each air conduit extending towards said hollow area and communicating therewith via an inner mouth such that a center line through each air conduit will intercept an imaginary radial line extending centrally through the associated wing adjacent to which the exit mouth of the air conduit is located.

#### 4,283,358

#### ROTOR-CARBURETOR HAVING AN IDLING MIXTURE ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES

Rudolf Diener, Zurich, Switzerland, assignor to Autoelektronik AG, Chur, Switzerland

Filed Jul. 16, 1980, Ser. No. 169,624

Claims priority, application Switzerland, Aug. 2, 1979, 7087/79

Int. Cl.<sup>3</sup> F02M 17/16

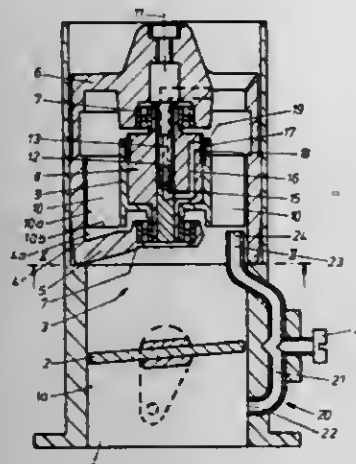
U.S. Cl. 261-88

7 Claims

1. A rotor-carburetor having an idling mixture arrangement for internal combustion engines with an impeller disposed in the suction port and put into rotation by the stream of intake air, which drives a rotor in the periphery of which at least one fuel outlet nozzle bore is provided which is connected with a fuel chamber in the rotor fed via a fixed fuel supply line with fuel and which delivers a quantity of fuel into the sucked in air being in an essentially linear relationship to the rpm of the impeller and with a throttle flap disposed in the suction port downstream from the impeller and serving for the regulation of quantities of the fuel mixture, characterized in that in the suction port (1), there is at least one idling duct (20) bridging the throttle flap (2) in a closing position, which meets the suction port (1) downstream from the throttle flap (2) and



upstream from said suction port has a pipeshaped inlet (23) directed toward the impeller (9), with an inlet opening (24) lying in the marginal area of the inlet port (I) closely below the



rotational surfaces determined by the lower edges of the impeller (10b), in order to enrich the idling mixture with fuel by increase of the rpm of the impeller for the idling throughput of air.

4,283,359

#### PROCESS FOR PRODUCING POLYACRYLONITRILE REVERSE OSMOTIC MEMBRANES

Nobuhiko Tsutsui, Seiji Takao, both of Okayama, and Iebiki Murase, Ibaraki, all of Japan, assignors to Japan Exlan Company Ltd. and Sumitomo Chemical Company, Ltd., both of Osaka, Japan

Filed Oct. 18, 1979, Ser. No. 85,957

Claims priority, application Japan, Oct. 23, 1978, 53-130628; Aug. 21, 1979, 54-106763

Int. Cl.<sup>3</sup> B29D 27/04; B29H 7/20

U.S. Cl. 264—22

18 Claims

1. A process for producing a polyacrylonitrile reverse osmotic membrane which comprises the steps of dissolving an acrylonitrile polymer in formamide-containing dimethylformamide to prepare an acrylonitrile polymer solution for membrane formation; shaping the polymer solution into a membranous product of a desired form while maintaining the temperature of the polymer solution above its gelation temperature; removing the solvent from the membranous product by bringing one side of the membranous product into contact with an aqueous solution of a temperature lower than 15° C. containing at least 10 weight % of a water-soluble solvent compatible with the mixed solvent, immediately or after bringing it once into contact with an inert atmosphere, and by bringing the other side of the membranous product into contact with an inert medium or an aqueous solution of a temperature higher than 0° C. containing not more than 50 weight % of a water-soluble solvent compatible with the above-mentioned mixed solvent, immediately or after bringing it once into contact with an inert atmosphere; subjecting the thus-obtained solidified membrane to a heat-treatment at a temperature between 50° and 120° C.; and then subjecting the membrane to a plasma treatment.

4,283,360

#### PROCESS FOR PRODUCING MOLDED CERAMIC OR METAL

Ichiro Henmi, Akinori Noda, and Takuro Ono, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,440

Claims priority, application Japan, Feb. 28, 1979, 54-21997

Int. Cl.<sup>3</sup> C04B 35/64

U.S. Cl. 264—63

9 Claims

1. In a process for producing a molded ceramic or metal by mixing a ceramic powder or metallic powder with a resin,

molding the mixture and firing the molded product, the improvement consisting of:

blending an organic solvent soluble resin and an organic solvent insoluble resin as said resin which is mixed with a ceramic or metallic powder; prior to firing, treating the molded product by immersion in a liquid organic solvent to dissolve said organic solvent soluble resin; and then, firing the so-treated molded product to remove residual resin.

4,283,361

#### PREPARATION OF SHAPED ARTICLES OF POLY(METAPHENYLENE ISOPHTHALAMIDE)

Ruskin Longworth, Greenville, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 31, 1979, Ser. No. 108,794

Int. Cl.<sup>3</sup> B29G 1/00; C08G 69/46

U.S. Cl. 264—120

7 Claims

1. A process for the preparation of shaped articles having a tensile strength of at least about 14,800 psi from coalescible and densifiable powder of poly(methaphenylene isophthalamide) by heating the powder in a mold of the desired configuration to a temperature of about from 265° to 320° C. while simultaneously maintaining the powder under a pressure of about from 100 to 2500 psi.

4,283,362

#### METHOD AND APPARATUS FOR MAKING A SELF-COILING SHEET

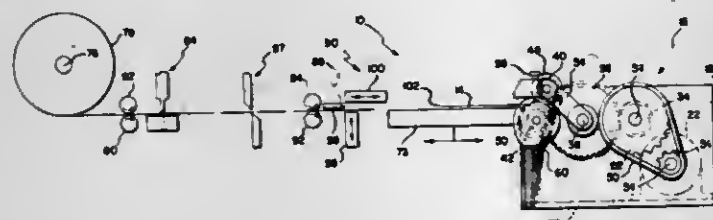
Nicholas Gold, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 4, 1980, Ser. No. 117,874

Int. Cl.<sup>3</sup> B29C 17/02

U.S. Cl. 264—160

8 Claims



1. A method of making a self-coiling sheet comprising: cutting a length of a sheet of flexible material, capable of being given a permanent coil set, to the size required of said sheet in an uncoiled condition; folding a section of said sheet back upon a portion of the remainder of said sheet so as to define a folded edge extending across the sheet and having a radius of curvature substantially equal to the thickness of said sheet; and advancing said section of said sheet in a direction away from said folded edge of said sheet and toward the opposite end of said sheet while substantially maintaining said radius of curvature, whereby is produced a multi-layered generally cylindrical coil having a permanent set which may be uncoiled and, when left free, will automatically return to its coiled condition.

3. Apparatus for making a self-coiling sheet from a sheet of flexible material capable of being given a permanent coil set, comprising:

first and second elongate rollers mounted in juxtaposed relation so as to define a gap therebetween; means for supporting a sheet of flexible material having a folded section at one end thereof which extends from a folded edge and is terminated by a free end of the sheet; means for moving said supporting means toward said gap so as to deposit the sheet of flexible material between said rollers with the folded section of the sheet located in engagement with said first roller and with its free end

directed away from said first and second rollers and toward the opposite end of the sheet, and with the adjacent section of the remainder of the sheet located in engagement with said second roller; and means for rotating said first roller in a direction so as to advance the folded section of the sheet in the direction of the opposite end of the sheet, and said second roller in a direction so as to advance the remainder of the sheet in the opposite direction, whereby is produced a multi-layered generally cylindrical coil having a permanent set which may be uncoiled and, when left free, will automatically return to its coiled condition.

4,283,363

#### PROCESS FOR MANUFACTURE OF PLASTIC SHEETS

Pierre Boudenant, Elisabethville, France; Heinz Scholl, Eschweiler, Fed. Rep. of Germany, and Michel Zortea, Chalon sur Saone, France, assignors to Saint-Gobain Industries, Paris, France

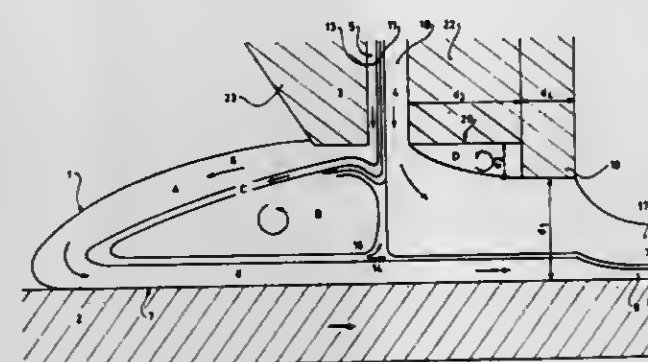
Filed Nov. 21, 1979, Ser. No. 96,294

Claims priority, application France, Nov. 12, 1978, 78 33060

Int. Cl.<sup>3</sup> B29D 7/02, 9/00

U.S. Cl. 264—171

17 Claims



1. A method for making a sheet of plastic material, comprising continuously feeding a thin sheet-like flow of a liquid film-forming material onto a flat, moving substrate, said sheet-like flow being disposed transversely to the direction of movement of the substrate, forming a stable pocket of material on the substrate upstream from the zone at which the flowable material is introduced onto the substrate and controlling viscosity, pressure, flow rate of the material, and degree of adherence between the flowable material and the substrate, whereby all the material in the pocket is continuously in motion, establishing a continuous flow in the upper portion of the pocket in a direction essentially opposite the direction of movement of the substrate in order to come in contact with said substrate and be entrained by the latter in the direction of the movement, thus forming the lower portion of the sheet-forming layer, establishing a flow of material forming the central portion of the pocket between the upper and lower paths that continuously flows in a direction essentially transverse to the direction of substrate movement towards the edges of said substrate, and simultaneously establishing the flow of a direct stream of material from the material introduction zone in a downstream tangential relation to the pocket, in order to form the upper portion of the sheet-forming layer.

4,283,364

#### MELT SPINNING OF SYNTHETIC YARNS

Spencer W. Capps, Gerald E. Hagler, and Agaram S. Abhiraman, all of Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 793,504, May 4, 1977, Pat. No. 4,153,409.

This application Dec. 20, 1978, Ser. No. 971,635

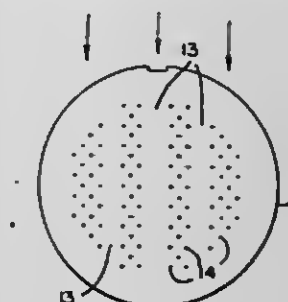
Int. Cl.<sup>3</sup> D01D 5/08

U.S. Cl. 264—176 F

15 Claims

1. A process for melt spinning of polymers into synthetic yarns with a spinneret assembly including a spinning plate

which comprises extruding a molten polymer downwardly through a spinning plate having a plurality of spinning orifices to form filaments of said polymer that extend vertically downwardly from said plate, arranging said filaments into a plurality of groups by providing the spinning plate with at least one open lane that is free of orifices and that extends across the operative area of the plate between the groups of orifices corresponding to the groups of filaments, said orifices being arranged in parallel rows in each group and said lane having a



width wider than the distance between adjacent orifices within each of said groups, with the spinning plate having an average of from 2 to 10 orifices per (10 mm.)<sup>2</sup> of the operative area, and passing a cooling gas transversely between and through the groups of filaments in a direction parallel to a centerline of the lane whereby said filaments provide a yarn of a high filament count and of a low denier per filament count that exhibits a reduced degree of denier unevenness as compared with a yarn with the same filament count and denier produced by a conventional spinning plate having the same operative area.

4,283,365

#### PROCESS FOR MELT-SPINNING ACRYLONITRILE POLYMER FIBER USING VERTICALLY DISPOSED COMPRESSION ZONE

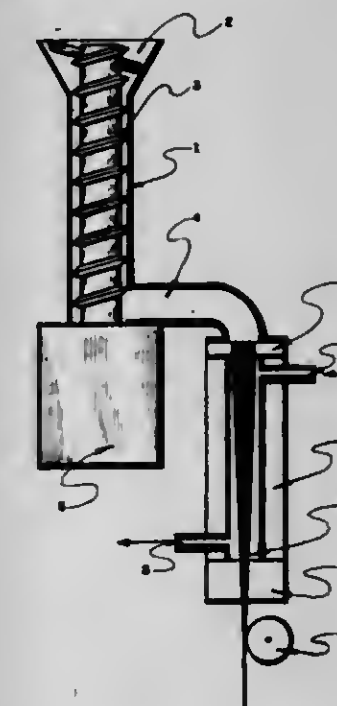
Chi C. Young, and Francesco DeMaria, both of Gulf Breeze, Fla., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 21, 1979, Ser. No. 13,352

Int. Cl.<sup>3</sup> D01F 6/18

U.S. Cl. 264—206

4 Claims



1. A process for preparing acrylonitrile polymer fiber which comprises continuously feeding a particulate composition of about 70 to about 95 weight percent of a fiber-forming acrylonitrile polymer and, correspondingly, from about 30 to about 5 weight percent of water into the top of a vertically disposed



compression zone operating at a compression ratio of greater than about 1:1 and less than about 1:3 and a temperature sufficient to provide a fusion melt at autogeneous pressure, said feeding being conducted at a rate which satisfies the operating capacity of said compression zone so as to provide a vapor seal, and extruding the resulting fusion melt from the bottom of said compression zone through a spinnerette assembly using the pressure generated within said compression zone, said extruding being directly into a steam-pressurized solidification zone maintained under conditions which control release of water from the nascent filaments to prevent deformation thereof.

4,283,366

## TIRE CURING METHOD

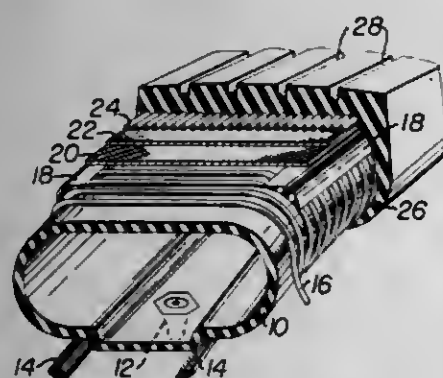
Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 965,533, Nov. 20, 1978, abandoned. This application Jun. 30, 1980, Ser. No. 164,648

Int. Cl.<sup>3</sup> B29H 5/02

U.S. Cl. 264—502

8 Claims



1. A method of curing a green rubber tire having a closed interior cavity with two spaced ports extending from the interior cavity to the tire exterior comprising the steps of:

- forming the green rubber tire on a porous disintegratable core;
- positioning the green rubber tire within a pressure vessel;
- filling the pressure vessel and the interior cavity and porous core with a liquid at an elevated temperature which is sufficient to cure rubber;
- circulating liquid at the elevated temperature through the pressure vessel and around the exterior of the green rubber tire; and
- simultaneously circulating liquid at the elevated temperature through the porous core and the interior cavity of the tire.

4,283,367

## PLANT FOR SEPARATING KRYPTON AND XENON FROM RADIOACTIVE WASTE GASES

Werner Koeppel, Josef Bohnenstingl, and Stanislaus G. J. Mastera, all of Jülich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 817,375, Jul. 20, 1977, abandoned, which is a division of Ser. No. 583,156, Jun. 2, 1975, Pat. No. 4,080,429. This application Apr. 16, 1979, Ser. No. 30,712

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1974, 2426764

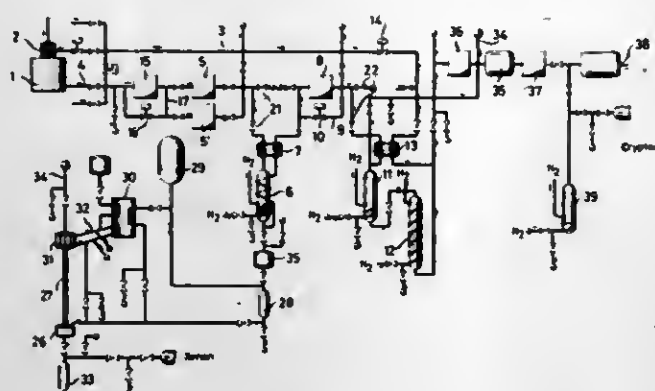
Int. Cl.<sup>3</sup> G21F 9/02

U.S. Cl. 422—159

10 Claims

1. A system for removing xenon and krypton from a gas mixture which includes an inert carrier gas comprising: first, nitrogen cooled container means in a first freezing stage for first cooling the gas mixture to the temperature of boiling nitrogen to separate solid xenon from the gas mixture, compressor means to increase the pressure of the gas mixture after separation of xenon, and nitrogen cooled separator means in a

second freezing stage to separate solid krypton from the gas mixture after pressure increase by said compressor means, so



that the xenon and krypton are solidified sequentially for separate collection.

4,283,368

## RADIAL FLOW CATALYTIC CONVERTER

Settsuo Harada, and Katsuhiko Yokooku, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

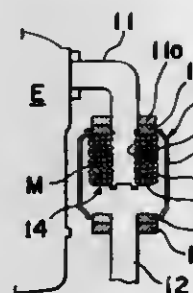
Filed Jun. 26, 1979, Ser. No. 52,917

Claims priority, application Japan, Jun. 27, 1978, 53/88978[U]; Aug. 16, 1978, 53/112680[U]

Int. Cl.<sup>3</sup> B01J 8/02; F01N 3/28

U.S. Cl. 422—181

7 Claims



1. A catalytic converter which comprises: an enclosure means having a generally cylindrical shape; a perforated outer sleeve positioned inside the enclosure means with an outer chamber defined between the enclosure means and said perforated outer sleeve; a perforated inner sleeve positioned inside the perforated outer sleeve in coaxial relation thereto and defining an annular intermediate chamber between said perforated outer and inner sleeves and defining an inner chamber within said inner sleeve; a bed of catalyst material in said intermediate chamber; a first port means connected with said inner chamber; and a second port means connected with said outer chamber; said first and second port means respectively being constituted by first and second annular flange members for being connected to a mating flange on a conduit member, said first annular flange member having a central opening defined therein and communicating with said inner chamber, said second annular flange member having a central opening defined therein and communicating with the outer chamber, said first annular flange member further having at least one aperture extending completely through the thickness thereof and opening into said annular intermediate chamber for charging said catalyst material into the annular intermediate chamber through said aperture, said aperture being positioned in said first annular flange for, when said first annular flange and a mating flange are connected, being closed by the mating flange.

4,283,369

## APPARATUS FOR MAKING PITCH FIBER INFUSIBLE

Hisatsugu Kaji, Iwawo Kameyama, Takashi Hamaguti, and Tamotsu Miyamori, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

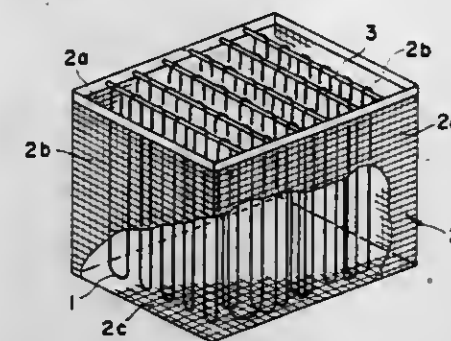
Division of Ser. No. 51,191, Jun. 22, 1979. This application Jan. 2, 1980, Ser. No. 109,115

Claims priority, application Japan, Jun. 30, 1978, 53-78555

Int. Cl.<sup>3</sup> B01J 6/00; C10C 3/14; F27B 5/02, 5/06

U.S. Cl. 422—193

1 Claim



1. An apparatus for making pitch fibers infusible, comprising:

a furnace for producing infusible materials holding a plurality of trays, each of said trays having side and bottom walls made of a metal net material and having an open upper end across which is placed a plurality of spaced bars for suspending said pitch fibers, said furnace having an inlet and an outlet;

at least two gas circulating means for exhausting gas heated during the infusibilization of said pitch from a lower portion of said furnace and returning the gas to an upper portion of said furnace, thus maintaining the temperature of the gas in said furnace constant in each part of said furnace, each of said gas circulating means comprising a blower or fan and a heat exchanger; and

a gas exchanging chamber adjacent to each of said inlet and said outlet.

4,283,370

## METHOD OF QUANTITATIVELY SEPARATING URANIUM FROM SPECIMENS OF NATURAL WATER BY SORPTION ON SILICA

Alexander Putral, and Klaus Schwochau, both of Jülich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich, Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed May 5, 1978, Ser. No. 903,079

Claims priority, application Fed. Rep. of Germany, May 10, 1977, 2720867

Int. Cl.<sup>3</sup> C22B 60/02; C02B 1/28

U.S. Cl. 423—6

3 Claims

1. A method of quantitatively separating uranium anions from test liquids either simulating natural sea water or test liquids of natural sea water, which method includes, in combination, the steps of: passing the test liquid directly without pretreatment over granular silica gel having an average grain diameter not exceeding 0.5 mm, while so selecting a through-flow speed of said test liquid that the contact time period for the said test liquid with said silica gel amounts to at least 50 seconds, and subsequently separating the uranium anions quantitatively adsorbed on said silica gel from the latter by elutriation with at least 0.1 normal oxidizing mineral acid, the volume of the utilized elutriate being selected to amount to at least about two times the volume of said silica gel.

4,283,371

## PROCESS FOR THE PRODUCTION OF ALUMINUM CHLORIDE AND RELATED PRODUCTS

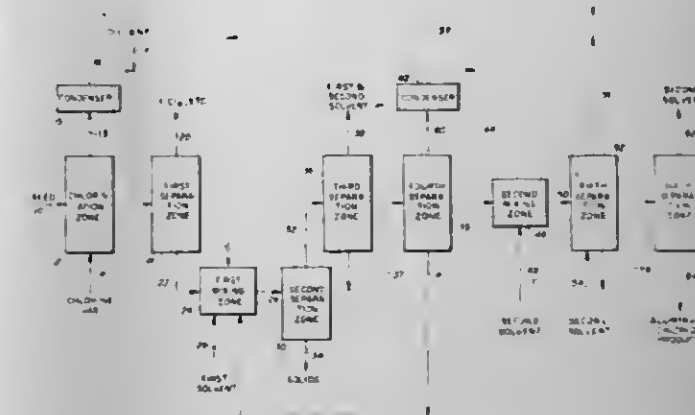
Theodore A. Rado, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Jan. 28, 1980, Ser. No. 116,302

Int. Cl.<sup>3</sup> C01F 7/62

U.S. Cl. 423—126

6 Claims



1. A process for producing substantially pure aluminum chloride comprising:

providing chlorination products of an aluminous ore containing iron and other impurities; contacting said chlorination products with a first solvent to dissolve at least a portion of the chlorides present including at least a portion of the aluminum chloride present in said chlorination products to form a solution; separating said solution from said undissolved chlorination products said solution containing aluminum chloride and at least one chloride of iron in a ratio essentially in proportion to their respective solubilities in the solvent; separating said first solvent from said solution to leave a mixture of molten chlorides;

separating said mixture of molten chlorides into an aluminum chloride-rich stream and a second stream, said aluminum chloride-rich stream containing aluminum chloride in a ratio to any chloride of iron present in excess of the solubility ratio of the mixture of chlorides in a second solvent;

contacting said molten aluminum chloride-rich stream with the second solvent to dissolve aluminum chloride and at least a portion of the chlorides other than aluminum chloride contained in said molten aluminum chloride-rich stream and saturate the solvent with aluminum chloride to form a second solution said second solution being in admixture with aluminum chloride in excess of that which is soluble as a solid phase; and;

recovering said solid aluminum chloride from said second solution, said solid aluminum chloride being substantially pure aluminum chloride.

4,283,372

## RECOVERY OF ALKALI VALUES FROM SODIUM BICARBONATE-CONTAINING ORE WITH AMMONIA

William R. Frint, Green River, Wyo.; William C. Copenhaver, Yardley, Pa., and Michael L. Pinsky, Mt. Holly, N.J., assignors to Intermountain Research and Devel. Corp., Green River, Wyo.

Continuation-in-part of Ser. No. 28,033, Apr. 9, 1979, abandoned. This application Jan. 29, 1980, Ser. No. 116,511

Int. Cl.<sup>3</sup> C22B 26/10; C01D 7/00; E21C 41/08

U.S. Cl. 423—206 T

19 Claims

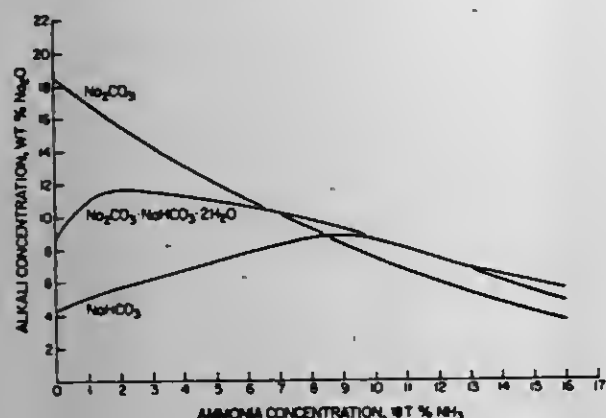
1. A cyclic method for recovering alkali values from mechanically mined trona ore, which comprises

(i) contacting trona ore with an aqueous ammonia solvent containing about 0.5 to 4% by weight  $\text{NH}_3$  to effect dissolution of sodium sesquicarbonate in the ore;

(ii) separating the resultant solution from the undissolved portion of the ore;



- (iii) crystallizing alkali values from the separated solution;  
 (iv) recovering the crystallized solids from the solution, leaving a mother liquor;



- (v) regenerating aqueous ammonia solvent from the mother liquor; and  
 (vi) recycling the regenerated aqueous ammonia solvent to step (i) and repeating the cycle of recovery.

4,283,373

#### METHOD FOR REMOVAL OF SULFUR COMPOUNDS FROM A GAS

Kenneth J. Frech, Tallmadge, and James J. Tazuma, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

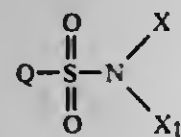
Filed Mar. 17, 1980, Ser. No. 130,897

Int. Cl.<sup>3</sup> B01D 53/34

U.S. Cl. 423—226

11 Claims

1. A process for removing hydrogen sulfide, mercaptans, sulfides and disulfides from a gas stream which comprises contacting said gas stream with a compound of the structural formula (I):



wherein Q is selected from the group comprised of alkyl radicals of 1 to 18 carbon atoms, cycloalkyl radicals of 4 to 18 carbon atoms, phenyl radical, mono and dialkyl substituted phenyl radicals wherein the alkyl substituents contain 1 to 6 carbon atoms; and wherein X is selected from the group comprised of chlorine, bromine or iodine radicals and X<sub>1</sub> is selected from the group comprised of chlorine, bromine, iodine, hydrogen, sodium, potassium and lithium radicals.

4,283,374

#### REGENERABLE MANGANESE OXIDE HOT GAS DESULFURIZATION PROCESS

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Feb. 21, 1980, Ser. No. 123,376

Int. Cl.<sup>3</sup> C01B 17/16, 31/20; B01J 8/00; C01B 17/00

U.S. Cl. 423—230

6 Claims

1. A continuous regenerative process for desulfurizing a hot reducing gas comprising:

- contacting the reducing gas with sorbent wherein the active sulfur absorbing component of the sorbent consists essentially of between 60% and 98% MnO and between 2% and 40% Mn<sub>3</sub>O<sub>4</sub>, whereby H<sub>2</sub>S reacts with the sorbent to form MnS containing spent sorbent;
- contacting the MnS containing spent sorbent with oxidized sorbent containing Mn<sub>3</sub>O<sub>4</sub>, wherein Mn<sub>3</sub>O<sub>4</sub> is supplied in an amount between 2% and 30% greater than the stoichiometric amount necessary for reaction with the MnS content of the spent sorbent, whereby SO<sub>2</sub> is generated and the said sorbent is regenerated;

- withdrawing the SO<sub>2</sub> at a controlled pressure between 1 and 30 atmospheres;
- recycling between 10% and 40% of the regenerated sorbent to additional reducing gas contact;
- contacting the remainder of the regenerated sorbent with a molecular oxygen containing gas, whereby the oxidized sorbent is obtained;
- recycling the oxidized sorbent to additional contact with the spent sorbent.

4,283,375

#### PRODUCTION OF SiC WHISKERS

Ottis J. Horne, Jr., and David E. Ramsey, Jr., both of Johnson City, Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Jan. 28, 1980, Ser. No. 115,684

Int. Cl.<sup>3</sup> C01B 31/36

U.S. Cl. 423—345

11 Claims

1. A process for the manufacture of β-silicon carbide whiskers of about 0.5 to 1.5 μ in diameter and 10 to 50 μ length comprising the steps of:

- (1) Ashing rice hulls in air at 400° to 700° C. to obtain amorphous SiO<sub>2</sub>;
- (2) Mixing finely powdered carbonaceous powder selected from the group consisting of the carbonized residue from heating rice hulls in nitrogen at temperatures between 400° and 700° C. and calcined petroleum coke with the SiO<sub>2</sub> obtained in Step 1; (3) Heating the above mixture in CO at 1 atmosphere pressure;
- (4) When the above mixture reaches a carbide-forming temperature within the range of 1400° to 1600° C., flushing the container rapidly with an inert gas; and
- (5) Maintaining a flow of inert gas for a time sufficient to form SiC whiskers.

4,283,376

#### METHOD OF PRODUCING SILICON CARBIDE FIBERS

Seisbi Yajima; Kiyohito Okamura, and Yoshio Hasegawa, all of Ohara, Japan, assignors to The Research Institute for The Foundation: Special Inorganic Materials, Asahi, Japan Division of Ser. No. 953,518, Oct. 23, 1978, Pat. No. 4,220,600. This application Jun. 12, 1979, Ser. No. 47,845

Claims priority, application Japan, Oct. 26, 1977, 52-127629; Oct. 26, 1977, 52-127630; Dec. 10, 1977, 52-148488

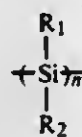
Int. Cl.<sup>3</sup> C01B 31/36

U.S. Cl. 423—345

9 Claims

1. A process for producing continuous silicon carbide fibers composed mainly of SiC, which comprises

- (1) preparing polycarbosilane partly containing siloxane bonds by adding 0.01 to 15% by weight of polyborosiloxane having phenyl groups in at least a part of the side chains of Si with its skeletal structure being composed of B, Si and O to a polysilane having the structure



wherein n is at least 3, and R<sub>1</sub> and R<sub>2</sub>, independently from each other, represent methyl, ethyl, phenyl of hydrogen; and heating the polymer mixture in an atmosphere inert to the reaction thereby to polymerize said polymer mixture;

- (2) preparing a spinning dope of the polycarbosilane and spinning the dope;
- (3) subjecting the result fibers to a treatment of rendering them infusible under tension or under no tension, and
- (4) firing the treated fibers at a temperature of from 800° to 1800° C. in vacuum or in an inert gaseous atmosphere.

9. Continuous silicon carbide fibers composed of ultrafine particles of amorphous SiC and/or β-type SiC crystals, said fibers having superior thermal stability, oxidation resistance

and acid resistance and having the composition, by weight, of Si:50–70 C: 30–40, O: 0.01–10, H: not more than 0.01, and B: not more than 500 ppm, a specific gravity of 2.3 to 3.1, a tensile strength of 200 to 500 kg/mm<sup>2</sup> and a modulus of elasticity of 15 to 40 tons/mm<sup>2</sup> prepared according to the process of claim 7 at a firing temperature of 1,000° to 1,500° C.

4,283,377

#### PROCESS FOR THE PREPARATION OF BASIC ZIRCONIUM CARBONATE OF HIGH PURITY

Jürgen Fenner, Essen, Fed. Rep. of Germany, assignor to Th.

Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jun. 26, 1980, Ser. No. 163,406

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1979, 2927128

Int. Cl.<sup>3</sup> C01B 31/24, 17/90

U.S. Cl. 423—419 P

14 Claims

1. A process for the preparation of high purity basic zirconium carbonate comprising:

- (a) precipitating basic zirconium sulfate by adding a compound selected from the group consisting of alkali or ammonium carbonate and alkali or ammonium hydrogen carbonate to an aqueous solution of zirconium sulfate and separating the precipitate from the mother liquor;
- (b) dissolving the basic zirconium sulfate from step (a) at temperatures not more than about 40° C. in a 0.3 N to 1 N HCl solution such that 0.5 to 1.5 liters of HCl solution is used for each mole of zirconium sulfate used in step (a), and then heating the solution to a temperature of at least 45° C. to reprecipitate the basic zirconium sulfate and separating the precipitate; and
- (c) suspending the basic zirconium sulfate in water to which the stoichiometric amount of a compound selected from the group consisting of alkali or ammonium carbonate and alkali or ammonium hydrogen carbonate is added and removing the basic zirconium carbonate formed from the solution wherein said basic zirconium carbonate contains substantially less impurities, based on the zirconium oxide content, than were present in the zirconium sulfate solution of step (a).

4,283,378

#### PRODUCTION OF HIGH SURFACE AREA CARBON BLACKS

Barrie J. Yates, Andover, Mass., and Ronald C. Hurst, Pampa, Tex., assignors to Cabot Corporation, Boston, Mass.

Filed Aug. 1, 1979, Ser. No. 62,727

Int. Cl.<sup>3</sup> C01B 31/02; C09C 1/48

U.S. Cl. 423—456

6 Claims

1. In a modular process for producing furnace carbon blacks having higher than normal surface areas wherein a fuel and an oxidant are reacted in a first zone so as to provide a stream of hot primary combustion gases possessing sufficient energy to convert a carbon black-yielding liquid hydrocarbon feedstock to carbon black, and wherein in a second zone the liquid hydrocarbon feedstock is peripherally injected, in the form of a plurality of coherent jets, into the stream of gaseous combustion products in a direction substantially transverse to the direction of flow of the stream of combustion gases and under sufficient pressure to achieve the degree of penetration required for proper shearing and mixing of the feedstock, and wherein in a third zone the feedstock is decomposed and converted into carbon black prior to termination of the carbon forming reaction by quenching, and then cooling, separating and recovering the resultant carbon black, the improvement which comprises introducing water, in the form of vapor, in an amount of from about 4 to 15% by volume based on the total gaseous volume of the fuel and oxidant utilized in preparing the primary combustion; into the first zone such that the water vapor is well mixed with the stream of gaseous combustion products prior to the introduction of the liquid feedstock, and maintaining the carbon black forming reaction in the third zone for a residence time of at least 0.5 seconds, and operating

the process under conditions such that the overall percent combustion thereof ranges from about 40 to about 60 percent.

4,283,379

#### METHOD FOR REMOVING HYDROGEN SULFIDE FROM GAS STREAMS

Donald M. Fenton, Anaheim, and Hugh W. Gowdy, Irvine, both of Calif., assignors to Union Oil Company of California, Brea, Calif.

Filed Jun. 20, 1979, Ser. No. 50,192

Int. Cl.<sup>3</sup> C01B 17/04

U.S. Cl. 423—571

21 Claims

1. A method for removing hydrogen sulfide from a hydrogen sulfide-containing gas stream and converting said hydrogen sulfide to elemental sulfur, which comprises:

- (a) contacting said gas stream with a regenerable washing solution so as to absorb said hydrogen sulfide into said washing solution, the washing solution introduced into contact with said gas stream comprising a substantially quinone-free aqueous solution having a pH between about 5 and about 10 and containing (1) solubilized vanadium, (2) one or more water-soluble nonquinone aromatic compounds capable of solubilizing tetravalent vanadium, (3) thiocyanate ions and (4) a water-soluble carboxylate complexing agent;
- (b) allowing the absorbed hydrogen sulfide to react with constituents of said washing solution so as to convert said absorbed hydrogen sulfide substantially exclusively to elemental sulfur;
- (c) oxidatively regenerating the washing solution from step (b) so as to form a regenerated washing solution; and
- (d) separating said elemental sulfur from said washing solution.

4,283,380

#### PROCESS AND INSTALLATION FOR DESULPHURIZING GASES CONTAINING SO<sub>2</sub>

Robert Voirin; Mourenx; Pierre Mathieu, Orthez, and Claude Chambe, Billere, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Oct. 12, 1976, Ser. No. 731,654

Claims priority, application France, Oct. 10, 1975, 75 31162; Oct. 4, 1976, 76 29756

Int. Cl.<sup>3</sup> C01B 53/34

U.S. Cl. 423—574 R

11 Claims

1. A process for desulphurizing gases containing SO<sub>2</sub> and SO<sub>3</sub>, O<sub>2</sub> and nitrogen oxide by absorption of the sulphur containing compounds by means of an absorbent comprising contacting said gas with an activated alumina free of alkaline substances absorbent at a temperature between 100° and 400° C., heating the resulting absorbent loaded with said compounds in the form of alumina sulphates with a reducing gas at a temperature of 250° C. to 450° C., separating the elementary sulphur thus formed from said absorbent, and thereafter reusing the absorbent in a subsequent absorption operation.

4,283,381

#### TRIIODINATED AMINOACETAMIDO ISOPHTHALAMIDE X-RAY CONTRAST AGENTS

Ulrich Speck; Erich Klieger, and Wolfgang Mützel, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 167,597

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928417

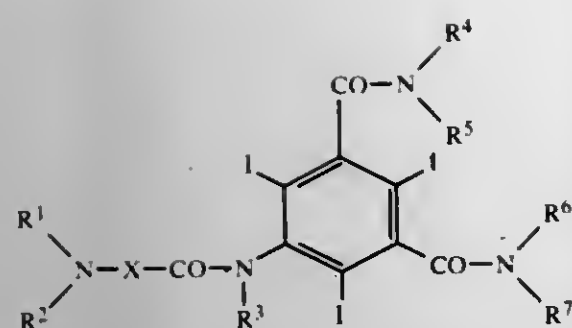
Int. Cl.<sup>3</sup> A61K 49/04; C07C 103/183, 103/50

U.S. Cl. 424—5

12 Claims

1. A 5-amino-2,4,6-triiodoisophthalic acid bisamide of the formula





wherein

X is C<sub>1-5</sub> alkylene, optionally substituted by hydroxy, methoxy or amino;  
 R<sup>1</sup> is hydroxy or C<sub>1-4</sub> alkyl;  
 R<sup>2</sup> is hydrogen, C<sub>1-4</sub> alkyl, or C<sub>2-4</sub> alkyl substituted by 1-3 OH groups;  
 R<sup>3</sup> is hydrogen, C<sub>1-4</sub> alkyl, or C<sub>2-4</sub> alkyl substituted by 1-3 OH groups;  
 R<sup>4</sup> is hydrogen, C<sub>1-4</sub> alkyl, or C<sub>2-4</sub> alkyl substituted by 1-4 OH groups;  
 R<sup>5</sup> is C<sub>2-4</sub> alkyl substituted by 1-3 OH groups;  
 R<sup>6</sup> is hydrogen, C<sub>1-4</sub> alkyl or C<sub>2-4</sub> alkyl substituted by 1-3 OH groups; and  
 R<sup>7</sup> is C<sub>2-4</sub> alkyl substituted by 1-3 OH groups, or a salt thereof with an acid which is an opaquing agent for x-ray contrast media.

12. A method of rendering a body part of a host visualizable by x-rays, which comprises administering to the host an amount of a compound of claim 1 effective as an x-ray opaque agent for the body part to be visualized.

4,283,382

#### FLUORESCENT LABELS COMPRISING RARE EARTH CHELATES

David S. Frank, Rochester, and Michael W. Sundberg, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 865,274, Dec. 28, 1977, abandoned. This application Oct. 18, 1978, Ser. No. 952,424  
 Int. Cl.<sup>3</sup> G01N 31/00, 31/22, 33/48, 33/00

U.S. Cl. 424-8

4 Claims

1. An aqueous-stabilized fluorescent label comprising fluorescent rare earth chelate incorporated into polymeric beads derived from a loaded latex wherein said rare earth chelate comprises up to about 7.5 percent by weight of said beads and said loaded latex has a polymeric discontinuous phase which consists essentially of polymer polymerized from one or more ethenic monomers and has an aqueous continuous phase and exhibits essentially no visible coagulation or settling out when 250 ml of the latex containing from about 10 to about 20 weight percent dispersed phase is stirred at 25° C. into an equal volume of acetone over a 1 minute period and subsequently allowed to stand at about 25° C. for 10 minutes.

4,283,383

#### ANALYSIS OF BIOLOGICAL FLUIDS

Pierre L. Masson, Brussels, and Joseph F. Heremans, Leuven, both of Belgium, assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Division of Ser. No. 578,699, May 19, 1975, Pat. No. 4,143,124. This application Sep. 27, 1978, Ser. No. 946,173

Claims priority, application United Kingdom, May 20, 1974, 22377/74

Int. Cl.<sup>3</sup> G01N 33/54

U.S. Cl. 424-12

16 Claims

1. A reagent useful in biological analysis which comprises RF or Clq covalently bonded to a solid phase substrate which is insoluble in aqueous fluids.

(l) 10. A method of competitive binding assay by which the presence, in a sample, of a particular antibody, antigen or antibody-antigen complex may be detected, and the amount thereof determined, which comprises the steps of:

- adding to the sample to form a mixture a quantity of the specific antigen or antibody for the antibody or antigen, respectively, to be determined, or a quantity of the antibody-antigen complex to be determined, which said quantity carries an identifying label;
- contacting the mixture with a reagent substance selected from the group consisting of RF and Clq, said substance being adsorbed onto a solid phase substrate which is insoluble in aqueous fluids;
- separating the reagent substance from the mixture; and
- measuring by the identifying label the amount of labelled antibody, antigen, or antibody-antigen complex remaining in the mixture or separated with the reagent, thereby determining the presence and amount of antibody, antigen or antibody-antigen complex in the original sample.

4,283,384

#### COSMETIC COMPOSITIONS CONTAINING POLYMERS PRODUCED IN THE PRESENCE OF CERIUM IONS

Bernard Jacquet, Antony; Jean Mondet, Sevran, and Christos Papantoniou, Montmorency, all of France, assignors to L'Oreal, Paris, France

Continuation-in-part of Ser. No. 740,015, Nov. 8, 1976, abandoned. This application Jan. 23, 1979, Ser. No. 5,919

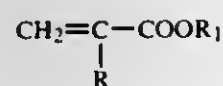
Int. Cl.<sup>3</sup> A61K 7/043, 7/06, 7/08, 7/11

U.S. Cl. 424-47

10 Claims

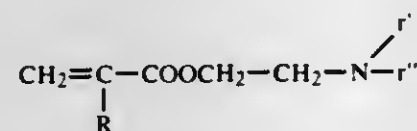
1. A shampoo composition comprising an aqueous solution of a polymer produced by polymerizing an unsaturated monomer selected from the group consisting of

- acrylic acid,
- methacrylic acid
- an ester of the formula



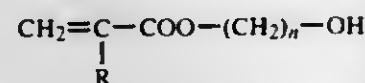
wherein R is hydrogen or methyl, and R<sub>1</sub> is linear or branched alkyl having 1-18 carbon atoms,

- an ester of the formula



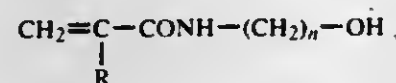
wherein R has the same meaning given above and r' and r'' each independently represent alkyl having 1-5 carbon atoms and corresponding quaternary esters thereof,

- an ester of the formula



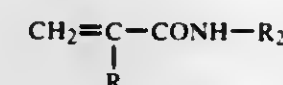
wherein R has the same meaning given above and n is 2 or 3,

- acrylamide,
- methacrylamide,
- hydroxy alkylacrylamide of the formula



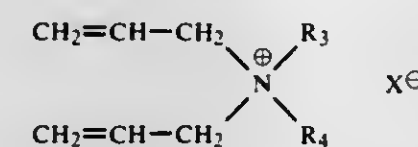
wherein R has the same meaning given above and n is 1-3,

- a compound of the formula



wherein R has the same meaning given above and R<sub>2</sub> represents linear or branched alkyl having 1-5 carbon atoms, and

- a compound of the formula



wherein R<sub>3</sub> and R<sub>4</sub> each independently represent linear or branched alkyl having 1-16 carbon atoms and X is Cl or Br,

with about 15 to 95 percent by weight of a compound based on the combined weight of said unsaturated monomer and said compound and selected from the group consisting of

- a product selected from the group consisting of gelatin, cellulose, starch, collagen, chitosans, nitro-cellulose and cellulose ethers,
  - a polymer selected from the group consisting of polyvinyl alcohol, hydrolyzed polyvinyl acetate, hydrolyzed copolymer of N-vinylpyrrolidone and vinyl acetate, hydrolyzed copolymer of crotonic acid and vinyl acetate, polyvinylpyrrolidone having terminal OH groups, polyacrylamide having terminal OH groups, N,N-dimethyl-2-amino ethyl methacrylate having terminal OH groups and quaternized with ethyl bromide, polybutadiene having terminal OH groups, polyisobutylene having terminal OH groups, copolymer of N-vinylpyrrolidone and N-methacryloyl D-glucosamine and copolymer of N-vinylpyrrolidone and N-methacryloyl D-glucosamine having terminal OH groups,
  - a polymeric compound selected from the group consisting of polyethylene glycol and polypropylene glycol, and
  - pentaerythritol,
- said polymerization being carried out in an aqueous medium and in the presence of cerium ammonium nitrate at a temperature between ambient temperature and 80° C., and a cationic, nonionic or anionic detergent, said detergent being present in an amount between 5 and 50 weight percent of said composition and said polymer being present in an amount between 0.1 and 10 weight percent of said composition.

4,283,385

#### DENTIFRICES WITH IMPROVED SOLUBLE FLUORIDE AVAILABILITY

Dadi J. Dhabhar, Norwalk, Conn., and Nutan B. Shah, New Rochelle, N.Y., assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed May 9, 1980, Ser. No. 148,548

Int. Cl.<sup>3</sup> A61K 7/18

U.S. Cl. 424-52

8 Claims

1. A dentifrice comprising from about 0.1 to about 5% by weight of a water-soluble fluoride, from about 5 to about 60% by weight of a calcium abrasive and from about 0.01 to about 5% by weight of ethylenediamine tetraacetic acid or sodium salt thereof.

4,283,386

#### METHOD FOR HAIR CARE

Eugene J. Van Scott, 1138 Sewell La., Rydal, Pa. 19046, and Ruey J. Yu, 4 Lindenwold Ave., Ambler, Pa. 19002

Division of Ser. No. 949,536, Oct. 10, 1978, Pat. No. 4,224,339.

This application Nov. 23, 1979, Ser. No. 96,678

Int. Cl.<sup>3</sup> A61K 7/06

U.S. Cl. 424-70

7 Claims

1. A method for hair grooming comprising topically applying to the hair a cosmetically effective amount of a composition containing from about 0.2 to 10% by weight of at least one compound selected from the group consisting of cysteine acid, cysteine sulfinic acid and homocysteic acid and chelates of said compound with at least one metallic compound selected from the group consisting of ferric chloride, copper sulfate, copper carbonate, zinc sulfate, zinc oxide, zinc chloride, aluminum chlorohydrate, and aluminum zinc sulfate.

5. A method for hair grooming comprising topically applying to the hair a cosmetically effective amount of a composition containing from about 0.2 to about 10% by weight of at least one compound selected from the group consisting of a reaction product of cysteine acid, cysteine sulfinic acid and homocysteic acid and a base selected from the group consisting of an organic primary, secondary, or tertiary alkylamine, alkanolamine, diamine, dialkylamine, dialkanolamine, alkylalkanolamine, trialkylamine, trialkanolamine, dialkylalkanolamine, or alkylalkanolamine wherein the alkyl or alkanol substituent has from 1 to 10 carbon atoms, an organic quaternary ammonium hydroxide compound, sodium hydroxide, and potassium hydroxide.

4,283,387

#### ADHERENT CONTROLLED RELEASE PESTICIDE

Robert W. Young, New York, N.Y.; Samuel Prussin, Big Sur, Calif., and Norman G. Gaylord, New Providence, N.J., assignors to Young, Prussin, MGK, J.V., New York, N.Y.

Filed Nov. 8, 1979, Ser. No. 92,632

Int. Cl.<sup>3</sup> A01N 25/24

U.S. Cl. 424-78

10 Claims

1. A composition capable of undergoing hydrolysis under ambient conditions to form a polymeric network capable of controlling the release of an insecticide consisting essentially of:

- a carbinol-containing organic polymer;
- crosslinking agents for said polymer comprising (b) a hydrolyzable silane selected from the group consisting of (1) a hydrocarbon-substituted hydrolyzable silane, (2) an organopolysiloxane containing hydrolyzable silane groups and (3) a partial hydrolyzate of (1) and/or (2), and (c) a hydrolyzable titanium compound or a partial hydrolyzate thereof, said titanium compound being selected from the group consisting of tetraesters, tetraanhydrides, tetraamides and chelates of glycols, hydroxy acids, dicarboxylic acids, diketones, ketoesters and alkanolamines, and
- a pesticide.

4,283,388

#### METHOD FOR TREATING COLIBACILLOSIS IN PIGS WITH TYLOSIN APRAMYCIN COMPOSITIONS

Earl E. Ose, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 26, 1979, Ser. No. 107,240

Int. Cl.<sup>3</sup> A61K 35/00

U.S. Cl. 424-114

11 Claims

1. A method for treating colibacillosis in post-weaning pigs in need of said treatment which comprises administering to said pigs in an amount effective to treat colibacillosis of an antibiotic composition comprising tylosin and apramycin or physiologically acceptable salts thereof wherein said composition contains a ratio by weight of tylosins to apramycin of about 5:1 to about 1:5.



4,283,389

## NOVEL ANTIBIOTIC, BN-183B SUBSTANCE

Norio Ezaki, Shinji Miyadob, Yasuaki Ogawa, Takashi Hisamatsu, all of Yokohama; Harumi Fukuyasu, Yokosuka, and Yujiro Yamada, Yokohama, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,442

Claims priority, application Japan, Dec. 27, 1978, 53-159820  
Int. Cl.<sup>3</sup> A61K 35/00

U.S. Cl. 424-116

2 Claims

1. An antibiotic designated BN-183B substance whose hydrochloride has the following characteristics or a pharmaceutically acceptable salt thereof

(1) Elemental analysis values: C 39.84%, H 5.25%, N 6.43%, Cl 22.90%

(2) Molecular weight: 383

(3) Molecular formula:  $C_{14}H_{20}N_2O_6Cl_2 \cdot HCl$

(4) Melting point: begins to turn brownish at 190° C. and to foam and decompose at 214° C.

(5) Ultraviolet absorption spectrum: shown in FIG. 1

(6) Infrared absorption spectrum: Absorption bands at 3400, 3020, 1680, 1620, 1570, 1520, 1400, 1360, 1330, 1270, 1240, 1180, 1160, 1130, 1090, 1080, 1020, 930, 880, 850, 830, 800, 740, 700  $cm^{-1}$  and absorption spectrum as shown in FIG. 2.

(7) Specific rotation:  $[\alpha]_D^{23} -9^\circ$  (c=1, water)

(8) Solubility: very soluble in water, slightly soluble in methanol, and scarcely soluble in acetone, chloroform and ethyl acetate

(9) Color reactions:

Positive: ferric chloride, ninhydrin and Fehling

Negative: Molish and biuret

(10) Distinction by neutrality, acidity and basicity: behaves as a basic substance in filter paper electrophoresis

(11) Appearance: white to slightly yellowish powder

(12) Rf values in thin-layer chromatography:

Butanol-acetic acid-water (2:2:1): 0.66

Ethyl acetate-acetic acid-water (60:17:17): 0.34

Butanol-pyridine-acetic acid-water (6:4:1:3): 0.65.

4,283,390

## ANTIBIOTICS AND PROCESS FOR PRODUCTION THEREOF

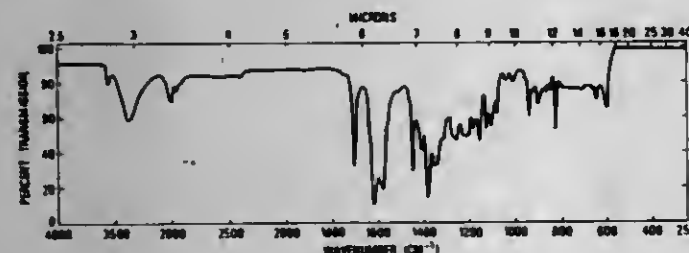
Kay F. Koch, North Salem, and Ralph E. Kastner, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 1, 1979, Ser. No. 90,386

Int. Cl.<sup>3</sup> A61K 35/00

U.S. Cl. 424-122

6 Claims



1. Antibiotic A-39183 factor C, which is a yellow, crystalline solid having the following characteristics:

(a) an approximate elemental composition of 68.03 percent carbon, 4.78 percent hydrogen, and 26.58 percent oxygen;

(b) a molecular weight of about 598, as determined by mass spectrometry;

(c) an infrared absorption spectrum with the following significant absorption maxima ( $cm^{-1}$ ): 3498, 3420, 2970, 2930, 2861, 1971, 1717, 1701, 1623, 1599, 1585, 1452, 1414, 1357, 1335, 1312, 1261, 1223, 1172, 1151, 1122, 1086, 1041, 1011, 980 (shoulder), 970, 955, 938, 905, 879, 870 (shoulder), 851, 801, 781, 750 (shoulder), 740, 692, and 666;

(d) ultraviolet absorption spectra in acidic or neutral methanol with absorption maxima at 226 nm ( $\epsilon$ 44,200), 268 nm

( $\epsilon$ 55,600), 300 nm ( $\epsilon$ 6,200), 310 nm ( $\epsilon$ 5,300), 327 nm ( $\epsilon$ 5,900), and 410 nm ( $\epsilon$ 13,800); and in basic methanol with absorption maxima at 229 nm ( $\epsilon$ 50,100), 226 nm ( $\epsilon$ 49,200), 328 nm ( $\epsilon$ 11,000), 340 nm ( $\epsilon$ 11,900), and 420 nm ( $\epsilon$ 17,000);

(e) is soluble in acetone, ethyl acetate, dimethylformamide, dimethyl sulfoxide, trifluoroethanol, the lower alkanols, is sparingly soluble in benzene and toluene, and insoluble in water; and

(f) an  $R_f$  value of approximately 0.46 on silica-gel thin layer chromatography using a toluene:acetone (3:1) solvent system.

4,283,391

## PAMAMYCIN

Burton M. Pogell, St. Louis, Mo., and Pamela A. McCann, Flemington, N.J., assignors to St. Louis, University, St. Louis, Mo.

Continuation-in-part of Ser. No. 964,952, Nov. 30, 1978, abandoned. This application Jul. 16, 1979, Ser. No. 57,795

Int. Cl.<sup>3</sup> A61K 35/00

U.S. Cl. 424-122

1 Claim

1. Pamamycin which has an elemental composition of  $C_{36}H_{63}NO_7$  and is defined by an NMR spectrum containing no exchangeable hydrogens, a multiplet centered at approximately 0.9 ppm indicating methyl groups, and multiplets in the range between 1.25-2.0 ppm and 2.0-2.75 ppm showing that the bulk of the hydrogen is methine and methylene groups and finally a triplet at 1.1 ppm indicating loss of a propyl group and being characterized by an IR spectrum which is highly aliphatic and showing an absence of aromatic, —OH, and —NH groups, further characterized by a peak at 1725  $cm^{-1}$  indicating a carbonyl group and further characterized by no amide 1 and amide 2 stretch bands (1600-1700  $cm^{-1}$ ) indicating the nitrogen present is as a tertiary linkage.

4,283,392

## INFUSION SOLUTIONS CONTAINING AMINO ACIDS AND MINERAL SALTS

Günther Dietze, and Matthias Wicklmayr, both of Munich, Fed. Rep. of Germany, assignors to THERA Gesellschaft für Patentverwertung mbH, Fed. Rep. of Germany

Filed Jan. 22, 1980, Ser. No. 114,241

Claims priority, application Switzerland, Jan. 23, 1979, 644/79

Int. Cl.<sup>3</sup> A61K 37/00

U.S. Cl. 424-177

5 Claims

1. An infusion solution for low-caloric parenteral nutrition, comprising 10 to 200 grams of essential and non-essential amino acids per liter of solution, 50 to 10,000  $\mu g$  of a kinin selected from the group consisting of Brady kinin, kallidin or mixtures thereof per liter of solution and mineral salts.

5. A method of treating a patient to preserve the depot proteins which comprises parenteral administration to said patient of an effective amount of the infusion solution of claim 1.

4,283,393

## TOPICAL APPLICATION OF INTERFERON INDUCERS

Arthur K. Field, North Wales, and Richard J. Harwood, Philadelphia, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 13, 1979, Ser. No. 20,125

Int. Cl.<sup>3</sup> A61K 31/70

U.S. Cl. 424-180

8 Claims

1. An improved method of treating virus infections of skin, eye and mucous membrane tissue susceptible to treatment with interferon by topically applying a therapeutically effective antiviral amount of an interferon inducer selected from the group consisting of synthetic double-stranded RNA, a natural double-stranded RNA, and a nonpolynucleotide, the improve-

ment consisting of incorporating said interferon inducer and a water soluble polymer selected from the group consisting of cellulose ethers, polyvinyl alcohol, polyvinylpyrrolidone, carboxyvinylpolymer and polyethylene glycol.

4,283,394

## CYTOTOXIC NUCLEOSIDE-CORTICOSTEROID PHOSPHODIESTERS

Charles R. West, East Amherst, and Chung I. Hong, Williams-ville, both of N.Y., assignors to Research Corporation, New York, N.Y.

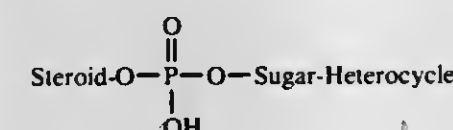
Filed Aug. 6, 1979, Ser. No. 63,753

Int. Cl.<sup>3</sup> C07J 17/00

U.S. Cl. 424-182

19 Claims

1. A compound selected from the group consisting of compounds of the formula:



wherein:

steroid is a 21-hydroxy-1,4-pregnadiene-3,20-dione; 21-hydroxy-1,4-pregnadiene-3,11,20-trione; 21-hydroxy-4-pregnene-3,20-dione or 21-hydroxy-4-pregnene-3,11,20-trione which is unsubstituted or substituted by 1-3, hydroxy, methyl or fluoro groups at the 2 $\alpha$ , 6 $\alpha$ , 9 $\alpha$ , 11, 16 $\alpha$ , 17 or 18 positions and which is esterified to the phosphate moiety at the 21-position;

sugar is ribose, deoxyribose, lyxose, xylose or arabinose which is esterified to the phosphate moiety at the 5'-position and covalently bonded to the heterocycle moiety at the 1'-position to form a nucleoside; and heterocycle is a purine, pyrimidine, hydrogenated pyrimidine or triazolopurine nucleoside base; and the physiologically acceptable salts thereof.

12. A compound according to claim 1, 5'-(prednisolone-21-phosphoryl)-1- $\beta$ -D-arabinofuranosylcytosine.

19. A method for inhibiting the growth of cancer cells in a living body, which comprises administering a safe and cytotoxic effective amount of a compound according to any one of claims 12 thru 17 to a living test animal afflicted with cancer susceptible.

4,283,395

## S-ALKYL AND ALKENYL-THIOPHENYLACETAMIDO THIOPHOSPHATES AND PHOSPHONATES AND METHOD OF CONTROLLING INSECTS

Llewellyn W. Fancher, New Castle, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

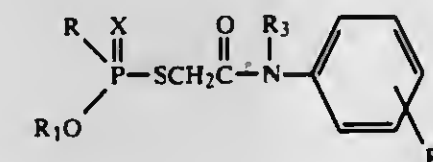
Filed Mar. 24, 1980, Ser. No. 133,066

Int. Cl.<sup>3</sup> C07F 9/165; A01N 57/06

U.S. Cl. 424-211

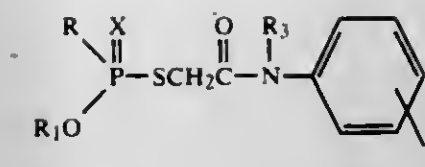
6 Claims

1. A compound having the formula



in which R is lower alkyl or lower alkoxy; R<sub>1</sub> is lower alkyl; R<sub>2</sub> is thio-lower alkenyl; R<sub>3</sub> is hydrogen and X is oxygen or sulfur, provided that when X is oxygen, R is lower alkoxy.

5. A method for controlling insects comprising applying to the insects, the habitat thereof, or a locus where protection is desired, an insecticidally effective amount of a compound having the formula



in which R is lower alkyl or lower alkoxy; R<sub>1</sub> is lower alkyl; R<sub>2</sub> is thio-lower alkenyl; R<sub>3</sub> is hydrogen and X is oxygen or sulfur; provided that when X is oxygen, R is lower alkoxy.

4,283,396

## 3-ACETOXYMETHYL-7-(HYDROXY-YIMINOACETAMIDO)-CEPHALOSPORANIC ACID DERIVATIVES

Rene Heymes, Romaioville, and Andre Lutz, Strasbourg, both of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 817,114, Jul. 19, 1977, Pat. No. 4,152,432, which is a continuation-in-part of Ser. No. 761,270, Jan. 21, 1977, abandoned. This application Jun. 22, 1978, Ser. No. 917,985

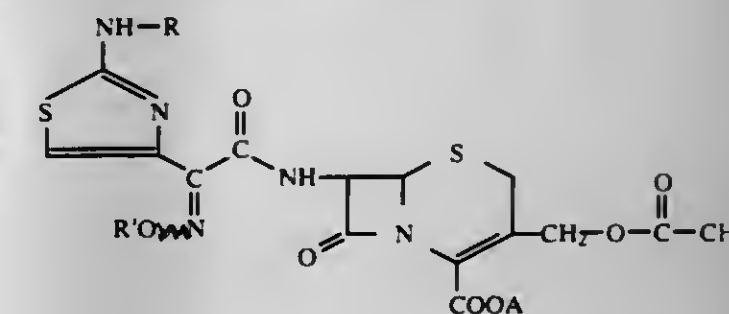
Claims priority, application France, Jan. 23, 1976, 76 01834; Jun. 11, 1976, 76 17743; Aug. 18, 1976, 76 25050; Mar. 11, 1977, 77 07307

Int. Cl.<sup>3</sup> A61K 31/545; C07D 501/34

U.S. Cl. 424-246

14 Claims

1. A compound of the formula



wherein R is hydrogen, R' is hydrogen, A is selected from the group consisting of hydrogen, alkali metal and equivalent of an alkaline earth metal, magnesium and a pharmaceutically acceptable organic amine base and the wavy line means the OR' group is in the syn position.

5. An antibiotic composition comprising an antibiotically effective amount of at least one compound of claim 1 and an inert pharmaceutical carrier.

4,283,397

## 7-N-HETEROCYCLYL CEPHALOSPORINS AND ANTIBIOTIC PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Jobo Hannah, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

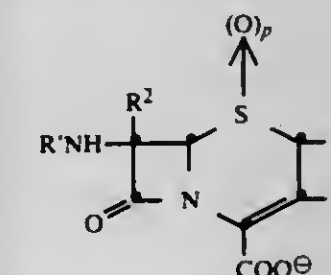
Filed Aug. 1, 1979, Ser. No. 62,836

Int. Cl.<sup>3</sup> A61K 31/545; C07D 501/14

U.S. Cl. 424-246

7 Claims

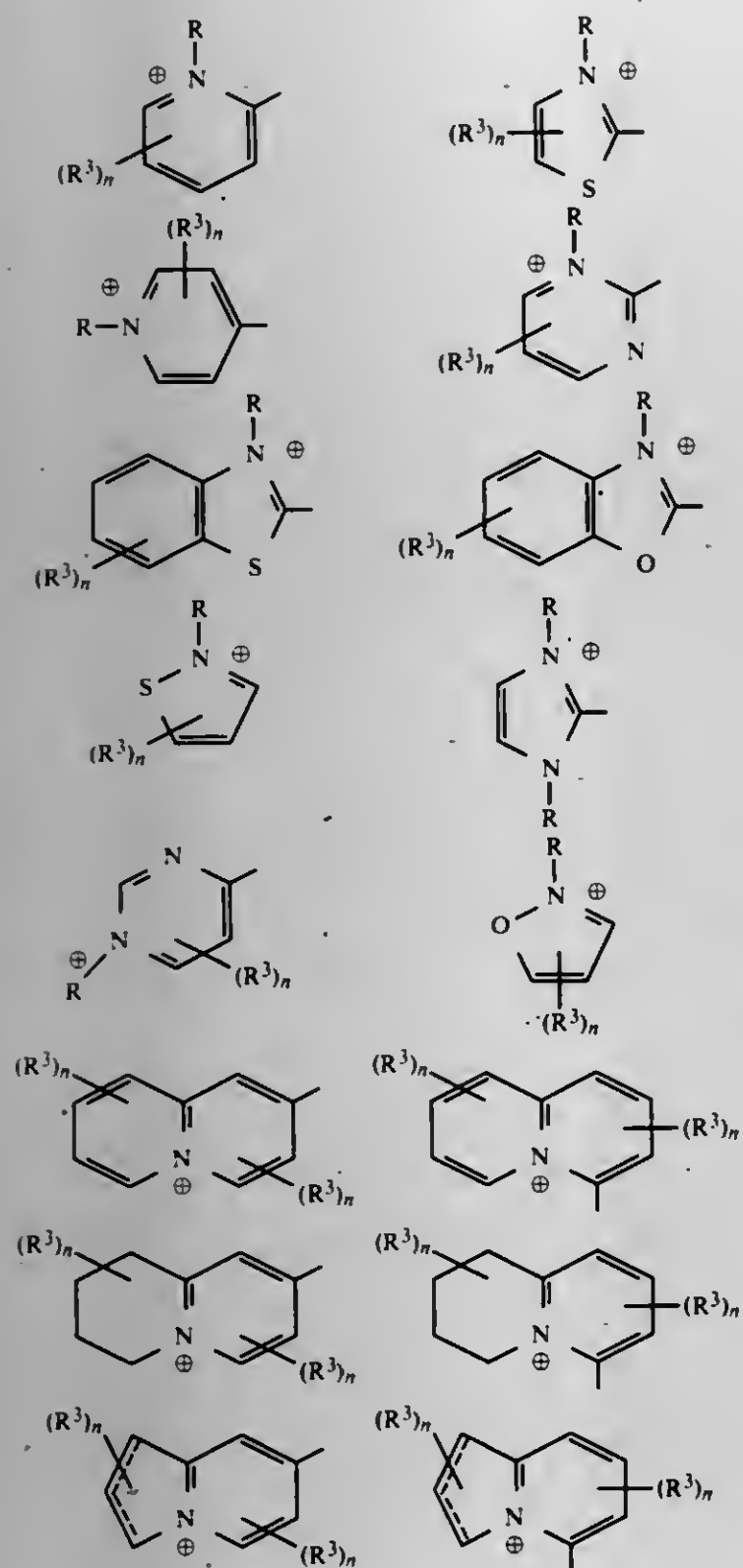
1. A compound having the structural formula:



and the pharmaceutically acceptable salts and esters thereof



wherein: p is 1 or 2; R<sup>1</sup> is H or CH<sub>3</sub>; R<sup>2</sup> is hydrogen or methoxyl; R<sup>3</sup> is selected from the group consisting of:



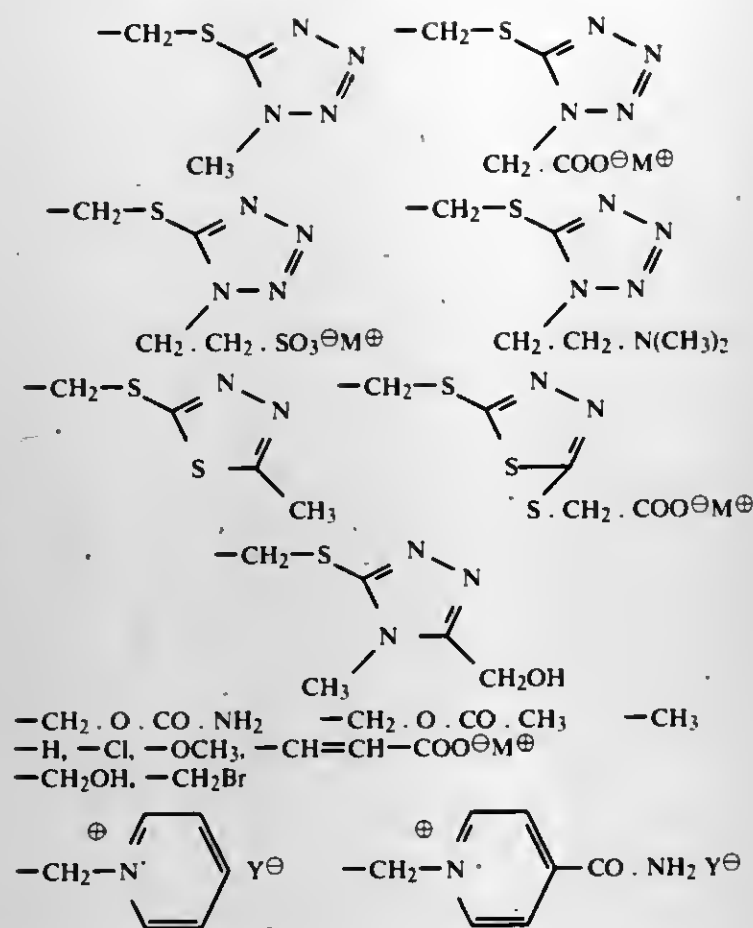
wherein the dotted line indicates both saturated and unsaturated rings; and wherein:

R is hydrogen alkyl having from 1-6 carbon atoms, substituted alkyl having from 1-6 carbon atoms wherein the substituent is chloro, fluoro, hydroxyl, alkoxy (C<sub>1-6</sub>), carboxyl, amino, sulfo and mono- and dialkylamino wherein each alkyl has 1-6 carbon atoms substituted and unsubstituted phenylalkyl and phenylalkenyl having 7-12 carbon atoms wherein the substituent is selected from chloro, fluoro, carboxyl, amino, cyano, hydroxyl and sulfo;

R<sup>3</sup> is chloro, fluoro, hydroxyl, carboxyl, sulfo, cyano, amino, mono- and dialkylamino, alkoxy, alkyl having from 1-6 carbon atoms, substituted alkyl having 1-6 carbon atoms wherein the substituent is carboxyl, cyano, alkoxy having 1-6 carbon atoms, phenyl and phenyloxy;

n is an integer selected from 0 to 3 and

A is selected from:



wherein Y is a pharmaceutically acceptable anion and M is a pharmaceutically acceptable cation.

7. An antibiotic pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

4,283,398

## CEPHALOSPORINS

Akira Matsubara, Yokohama; Hideaki Sakai, Fujisawa; Toshio Suganuma, Mobara; Nobuyuki Fukazawa, and Takuo Nakano, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Nov. 26, 1979, Ser. No. 97,146

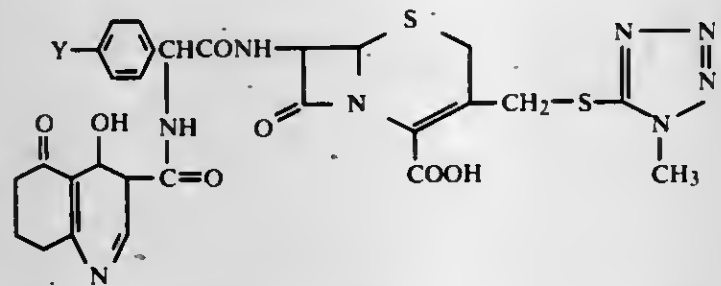
Claims priority, application Japan, Nov. 28, 1978, 53-146053

Int. Cl.<sup>3</sup> C07D 501/36

U.S. Cl. 424-246

8 Claims

1. A cephalosporanic acid of the formula



wherein Y represents a hydrogen atom or a hydroxyl group, and pharmaceutically acceptable salts and esters thereof.

4,283,399

## PARASTICIDE

Stanislaw Witek, Swobodna Str., 12; Damian Grobelny, Cieszkowskiego Str., 15, both of Wroclaw; Janina Ptaszowska, Ks. Janusza Str., 62, Warszawa; Andrzej Bielecki, R. Luksemburg Str., 25, Opole; Edmund Bakuniak, Dzielna Str., 11a, Warszawa; Stefan Fulde, Traugutta Str., 7/9, Warszawa, and Jadwiga Gorska-Poczopko, Instytucja Str., 4, Jablonna/k Warszawa, all of Poland

Division of Ser. No. 884,842, Mar. 9, 1978, Pat. No. 4,217,365.

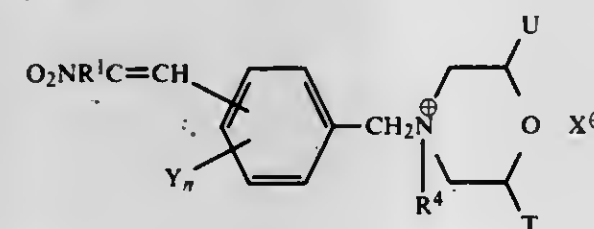
This application May 25, 1979, Ser. No. 42,407

Claims priority, application Poland, Mar. 11, 1977, 196612 Int. Cl.<sup>3</sup> A01N 43/84

U.S. Cl. 424-248.4

1 Claim

1. A fungicidal composition containing as the active substance therein a fungicidally effective amount of a compound having the formula:



wherein

X is a halogen atom,

Y is a hydroxy or nitro group,

n is 0-4

R<sup>1</sup> is an alkyl radical with 1-3 carbon atoms or a hydrogen atom,

R<sup>4</sup> is an alkyl radical with 7-16 carbon atoms, and

U and T are methyl radicals or hydrogen atoms, and a carrier selected from the group consisting of kaolin, synthetic and natural kieselguhr, bentonite, talc, grain flour, wood-bark and walnut shell flour.

4,283,401

# PROCESS FOR THE PREPARATION OF 11-BROMO-VINCAMINIC ACID ESTER DERIVATIVES AND THEIR USE IN PROTECTING ANIMALS AGAINST CEREBRAL HYPOXY

Csaba Szantay; Lajos Szabo; György Kalas; Lajos Dancsi; Tibor Keve; Egon Karpati, and Laszlo Szporny, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Filed Jul. 11, 1979, Ser. No. 56,647

Claims priority, application Hungary, Jul. 12, 1978, RI 676;

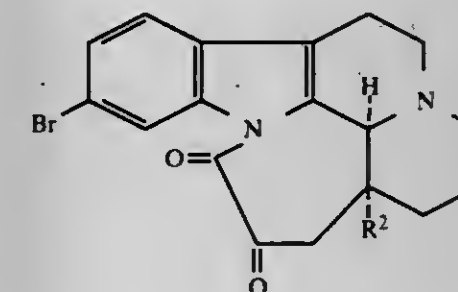
Jul. 12, 1978, RI 677; Jul. 12, 1978, RI 678

Int. Cl.<sup>3</sup> A61K 31/55; C07D 459/00, 461/00

U.S. Cl. 424-256

30 Claims

1. An optically active or racemic 11-bromo-14,15-dioxo-E-homo-eburnane derivative of the formula (VII),



wherein R<sup>2</sup> is a C<sub>1-6</sub> alkyl group, or a pharmaceutically acceptable acid addition salt thereof.

25. A method of protecting an animal against cerebral hypoxia which comprises the step of administering to the animal subject a pharmaceutically effective amount of the compound defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,283,402

6-N-HETEROCYCLYL-3-TETRAZOLYL-PENICILLINS  
John Hannah, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

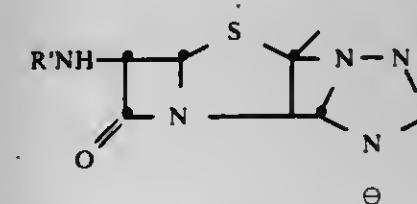
Filed Aug. 1, 1979, Ser. No. 62,828

Int. Cl.<sup>3</sup> C07D 402/02

U.S. Cl. 424-256

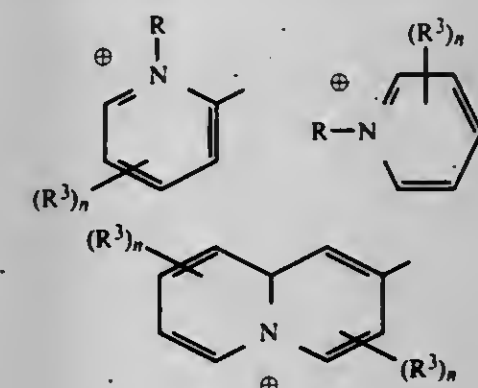
4 Claims

1. A compound having the structural formula:



and the pharmaceutically acceptable salts and esters thereof wherein:

R' is selected from the group consisting of:



4,283,400

MEDICATED ANIMAL FEED BASED ON LIVER MEAL  
Miklos von Bittera; Herbert Voegel, both of Leverkusen, and Reinwald Bauditz, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,990

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 2841668

Int. Cl.<sup>3</sup> A61K 31/43, 31/65, 31/325, 31/495

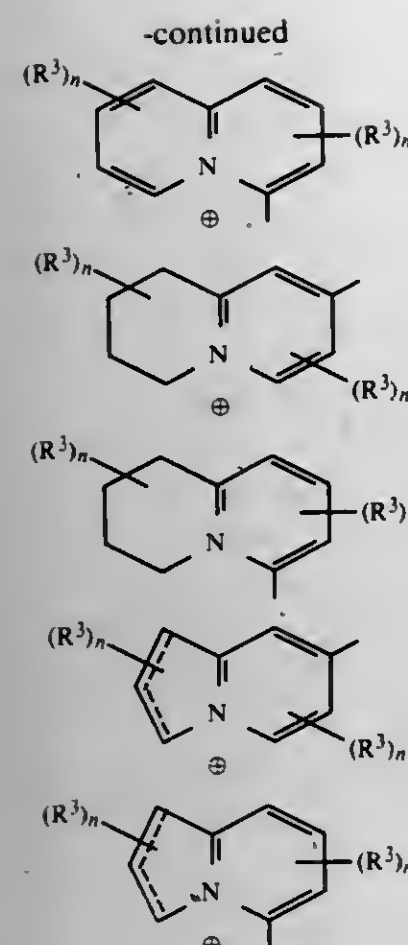
U.S. Cl. 424-250

6 Claims

1. A medicated animal feed comprising 0.1 to 20 parts by weight of one or more pharmaceutically active compounds selected from the group consisting of anthelmintic agents, praziquantel, tetramisole, febantel, levamisole, niclosamide, piperazine salts, chloramphenicol, tetracycline, penicillin derivatives, ampicillin, cloxacillin, and 6-chloro-6-dehydro-17a-acetoxy-progesterone, 1 to 20 parts by weight of a binder selected from the group consisting of starch, polyvinylpyrrolidone, gelatin, sodium alginate and a cellulose derivative, 50 to 99 parts by weight liver meal as a formulation auxiliary and 0.04 to 5 parts by weight of one or more other auxiliaries.

4. A medicated animal feed according to claim 1, characterized in that the liver meal is de-fatted liver meal and that the active compound is Praziquantel.





wherein the dotted line indicates both saturated and unsaturated rings; and wherein:

R is hydrogen, alkyl having from 1-6 carbon atoms, substituted alkyl having from 1-6 carbon atoms wherein the substituent is chloro, fluoro, hydroxyl, alkoxy (C<sub>1-6</sub>), carboxyl, amino, sulfo and mono- and dialkylamino wherein each alkyl has 1-6 carbon atoms substituted and unsubstituted phenylalkyl and phenylalkenyl having 7-12 carbon atoms wherein the substituent is selected from chloro, fluoro, carboxyl, amino, cyano, hydroxyl and sulfo;

R<sup>3</sup> is chloro, fluoro, hydroxyl, carboxyl, sulfo, cyano, amino, mono- and dialkylamino, alkoxy alkyl having from 1-6 carbon atoms, substituted alkyl having 1-6 carbon atoms wherein the substituent is carboxyl, cyano, alkoxy having 1-6 carbon atoms, phenyl and phenyloxy; n is an integer selected from 0 to 3.

4,283,403

### SUBSTITUTED ISOXAZOLINES FOR CONTROL OF PLANT PHYTOPATHOGENS

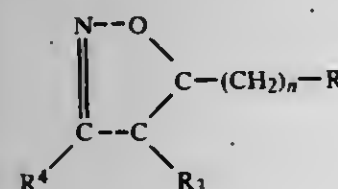
James D. Davenport, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 695,668, Jun. 14, 1976, abandoned. This application Aug. 31, 1977, Ser. No. 829,304  
Int. Cl.<sup>3</sup> C07D 413/04; A01N 43/80

U.S. Cl. 424-263

9 Claims

1. A compound of the formula



wherein

R represents NCS;

n represents 1 or 2;

R<sup>3</sup> represents hydrogen or phenyl;

R<sup>4</sup> represents 2-pyridyl.

7. The method of reducing the adverse effects of fungal foliar phytopathogens which comprises contacting the phytopathogens on the foliage of host plants with an effective phytopathogen-inhibiting amount of a compound of claim 1.

4,283,404

### AROYLETHENYLPIPERIDINO BUTYROPHENONE ANTIPSYCHOTIC AGENTS

Albert A. Carr, and Robert A. Farr, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

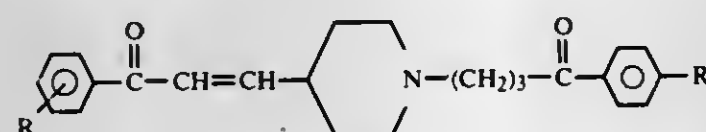
Filed Sep. 4, 1979, Ser. No. 72,499

Int. Cl.<sup>3</sup> C07D 211/18; A61K 31/445

U.S. Cl. 424-267

12 Claims

1. A compound of the formula



wherein R is hydrogen, C<sub>1-4</sub> alkyl, C<sub>1-4</sub> alkoxy, fluorine, chlorine, bromine, or trifluoromethyl; and R' is hydrogen, fluorine, chlorine or bromine; and pharmaceutically acceptable acid addition salts thereof.

4,283,405

### DITHIENYLPIPERIDINES, PHARMACEUTICAL COMPOSITIONS THEREOF, AND METHOD OF USE THEREOF

Jurgen Engel, Alzenau; Axel Kleemann, Hanau; Fritz Stroman, Offenbach, and Klaus Thieme, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 14, 1980, Ser. No. 112,099

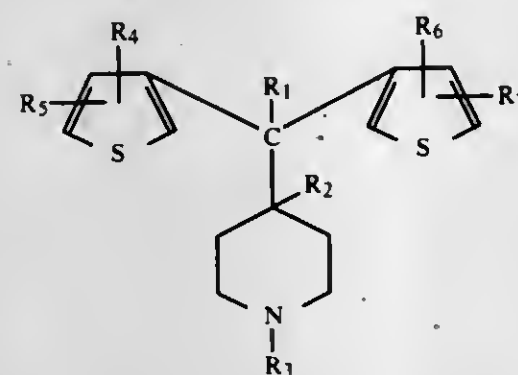
Claims priority, application United Kingdom, Jan. 17, 1979, 7901659

Int. Cl.<sup>3</sup> A61K 311/38; C07D 409/14; A61K 31/445

U.S. Cl. 424-267

30 Claims

1. A compound having the formula



where R<sub>1</sub> is hydrogen or hydroxy, R<sub>2</sub> is hydrogen or R<sub>1</sub> and R<sub>2</sub> together represent a second bond between the carbon atoms carrying R<sub>1</sub> and R<sub>2</sub>, R<sub>3</sub> is a C<sub>3</sub>-C<sub>8</sub> cycloalkyl group or a C<sub>1</sub>-C<sub>20</sub> alkyl group containing one or two hydroxy groups and the groups R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub> are hydrogen, C<sub>1</sub>-C<sub>6</sub>-alkyl groups or halogen atoms, an N-oxide thereof, a quaternary salt thereof with a compound of the formula R<sub>8</sub>Y where R<sub>8</sub> is alkyl of 1 to 20 carbon atoms and Y is chlorine, bromine or iodine or an acid addition salt thereof with a therapeutically acceptable acid.

16. A method of preventing anginosus in a mammal comprising administering to the mammal an effective amount of a compound of claim 1 to prevent anginosus.

4,283,406

### COMBATING BOTRYTIS FUNGI WITH 1-(2,4-DICHLOROPHENYL)-1-(2,6-DIHALOGENOBENZYL-OXIMINO)-2-(1,2,4-TRIAZOL-1-YL)-ETHANES

Wolfgang Krämer; Hans-Joachim Knops; Karl H. Büchel, all of Wuppertal, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 141,834

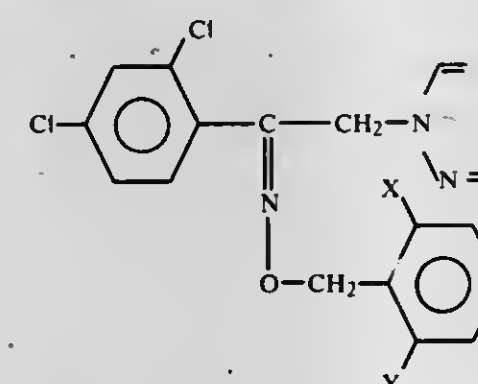
Claims priority, application Fed. Rep. of Germany, May 8, 1979, 2918467

Int. Cl.<sup>3</sup> A01N 43/64; C07D 249/08

U.S. Cl. 424-269

7 Claims

1. A method of combating Botrytis fungi, comprising applying to such fungi, or to a habitat thereof to be protected against such fungus, a fungicidally effective amount of a 1-(2,4-dichlorophenyl)-1-(2,6-dihaloxybenzyloximino)-2-(1,2,4-triazol-1-yl)-ethane of the formula



in which

X and Y each independently is chlorine or fluorine or a physiologically acceptable acid addition salt thereof.

4,283,407

### THIOPROPIONAMIDES, AND THE PHARMACEUTICAL COMPOSITIONS

Charles Malen, Fresnes; Pierre Roger, St. Cloud, and Michel Laubie, Vaucresson, all of France, assignors to Science Union et Cie, Suresnes, France

Filed Sep. 25, 1978, Ser. No. 945,253

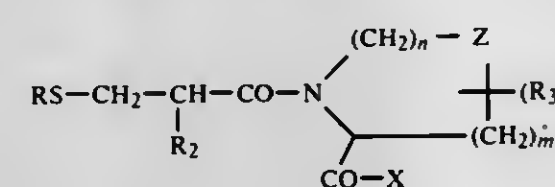
Claims priority, application France, Sep. 28, 1977, 77 29109; United Kingdom, Jan. 6, 1978, 0051/78

Int. Cl.<sup>3</sup> C07D 277/06; A61K 31/425

U.S. Cl. 424-270

8 Claims

1. A compound of the formula



where

R is hydrogen, loweralkyl, loweralkanoyl, phenyl, loweralkyl or phenyl, where each of such phenyl rings may be substituted with one to three substituents selected from the group consisting of halogen, trifluoromethyl, lower alkoxy, vinyl, lower alkylendioxy, hydroxy and lower alkyl;

R<sub>2</sub> is hydrogen, loweralkyl or lower cycloalkyl;

Z is sulfur, sulfoxide or sulfonyl;

R<sub>3</sub> is hydrogen or loweralkyl;

m is 1;

n is 1;

p is 0, 1, or 2; and

X is an amino group.

7. A method for treating hypertension in hypertensive patients suffering from an excessive blood content of Angiotensin II which consists in administering to said patients a small but

effective amount of a compound of claim 1 or a salt thereof to curb the conversion of Angiotensin I into Angiotensin II.

4,283,408

### GUANIDINOTHIAZOLE COMPOUNDS, PROCESS FOR PREPARATION AND GASTRIC INHIBITING COMPOSITIONS CONTAINING THEM

Yasufumi Hirata, Omiya; Isao Yanagisawa, Tokyo; Yoshio Ishii, Omiya; Shinichi Tsukamoto, Tokyo; Noriki Ito, Twatsuki; Yasuo Isomura, Yokohama, and Masaaki Takeda, Urawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1979, Ser. No. 107,629

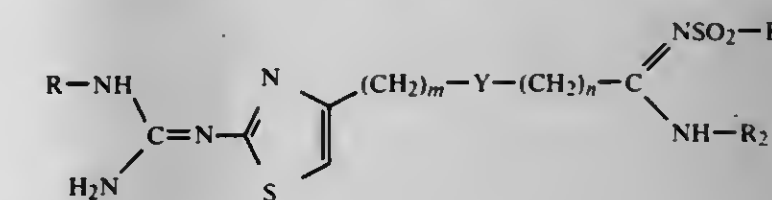
Claims priority, application Japan, Aug. 2, 1979, 54-98906

Int. Cl.<sup>3</sup> C07D 277/38; A61K 31/425

U.S. Cl. 424-270

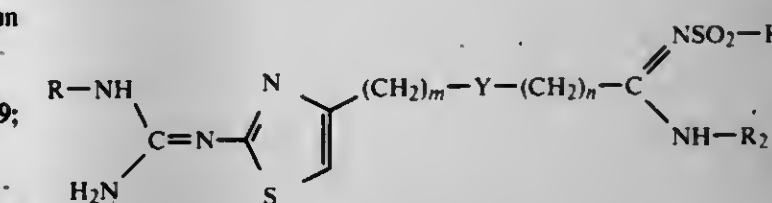
6 Claims

1. Guanidinethiazole compounds of the formula



wherein R represents a hydrogen atom or a lower alkyl group, R<sub>1</sub> represents an amino group, a lower alkyl group, a halogeno lower alkyl group, a phenyl or naphthyl group which is unsubstituted or substituted by halogen, hydroxyl, amino, or alkoxy, a mono- or di-lower alkylamino group, an arylamino group or an aralkylamino group, R<sub>2</sub> represents a hydrogen atom, a lower alkyl group, a lower alkenyl group or a lower alkynyl group, Y represents a sulfur atom or a methylene group, m and n, each represents an integer of 1-3, and the pharmacologically acceptable acid addition salts thereof.

6. Medical composition containing a gastric acid secretion inhibiting amount of a guanidinethiazole compound of the formula



wherein R represents a hydrogen atom or a lower alkyl group, R<sub>1</sub> represents an amino group, a lower alkyl group, a halogeno lower alkyl group, a phenyl or naphthyl group which is unsubstituted or substituted by halogen, hydroxyl, amino, or alkoxy, a mono- or di-lower alkylamino group, an arylamino group or an aralkylamino group, R<sub>2</sub> represents a hydrogen atom, a lower alkyl group, a lower alkenyl group or a lower alkynyl group, Y represents a sulfur atom or a methylene group, m and n, each represent an integer of 1-3, or a non-toxic acid addition salt thereof and pharmaceutically acceptable carriers or diluents.

4,283,409

### IMIDAZOLONE DERIVATIVES

John L. Belletire, Madison, Wis., and Reinhard Sarges, Mystic, Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Oct. 29, 1979, Ser. No. 89,655

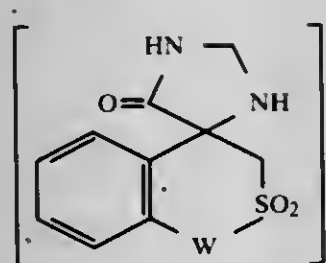
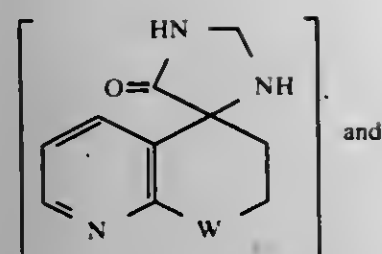
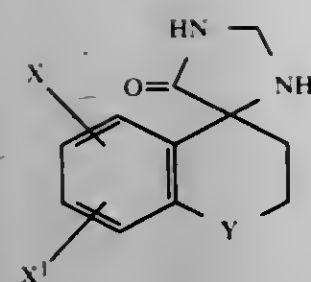
Int. Cl.<sup>3</sup> A61K 31/415

U.S. Cl. 424-273 R

4 Claims

1. A method for treating a diabetic host to prevent or alleviate diabetes-associated chronic complications arising in said host, which comprises administering to said diabetic host an effective amount of a compound selected from the group consisting of spiro-imidazolone bases of the formula:





and the pharmaceutically acceptable acid addition salts thereof, wherein

X is hydrogen and X' is hydrogen, fluorine, chlorine, bromine, lower alkyl or lower alkoxy; or

X and X', when taken separately, are each chlorine, lower alkyl or lower alkoxy, and when taken together at adjacent positions of the molecule are  $-OCH_2(CH_2)_nO-$ ;

Y is  $-(CH_2)_n-$ ; and n is zero or one.

4,283,410

### 3-AMINO OR AMIDO-2-(1H-INDOL-3-YL) PROPANOIC ACID DERIVATIVES

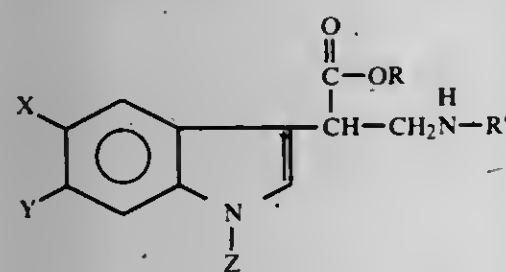
Robert N. Schut, Edwardsburg, Mich.; Max E. Safdy, Elkhart, Ind., and Enrique Hoog, Cerro San Francisco, Mexico, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 915,735, Jun. 15, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 107,076 Int. Cl.<sup>3</sup> A61K 31/405; E07D 209/20

U.S. Cl. 424—274

23 Claims

1. 3-Amino or amido-2-(1H-indol-3-yl)propanoic acid compounds characterized by the formula:



wherein:

R is H, CH<sub>3</sub> or CH<sub>2</sub>CH<sub>3</sub>,  
R' is H or



X is H, F or OCH<sub>3</sub>,  
Y is H or Cl, and  
Z is H or

I



provided that:

(i) when X is F; Y, Z and R' are H and R is H or CH<sub>3</sub>;

(ii) when X is H, Y is Cl, Z is H, R is CH<sub>3</sub> and R' is H; and

(iii) when X is OCH<sub>3</sub>; Y is H provided further that when Z and R' are H, R is CH<sub>3</sub>; when Z is H and R' is

II



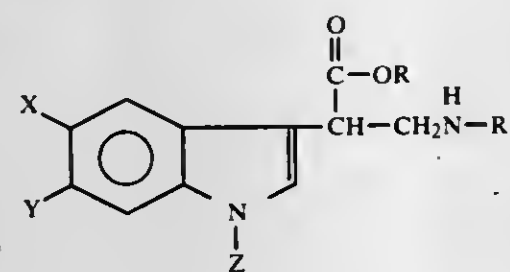
R is H and when Z is

R' is



and R is CH<sub>2</sub>CH<sub>3</sub>.

13. A method of treating hypertension in an individual requiring such treatment which method comprises administering to such individual an anti-hypertensive amount of a compound of the formula:



wherein:

R is H, CH<sub>3</sub> or CH<sub>2</sub>CH<sub>3</sub>,

R' is H or



X is H, F or OCH<sub>3</sub>,

Y is H or Cl, and

Z is H or



provided that:

(i) when X is F; Y, Z and R' are H and R is H or CH<sub>3</sub>;

(ii) when X is H, Y is Cl, Z is H, R is CH<sub>3</sub> and R' is H; and

(iii) when X is OCH<sub>3</sub>; Y is H provided further that when Z and R' are H, R is CH<sub>3</sub>, when Z is H and R' is



R is H and when Z is



R' is



and R is CH<sub>2</sub>CH<sub>3</sub>.

4,283,411

### ANTIBACTERIAL COMPOUNDS

Kong Luk, Cranleigh; John P. Clayton, Horsham, and Norman H. Rogers, Rudgwick, all of England, assignors to Beecham Group Limited, England

Division of Ser. No. 931,385, Aug. 7, 1978, Pat. No. 4,237,161, which is a division of Ser. No. 873,394, Jan. 30, 1978, Pat. No. 4,166,863, which is a division of Ser. No. 803,466, Jun. 6, 1977, Pat. No. 4,102,901. This application Jun. 11, 1979, Ser. No. 47,352

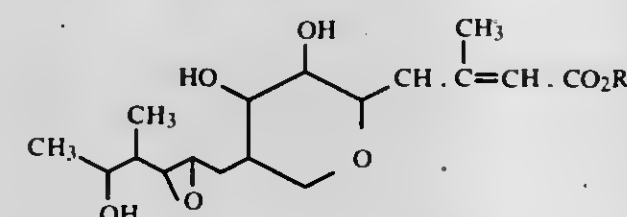
Claims priority, application United Kingdom, Jun. 15, 1976, 24712/76; Sep. 29, 1976, 40472/76; Mar. 1, 1977, 8647/77

Int. Cl.<sup>3</sup> A61K 31/35

U.S. Cl. 424—283

18 Claims

10. A method of treating bacterial infections in humans and animals which comprises administering to a human or animal in need of said treatment an antibacterially effective amount of a compound of the formula (II):



wherein R is cycloalkyl of 3 to 7 carbon atoms unsubstituted or substituted by alkyl of 1 to 6 carbon atoms; or aryl unsubstituted or substituted by up to 5 substituents selected from the group consisting of halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, haloalkyl of 1 to 6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms in the alkoxy moiety and alkoxycarbonylalkyl of 1 to 6 carbon atoms, in the alkoxy moiety and 1 to 6 carbon atoms in the alkyl moiety.

4,283,412

### ANTIBACTERIAL COMPOUNDS

Kong Luk, Cranleigh; John P. Clayton, Horsham, and Norman H. Rogers, Rudgwick, all of England, assignors to Beecham Group Limited, England

Division of Ser. No. 931,385, Aug. 7, 1978, Pat. No. 4,237,161, which is a division of Ser. No. 873,394, Jan. 30, 1978, Pat. No. 4,166,863, which is a division of Ser. No. 803,466, Jun. 6, 1977, Pat. No. 4,102,901. This application Jun. 11, 1979, Ser. No. 47,160

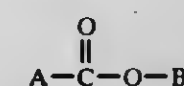
Claims priority, application United Kingdom, Jun. 15, 1976, 24712/76; Sep. 29, 1976, 40472/76; Mar. 1, 1977, 8647/77

Int. Cl.<sup>3</sup> A61K 31/35

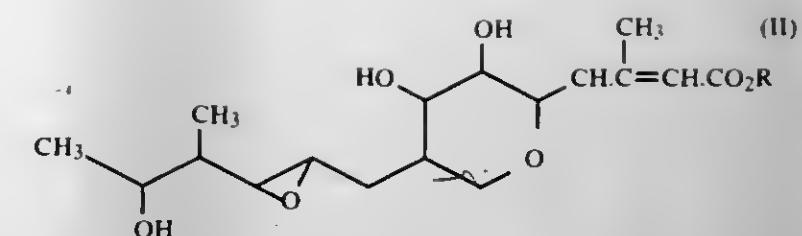
U.S. Cl. 424—283

10 Claims

6. A method of treating bacterial infections in humans and animals which comprises administering to a human or animal in need of said treatment an antibacterially effective amount of a compound of the formula (II).



wherein: A is the group



wherein R is alkyl of 1 to 20 carbon atoms, alkenyl of 2 to 8 carbon atoms or alkynyl of 2 to 8 carbon atoms substituted by cycloalkyl of 3 to 7 carbon atoms unsubstituted or substituted by alkyl of 1 to 6 carbon atoms or aryl unsubstituted or substituted by up to 5 substituents selected from the group consisting of halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxy, amino, carboxy, alkoxycarbonyl of 1 to 6 carbon atoms, in the alkoxy moiety and alkoxycarbonylalkyl of 1 to 6 carbon atoms in the alkoxy moiety and 1 to 6 carbon atoms in the alkyl moiety.

4,283,413

### METHOD FOR INHIBITING AGGREGATION OF HUMAN THROMBOCYTES

Tibor Szabo; Laszlo Institoris; Gabor Kovacs; Istvan Stadler, and Bela Koszegi, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT., Budapest, Hungary

Continuation of Ser. No. 929,223, Jul. 31, 1978, abandoned. This application Dec. 12, 1979, Ser. No. 102,649

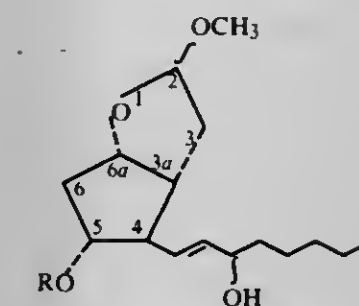
Claims priority, application Hungary, Aug. 3, 1977, Ci 1762

Int. Cl.<sup>3</sup> A61K 31/34

U.S. Cl. 424—285

2 Claims

1. A method for inhibiting an aggregation of human thrombocytes in human plasma comprising administering a therapeutically effective amount of a compound of the general formula I:



wherein R is hydrogen, alkanoyl, or aralkanoyl and represents  $\alpha$  or  $\beta$  steric position or a mixture of  $\alpha$  and  $\beta$  position with the provision that if R stands for p-phenyl-benzoyl then methoxy in the position 2 may stand only in  $\alpha$  or only in  $\beta$  steric position, in a pharmaceutically acceptable diluent.

4,283,414

### PESTICIDAL FLUORINATED ESTERS OF THE PYRETHRIN OR PYRETHROID TYPE

Donald W. G. Harney, Doncaster; Peter G. Lehman, Tullamarine, and Joseph C. Ruodle, Nunawading, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Filed Jun. 8, 1979, Ser. No. 46,757

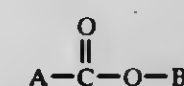
Claims priority, application Australia, Jun. 21, 1978, PD4813

Int. Cl.<sup>3</sup> A01N 53/00; C07C 69/743, 69/747

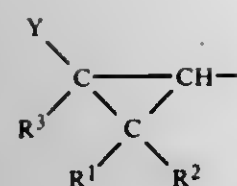
U.S. Cl. 424—304

12 Claims

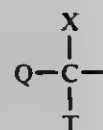
1. An ester of the formula



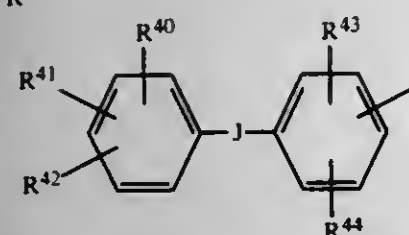
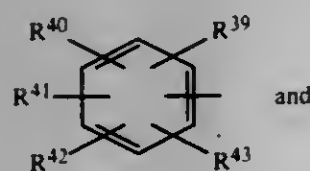




wherein: Y is the group  $R^{15}R^{16}C=CR^{14}$  in which  $R^{14}$  is chosen from hydrogen and  $C_1$  to  $C_6$  alkyl,  $R^{15}$  is chosen from hydrogen, halogen and  $C_1$  to  $C_6$  alkyl optionally substituted with halogen and  $R^{16}$  is chosen from hydrogen, halogen,  $C_1$  to  $C_6$  alkyl optionally substituted with halogen and  $C_1$  to  $C_6$ -(alkoxy)carbonyl,  $R^1$  and  $R^2$  are independently chosen from  $C_1$  to  $C_6$  alkyl and  $R^3$  is hydrogen; and B is the group



wherein: Q is chosen from



$R^{39}$  is chosen from halogen and the group  $R^{50}R^{51}C=C(R^{49})O-$  in which  $R^{49}$  is chosen from hydrogen and  $C_1$  to  $C_6$  alkyl and  $R^{50}$  and  $R^{51}$  are independently chosen from hydrogen, halogen and  $C_1$  to  $C_6$  alkyl optionally substituted with halogen,  $R^{40}$ ,  $R^{41}$ ,  $R^{42}$ ,  $R^{43}$  and  $R^{44}$  are independently chosen from hydrogen,  $C_1$  to  $C_6$  alkyl, halogen and  $C_2$  to  $C_6$  alkenyl and J is oxygen; T is chosen from hydrogen, halogen, cyano,  $C_1$  to  $C_6$  alkyl optionally substituted with halogen,  $C_2$  to  $C_6$  alkenyl and  $C_2$  to  $C_6$  alkynyl; and X is fluorine.

6. An insecticidal or acaricidal composition comprising as active ingredient an insecticidally or acaricidally effective amount of a compound according to claim 1 and an inert carrier therefor.

4,283,415

#### OIL-IN-WATER INSECTICIDAL AND ACARICIDAL EMULSION

Hiroshi Fuyama, Ikeda, and Kozo Tsuji, Takatsuki, both of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Jun. 20, 1979, Ser. No. 50,286

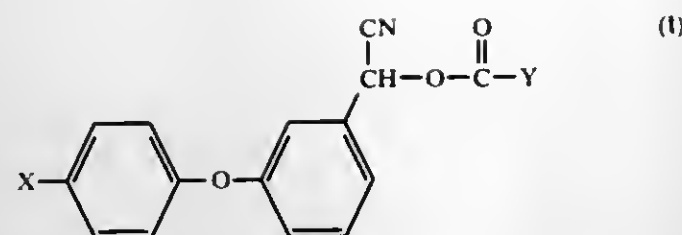
Claims priority, application Japan, Jul. 7, 1978, 53-83200

Int. Cl.<sup>3</sup> A01N 37/34

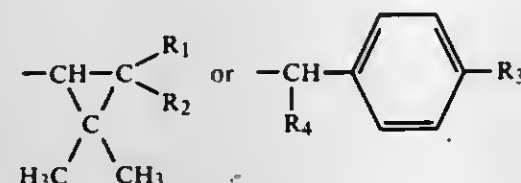
U.S. Cl. 424-304

12 Claims

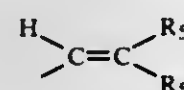
1. An oil-in-water insecticidal and acaricidal emulsion comprising as a hydrophobic insecticidally and acaricidally active liquid ingredient 1 to 50% by weight of at least one ester of the formula (I):



where X is a hydrogen atom, a chlorine atom, a bromine atom or a fluorine atom; and Y is a group of the formula:



where  $R_1$  is a methyl group or a group of the formula:



where  $R_5$  is a chlorine atom, a bromine atom, a fluorine atom or a methyl group;  $R_2$  is a hydrogen atom or a methyl group;  $R_3$  is a chlorine atom, a bromine atom, a fluorine atom or a tert-butyl group; and  $R_4$  is an isopropyl group or a cyclopropyl group, 2 to 10% by weight of polyvinyl alcohol or gum arabic and 0.1 to 20% by weight of a thickener with the balance being water.

4,283,416

#### FUNGICIDAL, MITICIDAL AND OVICIDAL ALKOXYCARBONYLALKYL-SUBSTITUTED AND CARBAMYLALKYL-SUBSTITUTED N-HALOALKYLTHIOSULFONAMIDES

David C. K. Chan, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

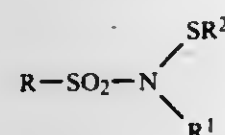
Division of Ser. No. 921,385, Jul. 3, 1978, Pat. No. 4,230,875, which is a division of Ser. No. 734,858, Oct. 22, 1976, Pat. No. 4,112,237. This application Feb. 19, 1980, Ser. No. 122,108

Int. Cl.<sup>3</sup> C07C 143/78, 37/18; A01N 41/06

U.S. Cl. 424-305

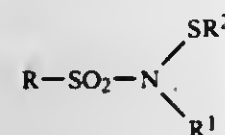
4 Claims

1. A compound of the formula



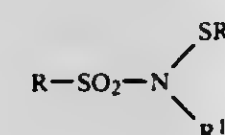
wherein R is phenyl substituted with up to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, trifluoromethyl, trichloromethyl, tribromomethyl or alkyl of 1 to 4 carbon atoms;  $R^1$  is carbamylalkyl of 1 to 6 carbon atoms; N-alkylcarbamylalkyl of 2 to 6 carbon atoms; or N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms; and  $R^2$  is alkyl of 1 to 2 carbon atoms and of 1 to 5 fluoro, chloro, bromo or iodo atoms.

2. A method for killing mite eggs which comprises applying thereto an ovicidally effective amount of a compound of the formula



wherein R is alkyl of 1 to 6 carbon atoms; cycloalkyl of 5 to 8 carbon atoms substituted with up to 2 alkyl of 1 to 4 carbon atoms; phenyl substituted with up to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, trifluoromethyl, trichloromethyl, tribromomethyl or alkyl of 1 to 4 carbon atoms; alkoxyalkyl of 2 to 6 carbon atoms; carbamylalkyl of 1 to 6 carbon atoms; N-alkylcarbamylalkyl of 2 to 6 carbon atoms; or N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms;  $R^1$  is alkyl of 1 to 6 carbon atoms; cycloalkyl of 5 to 8 carbon atoms substituted with up to 2 alkyl of 1 to 4 carbon atoms; phenyl substituted with up to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, trifluoromethyl, trichloromethyl, tribromomethyl or alkyl of 1 to 4 carbon atoms; alkoxyalkyl of 2 to 6 carbon atoms; carbamylalkyl of 1 to 6 carbon atoms; N-alkylcarbamylalkyl of 2 to 6 carbon atoms; N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms; and  $R^2$  is tetrachloroethyl, with the proviso that one R or  $R^1$  group is alkoxyalkyl, carbamylalkyl, N-alkylcarbamylalkyl or N,N-dialkylcarbamylalkyl.

3. A method for the control of fungi which comprises applying thereto a fungicidally effective amount of a compound of the formula



wherein R is alkyl of 1 to 6 carbon atoms; cycloalkyl of 5 to 8 carbon atoms substituted with up to 2 alkyl of 1 to 4 carbon atoms; phenyl substituted with up to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, trifluoromethyl, trichloromethyl, tribromomethyl, or alkyl of 1 to 4 carbon atoms; alkoxyalkyl of 2 to 6 carbon atoms; carbamylalkyl of 1 to 6 carbon atoms; N-alkylcarbamylalkyl of 2 to 6 carbon atoms; or N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms;  $R^1$  is alkyl of 1 to 6 carbon atoms; cycloalkyl of 5 to 8 carbon atoms substituted with up to 2 alkyl of 1 to 4 carbon atoms; phenyl substituted with up to 2 of the same or different substituents selected from fluoro, chloro, bromo, iodo, trifluoromethyl, trichloromethyl, tribromomethyl, or alkyl of 1 to 4 carbon atoms; alkoxyalkyl of 2 to 6 carbon atoms; carbamylalkyl of 1 to 6 carbon atoms; N-alkylcarbamylalkyl of 2 to 6 carbon atoms; or N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms; and  $R^2$  is alkyl of 1 to 2 carbon atoms and of 1 to 5 fluoro, chloro, bromo or iodo atoms, with the proviso that one R or  $R^1$  group is alkoxyalkyl, carbamylalkyl of 1 to 6 carbon atoms, N-alkylcarbamylalkyl of 2 to 6 carbon atoms or N,N-dialkylcarbamylalkyl of 3 to 6 carbon atoms.

4,283,417

#### BRONCHODILATION WITH

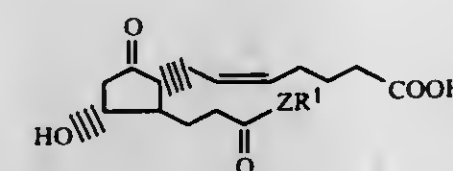
13,14-DIHYDRO-15-AKLENYL PROSTAGLANDINS  
James F. Egger, Stonington, and Hans-Jürgen E. Hess, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.  
Division of Ser. No. 695,420, Jun. 14, 1976, abandoned. This application Oct. 18, 1979, Ser. No. 85,906

Int. Cl.<sup>3</sup> A61K 31/215, 31/19

U.S. Cl. 424-305

5 Claims

1. A method of selectively inducing bronchodilation in a mammal in need of such therapy which comprises administering to said mammal a bronchodilating amount of a compound of the formula

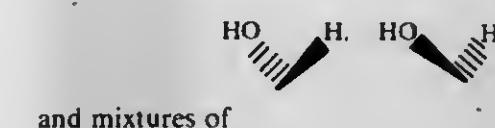


wherein

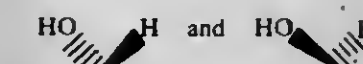
R is hydrogen or biphenyl;

$R^1$  is a member selected from the group consisting of hydrogen and alkyl having from one to eleven carbon atoms;

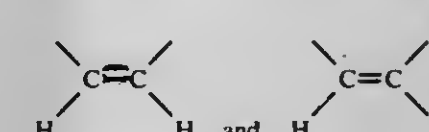
Q is a member selected from the group consisting of oxygen,



and mixtures of



and Z is a member selected from the group consisting of



4,283,418

#### GUANIDINOBENZOIC ACID DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Seturo Fujii, Toyonaka; Tsuyoshi Watanabe, Kadoma; Masashi Shiota, Nishio; Itsuo Okumoto, Ashiya, and Naohiro Kayama, Takatsuki, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Feb. 22, 1980, Ser. No. 123,609

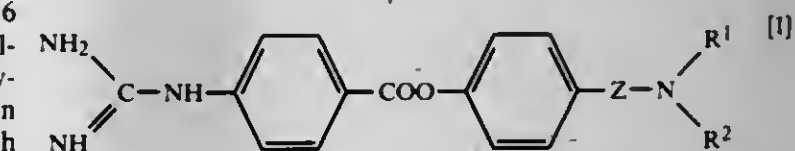
Claims priority, application Japan, Mar. 1, 1979, 54-22571; Mar. 1, 1979, 54-22572

Int. Cl.<sup>3</sup> A61K 31/245; C07C 101/56

U.S. Cl. 424-310

10 Claims

1. Guanidinobenzoic acid derivatives represented by the formula [I]



wherein Z represents a  $SO_2$  group or  $Z'-CO$  group wherein  $Z'$  represents a single bond or a methylene, ethylene or vinylene group, and  $R^1$  and  $R^2$ , which may be the same or different, each represent a hydrogen atom or a lower alkyl group, and the acid addition salts thereof.

4,283,419

#### PREPARATION FOR RAISING THE FERTILITY OF ANIMALS

Mikhail G. Voronkov, ulitsa Lermontova, 315, kv. 32; Ada T. Platonova, ulitsa Lermontova, 313, kv. 31; Nikolai L. Simbirtsev, ulitsa Chaikovskogo, 20, kv. 2; Valery M. Dyakov, ulitsa Lermontova, 263, kv. 23, all of Irkutsk; Andrei P. Dyban, prospekt Engelsa, 28, kv. 130, Leningrad, and Igor G. Kuznetsov, ulitsa Lermontova, 273, kv. 86, Irkutsk, all of U.S.S.R.

Filed Nov. 1, 1978, Ser. No. 956,733

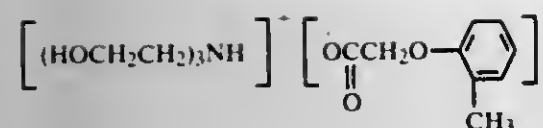
Int. Cl.<sup>3</sup> A61K 31/205

U.S. Cl. 424-316

2 Claims

1. A method for raising fertility in a farm animal comprising administering to the animal a preparation, the active principle of which is tris-(2-ethoxy)-ammonium-orthocresoxyacetate having the formula:





wherein the amount administered is between 2 and 50 mg/kg per dose.

2. The method of claim 1 wherein the amount administered is from 2 to 6 mg/kg per day.

4,283,420

### PHARMACEUTICALLY ACTIVE CYCLOHEXYL COMPOUNDS AND THEIR PREPARATION

Charles Pigerol, Saint-Ouen; Jean-Claude Vernieres, Domene; Pierre Eymard, Fontaine; Jacques Simiand, Noyarey; Madeleine Broll, Saint-Egreve, and Jean-Yves Lacolle, Domene, all of France, assignors to Labaz, Paris, France

Filed Apr. 18, 1979, Ser. No. 31,165

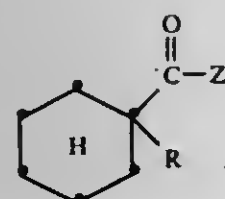
Claims priority, application United Kingdom, Apr. 27, 1978, 16762/78

Int. Cl.<sup>3</sup> A61K 31/19; C07C 62/20, 62/10, 61/08

U.S. Cl. 424—317

3 Claims

1. A method of inducing anticonvulsant, antianoxic or antipsychotic effects in a human needing such treatment, comprising administering to said subject a dosage ranging from 200 to 3000 milligrams per day of a cyclohexane derivative of the general formula:



wherein Z is a hydroxyl group or an —OM group wherein M represents an alkali metal atom or an equivalent of an alkaline earth metal, and R is a linear- or branched-chain alkyl radical having from 1 to 9 carbon atoms and optionally substituted by one or more halogen atoms.

4,283,421

### ANTI-VIRAL TREATMENT

Frank F. Ray, 11449 S. Iroquois Dr., Phoenix, Ariz. 85044

Filed Dec. 19, 1979, Ser. No. 105,129

Int. Cl.<sup>3</sup> A61K 31/19, 31/14

U.S. Cl. 424—317

3 Claims

1. The method for treating viral infections in a human or animal host in need of said treatment which comprises contacting said host with an effective amount of a composition of matter comprising a mixture of a solution of 100 parts by weight of p-aminobenzoic acid in an amount of high proof volatile lower alcohol sufficient to dissolve and form a clear solution of said p-aminobenzoic acid and of a solution of from about 2.5 to about 15 parts by weight of a mixture of C-12 to C-18 n-alkyl dimethyl benzyl ammonium chlorides or bromides and C-12 to C-18 n-alkyl dimethyl ethylbenzyl ammonium chlorides or bromides in the range of relative proportions of 65:35::35:65 in an amount of water sufficient to dissolve said n-alkyl dimethyl ammonium chlorides or bromides and said n-alkyl dimethyl ethylbenzyl ammonium chlorides or bromides to form a clear solution.

4,283,422

### 3-AMINO-4-HOMOISOTWISTANE DERIVATIVES

Toshio Atsumi, Kawanishi; Yoshiaki Takebayashi, Toyonaka, and Hideki Okajima, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and Kao Soap Company, Limited, Tokyo, both of Japan

Filed Feb. 12, 1980, Ser. No. 120,834

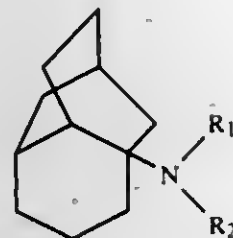
Claims priority, application Japan, Feb. 17, 1979, 54-17406

Int. Cl.<sup>3</sup> C07C 87/40

U.S. Cl. 424—325

9 Claims

1. A compound of the formula,



wherein R<sub>1</sub> is a hydrogen atom, a C<sub>1</sub>–C<sub>4</sub> alkyl group or a C<sub>3</sub>–C<sub>5</sub> alkenyl group, and R<sub>2</sub> is a C<sub>1</sub>–C<sub>4</sub> alkyl group or a C<sub>3</sub>–C<sub>5</sub> alkenyl group, or a non-toxic, pharmaceutically acceptable salt thereof.

4,283,423

### FREE-FLOWING GRANULAR UREA NUTRIENT SUPPLEMENTS

Kenneth R. Watkins, Wheaton, and Michael L. Bolind, Des Plaines, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Aug. 20, 1979, Ser. No. 67,976

Int. Cl.<sup>3</sup> A23K 1/00, 1/22

U.S. Cl. 426—69

5 Claims

1. A method of making a nutrient composition containing urea in granular, substantially free-flowing form consisting essentially of the steps of:

- dry blending a mixture of particles passing 100 U.S. Standard mesh comprising at least about 10% by weight of urea with at least about 10% by weight of a calcium sulphate selected from the group consisting of calcium sulphate hemihydrate and calcium sulphate anhydrite;
- compacting the dry blended mixture into a sheet at internal temperatures of 160°–225° F.; and
- crushing the sheet to desired granular size.

4,283,424

### FROZEN PIZZA CRUST AND PIZZA SUITABLE FOR MICROWAVE COOKING

David P. Bone, Palatine, and Paula M. Manoski, Schaumburg, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Aug. 6, 1979, Ser. No. 63,945

Int. Cl.<sup>3</sup> A21D 13/00

U.S. Cl. 426—94

5 Claims

1. A frozen pizza product comprising, in combination, a crust portion and a filling portion received atop said crust portion, said filling portion comprising a pizza sauce material and said crust comprising first and second crust elements, said first crust element being comprised of a baked, cracker type dough material having a moisture content of about 5% or less, said second crust element being a baked bread dough type crust having a moisture content of from about 20% to 40% moisture, said second crust immediately overlying said first crust in intimate contact therewith and supporting said filling portion, said cracker crust being adapted to absorb vapor phase moisture created during microwave cooking of said second crust portion and said filling, said absorption of moisture by said cracker crust thereby preventing undesirable increase in the moisture content of said second crust and in

turn preventing said pizza as a whole from developing an unpalatable taste due to excess moisture content in the crust.

4,283,425

### PROCESS FOR PREPARING LOW FAT CONTENT POTATO CHIPS AND PRODUCT THEREOF

Mary W. Yuan, Tarrytown, and Sharon R. Birney, Yorktown Heights, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed May 19, 1980, Ser. No. 151,212

Int. Cl.<sup>3</sup> A23L 1/216

U.S. Cl. 426—102

6 Claims

1. A process of preparing a potato product having a low fat content which comprises:

- coating raw potato slices with globular protein,
- applying a layer of edible oil on top of the protein coating, and then
- microwave heating the coated potato slices for a period of time sufficient to produce a product having substantially the same flavor, color and crispness as deep fat fried potato chips and having an added fat content of up to about 10%.

4,283,426

### CELLULOSE HYDRATE TUBING WITH AGING-RESISTANT BARRIER LAYER AND PROCESSES FOR THE MANUFACTURE THEREOF

Harald Schenk, Hermann Winter, and Walter Spietschka, all of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

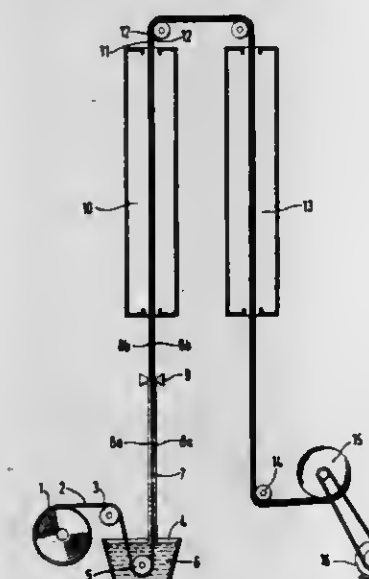
Filed Jul. 25, 1979, Ser. No. 60,366

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2832926

Int. Cl.<sup>3</sup> F16L 11/00; B65D 81/34; B05D 3/12; A23G 1/00

U.S. Cl. 426—105

23 Claims



1. A packaging material comprising a base layer of cellulose hydrate having on one surface a film coating which is impervious to water vapor, water and oxygen and which comprises a vinylidene chloride copolymer containing from about 90 to 92 percent by weight of vinylidene chloride, from about 5.5 to 7 percent by weight of acrylonitrile, from about 1.5 to 3.5 percent by weight of methyl methacrylate and from about 0.5 to 1.5 percent by weight of itaconic acid, said copolymer having a relative viscosity of about 1.04 measured at 23° C. in a 0.1 percent strength by weight solution in a mixture of tetrahydrofuran and toluene in the ratio of 70:30, and a relative viscosity of 2.8 measured at 23° C. in a 3 percent by weight solution in a mixture of tetrahydrofuran and toluene in the ratio of 70:30, and said film coating having a thickness corresponding to a weight per unit area in the range between about 3 and 10 g/m<sup>2</sup>.

12. A sausage product comprising an artificial sausage casing and a meat-containing filling contained therein, wherein said

sausage casing comprises said packaging material as defined by claim 1.

13. A process for the manufacture of packaging material, which comprises the steps of drawing a tubing of cellulose hydrate from a stock roll, applying a liquid lacquer solution to one side of the moving tubing, said solution containing a copolymer comprising from about 90 to 92 percent by weight of vinylidene chloride, from about 5.5 to 7 percent by weight of acrylonitrile, from about 1.5 to 3.5 percent by weight of methyl methacrylate and from about 0.5 to 1.5 percent by weight of itaconic acid, said copolymer having a relative viscosity of about 1.04, measured at 23° C. in a 0.1 percent strength by weight solution in a mixture of tetrahydrofuran and toluene in the ratio of 70:30, and a relative viscosity of about 2.8, measured at 23° C. in a 3 percent strength by weight solution in a mixture of tetrahydrofuran and toluene in the ratio of 70:30, levelling the lacquer to a predetermined thickness and drying it to give a film coating which comprises said copolymer having a thickness corresponding to a weight per unit area in the range between about 3 and 10 g/m<sup>2</sup>.

4,283,427

### MICROWAVE HEATING PACKAGE, METHOD AND SUSCEPTOR COMPOSITION

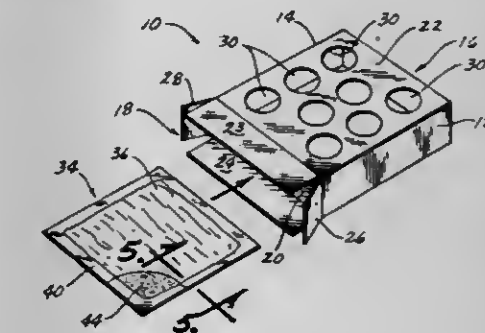
William C. Winters, Bloomington; Hsien-Hsin Chang, Minneapolis; George R. Anderson, Minneapolis; Ross A. Easter, Minneapolis, and Jeffrey J. Sholl, New Brighton, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Dec. 19, 1978, Ser. No. 970,898

Int. Cl.<sup>3</sup> H05B 6/64

U.S. Cl. 426—107

40 Claims



1. A lossy susceptor device for microwave energy, which upon continued heating by exposure to microwave radiation has a chemical susceptor portion which becomes substantially microwave transparent, said susceptor device comprising: a chemical susceptor comprising a combination of a solute and a polar solvent for said solute, the amount of solute present being as a minimum an amount which will depress the vapor pressure of said solvent, at least by 25% when compared to said solvent's boiling point at standard pressure; and a holder for said chemical susceptor said holder including vent means which permits escape of solvent from the holder when said chemical susceptor is exposed to microwave radiation.

4,283,428

### BEVERAGE CONTAINERS COATED WITH A WATER-BASED LINER

William J. Birkmeyer, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 8, 1977, Ser. No. 775,489

Int. Cl.<sup>3</sup> B65D 85/72

U.S. Cl. 426—131

10 Claims

1. A metal container having an internal surface coated with a cured layer of a water-based coating composition comprising an aqueous medium having dissolved or dispersed therein:

- an at least partially base neutralized reaction product of:
  - a polyepoxide having a 1,2-epoxy equivalency of greater than 1.0, and
  - an aromatic amino acid containing at least one amine



group and at least one carboxyl group, in which the amine group and the carboxyl group are both attached to the aromatic ring, wherein the amine groups of said amino acid are preferentially reactive with the epoxy groups of said polyepoxide;  
said reaction product having unreacted carboxyl groups which are neutralized with a base; and  
(b) from about 3 to about 30 percent by weight based on the weight of (a) and (b) of a curing agent.

4,283,429

## LIQUID SEASONING COMPOSITIONS I

Paul H. Todd, Jr., and Howard E. Haley, both of Kalamazoo, Mich., assignors to Kalsec, Inc., Kalamazoo, Mich.  
Filed Feb. 28, 1980, Ser. No. 125,423  
Int. Cl.<sup>3</sup> A23L 1/221

U.S. Cl. 426—250

17 Claims

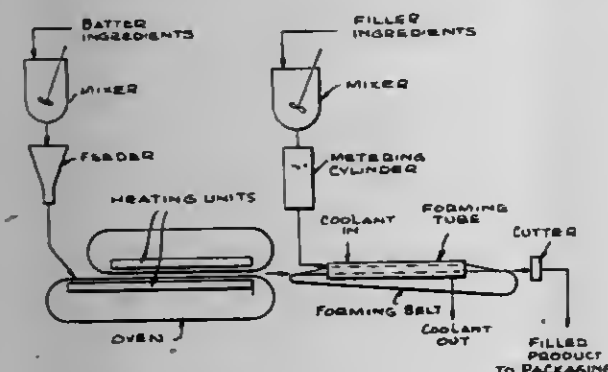
1. A homogeneous liquid condimental composition, useful in flavoring or coloring foods and beverages and which is dispersible in both oil and water, consisting essentially of  
(1) hydroxylated lecithin,  
(2) tartaric acid esters of mono- and diglycerides, and  
(3) one or more condiments selected from edible flavorings and edible colorings, the ratio by weight of (1) plus (2) to (3) being at least 1:4.

4,283,430

## PREPARING CENTERFILLED FOOD PRODUCT

Robert C. Doster, Van Nuys; Beth R. Judson, Northridge, and Kathleen G. Soo Hoo, Granada Hills, all of Calif., assignors to Carnation Company, Los Angeles, Calif.  
Continuation-in-part of Ser. No. 787,697, Apr. 14, 1977, abandoned. This application Sep. 14, 1979, Ser. No. 75,613  
Int. Cl.<sup>3</sup> A21D 13/00; A23G 3/00  
U.S. Cl. 426—284

13 Claims



1. A continuous process for producing a tubular centerfilled food product having an edible baked thermoplastic shell surrounding a core of edible filling material, which comprises preparing a semi-liquid batter having a relatively high content of mono-and/or disaccharides, carrying a layer of said semi-liquid batter between a pair of opposed, vertically spaced apart, heated moving surfaces to form between said surfaces a continuous layer of batter having a controlled, set thickness, continuously passing said batter layer through a heating zone in which the batter layer is heated to a temperature and for a time sufficient to bake the batter layer into a continuous, elongated, pliable, deformable thermoplastic sheet having a temperature of at least about 212° F. and a moisture content of no more than about 5% by weight, continuously passing said elongated, pliable, thermoplastic baked sheet while at a temperature above about 210° F. from said heating zone through a forming tube in which the edges of said sheet are progressively raised and curved until said edges are butted together to form a continuous cylindrical tube having a closed longitudinal butted seam, continuously filling the core of said continuous tube with an

edible viscous filling material at a point after the edges of the sheet are butted together,  
cooling the filled tube until the baked sheet becomes rigid, and  
cutting the cooled filled tube into pieces of desired length.

4,283,431

## METHOD OF MAKING A MULTI-LAYER PIZZA TYPE PRODUCT

Gene Giordano, and Flora Giordano, both of 1226 Taylor Ave., Arnold, Md. 21012  
Filed Jun. 12, 1979, Ser. No. 47,687  
Int. Cl.<sup>3</sup> A21D 13/00

U.S. Cl. 426—296

3 Claims

1. The method of making a double-layered pizza type product comprising the steps of applying at least one layer of ingredients, which includes tomato sauce, to a pre-baked pastry layer, distributing over said layer of ingredients a layer of cheese comprising a blend of mozzarella and provolone cheese, stretching a second layer of rolled out, unbaked pastry over the entire surface of said layer of cheese, partially baking the two pastry layers with the said at least one layer of ingredients and the layer of cheese there-between, allowing the foregoing layers to cool, applying to the upper surface of the second layer of pastry a layer of ingredients, and then baking the entire assembly until done.

4,283,432

## NATURAL BEVERAGE POWDERS FROM DAHLIA EXTRACTS

William A. Mitchell, 175 Jacksonville Rd., Lincoln Park, N.J. 07035; John L. A. Mitchell, 108 Mattek, DeKalb, Ill. 60115, and Cheryl R. Mitchell, 375 Northgate Dr., Apt. #2, Manteca, Calif. 95336  
Continuation-in-part of Ser. No. 973,856, Dec. 12, 1978, abandoned. This application Aug. 13, 1980, Ser. No. 177,934  
Int. Cl.<sup>3</sup> A23B 4/04

U.S. Cl. 426—466

10 Claims

9. The process for making dahlia flavor powders by grinding, pressing and filtering dahlia tubers in order to extract the water soluble solids in 15% to 25% concentration by weight from the insoluble solids, then concentrating said extract to a thick syrup or solid of from 70% to 99% solids at temperatures of 50° C. to 110° C., then heating or roasting of said concentrated extract between 102° C. and 225° C. for periods of 3 minutes to 2 hours then grinding to a powder of 10 to 100 mesh U.S. Standard.

4,283,433

FLAVORING WITH  $\alpha,\beta$ -UNSATURATED ALDEHYDES

Wilhelm Pickenhagen, Chavannes-des-Bois, Switzerland, assignor to Firmenich SA, Geneva, Switzerland.  
Filed Sep. 7, 1979, Ser. No. 73,446  
Claims priority, application Switzerland, Sep. 14, 1978, 9632/78

Int. Cl.<sup>3</sup> A23L 1/226, 1/231

U.S. Cl. 426—534

4 Claims

1. A method for imparting, improving or modifying the organoleptic properties of foodstuffs, animal feeds and beverages which comprises adding thereto from about 0.01 to 2 ppm based on the weight of said foodstuff, animal feed or beverage of at least one of the  $\alpha,\beta$ -unsaturated aldehydes selected from the group consisting of  
2,6-dimethyl-oct-2-en-1-al,  
2,5-dimethyl-oct-2-en-1-al,  
2,5-dimethyl-hept-2-en-1-al and  
2-ethyl-7-methyl-oct-2-en-1-al.

4,283,434

## SULFAMO DIHYDROCHALCONE SWEETENERS

Grant E. DuBols, 4256 Ruthelma Ave., Palo Alto, Calif. 94306, and Rebecca A. G. Stephenson, 636 Maple St., Redwood City, Calif. 94063

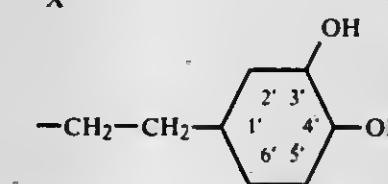
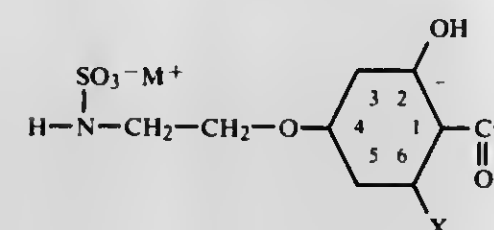
Filed Apr. 14, 1980, Ser. No. 140,064

Int. Cl.<sup>3</sup> A23L 1/236

U.S. Cl. 426—548

13 Claims

1. A sulfamo dihydrochalcone compound represented by the structural formula



wherein R is a lower alkyl of from one to three carbon atoms inclusive, X is hydrogen or hydroxy, and M<sup>+</sup> is a physiologically acceptable cation.

4,283,435

## OXIDIZED WHEY PROTEIN CONCENTRATE ENRICHED SHORTENING-CONTAINING BISCUITS

Robert M. Lauck, New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.  
Continuation of Ser. No. 750,946, Dec. 15, 1976, abandoned.  
This application Dec. 26, 1978, Ser. No. 973,506  
Int. Cl.<sup>3</sup> A21D 2/34

U.S. Cl. 426—551

11 Claims

1. A process for preparing protein-fortified biscuits containing at least 6.68% by weight based on the ingredient weight including shortening, but not including the water added as an ingredient of the biscuits of shortening which comprises adding to a normal biscuit recipe which requires no recipe change except for adjustment of flour or water, a protein fortifier comprising a whey protein concentrate wherein the protein is substantially oxidized in an amount sufficient to increase the protein level of the biscuit over the 7% protein content of a normal biscuit but no more than 20% above the protein content of said biscuit.

4,283,436

## HARD FAT REPLACER AND CHOCOLATE-CONTAINING SAME

Cornelis J. Soeters, Rotterdam; Cornelis N. Paulussen, Maasland, both of Netherlands; Frederick B. Padley, Welwyn Garden City, and David Tresser, London, both of England, assignors to Lever Brothers Company, New York, N.Y.  
Continuation of Ser. No. 417,865, Nov. 21, 1973, abandoned, which is a continuation of Ser. No. 240,265, Mar. 31, 1972, abandoned. This application Dec. 16, 1976, Ser. No. 751,309  
Claims priority, application United Kingdom, Apr. 2, 1977, 8501/77; Apr. 2, 1977, 8502/77; Apr. 2, 1977, 8503/77  
Int. Cl.<sup>3</sup> A23D 5/00; A23G 1/00

U.S. Cl. 426—607

8 Claims

1. A hard-fat replacer consisting essentially of palm mid-fraction and an amount of  
(a) at least 85% pure 1,3-distearyl-2-oleyl glycerol,  
(b) at least 85% pure 1-palmityl-2-oleyl-3-stearyl glycerol, or  
(c) mixtures of said at least 85% pure 1,3-distearyl-2-oleyl glycerol and said at least 85% pure 1-palmityl-2-oleyl-3-stearyl glycerol.

effective to increase the flexibility of palm mid-fraction as a hard-fat replacer.

4,283,437

## METHOD FOR FRYING FOODS AND FRIED FOOD PRODUCTS

Lucy L. Fan, Irving; Alan Wohlman, Richardson, and Bobby J. Longan, Carrollton, all of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed Aug. 2, 1979, Ser. No. 63,090

Int. Cl.<sup>3</sup> A23L 1/216

U.S. Cl. 426—637

8 Claims

1. A method for counteracting the development of light-induced, undesirable organoleptic characteristics in an oil-absorbent, farinaceous food fried in cottonseed oil which comprises frying said food in non-hydrogenated cottonseed oil in which the cyclopropenoid fatty acid content is about 0.1% or less and sufficiently low to resist the development of said characteristics.

4,283,438

## METHOD FOR INDIVIDUALLY ENCAPSULATING MAGNETIC PARTICLES

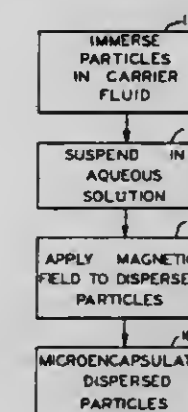
Lawrence L. Lee, Fort Wayne, Ind., assignor to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Dec. 26, 1979, Ser. No. 106,793

Int. Cl.<sup>3</sup> B05D 3/14

U.S. Cl. 427—47

18 Claims



1. A method for encapsulating a preselected average number of magnetized particles which may be rotated within individual capsules for use in a magnetic particle display comprising the steps of:

immersing the particles in a liquid internal phase;  
forming drops of the internal phase containing said particles;  
suspending said drops in a liquid continuous phase;  
applying a varying magnetic field to said suspension for dispersing said particles and forming smaller drops with a reduced number of particles in each drop, the frequency of said field variations being selected according to the desired number of particles in individual drops;  
microencapsulating individual ones of said drops to form capsules containing drops in which said particles are rotatable.



4,283,439

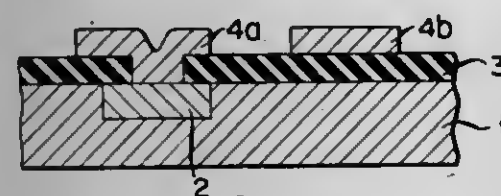
# METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE BY FORMING A TUNGSTEN SILICIDE OR MOLYBDENUM SILICIDE ELECTRODE

Iwao Higashinakagawa; Syohei Sima, both of Kawasaki, and Takahiko Moriya, Yokosuka, all of Japan, assignors to VLSI Technology Research Association, Japan  
Continuation of Ser. No. 971,547, Dec. 20, 1978, abandoned.  
This application Apr. 29, 1980, Ser. No. 144,836

Claims priority, application Japan, Dec. 23, 1977, 52-155179  
Int. Cl.<sup>3</sup> H01L 21/285

U.S. Cl. 427—89

6 Claims U.S. Cl. 427—126.2



1. A method of making a semiconductor device comprising the steps of:

- forming an interconnection electrode comprising a silicide of a refractory metal selected from the group consisting of molybdenum and tungsten on an insulating film formed on a semiconductor substrate;
- forming a silicon nitride film on the interconnection electrode in an atmosphere containing ammonia gas and silane gas;
- forming a silicon oxide film on the silicon nitride film;
- selectively etching the silicon oxide film and the silicon nitride film to form a contact hole; and
- forming a metal electrode layer on the silicon oxide film and the interconnection electrode through said contact hole.

4,283,441

# METHOD OF MAKING AN ION CONDUCTIVE GAS SENSOR BODY WITH A CERMET ELECTRODE THEREON

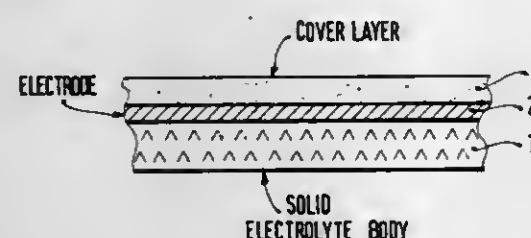
Wolf-Dieter Haecker, Asperg, and Karl-Hermann Friese, Leonberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 29, 1979, Ser. No. 98,708

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852638

Int. Cl.<sup>3</sup> B05D 5/12

11 Claims



1. In a method of making a cermet electrode for gas sensors having an ion conductive solid electrolyte body, in which the electrode essentially comprises a mixture of a finely divided ceramic to form a support lattice and a finely divided electron conductive material, and including the steps of applying the mixture of ceramic-electron conductive material to said body and sintering the body and mixture thereon to form a cermet electrode on the body.

the improvement wherein the finely divided ceramic for the lattice comprises a material having a lesser sintering activity than the sintering activity of the solid electrolyte body.

4,283,442

# METHOD OF PRODUCING A DIMENSIONALLY STABLE BATTERY SEPARATOR

Sueo Machi, Takasaki; Isao Isbigaki, Maebashi; Takanobu Sugo, Gunma; Kazuo Murata; Shiro Tanso, both of Takatsuki, and Keizi Seoo, Takasaki, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo and Yuasa Battery Co. Ltd., Osaka, both of Japan

Filed Feb. 4, 1980, Ser. No. 118,103

Claims priority, application Japan, Feb. 5, 1979, 54/11985

Int. Cl.<sup>3</sup> B05D 3/06

U.S. Cl. 427—171

3 Claims

1. A method of producing a dimensionally stable battery separator characterized by grafting acrylic acid and/or methacrylic acid onto a polyethylene film, treating the resulting membrane with an aqueous alkaline solution, and drying the treated membrane under application of tension.

4,283,443

# METHOD AND APPARATUS FOR COATING WEBS

Edward J. Choinski, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 27, 1977, Ser. No. 762,950

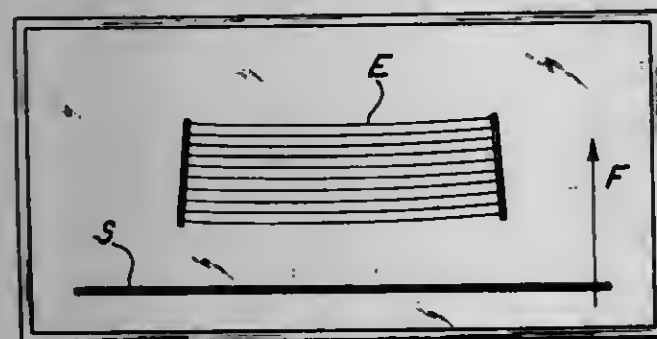
Int. Cl.<sup>3</sup> B05D 1/26; B05C 5/02

U.S. Cl. 427—295

15 Claims

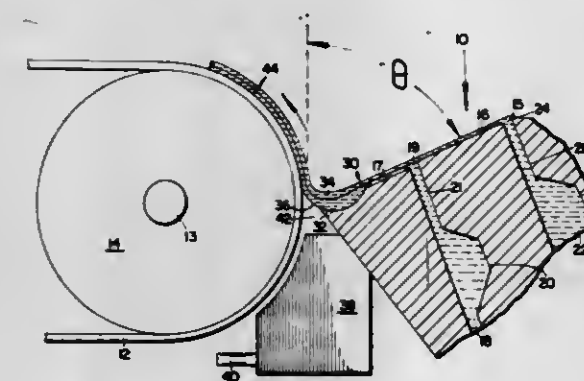
1. The method for coating a web moving in a generally upwardly direction along a predetermined path segment with a liquid composition comprising at least two superposed separate and distinct layers which comprises:

- feeding at least two liquid streams through vertically spaced slots onto downwardly inclined slide surfaces so that the liquid streams flow by gravity down the slide surfaces to form superposed distinct layers on the lowermost slide surface;
- flowing said liquid layers into a pool on said lowermost



1. In a process for the production of a thermal pane of the type having an electrically conductive circuit on a glass pane, the improvement comprising the steps of producing a plurality of electrically conductive inks, each of said inks having a different resistivity, forming on at least one side of the glass pane a continuous circuit having a constant section along its length by layering each of said inks along the length of said circuit at predetermined locations so that the resistivity of said circuit changes along the length thereof.

- surface for a time sufficient to level said layers relative to the horizontal;
  - changing the direction of flow of said liquid layers at the lowermost end of said lowermost inclined surface to a generally upward direction and in generally the same direction as the movement of said web as said layers move to a location adjacent said path segment and spaced therefrom by a gap; and
  - flowing said liquid layers across said gap in a generally upward direction to contact and coat said moving web.
9. Apparatus for coating a web moving over a path segment in a generally upwardly direction with a liquid composition comprising at least two liquid layers wherein layers within said composition are separate and distinct comprising in combination:



- means comprising vertically spaced discharge slots for flowing said liquid compositions down an inclined surface,
- said inclined surface having a generally upwardly directed lip at its lowermost end, said lip forming a pool with upstream portions of said inclined surface of sufficient size to cause said liquid composition to level relative to the horizontal, said lip being adapted to alter the direction of flow of said liquid composition in a generally upward direction and in generally the same direction as the direction of web movement; and
- the end of said lip being positioned away from said web to form a gap across which said liquid composition flows to coat said moving web.

4,283,444

# METHOD OF PROTECTING KERATINOUS MATERIAL FROM ATTACK BY INSECTS THAT FEED ON KERATIN BY TREATMENT WITH 5-PHENYLCARBAMOYLBARBITURIC ACID COMPOUNDS

Bernardo de Sousa, Basel; Rene Muntwyler, Hofstetten, and Werner Schmid, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 6, 1979, Ser. No. 73,048

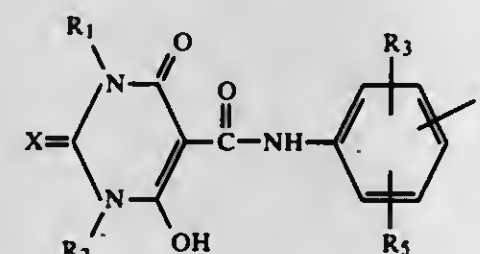
Claims priority, application Switzerland, Sep. 12, 1978, 9545/78

Int. Cl.<sup>3</sup> A01N 43/54

U.S. Cl. 427—421

19 Claims

1. A method of protecting keratinous material from attack by insects that feed on keratin and from feeding damage, which comprises treating said material with compounds of the formula



or with tautomeric forms and salts thereof, wherein X is oxygen or sulfur, each of R<sub>1</sub> and R<sub>2</sub> independently is alkyl of 1 to

4 carbon atoms, alkenyl of 3 or 4 carbon atoms, benzyl, phenyl or phenyl substituted by alkyl or alkoxy, each of 1 to 4 carbon atoms, chlorine, bromine, fluorine, nitro or trihalomethyl, but at most 1 nitro and at most 2 trihalomethyl and alkoxy, R<sub>3</sub> is halogen, nitro or trihalomethyl, R<sub>4</sub> is hydrogen, halogen or trihalomethyl, and R<sub>5</sub> is hydrogen, halogen, methyl or methoxy.

15. A composition for protecting woollen goods, furs and skins against attack by moths and beetles, which contains one or more of the compounds of the formula (1) as defined in claim 1 and which additionally contains a synthetic pyrethroid, an ester or a thioester of an  $\alpha$ -alkyl-substituted phenylacetic acid or a substituted sulfinilide.

4,283,445

# NON-WOVEN ORGANIC MULCH BLANKET WITH POLYVINYLACETATE COPOLYMER BINDER

Klaus Bartholl, 1920 Riverfield, Howick, Quebec, Canada (JQS 1G0)

Filed Jun. 25, 1979, Ser. No. 51,895

Int. Cl.<sup>3</sup> A01N 3/00

U.S. Cl. 428—17

5 Claims



1. A non-woven mulch composite blanket adapted to be laid on a ground area comprising a sheet-like member made up of randomly oriented organic fibers each having a length not exceeding 2" and a binder of a non-toxic biodegradable polyvinylacetate copolymer such as to form a self-supporting sheet.

4,283,446

# FIBER REINFORCED PLASTIC MEMBERS

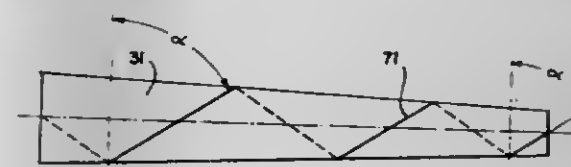
Philippe H. McLain, Columbia, S.C., assignor to Shakespeare Company, Columbia, S.C.

Division of Ser. No. 720,907, Sep. 7, 1976, Pat. No. 4,089,727.  
This application Aug. 12, 1977, Ser. No. 823,977

Int. Cl.<sup>3</sup> D03D 13/00; D02G 3/00

U.S. Cl. 428—36

4 Claims



1. A tubular fiber reinforced plastic member of variable diameter comprising: a resin base; a plurality of substantially contiguous individual reinforcing strands disposed in right and left hand helices without longitudinal reinforcement; the individual reinforcing strands of each hand forming expanded helices having a controlled predetermined lead angle of at least 10° at any point along the length of the member independently of the diameter thereof; the helices of one hand being contained in at least one complete and discrete layer radially disposed of at least one complete and discrete layer comprised of the helices of opposite hand without interweaving of the strands comprising each of the separate layers.



4,283,447

# RADIOPAQUE POLYURETHANE RESIN COMPOSITIONS

Vincent J. Flynn, 130 New Rd., Apt. D10, Parsippany, N.J. 07054

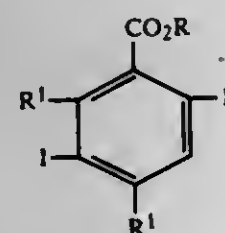
Division of Ser. No. 40,278, May 18, 1979, Pat. No. 4,250,072, which is a continuation-in-part of Ser. No. 862,773, Dec. 21, 1977, abandoned, which is a continuation of Ser. No. 712,189, Aug. 6, 1976, abandoned. This application Dec. 28, 1979, Ser. No. 108,393

Int. Cl.<sup>3</sup> F16L 9/00, 11/00

U.S. Cl. 428—36

6 Claims

1. Medical-surgical tubing comprising (a) a resin which includes from 100 to 33 parts by weight of a thermoplastic polyurethane and from 0 to 67 parts of a polymer of a halogenated vinyl monomer; and (b) a radiopacifier therefor consisting of a diiodobenzoate or a tetraiodobenzoate compound of the formula



wherein R<sup>1</sup> is hydrogen or iodo, and R is alkyl or alkoxy-alkyl and a mixture of said compounds, said radiopacifier (b) comprising 10 to 40 parts by weight per 100 parts by weight of (a) and (b).

4,283,448

# COMPOSITE POLYTETRAFLUOROETHYLENE ARTICLE AND A PROCESS FOR MAKING THE SAME

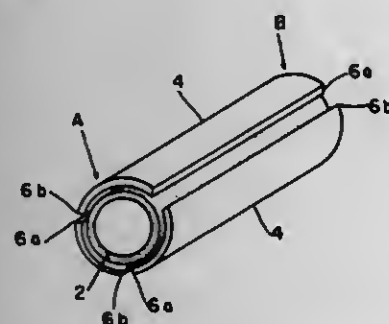
Jeffery B. Bowman, Flagstaff, Ariz., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Feb. 14, 1980, Ser. No. 121,365

Int. Cl.<sup>3</sup> B29C 27/02; B29D 23/00

U.S. Cl. 428—36

4 Claims



1. A process for joining a plurality of shrinkable expanded porous polytetrafluoroethylene segments, each having a microstructure of nodes interconnected by fibrils, such that the microstructure is virtually uninterrupted at the seam joining said segments, comprising the steps of:

- (a) arranging said segments such that their edges are disposed in abutting relationship;
- (b) causing a pressure to be applied perpendicular to said abutting edges;
- (c) causing said segments to be restrained from shrinking in any direction;
- (d) heating said segments while they are so held, to a temperature above the crystalline melt point of polytetrafluoroethylene for a predetermined time; and
- (e) allowing said segments to cool while still being held restrained and under pressure.

4,283,449

# COMPOSITE MATERIAL WITH A CORE AND AN ADHERING COATING UNITED THERETO

Rudolf Damminger, Schulstrasse 11, 6781 Trulben, Fed. Rep. of Germany

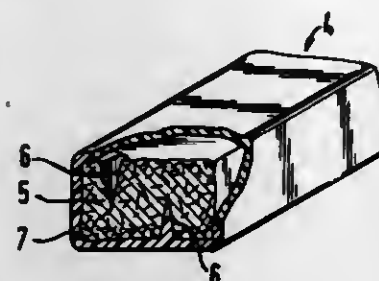
Filed Nov. 30, 1977, Ser. No. 855,833

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1976, 2657463

Int. Cl.<sup>3</sup> B32B 15/08

U.S. Cl. 428—72

2 Claims



1. A composite structural material consisting essentially of a core body formed of closely folded or crushed metal foil or filaments providing a porous structure of low density and strength, and a rigid synthetic resin coating layer of higher density than the core, formed on substantially all the surfaces thereof, whereby the porosity of the core results in good bonding with the coating layer.

4,283,450

# PRODUCT CONTAINING HIGH DENSITY SKINS

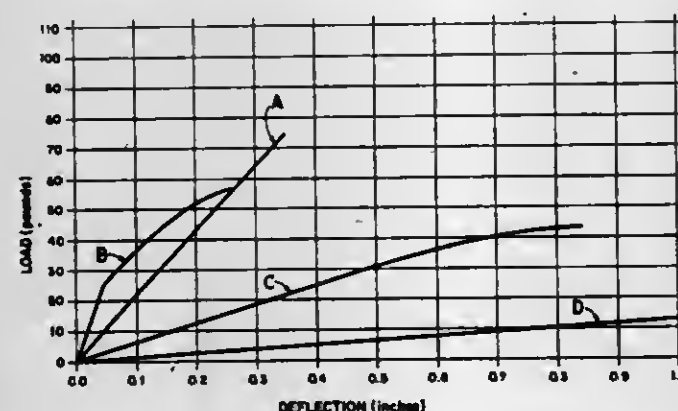
Allan J. Luck, Harvard; John T. Clarke, St. Charles, and Michael R. Hoffman, Elgin, all of Ill., assignors to Masonite Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 739,184, Nov. 5, 1976, Pat. No. 4,175,150. This application Nov. 19, 1978, Ser. No. 95,628. The portion of the term of this patent subsequent to Nov. 20, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> B32B 5/14, 23/04

U.S. Cl. 428—171

35 Claims



23. A fiberboard or particle board product comprising a base layer comprising cellulosic fibers and a binder, said base layer having a density in the range of 10–65 pounds/ft.<sup>3</sup>; and an integral skin disposed on at least one face of said base layer, said skin having a density in the range of 40–55 pounds/ft.<sup>3</sup> and formed by including urea within the surface fibers of said fiberboard, in an amount of 5–20% based on the dry weight of fibers containing urea, consolidating said fiberboard to provide a base layer having a density in the range of 10–35 pounds/ft.<sup>3</sup>, and thereafter heating said contacted surface fibers, under pressure, at a temperature of at least 525° F., to form said skin during hot-pressing on the surface of said mat containing urea.

4,283,451

# LIGHT-TRANSMITTING ROOFING AND CLADDING PANEL

Shoshana Abrahami, Haifa, Israel, assignor to Ziklag Reinforced Plastics, Ltd., Haifa, Israel

Filed Mar. 26, 1979, Ser. No. 23,963

Claims priority, application Israel, Jun. 9, 1978, 54879; Jul. 13, 1978, 55141

Int. Cl.<sup>3</sup> B32B 3/28, 27/20

U.S. Cl. 428—182

9 Claims



1. A light transmitting roofing or cladding panel consisting of a translucent, structural, rigid plastic sheet formed into a corrugated panel having two sets of slopes wherein the slopes of each set are respectively substantially identically oriented, the slopes of only one of said sets being provided with a reflecting and opacifying material embedded within the surface of said panel and the slopes of said other set being made translucent to form alternate light transmitting and light reflecting zones of a fixed ratio and wherein the area of the reflecting zones is equal to or greater than that of the light transmitting zones, whereby said panels are adapted upon proper positioning relative to the sun's apparent passage to allow natural daylight to pass therethrough while at the same time, minimizing penetration of the sun's heat radiation.

4,283,452

# POLYESTER TEXTILE MATERIAL HAVING IMPROVED OPACITY

Francis W. Marco, Pauline, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation-in-part of Ser. No. 72,959, Sep. 6, 1979, abandoned, which is a continuation-in-part of Ser. No. 40,032, May 17, 1979, abandoned. This application Mar. 10, 1980, Ser. No. 128,619

Int. Cl.<sup>3</sup> B32B 3/00

U.S. Cl. 428—206

21 Claims

1. A polyester fiber-containing textile material having improved opacity and handle characteristics, which comprises a polyester fiber-containing substrate; said textile fibers having been covered with titanium dioxide particles having an average particle size of at least about 0.18 micron in an amount of up to about 20 percent based upon the weight of the textile material, the durability of bonding of said particles to said textile fibers in the absence of a binder as the primary bonding means being such that at least about 50 percent of said particles remain bound to the surface of said textile fibers after five standard AATCC washings.

4,283,453

# BIAXIALLY STRETCHED POLYPROPYLENE COMPOSITE FILM AND ELECTRICAL INSULATING FILM MADE THEREFROM

Walter Siefried; Siegfried Janocha, both of Wiesbaden, and Günther Crass, Taunusstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 29, 1979, Ser. No. 98,549

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851557

Int. Cl.<sup>3</sup> B32B 7/02, 27/32; H01G 4/18

U.S. Cl. 428—212

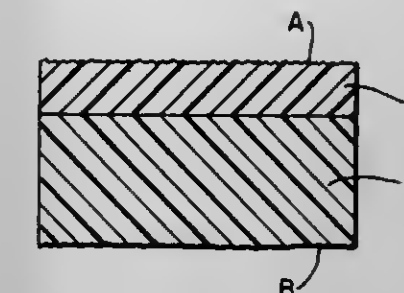
17 Claims

1. A biaxially stretched, composite polypropylene film suitable for use as an electrical insulating film, comprising a first layer comprising a first propylene polymer and having

a maximum roughness height R<sub>2</sub> of its exposed surface of about 0.15 μm, and

a second layer contiguous to said first layer comprising a second propylene polymer having a composition different from said first propylene polymer and having a roughness height R<sub>2</sub> on its exposed surface ranging between about 0.2 μm and 0.4 μm,

said composite film being biaxially stretched and having a



modulus of elasticity of at least about 2000 N/mm<sup>2</sup> in all directions of the plane of the film and a DC dielectric strength of at least about 650 V/μm, said composite film having been produced by the steps consisting essentially of joining said first and second layers together and subjecting the resulting composite film to biaxial stretching, and wherein the differences in said first and second propylene polymers are sufficient to produce said different roughness heights during said biaxial stretching.

4,283,454

# PAPERMAKERS WET FELT WITH RIBBED AND SMOOTH SURFACE TEXTURES

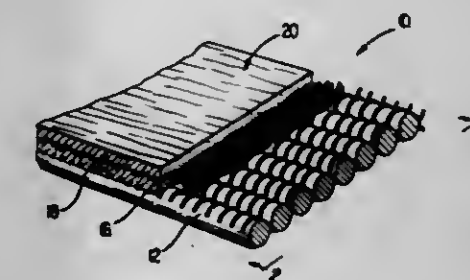
Robert D. Buchanan, Wilson, N.C., assignor to Porritt & Spencer Inc., Wilson, N.C.

Filed Feb. 8, 1980, Ser. No. 119,841

Int. Cl.<sup>3</sup> B32B 5/06

U.S. Cl. 428—233

26 Claims



1. A papermakers felt comprising: a first cloth woven from a first plurality of machine direction and cross machine direction yarns in accordance with a preselected weave pattern, said machine direction yarns being of greater diameter than said cross machine direction yarns, said first cloth defining alternating machine direction abrasion-resisting ribs and machine direction drainage grooves across the width of said first cloth, said ribs being formed by said machine direction yarns, with the frequency of said ribs and the widths of said grooves being determined by said weave pattern; a second cloth woven from a second plurality of machine direction yarns and cross machine direction yarns to define a plurality of drainage interstices, said second cloth being in surface contact with said first cloth; and a web of non-woven fiber in surface contact with said second cloth, select fibers of said web being displaced from said web and extending through said first and second cloths to hold said web and said first and second cloths together.



4,283,455

# PRODUCTION OF COVER FABRICS FOR V BELTS WHICH FUNCTION AS WEAR INDICATORS DUE TO DIFFERENT LAYER CHARACTERISTICS

James N. McGee, Pleasant Garden, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Nov. 19, 1979, Ser. No. 95,675

Int. Cl.<sup>3</sup> B05D 5/06; B32B 25/02, 25/08, 25/10; F16G 5/06  
U.S. Cl. 428—240

19 Claims

1. An industrial cover fabric for power transmission belts or the like, consisting of a strip of bias cut fabric woven from blended fiber yarns, the individual fibers of said yarns being encapsulated in a dried pigmented elastomeric polymer, and said yarns and encapsulated fibers being over coated with a dried elastomeric polymer, the angular orientation between the warp and weft yarns of said woven fabric being increased to an angle greater than 90° and being held in that position by the dried elastomeric coating, said industrial cover fabric having greatly increased wear life by virtue of said individual fiber encapsulation, the pigment in said pigmented elastomeric polymer being adapted to abrade off with said polymer to reveal unpigmented portions of said fibers when said fabric has outlived its usefulness.

5. A method of making a cover fabric for V belts or the like, comprising the steps of

- cutting a fabric into a continuous strip of fabric;
- impregnating the individual fibers in the continuous strip of fabric with an elastomeric polymeric material effective to increase the wearlife of the fabric when used as a cover fabric for V belts or the like;
- applying an elastomeric coating to the strip;
- stretching the strip in its width direction to increase the angular relation of the threads of the fabric relative to its longitudinal axis; and
- drying the thus coated strip.

4,283,456

# PERMEATION RESISTANT COVERING MATERIAL

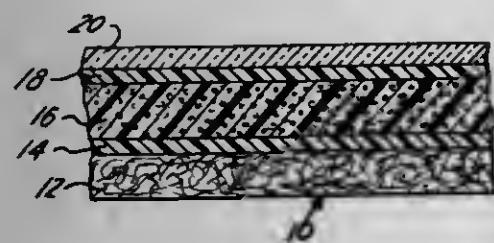
Walter Cressy, Bridgewater, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,206

Int. Cl.<sup>3</sup> B32B 5/18, 17/10, 19/08, 27/30

U.S. Cl. 428—282

7 Claims



1. Sheet-type covering material comprising:

- a moisture permeable backing layer which is dimensionally stable under varying moisture conditions and resistant to degradation from water;
- an intermediate open-cellular foamed, resinous layer overlying the backing layer; and
- a resinous wear layer overlying the intermediate layer; said backing layer being sealed at its surface adjacent the intermediate layer with a discrete continuous vinyl halidevinylidene halide polymer latex seal coat.

4,283,457

# LAMINATE STRUCTURES FOR ACOUSTICAL APPLICATIONS AND METHOD OF MAKING THEM

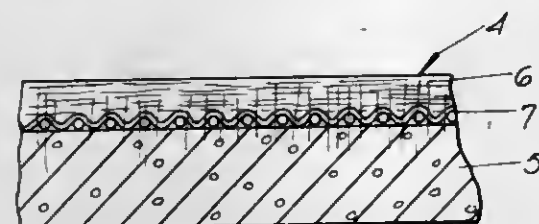
Rodger E. Kolsky, Schenectady, and Raymond Z. Naar, Delmar, both of N.Y., assignors to Huyck Corporation, Wake Forest, N.C.

Filed Nov. 5, 1979, Ser. No. 91,601

Int. Cl.<sup>3</sup> B32B 5/06, 5/20, 5/26; E04B 1/82

U.S. Cl. 428—285

26 Claims



1. A laminate structure for acoustical applications comprising a facing layer and a backing layer, said facing layer comprising a porous non-woven, needle punched mat of inherently non-flammable, fine fibers chosen from the class consisting of glass and mineral fibers, said backing layer comprising a flame retardant layer chosen from the class consisting of a layer of open cell foam, a glass fiber batt and a mineral fiber batt, said facing and backing layers being bonded together.

8. The structure claimed in claim 1 wherein said fine fiber mat of said facing layer is needle punched to a reinforcing layer chosen from the class consisting of a glass fiber scrim and woven and non-woven fabrics of flame retardant fibers, the reinforced facing layer being treated with a low flammability resin binder for integrity and abrasion resistance.

4,283,458

# HEAT-SENSITIVE RECORDING PAPER CONTAINING A NOVEL ELECTRON ACCEPTING COMPOUND

Akira Igarashi, Fujinomiya, and Kozo Sato, Minami-ashigara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

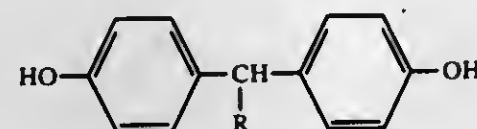
Filed Jul. 17, 1979, Ser. No. 58,399

Claims priority, application Japan, Aug. 18, 1978, 53-100599  
Int. Cl.<sup>3</sup> B32B 9/04, 21/04

U.S. Cl. 428—341

8 Claims

1. A heat-sensitive recording sheet consisting essentially of a support and a recording layer containing an electron donating colorless dye and a compound represented by the following formula:



wherein R represents an alkyl group containing 5 to 8 carbon atoms.

4,283,459

# INSULATING COMPOSITION AND ARTICLES MADE THEREFROM

Edward J. Urban, Kennett Square, Pa., and William P. Vitcuskus, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 9, 1979, Ser. No. 65,095

Int. Cl.<sup>3</sup> B32B 15/00

U.S. Cl. 428—379

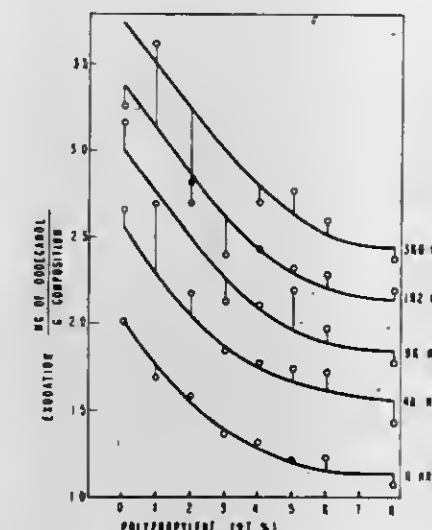
7 Claims

1. A composition of matter consisting essentially of a homogeneous combination of:

- polyethylene;

- monohydric alcohol of 6 to 24 carbon atoms in an amount of 0.1 to 7 weight percent of the polyethylene; and
- polypropylene in an amount effective to mitigate exudation of the alcohol from the polyethylene as measured by Test Method II.

3. An article comprising an electrical conductor and an insulating layer consisting essentially of



- polyethylene;
- monohydric alcohol of 6 to 24 carbon atoms in an amount of 0.1 to 7 weight percent of the polyethylene;
- polypropylene in an amount effective to mitigate exudation of the alcohol from the polyethylene as measured by Test Method II.

4,283,460

# AROMATIC TRIAZOLES AND ALKYLAMINE BORATES FOR INCREASED SURFACE PROTECTION AND IMPROVED ADHESION OF BRASS-COATED STEEL TO RUBBER

Robert M. Shemanski, Sr., North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 567,586, Apr. 14, 1975. This application May 8, 1980, Ser. No. 147,818

Int. Cl.<sup>3</sup> B32B 9/00, 15/06; D02G 3/00; B44D 1/42

U.S. Cl. 428—389

14 Claims

1. A method of improving the adhesion between brass-coated steel tire cord and rubber comprising (A) treating the brass-coated steel tire cord with benzotriazole to form a layer of polymeric complex of benzotriazole and copper over substantially all of the brass surface and (B) vulcanizing a composite of the treated cord and rubber; where at least one portion of the benzotriazole is added to the rubber adjacent to the cord.

3. The vulcanized composite produced according to the method of claim 1.

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# PIEZOELECTRIC POLYMER ANTIFOULING COATING

Bruce J. Wooden, Dickerson, and Seymour Edelman, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 31, 1979, Ser. No. 44,130

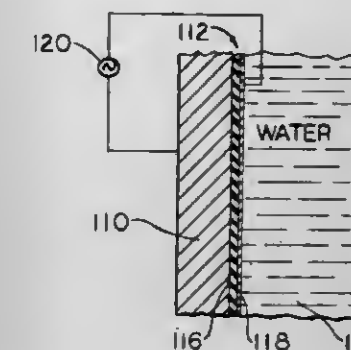
Int. Cl.<sup>3</sup> B32B 27/00

U.S. Cl. 428—422

15 Claims

1. A coating for reducing fouling on marine structures comprising:

- a film containing piezoelectric polymer secured over substantially the entire surface of the marine structure and separating said surface from water which contains animal and vegetable fouling organisms;
- said film having one of its sides in electrical contact with the surface of the marine structure and its other side in electrical contact with the water with which it interfaces;



said alternating signal having a wave form with a quick reversal of direction at its peak thereby causing the film to flick sharply at the film surface for throwing off attaching organisms.

4,283,462

# PHENOLIC LAMINATES WITH FURAN RESIN COATING

Nicolas Meyer, Bully les Mines, and Leon Schuller, Noisy le Roi, both of France, assignors to Societe Chimiques des Charbonnages, Paris, France

Filed Jan. 24, 1980, Ser. No. 114,877

Claims priority, application France, Jan. 25, 1979, 79 01888

Int. Cl.<sup>3</sup> B32B 27/08

U.S. Cl. 428—506

13 Claims

1. A process for producing a reinforced phenolic resin laminate coated with a surface layer on at least one side, said surface layer consisting essentially of a furan resin coating which is directly bonded to the reinforced phenolic resin laminate, comprising depositing said coating of furan resin on a mold, then after at least a beginning of hardening, depositing alternate layers of phenolic resin and reinforcing agent, hardening the laminate, and then withdrawing resultant laminate from the mold; said laminate having no surface irregularities due to pitting or fiber projection.

4,283,463

# MOLDED PRODUCTS OF POLYPROPYLENE

Akinobu Shiga, Kiyoshi Matsuyama, Masahiro Kakugo, Yukio Naito, and Seiichiro Ima, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 13, 1979, Ser. No. 103,133

Claims priority, application Japan, Dec. 13, 1978, 53/155973; Dec. 29, 1978, 53/165134

Int. Cl.<sup>3</sup> B32B 27/32; C08F 110/06

U.S. Cl. 428—512

21 Claims

1. A stretched film, for use in electrical insulation, prepared from a polypropylene having an isotactic pentad fraction of the boiling heptane insoluble portion of at least about 0.955 and a content of the boiling heptane soluble portion of about 2.0 to 9.0% by weight.

12. A laminated paper, for use in electrical insulation, produced by laminating a polypropylene, having an isotactic pentad fraction of the boiling heptane insoluble portion of at least about 0.955 and a content of the boiling heptane solution portion of about 2.0 to 9% by weight, on a fibrous paper.

4,283,464

# PREFABRICATED COMPOSITE METALLIC HEAT-TRANSMITTING PLATE UNIT

Norman Hascoe, 791 Weaver St., Larchmont, N.Y. 10538

Filed May 8, 1979, Ser. No. 37,236

Int. Cl.<sup>3</sup> B21D 39/00; B32B 3/12

U.S. Cl. 428—594

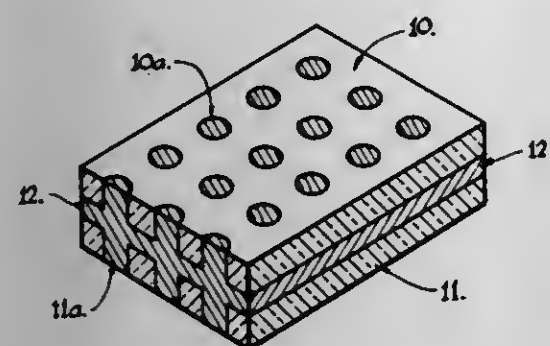
9 Claims

1. A prefabricated composite metallic plate unit for transmit-



ting heat from a heat source to a heat-absorbing medium, having opposed planar surfaces adapted individually to engage the heat source and the heat-absorbing medium, and having a relatively high heat-transfer coefficient, said plate unit comprising:

a pair of high-tensile-strength metallic plate members having



a temperature coefficient of expansion approximately the same as that of said heat source;

a plurality of holes extending through each of said members; and a layer of relatively malleable metallic material interposed between said members and filling said holes and having a heat-transfer coefficient of at least about 0.3 cal./cm<sup>2</sup>/cm/sec./°C.

4,283,465

#### POROUS BODY OF ALUMINUM OR ITS ALLOY AND A MANUFACTURING METHOD THEREOF

Toru Morimoto, Ichikawa; Tsuyoshi Ohsaki; Toshio Ohkawa, both of Narashino, and Kenji Matsuzawa, Yokohama, all of Japan, assignors to Nippon Dia Clevite Co., Ltd., Narashino, Japan

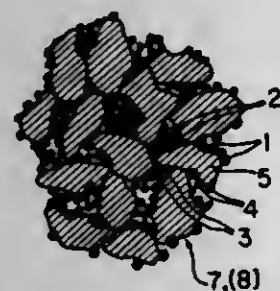
Filed Aug. 23, 1978, Ser. No. 936,151

Claims priority, application Japan, Sep. 7, 1977, 52-106822

Int. Cl.<sup>3</sup> H01F 3/02

U.S. Cl. 428—566

11 Claims



1. A porous body having excellent sound absorbing properties composed of a sintered body of stick-shaped, needle-shaped, oval-shaped or other irregular-shaped particles of a base material of aluminum or aluminum alloy powder and a second material of aluminum alloy powder having a melting point at least 10° C. lower than the melting point of said base material, said porous body having a network of connecting pores communicating with the surface of said body with a pore ratio of 33 to 50% of the total volume of the body.

4,283,466

#### CHEMICAL AND ELECTROCHEMICAL PROCESS

Jean-Yves Machat, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Division of Ser. No. 59,075, Jul. 19, 1979, Pat. No. 4,245,011.

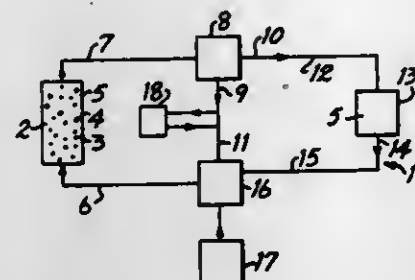
This application May 15, 1980, Ser. No. 150,233

Claims priority, application France, Jul. 27, 1978, 78 22545; Jul. 27, 1978, 78 22546

Int. Cl.<sup>3</sup> H01M 8/04

U.S. Cl. 429—15

3 Claims



1. A process for carrying out chemical and/or electrochemical reactions in at least one reaction chamber traversed by a suspension of particles in a fluid, characterized by:

(a) separating the suspension emerging from the chamber into two fractions, the separation being effected at least in part by centrifugation:

one fraction, called the "concentrated fraction," comprising the greater part or all of the particles, one fraction, called the "fluid fraction," comprising the greater part or all of the fluid;

(b) introducing the "fluid fraction" into at least one reservoir;

(c) causing a flow of the fluid from the reservoir in such a manner that the reaction product or products contained in the "fluid fraction" and introduced into the reservoir with said fraction remain in the reservoir or are entrained by said flow; combining said flow with the "concentrated fraction" in order to form a suspension; and

(d) introducing the suspension thus formed into the reaction chamber.

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#### ELECTRIC STORAGE BATTERY WITH GAS DRIVEN ELECTROLYTE MOVEMENT

Karl-Friedrich Gütlich, Frankfurt; Wolfgang Kappus, Viernheim; Herbert Zwielfardt, Kelkheim, and Rudolf Eckardt, Steinbach, all of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,464

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912527

Int. Cl.<sup>3</sup> H01M 2/38

U.S. Cl. 429—51

6 Claims

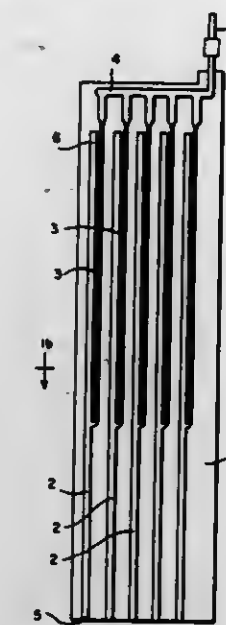
1. An electric storage battery with gas driven electrolyte flow between the electrode plates united into a plate block in accordance with the bubble pump principle, comprising

at least two parallel extending transport pipes located on a base plate of non-conducting material, the transport pipes having gas supply ducts connected thereto,

the base plate being adapted to be inserted between the plate block and the housing wall,

the upper outlet apertures of the transport pipes lying below

the minimum height of the electrolyte level on the side facing the plate block, and



the upper edge of the base plate being above the outlet openings.

4,283,468

#### ELECTROCHEMICAL CELL INSENSITIVE TO PHYSICAL ORIENTATION

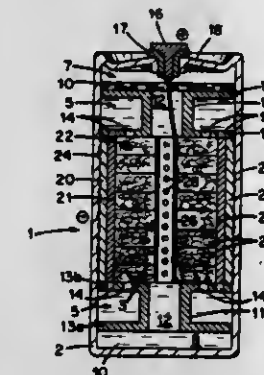
Franz Goebel, Sudbury, and Cyril Morgan, Manchester, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 29, 1980, Ser. No. 145,177

Int. Cl.<sup>3</sup> H01M 2/38

U.S. Cl. 429—81

17 Claims



1. A primary electrochemical cell insensitive to physical orientation over the rated life span of the cell, comprising:

an elongated housing having first and second ends and containing an electrochemical system therewithin, said electrochemical system comprising:

a battery stack fixedly disposed intermediate to the first and second ends of the housing and defining first and second reservoirs with said first and second ends, respectively;

channel means in communication with the first and second reservoirs for permitting bi-directional passage therebetween of electrolyte solution; and

a liquid electrolyte solution supplied to and in contact with the battery stack and present within the first and second reservoirs and the channel means, said electrolyte solution being chemically reactive with the battery stack and being initially present in the cell in an amount related to the rated life span of the cell, said electrolyte solution including a component consumable during discharge of the cell by chemical reaction within the cell resulting in the electrolyte solution undergoing a loss in volume, said first and second reservoirs and the channel means cooperating in the event of a change in the physical orientation of the cell over its rated life span to shift the electrolyte solution within the cell so as

to continue to supply electrolyte solution to the battery stack.

4,283,469

#### INTEGRATED ELECTRODE/SEPARATOR STRUCTURES

Franz Goebel, Sudbury, and Carl R. Schlaikjer, Winchester, both of Mass., assignors to GTE Products Corp., Stamford, Conn. and GTE Laboratories Inc., Waltham, Mass.

Filed Mar. 31, 1980, Ser. No. 135,417

Int. Cl.<sup>3</sup> H01M 6/14

U.S. Cl. 429—196

5 Claims



1. An electrochemical cell comprising:

an anode electrode;

an electrode/separator structure adjacent to the anode electrode; and

an electrolytic solution in contact with the anode electrode and the electrode/separator structure;

said electrode/separator structure comprising

a metallic substrate having a plurality of interstice-defining members,

an aggregate of discrete, semi-rigid, porous carbon conglomerates physically pressed into and supported by the interstice-defining members of the metallic substrate and defining a network of channels through the resultant structure by which said structure may be permeated by the electrolytic solution, said carbon conglomerates including carbon black and a binder, and

an adherent porous layer of an electrically non-conductive material deposited on and physically integrated with the aggregation of carbon conglomerates of the electrode/separator structure, the material of said layer being chemically stable with the anode electrode, the metallic substrate, the carbon conglomerates and the electrolytic solution and being permeable by the electrolytic solution, said adherent porous layer consisting essentially of a material selected from the group consisting of aluminum oxide, magnesium silicate, zirconium oxide, talc, a molecular sieve, and combinations thereof.

4,283,470

#### ANODE STRUCTURE FOR AN ELECTROCHEMICAL CELL

Roger K. Freeman, Plymouth, and Franz Goebel, Sudbury, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 13, 1980, Ser. No. 159,269

Int. Cl.<sup>3</sup> H01M 4/02

U.S. Cl. 429—209

18 Claims

1. A contact member comprising:

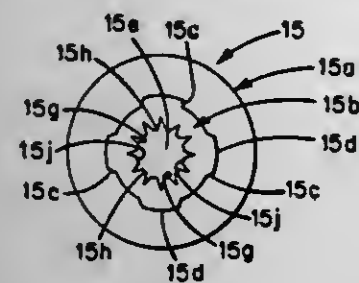
a resilient metal member of a predetermined thickness and configuration and having a plurality of spikes depending therefrom at its periphery and further having a major opening therein and a plurality of other openings at the perimeter of the major opening defining a plurality of



resilient, deflective portions intermediate to said other openings and each having an exposed edge.

11. An anode structure for an electrochemical cell, comprising:

- a metal disc of a predetermined thickness and having an opening therein; and
- a resilient, metal contact member of a predetermined thickness and configuration and having a plurality of spikes



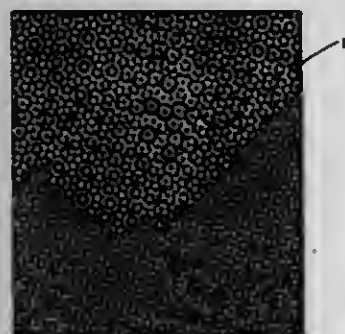
depending therefrom at its periphery and inserted into the metal disc at points spaced from the opening in the metal disc for securing the contact member to the metal disc, said metal contact member further having a major opening therein adjacent to the opening in the metal disc and a plurality of other openings at the perimeter of the major opening defining a plurality of resilient, deflective portions intermediate to said other openings.

4,283,471

PRINTING SCREEN AND METHOD OF MAKING SAME  
Frank A. Sportelli, 7 Redwood Ct., Glen Cove, N.Y. 11542

Filed Nov. 2, 1979, Ser. No. 90,763  
Int. Cl.<sup>3</sup> G03F 5/00; G03C 5/00

U.S. Cl. 430—6



1. A method of making a photoprinting image element, said method comprising:

- (a) providing a negative screen having two sets of parallel equispaced lines located thereon, each said set being perpendicular to each other,
- (b) providing a photographic film to be exposed,
- (c) exposing the negative screen onto the photographic film in at least three separate exposures,
- (d) said negative screen being disposed at a predetermined angle in each said separate exposure,
- (e) each said predetermined angle being at a different angle with respect to each other, and
- (f) developing the exposed photographic film to produce a photoprinting image element having a regular screen pattern as shown in FIG. 2.

4,283,472

SILVER HALIDE ELEMENTS CONTAINING BLOCKED PYRAZOLONE MAGENTA DYE-FORMING COUPLERS  
Thomas E. Gompf, Howell A. Hammond, and Jared B. Mooberry, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

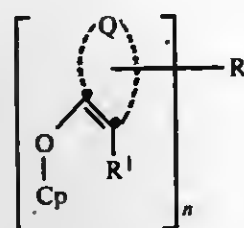
Filed Feb. 26, 1980, Ser. No. 124,872  
Int. Cl.<sup>3</sup> G03C 7/00

U.S. Cl. 430—17

18 Claims

12. A processed photographic element containing a magenta dye image comprised of a magenta dye obtained by coupling of

oxidized silver halide color developing agent and a nondiffusible magenta dye-forming coupler having the structure:



wherein:

- Q represents the atoms to complete a 5-pyrazolone magenta dye-forming coupler moiety;
- n is 1 or 2;
- R is a ballast group when n is 1 or a divalent organic group when n is 2;
- R<sup>1</sup> is hydrogen or a coupling-off group; and
- Cp is a coupler moiety which upon reaction by means of oxidized color developing agent yields a colorless or alkali soluble reaction product and is attached at its coupling position to the enol oxygen of the pyrazolone coupler moiety;

there remaining in areas where magenta dye has not been formed, the blocked magenta dye forming coupler.

4,283,473

ELECTROPHOTOGRAPHIC SHEET MATERIAL

Colin H. Lewinton, Montreal, Canada, and Joseph Savit, Glen-coe, Ill., assignors to Domtar Inc., Montreal, Canada

Filed Jan. 29, 1979, Ser. No. 7,493  
Int. Cl.<sup>3</sup> G03G 5/08, 5/10

U.S. Cl. 430—64

1 Claim

1. An electrophotographic sheet material comprising: a cellulosic base material, a continuous barrier film consisting of cellulose nitrate on said base material, and a photoconductive layer comprising zinc oxide on the surface of said film remote from said base material, wherein said cellulosic base material consists of a base paper, said continuous barrier film of cellulose nitrate constitutes between 1/2 and 6 lb. per ream (3,300 ft<sup>2</sup>) of said sheet material.

4,283,474

OLEOPHILIC RESIN ENCAPSULATES PHOTOCONDUCTIVE ZINC OXIDE PARTICLES DISPERSED IN VINYL CHLORIDE AND VINYL ACETATE RESIN BINDER FOR

ELECTROPHOTOSENSITIVE RECORDING LAYER

Tadashi Kaneko, Takeo Shimura, Masanori Matsumoto, Hiroyuki Moriguchi, and Hiroyuki Nomori, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 19, 1980, Ser. No. 188,612

Claims priority, application Japan, Sep. 25, 1979, 54-122092  
Int. Cl.<sup>3</sup> G03 5/087

U.S. Cl. 430—69

7 Claims

1. A photosensitive element for electrophotography which comprises on a conductive support a photoconductive layer comprising photoconductive zinc oxide particles the surface of which particles has been encapsulated, together with a sensitizer for said zinc oxide, with an oleophilic resin material, said encapsulated zinc oxide particles having been dispersed in a binder resin containing vinyl chloride and vinyl acetate as components thereof.

4,283,475

PENTAMETHINE THIOPYRYLIUM SALTS, PROCESS FOR PRODUCTION THEREOF, AND PHOTOCONDUCTIVE COMPOSITIONS CONTAINING SAID SALTS

Koichi Kawamura, Harumi Katsuyama, and Hideo Sato, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 20, 1980, Ser. No. 180,058

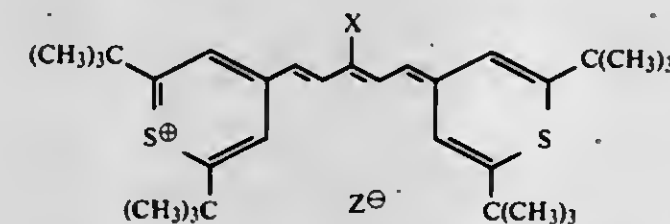
Claims priority, application Japan, Aug. 21, 1979, 54-105548; Nov. 5, 1979, 54-142034

Int. Cl.<sup>3</sup> G03G 5/09

U.S. Cl. 430—70

29 Claims

1. A photoconductive composition comprising a photoconductive material and a 2,6-di-tert-butyl-4-[5-(2,6-di-tert-butyl-4H-thiopyran-4-ylidene)penta-1,3-dienyl]thiopyrylium salt of chemical structural formula (I)



wherein Z<sup>-</sup> represents an anion, and X represents a hydrogen atom, a halogen atom, an alkyl group or an aryl group.

4,283,476

PHOTOGRAPHIC ELEMENT HAVING A MAGNETIC RECORDING STRIPE OVERLYING AN ANTISTATIC LAYER

Gary V. Farnsworth, Newark; Gerald C. Gandy, Rochester, and Hugh W. Richards, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,795

Int. Cl.<sup>3</sup> G03C 1/78

U.S. Cl. 430—140

32 Claims

1. A photographic element comprising a support having on one side thereof at least one radiation-sensitive layer and on the opposite side an antistatic layer comprising a phosphate ester antistatic agent, said element additionally comprising a magnetic recording stripe overlying said antistatic layer, said magnetic recording stripe comprising magnetic particles dispersed in a polymeric binder and containing a carboxylic acid salt of a polyvalent metal in an amount sufficient to enhance the adhesion of said stripe to said element.

4,283,477

PHOTOTHERMOGRAPHIC MATERIAL AND PROCESS  
George L. Fletcher, Jr., Pittsford; Richard A. deMauriac, Webster, and Stewart H. Merrill, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 2, 1978, Ser. No. 956,828

Int. Cl.<sup>2</sup> G03C 1/52, 1/48, 1/40

U.S. Cl. 430—141

18 Claims

1. In a photothermographic element comprising (A) at least one photosensitive layer comprising a diazo or silver halide photosensitive component, (B) at least one layer comprising a processing agent for said photosensitive component and (C) a separation polymer between said photosensitive component and said processing agent, the improvement wherein

said separation polymer (C) comprises a polysulfonamide which has the property of producing increased preexposure storage stability for said element.

4,283,478

LIGHT-SENSITIVE MATERIAL FOR PREPARING A LITHOGRAPHIC PRINTING PLATE AND A PROCESS USING THE SAME

Kikuo Kubotera, and Akira Kashiwabara, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 16, 1979, Ser. No. 39,479

Claims priority, application Japan, May 19, 1978, 53/59796  
Int. Cl.<sup>3</sup> G03C 5/00, 1/52

U.S. Cl. 430—156

23 Claims

1. A light-sensitive lithographic printing plate forming material comprising a support having a hydrophilic surface provided in order with a layer of a positive-working light-sensitive resin composition which comprises an o-quinone diazide compound and which is capable of forming an oleophilic image, a tannable interlayer containing a tanning developing agent, which interlayer is a silver halide emulsion layer wherein the amounts of the tanning developing agent and the silver halide therein are 0.01 to 100 mmols and 0.01 to 10 mmols, respectively, per square meter of area and 1 μ of dry thickness of the interlayer and a tannable second light-sensitive silver halide emulsion layer containing a tanning developing agent, wherein the tanning developing agent is present in the light-sensitive silver halide emulsion layer in an amount of about 0.01 to 100 mmols per 1 μ thickness and square meter of the second silver halide emulsion layer, and wherein the amounts of tanning developing agent and silver halide in the interlayer are less than the amounts thereof in the light-sensitive silver halide emulsion layer.

11. A process of preparing a lithographic printing plate which comprises: (1) imagewise exposing a light-sensitive lithographic printing plate material comprising a support having a hydrophilic surface provided in order with a layer of a positive-working light-sensitive resin composition which comprises an o-quinone diazide compound and which is capable of forming an oleophilic image, a tannable interlayer containing a tanning developing agent, which interlayer is a silver halide emulsion layer wherein the amounts of the tanning developing agent and the silver halide therein are 0.01 to 100 mmols and 0.01 to 10 mmols, respectively, per square meter of area and 1 μ of dry thickness of the interlayer and a tannable light-sensitive silver halide emulsion layer containing a tannable developing agent such that a silver image is formed in the light-sensitive silver halide emulsion layer by the subsequent activating processing with an alkali solution, wherein the tanning developing agent is present in the light-sensitive silver halide emulsion layer in an amount of about 0.01 to 100 mmols per 1 μ thickness and square meter of the light-sensitive silver halide emulsion layer, and wherein the amounts of tanning developing agent and silver halide in the interlayer are less than the amounts thereof in the light-sensitive silver halide emulsion layer, (2) forming a tanned silver image by activation processing using an alkali solution, (3) washing off portions of the silver halide emulsion layer where no silver images have been formed to thereby leave tanning-hardened silver image portions on said light-sensitive resin composition layer, thus forming a hardened relief silver image, (4) uniformly irradiating with light to which said light-sensitive resin composition is sensitive, in an amount such that the light-sensitive resin composition layer in the areas where the relief silver image is not present will dissolve in an alkaline developer, and (5) developing the material with an alkaline developer capable of dissolving the light-sensitive resin composition layer in areas where the relief silver image does not exist to thereby form a relief image comprising the insoluble portions of the light-sensitive resin composition layer and the hardened relief silver image lying thereon.



4,283,479

## SILVER HALIDE PHOTOGRAPHIC MATERIALS AND A PROCESS FORMING RELIEF IMAGES

Tsutomu Hamaoka, and Yasuo Kasama, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 22, 1980, Ser. No. 123,611

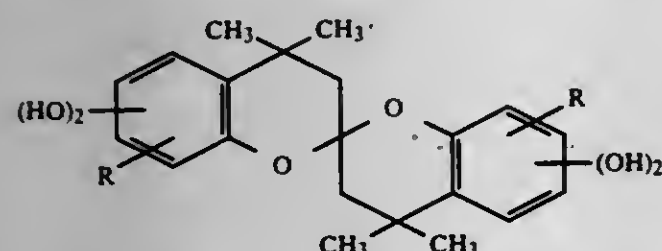
Claims priority, application Japan, Feb. 26, 1979, 54/21650

Int. Cl.<sup>3</sup> G03C 1/48, 5/00

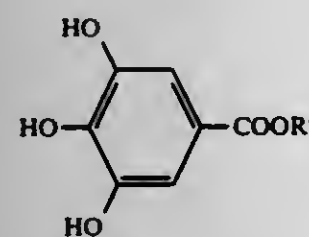
U.S. Cl. 430—264

10 Claims

7. A process for forming relief images which comprises imagewise exposing a silver halide photographic material comprising a support having thereon at least a photosensitive silver halide photographic emulsion layer and at least one of said photosensitive silver halide emulsion layer or another hydrophilic colloid layer on said support containing a compound of the formula (I):



wherein R represents a hydrogen atom or an alkyl group having 1 to 10 carbon atoms, and a compound of the formula (II):



wherein R' represents an alkyl group having 1 to 10 carbon atoms, and developing said imagewise exposed material with an alkaline aqueous solution.

4,283,480

## PHOTOPOLYMERIZABLE COMPOSITIONS, METHODS FOR THEIR PREPARATION, AND METHODS FOR THEIR USE IN COATING SUBSTRATES

William D. Davies, Littleborough; Graham G. Skelthorne, Prestwich, and John B. Warren, Malpas, all of England, assignors to Diamond Shamrock Industrial Chemicals Limited, Great Britain

Filed Oct. 1, 1979, Ser. No. 80,545

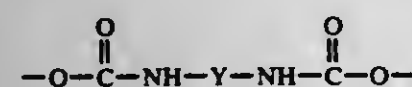
Claims priority, application United Kingdom, Oct. 3, 1978, 39149/78

Int. Cl.<sup>3</sup> B05D 3/06

U.S. Cl. 430—270

8 Claims

1. A process for soldering electrical components on a circuit board which comprises protecting areas of the board by applying thereto a photopolymerisable liquid composition which on curing forms a solder resist and which comprises a polymerisable component which is a polymer having an average of at least two terminal groups per molecule, which groups provide ethylenic double bonds by which the polymer may be further polymerised and which groups are attached to the remainder of the polymer molecule by groups of the formula:



which are the residues of a polyisocyanate, a polythiol as a chain modifier, and a photoinitiator capable of initiating polymerisation of the polymerisable component upon UV-

irradiation, curing the composition to form the solder resist and soldering electrical components to the protected areas of the board.

4,283,481

## ELEMENT HAVING PHOSPHINE ACTIVATED PHOTSENSITIVE COMPOSITIONS THEREIN

Sakuo Okai, Carlsbad, and Koichi Kimoto, Oceanside, both of Calif., assignors to Napp Systems (USA) Inc., San Marcos, Calif.

Division of Ser. No. 70,190, Aug. 27, 1979, Pat. No. 4,233,391, which is a continuation-in-part of Ser. No. 941,519, Sep. 9, 1978, abandoned. This application Jan. 23, 1980, Ser. No. 161,757

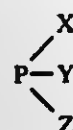
Int. Cl.<sup>3</sup> G03C 1/78

U.S. Cl. 430—271

6 Claims

1. A photosensitive element comprising a substrate and a layer of water developable photopolymerizable composition including:

- about 0.1 to 3.0 parts by weight of a monomer component including at least one water-soluble, monofunctional unsaturated ethylenic monomer, or the combination of said monofunctional monomer and at least one polyfunctional unsaturated ethylenic monomer, said monomers capable of forming a polymer by photoinitiated polymerization in the presence of a polymerization initiator activatable by actinic light;
- about 0.1 to 3.0 parts by weight of a polymer component including a partially saponified, water-soluble, polyvinyl acetate polymer compatible with said monomer component containing both acetyl and hydroxy groups, and having a polymerization degree of about 300 to 2,000 and a saponification degree of about 65 to 99 mole percent;
- about 0.001 to 0.3 parts by weight of a photopolymerization initiator compatible with said monomer component and said polyvinyl acetate polymer, and activatable by actinic light; and,
- about 0.001 to 0.3 parts by weight of an activator including a phosphine derivative described by the formula:



wherein any of X, Y and Z are hydrogen, halogen, alkyl, alkoxy, aryl, or vinyl, but not more than one of the X, Y and Z is hydrogen, and wherein at least one of X, Y and Z is aryl.

4,283,482

## DRY LITHOGRAPHIC PROCESS

Shuzo Hattori, and Shinzo Morita, both of Nagoya, Japan, assignors to Nihon Shinku Gijutsu Kabushiki Kaisha, Japan

Filed Mar. 25, 1980, Ser. No. 133,865

Claims priority, application Japan, Mar. 29, 1979, 54-36307

Int. Cl.<sup>3</sup> G03C 5/00; B44C 1/22; C03C 15/00, 25/06

U.S. Cl. 430—296

6 Claims

1. A dry lithographic process comprising the consecutive steps of:

- introducing at least one ethylenically unsaturated monomer compound in the vapor form into a vacuum vessel where said monomer compound is, at least in part, excited in a plasma atmosphere and deposited onto the surface of a substrate located in the vacuum vessel to form a plasma-polymerized film on said substrate,
- exposing the film thus formed on the substrate to a controlled beam of electrons in conformity to the predetermined pattern to degrade the polymer in the exposed part of the film, and
- removing the degraded part of the polymer from the film by development in vapor phase etching atmosphere.

4,283,483

## PROCESS FOR FORMING SEMICONDUCTOR DEVICES USING ELECTRON-SENSITIVE RESIST PATTERNS WITH CONTROLLED LINE PROFILES

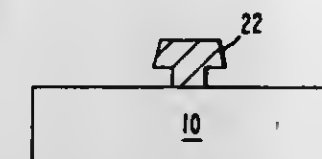
Phillip J. Coane, Mahopac, N.Y., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 19, 1979, Ser. No. 59,010

Int. Cl.<sup>3</sup> H01L 21/283

U.S. Cl. 430—296

7 Claims



1. A process for forming a conductive electrode of variable cross-section-area which comprises the steps of:

- providing a three layer mask on a substrate with the first or inner layer and third or outer layer being of a chosen electron-sensitive resist material and separated by an intermediate etch resistant conductive layer;
- defining predetermined patterns in said first layer and said third layer of resist simultaneously by electron bombardment which penetrates said conductive layer;
- forming a first opening in said third layer while shielding said first layer with said conductive layer, said first opening having a first chosen width;
- successively removing portions of said intermediate and first layers to thereby produce second and third openings therein, said second opening in said intermediate layer having a second chosen width substantially equal to said first width of said first opening and said third opening in said first layer having a third chosen width smaller than said first and second widths; and
- depositing a chosen metal in said openings formed in (c) and (d) above to thereby form said electrode of variable cross-section area, and with variable width essential replicating said widths of said first, second, and third openings.

## CONDUCTOR CROSSOVERS FOR INTEGRATED RC-CIRCUITS

Wolf-Dieter Müenz, Freigericht, and Hans W. Pöetzberger, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin &amp; Munich, Fed. Rep. of Germany

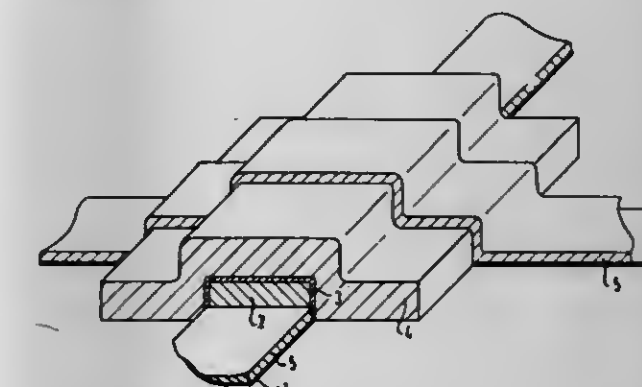
Filed May 21, 1979, Ser. No. 40,703

Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823881

Int. Cl.<sup>3</sup> C25D 11/02, 11/34; H05K 3/06

U.S. Cl. 430—314

6 Claims



1. A method for the manufacture of a conductor crossover formed of a crossover region with a crossunder path and a crossover path and leads connecting to the crossover and crossunder paths, all in a thin film integrated circuit, comprising the steps of:

- providing an insulating base and applying a TaAl double layer thereon, the double layer comprising a first bottom TaAl layer of higher tantalum content and a second upper TaAl layer of lower tantalum content;
- in a first photo-technique, masking the desired crossunder path and associated leads and also the desired leads for the crossover path, and then etching away unmasked portions of the double layer;
- oxidizing the remaining portions of the double layer to create a TaAl-oxide layer;
- applying an SiO<sub>2</sub> layer over the structure formed thus far;
- in a second photo-technique, masking the desired crossover region and etching off unmasked SiO<sub>2</sub> and TaAl-oxide layers;
- using the remaining SiO<sub>2</sub> in the crossover region as a mask, etching off unmasked TaAl second layer from the leads of the crossunder and crossover paths;
- applying an electrically highly conductive layer over the structure formed thus far; and
- in a third photo-technique, masking the desired crossover path and the leads of the crossover and crossunder paths and etching away unmasked portions of the conductive layer.

4,283,484

## METHOD OF MAKING RELIEF PRINTING PLATES WITH CONCAVE PRINTING AREAS

Michael J. B. Fairhead, and Nicolas R. Jung, both of London, England, assignors to Letraset USA, Inc., Paramus, N.J.

Division of Ser. No. 875,554, Feb. 6, 1978, abandoned. This application Jan. 19, 1979, Ser. No. 4,618

Claims priority, application United Kingdom, Feb. 7, 1977, 4911/77

Int. Cl.<sup>3</sup> G03C 5/00

U.S. Cl. 430—306

7 Claims

1. A method of manufacturing a printing plate which comprises the steps of

- imagewise exposing a photopolymerisable material layer formed on a layer of base material through a negative of the desired image in which the light transmitting areas are partly covered by a corresponding positive image, developing the exposed layer to leave a plurality of raised printing areas adapted to receive a film of ink, the time and intensity of exposure being such that the upper surface of each area consists of a relatively higher peripheral region and a relatively lower central region.

4,283,486

## SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Toshiaki Aono, and Takeshi Hirose, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 30, 1980, Ser. No. 145,090

Claims priority, application Japan, Oct. 2, 1979, 54/126971

Int. Cl.<sup>3</sup> G03C 1/76

U.S. Cl. 430—505

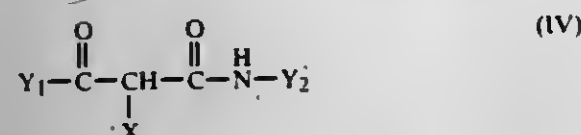
20 Claims

1. A silver color photographic light-sensitive material comprising:

- a paper support;
- a color image-forming emulsion layer containing a photographic color coupler which forms a dye on coupling with an oxidized aromatic primary amine, said color image-forming emulsion layer comprising a blue-sensitive

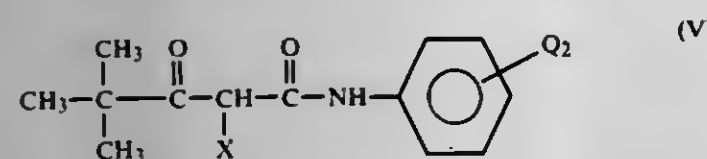


emulsion layer containing a yellow coupler, a green-sensitive emulsion layer containing a magenta coupler, a red-sensitive emulsion layer containing a cyan coupler, wherein said yellow coupler is selected from the group consisting of a coupler represented by the formula (IV)



wherein Y<sub>1</sub> represents an aliphatic group, an aromatic group or a heterocyclic group; Y<sub>2</sub> represents an aromatic group or a heterocyclic group; and X represents hydrogen or a cleavable group which is capable of being cleaved as an anion during the oxidation coupling reaction with the oxidation product of the aromatic primary amine developer,

and a coupler represented by the formula (V)



wherein Q<sub>1</sub> represents halogen, alkoxy, aryloxy, dialkyl-amino or alkyl; Q<sub>2</sub> is positioned at 4- or 5-position of the anilido nucleus and represents halogen, trifluoromethyl, acylamino, sulfonamido, ureido, alkyl, alkoxy, aryloxy, carboxy, alkoxycarbonyl, carbamoyl, sulfo, sulfamoyl or imido; and X represents hydrogen or a cleavable group which is capable of being cleaved as an anion during the oxidation coupling reaction with the oxidation product of the aromatic primary amine developer;

(c) an oxygen-impermeable layer having an oxygen permeability of not more than 2.0 ml/m<sup>2</sup>·mm·atm, said oxygen-impermeable layer being located between the paper support and the color image-forming layer; and

(d) a protective layer providing a top surface on the same side of the paper support as the color image-forming layer and the oxygen-impermeable layer, said protective layer containing gelatin as a binder having a thickness of from about 0.4 to 4 μm.

4,283,487

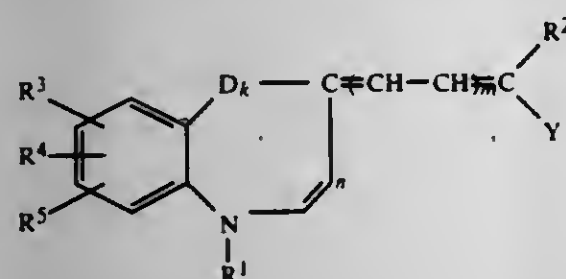
**THERMOLABILE ACUTANCE DYES FOR DRY SILVER**  
Bernard A. Lea, and Ronald W. Burrows, both of Harlow, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 29, 1979, Ser. No. 98,386  
Int. Cl.<sup>3</sup> G03C 1/84, 1/02

U.S. Cl. 430—522

15 Claims

1. A light sensitive composition comprising an intimate mixture of a substantially light-insensitive silver compound which upon reduction gives a visible change and sufficient amount of a silver halide to catalyze said reduction to give a visible change in those areas where the silver halide has been exposed to light when the intimate mixture is heated in the presence of a reducing agent, the intimate mixture including as an acutance dye a compound of the general formula:



wherein:

n is 1 when k is 0 or k is 1 when n is 0,  
m is 0, 1 or 2,

Y is a member selected from the group consisting of —CN and NO<sub>2</sub>,

R<sup>1</sup> represents an alkyl group containing 1 to 12 carbon atoms,

R<sup>2</sup> is a member selected from the group consisting of a phenyl group, a substituted phenyl group of molecular weight less than 350, —COOR<sup>1</sup> wherein R<sup>1</sup> is an alkyl group of 1 to 12 carbon atoms, C<sub>6</sub>H<sub>5</sub>CO— or R<sup>6</sup>NHCO— wherein R<sup>6</sup> is a member of the group consisting of a hydrogen atom, alkyl, aryl or aralkyl group, and when m is 1 or 2, R<sup>2</sup> may additionally represent a member of the group consisting of a hydrogen atom and an alkyl group having 1 to 4 carbon atoms,

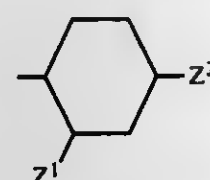
R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> are cyanine dye compatible substituents,

D represents a member of the group consisting of (CH=CH), O, S, Se, >C(CH<sub>3</sub>)<sub>2</sub> or >NR<sup>7</sup>, wherein R<sup>7</sup> is selected from the group consisting of an alkyl group containing 1 to 4 carbon atoms and CH<sub>3</sub>COO—,

with the proviso that:

when k=0, n=1, m=0 and Y is NO<sub>2</sub>

R<sup>2</sup> is not a substituted phenyl group of the formula:



wherein one of Z<sup>1</sup> and Z<sup>2</sup> is NO<sub>2</sub> and the other is a member of the group consisting of a halogen atom, —NO<sub>2</sub>, —CN and a perfluoroalkyl group containing 1 to 4 carbon atoms.

4,283,488

**PHOTOGRAPHIC COMPOSITIONS AND ELEMENTS SPECTRALLY SENSITIZED WITH NEW METHINE DYES**

Earl J. VanLare, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 22, 1980, Ser. No. 180,261  
Int. Cl.<sup>3</sup> G03C 1/02, 1/18, 1/19, 1/22

U.S. Cl. 430—588

9 Claims

7. In a radiation-sensitive silver-halide composition, the improvement wherein said composition is spectrally sensitized by means of a methine dye selected from the group consisting of:

- (1) 5,5',6,6'-tetrachloro-1,1-diethyl-3,3'-bis(3-trimethylsilylpropyl)benzimidazolocarboxyanine iodide;
- (2) 5,6-dichloro-1,3'-diethyl-3-(3-trimethylsilylpropyl)benzimidazoloxocarboxyanine iodide;
- (3) 5,6-dichloro-1,3'-diethyl-3-(3-trimethylsilylpropyl)benzimidazolothiocarboxyanine iodide;
- (4) 5,6-dichloro-1,3'-diethyl-3-(3-trimethylsilylpropyl)-4',5'-benzobenzimidazolothiocarboxyanine iodide;
- (5) 5-[[5,6-dichloro-1-ethyl-3-(3-trimethylsilylpropyl)-2-benzimidazolinylidene]ethylidene]-3-ethylrhodanine;
- (6) 5-[[5,6-dichloro-1-ethyl-3-(3-trimethylsilylpropyl)-2-benzimidazolinylidene]ethylidene]-3-ethyl-2-thio-2,4-oxazolidinedione;
- (7) 3,3'-Bis(3-trimethylsilylpropyl)thiacarboxyanine iodide;
- (8) 9-methyl-3,3'-bis(3-trimethylsilylpropyl)thiacarboxyanine iodide;
- (9) 9-ethyl-3,3'-bis(3-trimethylsilylpropyl)thiacarboxyanine iodide;
- (10) 3,3'-bis(3-trimethylsilylpropyl)thiadicarboxyanine iodide;
- (11) 1'-ethyl-3-(3-trimethylsilylpropyl)thia-2'-cyanine iodide;

- (12) 3-ethyl-3'-(3-trimethylsilylpropyl)oxathiacarboxyanine iodide;
- (13) 3-ethyl-3'-(3-trimethylsilylpropyl)-4,5-benzothiacarboxyanine iodide;
- (14) 5-[[3-(3-trimethylsilylpropyl)-2-benzothiazolinylidene]ethylidene]-3-ethylrhodanine;
- (15) 2-(3,3-dicyanoallylidene)-3-(3-trimethylsilylpropyl)benzothiazoline;
- (16) 3,3'-bis(3-trimethylsilylpropyl)selenacarboxyanine iodide;
- (17) 3,3'-bis(3-trimethylsilylpropyl)selenadicarboxyanine iodide;
- (18) 1'-ethyl-3-(3-trimethylsilylpropyl)seleno-2'-cyanine iodide;
- (19) 3-ethyl-3'-(3-trimethylsilylpropyl)oxaselenocarboxyanine iodide; and
- (20) 5,6-dichloro-1,3-diethyl-3'-(3-trimethylsilylpropyl)benzimidazoloseleacarboxyanine iodide.

4,283,489

**PURIFICATION OF NUCLEOTIDE SEQUENCES SUITABLE FOR EXPRESSION IN BACTERIA**

Howard M. Goodman, Seeburg, John Shine, and Peter Horst, both of San Francisco, all of Calif., assignors to The Regents of the University of California, San Francisco, Calif.

Division of Ser. No. 836,218, Sep. 23, 1977, abandoned. This application Nov. 23, 1979, Ser. No. 97,049

Int. Cl.<sup>3</sup> C12Q 1/68

U.S. Cl. 435—6

5 Claims

1. A method for measuring the purity of a specific desired nucleotide sequence in a preparation of DNA fragments of essentially homogeneous length containing said nucleotide sequence, there being at least one restriction site within the specific desired nucleotide sequence, comprising the steps of:

- a. subjecting the DNA preparation to the action of a restriction endonuclease capable of catalyzing the hydrolysis of the specific desired nucleotide sequence at the restriction site within the sequence, in order to produce identifiable sub-fragments thereof;
- b. separating the restriction endonuclease treated DNA sub-fragments according to their length, and
- c. measuring the amount of the DNA preparation identifiable as sub-fragments of the specific desired nucleotide sequence, compared to the total amount of DNA, thereby measuring the purity of the specific desired nucleotide sequence.

4,283,490

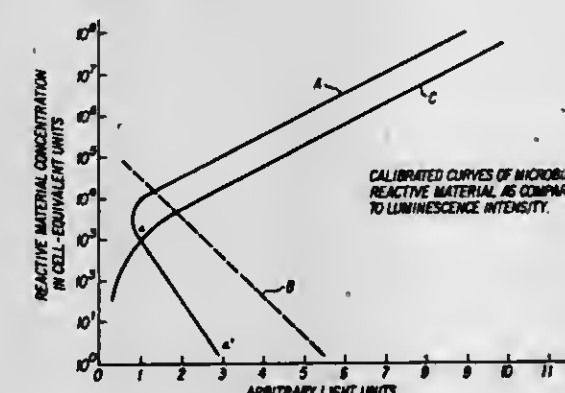
**METHOD FOR DETECTION OF LOW LEVEL BACTERIAL CONCENTRATION BY LUMINESCENCE**  
Chris J. Plakas, 8510 Conover Pl., Alexandria, Va. 22308

Continuation-in-part of Ser. No. 928,869, Jul. 28, 1978, abandoned, which is a continuation of Ser. No. 764,180, Jan. 31, 1977, Pat. No. 4,144,134. This application Oct. 11, 1979, Ser. No. 83,758

Int. Cl.<sup>3</sup> C12Q 1/6

U.S. Cl. 435—8

3 Claims



1. An improvement on a method of detecting the presence of

microbial luminescent reactive molecules in a sample wherein the concentration of said molecules is so low as to have the luminescent reaction due to said molecules masked by extraneous luminescent reactions of the reagents themselves, the method comprising the steps of:

- (A) placing said sample, wherein the concentration of said molecules is so low as to have the luminescent reaction due to said molecules masked by extraneous luminescent reactions of the reagents themselves, in a designated reactive location,
- (B) situating an optical detector means adjacent the reactive location for detecting photon emission from the sample,
- (C) adding a reagent to the sample in an amount exceeding the minimum necessary to cause luminescence of all the luminescent reactive molecules in the sample, and
- (D) observing the strength of luminescence during the reaction between the sample and reagent with the aid of the optical detector means, the improvement comprising the step of:

positioning an optical filter means between the optical detector means and the sample for selectively restricting the wavelength of photons which are permitted to pass from the sample to the detector means to those photons having a wavelength less than about 400 nanometers.

4,283,491

**ANALYTICAL ELEMENTS WITH IMPROVED REAGENT STABILITY**

Glen M. Dappen, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 831,204, Sep. 6, 1977, abandoned. This application Aug. 20, 1979, Ser. No. 67,843

Int. Cl.<sup>3</sup> C12Q 1/62, 1/54, 1/28; C12N 9/96

U.S. Cl. 435—10

30 Claims

1. In an element for the analysis of a predetermined analyte in an aqueous liquid, said element comprising:

- (a) a carrier permeable to said aqueous liquid and to said predetermined analyte and,
- (b) dispersed in said carrier, reagents capable of interacting with or facilitating interaction with said predetermined analyte or its reaction products to yield a detectable product, one of said reagents comprising peroxidase, the improvement comprising having dispersed in said carrier in addition to said reagents a polymer in an amount sufficient to impart stability to said peroxidase, said amount comprising from about 20 percent to about 50 percent of the total weight of said carrier material plus said polymer, said polymer comprising:
- (1) from about 80 to about 98 percent by weight of recurring units derived from one or more hydrophobic, addition-polymerizable monomers selected from the group consisting of an alkyl acrylate, an alkyl methacrylate, styrene and a substituted styrene,
- (2) from about 1 to about 20 percent by weight of recurring units derived from one or more anionic monomers selected from the group consisting of an acrylic acid, an acrylic acid salt, a methacrylic acid, a methacrylic acid salt, a sulfonic acid, a sulfonic acid salt, a sulfonate, a sulfate, a phosphate and a phosphorate, and
- (3) from 0 to about 15 percent by weight of recurring units derived from one or more crosslinkable, active methylene group-containing monomers.
8. In an element for the analysis of a predetermined analyte in an aqueous liquid, said element comprising:
- (a) a carrier permeable to said aqueous liquid and to said predetermined analyte and
- (b) dispersed in said carrier, reagents capable of interacting with or facilitating interaction with said predetermined analyte or its reaction products to yield a detectable product, one of said reagents comprising peroxidase, the improvement comprising having dispersed in said carrier in addition to said reagents a polymer comprising:
- (1) from about 80 to about 98 percent by weight of recurring



units derived from one or more hydrophobic, addition-polymerizable monomers selected from the group consisting of an alkyl acrylate, an alkyl methacrylate, styrene, and a substituted styrene,

- (2) from about 1 to about 20 percent by weight of recurring units derived from one or more anionic monomers selected from the group consisting of an acrylic acid, an acrylic acid salt, a methacrylic acid, a methacrylic acid salt, a sulfonic acid, a sulfonic acid salt, a sulfonate, a sulfate, a phosphate, and a phosphorate, and
- (3) from 0 to about 15 percent by weight of recurring units derived from one or more crosslinkable, active methylene group-containing monomers,

said polymer comprising from about 20 percent to about 50 percent of the total weight of said carrier plus said polymer.

16. In an element for the analysis of a predetermined analyte in an aqueous liquid, said element comprising:

- (a) a carrier permeable to said aqueous liquid and to said predetermined analyte and
- (b) dispersed in said carrier, reagents capable of interacting with or facilitating interaction with said predetermined analyte or its reaction products to yield a detectable product, one of said reagents comprising peroxidase,

the improvement comprising having dispersed in said carrier in addition to said reagents a polymer selected from the group consisting of

Poly(methyl acrylate-co-3-acryloyloxypropyl sulfonic acid, sodium salt-co-2-acetoacetoxyethyl methacrylate) (weight ratio 88.75:4.75:6.5);

Poly(methyl acrylate-co-2-acrylamido-2-methylpropanesulfonic acid-co-2-acetoacetoxyethyl methacrylate) (weight ratio 88.75:4.75:6.5);

Poly(methyl acrylate-co-2-acrylamido-2-methylpropanesulfonic acid-co-2-acetoacetoxyethyl methacrylate) (weight ratio 85:10:5);

Poly(n-butyl acrylate-co-3-acryloyloxypropyl sulfonic acid, sodium salt-co-2-acetoacetoxyethyl methacrylate) (weight ratio 91.25:4.75:4.0); and

Poly(n-butyl acrylate-co-2-acrylamido-2-methylpropane sulfonic acid-co-2-acetoacetoxyethyl methacrylate) (weight ratio 85:10:5),

said polymer comprising from about 20 percent to about 50 percent of the total weight of said carrier plus said polymer.

27. In an element for the analysis of uric acid in aqueous liquids, said element comprising:

- (a) a carrier permeable to said aqueous liquid and to uric acid and,
- (b) dispersed in said carrier, reagents comprising bis(vinylsulfonylmethyl)ether, uricase, peroxidase, a dispersion of 2-(3,5-dimethoxy-4-hydroxyphenyl)-4,5-bis-(4-dimethylaminophenyl)imidazole in 2,4-di-n-pentylphenol, and a borate buffer (pH 9),

the improvement comprising having dispersed in said carrier in addition to said reagents a polymer in an amount sufficient to impart stability to said peroxidase, said amount comprising from about 20 percent to about 50 percent of the total weight of said carrier material plus said polymer, said polymer being selected from the group consisting of:

poly(methyl acrylate-co-3-acryloyloxypropyl sulfonic acid, sodium salt-co-2-acetoacetoxyethyl methacrylate) (weight ratio 88.75:4.75:6.5);

poly(methyl acrylate-co-2-acrylamido-2-methylpropanesulfonic acid-co-2-acetoacetoxyethyl methacrylate) (weight ratio 88.75:4.75:6.5);

poly(methyl acrylate-co-2-acrylamido-2-methylpropanesulfonic acid-co-2-acetoacetoxyethyl methacrylate) (weight ratio 85:10:5);

poly(n-butyl acrylate-co-3-acryloyloxypropyl sulfonic acid, sodium salt-co-2-acetoacetoxyethyl methacrylate) (weight ratio 91.25:4.75:4.0); and

poly(n-butyl acrylate-co-2-acrylamido-2-methylpropane sulfonic acid-co-2-acetoacetoxyethyl methacrylate) (weight ratio 85:10:5).

4,283,492

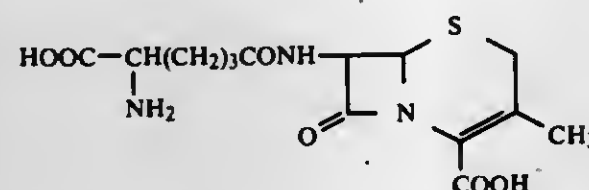
# PRODUCTION OF ANTIBIOTICS WS-3442 A, B, C, D AND E, AND THEIR ACYL DERIVATIVES

Hiroshi Imanaka; Junzi Hosoda, both of Ikeda; Kazuyoshi Jomon, Kawanishi; Heiichi Sakai, Ikeda; Ikuro Ueda, Yao, and Daizou Morino, Hatsutori-yutamachi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan  
Division of Ser. No. 371,989, Jun. 21, 1975, abandoned. This application Jun. 13, 1978, Ser. No. 915,215  
Int. Cl.<sup>2</sup> C12D 9/14

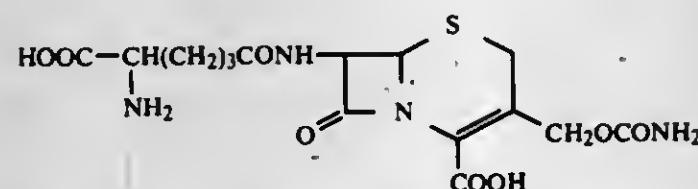
U.S. Cl. 435-47

9 Claims

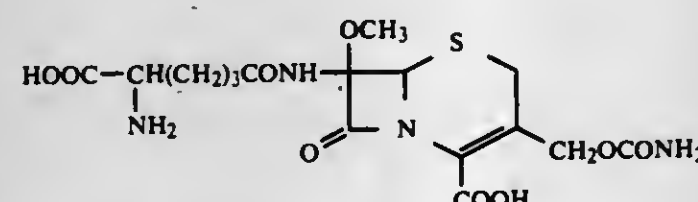
1. A process for the production of antibiotic WS-3442 selected from the group of WS-3442 A, B, C, D and E in which WS-3442 A has following chemical structure:



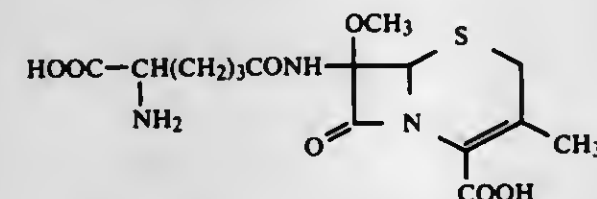
WS-3442 B has following chemical structure:



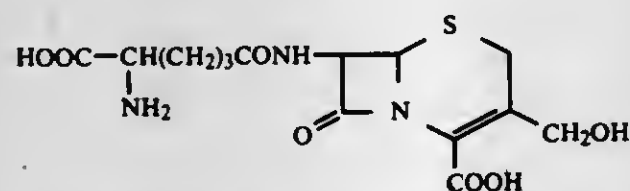
WS-3442 C has following chemical structure:



WS-3442 D has following chemical structure:



WS-3442 E has following chemical structure:



which comprises cultivating a WS-3442-producing strain of *Streptomyces wadayamensis* in an aqueous nutrient medium under submerged aerobic conditions until a substantial antibiotic activity is imparted to said medium by the production of the WS-3442 and recovering the WS-3442.

4,283,493

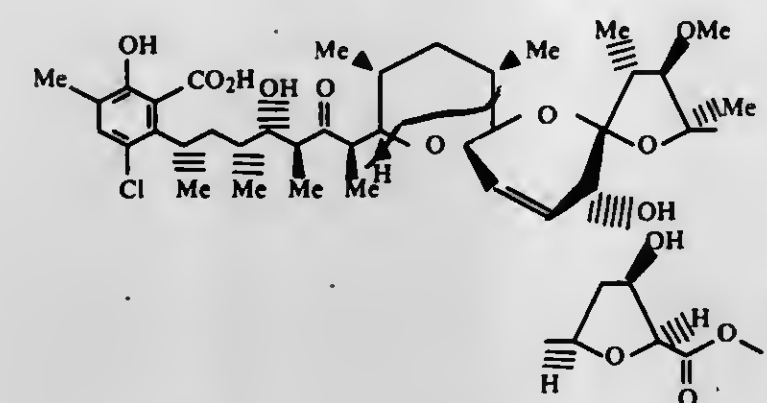
# PROCESS OF PRODUCING ANTIBIOTIC X-14766A BY A STREPTOMYCES

Chao-Min Liu, and John Westley, both of Cedar Grove, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.  
Division of Ser. No. 944,825, Sep. 22, 1978, Pat. No. 4,221,724.  
This application Mar. 10, 1980, Ser. No. 128,992  
Int. Cl.<sup>3</sup> C12P 17/18

U.S. Cl. 435-119

1 Claim

1. A process to produce a compound of the formula



which comprises:

cultivating a strain of *Streptomyces* X-14766A, NRRL 11335 in an aqueous carbohydrate solution containing a nitrogenous nutrient under submerged aerobic conditions and thereafter isolating the X-14766A antibiotic from said solution.

4,283,494

# MICROBIAL LIPASE, PROCESS FOR ITS PREPARATION AND MICROBIOLOGICALLY PURE CULTURE THEREFOR

Yoshitaka Kokusho, Kunitachi; Haruo Machida, and Shinjiro Iwasaki, both of Hino, all of Japan, assignors to Meito Sangyo Kabushiki Kaisha, Japan

Filed Apr. 26, 1978, Ser. No. 900,234

Int. Cl.<sup>3</sup> C12N 9/20, 1/20; C12R 1/05

U.S. Cl. 435-198

11 Claims

1. A microbial lipase which has

- (i) an optimal pH for activity of about 9±0.5,
- (ii) an optimal temperature for activity of about 40° C. to about 48° C.,
- (iii) a lipase activity to be activated by bile salts,
- (iv) a cholesterol esterase activity, and
- (v) a molecular weight of about 30×10<sup>4</sup> to about 40×10<sup>4</sup>.

4,283,495

# ROLLER BOTTLE

Robert W. Lynn, Oxnard, Calif., assignor to Becton, Dickinson and Company, Paramus, N.J.

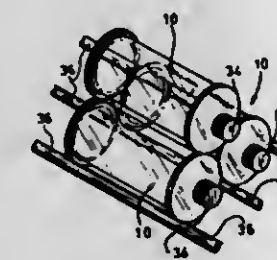
Division of Ser. No. 949,450, Oct. 10, 1978, Pat. No. 4,238,568.

This application Feb. 25, 1980, Ser. No. 123,957

Int. Cl.<sup>3</sup> C12N 5/00

U.S. Cl. 435-240

3 Claims



1. A method for culturing cells within a roller bottle having an interior surface adapted for cell adhesion and an exterior surface including at least one serrated portion along its circum-

ference comprising the steps of contacting said serrated portion with rollers of a roller apparatus and rotating said rollers whereby the bottle rotates without slipping.

4,283,496

# PREPARATION AND USE OF GLUCOSE ISOMERASE

Chin K. Lee, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.  
Continuation-in-part of Ser. No. 734,222, Oct. 20, 1976, Pat. No. 4,061,539. This application Sep. 19, 1977, Ser. No. 834,073  
Int. Cl.<sup>3</sup> C12N 1/20; C12P 19/24

U.S. Cl. 435-253

3 Claims

1. A biologically pure culture of a mutant strain of the microorganism *Flavobacterium arborescens* having the identifying characteristics of *Flavobacterium arborescens* ATCC 4358, said strain being capable of producing substantial quantities of glucose isomerase activity when cultivated in a nutrient medium containing sources of carbon, nitrogen and inorganic salts with lactose as the sole carbon source.

4,283,497

# MICROBIOLOGICAL SYSTEMS

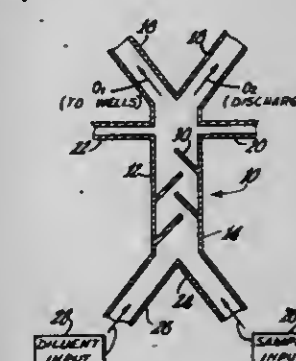
Yashar Hirshaut, Lawrence, N.Y., assignor to Samson Helfgott and Jack W. Benjamin, both of New York, N.Y., part interest to each

Filed Jan. 24, 1979, Ser. No. 6,005

Int. Cl.<sup>3</sup> C12M 1/36

U.S. Cl. 435-289

13 Claims



1. A microbiological mixing and dilution device comprising, at least one fluid amplifier having a control chamber, a first inlet port for feeding a microbiological fluid sample from a source of supply into said control chamber, a second inlet port for feeding a fluid diluent from another source of supply into said control chamber wherein the fluid sample and the fluid diluent are mixed, two fluid outlet ports for selectively discharging the contents of said control chamber, said control chamber serving as a mixing chamber to dilute the sample and control port means fluidly coupled to said control chamber for utilizing a suitable control fluid to direct at least a portion of the diluted sample to a selected outlet port, and distribution means for receiving the diluted sample from said selected outlet port for microbiological use.

4,283,498

# BIOLOGICAL SPECIMEN COLLECTION AND TRANSPORT SYSTEM

Joseph D. Schlesinger, 1013 Sunset Pl., Ojai, Calif. 93023

Filed Oct. 29, 1979, Ser. No. 89,603

Int. Cl.<sup>3</sup> C12M 1/24

U.S. Cl. 435-296

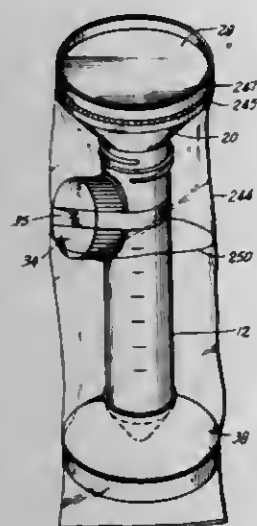
33 Claims

1. A biological specimen collection and transport apparatus which comprises:

- (a) an elongated hollow specimen receptacle having a closed bottom end and an open top end;
- (b) detachable conduit means for introducing a biological specimen into the hollow specimen receptacle mounted on the open end of the hollow specimen receptacle;



- (c) base means for receiving the closed bottom end of the elongated hollow specimen receptacle for supporting said elongated hollow specimen receptacle in a vertical position;
- (d) a flexible outer protective covering enclosing the outer surface of the elongated hollow specimen receptacle for



preventing contamination of the outer surface of said elongated hollow specimen receptacle by a biological specimen during introduction of the biological specimen into said elongated hollow specimen receptacle; and

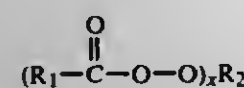
(e) means for attaching the flexible outer protective covering to the detachable conduit means.

#### 4,283,499 RESINS

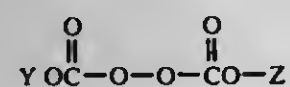
Thomas J. Howell, Langhorne, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.  
Continuation of Ser. No. 951,102, Oct. 13, 1978, abandoned, which is a continuation of Ser. No. 809,957, Jun. 27, 1977, abandoned. This application Mar. 17, 1980, Ser. No. 130,923  
Int. Cl.<sup>3</sup> C08F 212/36

U.S. Cl. 521—38 11 Claims

1. In the process of preparing hard, crosslinked discrete ion exchange copolymer beads by the thermally induced free-radical polymerization in an aqueous dispersion of a monomer mixture comprised of a major proportion of a monovinyl aromatic monomer and a minor proportion of a crosslinking monomer having at least two active vinyl groups, the improvement which comprises conducting the polymerization reaction in the presence of a peroxy catalyst of the formula:



wherein  $R_1$  is a branched alkyl of 3 to 12 carbon atoms and having a secondary or tertiary carbon linked to the carbonyl group and  $X$  is a positive integer having a value of either 1 or 2 and when  $X$  is 1,  $R_2$  is a branched alkyl radical containing a tertiary carbon attached to the oxygen, and when  $X$  is 2,  $R_2$  is an alkylene or aralkylene, in either case terminating in tertiary carbons attached to the oxygen, or of the formula:

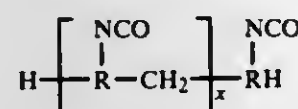


wherein  $Y$  and  $Z$  are independently selected from lower alkyl, cycloalkyl, alkyl-substituted cycloalkyl and aralkyl, and thereafter functionalizing the copolymer bead to form ion exchange sites therein.

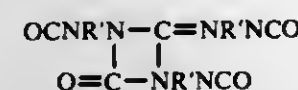
4,283,500  
POLYMER/POLYISOCYANATES  
George H. Armstrong; Richard M. Gerkin, both of Charleston, and Frank E. Critchfield, South Charleston, all of W. Va., assignors to Uolon Carbide Corporation, New York, N.Y.  
Filed Mar. 31, 1980, Ser. No. 135,397  
Int. Cl.<sup>3</sup> C08G 18/14

U.S. Cl. 521—137 47 Claims

1. In a polymer/polyisocyanate composition which is convertible by reaction with a poly(active hydrogen) organic compound to form a polyurethane product wherein the polyisocyanate of said composition is normally liquid at a temperature at which said composition is converted to said polyurethane product and the polymer of said polymer/polyisocyanate is formed in situ in the polyisocyanate thereof from a polymerizable ethylenically unsaturated monomer and is essentially insoluble therein, the improvement providing more stable dispersions of small particles of said polymer in the polyisocyanate, comprising, an improved dispersion of said polymer prepared by the in situ polymerization of acrylonitrile or mixtures of acrylonitrile and one or more ethylenically unsaturated monomers copolymerizable with acrylonitrile in a liquid polyisocyanate material having a free NCO content of at least 10 wt. % consisting essentially of (1) polymeric forms of a diarylalkylene diisocyanate having the formula:



in which  $R$  is a trivalent aromatic group and  $x$  is a number having an average value of 1.1 to 5, (2) mixtures of a diarylalkylene diisocyanate, a carbodiimide of the formula:  $\text{OCNR}'\text{N}=\text{C}=\text{NR}'\text{NCO}$  and a diarylalkylene diisocyanate trifunctional trimeric cycloadduct of the formula:

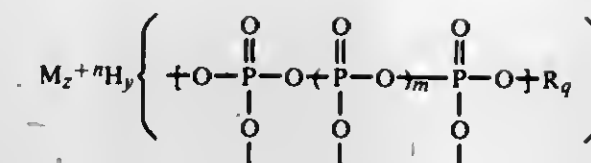


wherein  $R'$  is a divalent arylenealkylenearylene group, or (3) mixtures of polyisocyanates (1) and (2) above, said ethylenically unsaturated monomer(s) in an effective amount improving the affinity of the resulting polymer particles for said polyisocyanate and restricting agglomeration of said polymer particles in said polyisocyanate to provide a dispersion which forms films containing less than 10% seeds, the remaining area being glossy, or 5% seeds, the remaining area being semi-glossy, said percentages being on an area basis.

4,283,501  
FIRE-RETARDANT COMPOSITION CONTAINING  
DERIVATIVES OF POLYPHOSPHORIC ACID PARTIAL  
ESTERS

Thomas P. Brady, Holliston, and Horst G. Langer, Wayland, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.  
Filed Jan. 28, 1980, Ser. No. 116,120  
Int. Cl.<sup>3</sup> C08K 5/52; D06M 13/26; B32B 13/10  
U.S. Cl. 525—2 22 Claims

1. A composition of matter comprising a cellulosic material rendered resistant to fire by addition thereto of a fire-retarding amount of one or more derivatives of polyphosphoric acid partial esters of the formula



wherein,

$R$  is each occurrence the remnant of phenol, halophenol or a  $C_{1-20}$  aliphatic or halogenated aliphatic monohydroxyl compound formed by removal of the hydroxyl group;

$M$  is independently each occurrence a cationic species selected from ammonium, substituted ammonium, and mono-, di-, tri- and tetravalent alkali metal, alkaline earth metal, transition metal and group 3a metal cations of the periodic table;

$m$  is an integer from zero to three;  $y$  is an integer equal to or greater than zero; and  $q$ ,  $x$  and  $z$  are all integers greater than or equal to one selected such that  $(zn) + y = x(m+4-q)$  and  $q \leq m+3$ .

#### 4,283,502 POLYAMIDE RESINS

Paul N. Richardson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.  
Continuation-in-part of Ser. No. 34,605, Apr. 30, 1979, abandoned, which is a continuation-in-part of Ser. No. 945,323, Sep. 25, 1978, abandoned. This application Apr. 7, 1980, Ser. No. 138,249  
Int. Cl.<sup>3</sup> C08L 77/00

U.S. Cl. 525—66 8 Claims

1. A melt compounded blend consisting essentially of

(a) a polyamide resin having a molecular weight of at least 5000, and

(b) an adduct of maleic or fumaric anhydride and a copolymer of ethylene, at least one  $C_3$  to  $C_6$   $\alpha$ -olefin, and at least one nonconjugated diene, said adduct having an anhydride functionality of between about 0.1 and 4.0 milliequivalents of carboxyl groups per 1 gram of adduct, said adduct being present in the blend in an amount such that the anhydride functionality comprises between about 0.7 and 10 equivalents per 10<sup>6</sup> g of polyamide present; provided that the maximum amount of adduct present is less than 1 percent based on weight of polyamide and adduct; and provided that the adduct is in the form of finely divided particles having an average size less than 0.5 micron.

4,283,503  
POLYPHENYLENE OXIDE BLENDING  
Roy F. Wright, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.  
Filed Dec. 10, 1979, Ser. No. 101,669  
Int. Cl.<sup>3</sup> C08L 71/04

U.S. Cl. 525—89 5 Claims

1. A process for blending polyphenylene oxide and a conjugated diene polymer comprising mechanically blending two components (a) and (b) namely

(a) a dry initial mixture of polyphenylene oxide and a first conjugated diene polymer, which mixture has been obtained by solution blending polyphenylene oxide and said first conjugated diene polymer, and

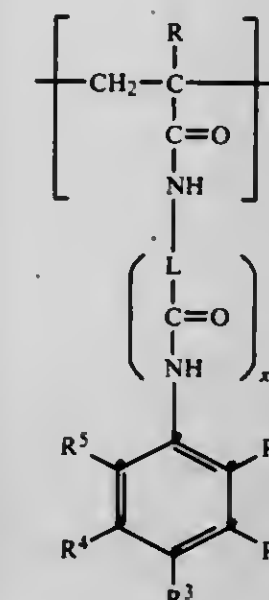
(b) a second conjugated diene polymer

to form a final mixture of polyphenylene oxide and conjugated diene polymer, wherein said first and said second conjugated diene polymers can be the same or different.

4,283,504  
CROSSLINKABLE POLYMERS CONTAINING  
ACRYLAMIDOPHENOL UNITS  
Gerald A. Campbell, Webster; Kenneth R. Hollister, Pittsford, and Richard C. Sutton, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.  
Division of Ser. No. 893,557, Apr. 4, 1978, Pat. No. 4,207,109. This application Oct. 11, 1979, Ser. No. 83,742  
Int. Cl.<sup>3</sup> C08F 22/38, 122/38, 212/04, 220/58  
U.S. Cl. 525—261 10 Claims

1. A crosslinked addition copolymer formed by crosslinking a copolymer comprising:

A. from about 0.5 to 50 percent by weight of a unit having the formula



wherein:

$x$  is 1 or 0,  
 $R$  represents hydrogen or methyl,  
 $L$  is alkylene and cycloalkylene having from 1 to 6 carbon atoms or arylene having from 6 to 10 carbon atoms, and  
 $R^1$  through  $R^5$  are independently selected from the group consisting of hydrogen, hydroxy, alkyl from 1 to 6 carbon atoms and aryl from 6 to 10 carbon atoms; with the proviso that at least one of  $R^1$  through  $R^5$  is hydroxy and at least one of the positions ortho or para to said hydroxy has a hydrogen atom attached thereto; and

B. from about 50 to 99.5 percent by weight of units of at least one additional polymerized ethylenically unsaturated monomer;

with 0.1 to 25 percent by weight based on the total weight of the uncrosslinked polymer of a gelatin crosslinking agent.

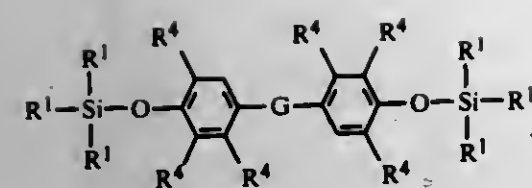
4,283,505  
METHOD FOR CROSS-LINKING AND STABILIZING  
POLYMERS WHICH CAN BE CROSS-LINKED  
RADICALLY

Wolfgang Kleeberg; Wolfgang Rogler; Wolfgang V. Gentzkow, all of Erlangen, and Roland Rubner, Röttenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany  
Filed May 18, 1979, Ser. No. 40,469  
Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823820

Int. Cl.<sup>3</sup> C08F 287/00, 265/04, 255/02, 255/06  
U.S. Cl. 525—281 5 Claims

1. In a method for cross-linking radically cross-linkable saturated hydrocarbon polymer systems and for stabilizing such polymer systems against oxidative and/or thermal decomposition, the improvement comprising carrying out the cross-linking of the polymer systems in the presence of oxidation inhibitors selected from the group consisting of compounds represented by the following formulae:

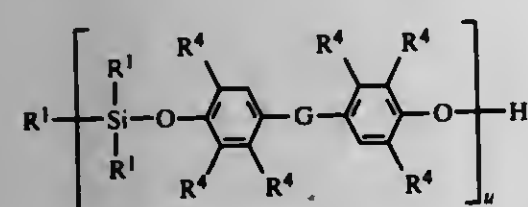




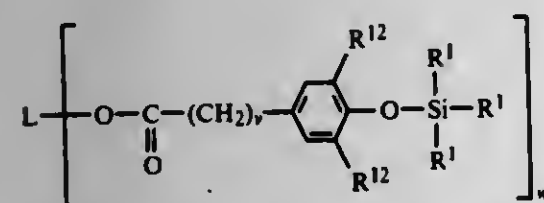
wherein G is selected from n-alkylene or iso-alkylene having 1 to 5 C-atoms, O and S;

at least one R<sup>1</sup> at each Si-atom is alkenyl with 2 to 3 C-atoms and, for any remaining positions, R<sup>1</sup> is selected from cycloalkyl, aryloxy, aralkyloxy having 7 to 11 C-atoms, cycloalkyloxy, alkyl with 1 to 3 C-atoms, phenyl, alkyloxy with 1 to 3 C-atoms, methoxyethoxy and ethoxyethoxy; and

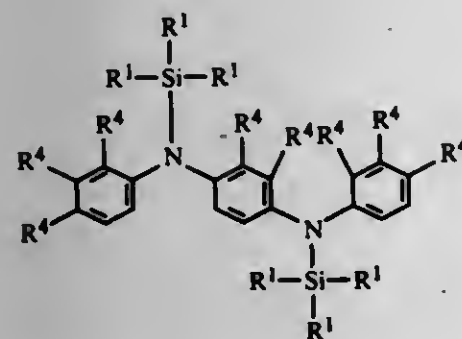
R<sup>4</sup> is selected from hydrogen, n- or iso-alkyl with 1 to 5 C-atoms or the two R<sup>4</sup> ortho substituents together can be benzo;



wherein u is a number from 1 to 20 and R<sup>1</sup>, R<sup>4</sup> and G are as defined above;



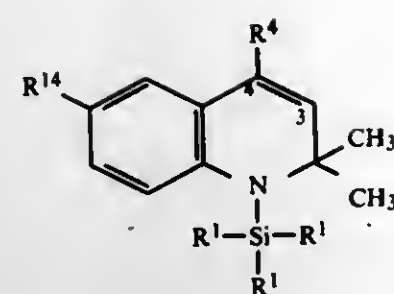
wherein v=0 to 2 and w=1 to 6, R<sup>1</sup> is as defined above, R<sup>12</sup> is n- or iso-alkyl with 1 to 5 C-atoms and L is a w-times substituted n- or isoalkyl radical with 1 to 6 C-atoms;



wherein R<sup>1</sup> and R<sup>4</sup> are as defined above;

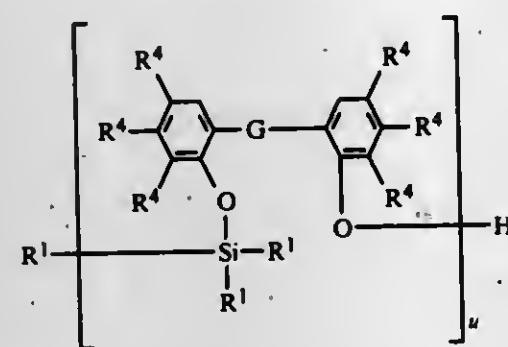


wherein R<sup>1</sup> and R<sup>4</sup> are as defined above;



wherein R<sup>1</sup> and R<sup>4</sup> are as defined above; R<sup>14</sup> is selected from hydrogen, n- or isoalkyl with 1 to 12 C-atoms and n- or isoalkyloxy with 1 to 12 C-atoms;

(g) compounds formed by oligimerizing the compounds of (f) via the C=C double bond at atoms C<sup>3</sup> and C<sup>4</sup> and



wherein R<sup>1</sup>, R<sup>4</sup>, G and u are as defined above.

4,283,506

#### PROCESS FOR PREPARING RUBBER REINFORCED STYRENIC RESINS

William J. I. Bracke, Hamme, and Emmannel Lanza, Brussels, both of Belgium, assignors to Labofina, S.A., Brussels, Belgium

Filed Mar. 27, 1980, Ser. No. 134,473  
Int. Cl.<sup>3</sup> C08L 27/00

U.S. Cl. 525—309

28 Claims

1. A process for the continuous production of rubber reinforced styrenic resins of the ABSA-type which are composites of styrenic compound-acrylonitrile copolymers and rubbery polymers of acrylate esters crosslinked by a diolefinic compound, said process comprising the steps of:

- adding a monomer material selected from the group consisting of alkyl ester of acrylic acid, alkyl ester of methacrylic acid and mixtures thereof together with a part of the diolefinic compound to a first solution of a copolymeric matrix of a styrenic compound and acrylonitrile in an inert solvent, whereby there is formed a second solution of said monomer material and said matrix in the inert solvent,
- charging continuously said second solution into a first polymerization reactor and subjecting said second solution to mass polymerization conditions to polymerize a part of said monomer material,
- withdrawing continuously a prepolymer mixture from said first reactor,
- charging continuously said mixture into a second polymerization reactor and subjecting said mixture to a further mass polymerization in the presence of the rest of the diolefinic compound whereby there is formed in situ a crosslinked rubbery material that is dispersed into said copolymer matrix,
- withdrawing continuously a reaction mixture from said second reactor and subjecting said mixture to a heat treatment to remove the solvent and the residual monomers, and
- recovering the ABSA resin.

4,283,507

#### HYDROLYSIS OF ACRYLAMIDE POLYMERS

Kenneth G. Phillips, River Forest, and Mary E. Bingham, Palos Hills, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Feb. 25, 1980, Ser. No. 124,615  
Int. Cl.<sup>3</sup> C08F 8/34, 8/42, 8/44

U.S. Cl. 525—344

3 Claims

1. A method of enhancing hydrolysis of an acrylamide polymer contained in a latex, employing either sodium hydroxide or sodium sulfite as a hydrolyzing agent for imparting anionic character to the polymer, comprising:

- incorporating a mixture of the latex and hydrolyzing agent in a reaction vessel having a vapor space above the mixture; and
- reacting the mixture at about 125° C. while maintaining a pressure in the vapor space sufficient to suppress boiling, for a time sufficient to convert amide groups to anionic character.

4,283,508

#### FRAGRANT PREVULCANIZATION INHIBITORS

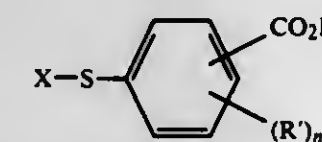
Otto W. Maender, Copley, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed May 22, 1980, Ser. No. 152,279  
Int. Cl.<sup>3</sup> C08F 8/34

U.S. Cl. 525—351

13 Claims

1. A vulcanizable composition comprising sulfur-vulcanizable rubber, sulfur-vulcanizing agent, organic accelerating agent and, in an amount effect to inhibit premature vulcanization, a compound of the formula:



in which X is an amide inhibitor moiety, R is alkyl of 1-8 carbon atoms, R' is alkyl of 1-8 carbon atoms, alkoxy of 1-8 carbon atoms, —CO<sub>2</sub>—R, or halo, and n is 0, 1 or 2.

4,283,509

#### PHOTOCROSSLINKABLE POLYMERS WITH SIDE TRICYCLIC IMIDYL GROUPS

Hans Zweifel, Basel, and Daniel Bellus, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 6, 1979, Ser. No. 9,984

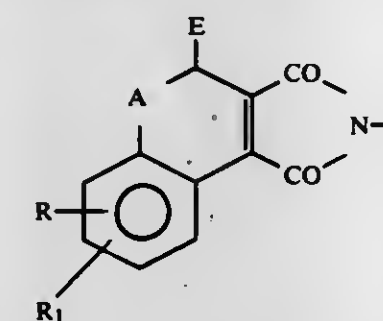
Claims priority, application Switzerland, Feb. 8, 1978, 1401/78

Int. Cl.<sup>3</sup> C08F 8/30

U.S. Cl. 525—375

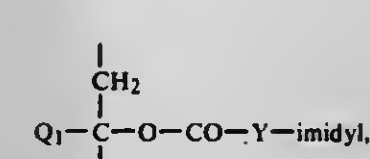
5 Claims

1. A photo-crosslinkable polymer, which has an average molecular weight between 1,000 and 1,000,000, as measured by inherent viscosity on a 0.5% by weight solution in N,N-dimethylformamide or chloroform, and which has side imidyl groups of the formula (I)

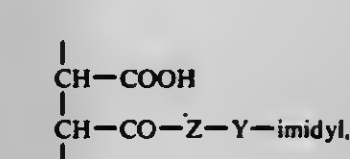


in which R and R<sub>1</sub> independently of one another are hydrogen, halogen, alkyl having 1-4 C atoms or methoxy, A is —CH<sub>2</sub>—, —CH<sub>2</sub>CH<sub>2</sub>— or —OCH<sub>2</sub>— with the oxygen atom bonded to the aromatic ring and E is hydrogen, or A is —O— and E is

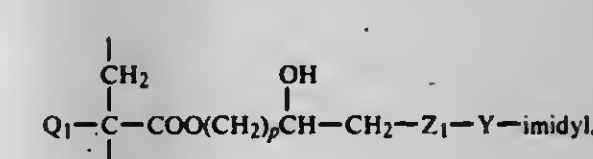
—CH<sub>3</sub>, the proportion of imidyl groups of the formula (I) being at least 5 percent, based on the number of recurring structural elements in the polymer, said polymer being a homopolymer or copolymer derived from monomers containing reactive C=C double bonds, wherein said polymer comprises (a) from 5 to 100 percent, based on recurring structural elements in the polymer chain, of molecular chain members selected from the group consisting of formulas (IV), (VI), (VII) and (X) to (XIV).



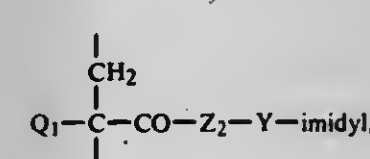
(IV)



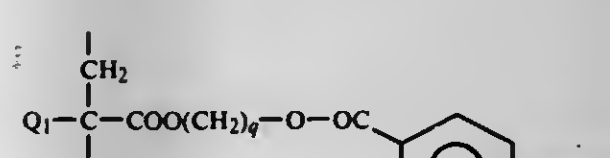
(VI)



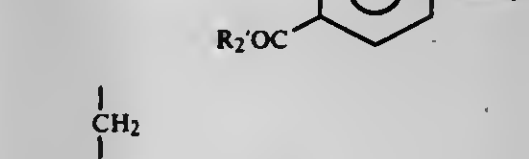
(VII)



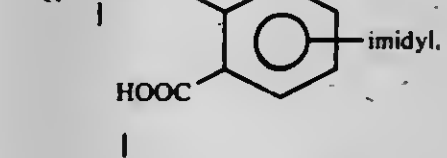
(X)



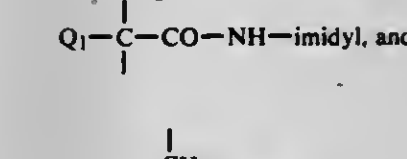
(XI)



(XII)



(XIII)



(XIV)

in which imidyl is a radical of the formula (I), Y is alkylene having 1-30 C atoms, or is interrupted by hetero-atoms, or is cycloalkylene having 5 or 6 C atoms, a dicyclohexylmethane radical, arylenes having 6-10 C atoms, or aralkylene or alkylarylene having 7 or 8 C atoms, or said radicals Y being substituted, and Q<sub>1</sub> is hydrogen or methyl, R<sub>2</sub>' is —OH or —O—M<sup>+</sup>, M<sup>+</sup> is an alkali metal cation, a pyridinium cation or a trialkylammonium cation having 3-24 C atoms, p is the number 1 or 2, q is an integer from 2 to 4, Z is —O—, —NH—,



4,283,511

## METHOD FOR PRODUCING MODIFIED POLYPHENYLENE OXIDES

Katsuji Ueno, Hirakata, and Takashi Maruyama, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 31, 1980, Ser. No. 135,236

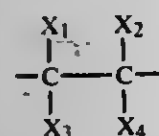
Claims priority, application Japan, Apr. 12, 1979, 54/45093  
Int. Cl.<sup>3</sup> C08F 283/08

U.S. Cl. 525—392

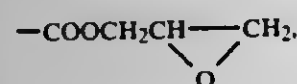
14 Claims

having 1-4 C atoms or —S—, Z<sub>1</sub> is —OCO—, —NH—, —N—alkyl having 1-4 C atoms, —O— or —S— and Z<sub>2</sub> is —O—, —S— or —NH—, and

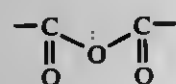
(b) from 95 to 0 percent, based on recurring structural elements in the polymer chain, of structural elements of the formula (XVI)



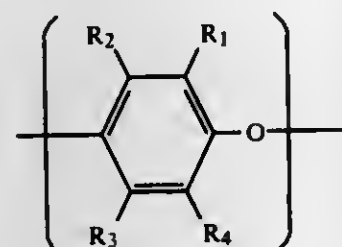
in which X<sub>1</sub> and X<sub>3</sub> are each hydrogen, X<sub>2</sub> is hydrogen, chlorine or methyl and X<sub>4</sub> is hydrogen, methyl, chlorine, —CN, —COOH, —CONH<sub>2</sub>, phenyl, methylphenyl, methoxyphenyl, cyclohexyl, pyridyl, imidazolyl, pyrrolidyl, —COO—alkyl having 1-12 C atoms in the alkyl moiety, —COO—phenyl,



—COO—alkyl—OH having 1-3 C atoms in the alkyl moiety, —OCO—alkyl having 1-4 C atoms in the alkyl, —OCO—phenyl, —CO—alkyl having 1-3 C atoms in the alkyl, alkoxy having 1-6 C atoms or phenoxy, or X<sub>1</sub> and X<sub>2</sub> are each hydrogen and X<sub>3</sub> and X<sub>4</sub> together are the grouping



or each are —COOH or —COO—alkyl having 1-6 C atoms in the alkyl.



wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are each a hydrogen or halogen atom, or a hydrocarbon, substituted hydrocarbon, cyano, hydrocarbonoxy, substituted hydrocarbonoxy, nitro or amino group.

14. A modified polyphenylene oxide prepared by the method of anyone of claims 1 to 12.

4,283,512

## COPOLYMER HAVING PEROXY BONDS IN THE MOLECULE THEREOF AND A PROCESS FOR PRODUCING THE SAME

Masaru Matsushima, Aichi, Japan; Takeshi Komai, Lawrence, Kans., and Masaharu Nakayama, Nagoya, Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

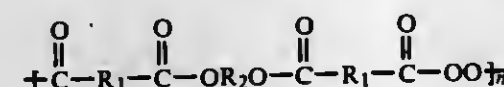
Filed Nov. 27, 1979, Ser. No. 97,627

Claims priority, application Japan, Nov. 30, 1978, 53/148436  
Int. Cl.<sup>3</sup> C08F 283/02

U.S. Cl. 525—438

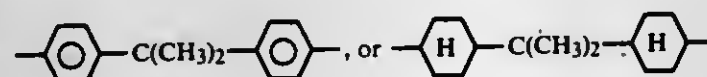
6 Claims

1. A copolymer having peroxy bonds in the molecule thereof, which copolymer is prepared by copolymerizing a diacyl type polymeric peroxide having the formula



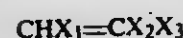
wherein

R<sub>1</sub> is alkylene having 1 to 15 carbon atoms or phenylene, R<sub>2</sub> is alkylene having 2 to 10 carbon atoms, —(CHR<sub>3</sub>, C—H<sub>2</sub>O), CHR<sub>3</sub>, CH<sub>2</sub> wherein R<sub>3</sub> is hydrogen or methyl and 1 is 1 to 10,



and n is 2 to 10

with one or more monomers having the formula



wherein

## POLYCHLOROPRENE TREATED WITH ALKYLATED DIARYL AMINE

Nathan L. Turner, Houston, Tex., assignor to Denka Chemical Corporation, Houston, Tex.

Continuation of Ser. No. 144,277, May 17, 1971, abandoned.

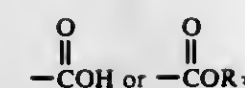
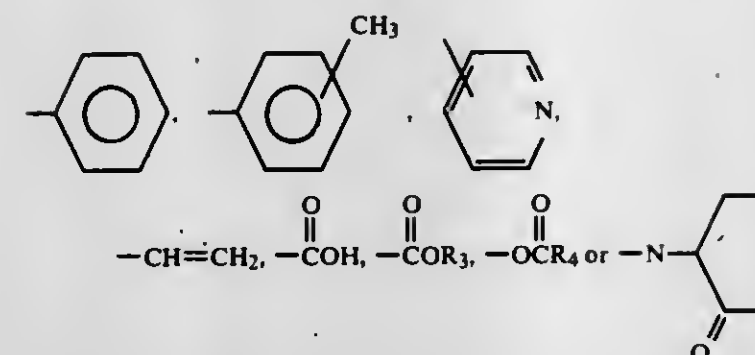
This application May 6, 1975, Ser. No. 575,110

Int. Cl.<sup>3</sup> C08C 3/00; C08F 2/26

U.S. Cl. 525—379

10 Claims

1. In a process for preparing polymers of chloroprene by emulsion polymerization using from about 0.05 to 2.0 parts by weight per 100 parts of polymerizable monomers of an octyl sulfate emulsifying agent selected from the group consisting of alkali metal octyl sulfates, ammonium octyl sulfates and mixtures thereof and washing of the resultant polymer with water to remove soluble emulsifying agents, the improvement comprising using as a stabilizer an alkylated diaryl amine.

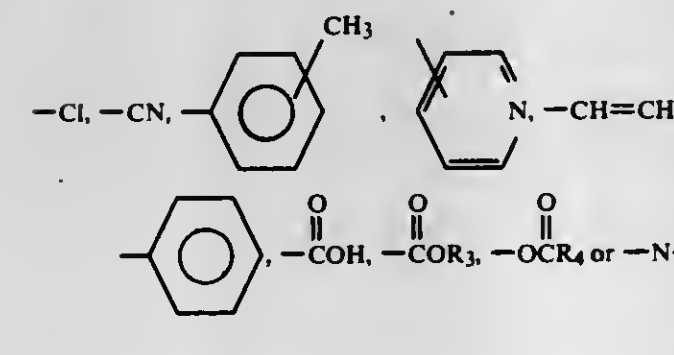
X<sub>1</sub> is hydrogen,X<sub>2</sub> is hydrogen, —CH<sub>3</sub>, —Cl or —CN,X<sub>3</sub> is —Cl, —CN,

or

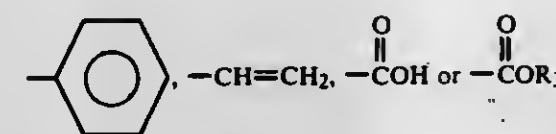
X<sub>1</sub> and X<sub>3</sub> together define

in which R<sub>3</sub> and R<sub>4</sub> are alkyl having 1 to 18 carbon atoms or substituted alkyl having 1 to 18 carbon atoms with the provisos that

(1) when X<sub>1</sub> and X<sub>2</sub> are both hydrogen, X<sub>3</sub> is

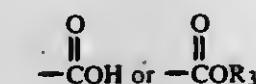
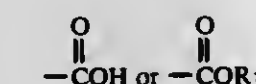


(2) when X<sub>1</sub> is hydrogen and X<sub>2</sub> is —CH<sub>3</sub>, X<sub>3</sub> is

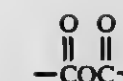


(3) when X<sub>1</sub> is hydrogen and X<sub>2</sub> is —Cl or —CN, X<sub>3</sub> is —Cl, CN or —CH=CH<sub>2</sub>

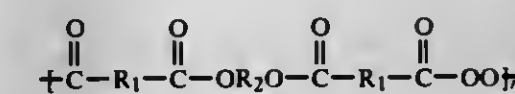
(4) when X<sub>1</sub> is

X<sub>2</sub> is hydrogen, and X<sub>3</sub> is

(5) when X<sub>1</sub> and X<sub>3</sub> together define



X<sub>2</sub> is hydrogen, said copolymer consisting essentially of units of the formula —CHX<sub>1</sub>—CX<sub>2</sub>X<sub>3</sub>— and



wherein 1 ≤ m ≤ n-1.

4,283,513

SILOXANE-MODIFIED EPOXY RESIN COMPOSITION  
Ryuzo Mikami, Ichihara, Japan, assignor to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,238

Int. Cl.<sup>3</sup> C08L 63/02, 83/06

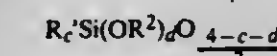
U.S. Cl. 525—476

8 Claims

1. A siloxane-modified epoxy resin composition consisting essentially of (A) 100 parts by weight of a siloxane-modified epoxy resin prepared by reacting (1) 5 to 70 parts by weight of an alkylphenylpolysiloxane of the general unit formula



wherein each R is an alkyl or a phenyl radical such that the ratio of alkyl radicals to phenyl radicals in the alkylphenylpolysiloxane is 0.3 to 3.0, X is an alkoxy radical or a hydroxyl radical, a is 0.9 to 1.8, and b is 0.01 to 2 with (2) 95 to 30 parts by weight of an epoxy resin having at least two epoxy groups per molecule, (B) 0.01 to 30 parts by weight of an alkoxy group containing organopolysiloxane of the general unit formula



wherein R' is selected from the group consisting of monovalent hydrocarbon radicals and halogen substituted monovalent hydrocarbon radicals, R<sup>2</sup> is an alkyl radical, c is 0.9 to 1.8 and d is 0.01 to 2 and (C) a curing agent for (A).

4,283,514

## CHEMICALS FOR TERMINATION OF POLYVINYLCHLORIDE POLYMERIZATIONS

Dean R. Weimer, and Charles M. Starks, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Division of Ser. No. 969,742, Dec. 14, 1978, Pat. No. 4,229,598.

This application Aug. 22, 1979, Ser. No. 68,819

Int. Cl.<sup>3</sup> C08F 2/42; C08K 5/13

U.S. Cl. 526—84

4 Claims

1. A method for terminating polyvinyl chloride polymerizations comprising injecting into the polymerization reactor at the desired level of conversion a free radical inhibitor obtained by,

(1) methylating phenol with methanol in vapor phase at pressures of from about 1 to about 2500 pounds per square inch gauge, temperatures of from about 400° C. to about 700° C. and liquid hourly space velocity of from about 1 to about 15 in the presence of alumina or alumina containing catalyst and recovering a product stream therefrom;

(2) distilling said product stream into desired fractions and retaining the fraction obtained at temperatures of from about 205° C. to about 230° C. at one atmosphere, and then;

(3) alkylating the retained fraction with acidic catalysts at temperatures of from about 10° C. to about 110° C. and



pressures of at least atmospheric while at a product fraction/alkylating agent weight ratio of from about 1/0.23 to about 1/1.85 respectively, then;  
(4) fractionally distilling the product of (3) and retaining the fraction obtained at temperatures of from about 110° C. to about 200° C. at 30 mm of mercury.

4,283,515

## SUPPORT, CATALYST AND PROCESS FOR POLYMERIZING OLEFINS

Ronald L. Gibbs, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 24,488, Mar. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 973,351, Dec. 26, 1978, abandoned, which is a division of Ser. No. 920,769, Jun. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 837,665, Sep. 29, 1977, abandoned. This application Jun. 17, 1980, Ser. No. 160,331 Int. Cl.<sup>3</sup> C08F 4/02, 10/02

U.S. Cl. 526—127

14 Claims

1. A process for the polymerization of one or more alpha olefins under conditions characteristic of Ziegler polymerization which process comprises employing as a polymerization catalyst a composition resulting from the addition of a reducing agent to a mixture of a support suspended in an inert liquid hydrocarbon and a transition metal compound of Groups 4b, 5b, 6b, 7b, or 8 of Mendeleev's Periodic Table under conditions so as to provide a catalytically active solid product and in such proportions that the magnesium:transition metal atomic ratio is from about 0.1:1 to about 30:1 followed by washing the resultant solid catalyst product with an inert liquid hydrocarbon wherein said support comprises the reaction product of (1) a mixture of an organomagnesium compound represented by the formula  $MgR_2$  and a silicon halide represented by the formula  $R'_4SiX_n$ , said mixture being in a non-polar solvent, with (2) an alcohol represented by the formula  $R''OH$ ; wherein the organomagnesium compound is or can be rendered hydrocarbon soluble and wherein each R, R' and R'' is independently a hydrocarbon group having from 1 to about 20 carbon atoms, X is Cl, Br or I, n has a value of from 1 to 4 and wherein the molar ratio of  $R''OH:MgR_2$  is at least 2:1 and the molar ratio of  $R''OH:R'_4SiX_n$  is sufficient so as to provide at least one X group per OH group.

4,283,516

## PROCESS FOR THE SUSPENSION POLYMERIZATION OF POLYVINYL CHLORIDE

William D. Peeples, New Castle, Del., assignor to Diamond Shamrock Plastics Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 19,343, Mar. 12, 1979, abandoned. This application Oct. 29, 1979, Ser. No. 89,096 Int. Cl.<sup>3</sup> C08F 2/18

U.S. Cl. 526—202

9 Claims

1. A process for the suspension polymerization in an aqueous medium at temperatures between about 30° and about 80° C. of vinyl chloride monomer with or without suitable comonomer in the presence of an oil soluble initiator wherein said aqueous medium contains from about 0.02 to about 0.75 parts per 100 parts, by weight, of total monomer of a combination of suspending agents composed of (a) a polyvinyl alcohol resin (PVA) with a hydrolysis level of between about 68 percent and 78 percent and having a viscosity in a 4 percent, by weight, solution in water of between about 1 and about 25 centipoises, and (b) a hydroxypropyl cellulose ether (HPC) having a molar substitution of between about 2 and about 4 hydroxypropoxyl groups per anhydroglucose monomer unit in the cellulose chain, with the HPC/PVA ratio, by weight, being between about 1/5 and about 2/1.

4,283,517  
CONTINUOUS PROCESS FOR SOLUTION POLYMERIZATION OF ACRYLAMIDE

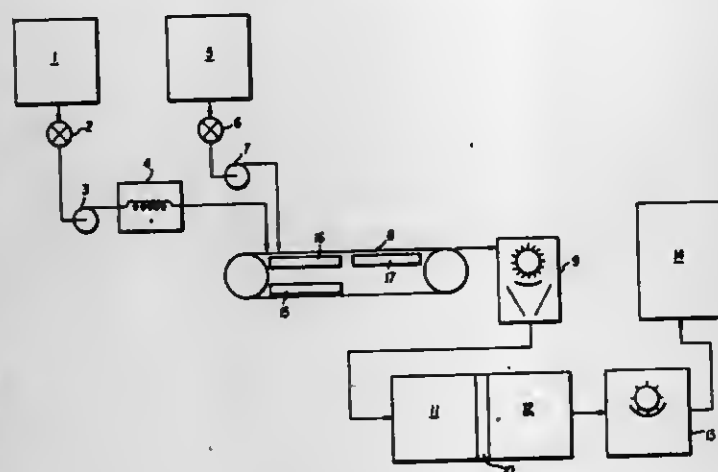
Alphonse C. Perricone, and James M. Lucas, both of Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.

Filed Jul. 16, 1979, Ser. No. 57,918

Int. Cl.<sup>3</sup> C08F 2/00, 4/30

U.S. Cl. 526—229

21 Claims



1. A continuous polymerization process for producing a continuous, substantially homogeneous stream of a solid, non-tacky polymer which comprises the steps of:

(a) forming a concentrated aqueous monomer solution at a temperature of from 23° to 40° C. to form a single phase solution said monomers being:

(i) a mixture consisting essentially of an alkali metal salt of acrylic acid, a hydroxyalkyl acrylate and acrylamide, in proportions of from 5 to 62 mole%, from 2.1 to 40 mole% and from 31 to 91 mole%, respectively; or  
(ii) a mixture consisting essentially of (a) a (meth)acrylamidoalkylsulfonic acid or alkali metal salt thereof and (b) (meth)acrylamide or N-alkyl(meth)acrylamide, in proportions of from 8 to 70 mole% and from 30 to 92 mole %, respectively; or  
(iii) mixture (ii), further containing from 0.2 to 4.4 moles of a quaternary ammonium salt cross-linking agent;

(b) heating a continuous stream of the monomer solution of step (a) to a polymerization initiation temperature of from 60° to 80° C. for mixture (i) or from 55° to 65° C. for mixture (ii) or (iii), by passage through an indirect heat exchanger at a rate such that the residence time of the solution in the heat exchanger is not longer than 0.5 minute;

(c) immediately and continuously thereafter depositing the heated stream of monomer solution as a continuous, substantially uniform layer on a moving surface;

(d) substantially simultaneously with step (c), continuously and substantially uniformly applying to the moving surface of catalytically effective amount of an aqueous solution of a polymerization initiator for the monomers, thereby continuously forming a substantially uniform reaction mixture of the heated monomer solution and the initiator on the moving surface said moving surface and said reaction mixture being unheated or heated only sufficiently to keep the temperature of the polymerizing mixture on the moving surface from falling substantially below said polymerization initiation temperature until polymerization is substantially complete; whereby the monomers exothermically and substantially homogeneously polymerize and a portion of the water therein evaporates to form a continuous stream of a substantially homogeneous solid, non-tacky polymer; and

(e) recovering the resultant solid, non-tacky polymer.

4,283,518

## PROCESS FOR MANUFACTURING A PETROLEUM RESIN

Toru Iwashita, Yokkaichi; Mineo Nagano, Shinnanyo, and Koji Tanaka, Yokkaichi, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed Dec. 13, 1979, Ser. No. 103,538

Claims priority, application Japan, Dec. 13, 1978, 53-153062

Int. Cl.<sup>3</sup> C08F 212/06, 212/08

U.S. Cl. 526—237

4 Claims

1. A process for manufacturing a petroleum resin comprising mixing (1) a fraction (component A) containing an aromatic hydrocarbon and obtained by the cracking of petroleum and having a boiling point in the range of 140°–280° C. and (2) a thermally polymerized oil (component B) which is a product obtained by polymerizing component A at a temperature of 180°–300° C. for a period of from 10 minutes to 10 hours, the amount of component B being from 1–99% by weight of the mixture; and subjecting said mixture of component A and component B to polymerization employing a Friedel-Crafts catalyst to obtain a petroleum resin having a softening point in the range of 50°–120° C.

4,283,520

## STORAGE-STABLE, HOMOGENEOUS MIXTURE CONTAINING EPOXIDE RESIN, CURING AGENT AND CURING ACCELERATOR, AND THE USE OF THE MIXTURE FOR PRODUCING CURED PRODUCTS

Roland Moser, Basel, and Alfred Renner, Münchenstein, both of Switzerland, assignors to Ciba-Gelby Corporation, Ardsley, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,403

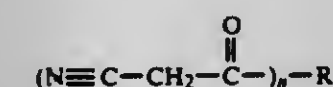
Claims priority, application Switzerland, Apr. 20, 1979, 3747/79

Int. Cl.<sup>3</sup> C08G 59/42, 59/46

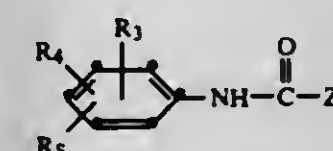
U.S. Cl. 528—93

13 Claims

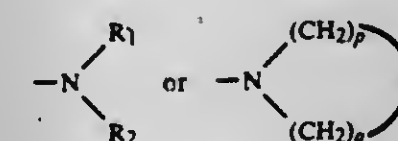
1. A homogeneous mixture of epoxide resin, curing agent for the resin, and curing accelerator, which mixture contains  
(a) an epoxide resin having on average more than one epoxide group in the molecule,  
(b) as curing agent for the epoxide resin, a cyanoacetyl compound dissolved in the resin, which compound has a melting point (m.p.) below 120° C. and corresponds to the formula I



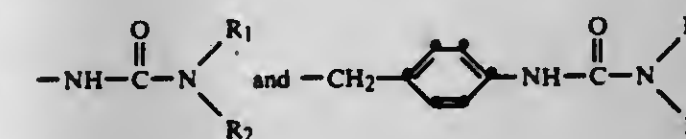
wherein R is the radical of a mono- to tetravalent alcohol or amine having a partial molecular weight of  $\leq 2000$ , which radical is formed by removal of 1 to 4 hydroxyl hydrogen atoms or amine hydrogen atoms, and n is a number from 1 to 4 inclusive, the amount of (b) being such that to 1  $-CH_2-C \equiv N$  group there are 3–4 epoxide groups of the component (a), and  
(c) as curing accelerator, to 100 parts by weight of epoxide resin 0.1 to 10 parts by weight of a phenylurea derivative of the formula II



in which Z is the group



wherein A is  $-CH_2-$  or N, p is 0, 1 or 2, and q is 1 or 2, and R<sub>1</sub> and R<sub>2</sub> independently of one another are each an alkyl group having 1 to 4 carbon atoms, and wherein R<sub>3</sub> and R<sub>4</sub> independently of one another are each hydrogen, halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, or a substituted or unsubstituted phenyl or phenoxy group, and R<sub>5</sub> is hydrogen, trifluoromethyl, nitro or one of the groups



4,283,519

## ORGANOSILICONE TERPOLYMERS

Arthur N. Pines, Katonah; Gordon C. Johnson, Armonk, and Fannie L. Campbell, Briarcliff Manor, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,708

Int. Cl.<sup>3</sup> B05D 3/02; B32B 7/00; C08G 77/04

U.S. Cl. 528—26

4 Claims

1. An organosilicone terpolymer of the formula



wherein M, each occurrence, is a end-capping unit of the formula  $A_3SiO_4$  in which A is a monovalent organic radical free of olefinic unsaturation or is hydroxyl bonded directly to the silicon atoms, or M is alkoxy of 1 to 13 carbon atoms,

D is a unit of the formula  $R_2SiO$  wherein R is a monovalent hydrocarbon radical free of acetylenic unsaturation,

D' is a unit of the formula  $RR'SiO$  wherein R is a monovalent hydrocarbon radical free of acetylenic unsaturation and R' is a polyoxyalkylene unit of the formula  $-C_nH_{2n}(OC_2H_4)_p(OC_3H_6)_qOR''$  in which R'' is a hydrogen, acyl of 1 to 8 carbon atoms, or a monovalent hydrocarbon radical of 1 to 13 carbon atoms, n is an integer having an average value from 3 to 8, and a and b are such that the sum of a + b is from 5 to 200 and the quantity  $a/(a+b)$  is from 0 to 1.0,

D'' is a unit of the formula  $RR''SiO$  wherein R is a monovalent hydrocarbon radical free of acetylenic unsaturation and R'' is a radical of the formula  $-L-SiR_mX_{3-m}$  wherein L is a non-hydrolyzable aliphatic hydrocarbon linkage which separates the silicon atoms by at least two carbon atoms, R''' is alkyl of up to 8 carbon atoms, X is hydroxyl or a hydrolyzable group, and m is 2, 1, or 0, and x is an integer from 25 to 500, y is an integer from 1 to 2x, and z is an integer from 1 to 2x.



# 4,283,521 CURABLE AROMATIC EPOXY-POLYIMIDE AND CYCLOALIPHATIC EPOXY-POLYIMIDE COMPOSITIONS

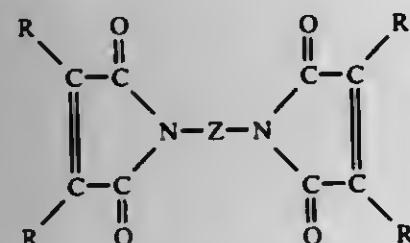
Robert J. Jones, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Feb. 14, 1979, Ser. No. 12,097  
Int. Cl.<sup>3</sup> C08G 73/10, 59/40

U.S. Cl. 528-117

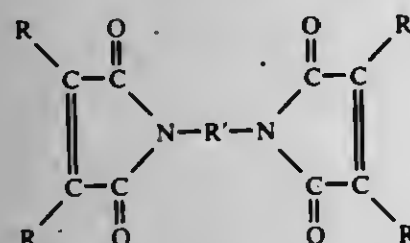
35 Claims

1. A low temperature curable composition comprising:
  - (a) at least one curable polyimide prepolymer formed at a temperature sufficient to cause thermal reaction between heated components of a mixture of:
  - (i) at least one aliphatic bismaleimide of the formula:

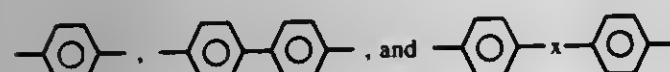


wherein Z is a polyaliphatic ether in which each aliphatic group individually contains from one to about six carbon atoms, and in which each R is independently selected from the group consisting of hydrogen, an aliphatic group containing one or two carbon atoms, a benzenoid radical and a halogen;

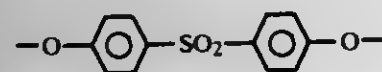
- (ii) at least one aromatic polyamine; and
- (iii) at least one aromatic bismaleimide of the formula:



wherein each R is independently selected from the group consisting of hydrogen, an aliphatic group containing one or two carbon atoms, a benzenoid radical and a halogen and wherein R' is a bifunctional benzenoid radical selected from the group consisting of:

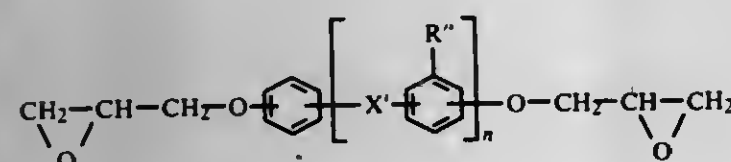


wherein X is selected from the group consisting of:  $-O-$ ,  $-S-$ ,  $-SO_2-$ ,  $-CH_2-$ ,  $-C_2H_4-$ ,  $-CO-$ ,  $-C_3H_6-$ , and

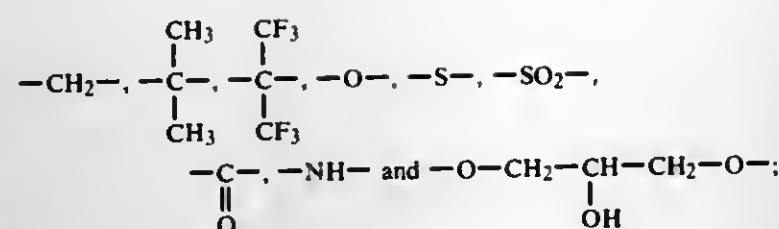


and;

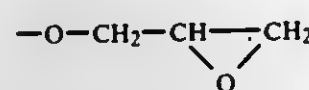
- (b) at least one aromatic epoxy resin of the formula:



wherein n has an average value of from 0 to about 6; each X' is independently selected from the group consisting of:



and each R'' is independently selected from the group consisting of  $-H$ , and



# 4,283,522 PROCESS FOR PREPARING THERMOSETTING PREPOLYMER FROM MIXTURE OF POLYFUNCTIONAL MALEIMIDE AND BIS-MALEIMIDE

Akio Takahashi, Hitachi-Ohta; Yutaka Itoh, Hitachi; Motoyo Wajima, Hitachi; Hirosada Morishita, Hitachi, and Kenji Tsukanishi, Shimodate, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Aug. 31, 1979, Ser. No. 71,518

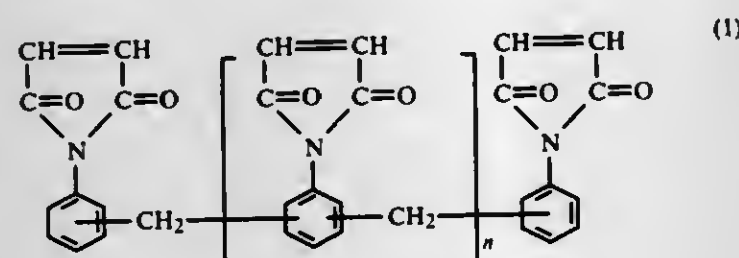
Claims priority, application Japan, Aug. 31, 1978, 53-106671  
Int. Cl.<sup>3</sup> C08G 69/26, 73/10

U.S. Cl. 528-170

10 Claims

1. A process for preparing a thermosetting maleimide prepolymer, which comprises heating, at a temperature of 100° to 150° C. for 10 to 60 minutes,

(A) a polyfunctional maleimide compound obtained by the dehydration reaction of an amide acid formed from maleic anhydride and a polyamine prepared by the condensation of aniline with formaldehyde and represented by the formula (1):



wherein n is in the range of from 0.1 to 3.0;  
(B) a bis-maleimide selected from the group consisting of N,N'-4,4'-diphenylmethane-bis-maleimide, N,N'-methylenebis(3-chloro-p-phenylene)-bis-maleimide, N,N'-4,4'-diphenyl-sulfone-bis-maleimide, N,N'-4,4'-diphenyl-ether-bis-maleimide, N,N'-ethylene-bis-maleimide, N,N'-hexamethylene-bis-maleimide and combinations thereof; and  
(C) a diamine selected from the group consisting of 4,4'-diaminodicyclohexylmethane, 1,4-diaminocyclohexane, 2,6-diaminopyridine, m-phenylenediamine, p-phenylenediamine, 4,4'-diaminodiphenylmethane, 2,2'-bis(4-aminophenyl)propane, benzidine, 4,4'-diaminodiphenylsulfone, bis(4-aminophenyl) methylphosphine oxide, bis(4-aminophenyl)phenylphosphine oxide, bis(4-aminophenyl)methylamine, 1,5-diaminonaphthalene, m-xylylenediamine, p-xylylenediamine, hexamethylenediamine, 6,6'-diamino-2,2'-dipyridyl, 4,4'-diaminobenzophenone, 4,4'-diaminoazobenzene, bis(4-aminophenyl)phenylmethane, 1,1-bis(4-aminophenyl)cyclohexane, 1,1-bis(4-amino-3-methylphenyl)cyclohexane, 2,5-bis(m-aminophenyl)-1,3,4-oxadiazole, 2,5-bis(p-aminophenyl)-1,3,4-oxadiazole, 2,5-bis(m-aminophenyl)thialoro(4,5-d)thiazole, 5,5'-di(m-aminophenyl)-2,2'-bis(1,3,4-oxadiazolyl), 4,4'-diaminodiphenyl ether, 4,4'-bis(p-

aminophenyl)-2,2'-dithiazole, m-bis(4-p-aminophenyl)-2-thiazolyl)benzene, 4,4'-diaminobenzanilide, 4,4'-diaminophenyl benzoate, N,N'-bis(4-aminobenzyl)-p-phenylenediamine, 4,4'-methylenebis(2-chloroaniline) and combinations thereof;

the weight proportion of the polyfunctional maleimide compound (A) relative to the total of the polyfunctional maleimide compound (A) and the bis-maleimide (B) being 10 to 80% and the molar ratio of the total of the polyfunctional maleimide compound (A) and the bis-maleimide (B) to the diamine (C) being 1:1 to 1:0.3.

4,283,523

# FLUORO-ALKYL ESTER-TERMINATED LINEAR AROMATIC POLYESTER OF ENHANCED HYDROLYTIC STABILITY

Gideon Salee, Williamsville, and Jerold C. Rosenfeld, Tonawanda, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,463

Int. Cl.<sup>3</sup> C08G 63/66, 63/68, 63/76

U.S. Cl. 528-176

11 Claims

1. In a linear aromatic polyester which comprises monomer residues of a bisphenol and a dicarboxylic acid and in which the terminal residues of the polyester chain comprise a residue of said dicarboxylic acid, the improvement wherein the end carboxylate groups of said terminal dicarboxylic acid residues comprise at least about 5 mole percent of a carboxylate ester of a fluorine substituted saturated aliphatic monofunctional alcohol of 1 to 45 carbon atoms, said proportion being based on the total moles of end groups in the polyester.

4,283,524

# PROCESS FOR POLYMERIZATION OF COMPOSITION COMPRISING (1) ALPHA,BETA-UNSATURATED MONOCARBOXYLIC ACID OR AMMONIUM SALT THEREOF AND (2) AMMONIA

Janice L. Greene, Chagrin Falls, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Apr. 23, 1979, Ser. No. 32,327

Int. Cl.<sup>3</sup> C08G 69/00

U.S. Cl. 528-363

39 Claims

1. A process for producing a resinous polymer containing carbonamide linkages wherein the carbonamide nitrogen is an integral part of the polymer backbone comprising polymerizing a composition comprising (1) at least one alpha, beta-unsaturated monocarboxylic acid or ammonium salt thereof and (2) ammonia.

4,283,525

# CONTINUOUS PROCESS FOR INCREASING DISCRETE PARTICLE SIZE OF SOLUTION CARBOXYL POLYMERS

Krishna K. Rao, Paterson, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Feb. 19, 1980, Ser. No. 122,385

Int. Cl.<sup>3</sup> C08F 6/12, 6/10, 6/24

U.S. Cl. 528-489

9 Claims

1. A process for producing discrete particles from a carboxyl-containing solution polymer comprising the steps of:
  - (a) continuously co-feeding into a reactor vessel (1) said solution polymer in an organic solvent or cosolvent system in flowable form, and (2) an aqueous phase containing an alkaline reagent in an amount of 1 to 20%, on a molar basis, of the total carboxyl-containing monomers employed in the polymerization;
  - (b) continuously stirring together said aqueous phase and said polymer to form a suspension such that the weight ratio of polymer solids to aqueous phase during the co-feeding operation is between about 1:20 and 10:1; and
  - (c) continuously discharging said suspension from the reactor vessel at a rate which is substantially equal to the rate at which said aqueous phase and said polymer are co-fed

into the reactor vessel, in which process the size of the polymeric particles produced is increased without destabilization thereof.

4,283,526

# METHOD OF TREATING POLYMERLATICES

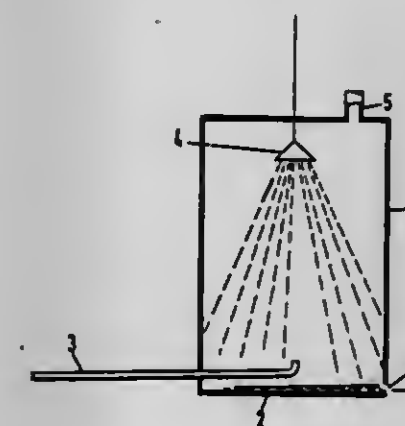
Bala P. Chandra, Huntingdon; Jeffrey C. Greaves, and Victor G. Lovelock, both of Welwyn Garden City, all of England, assignors to Imperial Chemical Industries Limited, London, England  
Continuation of Ser. No. 728,994, Oct. 4, 1976, now Defensive Publication No. T962,008. This application Mar. 15, 1979, Ser. No. 20,924

Claims priority, application United Kingdom, Oct. 13, 1975, 41848/75

Int. Cl.<sup>3</sup> C08F 6/16, 6/14

U.S. Cl. 528-500

5 Claims



1. A method of continuously treating an aqueous latex of a vinyl chloride polymer which contains unreacted residual monomer from the polymerisation reaction used for the production of the polymer, which method comprises:

(a) feeding the aqueous latex as a spray at a temperature within the range of 30°-0° C. below the boiling point of the latex into a vessel defining a chamber so that at least 80% by weight of the droplets of spray avoid contact with the side wall of the chamber, wherein the pressure inside the chamber is atmospheric or less than atmospheric, and  
(b) contacting the falling spray with steam flowing counter-current thereto, whereby residual monomer is removed with the flow of steam leaving the chamber.

4,283,527

# ERYTHROMYCYLAMINE 11,12-CARBONATE AND DERIVATIVES THEREOF

Frank C. Sciavolino, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 1, 1980, Ser. No. 136,197

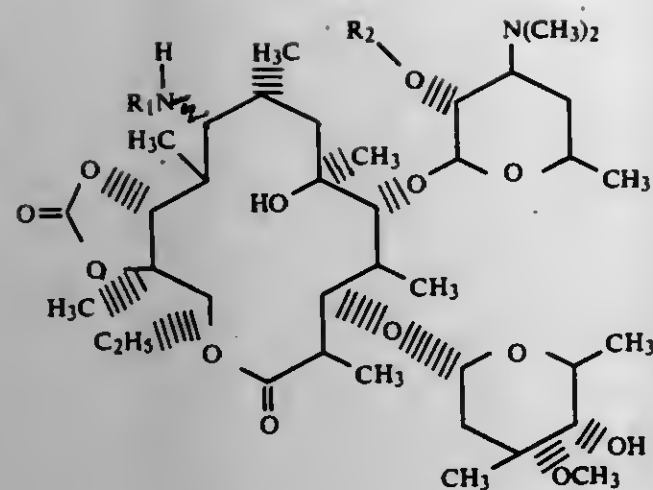
Int. Cl.<sup>3</sup> C07H 17/08

U.S. Cl. 536-9

11 Claims

1. A compound of formula I





wherein  $R_1$  is hydrogen or N-carbobenzyloxy; and  $R_2$  is hydrogen, acetyl, propionyl or 3-carboxypropionyl; or the pharmaceutically acceptable acid addition salts of those compounds wherein  $R_1$  is hydrogen.

4,283,528

### 1-N-AMINOHYDROXYACYL DERIVATIVES OF GENTAMICIN B

Peter J. L. Daniels, Cedar Grove, and Tattanahalli L. Nagabhushan, Parsippany, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 697,298, Jun. 17, 1976, abandoned.

This application Apr. 24, 1979, Ser. No. 32,808

Int. Cl.<sup>3</sup> A61K 31/71; C07H 15/22

U.S. Cl. 536—17 R

11 Claims

1. A compound selected from the group consisting of 1-N-(R-β-amino-α-hydroxypropionyl)-gentamicin B, 1-N-(R-γ-amino-α-hydroxybutyryl) gentamicin B, 1-N-(R-δ-amino-α-hydroxyvaleryl) gentamicin B, the respective R,S diastereoisomeric mixtures of said compounds and the non-toxic pharmaceutically acceptable acid addition salts thereof.

4,283,529

### 3-O-DEMETHYL DERIVATIVES OF SANNAMYCIN C AND ANTIBIOTIC AX-127B-1

William Rosenbrook, Jr., Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

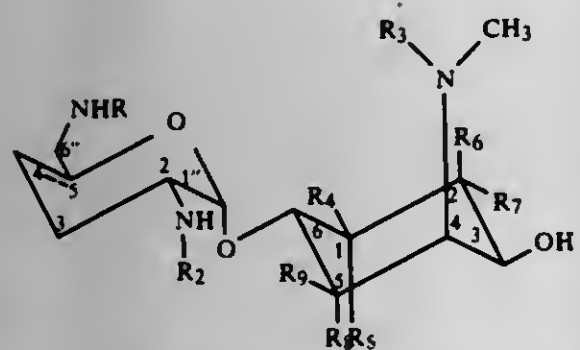
Filed Mar. 3, 1980, Ser. No. 126,732

Int. Cl.<sup>3</sup> A61K 31/71; C07H 15/22

U.S. Cl. 536—17 R

25 Claims

1. A 3-O-demethylsannamycin C or antibiotic AX-127B-1 derivative represented by the formula



wherein: R is hydrogen or methyl,  $R_2$  and  $R_3$  are the same or different members of the group consisting of hydrogen, acyl of the formula



wherein  $R_{10}$  is loweralkyl, aminoacyl, diaminoacyl, N-loweralkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxy-

substituted aminoacyl, loweralkyl, aminoloweralkyl, diamino-loweralkyl, hydroxyloweralkyl, N-loweralkylaminoloweralkyl, N,N-diloweralkylaminoloweralkyl, N-loweralkylaminohydroxyloweralkyl and N,N-diloweralkylaminohydroxyloweralkyl;  $R_4$  and  $R_5$  are hydrogen or amino with the limitation that one of either  $R_4$  or  $R_5$  must be hydrogen;  $R_6$  and  $R_7$  are selected from the group consisting of hydrogen, hydroxy, amino and chloro with the limitation that one of either  $R_6$  or  $R_7$  must be hydrogen;  $R_8$  and  $R_9$  are hydrogen or hydroxy with the limitation that one of either  $R_8$  or  $R_9$  must be hydrogen; and the pharmaceutically acceptable salts thereof.

4,283,530

### PROCESS FOR THE PREPARATION OF HEPARIN

Hans-Jorg Vidic, Berlin, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 851,562, Nov. 14, 1977, abandoned.

This application Jul. 2, 1979, Ser. No. 54,071

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1976, 2652272

Int. Cl.<sup>3</sup> C08B 37/10

U.S. Cl. 536—21

11 Claims

1. A method of extracting heparin from a heparin-containing source which comprises extracting heparin from intestinal brine which is produced by dewatering and preservation treatment of heparin-containing animal intestines whose mucosa has been removed, said dewatering and preservation treatment consisting essentially of treating said intestines with sodium chloride.

4,283,531

### SYNTHESIS OF β-LACTAMS HAVING A SUBSTITUTED HYDROXYMETHYLENE GROUP AT THE POSITION α TO THE LACTAM CARBONYL GROUP

Ashit K. Ganguly, Upper Montclair; Viyyoor M. Girijavallabhan, East Orange; Patricia Cavender, Lawrenceville; Olga Sarre, Verona, and Stuart W. McCombie, West Orange, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

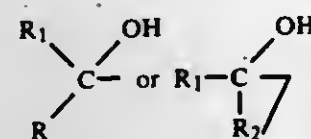
Division of Ser. No. 911,858, Jun. 2, 1978. This application Oct. 4, 1979, Ser. No. 81,734

Int. Cl.<sup>3</sup> C07D 499/00, 501/00

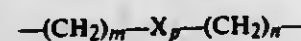
U.S. Cl. 544—30

14 Claims

1. The process for preparing and isolating a β-lactam having a substituted hydroxymethylene group at the position α to the lactam carbonyl group of the following formulae:



wherein R and  $R_1$  together with the carbon atom to which they are attached is the carbon residue of an aldehyde or ketone which contains no functional group that would preferentially react with a zinc halo-β-lactam intermediate over the oxo functionality; and wherein  $R_2$  is a group of the formula



wherein X is O or S; m is 0-3; n is 0-3; p is 0-1; with the proviso that that  $m+n+p$  is 3-5; which comprises the reaction of an α-halo-β-lactam wherein halo is chlorine, bromine or iodine, with zinc or zinc amalgam in an anhydrous aprotic medium at temperatures in the range of from about 0° C. to about 110° C., in the presence of an appropriate aldehyde or ketone, and breaking the zinc complex by the addition of water or a buffer of PH of about 5-7.

4,283,532

### PROCESS FOR PREPARATION OF O-(2,6-DICHLOROANILINO)PHENYLACETIC ACID AND NOVEL INTERMEDIATE FOR USE IN PREPARATION OF THE SAME

Fujio Nohara, Kamiichi, Japan, assignor to Ikeda Mohando Co., Ltd., Toyama, Japan

Filed Aug. 7, 1979, Ser. No. 64,404

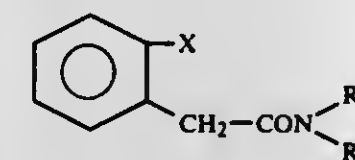
Claims priority, application Japan, Aug. 8, 1978, 53-96434

Int. Cl.<sup>3</sup> C07C 51/06, 102/00; C07D 295/18

U.S. Cl. 544—165

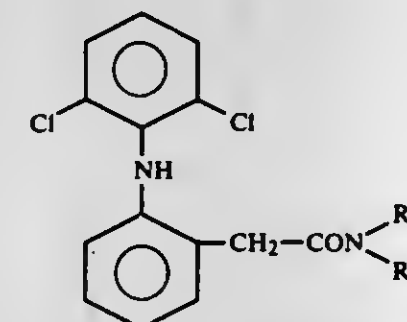
2 Claims

1. A process for the preparation of o-(2,6-dichloroanilino)-phenylacetic acid or its pharmacologically acceptable acid addition salt, which comprises reacting an N,N-disubstituted-o-halogenophenylacetamide derivative represented by the following general formula (I):



wherein  $R_1$  and  $R_2$ , which may be the same or different, stand for a lower alkyl group, or one of  $R_1$  and  $R_2$  stands for a lower alkyl group and the other of  $R_1$  and  $R_2$  stands for a phenyl or benzyl group, or  $R_1$  and  $R_2$  are bonded together to form a heterocyclic ring together with a nitrogen atom and/or an oxygen atom, and X stands for an iodine or bromine atom,

with 2,6-dichloroaniline in the presence of a copper catalyst to form an N,N-disubstituted-o-(2,6-dichloroanilino)phenylacetamide represented by the following general formula (II):



wherein  $R_1$  and  $R_2$  are as defined above, and hydrolyzing with an alkali.

4,283,533

### N-TYPE BETAINES OF 2-HYDROXY-1,1,2,3,3-PENTAFLUOROPERFLUOROALKYLAMINES

John W. Richter, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

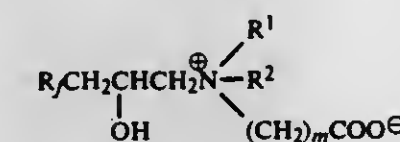
Filed Nov. 9, 1979, Ser. No. 92,767

Int. Cl.<sup>3</sup> C07D 265/30; B01F 17/28

U.S. Cl. 544—171

4 Claims

1. An amphoteric N-type betaine having surfactant properties represented by the formula:



wherein

$R_f$  is  $C_4$ - $C_{20}$  perfluoroalkyl;

$R^1$  and  $R^2$  are methyl or, together with the N atom to which they are bonded, form a piperidino, morpholino, or N-alkyl ( $C_1$ - $C_4$ ) piperazino; and

m is a whole number between 1 and 4; and mixtures thereof.

4,283,534

### REDUCTIVE ALKYLATION OF NITROGEN HETEROCYCLES

Norbert Goetz, Worms, and Leopold Hupfer, Friedelsheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 14, 1980, Ser. No. 130,448

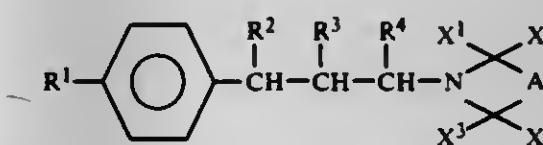
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914646; Sep. 27, 1979, 2939060

Int. Cl.<sup>3</sup> C07D 265/28, 295/02, 295/08

U.S. Cl. 544—174

1 Claim

1. A process for the preparation of an aralkylamine of the formula I

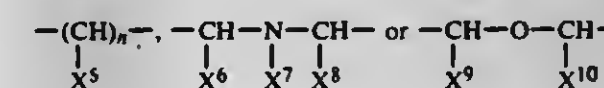


where

$R^1$  is hydrogen, an aliphatic hydrocarbon radical of 1 to 10 carbon atoms, a cycloaliphatic radical of 5 to 7 carbon atoms or alkoxy of 1 to 6 carbon atoms,

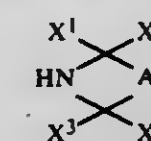
$R^2$ ,  $R^3$  and  $R^4$  are hydrogen or alkyl of 1 to 4 carbon atoms,  $X^1$ ,  $X^2$ ,  $X^3$  and  $X^4$  are hydrogen or alkyl of 1 to 4 carbon atoms,

A is



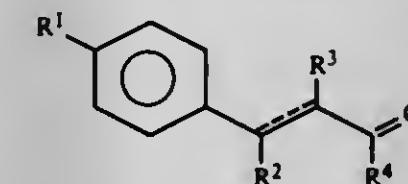
$X^5$ ,  $X^6$ ,  $X^7$ ,  $X^8$ ,  $X^9$  and  $X^{10}$  are hydrogen or alkyl of 1 to 4 carbon atoms and n is 2, 3 or 4,

by reacting a secondary amine of the formula II



where

$X^1$ ,  $X^2$ ,  $X^3$ ,  $X^4$  and A have the above meanings with a carbonyl compound of the formula III



where

$R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  have the above meanings and the bond shown in broken lines is a double bond or a single bond, wherein the reaction is carried out in the presence of hydrogen and of a hydrogenation catalyst which consists essentially of palladium, mixed with zinc, cadmium, manganese and/or a rare earth metal oxide, on an inert carrier.



4,283,535

METHOD FOR THE PRODUCTION OF  
2,4,6-TRIKETOHEXAHYDROTRIAZINES

Josef Disteldorf; Werner Hübel, and Elmar Wolf, all of Herne, Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 38,692

Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821109

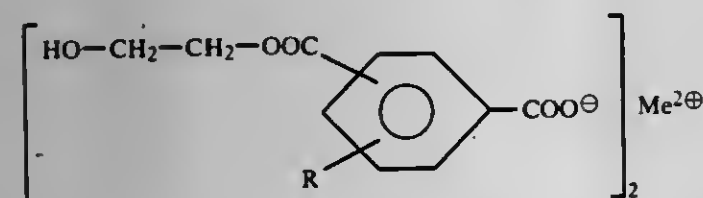
Int. Cl.<sup>3</sup> C07D 251/34

U.S. Cl. 544—193

6 Claims

1. A method of preparing 2, 4, 6-triketohehexahydrotriazines which comprises:

catalytically trimerizing an organic isocyanate at 60°–150° C. in an inert, polar solvent present in an amount of 5–40% by weight with respect to the quantity of said isocyanate, in the presence of 0.1–5 weight % of a catalyst of the formula:



or hydrated derivatives of said catalyst, wherein R is selected from the group consisting of hydrogen and C<sub>1</sub>–C<sub>4</sub> alkyl, and Me<sup>2+</sup> is a bivalent metal cation; interrupting the trimerization at a conversion of about 50%, by cooling said trimerization, and then isolating said 2, 4, 6-triketohehexahydrotriazine.

4,283,536

PREPARATION OF VINCADIFFORMINE AND  
RELATED DERIVATIVES

Martin E. Kuehne, Burlington, Vt., assignor to University of Vermont, Burlington, Vt.

Continuation-in-part of Ser. No. 865,657, Dec. 29, 1977, Pat. No. 4,154,943. This application Apr. 30, 1979, Ser. No. 34,792

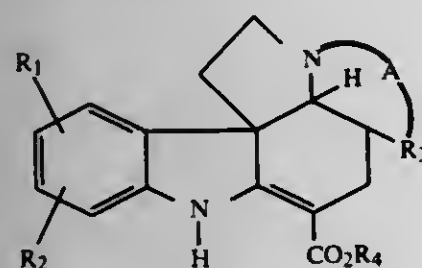
The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> C07D 471/14, 487/04

U.S. Cl. 546—51

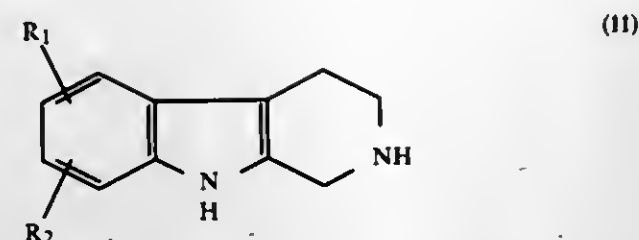
24 Claims

1. A process for the preparation of  $\pm$ vincadifformine and related compounds of the formula I:

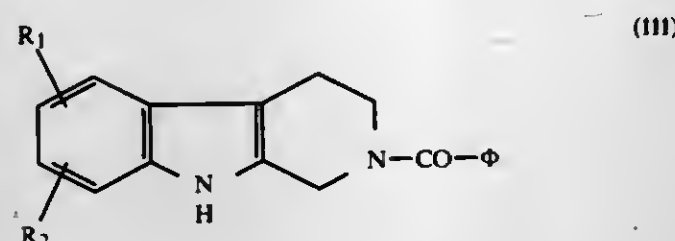


wherein each of R<sub>1</sub> and R<sub>2</sub> individually is hydrogen, acyloxy, carbamate, lower alkoxy of one to seven carbon atoms, lower alkyl of one to seven carbon atoms, or halo; R<sub>3</sub> and R<sub>4</sub> are the same or different and are hydrogen or alkyl having from 1 to 7 carbon atoms; A represents an alkyl chain or unsaturated aliphatic hydrocarbon chain of 2 to 7 carbon atoms and which may be substituted by one or more alkyl, hydroxy or hydroxy-alkyl groups having from 1 to 7 carbon atoms, which comprises the steps of:

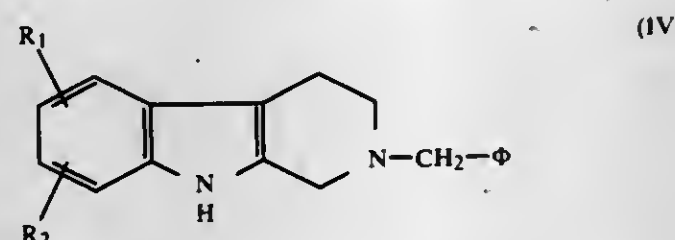
(a) reacting a tetrahydro- $\beta$ -carboline of the formula:



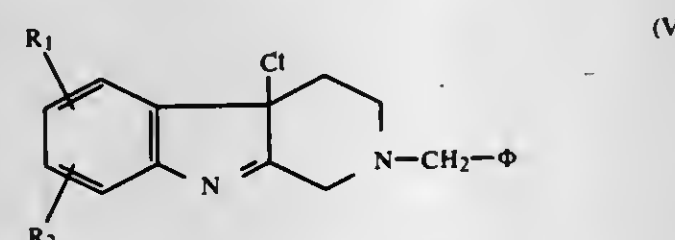
with benzoyl chloride to form a compound of the formula:



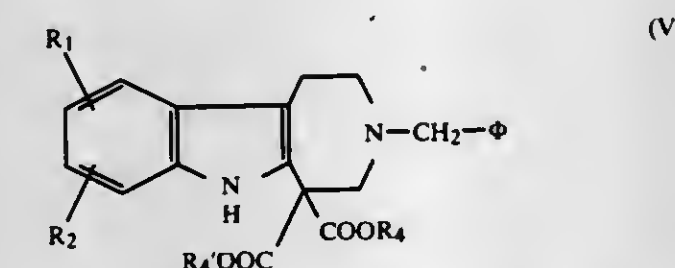
wherein  $\phi$  represents a phenyl radical  
(b) reducing the compound of formula III by means of a reducing agent to form a compound of the formula:



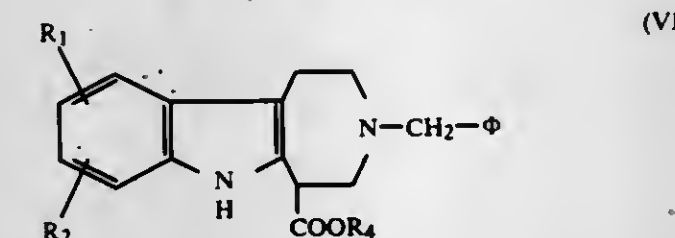
(c) chlorinating the compound of formula IV with t-butyl hypochlorite in the presence of triethylamine to form a compound of the formula:



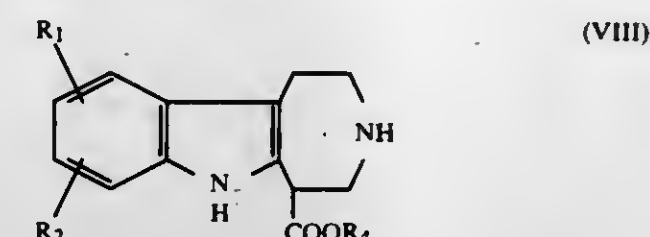
(d) reacting the compound of formula V with a dialkyl malonate salt of sodium or thallium wherein each alkyl group has 1 to 7 carbon atoms at reflux to form a compound of the formula:



(e) decarboxylating partly the compound of formula VI to form a compound of the formula:

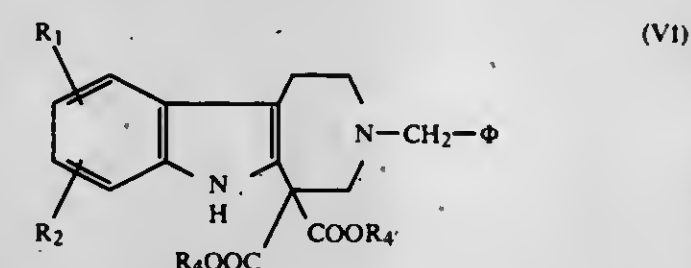


(f) hydrogenating the compound of formula VII into a compound of the formula:

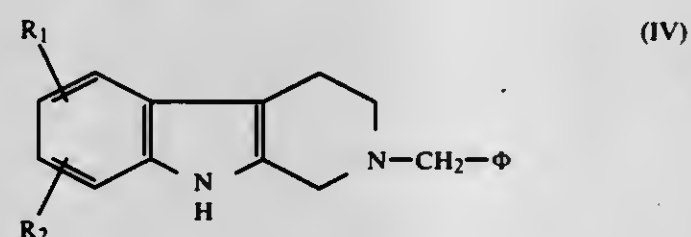


(g) reacting the compound of formula VIII with an aldehyde selected from the group of haloaldehyde, alkylsulfoxaldehyde, arylsulfoxaldehyde, epoxaldehyde or mixture thereof wherein said aldehyde has 3–14 carbon atoms in the presence of triethylamine to yield the desired vincadifformine or related compound of formula I.

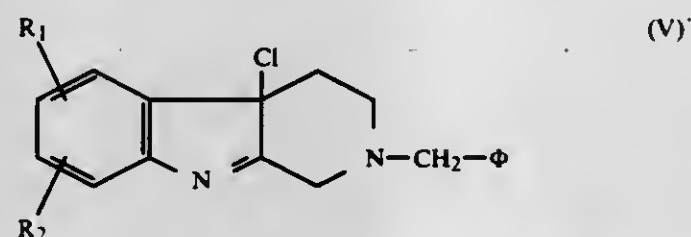
17. A process for preparing a dialkyl 3-benzyl-1,2,3,4,5,6-hexahydroazepino-[4,5b]-indole-5,5-dicarboxylate of the formula:



wherein each of R<sub>1</sub> and R<sub>2</sub> individually is hydrogen, hydroxy, acyloxy, carbamate, lower alkoxy of 1 to 7 carbon atoms, lower alkyl of 1 to 7 carbon atoms, or halo, R<sub>4</sub> and R<sub>4</sub> are the same or different alkyl groups of 1 to 7 carbon atoms which comprises chlorinating 2-benzyl-1,2,3,4-tetrahydro-9H-pyrido [3,4b]-indole of the formula:



with t-butyl hypochlorite under cooling in the presence of dry triethylamine to form a chloroindolenine of the formula:



and immediately reacting said chloroindolenine (formula V) with a dialkyl malonate salt of sodium or thallium wherein each alkyl group has 1 to 7 carbon atoms.

4,283,537

THIAZINE-1,1-DIOXIDE AND  
ISOTHIAZOLE-1,1-DIOXIDE DERIVATIVES AND  
PROCESS FOR PREPARATION

Louis Cincotta, and James W. Foley, both of Andover, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

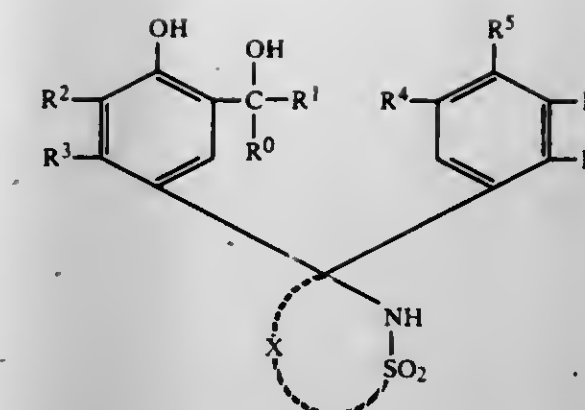
Filed Nov. 2, 1978, Ser. No. 956,908

Int. Cl.<sup>3</sup> C07D 275/04

U.S. Cl. 546—94

26 Claims

14. A compound of the formula



wherein R<sup>0</sup> is perhalomethyl selected from trifluoromethyl, difluoromethyl, difluorochloromethyl, dichlorofluoromethyl, dichloromethyl and trichloromethyl; R<sup>1</sup> is hydrogen or perhalomethyl having the same meaning given above; R<sup>2</sup> is hydrogen or methyl; R<sup>3</sup> is hydrogen, alkyl or alkoxy; R<sup>4</sup> and R<sup>5</sup> taken together represent the carbon atoms necessary to complete a fused benzene ring; R<sup>6</sup> and R<sup>7</sup> each are selected from hydrogen, alkyl, alkoxy, chloro and fluoro; R<sup>8</sup> is hydrogen, alkyl, alkoxy, —OP<sup>i</sup> wherein P<sup>i</sup> is a protecting group, —N,N-(dialkyl)amino, —N,N-(w-R<sup>8</sup>-alkyl)<sub>2</sub>amino wherein R<sup>8</sup> is halo or —OP<sup>ii</sup> wherein P<sup>ii</sup> is a protecting group; —NHCOCH<sub>3</sub>, piperidino, pyrrolidino, N-methylpiperazino, morpholino, thiomorpholino or tetrahydro-2H,4H-1,3,6-dioxazocino; R<sup>7</sup> is hydrogen, alkyl, alkoxy or —OP<sup>iii</sup> wherein P<sup>iii</sup> is a protecting group usually the same as P<sup>i</sup> or P<sup>ii</sup>; R<sup>6</sup> and R<sup>7</sup> taken together represent the carbon atoms necessary to complete a fused benzene ring provided R<sup>2</sup> and R<sup>3</sup> are taken separately when R<sup>6</sup> and R<sup>7</sup> are taken together; and R<sup>4</sup>, R<sup>5</sup> and R<sup>6</sup> taken together represents the atoms necessary to complete a fused [ij]quinolizidine ring and X represents the atoms necessary to complete 2,3-dihydronaphtho[1,8-de]-1,2-thiazine-1,1-dioxide or 2,3-dihydrobenz[d]isothiazole-1,1-dioxide.

4,283,538

## NOVEL TRIARYLMETHANE COMPOUNDS

James W. Foley, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

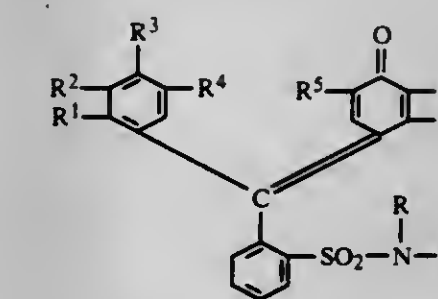
Filed Dec. 26, 1979, Ser. No. 106,904

Int. Cl.<sup>3</sup> C07D 455/04; C07C 143/80

U.S. Cl. 546—94

23 Claims

9. A compound of the formula



wherein R<sup>1</sup> is hydrogen, alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 4 carbon atoms or hydroxy; R<sup>2</sup> and R<sup>4</sup> each are selected from hydrogen, alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 4 carbon atoms, chloro and fluoro; R<sup>1</sup> and R<sup>2</sup> taken together represent the carbon atoms necessary to complete a fused benzene ring; R<sup>3</sup> is hydrogen; alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 4 carbon atoms, hydroxy, —N,N-(dialkyl)amino wherein each alkyl contains 1 to 4 carbon atoms, —N,N-(w-R<sup>8</sup>-alkyl)<sub>2</sub>amino wherein R<sup>8</sup> is halo or hydroxy and said alkyl contains 1 to 4 carbon atoms; piperidino, pyrrolidino, N-methylpiperazino, morpholino, thiomorpholino or tetrahydro-2H,4H-1,3,6-dioxazocino; R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> taken together represent the atoms necessary to complete a fused quinolizidine ring; R<sup>5</sup> is hydrogen, alkyl containing 1 to 4 carbon atoms, phenyl, alkoxy containing 1 to 4 carbon atoms, chloro, fluoro or perhalome-



thylcarbinol; R<sup>6</sup> is hydrogen, alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 4 carbon atoms, chloro or fluoro; R<sup>7</sup> is hydrogen, alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 4 carbon atoms or hydroxy; R<sup>6</sup> and R<sup>7</sup> taken together represent the carbon atoms necessary to complete a fused benzene ring; R is an alkyl group containing 1 to 4 carbon atoms or a phenyl group, unsubstituted or substituted with a solubilizing group selected from —SO<sub>3</sub>H, —COOH and —OH; R' is selected from



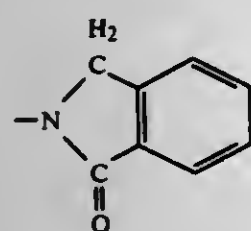
wherein R'' is methyl, unsubstituted or substituted with one or two halo groups or substituted with a phenyl, alkoxy containing 1 to 4 carbon atoms or phenoxy group, and



wherein Y is an electron-withdrawing group having a positive sigma value greater than 0.6 as defined by Hammett's Equation; and R and R' taken with said



represents



4,283,539

#### ISOQUINOLINE ACETIC ACIDS

Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

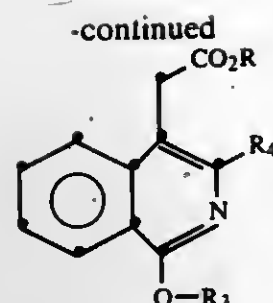
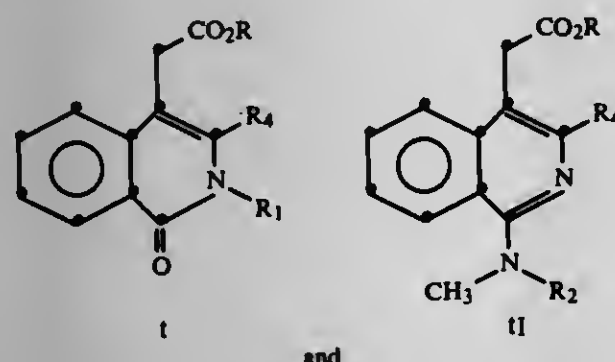
Filed Dec. 18, 1979, Ser. No. 104,939

Int. Cl.<sup>3</sup> C07D 217/16; A61K 31/47

U.S. Cl. 546—141

13 Claims

1. A compound selected from the group consisting of those of the formulae



III

wherein

R is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms;

R<sub>1</sub> is selected from the group consisting of —CH<sub>2</sub>—X and —O—CH<sub>2</sub>—X;

R<sub>2</sub> is —CH<sub>2</sub>—X;

R<sub>3</sub> is selected from the group consisting of —X and —CH<sub>2</sub>—X;

and R<sub>4</sub> is selected from hydrogen and methyl; wherein X is selected from the group consisting of phenyl, monosubstituted and disubstituted phenyl, said substituents being selected from the group consisting of chloro, bromo and fluoro;

and the pharmaceutically-acceptable salts thereof.

4,283,540

#### PROCESS FOR THE PREPARATION OF CATIONIC NAPHTHOLACTAM DYESTUFFS

Alfred Brack, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany Continuation of Ser. No. 784,360, Apr. 4, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 943,473

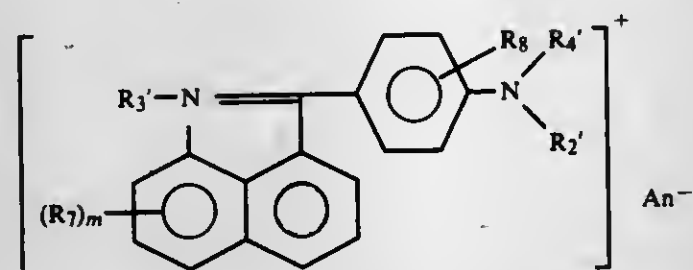
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1976, 2614886

Int. Cl.<sup>3</sup> C07D 215/12, 209/80

U.S. Cl. 546—165

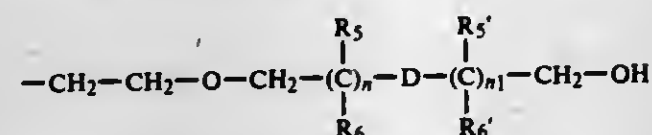
6 Claims

1. A process for the preparation of a dyestuff of the formula



wherein

R<sub>3</sub>' and R<sub>4</sub>' independently of one another represent C<sub>1</sub>—C<sub>6</sub>-alkyl, which can be substituted by a C<sub>1</sub>—C<sub>4</sub>-alkoxy, cyano, aminocarboxyl or C<sub>1</sub>—C<sub>4</sub>-alkoxycarbonyl group, and at least one of the radicals R<sub>3</sub>' or R<sub>4</sub>' is the radical



n and n<sub>1</sub> independently of one another denote 0, 1 or 2, R<sub>5</sub> and R<sub>5</sub>' independently of one another denote hydrogen, methyl, ethyl or hydroxyl, R<sub>6</sub> and R<sub>6</sub>' independently of one another denote hydrogen, methyl or ethyl, or R<sub>5</sub> and R<sub>6</sub> conjointly denote methylene or ethylidene, D denotes a direct bond, vinylene, ethynylene, sulphur or —O—(CH<sub>2</sub>—CH<sub>2</sub>O)<sub>x</sub>, x=0, 1 or 2,

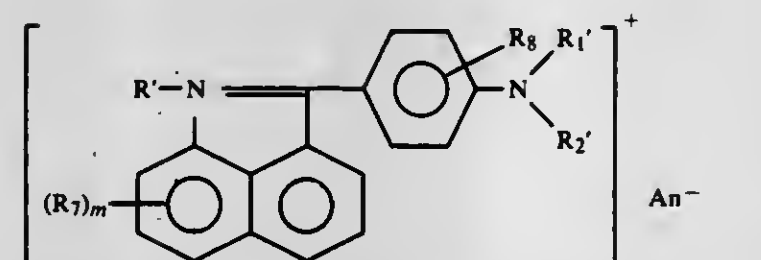
R<sub>2</sub>' represents C<sub>1</sub>—C<sub>6</sub>-alkyl, which can be substituted by a C<sub>1</sub>—C<sub>4</sub>-alkoxy, cyano, aminocarboxyl or C<sub>1</sub>—C<sub>4</sub>-alkoxycarbonyl group; or represents phenyl, cyclopentyl, cyclohexyl, benzyl or phenylethyl, which, in the rings, can be substituted by 1–5 halogen or C<sub>1</sub>—C<sub>4</sub>-alkyl groups or by 1 or 2 hydroxyl, C<sub>1</sub>—C<sub>4</sub>-alkoxy or nitro groups,

R<sub>7</sub> represents C<sub>1</sub>—C<sub>6</sub>-alkyl, halogen, hydroxyl, C<sub>1</sub>—C<sub>4</sub>-alkoxy, cyano, aminocarboxyl, C<sub>1</sub>—C<sub>4</sub>-alkoxycarbonyl, amino, acetyl amino, mono- and di-C<sub>1</sub>—C<sub>4</sub>-alkyl amino, C<sub>1</sub>—C<sub>4</sub>-alkylsulphonylamino, C<sub>1</sub>—C<sub>4</sub>-alkylmercapto, cyanoethylmercapto, phenylmercapto, phenylmercapto substituted by chlorine or methyl, or aminosulphonyl or C<sub>1</sub>—C<sub>4</sub>-alkylsulphonyl,

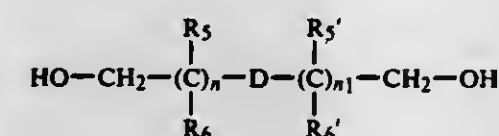
R<sub>8</sub> represents hydrogen, methyl, ethyl or C<sub>1</sub>—C<sub>4</sub>-alkoxy or a R<sub>8</sub> which is in the o-position relative to the nitrogen represents, conjointly with R<sub>2</sub>, propylene-(1,2) ethylene, methyl-substituted propylene-(1,3) or methyl-substituted ethylene, m represents 0, 1 or 2 and

An<sup>—</sup> represents an anion,

consisting essentially reacting a dyestuff of the formula



wherein R' and R<sub>1</sub>' independently of one another represent C<sub>1</sub>—C<sub>6</sub>-alkyl, which can be substituted by a C<sub>1</sub>—C<sub>4</sub>-alkoxy, cyano, aminocarboxyl or C<sub>1</sub>—C<sub>4</sub>-alkoxycarbonyl group, and at least one of the radicals R' and R<sub>1</sub>' is ethyl substituted by chlorine, bromine or hydroxyl, with a polyhydric alcohol of the formula



at 80° to 160° C. in the presence of a catalyst selected from the group consisting of an aluminium oxide, active alumina, silica, active zeolite finely divided platinum, phosphorus pentoxide, polyphosphoric acid, phosphoric acid, sulfuric acid, titanium oxide, zirconium oxide, thorium oxide and polystyrene-sulphonic acids.

4,283,541

#### PYRIDYLACYL-HYDROXAMATES

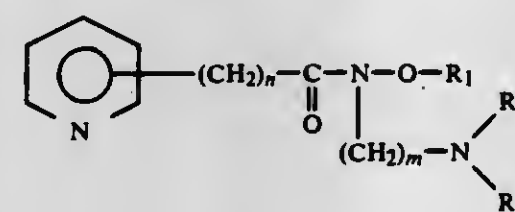
James R. Shroff, Riverside, Conn., and Rohit Desai, Yonkers, N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Filed May 27, 1980, Ser. No. 153,480

Int. Cl.<sup>3</sup> C07D 213/56

U.S. Cl. 546—336

1. A compound of the formula



wherein

R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are independently hydrogen, lower alkyl, phenyl or phenyl-lower alkyl, n is an integer from 1 to 5, and

m is an integer from 2 to 5.

4,283,542

#### PROCESS FOR THE PREPARATION OF PHOSPHOBETAINES

Anthony J. O'Lenick, Jr., Fairlawn, and Raymond L. Maybew, Summit, both of N.J., assignors to Mona Industries, Paterson, N.J.

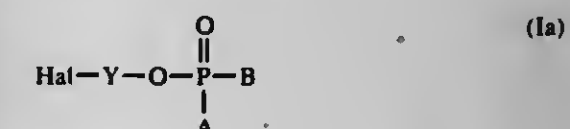
Filed Nov. 30, 1978, Ser. No. 965,459

Int. Cl.<sup>3</sup> C07F 9/09, 9/58

U.S. Cl. 548—112

26 Claims

1. Process for the production of phosphobetaine compounds, which process comprises reacting in aqueous medium a tertiary reactant of at least 6 carbon atoms, to produce an amphoteric phosphobetaine surfactant having at least one phosphorus-containing anion in the molecule, wherein said phosphate ester reactant is of the formula



where

Hal is halogen

A is selected from O<sup>—</sup>, OM, and —O—Y—Hal

B is selected from O<sup>—</sup> and OM'

with the proviso that only one of A' and B can be O<sup>—</sup>

Y may be alkylene, optionally interrupted by up to 3 oxygen atoms, of up to 12 carbon atoms, which alkylene chain may optionally be substituted with lower alkyl, alkoxy, hydroxy or hydroxyalkyl, e.g., of not more than 10 carbon atoms each;

M and M' are individually selected from (a) hydrogen, (b) an organic radical selected from alkyl or hydroxy-alkyl of up to 6 carbon atoms, polyhydroxyalkyl of up to 10 carbon atoms, glyceryl, cycloalkyl or up to 6 carbon atoms, aryl or arylalkyl of up to 10 carbon atoms, or (c) a salt radical selected from alkali metals, alkaline earth metals, and mono-, di-, or triethanolamine, with the proviso that when both M and M' are contained in said phosphate reactant and M or M' is an organic radical (b), the other of M and M' must be hydrogen or a salt radical (c).

24. Process for the preparation of a 3-hydroxypropylphosphobetaine compound, which process comprises reacting an amine reactant with a cyclic hydroxypropylene containing phosphate ester reactant, wherein the amine reactant is selected from primary, secondary and tertiary amines having a total of from 6 to 60 carbon atoms therein.

4,283,543

#### PROCESS FOR PREPARING THE COMPOUND 5-T-BUTYL-2-METHYLAMINO-1,3,4-TRIADIAZOLE

David L. Booth, and Richard M. Rodebaugh, both of Crystal Lake, Ill., assignors to Morton-Norwich Products, Inc., Chicago, Ill.

Filed Oct. 19, 1979, Ser. No. 86,414

Int. Cl.<sup>3</sup> C07D 285/12

U.S. Cl. 548—138

25 Claims

1. A process for preparing the compound 5-t-butyl-2-methylamino-1,3,4-thiadiazole in high yield comprising:

- adding 4-methyl-3-thiosemicarbazide to a solution of pivalic acid to form a slurry in a first vessel;
- placing a solution comprising polyphosphoric acid and concentrated sulfuric acid in a second vessel;
- feeding the contents of said first and second vessels concomitantly into a third vessel while agitating and maintaining the temperature of the resultant mixture at a maximum of about 90° C. to form 5-t-butyl-2-methylamino-1,3,4-thiadiazole;
- neutralizing said mixture with a neutralizing agent comprising an organic solvent and an alkaline substance dis-



solved in water to form an essentially neutralized two-phase, water-organic solvent system; and  
(v) separating from the neutralized system of (iv) an organic phase and recovering the compound 5-t-butyl-2-methylamino-1,3,4-thiadiazole therefrom.

4,283,544

## PREPARATION OF

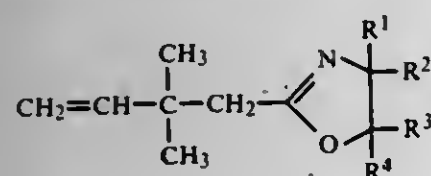
2-(2,2-DIMETHYL-3-BUTEN-1-YL)-2-OXAZOLINES  
Manfred Jautelat, Burscheid, and Dieter Arlt, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed Feb. 26, 1979, Ser. No. 15,376  
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811190

Int. Cl.<sup>3</sup> C07D 263/12, 263/14

U.S. Cl. 548—216

1 Claim

1. A process for the preparation of a 2-(2,2-dimethyl-3-buten-1-yl)-2-oxazoline of the formula

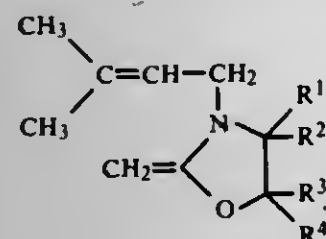


in which

R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> each independently is hydrogen, alkyl with 1-4 carbon atoms, aralkyl with 7-9 carbon atoms, phenyl or phenyl substituted by halogen, alkoxy with 1-4 carbon atoms or phenoxy, or

R<sup>1</sup> and R<sup>2</sup> or R<sup>3</sup> and R<sup>4</sup> form an alkylene chain of 4-6 carbon atoms, or

R<sup>1</sup> and R<sup>3</sup> form an alkylene chain of 3 or 4 carbon atoms, comprising pyrolyzing at about 200° to 500° C. a 2-methylene-3-(3-methyl-2-butenyl)-oxazolidine of the formula



4,283,545

PROCESS FOR THE PREPARATION OF 1,2,4-TRIAZOLE  
Harald Knorr, Gersthofen; Thomas Maier, Frankfurt am Main; Hilmar Mildenberger, Kelkheim, and Helmut Korbanka, Adelsried, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany  
Filed Oct. 22, 1980, Ser. No. 199,460

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943265

Int. Cl.<sup>3</sup> C07D 249/08

U.S. Cl. 548—262

4 Claims

1. A process for the preparation of 1,2,4-triazole by cyclization of N,N'-diformylhydrazine in the presence of ammonia at elevated temperature, which comprises supplying the amount of ammonia required either (a) by forming it in situ from ammonium carbonate or ammonium hydrogen carbonate with heating to 150°-250° C., or (b) introducing gaseous ammonia into the N,N'-diformylhydrazine under the same conditions, while operating in both cases without pressure and in formamide as solvent, and constantly distilling off the water formed.



4,283,546

## 1,2,4-TRIGLYCIDYL TRIAZOLIDINES-3,5-DIONES AND A PROCESS FOR THE PREPARATION THEREOF

Ludwig Rottmaier, Odenthal-Gloebusch, and Rudolf Merten, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany  
Filed Aug. 28, 1980, Ser. No. 182,110

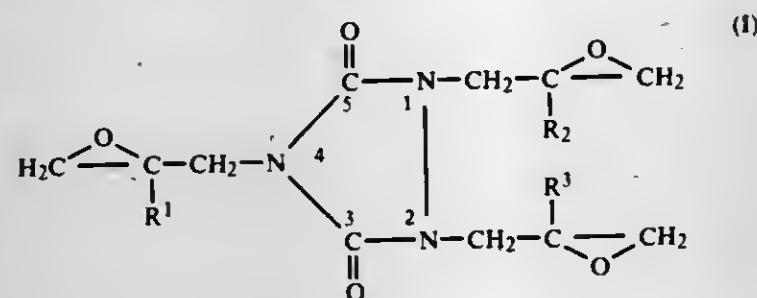
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935354

Int. Cl.<sup>3</sup> C07D 405/14; C08G 59/32, 59/42, 59/62

U.S. Cl. 548—264

7 Claims

1. A composition having an epoxide value of from 0.6 to 1.13 and consisting essentially of a compound which corresponds to the following general formula I



wherein R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup>, which may be the same or different, each represents hydrogen or methyl as main component and oligomeric by-products, which are formed during the production of the above compound by reaction of 1,2,4-triazolidine-3,5-dione with an at least equivalent quantity of an epihalohydrin or β-methyl epihalohydrin and subsequent reaction of the resulting material with a hydrogen halide acceptor.

2. A compound of the general formula, as claimed in claim 1.

4,283,547

## PARABANIC ACID DERIVATIVES

Ulrich Schirmer, Heidelberg; Rainer Becker, Bad Dürkheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany  
Filed Mar. 24, 1980, Ser. No. 132,983

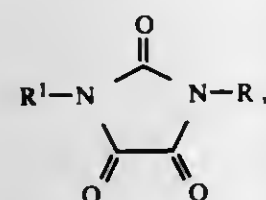
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1979, 2916647

Int. Cl.<sup>3</sup> C07D 233/96

U.S. Cl. 548—307

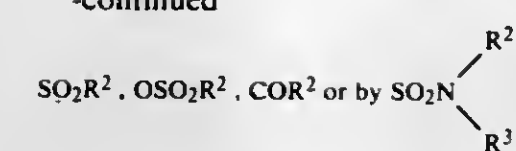
3 Claims

1. A parabanic acid derivative of the formula



where R<sup>1</sup> denotes alkyl of 1 to 4 carbon atoms, 2-chloroethyl, 2-methoxyethyl, methoxymethyl, allyl, 2-chloropropen-(1)-yl-(3), buten-(1)-yl-(3), propargyl, butyn-(1)-yl-(3), 1-chlorobutyn-(2)-yl-(4), cyclopentyl, cyclohexyl, 3-methylcyclohexyl, 2,6-dimethylcyclohexyl or cyclopropyl and R denotes phenoxyphenyl which is unsubstituted or is substituted in one or both rings by alkyl of 1 to 3 carbon atoms, alkyl of 1 to 3 carbon atoms substituted by 1 to 3 halo atoms, methoxymethyl, cyclohexyl, benzyl, methoxy, ethoxy, methoxy or ethoxy substituted by 1 to 2 halo atoms, from 1 to 3 halo atoms, methylthio, phenyl, thiocyanato, cyano

-continued



R<sup>2</sup> and R<sup>3</sup> being identical or different and each denoting hydrogen or having the meanings given for R<sup>1</sup>.

4,283,550  
1-DESCARBOXY-1-KETOESTER(KETOACID)-PROSTAGLANDINS

Middleton B. Floyd, Jr., Suffern, N.Y., assignor to American Cyanamid, Stamford, Conn.

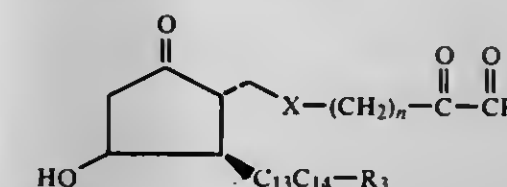
Filed Sep. 27, 1979, Ser. No. 79,631

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 560—53

32 Claims

1. Compounds of the formula



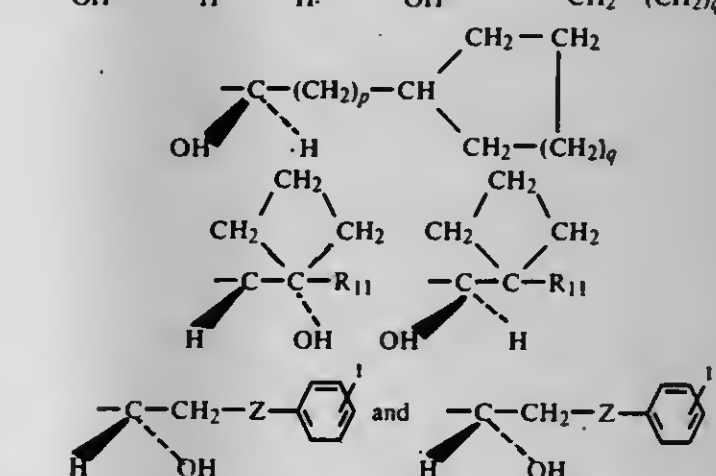
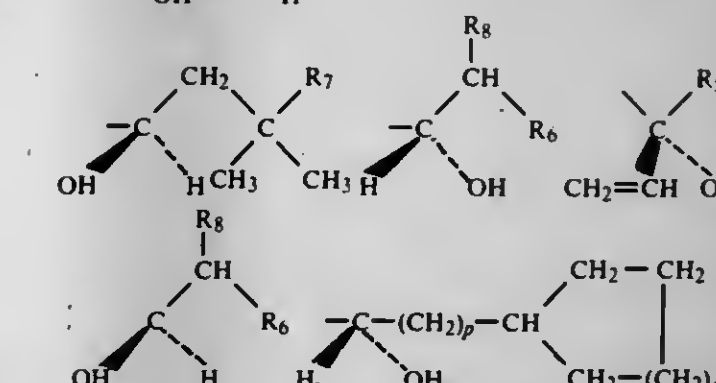
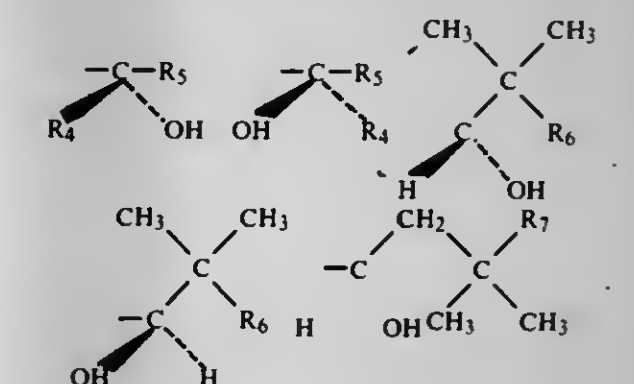
wherein R<sub>2</sub> is selected from the group hydroxy and C<sub>1</sub> to C<sub>7</sub> alkoxy;

X is selected from the group cis or trans —CH=CH— and —CH<sub>2</sub>—CH<sub>2</sub>—

C<sub>13</sub>C<sub>14</sub> is selected from the group trans —CH=CH— and —CH<sub>2</sub>—CH<sub>2</sub>—;

n is the integer 2, 3 or 4; and

R<sub>3</sub> is selected from the group consisting of:



Wherein R<sub>4</sub> is hydrogen or methyl; R<sub>5</sub> is selected from the group consisting of C<sub>4</sub>-C<sub>7</sub> alkyl; R<sub>6</sub> is selected from the group consisting of C<sub>3</sub>-C<sub>6</sub> alkyl; R<sub>7</sub> is selected from the group consisting of C<sub>2</sub>-C<sub>4</sub> alkyl; R<sub>8</sub> is selected from the group consisting of C<sub>1</sub>-C<sub>2</sub> alkyl; R<sub>11</sub> is selected from the group consisting of C<sub>3</sub>-C<sub>7</sub> alkyl; p is an integer from 0 to 3; q is 1 or 2; Z is a divalent radical selected from the group consisting of —O— and —CH<sub>2</sub>—; and t is selected from the group consisting of

4,283,548

## DIISATOIC ACID OR TRIISATOIC ACID DERIVATIVES

Walter Sibrat, Tulln, and Oskar Schmidt, Kittsee, both of Austria, assignors to Lim-Holding S.A., Luxembourg, Luxembourg

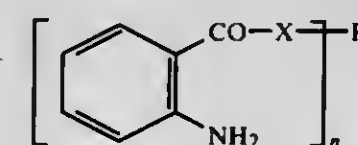
Filed Apr. 10, 1979, Ser. No. 28,754

Int. Cl.<sup>3</sup> C07D 401/06, 233/64

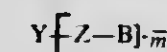
U.S. Cl. 548—310

9 Claims

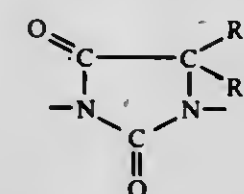
1. A compound of the formula I



wherein n represents 2 or 3, X stands for oxygen or sulfur and R for a group of the formula II



in which m stands for 1 or 2, Y for B when m is 1 and Y further represents a di- or trivalent alkyl group having 1 to 5 carbon atoms when m is 2, B represents alkylene having 1 to 4 carbon atoms and Z is



wherein R<sub>1</sub> and R<sub>2</sub> independently of one another are hydrogen or methyl.

4,283,549

## METHOD OF PRODUCING ALKANDIOL-DIAMINO BENZOATES

Boris Holm, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Dec. 4, 1978, Ser. No. 966,404

Claims priority, application Sweden, Dec. 12, 1977, 7714047

Int. Cl.<sup>3</sup> C07C 101/62

U.S. Cl. 560—50

9 Claims

1. A method of producing 1,3 propanediol-di-p-aminobenzoate from p-nitro-benzoic acid and 1,3 propanediol, characterized in that the nitrobenzoic acid and the diol are esterified in a melt at 160°-210° C. after which the intermediate obtained is dissolved in the solvent anisole and is reduced with hydrogen gas in the presence of said solvent to the amino compound desired.



hydrogen, chloro, fluoro, dichloro, trifluoromethyl, methoxy; the racemic mixtures thereof; the mirror images thereof and where  $R_2$  is hydroxy the pharmaceutically acceptable salts thereof.

4,283,551

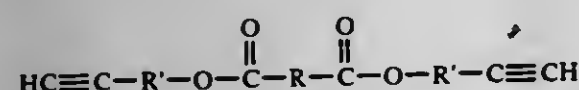
**NOVEL ACETYLENE END-CAPPED POLYESTERS**  
Wai Y. Chow, Daniel J. Hurley, James H. Rea, and S. Paul Thackaberry, all of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Sep. 13, 1979, Ser. No. 75,364  
Int. Cl.<sup>3</sup> C07C 69/76

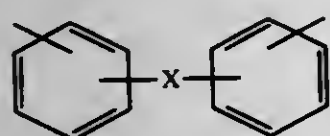
U.S. Cl. 560—86

4 Claims

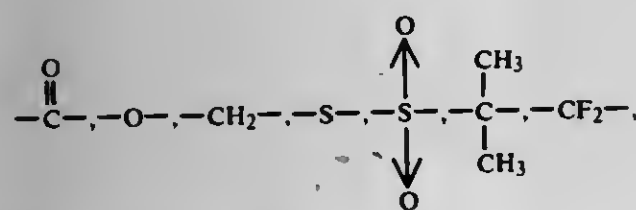
1. A heat-curable acetylene end-capped polyester having the structure:



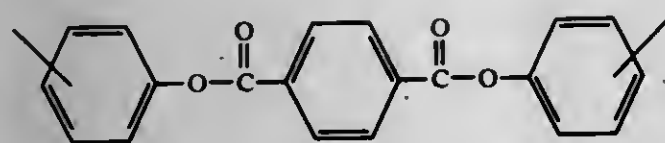
where R is a phenylene group, a naphthylene group, or the structure:



where X is

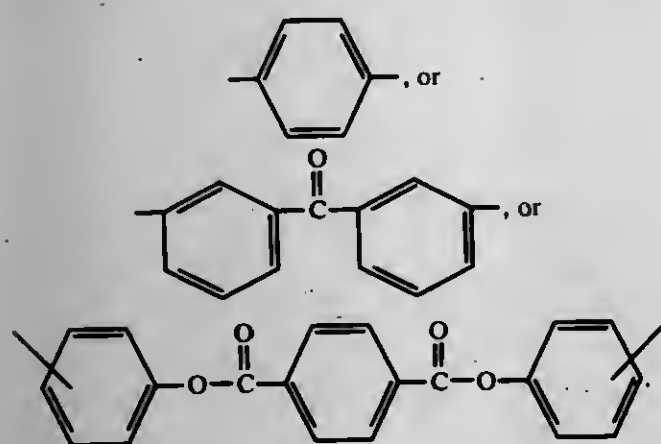


or a bond, or the structure:



and R' is a phenylene group.

2. A product of claim 1 in which R has the structure:



# 4,283,552 **11-DEOXY-11-HYDROXYMETHYL-INTER-OXA-19-OXO-PGE<sub>1</sub> COMPOUNDS**

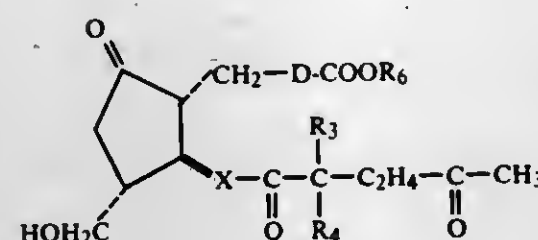
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,235  
Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 560—121

4 Claims

1. A compound of the formula



wherein D is

- (1)  $(\text{CH}_2)_3-\text{O}-\text{CH}_2-$ ,
  - (2)  $(\text{CH}_2)_3-\text{O}-\text{CF}_2-$ , or
  - (3)  $-\text{CH}_2-\text{O}-(\text{CH}_2)_3-$ ;
- wherein Q is  $\alpha-\text{OH}:\beta-\text{R}_5$  or  $\alpha-\text{R}_5:\beta-\text{OH}$ , wherein  $\text{R}_5$  is hydrogen or methyl;
- wherein  $\text{R}_6$  is
- (a) hydrogen,
  - (b) alkyl of one to 12 carbon atoms, inclusive,
  - (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
  - (d) aralkyl of 7 to 12 carbon atoms, inclusive,
  - (e) phenyl,
  - (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
  - (g)  $-(p\text{-Ph})-\text{CO}-\text{CH}_3$ ,
  - (h)  $-(p\text{-Ph})-\text{NH}-\text{CO}-(p\text{-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,
  - (i)  $-(p\text{-Ph})-\text{NH}-\text{CO}-(p\text{-Ph})$ ,
  - (j)  $-(p\text{-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,
  - (k)  $-(p\text{-Ph})-\text{NH}-\text{CO}-\text{NH}_2$ ,
  - (l)  $-(p\text{-Ph})-\text{CH}=\text{N}-\text{NH}-\text{CO}-\text{NH}_2$ ,
  - (m)  $\beta$ -naphthyl,
  - (n)  $-\text{CH}_2-\text{CO}-\text{R}_{28}$ ,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein  $\text{R}_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or (o) a pharmacologically acceptable cation; wherein  $\text{R}_3$  and  $\text{R}_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $\text{R}_3$  and  $\text{R}_4$  is fluoro only when the other is hydrogen or fluoro; and

wherein X is cis- or trans- $\text{CH}=\text{CH}-$ .

# 4,283,553 **HYDROPEROXIDE DERIVATIVES OF HYDROXYETHYLATED COMPOUNDS AND METHOD OF PRODUCING SAME**

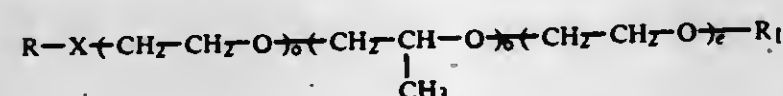
Sergei S. Ivanchev, ulitsa Nalichnaya, 36/3; kv. 97; Anatoly A. Syrov, ulitsa III Internatsionala, 52, kv. 51; Valery N. Pavljuchenko, prospekt Energetikov, 34, kv. 53; Ninel N. Lesnikova, ulitsa Vernosti, 20, kv. 1, and Diana A. Rozhkova, prospekt Metalistov, 8, kv. 77, all of Leningrad, U.S.S.R.

Filed Sep. 24, 1979, Ser. No. 78,037  
Int. Cl.<sup>3</sup> C07C 69/66, 43/11, 179/025

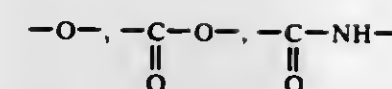
U.S. Cl. 560—176

8 Claims

1. Hydroperoxide derivatives of hydroxyethylated compounds of the general formula:

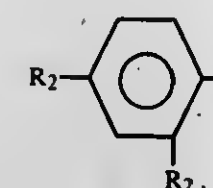


with x selected from the group consisting of

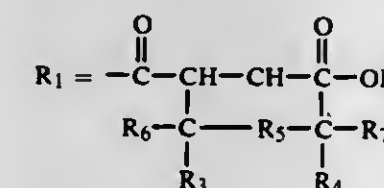


a—whole number selected from the range from 10 to 30, b is absent, c is absent,

R is selected from the group of normal alkyls from  $\text{C}_8$  to  $\text{C}_{20}$  secondary alkyls  $\text{C}_{14}$ ,  $\text{C}_{15}$ ,

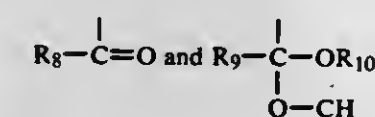


where  $\text{R}_2$  is selected from the group of normal alkyls of  $\text{C}_8$  to  $\text{C}_{12}$ , where



where

$\text{R}_3$  and  $\text{R}_4$  are selected from the group consisting of



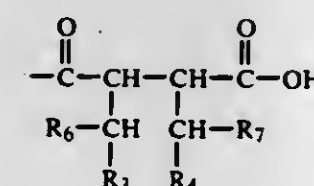
when  $\text{R}_3 \neq \text{R}_4$ ,

where  $\text{R}_8$  is selected from the group consisting of  $-\text{CH}_3$  and H with  $\text{R}_{6,7,9}=\text{H}$ ,  $\text{R}_5$  is absent,

$\text{R}_9$  is selected from the group consisting of  $-\text{CH}_3$  and H with  $\text{R}_{6,7,8}=\text{H}$ ,  $\text{R}_5$  is absent,

$\text{R}_{10}$  is selected from the group of normal alkyls from  $\text{C}_1$  to  $\text{C}_9$ ;  $\text{R}_5=-\text{CH}_2-$  if  $\text{R}_{6,7,8,9}=\text{H}$ , if  $\text{R}_5$  is absent,

$\text{R}_1$  is acyclic and is



$\text{R}_6$  is selected from the group consisting of  $-\text{CH}_3$  and H with  $\text{R}_{7,8,9}=\text{H}$ ,  $\text{R}_5$  is absent,

$\text{R}_7$  is selected from the group consisting of  $-\text{CH}_3$  and H with  $\text{R}_{6,8,9}=\text{H}$ ,  $\text{R}_5$  is absent;

with  $x=-\text{O}-$ , b—whole number selected from the range from 8 to 24, the total of (a+c) is a whole number selected from the range of 6 to 30

$\text{R}=\text{R}_1$ .

4,283,554

**PROCESS FOR PRODUCTION OF  $\beta$ -CHLOROALANINE**  
Chozo Inoue, and Soyao Moriguchi, both of Yokohama, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan  
Filed May 29, 1980, Ser. No. 154,379

Claims priority, application Japan, Jun. 8, 1979, 54/71165  
Int. Cl.<sup>3</sup> C07C 101/10

U.S. Cl. 562—574

4 Claims

1. A process for preparing  $\beta$ -chloroalanine comprising the steps of:

- (a) reacting an aqueous solution of a bisulfite or sulfite addition compound of chloroacetaldehyde with ammonia and, then, with hydrocyanic acid or a salt thereof, whereby  $\alpha$ -amino- $\beta$ -chloropropionitrile is formed, and
- (b) hydrolyzing the resultant  $\alpha$ -amino- $\beta$ -chloropropionitrile under an acidic condition.

4,283,555

**AMIDINOUREAS**

Julius Diamond, Lafayette Hill, and Jerome J. Zalipsky, Melrose Park, both of Pa., assignors to William H. Rorer, Inc., Ft. Washington, Pa.

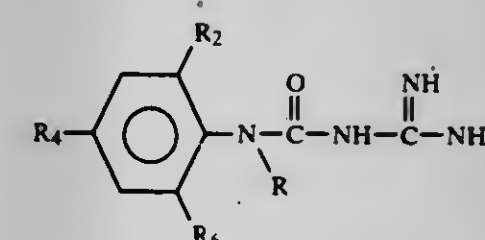
Continuation of Ser. No. 379,773, Jul. 16, 1973, abandoned. This application Mar. 2, 1979, Ser. No. 16,997

Int. Cl.<sup>3</sup> C07C 129/12; A61K 31/17

U.S. Cl. 564—53

12 Claims

1. A compound of the formula



where:

R is hydrogen or loweralkyl;  
 $\text{R}_2$  is halo;  
 $\text{R}_4$  is hydrogen;  
 $\text{R}_6$  is halo; and or  
the non-toxic acid addition salts thereof.

4,283,556

**PROCESS FOR THE MANUFACTURE OF SUBSTANTIALLY PURE 3-AMINO-4-ALKOXY-ACYLANILIDES FROM 2,4-DINITROCHLOROBENZENE**

Philip C. Lang, Dover Township, Ocean County, N.J., assignor to Toms River Chemical Corporation, Toms River, N.J.

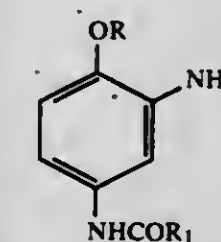
Continuation of Ser. No. 941,533, Sep. 11, 1978, abandoned. This application Feb. 7, 1980, Ser. No. 119,245

Int. Cl.<sup>3</sup> C07C 102/00

U.S. Cl. 564—144

12 Claims

1. A process for the manufacture of an acylanilide compound of the structure

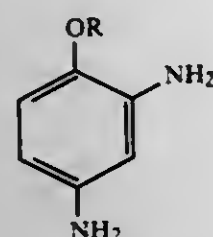


where R is hydrogen, lower alkyl, hydroxy-lower alkyl or lower alkoxy-lower alkyl; and

$\text{R}_1$  is lower alkyl, phenol, lower alkylphenyl, lower alkoxy, lower alkoxyphenyl, chlorophenyl, nitrophenyl, dichlorophenyl, chloro-lower alkyl, cyano-lower alkyl, lower



alkyl amino, sulfamoylphenyl, carbamoylphenyl or lower alkoxy-lower alkyl;  
comprising the step of treating an alcohol solution of a diamino compound of the structure



with a substantially equivalent weight of an acylating agent of structure  $R_1\text{COOCOR}_1$ , added over a period of at least about 1 hour at a temperature in the range of about  $0^\circ$  to about  $5^\circ\text{C}$ ., to give an alcohol solution of the acylanilide compound.

4,283,557

# ACETYLENE-TERMINATED DIANIL MONOMER AND THE POLYMER THEREFROM

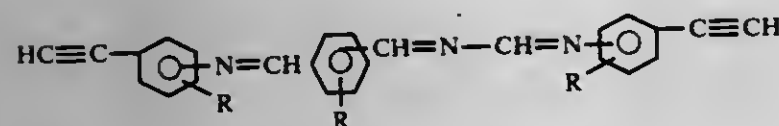
Theodore R. Walton, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 10, 1979, Ser. No. 102,293  
Int. Cl.<sup>3</sup> C07C 119/00

U.S. Cl. 564—272

1. A compound with the formula

6 Claims



wherein R is selected from the class consisting of H—, F—, Cl—,  $\text{CH}_3$ ,  $\text{C}_2\text{H}_5$ , and  $\text{CH}_3$ ,  $\text{C}_2\text{H}_5$ , and n is an integer from 1 to 3.

4,283,558

# 2-DECARBOXY-2-AMINOMETHYL-19-HYDROXY-PG COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

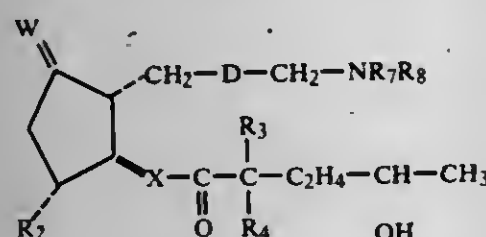
Division of Ser. No. 25,899, Apr. 2, 1979, Pat. No. 4,228,104.  
This application Oct. 26, 1979, Ser. No. 88,662

Int. Cl.<sup>3</sup> C07C 87/50

U.S. Cl. 564—305

1. A compound of the formula

263 Claims



wherein D is

- (1)  $\text{cis-CH=CH-CH}_2\text{-(CH}_2\text{)}_g\text{-CH}_2\text{—}$ ,
- (2)  $\text{cis-CH=CH-CH}_2\text{-(CH}_2\text{)}_g\text{-CF}_2\text{—}$ ,
- (3)  $\text{cis-CH}_2\text{-CH=CH-CH}_2\text{-(CH}_2\text{)}_g\text{—}$ ,
- (4)  $\text{trans-(CH}_2\text{)}_3\text{-CH=CH—}$ ,
- (5)  $\text{-(CH}_2\text{)}_3\text{-(CH}_2\text{)}_g\text{-CH}_2\text{—}$ ,
- (6)  $\text{-(CH}_2\text{)}_3\text{-CH}_2\text{-CF}_2\text{—}$ ,
- (7)  $\text{-(CH}_2\text{)}_3\text{-O-CH}_2\text{—}$ ,
- (8)  $\text{-(CH}_2\text{)}_2\text{-O-(CH}_2\text{)}_2\text{—}$ ,
- (9)  $\text{-CH}_2\text{-O-(CH}_2\text{)}_3\text{—}$ ,
- (10)  $\text{-(m-ph)-(CH}_2\text{)}_2\text{—}$ , or
- (11)  $\text{-(m-ph)-O-CH}_2\text{—}$

wherein m-ph is inter-meta-phenylene, and wherein g is zero, one, two, or three;

wherein Q is  $\alpha\text{-OH-}\beta\text{-R}_5$  or  $\alpha\text{-R}_5\text{-}\beta\text{-OH}$ ,  
wherein  $\text{R}_5$  is hydrogen or methyl,  
wherein  $\text{R}_7$  and  $\text{R}_8$  are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different;  
wherein  $\text{R}_2$  is hydrogen, hydroxyl, or hydroxymethyl;  
wherein  $\text{R}_3$  and  $\text{R}_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $\text{R}_3$  and  $\text{R}_4$  is fluoro only when the other is hydrogen or fluoro;  
wherein W is oxo, methylene,  $\alpha\text{-OH-}\beta\text{-H}$ , or  $\alpha\text{-H-}\beta\text{-OH}$ ;  
and wherein X is cis- or trans- $\text{CH=CH—}$ ,  $\text{—C}\equiv\text{C—}$ , or  $\text{—CH}_2\text{CH}_2\text{—}$ .

4,283,559

# PROCESS FOR THE MANUFACTURE OF CYCLOHEXENE DERIVATIVES

Emil A. Broger, Magden; Yvo Cramer, Oberwil; Hans G. W. Leuenberger, Bättwil; Erich Widmer, Münchenstein, and Reinhard Zell, Rodersdorf, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 21, 1979, Ser. No. 40,625

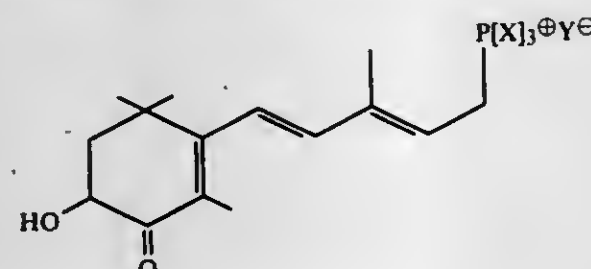
Claims priority, application Switzerland, Jun. 2, 1978, 6074/78; Mar. 29, 1979, 2922/79

Int. Cl.<sup>3</sup> C07F 9/54

U.S. Cl. 568—11

1. A phosphonium salt of the general formula

2 Claims



wherein X is aryl; and Y is halogen.

4,283,560

# BULK CYCLOHEXANOL/CYCLOHEXANONE SEPARATION BY SELECTIVE ADSORPTION ON ZEOLITIC MOLECULAR SIEVES

Chien C. Chao, Millwood, and John D. Sherman, Chappaqua, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 30, 1979, Ser. No. 98,714

Int. Cl.<sup>3</sup> C07C 49/303

U.S. Cl. 568—366

4 Claims

1. Process for separating cyclohexanone from admixture with cyclohexanol by selective adsorption which comprises contacting a mixture comprising said compounds at a temperature of from  $70^\circ$  to  $250^\circ\text{C}$ . and at a pressure sufficient to maintain the system in the liquid phase with an adsorbent composition comprising at least one crystalline aluminosilicate zeolite selected from the group consisting of zeolite X in which the zeolitic cations are predominantly calcium, barium, strontium, or a mixture of at least two thereof, and zeolite Y in which the zeolitic cations are predominantly lithium, sodium, barium, or a mixture of at least two thereof, whereby cyclohexanone is selectively adsorbed thereon, removing the non-adsorbed portion of said mixture from contact with the zeolite adsorbent and desorbing the cyclohexanone adsorbate therefrom by contacting said adsorbent with a desorbing agent and recovering the desorbed cyclohexanone.

4,283,561

# MIXTURE OF ALDEHYDES RESULTING FROM HYDROFORMYLATION OF $\alpha$ -TERPINENE

Jens Hagen, Ketsch, and Klaus Bruns, Krefeld-Traar, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 94,277

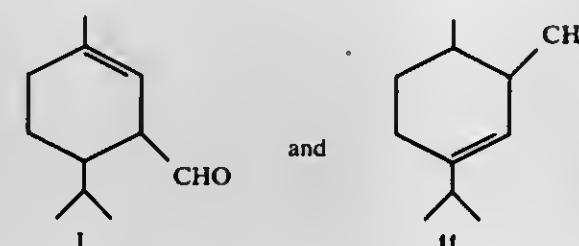
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1978, 2849642

Int. Cl.<sup>3</sup> C07C 47/42

U.S. Cl. 568—446

1 Claim

1. A mixture consisting of the compounds of formulas



4,283,562

# HYDROFORMYLATION PROCESS USING STABLE RHODIUM CATALYST

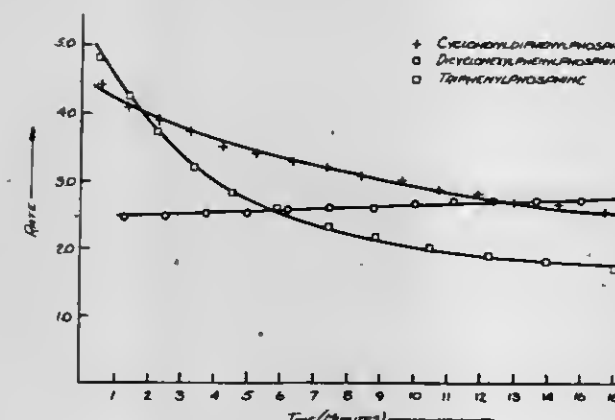
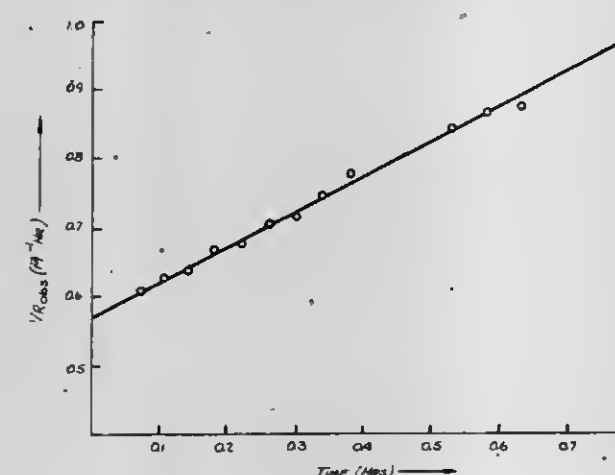
Ernst Billig, and Donald L. Bunning, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,827

Int. Cl.<sup>3</sup> C07C 45/50

U.S. Cl. 568—454

11 Claims



1. In a process for the hydroformylation of an olefin to produce aldehydes having one more carbon atom than the olefin comprising reacting said olefin with hydrogen and carbon monoxide in a liquid reaction medium which contains a soluble rhodium complex catalyst consisting essentially of rhodium complexed with carbon monoxide and a phosphine ligand and wherein the hydroformylation reaction conditions

are controlled to a temperature of from about  $90^\circ$  to about  $145^\circ\text{C}$ ., a total gas pressure of hydrogen, carbon monoxide and olefin of less than about 450 pounds per square inch absolute, a carbon monoxide partial pressure of less than about 55 pounds per square inch absolute, a hydrogen partial pressure of less than about 200 pounds per square inch absolute, and at least about 6 total moles of said phosphine ligand for each mole of catalytically-active rhodium metal present in the rhodium complex catalyst, the improvement comprising improving the stability of said catalyst against deactivation by employing as said phosphine ligand a phosphine represented by the following formula (I):



(I)

wherein R represents a branched chain alkyl group having from 3 to 9 carbon atoms or a cycloalkyl group having from 5 to 12 carbon atoms, n represents an integer of 1 or 2 and Ph represents phenyl.

4,283,563

# PROCESS FOR PREPARATION OF ALDEHYDES

Yasujiro Kawabata, Musashino, and Ikuei Ogata, Tokyo, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

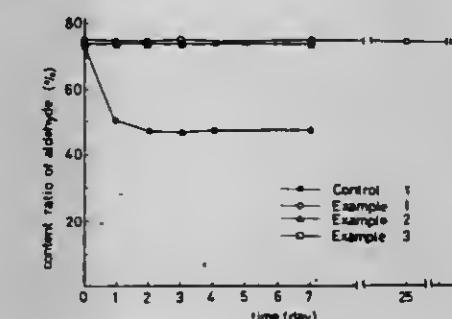
Filed Feb. 26, 1980, Ser. No. 124,796

Claims priority, application Japan, Jun. 12, 1979, 54-73692

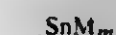
Int. Cl.<sup>3</sup> C07C 45/50

U.S. Cl. 568—454

10 Claims



1. A process for the preparation of aldehydes by hydroformylation of olefins, which comprises reacting an olefin with hydrogen and carbon monoxide in the presence of a platinum-phosphine complex catalyst, wherein a compound represented by the following general formula:



wherein M stands for an element of the group VIB of the Periodic Table and m is 1 or 2, or  $\text{SnSO}_4$  is used as a promotor for said reaction wherein an aldehyde is formed by hydroformylation of said olefin.

4,283,564

# PROCESS FOR PREPARING METHACROLEIN

Wolfgang Bernhagen, Mülheim; Hanswilhelm Bach, Duisburg; Eike Brundin, Dinslaken; Wilhelm Gick, Duisburg; Helmut Springer, and Adolf Hack, both of Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie AG, Oberhausen, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 106,211

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855504

Int. Cl.<sup>3</sup> C07C 47/22

U.S. Cl. 568—461

14 Claims

1. In a process for preparing methacrolein by catalytic reaction between propionaldehyde and formaldehyde, the improvement wherein said catalyst is a mixture of a secondary amine and an organic carboxylic acid with up to 8 carbon atoms selected from the group consisting of formic acid, acetic acid, propionic acid, n-butyric acid, i-butyric acid, oxalic



acid, maleic acid, acetylene dicarboxylic acid, malonic acid, glutaric acid, succinic acid, tartaric acid, adipic acid, hydroxy succinic acid, salicylic acid and 2-ethylhexanoic acid and the process is carried out at a temperature of 70° to 120° C.

4,283,565

## PROCESS FOR PREPARING BENZYLALCOHOLS

Güther Bernhardt, St. Augustin, and Gerhard Danm, Cologne, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 974,468

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 2759168; Jun. 9, 1978, 2825364

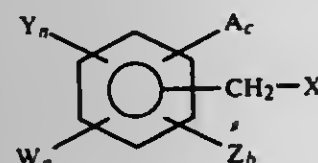
Int. Cl.<sup>3</sup> C07C 29/128

U.S. Cl. 568—648

48 Claims

1. A process for preparing benzylalcohol or benzylalcohol having a substituent on the benzene ring which comprises:

A. Contacting a benzylchloride and/or bromide or a benzylchloride and/or bromide singularly or multiply substituted on the benzene ring which compound has the formula



wherein

Y = halogen and/or alkyl

n = 0 to 5

W = —CH<sub>2</sub>—X

a = 0 to 5

Z = hydroxy or alkoxy

b = 0 to 3

A = nitro and/or nitrile

c = 0 to 2 and a + b + n + c = 1 to 5, and X represents chlorine or bromine

at a temperature of 100° to 250° C. with an alkali metal or alkaline earth metal formate such that said benzylchloride and/or bromide reacted is in the heterogeneous phase in the presence of a catalyst selected from the group consisting of tertiary amines, tertiary phosphines, quaternary ammonium salts and quaternary phosphonium salts and in the absence of a solvent to form benzylformate or a benzylformate which contains a substituent on the benzene ring; and

B. Thereafter converting the so formed benzylformate or substituted benzylformate by means of a transesterification step to the corresponding alcohol by contacting the same with an alcohol in the presence of an esterification catalyst.

4,283,566

## PROCESS FOR OBTAINING HALOGENATED DIPHENOLS

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

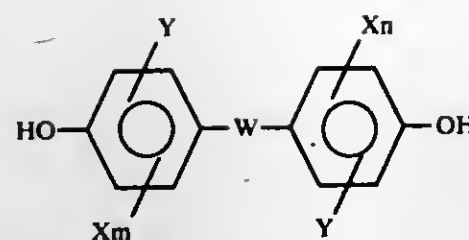
Division of Ser. No. 58,000, Jul. 16, 1979, which is a division of Ser. No. 882,242, Feb. 28, 1978, Pat. No. 4,210,765. This application Jan. 21, 1980, Ser. No. 113,479

Int. Cl.<sup>3</sup> C07C 39/16, 37/00, 43/23

U.S. Cl. 568—726

7 Claims

1. A halogenated diphenol mixture having a significantly reduced quantity of trihalo substituted and tetrahalo substituted diphenol, said mixture containing predetermined, statistical quantities of unreacted diphenol, monohalodiphenol and dihalodiphenol, said halogenated diphenol being represented by the general formula



wherein X<sub>m</sub> and X<sub>n</sub> are chlorine, bromine and mixtures thereof with the proviso that either X<sub>m</sub> or X<sub>n</sub> is chlorine; Y is independently selected from the group consisting of C<sub>1</sub>–C<sub>4</sub> alkyl and hydrogen; m and n are each 0–2 with the proviso that m + n equal at least 0.1, but no more than 2.0; and, W is —O—.

4,283,567

## METHOD FOR RECOVERING RESORCINOL

Hirohiko Nambu; Hiroaki Nakagawa, both of Iwakuni, and Masayasu Isibasi, Yamaguchi, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,246

Claims priority, application Japan, Dec. 20, 1978, 53-156247

Int. Cl.<sup>3</sup> C07C 37/68

U.S. Cl. 568—754

9 Claims

1. A method for recovering resorcinol from the high-boiling by-products formed by the acid-cleavage of m-diisopropylbenzene dihydroperoxide which comprises thermally cracking the high-boiling by-products under substantially anhydrous conditions and without supplying any inert gas, said thermal cracking being carried out in the presence of at least one ammonium compound selected from the group consisting of ammonium sulfate and ammonium bisulfate at a temperature of about 170° C. to about 350° C. and at a pressure of less than 50 mm Hg gauge and recovering resorcinol therefrom.

4,283,568

## PROCESS FOR THE RECOVERY OF PHENOL FROM A REACTION MIXTURE RESULTING FROM THE ACID CLEAVAGE OF CUMENE HYDROPEROXIDE

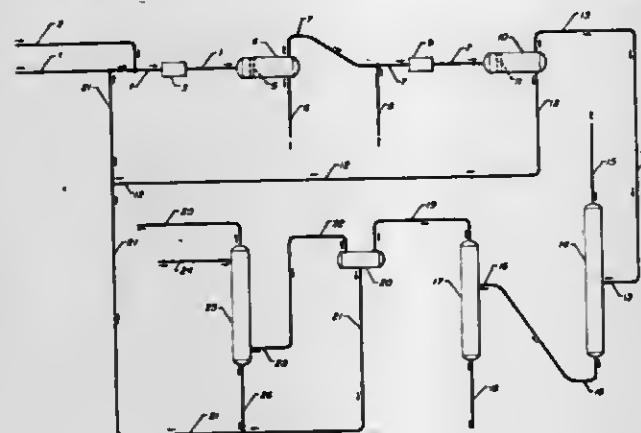
Peter R. Pujado, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 31, 1979, Ser. No. 108,736

Int. Cl.<sup>3</sup> C07C 37/68, 37/86

U.S. Cl. 568—754

2 Claims



1. A process for the recovering of phenol from a reaction mixture resulting from the acid cleavage of cumene hydroperoxide and containing phenol, acetone, alphas-methylstyrene, cumene and unreacted cumene, which process comprises the steps of:

- effecting the neutralization of said reaction mixture by admixing an alkali metal phenate therewith at a temperature of from about 90° F. to about 120° F.;
- recovering substantially all of said acetone by distillation from the neutralized reaction mixture;
- separating the substantially acetone-free reaction mixture

- by distillation into a phenol fraction and a cumene-methylstyrene fraction containing residual phenol;
- recovering said phenol fraction by withdrawal as a bottoms product from the last-mentioned distillation;
- contacting the cumene-methylstyrene fraction with an alkali metal hydroxide and converting the residual phenol contained therein to an alkali metal phenate; and,
- recycling said alkali metal phenate to the aforesaid neutralization of said acid cleavage reaction mixture.

4,283,569

## HYDROXYALKYL AND OXOALKYL SUBSTITUTED PHENOLS AS ANALGESICS AND SEDATIVES

Thomas H. Althuis, Groton; Charles A. Harbert, Waterford; Michael R. Johnson, and Lawrence S. Melvin, Jr., both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

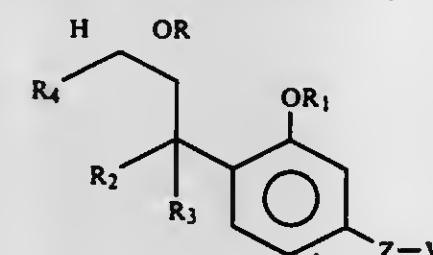
Filed Sep. 13, 1977, Ser. No. 832,868

Int. Cl.<sup>3</sup> C07C 39/06, 39/10

U.S. Cl. 568—764

14 Claims

1. A compound having the formula:



wherein

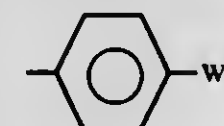
R is selected from the group consisting of hydrogen and alkanoyl having from one to five carbon atoms;

R<sub>1</sub> is selected from the group consisting of hydrogen, benzyl, alkanoyl having from one to five carbon atoms, P(O)(OH)<sub>2</sub> and mono- and disodium and potassium salts thereof, —CO(CH<sub>2</sub>)<sub>2</sub>COOH and sodium and potassium salts thereof, and —CO(CH<sub>2</sub>)<sub>p</sub>—NR<sub>5</sub>R<sub>6</sub> wherein p is 0 or an integer from 1 to 4; each of R<sub>5</sub> and R<sub>6</sub> when taken individually is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms; R<sub>5</sub> and R<sub>6</sub> when taken together with the nitrogen to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of piperidino, pyrrolo, pyrrolidino, morpholino and N-alkylpiperazino having from one to four carbon atoms in the alkyl group; each of R<sub>2</sub> and R<sub>4</sub> is selected from the group consisting of hydrogen, alkyl having from one to six carbon atoms, phenyl, pyridyl and phenylalkyl having from one to four carbon atoms in the alkyl moiety;

R<sub>3</sub> is selected from the group consisting of hydrogen and methyl;

Z is selected from the group consisting of (a) alkylene having from one to thirteen carbon atoms; (b) —(alk<sub>1</sub>)<sub>m</sub>—O—(alk<sub>2</sub>)<sub>n</sub>— wherein each of (alk<sub>1</sub>) and (alk<sub>2</sub>) is alkylene having from one to thirteen carbon atoms, with the proviso that the summation of carbon atoms in (alk<sub>1</sub>) plus (alk<sub>2</sub>) is not greater than thirteen; each of m and n is 0 or 1; and

W is selected from the group consisting of hydrogen, pyridyl,



wherein W<sub>1</sub> is selected from the group consisting of hydrogen, fluoro and chloro; and the pharmaceutically acceptable acid addition salts of

those compounds wherein R<sub>1</sub> is —CO—(CH<sub>2</sub>)<sub>p</sub>—NR<sub>5</sub>R<sub>6</sub> and/or R<sub>2</sub>, R<sub>4</sub> or W is pyridyl.

4,283,570

## PROCESS FOR PREPARING RESORCINOL

Hiroaki Nakagawa, Iwakuni; Noriyuki Hirowatari, Ohtake, and Takayuki Nakamura, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 954,547, Oct. 25, 1978, abandoned,

which is a continuation of Ser. No. 822,634, Aug. 8, 1977,

abandoned. This application Jan. 28, 1980, Ser. No. 115,704

Claims priority, application Japan, Aug. 18, 1976, 51-97680

Int. Cl.<sup>3</sup> C07C 37/08

U.S. Cl. 568—768

15 Claims

1. A process for preparing resorcinol from an oxidation product of diisopropylbenzene which comprises

(1) a first step of pre-treating an oxidation product of m-diisopropylbenzene composed of m-diisopropylbenzene dihydroperoxide and by-product m-substituted carbinol hydroperoxide and/or dicarbinol with hydrogen peroxide in the presence of sulfuric acid as an acid catalyst in a heterogeneous system of an aqueous aromatic hydrocarbon solvent at a temperature of about 30° C. to 60° C., for a reaction time of from about 3 minutes to about 60 minutes, the pre-treatment being performed while removing by-product water as an azeotrope with the aromatic hydrocarbon in the treating system, while maintaining the concentrations of the hydrogen peroxide and the acid catalyst in the aqueous solution of the treating system at 1 to 15 moles/liter, and 0.5 to 5 moles/liter, respectively, separating the aromatic hydrocarbon solvent layer containing the pre-treated reaction product from the aqueous layer containing the hydrogen peroxide of the first step pre-treatment; and

(2) a second step of acid-cleaving the pre-treated reaction product recovered in the aromatic hydrocarbon solvent layer, in the substantial absence of hydrogen peroxide at a temperature of about 40° to 100° C., the second step being performed in the presence of an acid-cleavage catalyst selected from the group consisting of sulfuric acid and silica-alumina, the amount of sulfuric acid being 0.1 to 15% by weight, based on the pre-treated reaction product and the amount of silica-alumina being 2 to 100% by weight based on the pre-treated reaction product and recovering the resorcinol.

4,283,571

## PROCESS FOR THE CATALYTIC ISOMERIZATION OF O-CRESOL

Karl-Heinz Keim; Reinhard Klauk, both of Wesseling, and Ewald Meisenburg, Helmerzhelm, all of Fed. Rep. of Germany, assignors to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft, Wesseling, Fed. Rep. of Germany

Filed Jan. 30, 1979, Ser. No. 7,721

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2804537

Int. Cl.<sup>3</sup> C07C 39/07

U.S. Cl. 568—783

4 Claims

1. In a process for isomerisation of o-cresol to m-cresol in the presence of an alumina and silica containing catalyst at elevated temperatures, the improvement which comprises reacting the o-cresol at temperatures of about 350° to 450° C. in the presence of an acidly acting crystalline aluminosilicate zeolite of the ZSM-type with a composition of oxides and water in the molar ratio of 1 ± 0.4 M<sub>2</sub>O/n:Al<sub>2</sub>O<sub>3</sub>:5–100 SiO<sub>2</sub>:0–60 H<sub>2</sub>O, M representing a cation having a valence of n.



4,283,572

## CONVERSION OF ALKYL PHENYL ETHER TO ALKYLPHENOL

James D. Klicker, Morgantown, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 27, 1979, Ser. No. 107,690  
Int. Cl.<sup>3</sup> C07C 39/06

U.S. Cl. 568—783

2 Claims

1. A process for the conversion of an alkyl phenyl ether to the corresponding alkylphenol comprising heating an alkyl phenyl ether in the presence of a dehydrated sulfonic acid type cation exchange resin, at a temperature within the range of from about 60° C. to about 120° C.

4,283,573

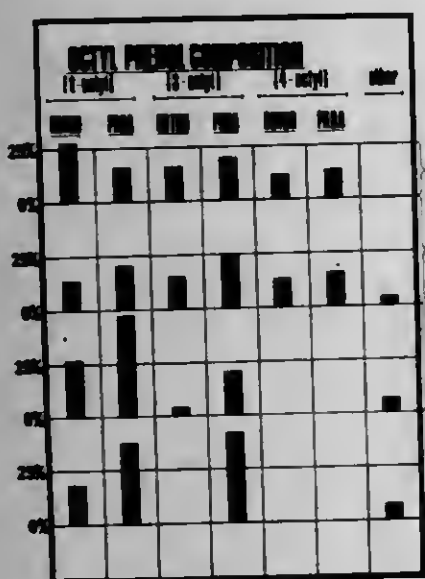
## LONG-CHAIN ALKYLPHENOLS

Lewis B. Young, Skillman, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 20, 1979, Ser. No. 96,093  
Int. Cl.<sup>3</sup> C07C 37/11

U.S. Cl. 568—794

15 Claims



1. A process for the production of alkyl-substituted phenolic compounds comprising:

contacting a phenol with an alkylating agent having a reactive alkyl group at a temperature of between about 50° C. and about 500° C. and a pressure within the approximate range of 10<sup>4</sup> N/m<sup>2</sup> to 10<sup>7</sup> N/m<sup>2</sup>, said alkyl group having at least 5 carbon atoms, said contacting being in the presence of a crystalline zeolite catalyst which is characterized by the presence therein of networks of pores having openings thereto, the major dimension of said openings being between about six and about seven angstroms.

4,283,574

## PROCESS FOR THE SYNTHESIS OF 2,6-XYLENOL AND 2,3,6-TRIMETHYLPHENOL

Bruce E. Leach, Ponca City, Okla., assignor to Cosoco, Inc., Ponca City, Okla.

Filed Jan. 28, 1980, Ser. No. 116,061  
Int. Cl.<sup>3</sup> C07C 37/11

U.S. Cl. 568—804

11 Claims

1. An improved method for the direct methylation of phenol to produce predominately ortho-cresol, 2,6-xyleneol, and 2,3,6-trimethylphenol, wherein phenol is methylated over alumina catalyst to produce a product stream, the improvement comprising passing the product stream through a second methylation over a catalyst in the presence of from about 1 to about 10 mole ratio of methanol at a temperature of from 400° C. to about 500° C., and a pressure of from about atmospheric to about 5 atmospheres, wherein the catalyst is magnesium oxide promoted with amorphous metal ions selected from the group

consisting of titanium, uranium, and chromium and sulfate ions.

4,283,575

2-DECARBOXY-2-HYDROXYMETHYL-19-HYDROXY-6A-CARBA-PGI<sub>2</sub> COMPOUNDS

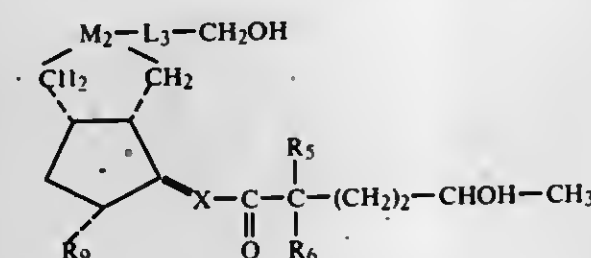
John C. Sib, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,811, Jul. 5, 1979, Pat. No. 4,225,508.  
This application Mar. 3, 1980, Ser. No. 126,470Int. Cl.<sup>3</sup> C07C 49/633, 35/31

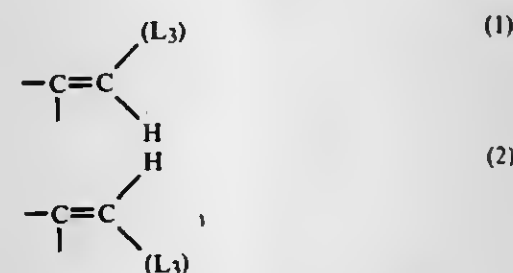
U.S. Cl. 568—819

4 Claims

1. A prostacycline-type compound of the formula

wherein L<sub>3</sub> is

- (1)  $-(CH_2)_n-$ , wherein n is one to 5, inclusive,
- (2)  $-(CH_2)_p-CF_2-$ , wherein p is 2, 3, or 4, or
- (3)  $-CH_2CH=CH-$ ;

wherein M<sub>2</sub> is

wherein Q is oxo,  $\alpha$ -H: $\beta$ -H,  $\alpha$ -OH: $\beta$ -R<sub>4</sub>, or  $\alpha$ -R<sub>4</sub>: $\beta$ -OH, wherein R<sub>4</sub> is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R<sub>5</sub> and R<sub>6</sub> are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R<sub>5</sub> and R<sub>6</sub> is fluoro only when the other is hydrogen or fluoro;

wherein R<sub>9</sub> is hydrogen or hydroxyl; and wherein X is

- (1) trans- $-CH=CH-$ ,
- (2) cis- $-CH=CH-$ ,
- (3)  $-C\equiv C-$ , or
- (4)  $-CH_2CH_2-$ .

4,283,576

## CYCLOHEXENEMETHANOLS

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors &amp; Fragrances Inc., New York, N.Y.

Division of Ser. No. 52,334, Jun. 27, 1979, Pat. No. 4,221,721, which is a division of Ser. No. 8,925, Feb. 2, 1979, Pat. No. 4,197,328, which is a continuation-in-part of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Dec. 5, 1979, Ser. No. 100,528

Int. Cl.<sup>3</sup> C07C 33/14

U.S. Cl. 568—826

7 Claims

1. A cyclic chemical compound having the structure:

4,283,579

## PROCESS FOR PRODUCING DIOL

Yoshinori Yoshida, Yokohama, and Hiroshi Oka, Tokyo, both of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

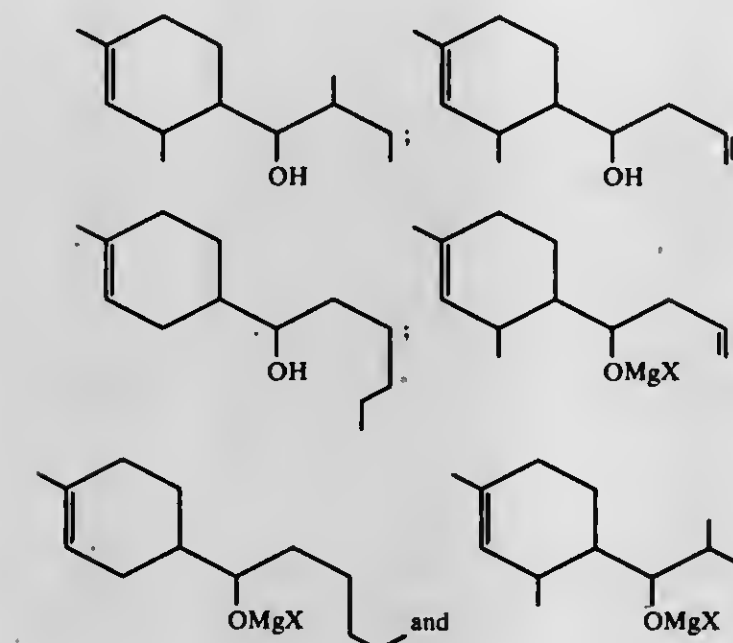
Filed Sep. 6, 1979, Ser. No. 72,991

Claims priority, application Japan, Sep. 7, 1978, 53-109083  
Int. Cl.<sup>3</sup> C07C 31/20, 27/02

U.S. Cl. 568—857

20 Claims

wherein R<sub>1</sub> is hydrogen or methyl and R<sub>2</sub> is C<sub>4</sub>-C<sub>5</sub> alkyl or C<sub>3</sub> alkenyl and wherein Z is hydrogen or MgX and wherein X is selected from the group consisting of chloro, bromo and iodo, said cyclic chemical compound being selected from the group consisting of compounds having the structures:



4,283,577

## METHOD FOR MAKING ETHYLENE CHLOROHYDRIN

William Jequier, Beauvais; Elie Ghenassia, Bethune; Francois Fine, Saint Laurent de Mure, and Gerard Krempf, Sainte-Foy-les-Lyon, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Aug. 31, 1979, Ser. No. 71,676

Claims priority, application France, Sep. 29, 1978, 78 27892  
Int. Cl.<sup>3</sup> C07C 31/34

U.S. Cl. 568—841

5 Claims

1. The method of making ethylene chlorohydrin comprising forming a reaction mixture of gaseous ethylene oxide and anhydrous, gaseous hydrochloric acid and maintaining the reaction mixture in a gaseous state at a temperature of from about 130° to 300° C. during the reaction period.

4,283,578

## PROCESS FOR MAKING GLYCOL

Leonard Kaplan, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

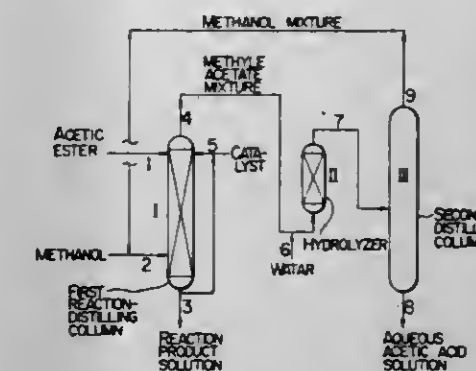
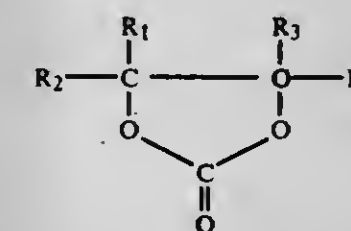
Filed May 23, 1980, Ser. No. 152,608

Int. Cl.<sup>3</sup> C07C 31/20

U.S. Cl. 568—852

6 Claims

1. The process of producing ethylene glycol and/or 1,2-propylene glycol which comprises reacting a non-cyclic oxymethylene compound by the hydration or acetalization of formaldehyde with a compound containing one or more of silicon, germanium and tin bonded therein which functions as an addend in a photochemically or thermally induced radical reaction, to form a 1,2-dioxyethylene containing compound, and cleaving such 1,2-dioxyethylene containing compound to form the glycol thereof said non-cyclic oxymethylene compound being formed by the hydration or acetalization of formaldehyde.



1. A process for producing a diol by reacting an acetic ester of butanediol or butenediol with methanol, which comprises (a) continuously feeding to a first reaction-distilling column from an upper part thereof a liquid acetic ester of a butanediol or butenediol, while continuously feeding methanol to the said column from a place higher than the bottom but lower than the middle part thereof, to bring both feeds into counter current gas-liquid contact in the presence of an acidic or basic catalyst, thereby allowing both feeds to react, withdrawing from the bottom a bottom stream containing a diol as major constituent, (b) continuously feeding to a hydrolyzer the distillate which is obtained from said first reaction-distilling column and which contains methyl acetate as major constituent, thus bringing said distillate into contact with water or steam in the presence of an acidic catalyst to effect hydrolysis, (c) then continuously feeding the reaction mixture from the hydrolyzer to a second distilling column, withdrawing a methyl acetate-containing methanol stream from the top of the second distilling column, and recycling said stream to a place higher than the bottom but lower than the middle part of the first reaction-distilling column, wherein the amount of methanol fed to a place higher than the bottom but lower than the middle part of the first reaction-distilling column is 1.0 to 5 moles per mole of the ester group of the acetic ester of diol.

4,283,580

## PROCESS FOR THE PRODUCTION OF ALKYLENE GLYCOLS

Hiroshi Odanaka, Yokosuka; Minoru Saotome, and Toshihiko Kumazawa, both of Yokohama, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 19, 1979, Ser. No. 76,843

Claims priority, application Japan, May 24, 1979, 54-63259; May 24, 1979, 54-63260

Int. Cl.<sup>3</sup> C07C 31/30, 33/26

U.S. Cl. 568—858

15 Claims

1. A process for the production of substituted or unsubstituted ethylene glycols, which comprises causing a corresponding substituted or unsubstituted ethylene carbonate of the formula



wherein, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> each denote a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, an aryl group having 6 carbon atoms, an alkenyl group having 2 or 3 carbon atoms or a cycloalkyl group having 3 to 6 carbon atoms, to react with water in the presence of a catalyst of at least one member selected from the group consisting of molybdenum and tungsten in metal or compound form.

4,283,581

## HYDROGENATION PROCESS

John B. Wilkes, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

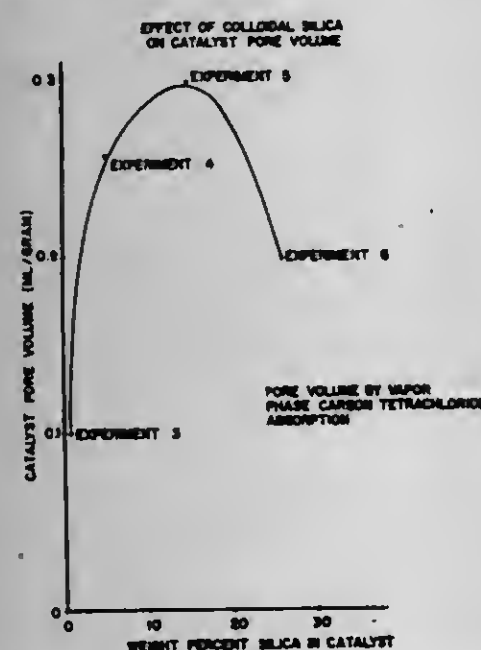
Division of Ser. No. 881,084, Feb. 24, 1978, Pat. No. 4,199,479.

This application Nov. 23, 1979, Ser. No. 97,083

Int. Cl.<sup>3</sup> C07C 31/20

U.S. Cl. 568—864

3 Claims



1. A process for hydrogenating a feedstock containing a polyglycolide derived from glycolic acid, an aliphatic monocarboxylic acid ester, an aliphatic dicarboxylic diester of an alpha-hydroxy mono-carboxylic aliphatic acid ester to the corresponding alcohol which comprises contacting said feedstock under hydrogenation conditions with a catalyst composition having a BET intrinsic surface area above about 60 m<sup>2</sup>/g; said catalyst composition comprising from about 1 to about 99 percent by weight of a hydrogenating component, said hydrogenating component comprising copper and zinc oxide, wherein the copper is in elemental, hydroxide, carbonate, hydroxycarbonate or oxide form, and said catalyst composition comprising from about 1 to about 30 percent by weight of silica, wherein the silica is incorporated in intimate admixture with the hydrogenating component substantially to increase the activity of the catalyst composition.

4,283,582

## PRE-PRESSURING METHANOL-COBALT WITH CARBON MONOXIDE IN HOMOLOGATION OF METHANOL

Miroslav Novotny, Danville, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Mar. 6, 1978, Ser. No. 884,064

Int. Cl.<sup>3</sup> C07C 27/00, 29/36

U.S. Cl. 568—902

4 Claims

1. In a process for converting methanol to ethanol including contacting a mixture of methanol and cobalt catalyst with a gaseous mixture of carbon monoxide and hydrogen gas, in about a 1:2 carbon monoxide/hydrogen molar ratio, respectively, and allowing the combined mixtures to react at a temperature of about 175° C. to 240° C. and a pressure of about 3000–6000 psig, the improvement which comprises pre-pressurizing the methanol-cobalt catalyst mixture with an atmosphere consisting essentially of carbon monoxide in an amount

corresponding to a pressure of about 10 to 1,000 psi gauge, at room temperature, or its equivalent at other temperatures, and maintaining said atmosphere of carbon monoxide while introducing said carbon monoxide/hydrogen gaseous mixture.

4,283,583

## ALKYLATION OF AROMATIC HYDROCARBONS IN THE PRESENCE OF COATED ZEOLITE CATALYSTS

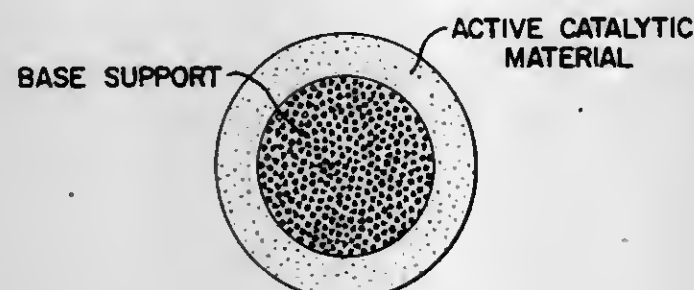
Louis J. Velenyi, Lyndhurst, and Serge R. Dolhyj, Parma, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 29, 1979, Ser. No. 53,458

Int. Cl.<sup>3</sup> C07C 2/68

U.S. Cl. 585—467

26 Claims



1. A process for producing an alkyl aromatic hydrocarbon comprising contacting an aromatic hydrocarbon with an alkylating agent in the presence of a zeolite catalyst, the improvement comprising using as at least part of the catalyst a coated catalyst having:

- an at least partially porous base support of at least about 20 microns in diameter, said support having an outer surface, and
- a coating substantially on said outer surface, said coating consisting essentially of an active catalytic material containing a zeolite, said coating strongly adhering to said outer surface of said base support.

4,283,584

## MANUFACTURE OF AROMATIC COMPOUNDS

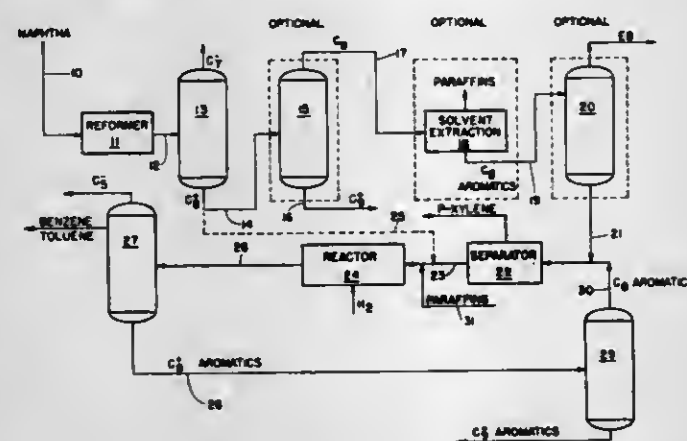
Arthur W. Chester, and Yung F. Chu, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 14, 1980, Ser. No. 140,346

Int. Cl.<sup>3</sup> C07C 5/22, 4/12

U.S. Cl. 585—481

44 Claims



1. A new use of known apparatus for simultaneously isomerizing xylenes and converting ethylbenzene to products readily separable by distillation from the mixture of C<sub>8</sub> aromatics by contacting a mixture of C<sub>8</sub> aromatics with a catalyst at conversion conditions of elevated temperature and under hydrogen pressure in a loop comprising an isomerization reactor for the contact aforesaid, distillation means for separating C<sub>8</sub> aromatics from lower boiling and higher boiling hydrocarbons, means to transfer hydrocarbon effluent of said isomerization reactor

to said distillation means, mixing means for mixing fresh feed C<sub>8</sub> aromatics containing xylenes and ethylbenzene with C<sub>8</sub> aromatics separated by said distillation means, a xylene separator for recovery of para xylene, means for transfer of mixed C<sub>8</sub> aromatics from said mixing means to said xylene separator, and means to transfer C<sub>8</sub> aromatics lean in para xylene from said xylene separator to said isomerization reactor, which new use comprises contacting, in the isomerization reactor of said known apparatus, a vapor phase mixture of said C<sub>8</sub> aromatics lean in para xylene together with 5 to 25 weight percent based on total charge to said reactor of paraffin hydrocarbon having 3 to 12 carbon atoms and having no branching in excess of one methyl group on any one carbon atom and fresh charge material containing alkyl benzenes of more than eight carbon atoms with a zeolite catalyst at a temperature of about 800°–1000° F., a pressure of less than 100 pounds per square inch and a weight hourly space velocity between 1 and about 200; said zeolite catalyst having a constraint index of 1 to 12, a silica to alumina ratio greater than 12 and a reduced acidity such that less than 2 weight percent of xylene is converted to other compounds when contacted with said catalyst at 900° F., 200 psig and LHSV of 5.

18. A process for the manufacture of aromatic hydrocarbons which comprises subjecting a hydrocarbon naphtha to catalytic reforming under conditions to convert naphthenes to aromatic hydrocarbons in a reformate reaction product, distilling said reformate to separate compounds of less than eight carbons from a heavy reformate, mixing said heavy reformate with a recycle stream hereafter defined, contacting the resultant mixture together with hydrogen and 5–25 weight percent based on said mixture of paraffin hydrocarbon having 3–12 carbon atoms and no branching in excess of one methyl group on any carbon atom at pressure above about 100 pounds per square inch and a temperature of about 800°–1000° F. with a zeolite catalyst having a constraint index of 1 to 12, a silica/alumina ratio above about 12 and reduced acidity such that less than 2 weight percent of xylene is converted to compounds other than xylene when contacted with said catalyst at 900° F., 200 psig and LHSV of 5, whereby to isomerize xylene content of said mixture and to convert ethylbenzene and alkylbenzenes of more than eight carbon atoms to benzene, toluene and xylene, distilling the product of said contacting to separate compounds of less than eight carbon atoms and compounds of more than eight carbon atoms from a C<sub>8</sub> fraction, recovering at least one xylene isomer from said C<sub>8</sub> fraction to provide a stream lean in said recovered isomer and mixing said lean stream with said heavy reformate as the recycle stream aforesaid.

4,283,585

## HYDROCARBON ISOMERIZATION CATALYSTS AND PROCEDURES FOR THE PREPARATION AND USE THEREOF

Michel Legendre, and Philippe Engelbard, both of Le Havre, France, assignors to Compagnie Francaise de Raffinage, Paris, France

Division of Ser. No. 936,686, Nov. 27, 1978, Pat. No. 4,201,696, which is a continuation of Ser. No. 713,238, Aug. 10, 1976, abandoned. This application Apr. 14, 1980, Ser. No. 139,688

Claims priority, application France, Aug. 13, 1975, 75 25224

Int. Cl.<sup>3</sup> C07C 5/22, 5/13

U.S. Cl. 585—482

8 Claims

1. A process for the isomerization of hydrocarbons comprising contacting said hydrocarbons under conditions favoring isomerization with hydrogen and a catalyst consisting essen-

tially of a carrier which is comprised of at least one refractory metal oxide, including a halogen element present in combined form, and deposited on said carrier:

from about 0.02 to 2 wt. %, based on the weight of the carrier, of at least one platinum-group metal;

from about 0.005 to 8 wt. %, based on the weight of the carrier, of at least one second element from the group consisting of titanium, zirconium, tungsten and molybdenum; and

at least one metal halide based on the weight of the carrier, selected from the group consisting of aluminum trichloride, aluminum tribromide, ferric chloride, ferric bromide, beryllium dichloride, zirconium chloride and mixtures thereof,

the total halogen content of said catalyst being 0.1 to 15 wt. % of the total weight of the catalyst,

wherein at least one of said platinum group metal and at least one second element are introduced onto the carrier by impregnation and thereafter at least one metal halide is introduced onto the carrier by sublimation.

4,283,586

## PROCESS FOR DIMERIZING OR CODIMERIZING LOWER MONOOLEFIN

Masahito Yoshimura, Satoshi Hoshiyama, Hideki Takamatsu, Hiroshi Kobayashi, and Shinichiro Takigawa, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,260

Claims priority, application Japan, Apr. 11, 1979, 54-43759

Int. Cl.<sup>3</sup> C07C 2/24, 2/02

U.S. Cl. 585—512

3 Claims

1. In a process for dimerizing or codimerizing a C<sub>2</sub>–C<sub>8</sub> monoolefin in the presence of a catalyst comprising an organo-aluminum halide and a nickel compound or nickel metal, an improvement characterized in that the catalyst further comprises at least one of aliphatic, cycloaliphatic and aromatic polyols.

4,283,587

## ADSORPTIVE SEPARATION OF AROMATIC ISOMERS

Donald H. Rosback, deceased, late of Elmhurst, Ill., and by Janice M. Gillespie, executrix, Bartlett, Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jun. 16, 1980, Ser. No. 160,053

Int. Cl.<sup>3</sup> C07C 7/13

U.S. Cl. 585—828

8 Claims

1. In a process for separating aromatic hydrocarbons from a feed containing a mixture of aromatic isomers including para-isomer, which process comprises contacting, at adsorption conditions, said feed with a Type X or Type Y zeolite which has been cation exchanged at exchangeable cationic sites with cations which make the zeolite selective for the para-isomer, to effect the selective adsorption of said para-isomer by said adsorbent, the improvement which comprises utilizing in said process a Type X or Type Y zeolite which has been treated with an alkyl amine hydrochloride or alkyl amines.



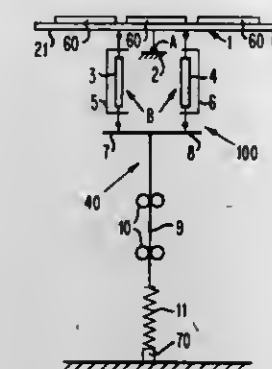
## ELECTRICAL

**4,283,588**  
**AUTOMATIC GUIDANCE SYSTEM FOR RADIATION-RESPONSIVE SYSTEMS**  
 Helmut Zitzelsberger, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 4, 1979, Ser. No. 72,096  
 Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2842084

Int. Cl.<sup>3</sup> H01L 31/00  
 U.S. Cl. 136—246

5 Claims



1. Apparatus for the automatic alignment of a radiation responsive system according to the position of a movable radiation source comprising:

- (1) a rocker means carrying said radiation responsive system, said rocker means being rotatable about an axis which intersects with the plane of movement of said movable radiation source,
  - (2) a platform means mounted for reciprocable translation in a direction perpendicular to said axis,
  - (3) two heat expansion bodies positioned between said rocker and platform means for exposure to said radiation source, said bodies being mounted in spaced-apart fashion on opposed sides of said axis, each body having first and second end portions linearly, longitudinally movable in response to thermal expansion forces occurring within the heat expansion body,
  - (4) means pivotally connecting respective first ends of said heat expansion bodies to said rocker means and respective second ends of said heat expansion bodies to said platform such that linear movements of said first and second ends serve to rotate said rocker means about said axis and translate said platform means, and
  - (5) shade means for shading each body from exposure to said radiation source such that relative thermal expansion forces are formed in said bodies.
5. The apparatus according to claim 1, wherein said radiation responsive system comprises an array of solar cells.

**4,283,589**  
**HIGH-INTENSITY, SOLID-STATE SOLAR CELL**  
 Roy Kaplow, Newton, and Robert I. Frank, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 901,331, May 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 689,989, May 26, 1976, Pat. No. 4,110,122. This application Jul. 10, 1979, Ser. No. 56,259

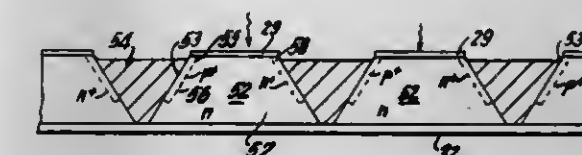
The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> H01L 31/06  
 U.S. Cl. 136—249

13 Claims

1. A semiconductor solar cell, comprising a substrate body of a first conductivity type and having spaced parallel exposure-side and underside body surfaces, one of said surfaces having a plurality of laterally spaced elongate grooves with opposed inclined sidewalls which diverge in the direction of said one surface, thereby defining plural spaced, elongate, parallel units with sidewalls which converge in the direction of said one surface, the maximum effective lateral width of the

exposure side of each unit being within the range up to ten mils, one sidewall of each unit comprised of a localized region of a second conductivity type, said localized region being diffused into said one sidewall and defining with adjacent first conductivity type body material a photovoltaic junction plane



which is parallel to the sidewall surface at said region, the other sidewall of each unit being of first conductivity type, and electric-circuit connection means including first conductive means having ohmic contact with said second conductivity-type regions and second conductive means having ohmic contact with regions of said first conductivity type.

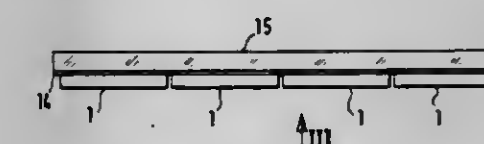
**4,283,590**  
**METHOD FOR PRODUCTION OF SOLAR CELLS AND SOLAR CELLS PRODUCED THEREBY**

Gerhard Bilger, Stuttgart; Gert Hewig, Steinenbronn; Fritz Pfisterer, Lauffen, and Hans-Werner Schock, Herrenberg, all of Fed. Rep. of Germany, assignors to Werner H. Bloss, Winterhach, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,433  
 Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732933

Int. Cl.<sup>3</sup> H01L 31/06, 31/18  
 U.S. Cl. 136—251

32 Claims



1. A method for the production of closed encapsulated solar cells with a thin film PN heterojunction, having a cadmium sulfide layer deposited on an electrically conductive support and a cuprous sulfide layer chemically produced on the cadmium sulfide layer, comprising the steps of depositing a layer of cadmium sulfide on an electrically conductive support, chemically producing a cuprous sulfide layer on the cadmium sulfide, thereby forming a lower part comprising the electrically conductive support, the layer of cadmium sulfide, and the layer of cuprous sulfide; depositing an adhesive material on a cover glass member, forming a conductive grid on the adhesive material, the cover glass member, adhesive material, and conductive grid forming an upper part; and joining the upper part with the lower part by means of said adhesive material, having the electrically conductive support and cover glass member be outer surfaces of the joined member, whereby the interface between the upper part and the lower part is formed between the electrically conductive grid and the cuprous sulfide layer, to form closed encapsulated solar cells.

30. Closed encapsulated solar cells, comprising:

- (a) an upper part comprising a cover glass member having adhesively attached thereto a plurality of individual electrically conductive grids;
- (b) a plurality of lower parts, each lower part comprising a structural part, an electrically conductive support on the structural part, a cadmium sulfide layer on the electrically conductive support, and a cuprous sulfide layer on the cadmium sulfide layer;
- (c) wherein the plurality of individual electrically conductive grids attached to the cover glass member are arranged in at least one row, with a lower part associated with each grid and arranged with respect to its associated grid such



that the electrically conductive support of each lower part contacts the grid associated with the adjacent lower part in the row, and wherein on one side of the cover glass an edge strip of the outer grids is exposed as a contact, while on the other side an edge strip of an electrically conductive support is exposed as a contact, the lower part and upper part being joined such that the cover glass member and the structural part form the outer surface of the solar cells, whereby closed encapsulated solar cells are formed.

4,283,591

## PHOTOVOLTAIC CELL

Karl W. Böer, Kennett Square, Pa., assignor to SES, Incorporated, Newark, Del.

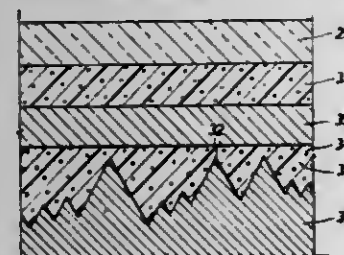
Filed May 22, 1980, Ser. No. 152,450

Int. Cl.<sup>3</sup> H01L 31/06, 31/18

U.S. Cl. 136—256

26 Claims

LACK OF PUNCHTHROUGH



14. A photovoltaic cell having improved stability comprising:

- (a) an electrically conductive first electrode;
- (b) a film of cadmium chalcogenide contacting said first electrode;
- (c) a film of copper chalcogenide contacting said cadmium chalcogenide and forming a p-n junction therewith;
- (d) a layer of a polymer composition containing electrically conductive particles in electrical contact with a portion of said copper chalcogenide film; and
- (e) a second metal electrode in electrical contact with said polymer layer but not in physical contact with said copper chalcogenide layer.

4,283,592

## FILLED ELECTRICAL SPLICE CASE

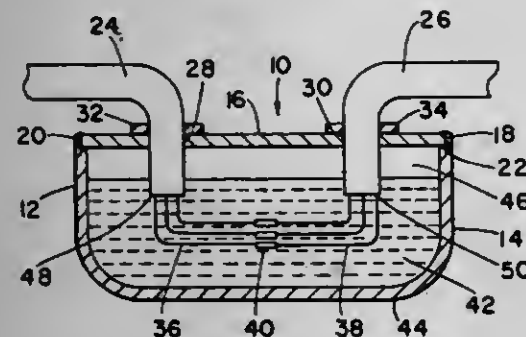
Kenneth W. Brownell, Jr., Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Aug. 23, 1979, Ser. No. 69,023

Int. Cl.<sup>3</sup> H02G 9/00

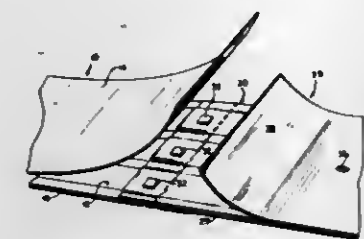
U.S. Cl. 174—21 R

10 Claims



1. An electrical splice case including a container housing electrical wire splices, entry holes located above the position of the splices; the entry holes for receiving electrical cable; the improvement comprising:

- a fluid sealant received in said container and covering said splices, said fluid sealant being substantially a silicone oil having a specific gravity greater than 1, whereby if water should enter said container, the water will remain on top of said fluid sealant; placing hydraulic pressure on said fluid sealant, thereby increasing the intimacy of the seal on the splices.



4,283,593  
MULTICONDUCTOR CABLE

Raymond F. Piasecki, Leonardo, and Ted L. C. Kuo, Fanwood, both of N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed May 25, 1979, Ser. No. 42,544

Int. Cl.<sup>3</sup> H02G 3/26; H01B 7/08, 7/36

U.S. Cl. 174—36

27 Claims

16. In combination, in an electrical wiring system:

- (a) first and second electrical cables having mutually overlapping end portions, each said cable having a plurality of flat conductors in an electrically insulative casing;
- (b) electrical connector means for mutually securing said cable end portions and providing electrical connection between said flat conductors of said cables;
- (c) a first electrically conductive member electrically connected to and extending lengthwise with said first cable, overlying said casing of said first cable and having successive lengthwise extents respectively secured and unsecured to said first cable; and
- (d) a second electrically conductive member electrically connected to and extending lengthwise with said second cable, overlying said casing of said second cable and having successive lengthwise extents respectively secured and unsecured to said second cable, at least one of such first and second electrically conductive members being in overlying disposition to said end portions of said first and second electrical cables and said electrical connector means.

4,283,594

VACUUM APPARATUS HAVING PROTECTIVE DEVICE FOR OPERATOR AND METHOD

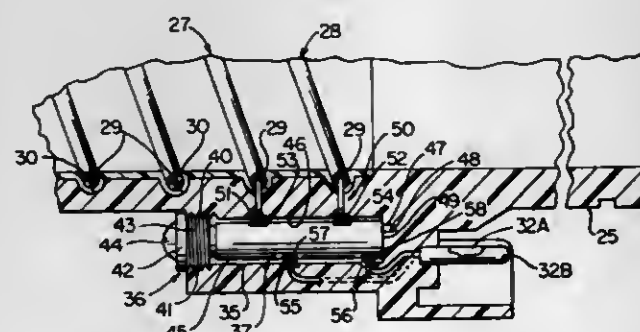
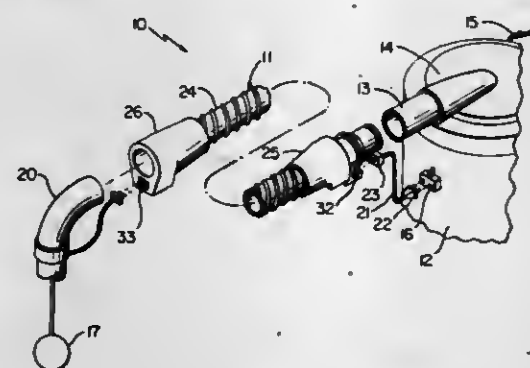
M. John Somers, Dayton, Ohio, assignor to Dayco Corporation, Dayton, Ohio

Filed Dec. 17, 1979, Ser. No. 104,617

Int. Cl.<sup>3</sup> A47L 9/24, 9/28

U.S. Cl. 174—47

16 Claims



11. In a vacuum hose assembly for a canister type vacuum

cleaner; said vacuum hose assembly comprising a vacuum hose; a pair of hose connectors provided at opposite end portions of said hose; and a pair of wires extending along said vacuum hose and serving the dual purpose of electrical conductors and hose reinforcing wires; and an electrical connector associated with each hose connector and having said dual-purpose wires connected thereto; the improvement comprising, a chamber in at least one of said hose connectors, readily opened and closed access means for said chamber, a protective cartridge within said chamber, said cartridge being adapted to be easily installed within and removed from said chamber, electrical connection means electrically connecting said cartridge between an associated electrical connector and said wires, said cartridge being sensitive to and serving to detect practically every type of fault capable of causing injury to humans and operating to interrupt the electrical circuit therethrough upon detection of a fault, and means for installing said cartridge within said chamber in only one operative position at which said cartridge enables operation of a cleaning instrument supplied with electrical power by said wires.

4,283,595

## HIGH VOLTAGE CONDUCTOR TERMINAL

Oleg V. Anosov, Alexandr G. Mirzoev, and Jury V. Obratsov, all of Moscow, U.S.S.R., assignors to Lackenbach, Lilling & Siegel, Scarsdale, N.Y.

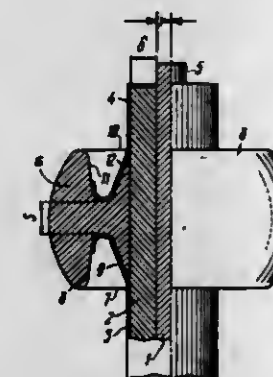
Continuation-in-part of Ser. No. 33,474, Apr. 26, 1979, abandoned, which is a continuation of Ser. No. 808,120, Jun. 20, 1977, abandoned. This application Nov. 19, 1979, Ser. No. 95,666

Claims priority, application U.S.S.R., Jun. 25, 1976, 2377112

Int. Cl.<sup>3</sup> H02G 150/064; H01B 17/42

U.S. Cl. 174—73 R

6 Claims



1. A high voltage terminal for a conductor having insulation, comprising:

- a first screen made as a coating of an electrically conductive material on an outer surface of said insulation;
- a second screen made as a coating of an electrically conductive material on an outer surface of said insulation near an end of said conductor, said second screen being in contact with said end of said conductor;
- at least one insulation bush arranged near said end of said conductor and between said first and second screens, said end of said conductor extending beyond a first butt end of said insulation bush, said insulation bush being in contact with said insulation of said conductor and being made of a material having a permittivity approximately equal to the permittivity of the material of said insulation of said conductor, said first butt end and a second butt end of said insulation bush having annular toroid-shaped grooves, the ratio of the minimum distance between said grooves of said butt ends to the thickness of said insulation of said conductor being within the range of about 0.2 to 5;
- a third screen made as a coating of an electrically conductive material on an outer surface of said groove of said first butt end of said insulation bush, said third screen being in contact with said second screen; and
- a fourth screen made as a coating of an electrically conductive material on an outer surface of said groove of said

second butt end of said insulation bush, said fourth screen being in contact with said first screen.

4,283,596

## CONNECTOR AND CONNECTION METHOD

Lajos J. Vidakovits, Mountain View, Calif., and Didier J. M. Watine, Maisons Laiffite, France, assignors to Raychem Pontolse S.A., Saint-Ouen l'Aumone, France

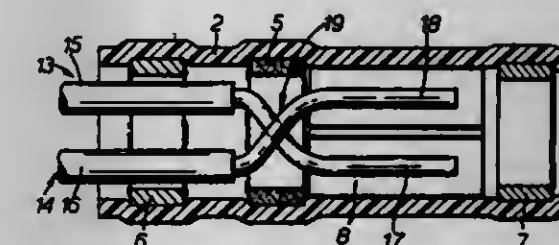
Filed May 7, 1979, Ser. No. 36,368

Claims priority, application United Kingdom, May 9, 1978, 18451/78

Int. Cl.<sup>3</sup> H01R 4/00

U.S. Cl. 174—84 R

35 Claims



1. In a method for electrically connecting together two elongate electrical conductors, the improvement comprising the steps of selecting a heat-recoverable sleeve having an insert disposed therein to locate the conductors, the insert being infusible and substantially dimensionally stable at the heat-recovery temperature of the sleeve and having two separate compartments, introducing the conductors into the insert in the sleeve so that the conductors are enclosed within respective ones of the compartments and are laterally spaced from each other, and applying heat to recover the sleeve.

4,283,597

## WIDE-RANGE INSULATING/SEALING SLEEVE

James J. Cooper, Jr., St. Louis, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,929

Int. Cl.<sup>3</sup> H01B 17/58; H01R 13/52

U.S. Cl. 174—138 F

7 Claims



7. A sleeve for sealing and insulating the connection of an insulated power distribution system cable to an insulated bus bar comprising, in combination: a generally cylindrical hollow body of elastomeric material having a plurality of circumferentially extending and axially closely spaced grooves at one end thereof and on the inner surface thereof for stretchingly and sealingly engaging an insulated projecting terminal portion of said bus bar, the other end of said body having a reentrant portion including an axially inner tubular portion and a flared portion joining said tubular portion and opening outwardly toward and terminating adjacent the edge of said other end of said body, the internal surfaces of said tubular and flared portions having a plurality of circumferentially extending and axially spaced grooves for sealingly engaging an insulated portion of said cable, wherein the diameters of the grooves along said tubular portion are substantially constant and wherein the diameters of the grooves along said flared portion increase in the axially outward direction, with the largest diameter groove being spaced apart from said edge thereby forming a funnel guide therebetween, wherein said flared portion joins said tubular portion at a point which is substantially spaced from the axially inner end of said funnel guide.



4,283,598

# LINE POST INSULATOR WITH SWINGING STIRRUP AND CLAMPING JAWS FOR OVERHEAD LINES OF MORE THAN 1000 VOLTS

Janos Fridrich, Budapest; Zoltan Hetesi, Hosszuheteny; Gusztav Kistelegi, Pecs; Laszlo Misangyi, Pecs; Emil Szegeletes, Pecs, and Jozsef Szabo, Dunaujvaros, all of Hungary, assignors to Finomkeramipari Művek, Budapest, Hungary

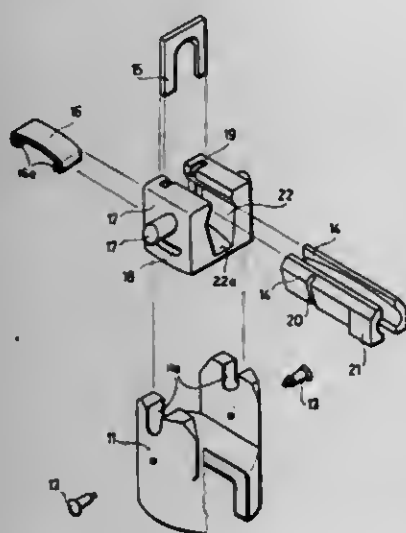
Filed Aug. 23, 1979, Ser. No. 68,902

Claims priority, application Hungary, Sep. 12, 1978, FI-682

Int. Cl.<sup>3</sup> H01B 7/16

U.S. Cl. 174-169

10 Claims



1. A line post insulator for overhead lines designed for operating voltages higher than 1000 volts, said line post insulator comprising an insulator cap, a swinging stirrup located in said insulator cap, said swinging stirrup comprising a stirrup body portion and a pair of laterally extending pins integral therewith, said insulator cap including a central, longitudinal hole therethrough for receiving said stirrup body portion and a pair of transverse recesses for locating said laterally extending pins whereby said swinging stirrup is adapted to pivot about a transverse axis defined by the axes of said pins, said swinging stirrup including a longitudinal, central cavity therethrough defined by a pair of opposed, downwardly narrowing side walls, a bottom wall joining said downwardly narrowing side walls and a pair of opposed upwardly narrowing side walls, the upper end of said upwardly narrowing side walls defining a longitudinal, upper gap for the insertion of a line, and a pair of elongated clamping jaws extending longitudinally within said cavity for supporting opposite sides of an overhead line, said clamping jaws having side walls that conform to the shape of said downwardly narrowing side walls of said cavity, whereby an overhead line is can be clamped between said clamping jaws by the pressing force occurring between said jaws when said jaws are wedged in said cavity due to the weight of such line.

4,283,599

# METHOD AND APPARATUS FOR SECURING DATA TRANSMISSIONS

Martia M. Atalla, Menlo Park, Calif., assignor to Atalla Technologies, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 3,898, Jan. 16, 1979, which is a continuation-in-part of Ser. No. 902,444, May 3, 1978. This application Feb. 5, 1979, Ser. No. 9,532

Int. Cl.<sup>3</sup> H04L 9/00

U.S. Cl. 178-22.1

5 Claims

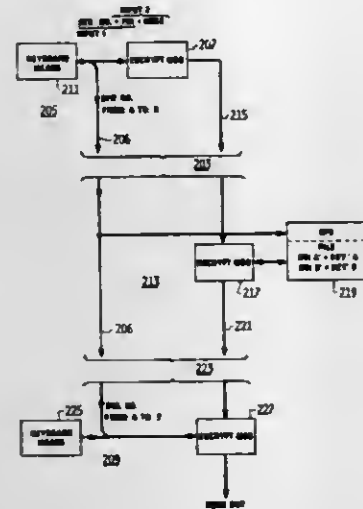
1. The method of securing a transaction between two entities at first and second spaced locations using identification information about the two entities stored at an intermediate location, the method comprising:

encoding in logical combination at the first location the identification information about one entity and data pertaining to the transaction to produce an encoded signal for

transmission to the intermediate location with information about the two entities;

decoding the encoded signal received at the intermediate location with respect to the logical combination used at the first location using information about said one entity stored thereat to provide the data pertaining to the transaction for re-encoding using information stored thereat about the other of the two entities;

encoding in a logical combination at the intermediate location



tion the data pertaining to the transaction decoded thereat and identification information about the other of the two entities stored thereat to produce an encoded signal for transmission to the second location with information about at least the other of the two entities; and

decoding the encoded signal received at the second location with respect to the logical combination used at the intermediate location using information about the other of the two entities provided at the second location to produce the data pertaining to the transaction.

4,283,600

# RECIRCULATIONLESS CONCERT HALL SIMULATION AND ENHANCEMENT SYSTEM

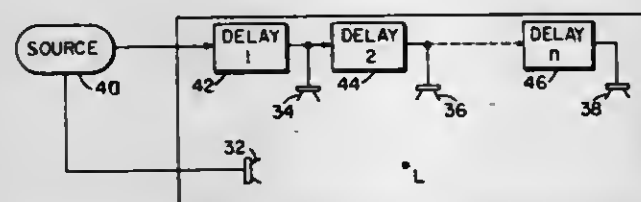
Joel M. Cohen, P.O. Box 135, Brookline, Mass. 02146

Filed May 23, 1979, Ser. No. 41,705

Int. Cl.<sup>3</sup> H04R 3/00

U.S. Cl. 179-1 J

3 Claims



3. A method of enhancing original concert hall ambience in a small listening area without creating ascertainable echoes, without signal recirculation and without creating booming or introducing tonal discoloration comprising the steps of:

acoustically reproducing at one location in the listening area sound from an original sound source; and

acoustically reproducing without recirculation at a plurality of locations in the listening area sound from the original source, all of which is sequentially delayed such that distinct echoes are not discernible; such that the cumulative delay exceeds that at which echoes are discernible; and such that phase cancellations are avoided.

4,283,601

# PREPROCESSING METHOD AND DEVICE FOR SPEECH RECOGNITION DEVICE

Akira Nakajima, Hachioji; Akira Ichikawa, Kokubunji, and Kazuo Nakata, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

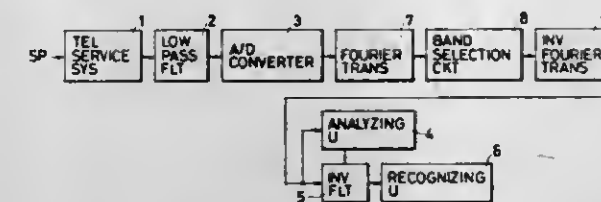
Filed May 8, 1979, Ser. No. 37,026

Claims priority, application Japan, May 12, 1978, 53-55556

Int. Cl.<sup>3</sup> G10L 1/00

U.S. Cl. 179-1 SD

6 Claims



1. A preprocessing method for a speech recognition device having input means for receiving a speech signal which has been transmitted through a transmission system having a certain transmission band, preprocessing means including an inverse filter for preprocessing the input speech signal and recognition means for recognizing the input speech signal from said preprocessing means; comprising the first step of Fourier-transforming the speech signal from said input means to obtain a frequency spectrum, the second step of extracting only a frequency spectrum relating to the frequency spectrum of said transmission band from said frequency spectrum obtained at said first step and continuously rearranging the extracted frequency spectrum from 0 Hz, and the third step of subjecting to inverse Fourier transform the signal corresponding to the rearranged frequency spectrum extracted at said second step, the fourth step of analyzing a signal obtained at said third step to obtain a specified characteristic parameter and the fifth step of setting a characteristic inverse to said characteristic parameter obtained by said fourth step in said inverse filter and passing the input speech signal through said inverse filter, thereby obtaining the input speech signal for said recognition means.

4,283,602

# CRYPTOGRAPHICALLY SECURE COMMUNICATION SYSTEM

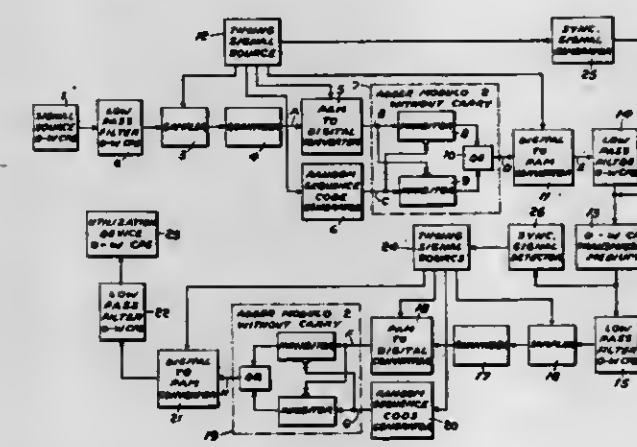
Robert T. Adams, Short Hills, N.J.; Paul E. Ahrens, Hicksville, N.Y., and John Granlund, Short Hills, N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 555,074, Jun. 3, 1966. This application Sep. 23, 1968, Ser. No. 761,879

Int. Cl.<sup>3</sup> H04K 1/02

U.S. Cl. 179-1.5 R

10 Claims



1. A cryptographically secure communication system employed with a transmission medium having a given low frequency pass band and a predetermined bandwidth comprising: a source of analog signal confined to said given pass band and said predetermined bandwidth;

first means coupled to said source to produce amplitude sample pulses from said analog signal at a given rate re-

lated to at least twice said predetermined bandwidth, each of said sample pulses having a discrete amplitude equal to one of a predetermined number of discrete amplitude levels;

second means to provide a first sequence of signals representing randomly and with substantially equal probability said predetermined number of discrete amplitude levels, said first sequence of signals being coincident with said sample pulses;

third means coupled to said first means and said second means responsive to said sample pulses and said first sequence of signals to encrypt said sample pulses;

said transmission medium;

fourth means coupled between said third means and said transmission medium to convert said encrypted sample pulses to an encrypted analog signal confined to said given pass band and said predetermined bandwidth for propagation through said transmission medium;

fifth means coupled to said transmission medium to produce encrypted amplitude sample pulses from said encrypted analog signal at said given rate, each of said encrypted sample pulses having a discrete amplitude equal to one of said predetermined number of discrete amplitude levels;

sixth means synchronous with said second means to provide a second sequence of signals identical to said first sequence of signals, said second sequence of signals being coincident with said encrypted sample pulses;

seventh means coupled to said fifth means and said sixth means responsive to said encrypted sample pulses and said second sequence of signals to decrypt said encrypted sample pulses and recover said sample pulses;

eighth means coupled to said seventh means to convert said sample pulses to said analog signal confined to said given pass band and said predetermined bandwidth; and

ninth means coupled to said eighth means having said given pass band and said predetermined bandwidth to utilize said analog signal.

4,283,603

# ON-HOOK/OFF-HOOK STATUS CHECK CIRCUIT

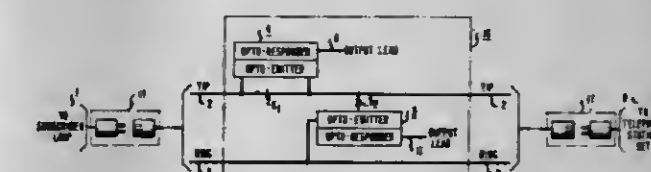
Ralph L. Cerbone, Indianapolis, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 19, 1980, Ser. No. 122,431

Int. Cl.<sup>3</sup> H04M 1/24

U.S. Cl. 179-18 FA

7 Claims



1. An on-hook/off-hook status check circuit, adapted to be connected between the tip and ring leads of a telephone subscriber loop and the telephone station set

characterized in that

the circuit provides a predetermined sequence of outputs identifying the switchhook status of the telephone station set, the circuit comprising

a first means connectable in series with the telephone subscriber loop for providing a first output responsive to the flow of current

a second means connectable across the telephone subscriber loop for providing a second output responsive to the flow of current and

means for sequentially activating the first means before the second means such that

upon activation of the first and second means, a sequence of the first output before the second output identifies the off-hook status of the telephone station set and

a sequence of the second output before the first output or



simultaneously with the first output identifies the on-hook status of the telephone station set.

4,283,604

# CURRENT SOURCE CIRCUITS WITH COMMON MODE NOISE REJECTION

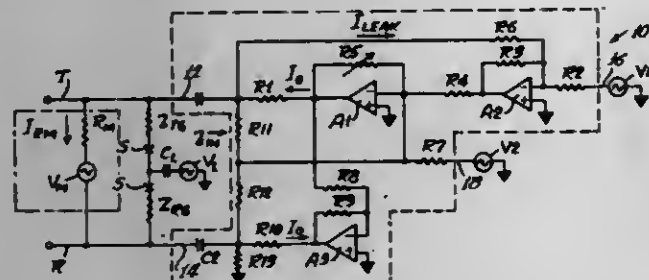
Charles W. Chambers, Jr., Downers Grove, Ill., assignor to Tellabs, Inc., Lisle, Ill.

Filed Jan. 4, 1979, Ser. No. 45,274

Int. Cl.<sup>3</sup> H04M 1/76

U.S. Cl. 179—70

26 Claims





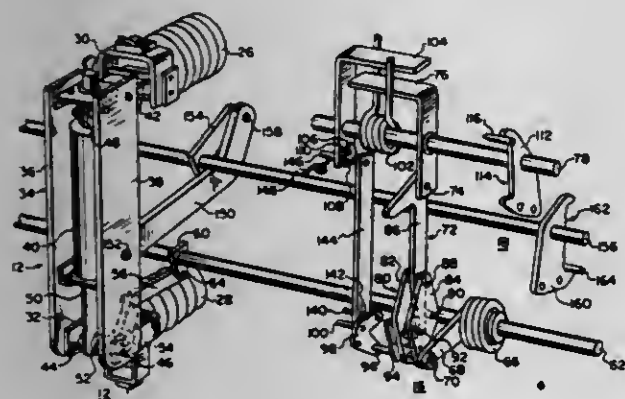
about its longitudinal axis between an open and a closed position;

a circuit interrupter mounted to the support structure and including a first electrically conductive interrupting contact member and a second electrically conductive interrupting contact member which is movable relative to the first interrupting contact member between a closed position at which the second interrupter contact member engages the first interrupter contact member, and an open position at which the second interrupter contact member is disengaged and spaced from the first interrupting contact member;

an interrupter operating shaft, having a longitudinal axis, which is rotatably mounted to the support structure in spaced parallel arrangement with the first shaft for rotation about its longitudinal axis between a closed position and an open position;

interrupter connecting means, disposed between the second contact member of the circuit interrupter and the interrupter operating shaft, for moving the second contact member to its closed position when the interrupter operating shaft is rotated to its closed position, and for moving the second contact member to its open position when the interrupter operating shaft is rotated and its open position;

an interrupter operating means, connected between the first shaft and the interrupter operating shaft, for quickly rotating the interrupter operating shaft between its open and closed positions, wherein, as the first shaft is rotated from its open position toward its closed position, the interrupter



operating means quickly rotates the interrupter operating shaft from its open position to its closed position at a first intermediate position of the first shaft near the closed position of the first shaft, and wherein, as the first shaft is rotated from its closed position toward its open position, the interrupter operating means quickly rotates the interrupter operating shaft from its closed position to its open position at a second intermediate position of the first shaft near the closed position of the first shaft;

a disconnect switch which is mounted to the support structure, and which includes a first electrically conductive disconnect contact member, and a second electrically conductive disconnect contact member which is movable relative to the first disconnect contact member between a closed position at which the second disconnect contact member engages the first disconnect contact member, and an open position at which the second disconnect contact member is disengaged and spaced from the first disconnect contact member, one of the disconnect contact members being electrically connected to one of the interrupting contact members of the circuit interrupter;

a disconnect operating shaft, having a longitudinal axis, which is rotatably mounted to the support structure for rotation about its longitudinal axis between a closed position and an open position, in spaced parallel arrangement with the interrupter operating shaft;

connecting means, disposed between the second disconnect contact member and the disconnect operating shaft, for moving the second disconnect contact member to its closed position when the disconnect operating shaft is

rotated to its closed position, and moving the second disconnect contact member to its open position when the disconnect operating shaft is rotated to its open position;

a first lever affixed to the first shaft;

a second lever affixed to the disconnect operating shaft;

a driving link for connecting the disconnect operating shaft to be rotated between its open and closed positions as the first shaft is rotated between its corresponding open and closed positions, the driving link having a first end which is pivotally connected to one of the first and second levers, and an opposite second end which defines an elongated opening, or slot, through the driving link having an outer end and an inner end which define the length of the slot;

a pivot pin, carried by the other of the first and second levers, which extends through the slot of the driving link, the pin being disposed against one of the outer and inner ends of the slot when the first shaft is disposed in its open position, and the driving link being moved over and beyond a toggle position when the first shaft is rotated to its closed position;

wherein, as the first shaft is rotated from its open position towards its closed position, the pivot pin traverses the length of the slot and abuts against the other of the outer and inner ends of the slot to initiate the rotation of the disconnect operating shaft from its open position towards its closed position, the pivot pin remaining in abutment with the other end of the slot until the driving link has been moved to its toggle position, the second disconnect contact member engaging the first disconnect contact member at a third intermediate position of the first shaft before the driving link has been moved to its toggle position, and before the interrupter operating shaft has been rotated from its open position to its closed position by the interrupter operating means at the first intermediate position of the first shaft which is disposed between the third intermediate position and the closed position of the first shaft; and

wherein, as the first shaft is rotated from its closed position towards its open position, the driving link is moved over its toggle position and the pivot pin is moved the length of the slot and abuts against the one side of the slot to initiate rotation of the disconnect operating shaft from its closed position towards its open position at a fourth intermediate position of the first shaft, the interrupter operating shaft being rotated from its closed position to its open position at the second intermediate position of the first shaft at which the first shaft is disposed between its closed position and its fourth intermediate position;

whereby, when the second operating shaft is rotated from its closed position to its open position, the series circuit through the circuit interrupter and the disconnect switch is opened by the circuit interrupter before the disconnect switch opens, and, when the second shaft is rotated from its open position to its closed position, the disconnect switch closes before the circuit interrupter closes.

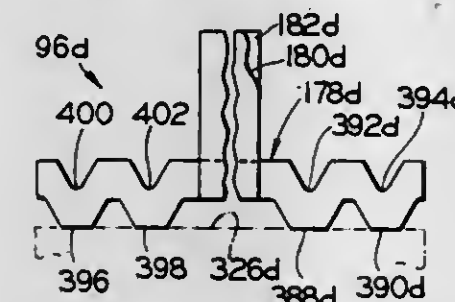
#### 4,283,611 ELECTRICAL SWITCH

David W. Bull, Hersey, Mich., assignor to Nartron Corporation, Reed City, Mich.  
Division of Ser. No. 861,436, Dec. 16, 1977, Pat. No. 4,204,102.  
This application May 14, 1979, Ser. No. 38,489  
Int. Cl.<sup>3</sup> H01H 3/12, 3/14

U.S. Cl. 200—252 16 Claims

I. A movable electrical contact for sliding electrical engagement with at least first and second stationary electrical contacts which are physically separate from each other and spaced from each other, said movable electrical contact comprising a contact main body, said main body comprising first surface means at generally one side of said main body for sliding engagement with said stationary electrical contacts and second surface means at a second side of said main body generally opposite to said one side, said main body when said first

surface means is engaged with only said second stationary electrical contact being movable in a first direction toward said first stationary electrical contact in order to achieve engagement with said first stationary electrical contact, said main body when said first surface means is engaged with only said first stationary electrical contact being movable in a second direction opposite to said first direction toward said second stationary electrical contact in order to achieve engagement with said second stationary electrical contact, said first surface means comprising first and second contacting surfaces, said first contacting surface defining a first contacting area, said second contacting surface defining a second contacting area, said first contacting area being relatively narrow and relatively elongated with the direction of such elongation being generally parallel to said first and second directions, said second



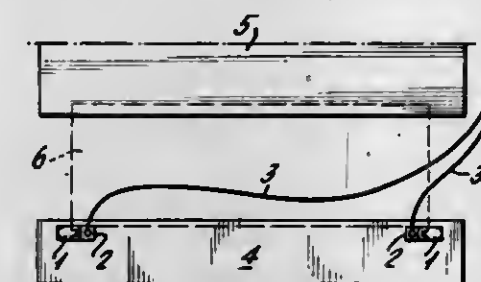
contacting area being relatively narrow and relatively elongated with the direction of such elongation being generally parallel to said first and second directions, said first and second contacting surfaces being generally coplanar with each other, a portion of said first surface means of said main body between said first and second contacting surfaces being spaced away from the plane of said first and second contacting surfaces as to thereby result in said first and second contacting areas being spaced from each other while being generally coplanar, both of said first and second contacting areas being effective for engaging said first stationary electrical contact when said main body is moved in said first direction, and both of said first and second contacting areas being effective for engaging said second stationary electrical contact when said main body is moved in said second direction.

4,283,612

MACHINE GUARDING APPARATUS  
Edward G. Richards, Columbia, Md., assignor to Baltimore Aircoil Co., Inc., Jessup, Md.  
Filed May 5, 1980, Ser. No. 146,585  
Int. Cl.<sup>3</sup> H01H 9/20

U.S. Cl. 200—334

3 Claims



1. A method for eliminating accidents on machines having dangerous propensities which comprises:  
(a) locating a strip of metal a sufficient distance from the machine so that one cannot stand on the metal and reach into the machine,  
(b) placing a foot pedal switch on said strip,  
(c) connecting a proximity switch to the foot pedal switch, which proximity switch only activates when it is near metal,  
(d) activating the machine by continuously pressing down

on the foot pedal switch while said foot pedal switch and proximity switch are located on the metal strip.

#### 4,283,613 CONSTRUCTION FOR ATTACHING KNOB TO MANIPULATION ROD OF PUSH-BUTTON TYPE MECHANISM

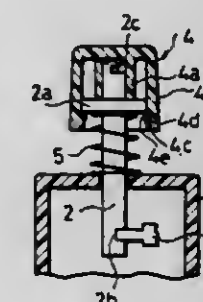
Shiro Kondo, and Minoru Oyama, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan  
Filed Apr. 14, 1980, Ser. No. 139,728

Claims priority, application Japan, Apr. 19, 1979, 54/52300[U]

Int. Cl.<sup>3</sup> H01H 3/12

U.S. Cl. 200—340

3 Claims



1. A knob and a manipulation rod of a push-button type actuating mechanism adapted to be attached to one another, characterized in that: said manipulating rod of said push-button type actuating mechanism has a flange and a projecting portion projecting axially from said flange, said projecting portion being provided at its end portion with resilient tongues; and that said knob has a cap-like shape having an inner peripheral surface provided with a snapping step for engagement with the outer periphery of said flange, said knob further having a liner cylinder having a bore for receiving said projecting portion of said manipulating rod, said bore having a length smaller than that of said projecting portion so that said tongues are resiliently deformed when said projecting portion is received by said cylinder.

4,283,614

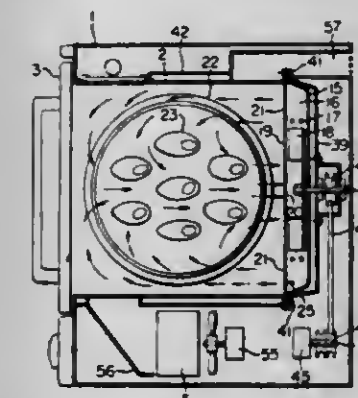
COOKING DEVICE WITH HIGH-FREQUENCY  
HEATING MEANS AND RESISTANCE HEATING MEANS  
Junzo Tanaka, Fujiidera; Toshio Kai, Nara, and Hitoshi Kurita, Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
Filed Feb. 7, 1979, Ser. No. 10,054

Claims priority, application Japan, Feb. 20, 1978, 53/18949; Apr. 19, 1978, 53/46991

Int. Cl.<sup>3</sup> H05B 6/64

U.S. Cl. 219—10.55 R

6 Claims



1. A cooking device utilizing high frequency and forced hot air heating means, comprising:  
a housing having a front heating chamber and a rear cham-



ber therein, said front chamber having front, rear, top and bottom walls, and two side walls;  
 means for permitting charges to be heated to be placed in and removed from said front chamber;  
 said housing including an apertured wall between said chambers for permitting air flow therebetween, the apertures of said wall comprising a central group of apertures for air movement in one direction through said wall, and a peripheral group of apertures for air movement in the opposite direction through said wall;  
 fan means having fan blades disposed in said rear chamber for forcing a flow of air from said rear chamber into said front chamber in a horizontal direction extending toward said front wall of said front chamber, through one of said groups of apertures, said air flow returning to said rear chamber through the other of said groups of apertures;  
 a resistance heating coil disposed in said rear chamber adjacent one group of apertures for heating air prior to flow thereof into said front chamber;  
 a thermally insulating plate defining a rear wall of said rear chamber;  
 driving means mounted on said insulating plate for supporting and rotating said fan means;  
 means for propagating high-frequency electromagnetic wave energy into said front heating chamber from a region adjacent said top wall thereof;  
 a horizontal turntable rotatably mounted within said front heating chamber adjacent the bottom thereof, in a recess in said bottom wall, for receiving said charges;  
 means for rotating said turntable;  
 a first receptacle disposed on said turntable;  
 a second metal receptacle removably disposed on said first receptacle for rotation in unison therewith, said second receptacle having legs the length or height of which are such that the hot air discharged from said rear chamber into said front chamber by said fan means may freely flow through the space between said first and second receptacles; and  
 a layer of self-cleaning catalytic material disposed on said fan blades and on said apertured wall;  
 whereby the rotation of said turntable distributes the heating effect of said wave energy with respect to said charges, and cooperates with said horizontal forced air flow to provide substantially uniform browning of all exposed surfaces thereof.

4,283,615

#### DEVICE FOR STOPPING A LEAK IN A STRAIGHT PORTION OF A HEAT-EXCHANGER TUBE

Bernard Vrillon, Wissous, France, assignor to Commissariat à l'Energie Atomique, Paris, France

Filed May 11, 1979, Ser. No. 38,315

Claims priority, application France, May 17, 1978, 78 14545  
 Int. Cl.<sup>3</sup> B23K 31/06; B22D 19/10; B23K 11/30; F28F 11/06  
 U.S. Cl. 219—66 14 Claims

1. A device for stopping a leak in a straight portion of a heat-exchanger tube, wherein said device comprises an axial mandrel of material having good electrical conductivity on which are engaged metal washers of revolution having a conical profile and separated by cylindrical insulating pastilles, an insulating head fixed at one end of the axial mandrel and an insulating support mounted at the end opposite to said head, a threaded portion of said mandrel being passed freely through said support and adapted to cooperate with a nut which is applied against the support and serves to exert on the conical washers an adjustable initial compressive stress such that the outer peripheral edges of said washers are applied against a thin cylindrical lining sleeve which is coaxial with the mandrel, the external diameter of said sleeve being smaller than the internal diameter of the tube in which the leak to be stopped is located, means for introducing the support within the lining sleeve and then introducing the sleeve within the tube in order to place said sleeve opposite to a region which includes said leak, means for subjecting the mandrel aforesaid to an axial

displacement with respect to said support so that the conical washers are compressed to a maximum extent and thus undergo a change from a conical profile to a more flattened profile so that each washer exerts on said lining sleeve a radial force which applies said sleeve in intimate contact with said



tube along a number of circular lines corresponding to the number of washers, and means for passing an electric current successively through the mandrel, the washers, the lining sleeve and the tube in order to joint said tube and said sleeve by means of resistance welds formed along said circular lines.

4,283,616

#### GAS METAL ARC WELDING METHOD FOR PREPARING MISALIGNED TUBE HOLES

F. Timothy Bacha, Crown Point, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

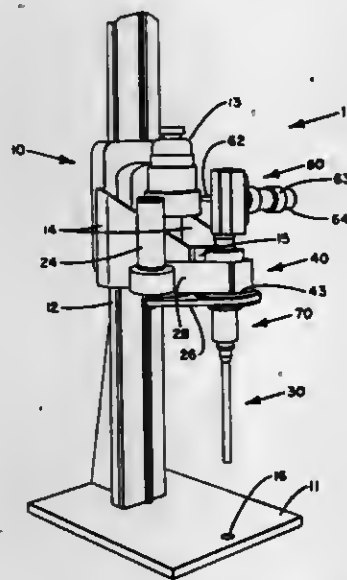
Division of Ser. No. 896,125, Apr. 14, 1978, Pat. No. 4,225,772.

This application Dec. 28, 1979, Ser. No. 108,265

Int. Cl.<sup>3</sup> B23K 9/04

U.S. Cl. 219—76.14

3 Claims



1. A gas metal arc welding method for repairing a relatively small diameter tube hole including the steps of:  
 guiding a consumable wire from a welding torch, through a guide means, and into the tube hole;  
 directing the consumable wire toward the tube hole sidewall as the wire exits the guide means;  
 thermally and electrically protecting the lower part of the guide means;  
 directing an inert gas from the welding torch, through a gas nozzle, and into the tube hole;  
 rotatably connecting the gas nozzle with the welding torch

for allowing relative rotation therebetween while directing the inert gas therebetween;  
 rotatably connecting the guide means with the welding torch for allowing relative rotation therebetween while guiding the consumable wire therebetween;  
 conducting an electric current between the welding torch and the guide means; and  
 vertically passing the nozzle assembly through the tube hole at a controlled rate.

4,283,617

#### AUTOMATIC PIPE WELDING SYSTEM

George J. Merrick, Franklin; George E. Cook, Brentwood, and Donald D. Modglin, Nashville, all of Tenn., assignors to Merrick Welding International, Inc., Nashville, Tenn.

Division of Ser. No. 654,975, Feb. 3, 1976, Pat. No. 4,145,593.

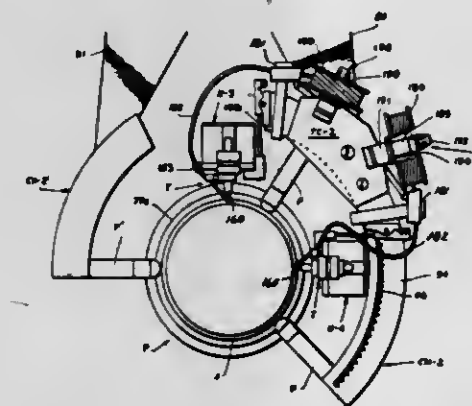
This application Mar. 19, 1979, Ser. No. 21,784

The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> B23K 9/12

U.S. Cl. 219—125.1

4 Claims



1. The process of arc welding a joint along a path while the size of the weld puddle in the joint is selectably adjusted in response to location of the arc along the path, comprising the steps of:

establishing an electric arc with the material being welded so as to create a weld puddle of molten metal at a location on the joint;  
 moving the arc to traverse the path being welded;  
 supplying preheated filler metal to said weld puddle while moving said arc; and  
 adjusting the amount of supplied filler metal by controlling the preheating of said filler metal and the rate at which said preheated filler metal is supplied to said weld puddle, in response to a selectably variable function of the location of said arc along said path, so that the size of said weld puddle at each location on the path is adjustable to the puddle size previously determined for said locating along said path.

4,283,618

#### WELDING APPARATUS WITH STEPPING CIRCUIT CURRENT CONTROL

Franz Jakob, Unterhaching, Fed. Rep. of Germany, assignor to Holger Reeh, Unterpaffenhofen, Fed. Rep. of Germany  
 Filed Sep. 19, 1978, Ser. No. 943,877

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742341

Int. Cl.<sup>3</sup> B23K 9/10

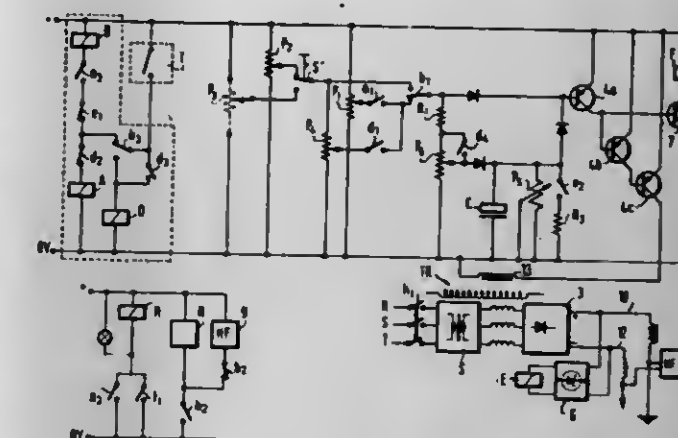
U.S. Cl. 219—130.5

8 Claims

1. An electric welding apparatus, particularly for inert gas d.c. welding, having an operation circuit, including a power supply and the welding electrode, and a control circuit for controlling the operation circuit, said control circuit including a stepping circuit comprising:

first switching circuit means for setting a repose current,  
 second switching circuit means for setting an ignition cur-

rent and switching on the power supply for the operation circuit,  
 third switching circuit means for setting a welding current,  
 fourth switching circuit means for reducing, with an adjustable time constant, the welding current to an intermediate crater filling current value, and  
 fifth switching circuit means for reducing, with an adjustable time constant, said intermediate crater filling current



value to said repose current, said first to fifth switching circuit means being operatively connected to and controlled by the successive operation of a trip switch and a limit switch, said limit switch being energized when the output voltage of the welding apparatus rises to a value above the welding voltage so that when said limit switch is energized said stepping circuit is automatically reset to one of said first or second switching circuit means as a function of the switching state of said trip switch.

4,283,619

#### GLOW PLUG TEMPERATURE CONTROL APPARATUS

Yoshiaki Abe, Higashimatsuyama, Japan, assignor to Diesel Kiki Company, Ltd., Tokyo, Japan

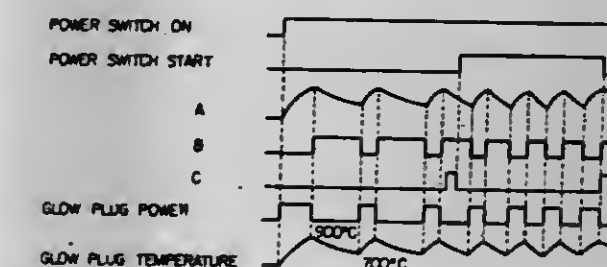
Filed Mar. 21, 1979, Ser. No. 22,722

Claims priority, application Japan, Apr. 4, 1978, 53-44140[U]

Int. Cl.<sup>3</sup> H05B 1/02

U.S. Cl. 219—492

10 Claims



1. A glow plug temperature control apparatus including a glow plug, power source means for applying electric power to the glow plug and first switch means connected between the power source means and the glow plug, characterized by comprising:

time constant circuit means having capacitance means and resistance means;  
 second switch means connected between the power source means and the time constant circuit means;  
 control means constructed to sense a voltage across the capacitance means and control the first and second switch means to connect the power source means to the glow plug and time constant circuit means in accordance therewith, the time constant circuit means being constructed so that the voltage across the capacitance means is proportional to a temperature of the glow plug;  
 the control means being constructed to control the first and second switch means to connect the power source means to the glow plug and time constant circuit means when the



voltage across the capacitance means is below a predetermined value and to disconnect the power source means from the glow plug and time constant circuit means when the voltage across the capacitance means is above the predetermined value;

a control switch having an OFF position, an ON position and a START position, the control means comprising timer means for controlling the first and second switch means to maintain the power source means disconnected from the glow plug and time constant circuit means after the control switch has been changed from the OFF position to the ON position for a predetermined length of time;

timer disable means for disconnecting the timer means from the first and second switch means when the control switch is in the START position;

the capacitance means comprising a capacitor, the resistance means comprising a charging resistor connected so that the capacitor charges from the power source means through the second switch means and the charging resistor when the time constant circuit means is connected to the power source means by the second switch means and a discharging resistor connected so that the capacitor discharges through the discharging resistor when the time constant circuit means is disconnected from the power source means by the second switch means; and

compensation means for compensating the time constant circuit means when the control switch is in the START position.

4,283,620

# ARRANGEMENT FOR DETERMINING THE LENGTH OF ARBITRARY SHIFT REGISTERS

Heinz Drescher, Holzgerlingen; Heinrich Imbusch, Mainz, and Hans H. Lampe, Herrenberg, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

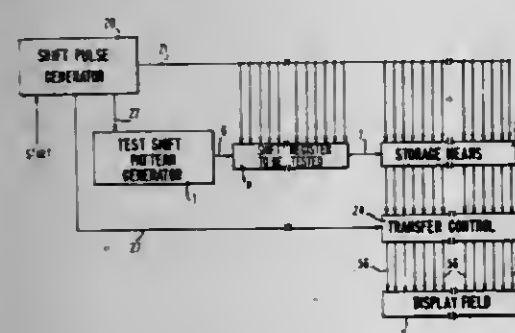
Filed Jul. 2, 1979, Ser. No. 54,327

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2839950

Int. Cl.<sup>3</sup> G01R 31/26

U.S. Cl. 235-92 SH

19 Claims



1. An arrangement to aid in determining the unknown length  $L_x$  of a shift register not exceeding a predetermined maximum length  $L_{max}$  said arrangement including:

- circuit means, connected to the input of a shift register whose length  $L_x$  is to be determined, for generating a test shift pattern of length  $L_{max} + K$ , with  $K \geq 2$ , which pattern comprises a defined homogeneous bit configuration having a defined data transition at the end thereof, and for shifting said test shift pattern into the shift register;
- storage means of length  $L_{max} + K$  having  $L_{max} + K$  individual cells, connected to the output of the shift register whose length is to be determined, for accommodating information as it emerges therefrom by storing said information of the length  $L_x$  of the shift register and portion  $L_{max} + K - L_x$  of the shift pattern; and
- display means having individual fields permanently associated with one storage cell each of said storage means and operatively coupled thereto for displaying the contents of

said storage cells so that said data transition and the length  $L_x$  of the shift register can be displayed for determination.

4,283,621

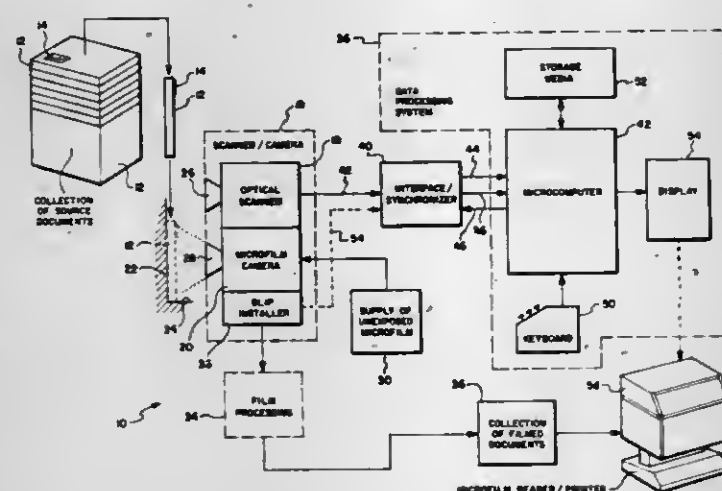
# APPARATUS AND METHOD OF STORING AND RETRIEVING INFORMATION

Robert Pembroke, 363 S. 500 East, Salt Lake City, Utah 84102  
Filed Dec. 14, 1979, Ser. No. 103,501

Int. Cl.<sup>3</sup> G06F 15/20; G03B 23/12, 27/32; G06K 7/10

U.S. Cl. 235-375

24 Claims



1. A system for storing and retrieving information contained in a plurality of source documents, said system comprising in combination

- identifying means of uniquely identify each of said plurality of source documents;
- scanning means for randomly reading each of said identifying means and producing a unique identifying signal as a function thereof;
- capturing means for sequentially preserving an image of each of said plurality of source documents immediately subsequent to the random reading of each of said identifying means by said scanning means;
- addressing means for annotating each of said images preserved by said capturing means with an address symbol to indicate the relative sequential position where said image is preserved within said capturing means;
- indexing means for aligning each of said unique identifying signals generated by said scanning means, which identifying signals correspond to a unique source document, with a corresponding address signal generated by said indexing means, which address signal corresponds to the address symbol annotated on the preserved image of said unique source document by said addressing means, said indexing means thus producing a unique index signal that indicates where the image of any one of said plurality of source documents is preserved within said capturing means;
- synchronization means to synchronize said indexing means with said addressing means, thereby permitting said address signal generated by said indexing means to correspond to said address symbol annotated on said preserved images by said addressing means;
- storage means for storing each of said unique index signals, thereby producing index data that can be retrieved for subsequent reference thereto;
- data viewing and sorting means for selectively retrieving and viewing said index from said storage means and sorting therethrough to locate the address of an image preserved in said capturing means corresponding to a desired source document; and
- image display means for selectively displaying one of said images preserved in said capturing means,

4,283,622

# BAR CODE READER

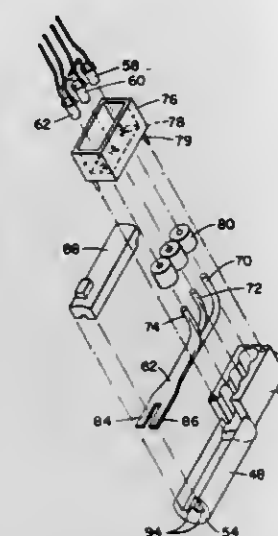
Barry E. Passer, Ithaca, and George A. Sculley, Endicott, both of N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed May 14, 1979, Ser. No. 39,013

Int. Cl.<sup>3</sup> G06K 7/10, 19/00

U.S. Cl. 235-462

8 Claims



1. In combination with a record member having first and second parallel tracks of encoded indicia with each indicia of each track being horizontally aligned with the corresponding indicia in the other track, a member for sensing both tracks of indicia upon movement of the record member past the sensing member comprising:

- a housing member having a scanning surface;
- a pair of apertures located in said scanning surface each associated with one of the tracks of coded indicia wherein the aperture associated with the first track of indicia being located in said scanning surface offset along the path of movement of the record member to the other aperture;
- a source of light mounted in said housing member;
- a plurality of light sensors mounted in said housing member each associated with one of the apertures in the scanning surface of the housing member;
- and light-transmitting means located within the housing member and being in communication with the source of light, the light sensors, and the apertures whereby light is transmitted from the light source to the tracks of coded symbols on a record member positioned adjacent the apertures and reflected back to the light sensors.

4,283,623

# READING APPARATUS FOR READING COLORED MARKINGS APPLIED TO OBJECTS

Walter von Stein, Waldkirch, and Günter Fetzner, Gundelfingen, both of Fed. Rep. of Germany, assignors to Erwin Sick Gesellschaft mit beschränkter Haftung Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Sep. 27, 1978, Ser. No. 946,165

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743459

Int. Cl.<sup>3</sup> G06K 7/12; B07C 5/342; G06K 7/10, 9/00

U.S. Cl. 235-465

18 Claims



1. Reading apparatus suitable for reading a series of colored markings arranged one behind the other on an object the apparatus comprising an illuminating system for producing an illuminating beam of light capable of illuminating said colored markings provided on an object during relative movement

thereof through the beam of light, optical means capable of receiving light from said colored markings and forming an image thereof moving in a first direction past an aperture member, the aperture member having a series of spaced apart optical apertures including first read apertures and at least one relatively smaller recognition aperture, there being further provided means for producing movement of said series of optical apertures in a second direction transverse to said first direction whereby said at least one recognition aperture and said first read apertures move transversely across said image, a color sensitive photoelectric detector arrangement disposed behind the aperture member to receive light from the colored markings and transmitted through any of said first read apertures and said at least one recognition aperture to provide respective reading and recognition signals and means for recognising a reading signal only when a corresponding recognition signal has been detected which shows that said image is correctly aligned with said first read apertures.

4,283,624

# EPITHERMAL NEUTRON DECAY LOGGING

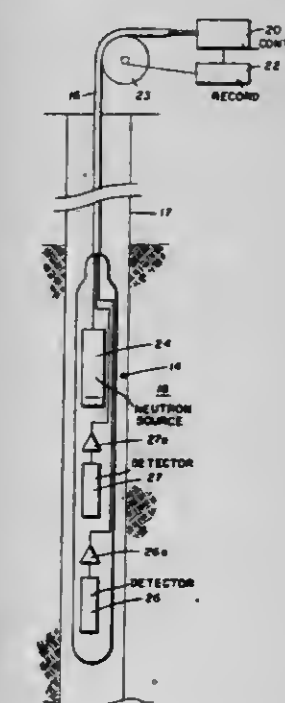
William R. Mills, Jr., Duncanville, Tex., assignor to Mobil Oil Corporation, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,566

Int. Cl.<sup>3</sup> G01V 5/00

U.S. Cl. 250-264

12 Claims



1. In the logging of a well penetrating a subterranean formation containing free hydrogen which is mobile in said formation and bound hydrogen which is immobile in said formation, the method comprising:

- irradiating said formation with a burst of fast neutrons whereby said fast neutrons enter said formation and are moderated therein to form a population of epithermal neutrons,
- measuring the decay rate of epithermal neutrons in said formation within an energy range having a lower limit which is less than the chemical binding energy of bound hydrogen in said formation, and
- recording the decay rate measurement obtained in step (b) in correlation with depth.



4,283,625

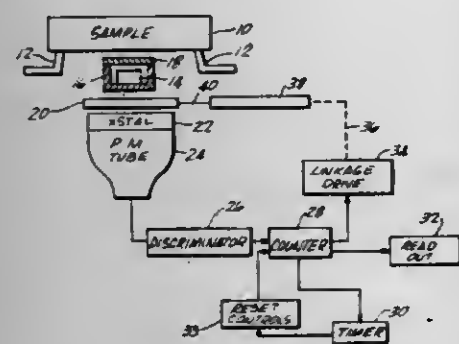
## X-RAY FLUORESCENCE ANALYSIS

Thomas C. King, Early, Tex., assignor to Associated Metals & Minerals Corporation, New York, N.Y.

Filed Jul. 13, 1979, Ser. No. 57,451  
Int. Cl.<sup>3</sup> G01N 23/22

U.S. Cl. 250-272

24 Claims



1. Apparatus for reducing the effects of sample composition and physical condition, and variation of radiation intensity from a source used to analyze a sample for the presence of an element which fluoresces characteristic radiation when exposed to a source of radiation, the apparatus comprising:

- means for holding the sample;
- means for irradiating the sample with a radiation of sufficient energy to cause the element to fluoresce the characteristic radiation;
- a first filter which substantially attenuates the characteristic radiation;
- a second filter which attenuates the characteristic radiation less than the first filter;
- means for sensing radiation from the sample;
- means for measuring the time required for the radiation sensing means to sense a fixed amount of radiation from the sample when one of the filters is between the sample and radiation sensing means to establish a reference time;
- means for measuring the amount of radiation from the sample reaching the sensing means during a time interval substantially equal to the reference time when the other filter is disposed between the sample and the sensing means; and
- means for determining the difference between the two amounts of radiation reaching the sensing means through the two filters to indicate the amount of the element in the sample.

4,283,626

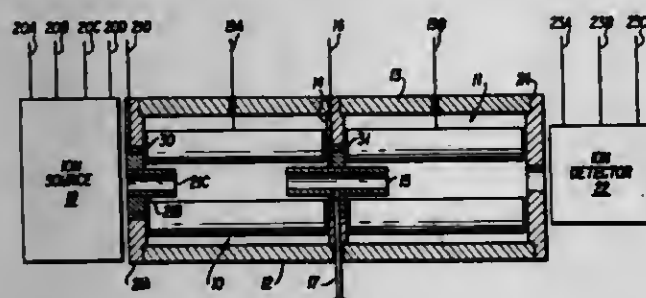
## METHODS AND APPARATUS FOR ANALYSIS OF MIXTURES BY MASS SPECTROMETRY

Melvin W. Siegel, Pittsburgh, Pa., assignor to Extranuclear Laboratories, Inc., Pittsburgh, Pa.

Filed Nov. 8, 1979, Ser. No. 92,559  
Int. Cl.<sup>3</sup> B01D 59/44

U.S. Cl. 250-292

21 Claims



1. A system of mass spectrometry for the analysis of ions of a selected mass produced by mass spectrometry wherein the ions are subjected to collision fragmentation and the resulting ion particles are subjected to further mass analysis, the system comprising: an ion source for the sample molecules to be analyzed, a first quadrupole mass spectrometer adapted to receive

ions from said source at its inlet and a second quadrupole mass spectrometer having its inlet proximate the outlet of said first mass spectrometer; a collision chamber between said mass spectrometers, said collision chamber comprising shielding means composed of a leaky dielectric material which has the characteristics of an insulator for RF electrical fields and of an electrical conductor for electrical fields produced by DC and low scan frequency voltages utilized for quadrupole mass spectrometry; and an ion detector adapted to receive ions from the outlet of said second quadrupole mass spectrometer.

4,283,627

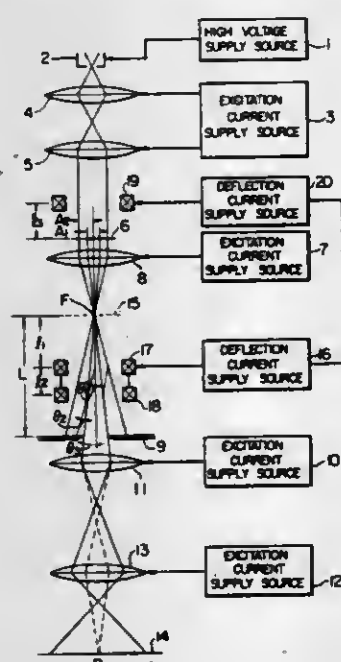
## ELECTRON MICROSCOPE

Shigeto Isakozawa, Katsuta, and Kazuo Shii, Asahimura, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1979, Ser. No. 98,664  
Claims priority, application Japan, Dec. 1, 1978, 53-147927  
Int. Cl.<sup>3</sup> G01N 23/00

U.S. Cl. 250-311

10 Claims



1. An electron microscope comprising means for producing an electron beam; means for directing said electron beam to a sample whereby said beam penetrates said sample; an objective lens disposed in the path of said beam; first means for deflecting the transmitted beam with the hind focal point of said objective lens set substantially as the deflecting center so as to select the observation field of said sample; a viewing screen on which the deflected beam is cast; and second means for deflecting said electron beam directed at said sample in response to the deflection of said transmitted beam by said first means.

4,283,628

## APPARATUS FOR THE CONTROL OF SELF-PROPELLED GAMMA-FLAW DETECTOR

Stefan I. Kulekov, and Alexander S. Pavlov, both of Sofia, Bulgaria, assignors to DSO "Montaji"—Kontrolno Zavarachno Upravlenie, Sofia, Bulgaria

Continuation-in-part of Ser. No. 908,766, May 23, 1978, abandoned, which is a continuation of Ser. No. 746,291, Dec. 1, 1976, abandoned. This application Feb. 23, 1979, Ser. No. 14,690  
Int. Cl.<sup>3</sup> G01N 23/00

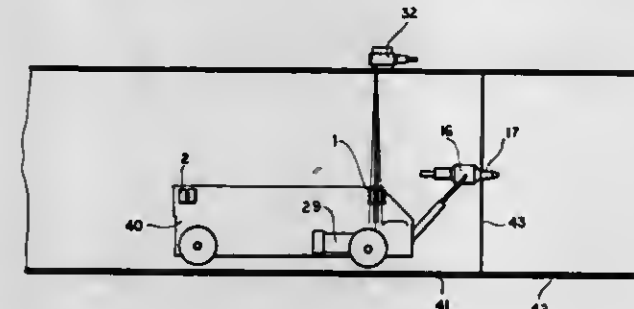
U.S. Cl. 250-358 P

7 Claims

1. In a device for the radiographic testing of weld joints in a pipeline, including a normally deactivated radiation emitter trainable upon a weld joint, a self-propelled carrier for said radiation emitter, and propulsion means on said carrier for driving same inside a pipeline to be inspected, the combination therewith of equipment aboard said carrier comprising:

sensing means responsive to external radiation transmitted through the pipeline wall; memory means adapted to assume several different states, including a quiescent state and at least one operational state, and connected to said sensing means for switchover from one state to another by command pulses of said external radiation;

- a first signal channel jointly controlled by said memory means for activating said radiation emitter in response to a command pulse of predetermined minimum duration in a de-energized condition of said propulsion means;
- a second signal channel controlled by said memory means



for de-energizing and energizing said propulsion means in said quiescent state and said operational state, respectively, of said memory means; pulse-width-discriminating means in said first signal channel for making same nonresponsive to command pulses of less than said minimum duration, said pulse-width-discriminating means including a logical coincidence circuit with a pair of parallel inputs and delay means in series with one of said parallel inputs; and timing means connected between said first signal channel and said memory means for switching the latter to deactivate said radiation emitter after a predetermined irradiation period.

4,283,629

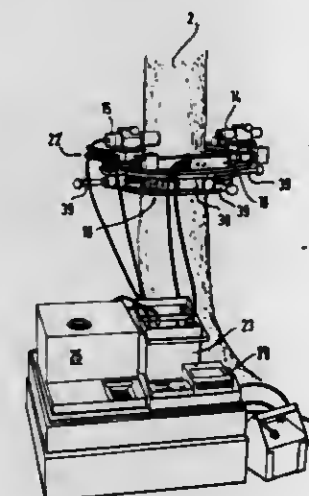
## METHOD AND APPARATUS FOR TESTING MATERIALS SUCH AS DISEASE IN LIVING TREES

Adolf Habermehl, Zum Lahnberg 44, D-3550 Marburg, Lahn, Fed. Rep. of Germany, and Hans-Werner Ridder, Marburg, both of Fed. Rep. of Germany, assignors to Adolf Habermehl, Marburg, Fed. Rep. of Germany

Filed Mar. 23, 1979, Ser. No. 23,265  
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846702

Int. Cl.<sup>3</sup> G03B 41/16

U.S. Cl. 250-445 T



1. A method for the non-destructive testing of immobile objects such as for disease in living trees, or the like comprising the steps of mounting on one side of said object a portable source of radiation and on the opposite side of said object a portable detector for such radiation, indexing said source and

said detector cooperatively about said object through a plurality of positions in a given cross-sectional plane, passing a beam of predetermined radiation through said object and detecting the beam at each of said positions, determining responsive to said detection the coefficient of absorption of radiation of said object, and converting said coefficient of absorption at each of said positions into a computerized tomographic display.

4,283,630

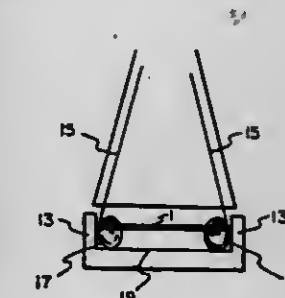
## IRRADIATED FILM

Stephen L. Fowler, Taylors, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 784,184, Apr. 4, 1977, Pat. No. 4,178,220.  
This application May 29, 1979, Ser. No. 43,402  
Int. Cl.<sup>3</sup> H01J 37/06

U.S. Cl. 250-492 B

2 Claims



1. An apparatus adapted to irradiate a film of thermoplastic material comprising: source means for a beam of accelerated electrons; and trough means comprising trough bottom means and at least one deflection box means; wherein accelerated electrons directly impinge upon said deflection box means, are deflected to impinge upon said trough bottom means and are then further deflected; whereby a lobe of high electron probability density resulting from said deflections is adapted to impinge an edge of the film to be irradiated.

4,283,631

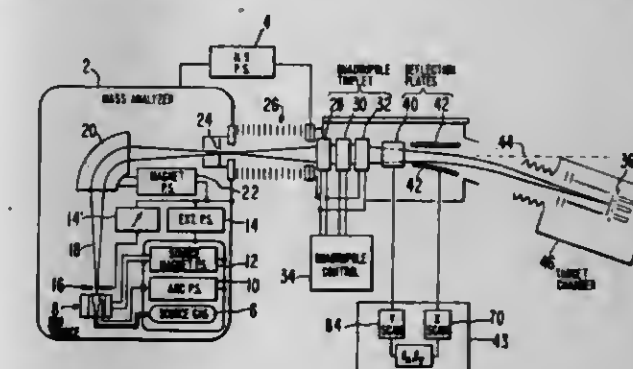
## BEAM SCANNING AND METHOD OF USE FOR ION IMPLANTATION

Norman L. Turner, Gloucester, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Feb. 22, 1980, Ser. No. 123,607  
Int. Cl.<sup>3</sup> B01D 59/44; A61K 27/02

U.S. Cl. 250-492 B

8 Claims



1. An ion implantation system for irradiation of a workpiece comprising ion source means for production of a beam of ions, kinematic analysis means for resolving ion species present in said beam, ion optical means for forming and focusing said beam, and ion beam scanning means, said scanning means comprising at least one deflecting means for compensating non-uniformity of ion dosage along the path of a trace, said deflecting means controlled in response to a non-linear waveform, means for directing said trace in a two-dimensional



pattern, means for repeating said trace for a preselected number of repetitions, each said repetition displaced from the remaining said repetition.

4,283,632

## ELECTRON BEAM APERTURE DEVICE

Seiichi Nakagawa, and Takayoshi Ikeda, both of Akishimashi, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

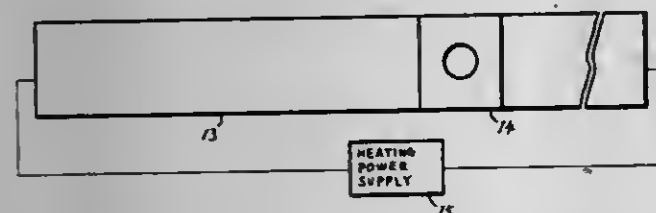
Filed Oct. 18, 1979, Ser. No. 86,254

Claims priority, application Japan, Oct. 23, 1978, 53/130250

Int. Cl.<sup>3</sup> G01J 1/00

U.S. Cl. 250—503

7 Claims



1. In an X-ray microanalyzer, an apertured baffle comprising an apertured foil selected from the group molybdenum, tantalum, tungsten and platinum, said foil being characterized by the application of thin layers of coating material on both sides of said foil in the vicinity of the aperture, the atomic number of the coating material on one side of the foil being larger than that of the material from which the foil is constituted, and the atomic number of the coating material on the other side of the foil being smaller than that of the material from which the foil is constituted.

4,283,633

## ELECTRO-PNEUMATIC DYNAMO

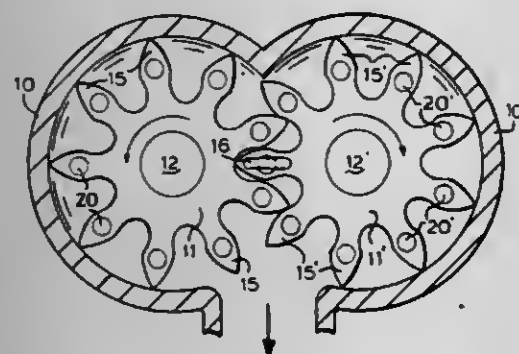
Peter Gijbels, Bosstraat 7, 1920 Diegem, and Jozef Gijbels, Tramlaan 148, 1960 Sterrebeek, both of Belgium

Filed Sep. 8, 1980, Ser. No. 184,879

Int. Cl.<sup>3</sup> H02P 9/04; F02B 53/00

U.S. Cl. 290—1 R

6 Claims



1. An electro-pneumatic dynamo comprising: a casing, two rotors rotatably mounted within said casing having intermeshing blades and inlet means for introducing a fluid between two intermeshing blades of said rotors, said casing and blades being made of a non-magnetic material; and generator means including a plurality of magnetic rods, each of which is mounted in the top of each of said blades and a plurality of magnetic circuit means mounted on said casing for cooperation with said rods, said circuit means each comprising a coil, a generally U-shaped magnetic bar having a base on which said coil is mounted and two ends between which said rods of one of said rotors passes upon rotation of said rotors so as to induce a flow of magnetic flux through said bar and thereby inducing a current flow in said coil.

4,283,634

## SYSTEM AND METHOD FOR MONITORING AND CONTROLLING OPERATION OF INDUSTRIAL GAS TURBINE APPARATUS AND GAS TURBINE ELECTRIC POWER PLANTS PREFERABLY WITH A DIGITAL COMPUTER CONTROL SYSTEM

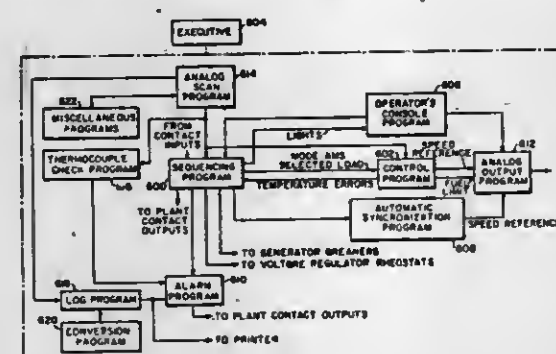
Robert A. Yannone, Aldan, and Terry J. Reed, Latrobe, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 155,905, Jun. 23, 1971, abandoned.

This application Dec. 26, 1972, Ser. No. 317,839

Int. Cl.<sup>3</sup> H02P 9/04

15 Claims



1. A gas turbine electric power plant comprising a gas turbine having compressor, combustion and turbine elements, a generator coupled to said gas turbine for drive power, a fuel system for supplying fuel to said gas turbine combustion elements, a control system including a digital computer and an input/output system therefor, means for operating said fuel system to energize said gas turbine operably coupled between said fuel system and said control means, a plurality of process sensors operably coupled to said control system and disposed to detect plant conditions related to said gas turbine and said generator, said plurality of sensors comprising at least a first arrangement of process temperature sensors operatively associated with said combustion elements, each of said temperature sensors providing a gas discharge temperature indication for at least one corresponding combustion element, means for operating said computer for processing said temperature indications to determine the validity of each of such indications, means for operating said computer for combining valid temperature indications retained after said processing step to derive a control parameter, and means for operating said computer to make control action determinations for implementation by said fuel system operating means and to make predetermined turbine alarm status determinations in response to individual temperature indications derived from at least said first arrangement of process temperature sensors.

4,283,635

## LOAD DEMAND CONTROL SYSTEM

Alden M. Balmer, New Brighton, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 25, 1979, Ser. No. 60,304

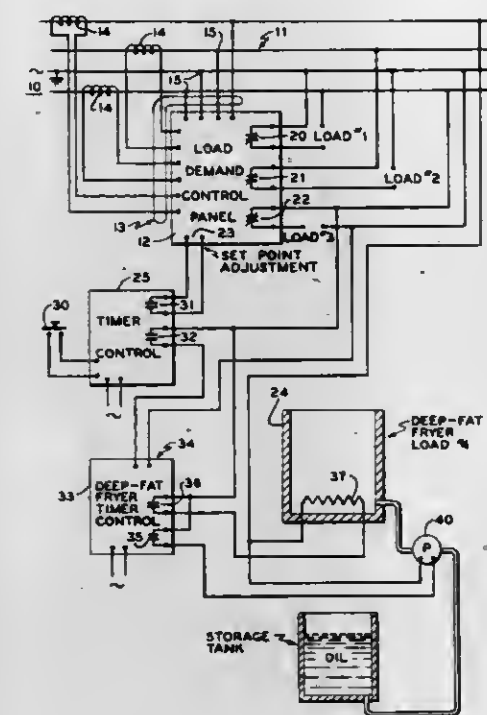
Int. Cl.<sup>3</sup> H01H 43/00

U.S. Cl. 307—35

9 Claims

1. In a load demand control system for limiting the total average electrical load, for a predetermined moving interval of time, to an installation having at least one large electric load device to be operated a portion of an interval of time, comprising: load demand control means having an input electrical power sensing means for sensing the input power to an installation and a plurality of load control circuits for selectively controlling various loads of the installation to shed loads when said input power exceeds a first predetermined value, timer control means selectively operated when the one large electric load device is to be operated, said timer control means comprising: first means for resetting said first predetermined value of said

load demand control means to a second predetermined value to cause said load demand control means to shed loads to maintain the input power below said second predetermined value for a first predetermined time period, and



second means adapted to be controlled by said timer control means to subsequently initiate operation of said large load device after said first predetermined time period for a second predetermined time period, whereby the total average input power for a predetermined moving interval of time is maintained at a minimum value.

4,283,636

## ELECTRONICALLY CONTROLLED POWER SUPPLY RAIL

Liang-ing Tchang, Paris, France, assignor to LITA, Paris, France

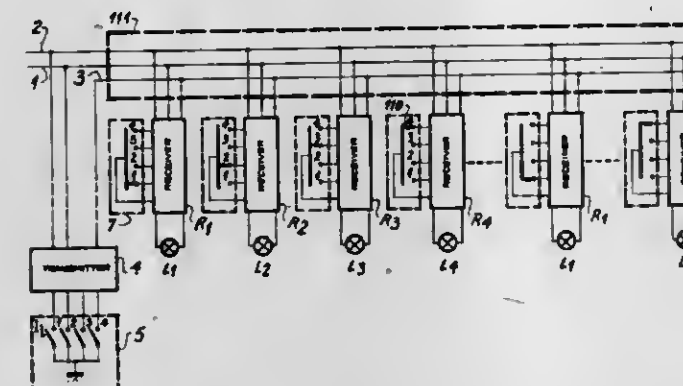
Filed Nov. 17, 1978, Ser. No. 961,857

Claims priority, application France, Nov. 22, 1977, 77 35044

Int. Cl.<sup>3</sup> H04Q 11/00

U.S. Cl. 307—38

9 Claims



1. An electronically controlled power supply rail for supplying power from a supply source to selected ones of a plurality of loads, each connected to a respective one of a plurality n of utilisation channels, comprising: a first conductor and a second conductor for transmitting power; a bus for transmitting signals indicative of selected loads, said bus consisting of one third conductor providing a first control signal; a control unit having a plurality n of switches for supplying a second control signal;

a transmitter positioned at one end of said rail and responsive to said second control signal; said transmitter comprising: a counting circuit which receives at its inputs said second control signal from the control unit and which, as a function of said second control signal, emits an intermediate signal, said counting circuit cooperating with a synchronising system for triggering the intermediate signal at a predetermined moment, and a shaping circuit receiving the intermediate signal and converting said intermediate signal into said first control signal formed by a train of pulses (a), (b), (c) . . . and a zero reset pulse (Z), transmitted to said plurality of receivers by means of said third conductor; a plurality of receivers, each of said receivers having first, second and third inputs respectively connected to said first, second and third conductors and having a first output connected to an associated one of said utilisation channels and a second output having n terminals connected to an associated channel selecting system having a movable contact for selecting one of said terminals in accordance with the utilisation channel which is to be supplied; and each of said receivers comprising a power switching member and means for performing a cycling operation during each period of said supply source; said selecting system, said power switching member and said cycling operation performing means cooperating with one another to cause, as a function of said control signal received by said plurality of receivers via said transmitter, voltage to be applied to the load of the utilisation channel which is associated with the receiver which is connected to said associated selecting system having said movable contact set to the said one selected terminal.

4,283,637

## SIGNAL GENERATOR

Herbert Handte, Filderstadt, and Friedrich Kollmar, Grafenau, both of Fed. Rep. of Germany, assignors to MOOG GmbH, Böblingen, Fed. Rep. of Germany

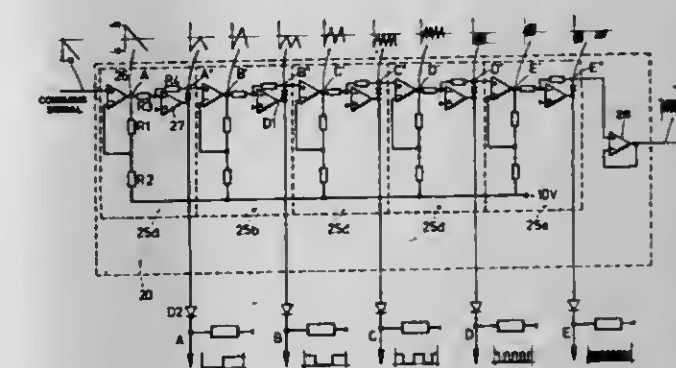
Division of Ser. No. 507, Jan. 2, 1979, Pat. No. 4,217,635. This application Dec. 3, 1979, Ser. No. 99,644

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1978, 2800441

Int. Cl.<sup>3</sup> H03K 4/08

U.S. Cl. 307—228

5 Claims



1. A signal generator arranged to be supplied with a command signal and operative to produce a first output signal in the form of a series of continuous voltage triangles, said signal generator comprising: at least one signal converter, each signal converter having a level symmetrizing circuit arranged to receive said command signal input and operative to amplify and symmetrize said command signal input, said level symmetrizing circuit including a first operational amplifier arranged to receive an input signal at its non-inverting inlet; and a rectifier circuit arranged to receive the output of said level symmetrizing circuit and operative to provide a full wave rectified signal of such amplified and symmetrized signal; said rectifier circuit including a second operational amplifier arranged to receive a signal at its inverting inlet and



having its non-inverting inlet connected to ground, and including a feedback circuit connecting the outlet and inverting inlet of said second operational amplifier, said feedback circuit including a series-connected diode and resistor, the cathode of said diode being connected to the outlet of said second operational amplifier.

4,283,638

# FIELD EFFECT TRANSISTOR SWITCHED TEMPERATURE CONTROL CIRCUIT

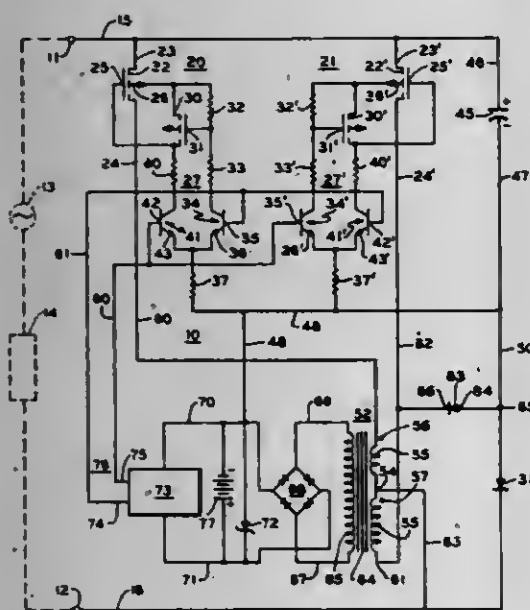
Arlon D. Kompelien, Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 23, 1979, Ser. No. 59,810

Int. Cl.<sup>3</sup> H03K 17/687

U.S. Cl. 307—580

10 Claims



1. A temperature control circuit adapted to control field effect transistor device means to switch an alternating current potential to operate temperature control load means, including: field effect transistor device means including input switching circuit means and output means with said field effect transistor device means being capable of being switched between conductive and non-conductive states; transformer means including low impedance primary winding means, high impedance primary winding means, and secondary winding means with said three winding means being magnetically coupled; said field effect device output means and said low impedance winding means adapted to be connected in a series circuit with said load means and said source of alternating current potential; energy storage means and series connected rectifier means connected in parallel with said field effect transistor device output means and said low impedance transformer winding means; second field effect transistor device means including input switching circuit means and output means with said second field effect transistor device means being capable of being switched between conductive and non-conductive states; said second field effect transistor device output means in series circuit with said high impedance primary transformer winding means connected in parallel circuit with said energy storage means and said rectifier means; second rectifier means connected from said energy storage means to said second field effect transistor device output means; power supply means having an input connected to said transformer secondary winding to receive power therefrom and having direct current potential output means; temperature responsive control means having an input connected to said direct current potential output means to power said temperature responsive control means; and temperature responsive control output means connected to both of said field effect transistor device means input switching circuit means to differentially control said field effect transistor device means.

## 4,283,639 DEVICE FOR PRODUCING TWO CLOCK PULSE TRAINS FROM A PERIODIC SIGNAL OF ANY WAVEFORM

Helmut Roesler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

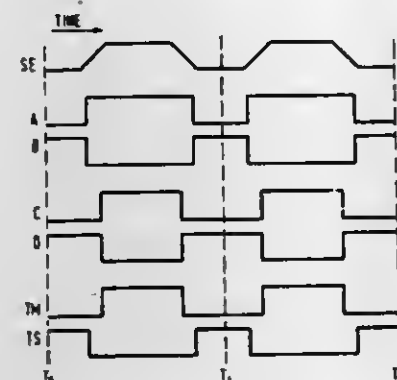
Filed Aug. 1, 1979, Ser. No. 62,767

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837855

Int. Cl.<sup>3</sup> H03K 5/00

U.S. Cl. 307—269

14 Claims



1. A pulse transformer with two signal outputs at which different digital pulses with the same period appear for producing a clock supply to digital semiconductor circuits, for use with a control input source which supplies periodic control signals to a transformer input, said transformer comprising:

- a first flip-flop cell having inverted and non-inverted signal inputs connected to said control input source and having two signal outputs;
- a voltage level divider having an input connected to said control input source and having an output tap;
- a second flip-flop cell having inverted and non-inverted inputs connected to said output of said voltage level divider, and having two signal outputs;
- a first push-pull output circuit having two inputs respectively connected to said two signal outputs of said first flip-flop cell;
- a second push-pull output circuit having two inputs respectively connected to said two signal outputs of said second flip-flop cell;
- said first and second push-pull output circuits each comprising two series connected transistors, one of said transistors connected to a reference potential and the other of which is connected to an operating potential, and each push-pull output circuit further having one circuit point lying between the two transistors comprising the circuit, said circuit points forming said two transformer signal outputs; and
- said operating potential also serving as a current supply for said first and second flip-flop cells, and said reference potential also serving as a reference potential also serving as a reference potential for said voltage level divider and said first and second flip-flop cells.

4,283,640

## ALL-NPN TRANSISTOR DRIVER AND LOGIC CIRCUIT

Richard R. Konian, Poughkeepsie, and James L. Walsh, Hyde Park, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 5, 1979, Ser. No. 82,256

Int. Cl.<sup>3</sup> H03K 19/00, 3/26

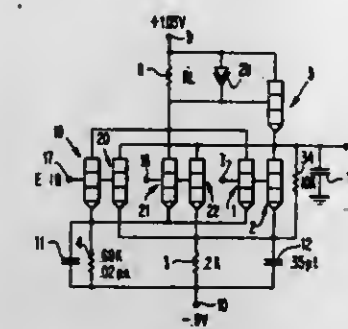
U.S. Cl. 307—270

9 Claims

1. An NPN transistor driver circuit comprising:

- a first pair of NPN transistors, the base of said pair of transistors being connected to an input terminal,
- a third NPN transistor, the emitter of said third transistor being connected to the

collector of one transistor of said transistor pair and to an output terminal, the collector of the other transistor of said transistor pair being connected to the base of said third transistor, the base and collector of said third transistor being connected to first biasing means, a pair of resistors,



the emitters of the transistors of said transistor pair being connected through respective ones of said pair of resistors to second biasing means, a source of first input signal coupled to said input terminal, the voltages of said first and second biasing means being set relative to the lowest voltage excursion of said input signal, so that substantially no current flows through at least said one transistor of said transistor pair during said lowest voltage excursion.

4,283,641

## FEEDBACK BIASING CIRCUIT ARRANGEMENT FOR TRANSISTOR AMPLIFIER

John A. Skingley, Purton, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

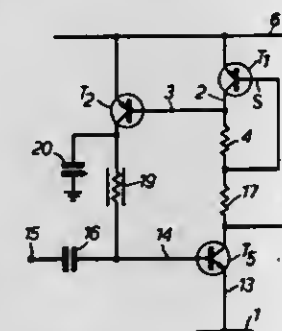
Filed Oct. 20, 1978, Ser. No. 953,206

Claims priority, application United Kingdom, Oct. 21, 1977, 43866/77

Int. Cl.<sup>3</sup> H03K 3/01, 3/26

U.S. Cl. 307—297

4 Claims



1. An amplifier circuit arrangement, comprising:

- first and second transistors, each having a base, an emitter and a collector electrode, the first and second transistors being connected to pass current in parallel with one another;
- interconnecting means for interconnecting the first and second transistors so that a base-emitter voltage applied to the first transistor is derived from a base-emitter voltage applied to the second transistor;
- biasing reduction means connected between the base and collector of said second transistor for reducing the base-emitter voltage applied to the first transistor by a component proportional to the magnitude of the current passed by the second transistor; and
- an amplifier transistor having a base input for receiving a signal frequency to be amplified, an emitter; and a collector output for delivering amplified output signals, the collector output of the amplifier transistor being connected to said second transistor so as to pass current in series with the said second transistor, the collector of the said first transistor being connected to the base of said

amplifier transistor for providing base bias current thereto.

4,283,642

## REGULATION OF CURRENT THROUGH DEPLETION DEVICES IN A MOS INTEGRATED CIRCUIT

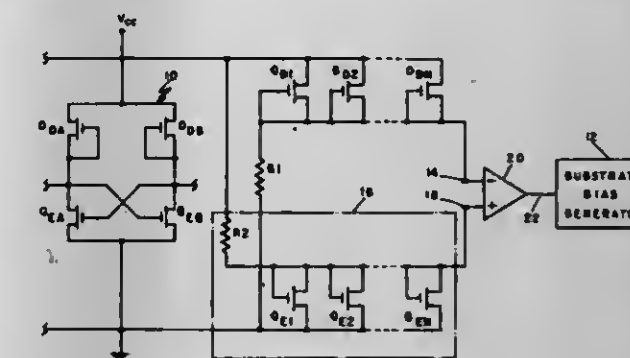
Robert S. Green, South Jordan, Utah, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 10, 1979, Ser. No. 74,015

Int. Cl.<sup>3</sup> H03K 3/01

U.S. Cl. 307—297

10 Claims



1. In an NMOS integrated circuit containing a plurality of given depletion devices having a given size and a given pinch-off voltage characteristic on a common substrate, a system for regulating current flow through the given depletion devices, comprising:

- a substrate bias generator coupled to the substrate for pumping the substrate negatively to lower the effective pinch-off voltage of the given depletion devices, and thereby decrease the current through the given depletion devices; one of the given depletion devices having its source and gate connected to a first node;
- a reference device connected to a second node for defining a reference voltage at the second node;
- a comparison circuit connected to the first and second nodes for comparing the respective voltages at the first and second nodes and for providing a control signal when the voltage at the first node is not greater than the voltage at the second node, wherein the comparison circuit is coupled to the substrate bias generator for turning off the substrate bias generator while the control signal is provided; and
- a resistance connected to the first node in series with the given depletion device that is connected thereto for defining the level of current flow through the given depletion devices at which the substrate bias generator is turned off, to thereby regulate said current flow at said level.

4,283,643

## HALL SENSING APPARATUS

Harry P. Levin, N. Hollywood, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 25, 1979, Ser. No. 42,645

Int. Cl.<sup>3</sup> G01R 33/00; H03K 17/04

U.S. Cl. 307—309

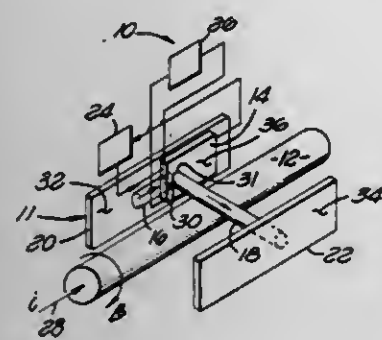
9 Claims

1. A Hall sensing apparatus for sensing the current in a conductor, the apparatus being responsive to the induced circumferential magnetic field in a magnetic field plane perpendicular to the axis of the conductor, comprising:

- magnetic field concentrator means comprising:
- first and second concentrator rods for being symmetrically positioned adjacent to the conductor in the magnetic field plane, each of the rods having a first end and a second end, the first ends positioned opposite one another with a gap therebetween, and
- first and second pick-up plates, each attached to the second end of one of the concentrator rods and having its major plane for being positioned parallel to the axis of



the conductor for picking up magnetic field flux along the conductor;  
a Hall sensor element positioned in the gap between the concentrator rods in spaced relationship thereto, having a voltage coordinate positioned perpendicular to the mag-



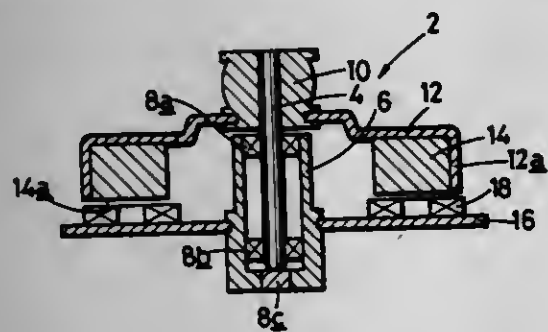
netic field plane for generating a Hall voltage output across the voltage coordinate;  
a Hall current circuit for providing a Hall current along the current coordinate of the Hall sensor element; and  
a Hall detection circuit for detecting the Hall voltage output induced by the magnetic field and the Hall current.

#### 4,283,644 DC MOTOR

Masayuki Kondo, Kashiwa, and Yoshio Kisbi, Hachioji, both of Japan, assignors to Sony Corporation, Tokyo, Japan  
Filed Sep. 20, 1979, Ser. No. 77,180  
Claims priority, application Japan, Sep. 22, 1978, 53-117196  
Int. Cl.<sup>3</sup> H02K 11/00

U.S. Cl. 310—68 R

19 Claims



1. In a DC motor including a field magnet having a radially directed annular surface, and at least one coil element in the form of a loop disposed in a plane parallel to said surface, said loop having circumferentially extending portions which are in inner and outer relation in respect to the center of said annular surface, said magnet and each said coil element being relatively rotatable about an axis through said center of the annular surface; the improvement comprising providing each said coil element with a mean radial distance  $f$  between said inner and outer circumferentially extending portions which is related to the radial width  $b$  of said annular surface of the magnet so that the ratio  $b/f$  is within the range of 0.8 to 1.2.

#### 4,283,645

#### ELECTRICAL DRIVE MOTOR, IN PARTICULAR FOR WATER PUMPS IN THE FIELD OF AQUARIA

Kurt H. Hofmann, Elmur Eulenthal, 5063 Overath, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,712

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 7829842[U]

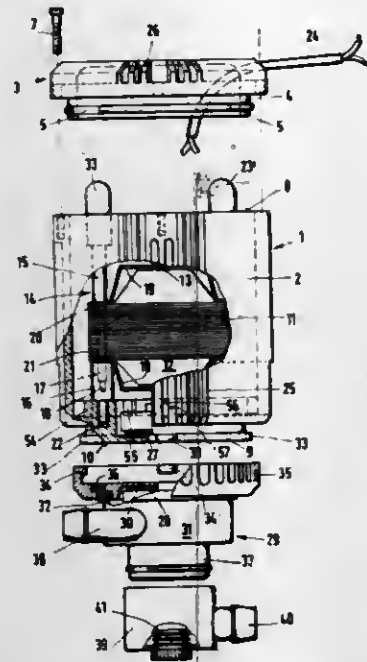
Int. Cl.<sup>3</sup> H02K 5/12

U.S. Cl. 310—87

13 Claims

1. A sealed electrical drive motor, in particular for water pumps in the field of aquaria, the motor comprising a motor shaft, a universally liquid-proof and gas-proof sealed housing including a thin walled diaphragm at one end thereof, a perma-

nent-magnetic coupling including a magnetic member on said motor shaft which acts through said thin-walled diaphragm, an end of said motor housing which is to face a water pump being defined by said thin-walled diaphragm, said thin-walled dia-



phragm having a planar outer surface which is engageable with a likewise planar, sealed diaphragm surface of a pump casing, and where in vicinity of said thin-walled diaphragm there are provided securing means for connecting said motor housing to a pump casing.

#### 4,283,646 BRUSHLESS ELECTRIC MOTOR

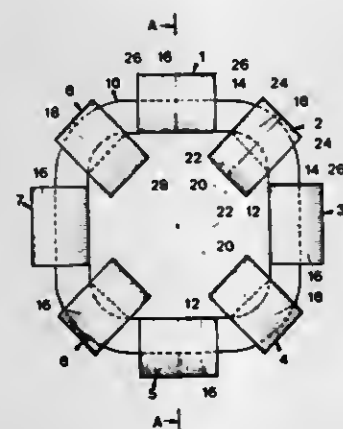
Poul E. Hansen, Guderup, and Jan Dyhr, Horuphav, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark  
Filed Mar. 17, 1980, Ser. No. 131,216

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1979, 2913691

Int. Cl.<sup>3</sup> H02K 37/00

U.S. Cl. 310—126

13 Claims



1. A brushless electric motor with an axial air gap relative to a rotary axis thereof, comprising, rotor means and a stator winding coaxial with said rotary axis, first and second sets of alternately arranged U-shaped laminated shoes attached to said stator winding at equal angular spacings, said pole shoes having rectangularly shaped end faces of substantially equal area cooperable with said rotor means with said end faces of said first set of shoes having a radial transverse line of symmetry and said end faces of said second set of shoes having a radial longitudinal line of symmetry, and said first and second sets of shoes having yokes disposed respectively radially outwardly and inwardly of said stator winding.

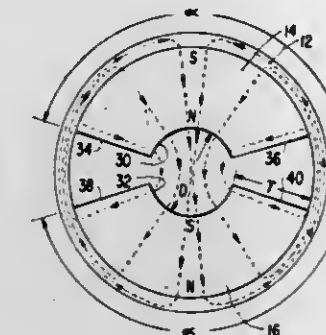
#### 4,283,647

#### ANNULAR SEGMENT PERMANENT MAGNET SINGLE AIR GAP ELECTRIC MOTOR

John A. Herr, Garwood, and Wolfgang Jaffe, Roselle Park, both of N.J., assignors to The Singer Company, Stamford, Conn.  
Filed Aug. 30, 1979, Ser. No. 70,770

Int. Cl.<sup>3</sup> H02K 21/28

U.S. Cl. 310—154



1. In an electric motor having a solid non-magnetic cylindrical armature with commutated windings thereon, and means rotationally mounting said armature about the cylindrical axis thereof radially within a single air gap formed by peripheral permanent magnets having oppositely polarized pole faces facing the axis of said armature, the improvement wherein said permanent magnets are formed as substantially equal size annular segments concentric with said axis and magnetized radially to said axis, each of said annular segments having an inner diameter  $D$  and a thickness  $T$  obeying the relationship

$$0.7D < T < 1.3D.$$

#### 4,283,648

#### SYNCHRONOUS ELECTRIC MACHINE WITH SALIENT POLES IN THE ROTOR

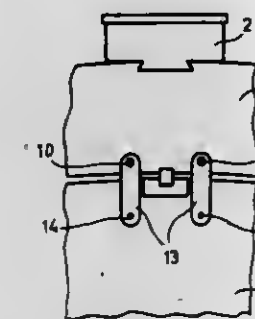
Franz Spirk, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany  
Filed Jun. 28, 1979, Ser. No. 53,501

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1978, 2829745

Int. Cl.<sup>3</sup> H02K 1/24

U.S. Cl. 310—269

5 Claims



1. In a synchronous electric machine in the form of a slowly rotating hydroelectric generator having salient poles in its rotor, said poles supported by a ring body which is constructed as a lamination chain from segments and is in turn fastened to the rotor shaft by means of a disc or star shaped hub body, said lamination chain guided by a tangential wedging, with additional parts fastened respectively to the hub body and the lamination-chain, one of the fastenings having play, the improvement comprising, the lamination chain fastened to said hub body in such a manner that it will lift off said hub body at a speed above rated speed, and the additional parts being in the form of straps fastened respectively to the hub body and lamination chain at points distributed uniformly around the circumference, with the play at the fastening of said straps corresponding approximately to the mean enlargement of the lamination chain at maximum overspeed, when the lamination chain is lifted off the hub body.

1009 O.G.—27

#### 4,283,649

#### PIEZOELECTRIC ULTRASONIC TRANSDUCER WITH RESONATOR LAMINATE

Yoshiaki Heinouchi, Joyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

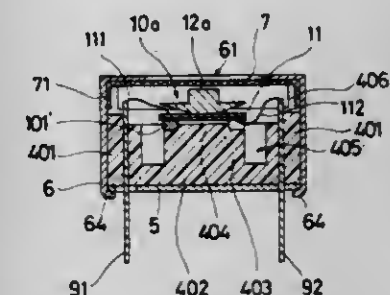
Filed Sep. 13, 1979, Ser. No. 75,275

Claims priority, application Japan, Sep. 21, 1978, 53-130524[U]; Sep. 21, 1978, 53-130525[U]; Sep. 21, 1978, 53-130526[U]; Sep. 28, 1978, 53-133820[U]; Oct. 11, 1978, 53-139803[U]

Int. Cl.<sup>3</sup> H01L 41/08

U.S. Cl. 310—324

11 Claims



1. An ultrasonic transducer, comprising:  
a composite vibrator including a piezoelectric bimorph vibrator and a resin resonator mounted on said bimorph vibrator, said composite vibrator having a first resonance region located in a first frequency range in which said composite vibrator vibrates in a piston vibration mode and a second resonance region located in a second frequency range, higher than said first frequency range, in which said composite vibrator vibrates in a bending vibration mode, said resin and resonator including a protrusion formed on the transducing surface thereof;  
an insulating base on which said composite vibrator is mounted, said insulating base including a protruding portion; and  
an elastic member interposed between said bimorph vibrator and said insulating base, said elastic member being formed in a ring shape and having a thickness larger than the height of said protruding portion of said insulating base, said protruding portion of said insulating base having an outer diameter slightly smaller than the inner diameter of said ring-shaped elastic member, said ring-shaped elastic member being fitted on said protruding portion of said insulating base such that said elastic member extends above said protruding portion and said bimorph vibrator of said composite vibrator is mounted on said elastic member.

#### 4,283,650

#### PIEZO-VIBRATOR UNIT CERAMIC PACKAGE WITH INTEGRAL CAPACITOR

Tamotsu Koyama, Kashiwara, and Yoshiharu Kuroda, Sakai, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 16, 1979, Ser. No. 20,982

Claims priority, application Japan, Mar. 16, 1978, 53/34475[U]

Int. Cl.<sup>3</sup> H01L 41/08

U.S. Cl. 310—344

8 Claims

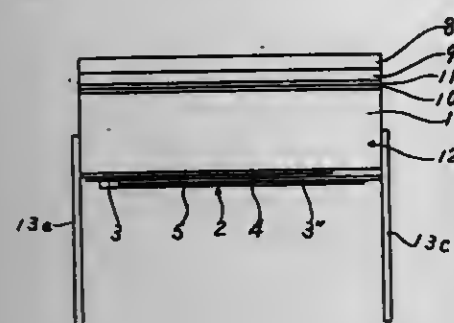
1. A piezo-electric vibrator assembly comprising:  
a ceramic case having sides and a bottom;  
a piezo-electric vibrator element disposed within said ceramic case; and  
capacitor means formed on the outside of the bottom of said ceramic case, said capacitor means including:  
a common electrode formed on substantially the entire outside surface of the bottom of said ceramic case;  
a dielectric layer formed on substantially the entire outside surface of the bottom at said case and covering said common electrode, said dielectric layer having a



throughhole formed therein to facilitate access to said common electrode;

a first electrode electrically connected to said piezo-electric vibrator element and formed on said dielectric layer, said first electrode and said common electrode forming a first capacitor;

a second electrode electrically connected to said piezo-electric vibrator element and formed on said dielectric



layer, said second electrode and said common electrode layer forming a second capacitor; and  
a third electrode formed on said dielectric layer, said third electrode being electrically connected to said common electrode through said throughhole formed in said dielectric layer;  
said first, second and third electrodes being positioned on the bottom of said case to facilitate ease of connection to outside circuitry.

4,283,651

#### SWITCHING CIRCUIT FOR HIGH CURRENT BRUSHES IN A DYNAMOELECTRIC MACHINE

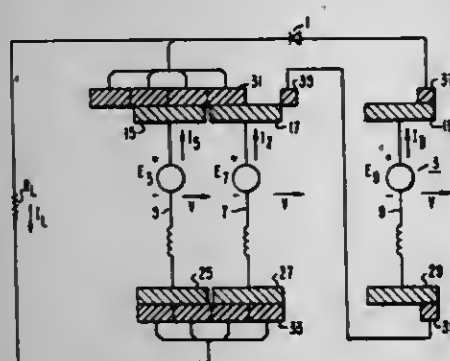
George T. Hummert, Oakmont; Randall M. Garrett, Murrysville, and Roy D. Schultz, Wilkensburg, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 25, 1979, Ser. No. 88,309

Int. Cl.<sup>3</sup> H02K 27/22

U.S. Cl. 310—223

4 Claims



1. A switching circuit in a DC dynamoelectric machine having a stator and a rotor, conductors in said rotor electrically connected to collector bars, and brushes which intermittently make electrical and physical contact with said collector bars, said switching circuit comprising a first collector bar disposed in the rotor; a first brush disposed to contact said first collector bar before said first brush separates therefrom; rectifying means electrically connected in a series circuit with said first brush and said first auxiliary brush; and a source of electromotive force which produces a current in said series circuit which is generally equal to the current flowing between said first collector bar and said first brush and which generally forces said current between said first collector bar and said first brush to zero as said first brush separates from said first collector bar.

#### 4,283,652 GAS DISCHARGE LAMP HAVING SUPPORTING TONGUE FORMED FROM ELECTRODE FEEDTHROUGH

Andre J. B. M. Van Herck, and Gerardus A. P. M. Cornelissen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

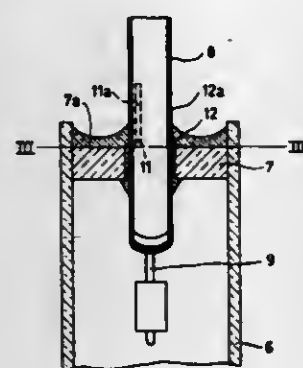
Filed Mar. 22, 1979, Ser. No. 22,745

Claims priority, application Netherlands, Apr. 10, 1978, 7803763

Int. Cl.<sup>3</sup> H01J 61/36

U.S. Cl. 313—217

2 Claims



1. An electric discharge lamp having a tubular ceramic discharge vessel which is closed in a vacuum-tight manner by an end plug, a metal current feedthrough member of an electrode being accommodated in said end plug, said metal current feedthrough member extending outside the discharge vessel through said end plug, said metal current feedthrough further comprising outside of said vessel a positioning means comprising at least one tongue extending outwardly of the feedthrough member and formed by solely disturbing the outer surface metal of the current feedthrough member, said tongue contacting the external surface of said end plug, and sealing glass disposed around said feedthrough member and contacting the exterior surface of said end plug, whereby the longitudinal position of said electrode is maintained during assembly.

4,283,653

#### HIGH EMISSIVITY FILAMENT FOR ENERGY CONSERVING INCANDESCENT LAMPS WITH INFRARED RADIATION RETURNING ENVELOPES

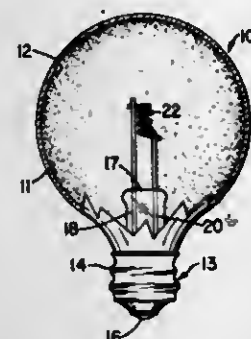
Jack Brett, Great Neck, N.Y., assignor to Duro-Test Corporation, North Bergen, N.J.

Filed Sep. 17, 1979, Ser. No. 76,356

Int. Cl.<sup>3</sup> H01J 1/15, 19/08; H01K 1/02

U.S. Cl. 313—341

12 Claims



1. A filament for an incandescent lamp of the type which reflects infrared energy produced by the filament back to the filament to reduce the power required to maintain the filament at a predetermined operating temperature said filament comprising

a coil of a wire of refractory metal having an emissivity of at least 0.5 at an operating temperature of above about 2000° K.

10. An incandescent electric lamp comprising:  
an envelope of light transmissive material,  
a filament mounted within said envelope which produces energy in the visible and infrared ranges when heated to incandescence, said filament having a length which is substantially less than the dimension of the major axis of the envelope,  
means for supplying electrical current to said filament to heat it to incandescence,  
means on said envelope for transmitting energy in the visible range and for reflecting energy in the infrared range produced by said filament,  
said envelope being shaped such as to reflect by said reflecting means the infrared range energy from all parts of the envelope back onto said filament,  
said filament formed by a coil of refractory metal having an emissivity of at least 0.5 at an operating temperature of about 2000° K.

4,283,654

#### MODULAR TUBE SHADOW MASK SUPPORT SYSTEM

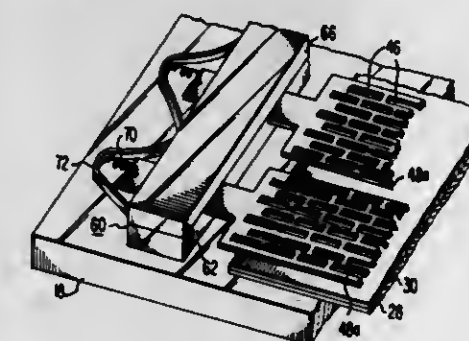
John A. van Raalte, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,966

Int. Cl.<sup>3</sup> H01J 29/07, 31/20

U.S. Cl. 313—422

5 Claims



1. In a display device having an evacuated envelope with a front wall and a screen on the internal surface of said front wall, an electron generating means, and a segmented shadow mask spaced from said screen, a shadow mask suspension system comprising:

a plurality of elongated support members arranged along said front wall on opposite sides of said screen and substantially parallel to one dimension of said screen, each of said support members including a plurality of slots substantially equally spaced along said one dimension;

said shadow mask including a plurality of segments, each of said segments having mounting tabs at both ends, said tabs being dimensioned substantially equally to said slots and engaging said slots to prevent motion of said segments in said one direction, each of said segments bridging said screen in the other dimension of said screen and said segments cumulatively spanning said screen in said one direction, said support members supporting said segments a predetermined distance above said screen to establish the q spacing of said display device.

4,283,655

#### CATHODE RAY TUBE WITH MULTIPLE INTERNAL GRATICLES

Ralph A. Mossman, Portland, and Kenneth R. Stinger, Hillsboro, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 26, 1979, Ser. No. 88,488

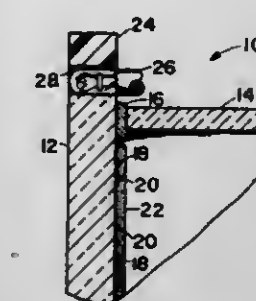
Int. Cl.<sup>3</sup> H01J 29/34; G01R 13/20

U.S. Cl. 313—462

7 Claims

1. In a cathode-ray tube having a transparent faceplate carrying a phosphor layer on its inner surface,  
means defining a first graticule scale formed beneath said phosphor layer and adjoining said inner surface,

means defining a second graticule scale formed beneath said phosphor layer and adjoining said inner surface, and  
user controllable edge lighting means for directing light into said faceplate to illuminate said scales,



one of said first and second scales being formed in a manner such that it is readily visible in the absence of illumination by said edge lighting means,  
the other of said scales being formed in a manner such that it is readily visible only when illuminated by said edge lighting means.

4,283,656

#### TRAVELING WAVE TUBE DEVICES

Genichi Goto, and Sadamasa Hanahara, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

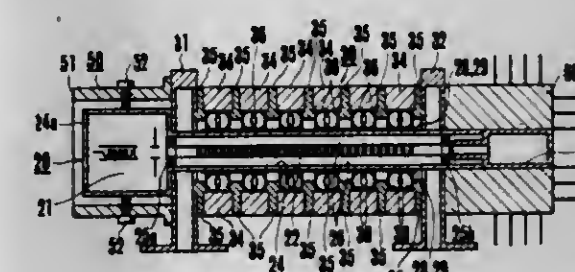
Filed Nov. 21, 1979, Ser. No. 96,543

Claims priority, application Japan, Nov. 29, 1978, 53/164371[U]

Int. Cl.<sup>3</sup> H01J 25/34

U.S. Cl. 315—3.5

4 Claims



1. A traveling wave tube device comprising a traveling wave tube including a source of an electron beam, an electron beam collector, a helical delay line disposed between said source of electron beam and said electron beam collector, a pumped envelope surrounding the elements described above, means disposed between said pumped envelope and said helical delay line for supporting the same, a carbonaceous coating applied on said pumped envelope and an electroconductive coating applied on said carbonaceous coating for preventing peeling off thereof; and

a periodic permanent magnet assembly which includes means for a microwave power input and output to and from said traveling wave tube, a plurality of annular permanent magnets and a plurality of pole pieces, said permanent magnets and pole pieces being alternately disposed between the microwave power input and output means, each of said pole pieces having an inner diameter that is smaller than that of the permanent magnets and larger than that of said pumped envelope, adjacent pole pieces and one of the permanent magnets interposed therebetween defining an annular recess, and a plurality of tridial metal spring rings contained in each annular recess and in contact with said electroconductive coating and said permanent magnets.



4,283,657

## EXIT ILLUMINATING SYSTEM

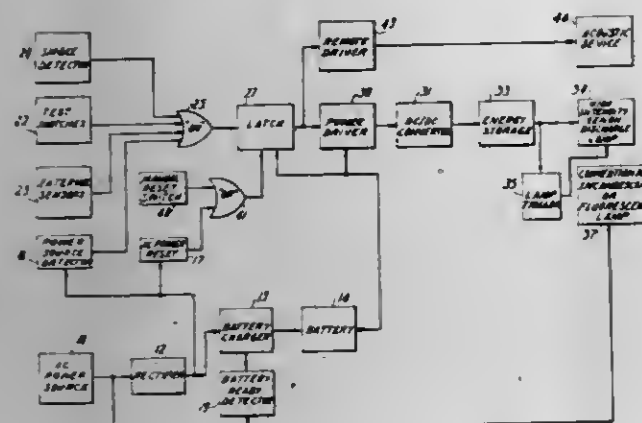
Joseph H. Gordon, Nanuet, and R. Ramon Bloch, Yonkers, both of N.Y., assignors to Lampiridae Associates, Conn.  
Continuation of Ser. No. 670,118, Mar. 25, 1976, abandoned.

This application Feb. 16, 1978, Ser. No. 878,467

Int. Cl.<sup>3</sup> G08B 17/10

U.S. Cl. 315—86

4 Claims



1. An exit illuminating system for leading persons to an escape route under emergency conditions, comprising:
  - means for connecting the system to an alternating current power line;
  - a rectifier circuit for converting said alternating current power into direct current;
  - a battery;
  - means connecting said direct current from the rectifier circuit to the battery so as to provide a substantially continuously available charging current to said battery when alternating current is present on said power line, said means including a current control transistor in series between said converted direct current and said battery for controlling the charging current supplied to said battery, and a biasing circuit including said battery connected to said current control transistor in order to bias the degree of conduction thereof in accordance with the battery voltage;
  - a smoke sensor for developing an electrical activating signal when the surrounding atmosphere in an area to be protected contains a predetermined amount of smoke;
  - a high intensity light source coupled to said electrical current source and adapted for mounting adjacent an exit, said light source being responsive to the activating electrical signal by the smoke sensor for providing a high intensity illumination sufficiently visible through the smoke in such atmosphere so as to guide persons who may be trapped therein to an escape route via the exit; and
  - means connecting said battery to said high intensity light source whereby direct current is made available to said light source during both the presence and failure of alternating current on the power line, thereby to render such system fail-safe in the event of power line failure.

4,283,658

## PROJECTION LAMP CONTROL ARRANGEMENT

Robert R. Parker, Wheeling, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jun. 13, 1979, Ser. No. 48,308

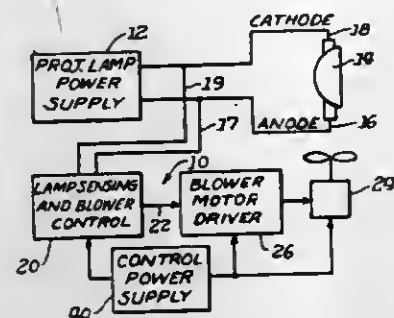
Int. Cl.<sup>3</sup> H05B 41/36; H01J 61/52

U.S. Cl. 315—117

20 Claims

1. A control arrangement for accurately maintaining the operating point of a projection lamp in projection apparatus having a projection lamp power supply, the control arrangement comprising:
  - means having a controllable variable output for providing control of the operating temperature of said projection lamp, said variable output being controllable over a predetermined range of output capacity, and
  - means responsive to the power input to said projection lamp for controlling operation of said controllable variable

output means, said controlling means comprising means for sensing the deviation of said power input of said projection lamp from a predetermined operating point and means responsive to said deviation sensing means for modifying the output of said controllable variable output



means whereby said projection lamp is maintained at a constant operating temperature, said modifying means modifying the output of said controllable variable output means according to a predetermined relationship relating the sensed deviation of said power input and the output of said controllable variable output means.

4,283,659

## DISPLAY SYSTEM UTILIZING INCANDESCENT LAMP MULTIPLEXING

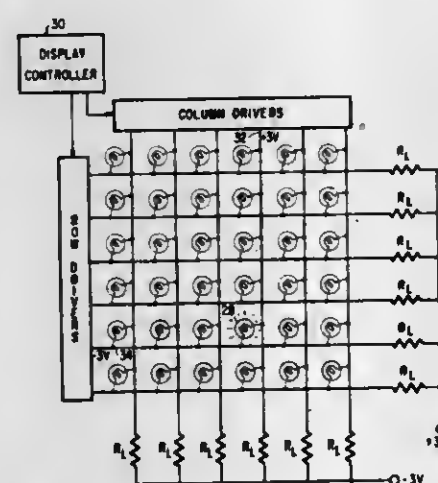
Howard L. Beckerman, Middletown, and William S. N. Trimmer, Belle Mead, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Apr. 7, 1980, Ser. No. 137,927

Int. Cl.<sup>3</sup> H05B 39/00

U.S. Cl. 315—161

4 Claims



1. A display system comprising:
  - a first plurality of column conductors;
  - a second plurality of row conductors;
  - a plurality of voltage sensitive light emitting elements arranged at respective intersection points of a matrix array of said row and column conductors;
  - a first voltage source at a first voltage level;
  - a second voltage source at a second voltage level differing from said first voltage level by a first voltage difference;
  - a first plurality of load resistors each connected between a respective one of said first plurality of column conductors and said first voltage source;
  - a second plurality of load resistors each connected between a respective one of said second plurality of row conductors and said second voltage source; and
  - means for connecting said first voltage source to one of said row conductors and said second voltage source to one of said column conductors;
  - whereby the one light emitting element at the intersection point of said one column conductor and said one row

conductor has said first voltage difference applied thereacross to relatively brightly light said one element and the remaining elements all have a second voltage difference less than said first voltage difference applied thereacross to relatively dimly light said remaining elements.

4,283,660

## MULTILINE CHARGE TRANSFER PANEL INPUT AND HOLD SYSTEM

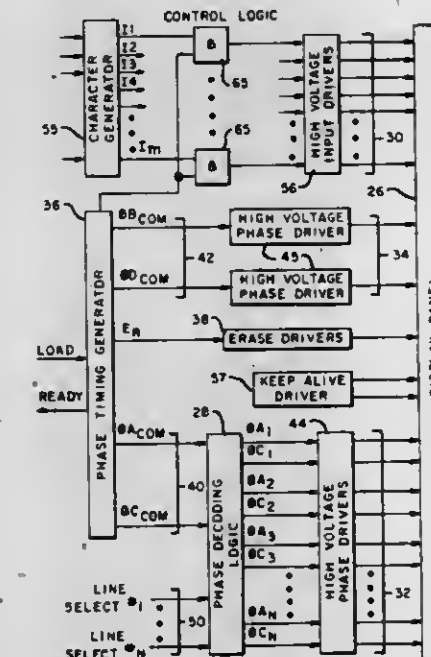
John L. Curry, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 23, 1979, Ser. No. 69,158

Int. Cl.<sup>3</sup> H05B 41/30

U.S. Cl. 315—169.2

11 Claims



1. In a multiline plasma charge transfer device wherein the lines each comprise at least one channel containing an ionizable medium, input and transfer electrodes positioned on inside wall surfaces, the transfer electrodes being alternately arranged on opposite wall surfaces, and control means including drivers for firing the electrodes to develop potential differences between the electrodes, application of potential differences serving to introduce charges into the channels, and serving to hold and shift changes in the channels, the improvement wherein said control means include first drivers for all transfer electrodes on one wall surface of all lines, means for operating said first drivers in regular phase, independent second drivers for the transfer electrodes on the other wall surface of each line, means for selectively operating each of said second drivers, third drivers connected to the input electrodes of all lines, and means for selectively operating said third drivers.

4,283,661

## IRRADIATION DEVICE AND REMOVABLE TIMER USEFUL THEREWITH

Wendell E. Doty, Battle Creek, Mich., assignor to Battle Creek Equipment Co., Battle Creek, Mich.

Filed Feb. 25, 1980, Ser. No. 124,259

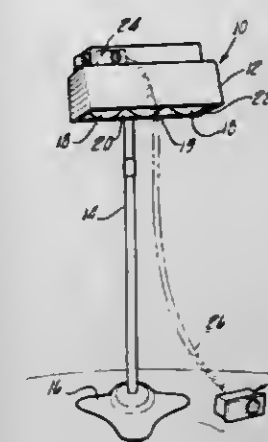
Int. Cl.<sup>3</sup> H05B 37/02; 41/36

U.S. Cl. 315—360

6 Claims

1. An irradiation apparatus including: a housing having an opening; a reflector carried within said housing and positioned to reflect radiation within said housing through said opening; means for attaching said apparatus to a source of electrical current; an electrically powered source of ultraviolet radiation located within said housing; and a timing mechanism detachably located within said housing allowing removal of said timing mechanism from said housing, said timing mechanism being an removable and indispensable portion of the circuit between said attachment means and said source of ultraviolet

radiation which supplies power to said ultraviolet source so that removal of said timer from said circuit renders said lamp



inoperative even when said attachment means is connected to said source of electrical current.

4,283,662

## LINE SCAN CIRCUITS FOR CATHODE RAY TUBE DISPLAYS

Frank Ainscow, Shawford, and Edward D. Anwyl, Eastleigh, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

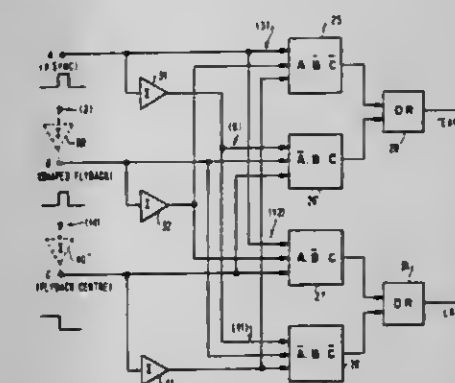
Filed Oct. 1, 1979, Ser. No. 80,889

Claims priority, application United Kingdom, Aug. 15, 1979, 28391/79

Int. Cl.<sup>3</sup> H01J 29/70, 29/72

U.S. Cl. 315—364

6 Claims



1. A line scan circuit for a cathode ray tube display adapted to receive horizontal synchronization pulses and to produce a line scan waveform comprising a phase detector adapted to compare the phase difference between said synchronization pulses and line flyback pulses and to produce an output representing the phase difference, an integrator adapted to integrate the output of the phase detector and having its output connected to a voltage controlled oscillator, and a line output stage connected to receive the output of said oscillator to produce said flyback pulses, characterized in that said phase detector is adapted to compare the phases of said synchronization and flyback pulses on both the leading and trailing edges thereof, and to produce phase difference signals therefrom which cause said flyback pulses to be centered on said synchronization pulses.



4,283,663

**HORIZONTAL DEFLECTION CIRCUIT IN A TELEVISION DEVICE**

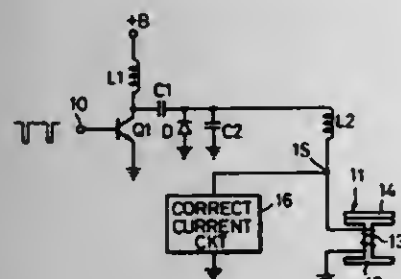
Tadayoshi Miyoshi, Yokohama, and Shigeru Kasbiwagi, Iwai, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 18, 1979, Ser. No. 4,601

Claims priority, application Japan, Jan. 20, 1978, 53/5169[U]  
Int. Cl.<sup>3</sup> H01J 29/70

U.S. Cl. 315-400

4 Claims



4. A horizontal deflection circuit in a television device comprising:

- a circuit for generating a saw-tooth waveform current for horizontal deflection;
- a horizontal deflection coil supplied with the saw-tooth waveform current thus generated;
- a saturable reactor type linearity coil comprising a first core, a permanent magnet for applying a magnetic field to the first core, and a first winding wound around the first core; and

correction current supplying means comprising a second core electromagnetically coupled with the first core through the permanent magnet, a second winding wound around the second core, and means for supplying to the second winding a current which varies in response to the temperature variation thereby to cause the correction current to flow substantially through the first winding so that the inductance value of the linearity coil will become constant irrespective of the temperature variation.

4,283,664

**CONTROL SIGNAL GENERATOR FOR THE COMMUTATING DEVICE OF A BRUSHLESS ELECTRONICS MOTOR**

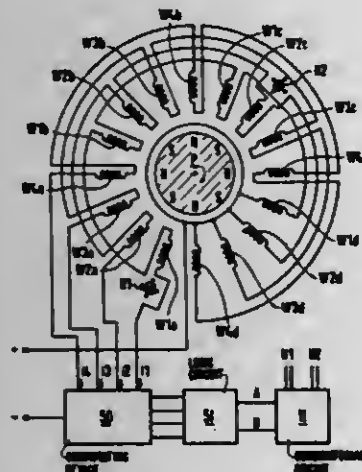
Hermann Ebert, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 105,868

Int. Cl.<sup>3</sup> H02K 29/00

U.S. Cl. 318-138

10 Claims



1. A control signal generator for the commutating device of a brushless electronic motor comprising:
  - (a) two Hall effect generators which are shifted relative to

- each other by 90° electrically and magnetically and furnish Hall signals as a function of the rotor position;
- (b) a combinatorial circuit receiving said Hall signals and furnishing two digital drive signals whose switching instants are shifted by half the time span between two successive zero crossings of the Hall signals; and
- (c) a 1 to 4 logic circuit having as inputs the two drive signals and having an output which furnishes one control signal for each of the switching elements of the commutating device.

4,283,665

**METHOD AND APPARATUS FOR ELIMINATING RIPPLE COMPONENT FROM MOTOR CONTROL LOOP**

Katsuzi Mizumoto, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

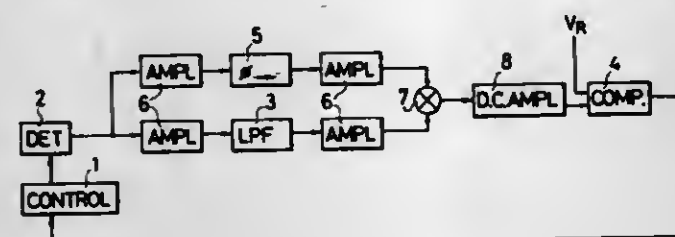
Filed Aug. 27, 1976, Ser. No. 718,256

Claims priority, application Japan, Aug. 28, 1975, 50/117591[U]

Int. Cl.<sup>3</sup> G05B 5/00; H02P 5/00, 7/00

U.S. Cl. 318-317

4 Claims



1. A motor speed control circuit of the servo loop type, comprising:

- (a) a motor drive winding control circuit,
- (b) a detection circuit for developing a speed signal proportional to the motor speed, said speed signal comprising a ripple component superimposed on a d.c. component,
- (c) a low-pass filter for smoothing the speed signal and simultaneously producing a phase lag therein,
- (d) a source of reference voltage proportional to a desired motor speed,
- (e) a comparator for producing an output proportional to the difference between the reference voltage and the filtered speed signal,
- (f) means for feeding back the comparator output as a control signal to the drive winding control circuit,
- (g) a phase leading circuit for advancing the phase of the speed signal by an amount equal to approximately 180 degrees minus the phase lag produced by the low-pass filter,
- (h) means coupling the speed signal to the phase leading circuit,
- (i) means coupling the output of the phase leading circuit to the comparator, and
- (j) means in the comparator for acting on the low-pass filter output and the phase leading circuit output to cancel the ripple component, whereby substantially only the d.c. component of the speed signal is fed back to the drive winding control circuit.

4,283,666

**SPEED CONTROL DEVICE FOR A HOME SEWING MACHINE**

Patrice J. Kemmel, Stutensee, Fed. Rep. of Germany, assignor to Pfaff Haushaltsmaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,381

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840208

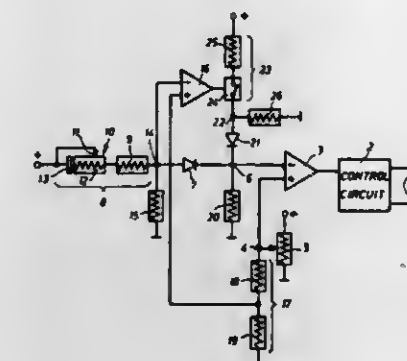
Int. Cl.<sup>3</sup> H05D 5/16

U.S. Cl. 318-349

6 Claims

1. A speed control device for the motor of a sewing machine, comprising, a first control circuit having a variable resistor

connected to the motor, a second control circuit having a constant resistor connected to the motor, selector switching means operatively connecting said first and second control circuits to the motor alternatively when said motor reaches a



given speed, switch means in said second control circuit, and voltage sensor means connected to said first control circuit and to said switching means of said second control circuit for actuating said switch means when said variable resistor reaches a given value.

4,283,667

**MOTOR FIELD EXCITER**

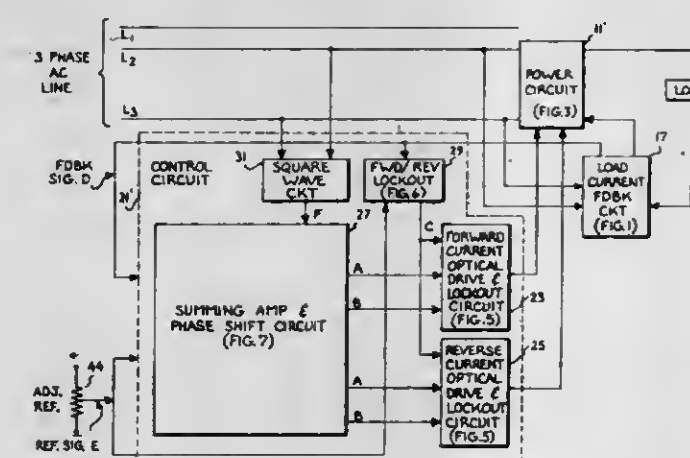
Edward H. Dinger, Waynesboro, Va., assignor to General Electric Company, Salem, Va.

Filed Aug. 14, 1979, Ser. No. 66,591

Int. Cl.<sup>3</sup> H02P 5/16

U.S. Cl. 318-356

14 Claims



1. A control circuit for supplying electrical power from an alternating current source to the field winding of an electric motor comprising:

- (a) means including a controlled input current path to intermittently connect said winding to said source;
- (b) a controlled freewheeling path for carrying field current for a predetermined portion of a period during which the field winding is not connected to said source;
- (c) means to sense the value of the actual field current and to provide a first output signal which is a function of said actual field current;
- (d) means to provide a second output signal which is a function of the desired field current;
- (e) means to combine said first and second output signals and produce a control signal which is a function of the difference between said first and second output signals; and
- (f) means to provide coordinated control of said input current path and said freewheeling path in response to said control signal to thereby insure continuous current through said field winding and to make both forward and reverse current-forcing voltages selectively available at said field winding.

4,283,668

**DC MOTOR CONTROL WITH ALTERNATE ACTION SOLENOID DRIVE CIRCUIT**

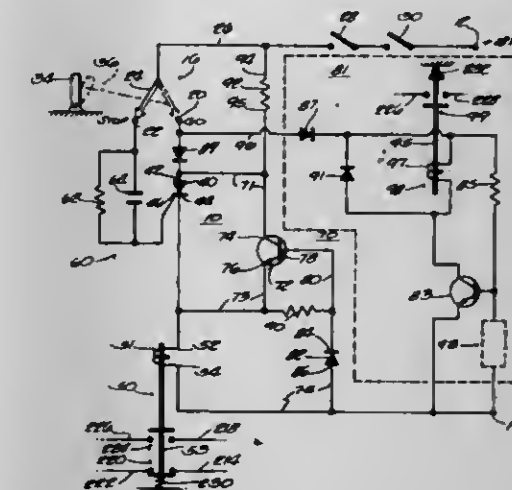
David T. Cavil, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 7, 1979, Ser. No. 10,030

Int. Cl.<sup>3</sup> H02P 3/00

U.S. Cl. 318-549

17 Claims



1. An alternate action solenoid drive circuit adapted for connection to a DC source having first and second power terminals, said circuit comprising actuator switch means including go and stop terminals, and an actuator switch connected to the first power terminal and selectively operable for alternately moving between a go position connecting said go terminal to the first power terminal, and an off position connecting said stop terminal to the first power terminal connected to said go terminal, and having a second terminal and a third terminal, a solenoid including a solenoid coil connected in series relation with said first semiconductor switching means between the first and second power terminals, first circuit means connected to and between said stop terminal and said third terminal for applying a trigger pulse to said third terminal when said actuator switch is moved to said off position, and second circuit means connected in circuit with said first semiconductor switching means and said solenoid coil for preventing current flow through said first semiconductor switching means in response to one of said trigger pulses alternate times said actuator is moved to said off position and for allowing a holding current flow through said first semiconductor switching means in response to one of said trigger pulses the other alternate times said actuator is moved to said off position.

4,283,669

**PROCESS AND APPARATUS FOR THE AUTOMATIC MEASURING OF A WORKPIECE**

Hans-Dieter Jacoby, Werdorf, Fed. Rep. of Germany, assignor to Ernst Letzt Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed May 22, 1980, Ser. No. 152,371

Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921166

Int. Cl.<sup>3</sup> G05B 19/36

U.S. Cl. 318-578

4 Claims

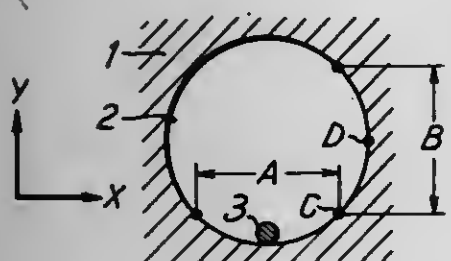
1. A method of automatic measuring of a workpiece mounted on a coordinate table movable with respect to a scanning head in at least two mutually orthogonal coordinate directions by scanning said workpiece by at least one stylus of said scanning head during movement in one coordinate direction and by maintaining constant a contact pressure of said stylus of said scanning head on said workpiece dependent upon electrical signals proportional to the deflection of said stylus according to the contour of said workpiece said method comprising the steps of:

moving said coordinate table by means of a predetermined



control voltage along a first measuring coordinate direction (primary coordinate) after contacting said workpiece by said stylus of said scanning head by a predetermined force and along a second measuring coordinate direction (secondary coordinate); maintaining the contact pressure between said stylus and said workpiece by moving said coordinate table in said second measuring direction (secondary coordinate) in dependence of a control voltage corresponding to the deflection of said stylus from its base position;

measuring the velocity of movement in each of said coordinate directions;



comparing said velocities of movement;

reversing control of movement in said coordinate directions when said velocities are equal, so that said other coordinate direction movement is at least a relatively constant velocity (equal to the rate of movement in said one direction immediately prior to said switching step) and said one coordinate direction movement is controlled by said contact pressure of said scanning head with said workpiece;

continuing with the above measuring, comparing and switching sequences until the entire workpiece has been measured.

4,283,670

#### AUTOMATIC INTEGRATOR CONTROL FOR TRANSIENTLESS SWITCHING OF CONTROLLER GAINS IN MANUAL TRACKING SYSTEMS

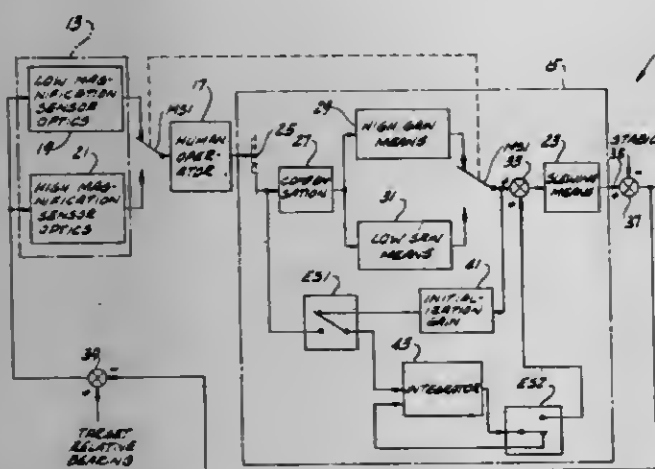
Tulvio S. Durand, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 6, 1979, Ser. No. 27,582

Int. Cl.<sup>3</sup> G05B 7/00

U.S. Cl. 318—591

7 Claims



1. A manual tracking system for performing target acquisition and tracking under the control of a human operator, said system having a slewable sensor with a line of sight, comprising:

slewing means for slewing said sensor to align said line of sight with a target, the difference between the position of the target and the line of sight being a line of sight error; display means for displaying the line of sight error to the operator, said display means including means for displaying said line of sight error at a first magnification and

means for displaying said line of sight error at a second magnification;

operator controllable magnification selection means for switching the display means from the first to the second magnification, whereby the operator can selectively display the line of sight error at either magnification;

operator controllable input means for generating an input signal corresponding to the slewing of the sensor desired by the operator to align the sensor line of sight with the target; and

control signal means responsive to the input signal for supplying control signals to the slewing means, said control signal means including means for generating a first control signal which is proportional to the input signal and for generating a second control signal which is proportional to the input signal plus its integral, said slewing means being responsive to the first control signal to slew the sensor in proportion to the input signal and being responsive to the second input signal to slew the sensor in proportion to the input signal plus its integral, said control signal means including integrator means for supplying a signal proportional to the integral of the input signal to the slewing means when the line of sight error is displayed at the second magnification;

said control signal means also including control switching means governed by the operator controllable magnification selection means for automatically switching the control signal means from supplying the first control signal to supplying the second control signal substantially simultaneously with the switching of the display means from the first to the second magnification, whereby when the line of sight error is displayed at the first magnification the slewing means slews the sensor in proportion to the input signal and when said error is displayed at the second magnification the slewing means slews the sensor in proportion to the input signal plus its integral.

4,283,671

#### AUTOMATIC RESIDUAL PHASE ERROR COMPENSATION CIRCUIT FOR A DIGITAL SERVO CONTROL SYSTEM

Kenji Nakano, Yokohama, and Tadahiko Nakamura, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

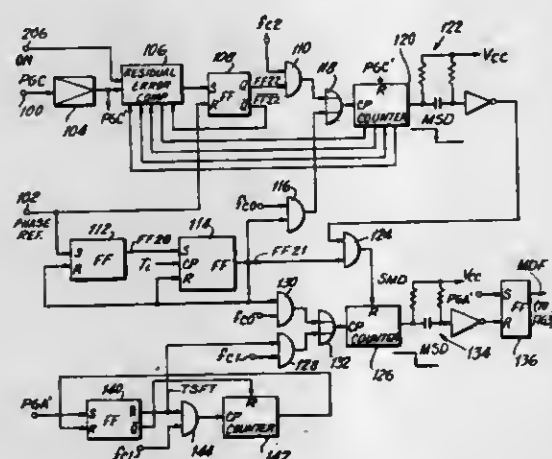
Filed Aug. 28, 1979, Ser. No. 70,517

Claims priority, application Japan, Aug. 30, 1978, 53-104900

Int. Cl.<sup>3</sup> G05B 1/01

U.S. Cl. 318—608

11 Claims



1. A servo control apparatus for controlling rotation of a rotary member comprising:

means for driving said rotary member;

means for generating an angular position signal related to an angular position of said rotary member;

means for generating a reference signal related to a desired angular position of said rotary member;

means for detecting a time interval related to a time between said angular position signal and said reference signal;

means for controlling said means for driving in accordance with said detected time interval whereby phase control of said rotary member is achieved; and

means for eliminating residual phase errors by changing a timing of one of said angular position signal and said reference signal in response to said detected time interval.

4,283,672

#### STEPPER MOTOR DRIVE

Raymond W. Throssell, Partridge Green, England, assignor to The Monotype Corporation Limited, Redhill, England

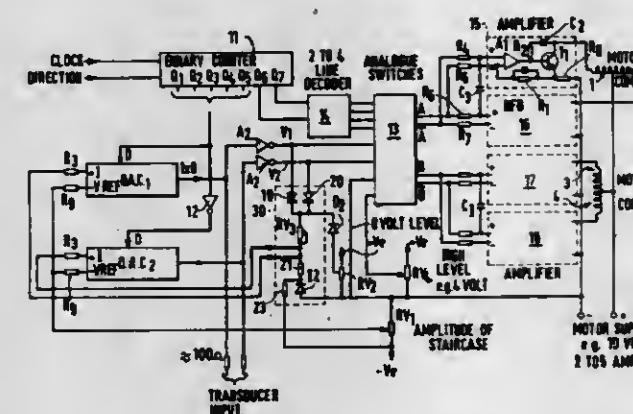
Filed Dec. 7, 1979, Ser. No. 101,064

Claims priority, application United Kingdom, Dec. 18, 1978, 48950/78

Int. Cl.<sup>3</sup> G05B 19/40

U.S. Cl. 318—696

6 Claims



1. A stepper motor drive which is arranged to sequentially energise the windings of a stepper motor, the drive including at least one generator of a staircase signal comprising a multiplier fed by a reference signal and the output of a clocked binary counter, an adjustable feedback network which is arranged to combine a fraction of the output of the multiplier with the reference signal, so that the output of the multiplier represents unequal steps of a staircase waveform, and a switching network which under the control of the counter applies to the windings drive signals in accordance with the output of the multiplier.

4,283,673

#### MEANS FOR REDUCING CURRENT-GAIN MODULATION DUE TO DIFFERENCES IN COLLECTOR-BASE VOLTAGES ON A TRANSISTOR PAIR

J. Darryl Lieux, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Dec. 19, 1979, Ser. No. 105,418

Int. Cl.<sup>3</sup> G05F 1/56

U.S. Cl. 323—316

4 Claims

1. A transistor circuit, comprising:

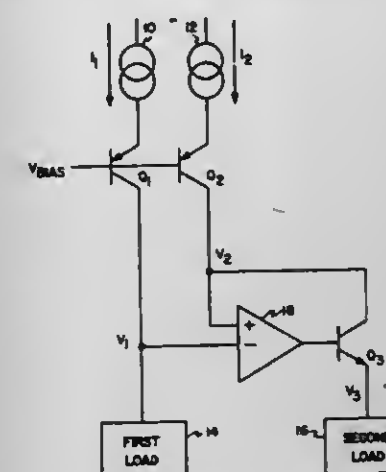
(a) a pair of transistors each having an emitter, base and collector, with their bases connected in common,

(b) current supply means for supplying substantially equal current to the emitters of said transistors,

(c) a load coupled separately to each collector of said transistors, and

(d) means coupled between the collectors of said transistors

and between the collector of one of said transistors and the load coupled thereto for maintaining the collector-base



voltages of said transistors substantially equal and their current gains substantially equal.

4,283,674

#### CONSTANT VOLTAGE OUTPUT CIRCUIT

Yasuo Kominami, Kokubunji; Masahiro Yamamura, Kodaira; Katsuji Mizumoto, and Toshihide Hanada, both of Sayama, all of Japan, assignors to Hitachi, Ltd. and Pioneer Electronic Corp., both of Tokyo, Japan

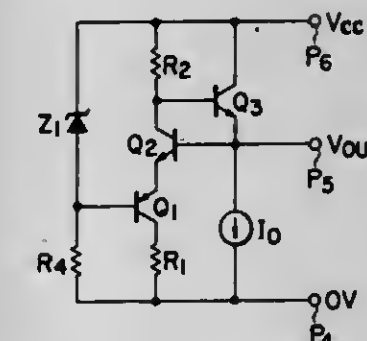
Filed Jul. 19, 1979, Ser. No. 59,030

Claims priority, application Japan, Jul. 19, 1978, 53-87177

Int. Cl.<sup>3</sup> G05F 3/18

U.S. Cl. 323—313

6 Claims



1. A constant voltage output circuit comprising:

first and second power source terminals for supplying a power source voltage;

a series circuit consisting of a first pnp transistor and a first npn transistor, each having its emitter connected to the emitter of the other;

means for connecting the collector of said first pnp transistor to said first power source terminal;

load means interposed between the collector of said first npn transistor and said second power source terminal;

a second npn transistor having its base connected to the collector of said first npn transistor, its collector connected to said second power source terminal and its emitter connected to the base of said first npn transistor as well as connected to said first power source terminal via second load means;

reference voltage feed means for impressing a reference voltage across the base of said first pnp transistor and said second power source terminal; and

an output terminal connected to the emitter of said second npn transistor, thereby providing a constant output voltage across it and said second power source terminal.

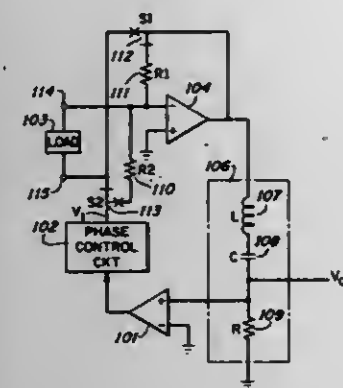


4,283,675

**IMPEDANCE/ADMITTANCE MEASURING CIRCUIT**  
Richard G. Sparber, Wheaton, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Mar. 12, 1979, Ser. No. 19,367  
Int. Cl.<sup>3</sup> G01R 27/26

U.S. Cl. 324—57 R

11 Claims



1. A circuit arrangement for measuring the electrical characteristics of a connected load comprising:  
generator means for generating an excitation signal having a fixed amplitude and for applying said excitation signal to said load;  
filter means connected to said generator means and responsive to signals received from said load for generating a filtered response signal; and  
isolating coupler means for coupling said signals from said load to said filter means and for isolating said load from the loading effects of said filter means;  
said generator means being responsive to said filtered response signal to generate said excitation signal.

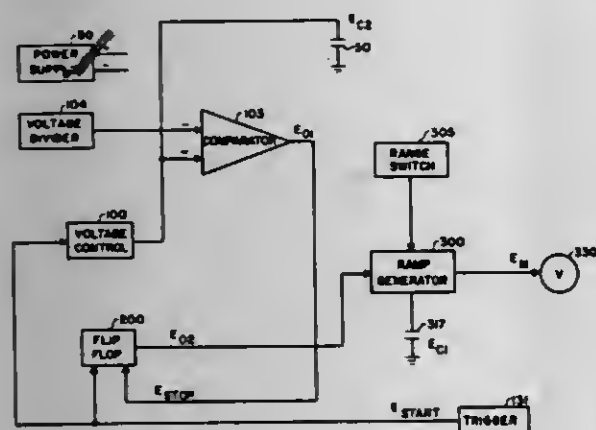
4,283,676

**DIRECT READING CAPACITANCE METER**  
Clifford O. Shaw, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 6, 1980, Ser. No. 127,707  
Int. Cl.<sup>3</sup> G01R 11/52

U.S. Cl. 324—60 C

5 Claims



1. A device for measuring the value of a capacitor comprising:  
terminal means for connecting a test capacitor;  
a voltage divider that receives an initial voltage and transmits a predetermined reference voltage;  
sensing means connected to the output of said terminal means and to said voltage divider;  
control means for transmitting a voltage to said sensing means and to said terminal means;  
switching means for receiving and sending a first signal, and further for receiving and sending a second signal;  
a ramp generator having a plurality of charging ranges connected to said switching means to receive a first signal

- and to supply a voltage and further, to receive a second signal and to stop supplying a voltage;  
a reference capacitor connected to said ramp generator;  
a capacitance reading meter effectively connected to said reference capacitor;  
a trigger having a first and a second mode such that in said first mode no voltage is transmitted and in said second mode a voltage is transmitted simultaneously to said switching means and to said control means, wherein the value of a capacitor is directly determined.

4,283,677

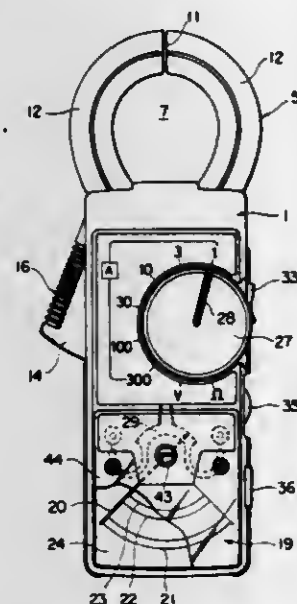
**CLAMP TYPE GALVANOMETER**

Shoji Niwa, 234 Gumyoji-cho, Minami-ku, Yokohama, Japan (233)

Filed May 18, 1979, Ser. No. 40,324  
Int. Cl.<sup>3</sup> G01R 1/22

U.S. Cl. 324—127

4 Claims



1. A clamp type galvanometer, comprising:  
(a) current transformer means (5) including a core assembly of laminated plates made of an alloy of about 78.5% nickel and about 21.5% iron, said core assembly being split to provide two half core segments (8), said segments being pivotally secured at one end and overlapping each other at the other end, a portion of each plate where a coil is to be wound being reduced in width;  
(b) a coil (9) wound around each segment at such reduced width portion;  
(c) a shield plate (10) disposed over each coil;  
(d) a lever (14) for opening or closing the overlapping other end of said segments;  
(e) a case wherein said one end of said segments are pivotally secured, said case being of a size carryable with one hand, said lever extending out of said case;  
(f) a meter assembly (19) with a pointer and graduations for indicating the output of said current transformer means displayed on said case, and including first circuit means with current measuring means operatively coupled to said current transformer means (5) to indicate the output of said current transformer means with said pointer and graduations;  
(g) a printed circuit (25) having shunt circuit means in said meter assembly for measuring various ranges of current;  
(h) a circular switching knob (27) coupled to said shunt circuit means for operating said printed circuit so as to determine the measuring range being measured; and,  
(i) a lock bar (29) disposed for being in contact with or separate from said pointer with a second knob (33) for operating said lock bar, said second knob being at the side of the case.

4,283,678

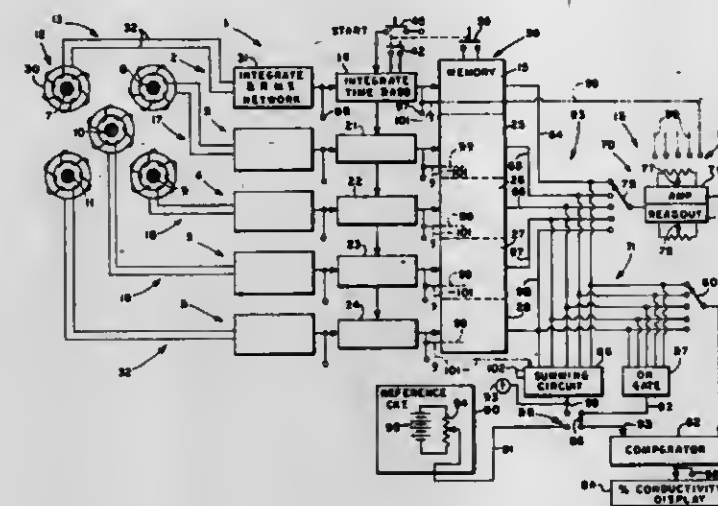
**CABLE CONDITION ANALYZING SYSTEM FOR ELECTRIC ARC FURNACE CONDUCTORS**

Matthew R. Halter, Bay Village, Ohio, assignor to Watteredge-Ualflex, Inc., Avon Lake, Ohio

Filed Jun. 5, 1978, Ser. No. 912,342  
Int. Cl.<sup>3</sup> G01R 19/02, 31/02

U.S. Cl. 324—140 R

28 Claims



1. For use with electric arc furnaces or the like usually provided with multiple phase electrical power and having for each phase plural electrical cables that ordinarily conduct relatively large electrical currents and encounter current fluctuations during operation, a system for sensing current flow for use in analyzing the condition of all of such electrical cables serving a respective phase, comprising input means for simultaneously producing a plurality of representative electrical signals indicative, respectively, of the electrical currents carried by such plurality of cables, said input means comprising a separate input means for each of the cables being monitored by the system and each input means including a respective transducer that produces an output voltage representative of the change of current flowing through a monitored cable with respect to time and means for producing such representative electrical signals from such output voltages, timed means including a plurality of timed integrator means for respectively integrating simultaneously each of said representative electrical signals for a period of time to produce respective integrated signals, said timed integrator means comprising a separate one of the same for each of the cables analyzed by the system, each including an integrator circuit and timer means for delivering to said integrator circuit for a selected period of time said representative electrical signal for integration by said integrator circuit, means for coupling each integrator circuit to said input means, memory means for storing a plurality of stored signals, each being indicative of a respective integrated signal, means for coupling said memory means to said integrator circuits, and means for making a comparison between at least one of said stored signals representing the electrical signal carried by at least one such cable at a given time and at least another one of said stored signals representing the electrical signal carried by at least another such cable at the same time, said means for making a comparison including read-out means selectively operable for producing output information representative of said stored signals, and display means for displaying the output from said read-out means.

4,283,679

**ROTATIONAL DIRECTION DETECTION DEVICE FOR A MOTOR OR THE LIKE**

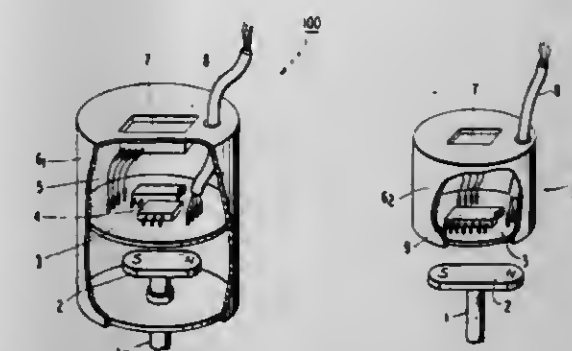
Susumu Ito, and Morimasa Nagao, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1979, Ser. No. 31,094

Claims priority, application Japan, Apr. 18, 1978, 53-46135  
Int. Cl.<sup>3</sup> G01P 3/52, 13/00

U.S. Cl. 324—165

5 Claims



1. A rotational direction detection device comprising a single permanent magnet rotatable in response to the rotation of a rotary shaft of a rotary object for generating a rotating magnetic field in a first plane substantially perpendicular to the rotary shaft; a magnetic field sensor disposed in a second plane parallel to and adjacent said first plane and spaced from said shaft, and having a plurality of ferromagnetic magnetoresistive elements lying in said second plane so as to be responsive to said rotating magnetic field for generating an output representative of the rotation of said rotary shaft, at least two of said elements being arranged within said second plane to form an angle other than 0 degree, 90 degrees, 180 degrees and 270 degrees; and a rotary condition detector responsive to the output of said magnetic field sensor for determining the rotational direction of said rotary shaft.

4,283,680

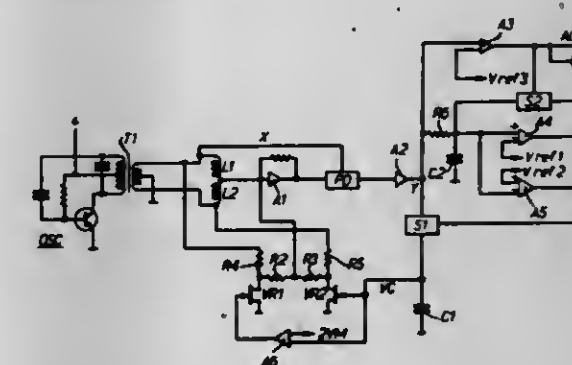
**ELECTRICAL BRIDGE BALANCING CIRCUIT**

Bruce G. Kerr, Amersham, England, assignor to Goring Kerr Limited, Windsor, England

Filed Feb. 26, 1979, Ser. No. 15,013  
Int. Cl.<sup>3</sup> G01N 27/72; G01R 33/12

U.S. Cl. 324—234

12 Claims



1. An electrical sensing circuit comprising:  
bridge circuit means including an electrical bridge and sensing means for producing an output signal which is a function of the in or out of balance condition of the bridge;  
storage means for storing the value of said output signal;  
balancing means responsive to said storage means for applying a balancing signal to said bridge circuit means for tending to cause said output signal to represent a balanced condition of the bridge, the value of said balancing signal being a function of the value of said output signal stored by said storage means;  
threshold means responsive to said output signal for produc-



ing a switch control signal which assumes a first state when the value of said output signal changes at less than a predetermined rate to exceed a predetermined threshold; switching means responsive to said switch control signal for applying said output signal to said storage means when said control signal is in said first state to modify the stored value of said storage means; and alarm means for providing an alarm signal in response to said output signal changing at a rate greater than said predetermined rate to exceed a given level.

4,283,681

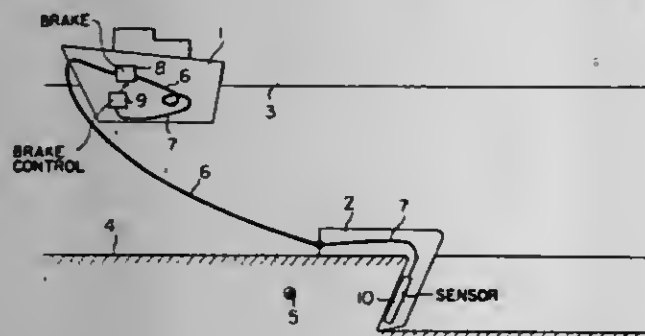
# SYSTEM FOR DETECTING AN UNDERWATER BURIED CABLE

Yamamura Kazuomi, Yokohama; Fukui Takasuke, Tokyo; Iwamoto Yoshinao, Fojimi; Shirasaki Yuichi, Tokyo; Fujise Masayuki, Yamato; Sugimoto Hikoaki, Mitaka; Shirai Kikuo, Chofu, and Yoshida Minoru, Yokohama, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,798

Claims priority, application Japan, Feb. 16, 1978, 53-15950; Mar. 9, 1978, 53-26035; May 6, 1978, 53-53308

Int. Cl.<sup>3</sup> G01V 3/11, 3/16; B63B 21/66; F16L 1/00  
U.S. Cl. 324-326 12 Claims



1. A cable detecting system comprising a cable ship, a cable detector having at least a body and a blade fixed to said body for dredging a sea bottom, a towing wire connected between said cable ship and said cable detector for towing the cable detector, a signal wire provided between said cable ship and said cable detector, and said cable detector dredging the water bottom to find a buried cable characterized in that said cable detector has a cable sensor which generates an electrical signal upon detection of the presence of a cable, said electrical signal is transmitted to said cable ship through said signal wire in said towing wire, said cable ship has at least a brake for selectively holding the towing wire and a brake control for controlling the operation of said brake in response to said electrical signal, and said brake control automatically has the brake release the towing wire upon receipt of said electrical signal to stop the cable detector and avoid damage to the detected cable.

4,283,682

# ERASURE ZONE DECISION FEEDBACK PHASE LOCK LOOP FOR CARRIER RECOVERY IN DATA MODEMS

Bruce M. Sifford, Los Altos, and D. Thomas Magill, Palo Alto, both of Calif., assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 6, 1979, Ser. No. 27,982

Int. Cl.<sup>3</sup> H03D 3/18

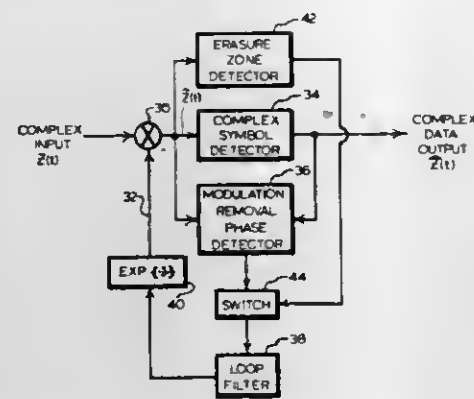
U.S. Cl. 329-50

6 Claims

1. In a feedback phase-lock loop of the type used in data communications systems transmitting constellation encoded data and including a demodulating multiplier for receiving the transmitted complex input signal and multiplying it by a feedback signal to develop a demodulated complex input signal, a complex symbol detector for detecting the particular constellation point received, a modulation removal phase detector which compares the demodulated complex input signal to the detected signal and generates a difference signal proportional to the difference therebetween, a loop filter which serves to

smooth out differences between successive difference signals input thereto, and an exponential circuit responsive to said filtered difference signals and operative to develop said feedback signal for input to the demodulating multiplier, the improvement comprising:

an erasure zone detector for monitoring the output of said demodulating multiplier and for determining whether or not the demodulated complex input signal falls within one of a predetermined number of erasure zones lying within



the complex plane of a particular modulation constellation and for developing a switch control signal when it is determined that the demodulated complex input signal does in fact fall within one of said erasure zones; and switching means responsive to said switch control signal and operative to interrupt the input of said difference signals into said loop filter and to thereby prevent adjustment of said feedback signal when the coordinates of a demodulated complex input signal falls within one of said erasure zones.

4,283,683

# AUDIO BRIDGE CIRCUIT

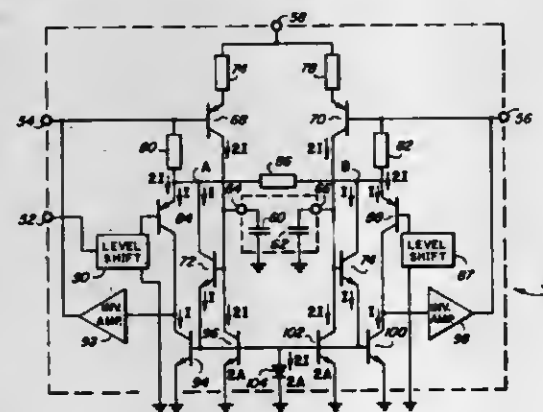
William E. Main, Mesa, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed May 29, 1979, Ser. No. 42,734

Int. Cl.<sup>3</sup> H03F 3/26

U.S. Cl. 330-262

18 Claims



1. Audio bridge circuit having an input terminal, first and second output terminals, comprising: amplifier means coupled between the input and first and second output terminals of the audio bridge circuit for amplifying input signals applied to the input terminal and providing the amplified signals across the first and second output terminals, said amplifier means including current mirror circuit means for setting both the first and second output terminals at a predetermined quiescent dc bias potential level the magnitude of which is substantially equal to one-half the magnitude of a first operating potential supplied to the audio bridge circuit; feedback circuit means having first and second inputs connected to the first and second output terminals of the audio bridge circuit respectively, said feedback circuit

means being responsive to a direct current offset voltage appearing at said first and second inputs thereof for providing a feedback signal to said amplifier means to cause said direct-current offset voltage to be severely reduced.

4,283,684

# NON-LINEARITY COMPENSATING CIRCUIT FOR HIGH-FREQUENCY AMPLIFIERS

Gunkichi Satoh, Yokohama, Japan, assignor to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

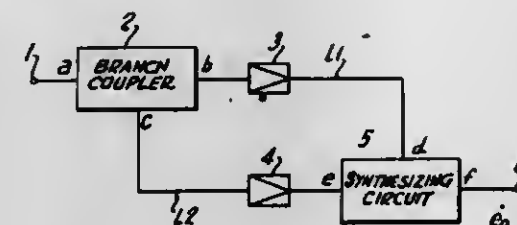
Filed Apr. 16, 1979, Ser. No. 30,361

Claims priority, application Japan, Apr. 17, 1978, 53/44138

Int. Cl.<sup>3</sup> H03F 1/32, 3/16

U.S. Cl. 330-277

14 Claims



1. A non-linearity compensating circuit for high-frequency amplifiers, comprising a pair of parallel channels each having a high-frequency amplifier of similar characteristics, branching means for branching the input signal so that the input signal is coupled to the two inputs of said pair of parallel channels, and synthesizing means for taking a vectorial sum of the two output signals from said channels, said high-frequency amplifier included in one of said channels being operable up to the non-linear region of the input/output characteristics, and said high-frequency amplifier included in the other of said channels being operable within the linear region of the input/output characteristics, said branching means and said synthesizing means being parallel-line-couple-type directional couplers, the effective electric length between the input and output of one of the said pair of channels being longer by about  $\pi$  radians than the effective electric length between the input and output of the other channel by selecting the transmission coefficients of said parallel-line-couple-type directional couplers, whereby the non-linear input/output characteristics of the whole circuit is approximately the opposite of the input/output characteristics of the high-frequency amplifier to be compensated which is serially connected to the non-linearity compensating circuit.

4,283,685

# WAVEGUIDE-TO-CYLINDRICAL ARRAY TRANSITION

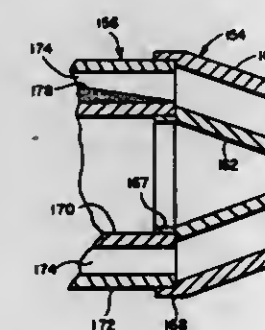
George H. MacMaster, Lexington, and Lawrence J. Nichols, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 13, 1979, Ser. No. 102,819

Int. Cl.<sup>3</sup> H03F 3/60

U.S. Cl. 330-286

6 Claims



1. A waveguide distribution system comprising: a waveguide a generally conically-shaped element positioned in said waveguide, an axis of said element being parallel to an axis

of said waveguide, said element being electrically conductive;

a plurality of transmission lines having ports arranged circumferentially around a base portion of said conically-shaped element and positioned between the conical surface of said element and a wall of said waveguide; and alternate ones of said transmission lines including 180° phase shifters for inhibiting the radiation of radiant energy from said transmission lines in directions normal to the nominal directions of propagation of radiant energy within said transmission lines.

4,283,686

# LASER OPERATION WITH CLOSED GAS AND TUNED DUCT PULSING

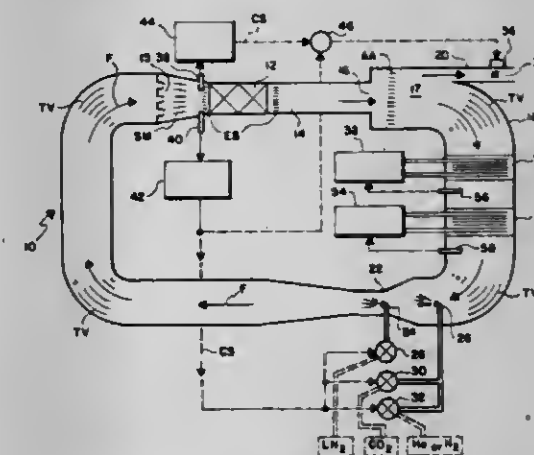
Jack D. Daugherty, Winchester; Arthur R. Kantrowitz, Cambridge; George W. Sutton, Lexington, and Oswald L. Zappa, Stoneham, all of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Mar. 21, 1979, Ser. No. 22,259

Int. Cl.<sup>3</sup> H01S 3/05

U.S. Cl. 331-94.5 G

8 Claims



1. Gas laser apparatus comprising: means defining an optical resonant cavity having a gas inlet and a gas outlet within a substantially closed loop flow path for a lasable gas having gas laser states, means for cyclically pumping the gas laser states within the cavity to produce lasing action and excess energy, in-turn cyclically producing pressure waves therein, means for coupling said lasing action out of said cavity, means within said closed loop flow path for utilizing said pressure waves to cyclically pump gas around the closed loop gas flow path, and means within said closed loop flow path to cool the pumped gas to limit heat build-up therein over the course of multiple pumping cycles.

4,283,687

# FREE ELECTRON LASER WITH END TAPERED WIGGLER STRENGTH

John M. J. Madey, Palo Alto; Luis R. Elias, Mountain View, and Todd I. Smith, Palo Alto, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 27, 1979, Ser. No. 61,557

Int. Cl.<sup>3</sup> H01S 3/09, 3/14

U.S. Cl. 331-94.5 PE

1 Claim

1. In a free electron laser the improvement residing in a periodic magnet means said magnet means comprising coaxial bifilar helical conductor means, bifilar conductors being 180° displaced and conducting current in opposite directions, said bifilar helical conductor means comprising



multiple layers of said bifilar conductors each successive layer thereof extending an increment beyond its antecede-



ent layer to effect a uniform tapered termination configuration, and  
a current source connected to supply current thereto.

4,283,688

## LASER AUTOALIGNMENT SYSTEM

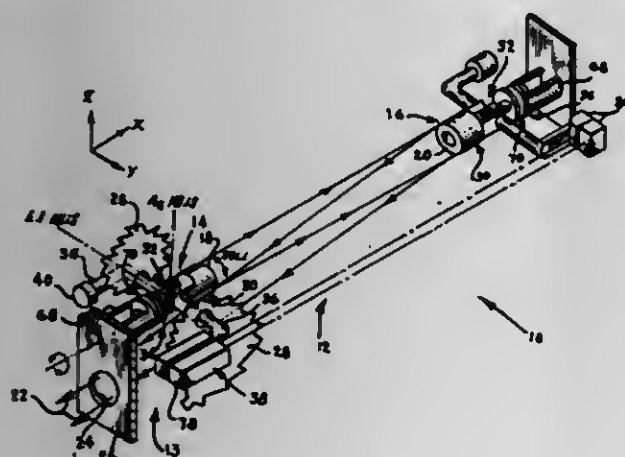
Wayne B. Lloyd, Baltimore, Md.; Robert J. Bernhard, Ames, Iowa; Dale R. Logan, Columbia, and Ronald W. Minarik, Lutherville, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 26, 1979, Ser. No. 97,594

Int. Cl.<sup>3</sup> H01S 3/05

U.S. Cl. 331-94.5 D

16 Claims



1. In a laser having a pair of end walls and a pair of side walls defining a laser cavity and an optical resonator located within said laser cavity bounded at opposed ends thereof by a first and second reflecting element, the improvement therein residing in a laser autoalignment system capable of providing six degrees of freedom of movement to said first and second reflecting elements, said autoalignment system comprising a first and a second reflector assembly disposed at opposite ends of said laser cavity, said first reflector assembly incorporating therein said first reflector element and said second reflector assembly incorporating therein said second reflector element, each of said first and second reflector assemblies comprising a reflector unit, a gimbal knuckle joint and a translator mechanism, said reflector unit having mounted on one end thereof one of said reflector elements, a pair of appendages protruding from each side of said reflector unit, each of said appendages passing through an opening located in each of said side walls, respectively, of said laser, at least one of said appendages having means connected to an end thereof and located outside of said laser cavity for aligning said reflector assemblies and means located within each of said openings in said side walls for sealing said opening between said appendage and said side wall, said gimbal knuckle joint having means at one end thereof for operably connecting the other end of said reflector unit to said gimbal knuckle joint for two degrees of freedom of movement with respect thereto, said translator mechanism having means at one end thereof for operably connecting the other end of said gimbal knuckle joint thereto for four degrees of freedom of movement with respect thereto, said translator mechanism being fixedly secured at the other end thereof to one of said end walls of said laser, means operably connected

to said translator mechanism, said gimbal knuckle joint and said reflector unit for moving each of said reflector assemblies in said six degrees of freedom, and said alignment means on each of said reflector assemblies being in operable relationship with one another so as to provide signals to said moving means thereby enabling said moving means to provide each of said reflector assemblies with said six degrees of movement in accordance with said signals.

4,283,689

## MICROWAVE OSCILLATOR CIRCUIT WITH IMPROVED EFFICIENCY

Hindrik Tjassens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

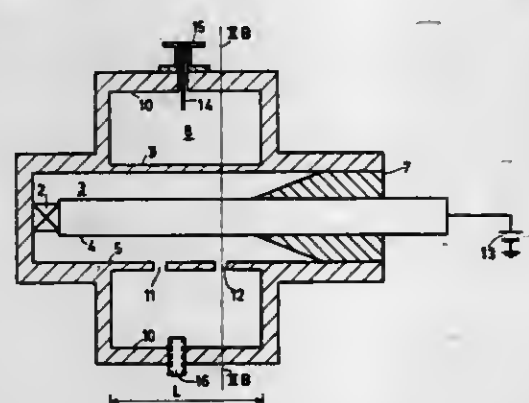
Filed May 17, 1979, Ser. No. 39,717

Claims priority, application Netherlands, Jun. 20, 1978, 7806617

Int. Cl.<sup>3</sup> B41J 27/00

U.S. Cl. 331-101

6 Claims



1. A microwave oscillator circuit comprising a transmission line having an inner conductor and an outer conductor, said inner and outer conductor being terminated at one end by a diode having a negative resistance for generating oscillations at a frequency  $f_0$  and at the other end by a terminal impedance which corresponds to the characteristic impedance of the transmission line, a cavity resonator coupled to said transmission line between said diode and said terminal impedance, said cavity resonator having an inner wall at least partially common with said outer conductor, said inner wall including a first impedance coupling between said transmission line and said cavity resonator and a second impedance coupling between said transmission line and said cavity resonator, said first and second impedance coupling being spaced from one another by an odd number of quarter wavelengths at said frequency toward said terminal impedance.

4,283,690

## LOW POWER CMOS OSCILLATOR

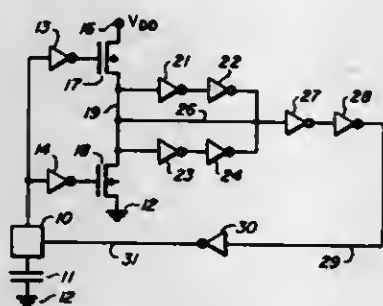
Jean-Claude Tarbouriech, Ville-la-Grand, France, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 31, 1979, Ser. No. 108,913

Int. Cl.<sup>3</sup> H03K 3/354

U.S. Cl. 331-111

9 Claims



1. A CMOS oscillator having a first and a second power supply node, comprising: a first and a second series connected

transistor being coupled between the first and second power supply node, the first and the second transistor each having a control electrode; a first and a second inverter each having an input and an output, the inputs being coupled together and the output of the first inverter being coupled to the control electrode of first transistor, the output of the second inverter being coupled to the control electrode of the second transistor; a third inverter coupled to a node formed between the first and second transistors, the third inverter having an output coupled back to the node formed between the first and second transistors; a fourth inverter having an input coupled to the output of the third inverter, the fourth inverter providing an output; a fifth inverter having an input coupled to the output of the fourth inverter and providing an output coupled to the inputs of the first and second inverters; and a capacitor coupled from the inputs of the first and second inverters to the second power supply node.

4,283,691

## CRYSTAL OSCILLATOR HAVING LOW NOISE SIGNAL EXTRACTION CIRCUIT

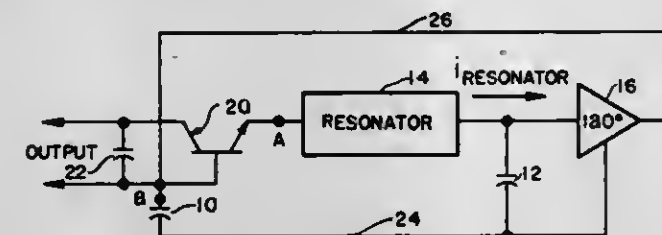
John R. Burgoon, Campbell, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 29, 1979, Ser. No. 43,591

Int. Cl.<sup>3</sup> H03B 5/36

U.S. Cl. 331-116 R

9 Claims



9. A method of minimizing the noise power in the output signal from a Colpitts type resonator oscillator, including a resonator, the method comprising the steps of:  
serially applying the current through the resonator of a Colpitts type oscillator to an active device that presents a low impedance load to the resonator to use the filtering effect of the resonator to minimize the oscillator loop noise component in the output signal; and  
connecting a selected load impedance to the active device for developing the output signal thereacross, the output signal being isolated from the oscillator loop and having a selected signal to noise ratio to further minimize the noise component in the output signal.

4,283,692

## MAGNETOSTATIC WAVE SIGNAL-TO-NOISE ENHANCER

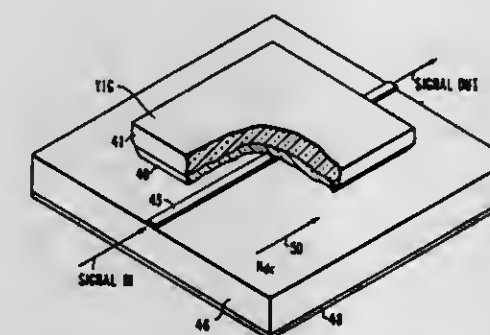
John D. Adam, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 27, 1979, Ser. No. 61,537

Int. Cl.<sup>3</sup> H01P 1/23

U.S. Cl. 333-17 L

10 Claims



1. A magnetostatic wave signal-to-noise enhancer comprising:

- (a) a magnetostatic wave supporting material;
- (b) a microwave transmission line, having first and second ends, and being contiguous said material to launch magnetostatic waves thereinto;
- (c) input means coupled to one end of said transmission line for applying an input signal within an operating frequency range;
- (d) output means coupled to the other end of said transmission line;
- (e) magnetic means biasing said material for magnetostatic wave operation wherein at relatively low power levels of input signal, launched magnetostatic waves remove power from said transmission line resulting in attenuation of said signal and
- past a certain critical input signal power level said power removed by said magnetostatic waves is reduced relative to said input signal power, resulting in a relative reduction of said attenuation; and
- (f) means for preventing launched magnetostatic waves from reflecting from the edges of said thin film material back to said transmission line.

4,283,693

## AMPLITUDE TILT COMPENSATING APPARATUS

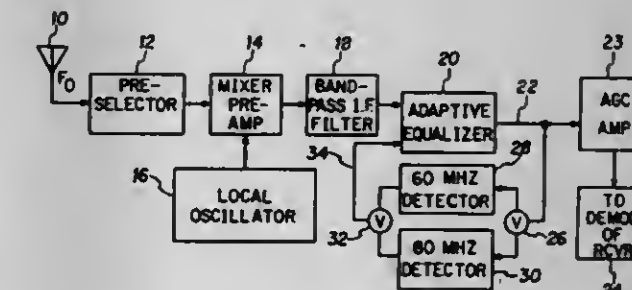
Eliseo Saenz, Garland, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 4,089, Jan. 17, 1979, abandoned. This application May 19, 1980, Ser. No. 150,861

Int. Cl.<sup>3</sup> H03H 7/03

U.S. Cl. 333-18

1 Claim



1. Apparatus of the class described comprising, in combination:  
adaptive equalizer means having a gain characteristic which varies as a function of frequency over a predetermined band of frequencies, including control signal responsive variable impedance means, for passing a signal there-through which may have an amplitude slope other than zero for the frequencies in said band, said control signal responsive variable impedance means comprising a tuned filter having only low-pass and bandpass characteristics including a pin diode as a variable resistance element in an inductive portion of the tuned filter circuit and the pin diode is utilized to vary the Q of said tuned filter circuit; detection means, connected to an output of said adaptive equalizer means, for detecting the relative amplitude of signals occurring at at least two different frequencies in the band; and  
first means, connected between said adaptive equalizer means and said detection means, for generating a feedback signal to vary the value of said impedance means whereby a spectrum envelope of signals output by said adaptive equalizer means is modified to have substantially a zero amplitude slope.



4,283,694

**IMPEDANCE-MATCHING NETWORK REALIZED IN MICROSTRIP TECHNIQUE**

Vlad Pauker, Bievres, France, assignor to U.S. Philips Corporation, New York, N.Y.

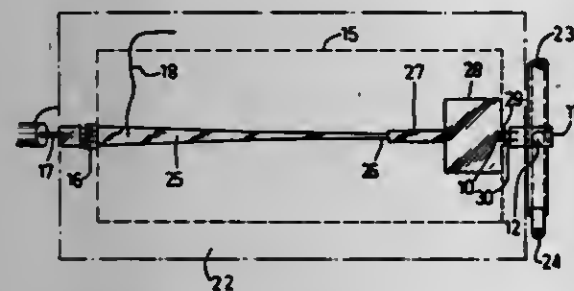
Filed Jul. 9, 1979, Ser. No. 55,579

Claims priority, application France, Jul. 11, 1978, 78 20678

Int. Cl.<sup>3</sup> H01P 5/02

U.S. Cl. 333—34

3 Claims



1. An impedance-matching micro-strip network for matching a predetermined impedance to a lower impedance over a wide frequency band, comprising a tapered line section for transposing the predetermined impedance to a higher impedance and at least one quarter wave line section on the narrow end of said tapered line section for transposing this higher impedance to the lower impedance.

4,283,695

**HIGH ISOLATION MULTICOUPLING APPARATUS**

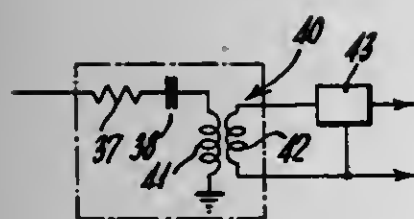
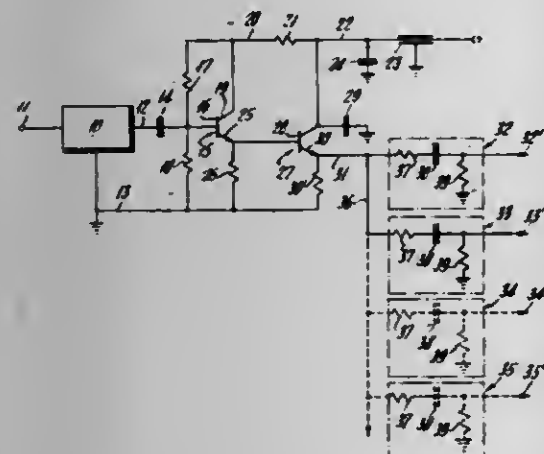
Aldo M. Scandurra, 22 Monett Pl., Greenlawn, N.Y. 11740

Filed Jun. 27, 1979, Ser. No. 52,410

Int. Cl.<sup>3</sup> H03H 11/36

U.S. Cl. 333—124

5 Claims



1. A multicoupler for coupling a single energy source to at least two or more utilization devices such as receivers and the like comprising a matching network having an input connected to said source and an output, a substantially frequency insensitive amplifier having a high input impedance and a very low output impedance, a connection between said matching network and the input of said amplifier, and at least two passive isolation networks each having an input directly connected to

the output of said amplifier and an output for connection to a utilization device whereby the output impedance of the amplifier is the only impedance viewed by the isolation networks, said isolation networks each including a series resistance connected between the last said input and the last said output, said passive networks constituting the sole load on said amplifier and producing outputs having substantially matched amplitude and phase characteristics, each of said passive networks further including a parallel impedance in the form of the primary of an impedance transformer in shunt with the last said output.

4,283,696

**METHOD AND CIRCUIT ARRANGEMENT FOR THE OPERATION OF RECURSIVE FILTER CIRCUITS OR ANALOG STORAGE CIRCUITS CONSTRUCTED ACCORDING TO THE CHARGE COUPLED DEVICE (CCD) PRINCIPLE**

Karl Goser, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

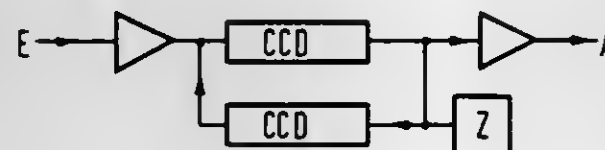
Filed Aug. 27, 1979, Ser. No. 69,790

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1978, 2841832

Int. Cl.<sup>3</sup> H03H 17/04; G11C 27/00

U.S. Cl. 333—165

3 Claims



1. A method of operating recursive filters utilizing charge coupled devices having plural storage cells comprising the steps of storing in first alternate storage cells of said charge coupled devices sampling values (Sn) of an analog signal, storing in second alternate storage cells of said charge coupled devices reference charge levels (SO), comparing each of said sampling values (Sn) with said reference values (SO) and increasing or decreasing said sampling values (Sn) in response to such comparison.

4,283,697

**HIGH FREQUENCY FILTER**

Yoshio Masuda, Atsushi Fukasawa, Jun Ashiwa, and Takuro Sato, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

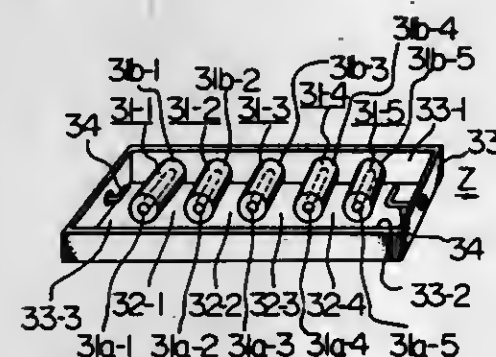
Filed Nov. 9, 1979, Ser. No. 92,670

Claims priority, application Japan, Nov. 20, 1978, 53-142306

Int. Cl.<sup>3</sup> H01P 1/20, 7/00

U.S. Cl. 333—202

7 Claims



1. A high frequency filter comprising a closed conductive housing, a pair of input/output means provided at both the extreme ends of said housing, a plurality of resonators mounted in said housing on a straight line between said input/output means, and one end of all of said resonators being fixed on the single conductive plane of said housing and the other end of said resonators being free standing, wherein each resonator

comprises a center conductor and a dielectric body surrounding said center conductor, and wherein the outer surface of the dielectric body is substantially disposed in the air so that a displacement current on the surface of the dielectric body can flow, the separation between each of said resonators is determined according to the desired coupling coefficient for the filter, and the coupling between each resonator is effected by the displacement current relating to surface TM mode and the conductive current relating to TEM mode.

4,283,698

**MAGNET DEVICE FOR ANIMALS, IN PARTICULAR CATTLE**

Yoshiho Fujisawa, 18-6, 3-chome Kichijoji Minami-cho, Musashino, Tokyo, Japan

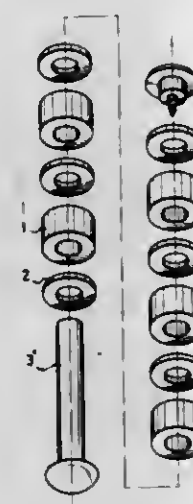
Filed Sep. 17, 1979, Ser. No. 76,325

Claims priority, application Japan, Aug. 8, 1979, 54-109646[U]

Int. Cl.<sup>3</sup> H01F 7/02

U.S. Cl. 335—306

6 Claims



1. A magnetic device adapted to be ingested by an animal, the device comprising:

- a plurality of cylindrical magnets;
- a plurality of cylindrical magnetic spacers disposed between said magnets to form a longitudinal rod having a size which suffices to lodge the device in the stomach of the animal and not pass to the intestines;
- said spacers and said magnets having essentially the same diameter and being arranged coaxially and adjacent to each other, said magnets being arranged such that the magnetic poles of the magnets confronting each other through the spacers are of the same polarity; and
- two end pieces, one end piece being disposed at each end of the rod, said end pieces being generally semi-circularly shaped and having a diameter essentially the same as the diameter of said cylindrical magnets and spacers.

4,283,699

**HOLDER FOR AN ELECTROMAGNETIC COIL**

Roland Ehrigott, Munich, and Gerhard Meindl, Ailing, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin &amp; Munich, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,871

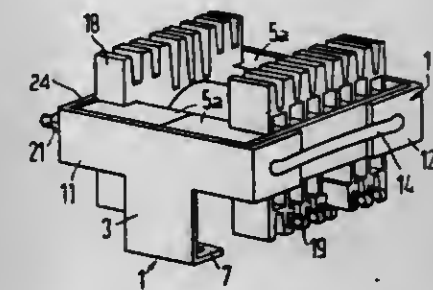
Int. Cl.<sup>3</sup> H01F 15/02, 27/26

U.S. Cl. 336—67

10 Claims

1. In an electromagnetic coil assembly consisting of opposed abutting E core halves each having an end face and two outer legs and a centrally disposed inner leg, and a hollow coil bobbin which receives said central legs and is disposed between said halves, a holder for said assembly comprising: two brackets disposed adjacent to said outer legs of each core half, each said bracket having a pair of spaced bores; at least one retainer received in said bores in said brackets, said retainer terminating in two threaded ends;

a means in said E core half legs for receiving and aligning said retainer, whereby said retainer extends through said brackets and said means in said core half legs to hold said halves between said brackets;



a pair of nuts received on said threaded ends of said retainer for applying uniform retaining pressure to said halves in cooperation with said brackets; and at least one vertical leg respectively depending downwardly from each bracket, each said vertical leg carrying means thereon for attaching said vertical leg to a circuit.

4,283,700

**DOUBLE TUBULAR TIME-LAG FUSE HAVING IMPROVED BREAKING CAPACITY**

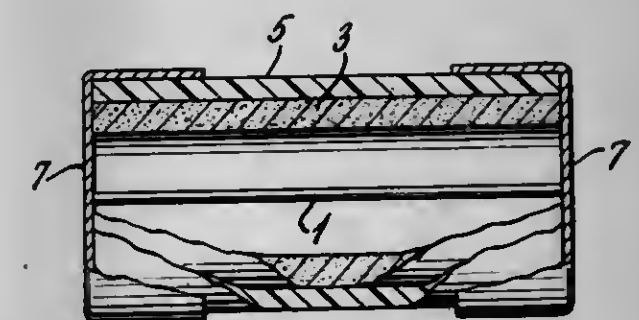
Fumitake Akiyama, Yokohama, Japan, assignor to San-O Industrial Co., Ltd., Tokyo, Japan

Filed Jan. 15, 1979, Ser. No. 3,261

Int. Cl.<sup>3</sup> H01H 85/38

U.S. Cl. 337—166

2 Claims



1. A time lag fuse having improved current-interrupting characteristics which comprises an inner tubular member, an outer tubular member encasing said inner tubular member and coterminous therewith, a fusible element disposed between the ends of said inner tubular member and means for enclosing the ends of said tubular members while establishing electrical contact with said fusible element, said inner tubular member being made of a material selected from the group consisting of fosterite, steatite, talc, or mixtures thereof having high thermal conductivity and low thermal impact resistance so as to be fragmented by the passage of an overload electrical current through said fusible element, and said outer tubular member being made of a material selected from the group consisting of cordierite ceramic, lithium ceramic, or mixtures thereof having low thermal conductivity and high thermal impact resistance to resist fragmentation during the passage of said overload electrical current.

4,283,701

**OVERSHOOT COMPENSATED THERMOSTAT**

William D. Ryckman, Jr., Asheville, N.C., assignor to General Electric Company, New York, N.Y.

Filed Apr. 20, 1979, Ser. No. 31,979

Int. Cl.<sup>3</sup> H01H 37/52

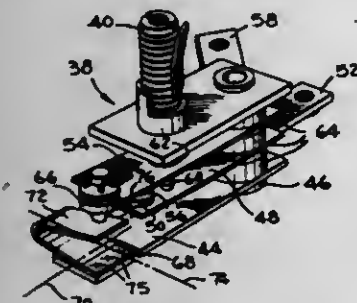
U.S. Cl. 337—341

9 Claims

1. In a thermostat assembly having contacts for making and breaking an electrical circuit to control heat to a medium and



using a heat deformable blade composed of first and second oppositely deformable portions supported at one point and operably connected to one of said contacts spaced from the support, the improvement comprising,  
an opening in said deformable blade and having said deformable portions primarily disposed on opposite sides of said

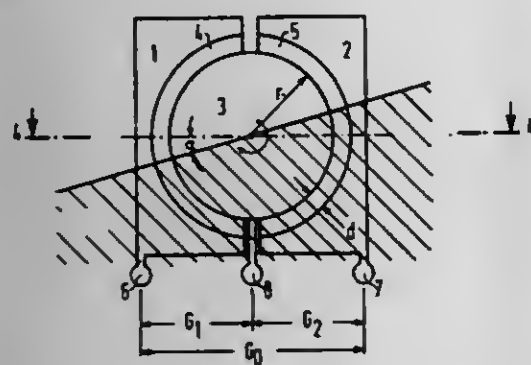


opening and mounted with their main axes of deformation substantially at right angles to each other, said opening disposed between the support and the operative connection, whereby conduction of heat to the operative connection is delayed by said opening.

**4,283,702**  
**CONTACTLESS CONDUCTANCE POTENTIOMETER**  
Juergo Meyer, Taunusstein, German Democratic Rep., and Norbert Schaaf, Wiesbaden, Fed. Rep. of Germany, assignors to Helmann GmbH, Wiesbaden, Fed. Rep. of Germany  
Filed May 10, 1979, Ser. No. 37,825  
Claims priority, application Fed. Rep. of Germany, May 23, 1978, 2822502

Int. Cl.<sup>3</sup> H01L 31/08  
U.S. Cl. 338—15

10 Claims



1. A contactless conductance potentiometer wherein the total conductance between two electrical terminals can be selectively divided into parts, which parts always equal the said total conductance comprising a light transparent substrate, a circular light transparent tapping electrode formed on said substrate, an external terminal connected to said tapping electrode, a pair of semicircular shaped photoconductor layers formed on substrate about and overlying and contacting said circular tapping electrode and electrically separated from each other, a pair of exterior electrodes formed on said substrate and overlying and respectively contacting said pair of semicircular photoconductor layers and said pair of exterior electrodes electrically separated from each other, such that when said pair of photoconductor layers are exposed to light through said transparent substrate and tapping electrode on approximately half of the total circular area of said semicircular photoconductor layers, the conductance of said two parts being equal to the total conductance between said two terminals, the tapping point being determined by the angular position of light falling on half of said pair of photoconductor layers.

**4,283,703**  
**VIBRATION-RESISTANT PROBE-LIKE ELECTRICAL HEATERS**  
Laurence G. Horwitt, New Haven, Conn., assignor to Sun Chemical Corporation, New York, N.Y.  
Filed Aug. 31, 1979, Ser. No. 71,753  
Int. Cl.<sup>3</sup> H01L 7/00; H05B 3/08; G01N 27/26  
U.S. Cl. 338—34

3 Claims

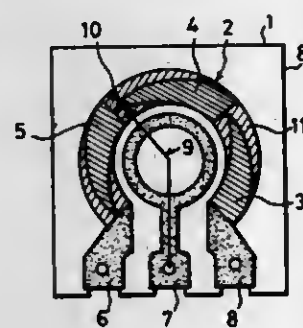


1. A probe-like vibration-resistant electrical heater assembly for use in an oxygen sensor of an exhaust monitoring system for internal combustion engines, comprising in combination:  
(a) an elongate metal tube adapted to constitute a support and to carry an electrical current, one end portion of said tube being of enlarged diameter,  
(b) an elongate metal conductor member extending through and spaced from said support tube, said conductor member projecting from said one enlarged-diameter end portion of the tube and forming therewith an annular space at said end portion,  
(c) a tubular ceramic coil form surrounding and carried on the projecting end of the metal conductor member,  
(d) said coil form having a hub disposed and closely fitting into the said annular space at the enlarged-diameter end portion of the tube,  
(e) said coil form having a helical groove in its exterior surface, and  
(f) a helical heating coil of wire disposed in the helical groove of the coil form and having its ends secured to an exterior surface of the metal tube and to the metal conductor member so as to enable the coil to be energized,  
(g) said hub, conductor member and enlarged-diameter end portion of said tube constituting a rigid, unitary direct-engaging assemblage, and said hub having a loose-fit in and being cemented in said enlarged-diameter portion of the tube.

**4,283,704**  
**VARIABLE RESISTOR**  
Takeshi Ohtani, Susumu Nishimura, Kozo Magami, and Katsuhisa Osada, all of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan  
Filed May 14, 1979, Ser. No. 38,947  
Claims priority, application Japan, May 18, 1978, 53/66918[U]

Int. Cl.<sup>3</sup> H01C 10/22  
U.S. Cl. 338—138

2 Claims

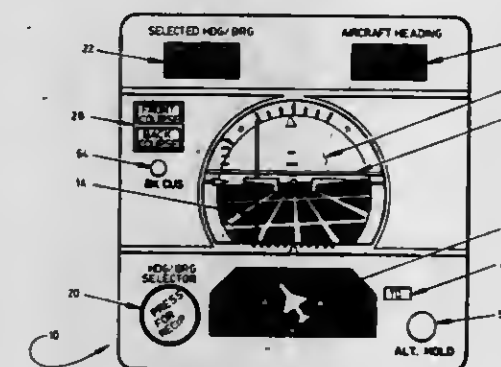


1. A variable resistor having an insulating substrate; a resistive member carried on said insulating substrate and having a width varying in the longitudinal direction thereof; a first terminal section formed on said insulating substrate and connected to an output terminal; a second terminal section connected to one end portion of said resistive member; a third

terminal section connected to the other end portion of said resistive member; a slide member connected to said first terminal section and having a plurality of contact elements sliding on said resistive member; and a high resistance film formed on said insulating substrate, said high resistance film underlying said resistive member and having a surface resistance of about  $1 \times 10^7$  to  $1 \times 10^9$  ohms per square centimeter so as to come into contact with a part of said contact elements at the portion of a narrow width of said resistance member and neutralize the adverse effects of any static electricity generated by the movement of said contact elements.

**4,283,705**  
**SYSTEM FOR PROVIDING AN INTEGRATED DISPLAY OF INSTANTANEOUS INFORMATION RELATIVE TO AIRCRAFT ATTITUDE, HEADING, ALTITUDE, AND HORIZONTAL SITUATION**  
Robert James, Lancaster, Calif., and Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Robert James  
Filed May 30, 1979, Ser. No. 43,942  
Int. Cl.<sup>3</sup> G08G 5/00  
U.S. Cl. 340—27 NA

2 Claims



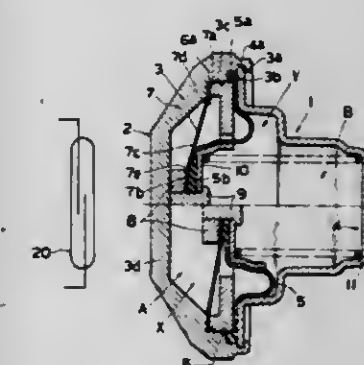
1. In a display unit adapted to be mounted in a cockpit of a piloted aircraft for pictorially presenting combined inflight course, altitude, and horizontal situation information relative to a selected course and altitude, the improvement comprising in combination:

A. a horizontal situation indicator for providing heading intelligence including a window having a transparent face disposed in a plane normally related to the longitudinal axis of the cockpit, a pointer mounted for visual observation through the face of said window pictorially depicting an instantaneous heading of the piloted aircraft relative to the selected course comprising a miniature aircraft supported for rotation about an axis normally related to the plane of said window, said window having a top, the center point of the top of the window being located above the axis of the pointer when the aircraft is in a normal level flight attitude, means for driving said miniature aircraft to an oncourse position when the position of the piloted aircraft is on the selected course and the heading thereof is coincident with the bearing of the course, said on-course position being indicated by the miniature aircraft when the nose thereof is pointed toward the center point of the top of said window, and means including a drive motor connected to said pointer and a heading error signal generator connected to the drive motor for angularly displacing the pointer from said on-course position to a heading error position wherein the nose is pointed at an angle relative to a line extended between the axis of the pointer and the center point equal to the instantaneous angle defined between the bearing of the selected course and the instantaneous heading for the piloted aircraft;  
B. a course deviation bar extended downwardly from the top of said window and supported for displacement along a path extended horizontally across the face of the window, and means including a beacon signal/converter and a drive motor for displacing said bar along said path in directions and through distances corresponding to instan-

taneous directions and distances of the piloted aircraft relative to the selected course; and  
C. an altitude deviation bar extended horizontally across the window, and means including an altitude error-signal generator and a motor connected to said altitude deviation bar for displacing the altitude deviation bar vertically across the face of said window as the altitude of the aircraft deviates from a selected altitude for the piloted aircraft.

**4,283,706**  
**PUNCTURE DETECTING DEVICE**  
Shigeo Kimura, Shiki; Tadashi Kamiya, Niiza, and Kiyotaka Hayashi, Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan  
Filed Apr. 19, 1979, Ser. No. 31,433  
Int. Cl.<sup>3</sup> B60C 23/04; H01H 35/34, 36/00  
U.S. Cl. 340—58

20 Claims



1. A puncture detecting device comprising:  
a body casing (3);  
an alarm circuit switch (20) disposed forwardly of said body casing (3), said alarm circuit switch (20) being actuable by magnetic force;  
a pressure chamber (A) formed in said body casing (3), said pressure chamber (A) communicating with the interior of a tire (15);  
an atmospheric chamber (B) formed in said body casing (3), said atmospheric chamber (B) communicating with the atmosphere;  
a flexible diaphragm (5) sealingly separating said pressure chamber (A) from said atmospheric chamber (B);  
a snap-acting spring plate member (7) disposed in said pressure chamber (A) and rigidly connected at a central portion (7b) of said snap-acting spring plate member (7) to a central portion (5b) of said flexible diaphragm (5);  
a magnet (8) supported on a front face of said snap-acting spring plate member (7);  
said magnet (8) being secured to an outer surface of said central portion (7b) of said snap-acting spring plate member (7), and being connected to said central portion (5b) of said flexible diaphragm (5) by means of said snap-acting spring plate member (7);  
resilient means (11) for resiliently urging said snap-acting spring plate member (7) from the rear side thereof;  
said snap-acting spring plate member (7) being normally held in a rearward direction against said resilient means (11) by the air pressure in said pressure chamber (A) to permit said magnet (8) to be spaced from said alarm circuit switch (20); and  
said snap-acting spring plate member (7) being buckled under the force from said resilient means (11) to rapidly project forwardly when said air pressure in said pressure chamber (A) decreases below a predetermined amount, whereby said magnet (8) is moved closer to said alarm circuit switch (20) to actuate said alarm circuit switch (20).



4,283,707

# AIRCRAFT LOW PRESSURE TIRE WARNING SYSTEM HAVING COMPARATOR CIRCUIT FOR EACH AXLE PAIR OF A FOUR WHEEL BOGIE CONFIGURATION

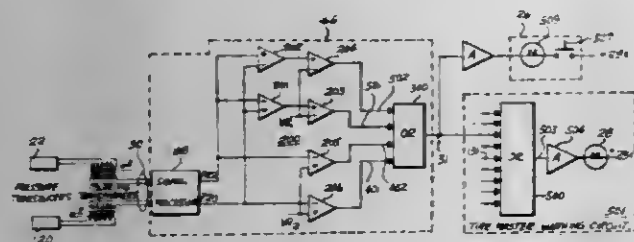
Royce F. Church, Lynnwood, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 12, 1979, Ser. No. 57,137

Int. Cl.<sup>3</sup> B60C 23/00; G08G 1/12

U.S. Cl. 340—58

3 Claims U.S. Cl. 340—147 R



1. In an aircraft low pressure tire warning system having a flight deck warning display and first and second pressure transducers associated with first and second tires respectively of an axle pair:

- means responsive to said first and second pressure transducers for providing first and second signals representative of said first and second tires;
- a tire pressure signal processor and comparator circuit responsive to said first and second signals for providing signals representative of pressure conditions of said tires less than a preselected percentage of a preset value and further providing signals representative of wheel pair pressure differentials greater than a given value; and
- said tire pressure signal processor and comparator circuit including a logic gate having an output terminal for providing a tire pressure warning signal in the event that at least one of said first and second tire pressures is less than a preselected percentage of a preset value or said first and second tire pressure differentials exceed a given value.

4,283,708

## PAPER CURRENCY ACCEPTOR

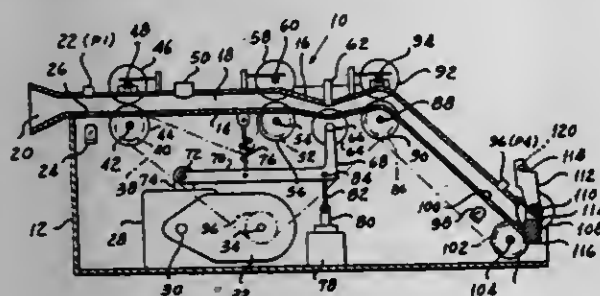
Larry F. Lee, Grand Rapids, Mich., assignor to Rowe International, Inc., Whippany, N.J.

Filed Jun. 13, 1979, Ser. No. 48,044

Int. Cl.<sup>3</sup> G06K 9/00; B07C 5/00

U.S. Cl. 340—146.3 Z

18 Claims



1. Apparatus for validating paper currency normally containing magnetic ink in certain areas and containing nonmagnetic ink in certain other areas, said apparatus including means for magnetically scanning one of said areas normally containing nonmagnetic ink, said scanning means generating an output on traversing a magnetic portion of said bill, and rejection means responsive to a predetermined number of repetitions of said output following the first such output for generating a signal indicating the unacceptability of said bill, said rejection means remaining inoperative prior to said predetermined number of repetitions of said output.

4,283,709

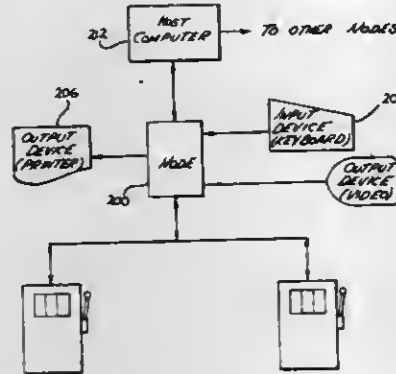
## CASH ACCOUNTING AND SURVEILLANCE SYSTEM FOR GAMES

Andres R. Lucero, Reno, Nev.; David E. Williams, San Francisco, Calif., and James L. Nelson, Reno, Nev., assignors to Summit Systems, Inc. (Interscience Systems), Sparks, Nev.

Filed Jan. 29, 1980, Ser. No. 116,669

Int. Cl.<sup>3</sup> H04G 9/00

24 Claims



1. A cash accounting and surveillance system for gaming machines comprising:

- first means within each machine for monitoring the input of items of monetary value and the payout of items of monetary value, and for maintaining digital signals indicative of the cumulative numbers thereof;
- second means within each machine for communication over data lines, said second means having a unique address on said communication lines and being responsive thereto to transmit said signals of said first means on said data lines;
- node means coupled to a plurality of said second means through said data communication lines, said node means including means for polling all of said second means coupled thereto and for receiving said digital signals therefrom, said node means having non-volatile storage means for maintaining data responsive to said digital signals in spite of system power loss and node means failures.

4,283,710

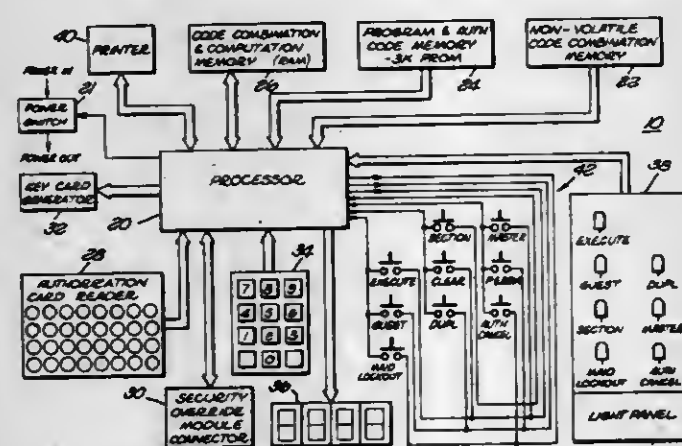
## SECURITY SYSTEM

Leonard J. Genest, Santa Ana, and Vache B. Madenlian, Huntington Beach, both of Calif., assignors to J.S. Lock Company, Chicago, Ill. and Uniqey, S.A., Fribourg, Switzerland

Continuation-in-part of Ser. No. 954,387, Oct. 25, 1978, abandoned, which is a continuation-in-part of Ser. No. 739,927, Nov. 8, 1976, abandoned. This application Feb. 15, 1979, Ser. No. 12,528

Int. Cl.<sup>3</sup> H04Q 3/00; E05B 49/00  
U.S. Cl. 340—149 R

50 Claims



1. A security system comprising:  
a plurality of electronic locks each for performing, at any

one time, one from a set of lock functions, each lock comprising:

a security memory for storing a security code combination,

at least one alterable memory for storing a lock code combination,

first receiving means for receiving a security code combination and a function code combination representative of one from the set of lock functions, and for receiving a lock code combination,

second receiving means for receiving a lock code combination,

first comparing means for generating a first enable signal when the security code combination received by the first receiving means corresponds to the security code combination stored in the security memory,

enabling means responsive to the occurrence of the first enable signal for enabling the lock to perform a lock function corresponding to the selected function code combination received by the lock, and

second comparing means for comparing the lock code combination received by the second receiving means against the lock code combinations stored in the alterable memories and generating a second enable signal coupled to open the lock when correspondence occurs according to a first selected criterion, and generating a third enable signal coupled to alter the value of the lock code combinations stored in one of the alterable memories when correspondence occurs according to a second selected criterion;

at least one key card for being encoded with a lock code combination and further adapted for being received by the second receiving means for transferring the lock code combination from the key card to the lock;

first, self-powered, portable means for transferring lock code combinations, function code combinations and security code combinations to the lock through the first receiving means of a lock comprising:

first connector means for being selectively interconnected with the first receiving means of the locks,

first function code combination generation means for outputting a selected function code combination through the first connector means, and

first memory means for storing at least one security code combination and selectively storing at least one lock code combination, the security code combination and the lock code combination being transferred into and out from the first memory through the first connector means;

a second, self-powered, portable means for transferring lock code combinations, function code combinations and security code combinations to a lock through the first receiving means, the second portable means comprising:

second connector means for being selectively interconnected with the first receiving means of the electronic locks,

second function code combination generation means for outputting a selected function code combination through the second connector means;

second memory means for storing at least one security code combination, the security code combination being transferred out from the second memory through the second connector means, and

reading means for reading a lock code combination from one of the key cards and transferring the lock code combination so read through the second connector means to the lock; and

central means comprising:  
connector means for interconnecting the first portable means to the central means,

means for selectively transferring at least a security code combination to the first portable means through the first connector means of the first portable means, and

means for selectively encoding the key card with a lock code combination.

4,283,711

## CROSS-TRACK DISTRIBUTOR FOR VIDEO SIGNALS

Dieter Frank, Darmstadt-Eberstadt, and Kurt Heonig, Rosdorf, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

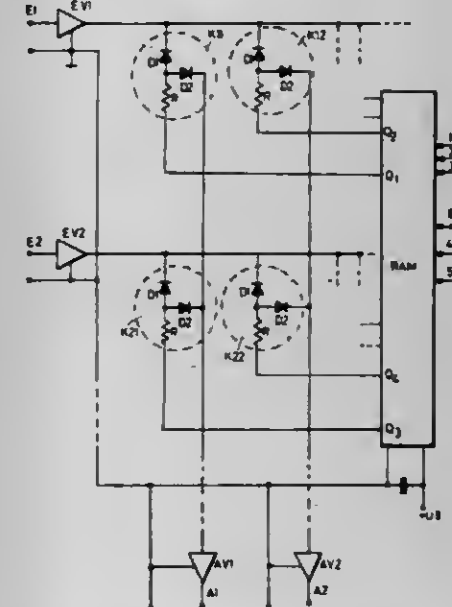
Filed May 6, 1980, Ser. No. 147,209

Claims priority, application Fed. Rep. of Germany, May 14, 1979, 2919327

Int. Cl.<sup>3</sup> H04Q 3/00

U.S. Cl. 340—166 R

4 Claims



1. A cross-track distributor for video signals for transferring signals from any one or more of several input lines to any one or more of several output lines through crosspoint switches, comprising the improvement in that:

- each crosspoint switch consists essentially of a pair of oppositely poled diodes connected in series between the input and output lines of the respective crosspoint and a resistor connected between the common connection of said diodes of said pair and a controllably switched source of current;
- said controllably switched source of current comprises controllable read-write storage means of the random access memory type having outputs connected to the respective resistors of the crosspoints and having at least addressing and read-write inputs connected to at least one remotely located control and monitoring means.

4,283,712

## PORTABLE EXERCISE TOTALIZER

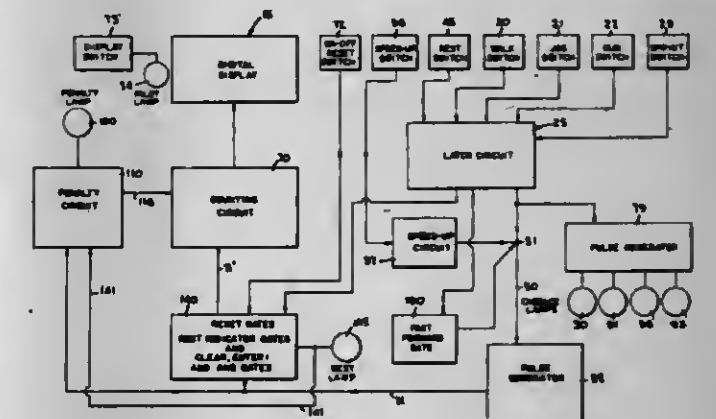
Roy W. Goody, 281-4 Rio Verde Pl., Milpitas, Calif. 95131

Filed Dec. 22, 1976, Ser. No. 753,582

Int. Cl.<sup>3</sup> G08B 5/36; A63B 71/06

U.S. Cl. 340—323 R

20 Claims



1. An exercise totalizer comprising:



- (a) a plurality of activating switches representing various exercise routines of different degrees of exercise exertion;
- (b) a pulse generator for producing pulses at different preselected frequencies corresponding to the different degrees of physical exertion represented by the respective activating switches;
- (c) a first circuit interconnecting said activating switches and said pulse generator for exciting said pulse generator in response to the actuation of one or more of said activating switches to generate pulses at a preselected frequency corresponding to the physical exertion represented by the actuated one or more of said activating switches;
- (d) a deactivating switch connected to said first circuit for interrupting the generation of pulses by said pulse generator; and
- (e) a second circuit including a visual display connected to said pulse generator for receiving the pulses generated thereby between the actuation of one or more of said activating switches and the actuation of said deactivating switch for displaying the accumulated total representing the exercise exertion between the exercise period of actuating one or more activating switches and the actuation of the deactivating switch.

4,283,713

## WAVEFORM ACQUISITION CIRCUIT

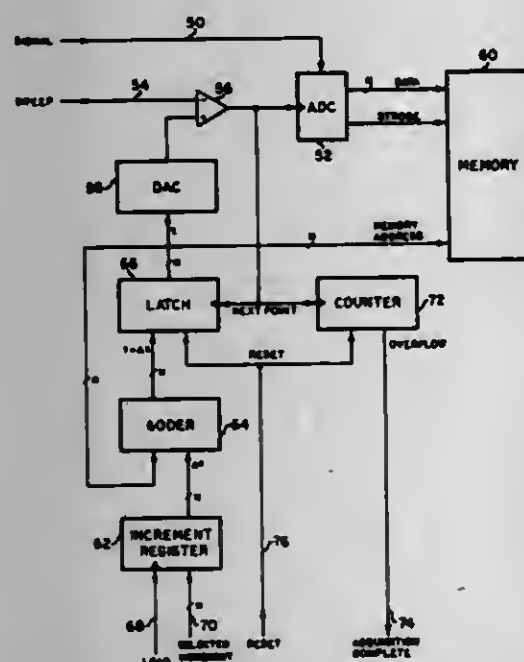
Harald Philipp, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 15, 1979, Ser. No. 3,141

Int. Cl.<sup>3</sup> H03K 13/02

U.S. Cl. 340—347 SH

7 Claims



1. A waveform acquisition circuit having a variable acquisition rate, comprising:
- control circuit means including an increment register, an adder circuit, and a latch for providing a digitally selected and incremented digital control signal in accordance with a selectable incremental value, wherein said increment register stores said selectable incremental value, said adder circuit iteratively adds said incremental value to said digital control signal, and said latch holds said digital control signal until updated in response to convert pulses received at a clock input of said latch;
- means for converting said digital control signal to discrete voltage levels;
- means for comparing said discrete voltage levels with a sweep sawtooth voltage and generating said convert pulses thereby, said sweep sawtooth corresponding to the time-base axis of said analog waveform;
- an analog-to-digital converter for converting instantaneous

values of said analog waveform to digital waveform data in response to said convert pulses; and

an addressable waveform memory for storing said digital waveform data, wherein said digital control signal provides addresses for said memory.

4,283,714

## MAGNETIC KEYBOARD SYSTEM

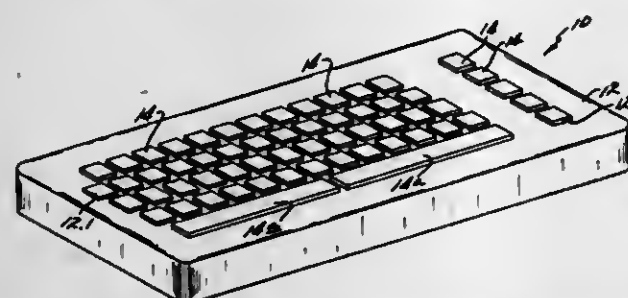
George Trenkler, East Providence, R.I.; Richard G. Delagi, Sbaron, and Francois A. Padovani, Westwood, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 8, 1979, Ser. No. 64,954

Int. Cl.<sup>3</sup> G06F 3/02

U.S. Cl. 340—365 L

6 Claims



1. A control apparatus comprising first magnetic means, means for applying an input signal to the first magnetic means, second magnetic means mounted adjacent to the first magnetic means, and modifying means movable between a first position in which the second magnetic means provides an output signal of a first polarity in response to the input of a signal to the first magnetic means and a second position in which the second magnetic means provides an output signal of an opposite polarity in response to the input of a signal to the first magnetic means, characterized in that, the second magnetic means is arranged relative to the first magnetic means so that said output signal of said first polarity is induced with relatively small amplitude in and provided as an output from the second magnetic means in response to the input of a signal to the first magnetic means when the modifying means is in said first position, said modifying means being also adapted to have a signal induced therein in response to the input of a signal in the first magnetic means when the modifying means is in said second position so that the signal in the modifying means tends to induce a corresponding signal in the second magnetic means which is of larger amplitude and of opposite polarity relative to said output signal of said first polarity, whereby the polarity of the output provided by the second magnetic means is reversed to provide said opposite polarity output signal from the second magnetic means when the modifying means is in said second position.

4,283,715

## CONTROL OF DISPLAY DEVICES WITH ELECTROMAGNETIC DRUMS

Jöel Choismet, Levallois-Perret, France, assignor to Jaeger, Levallois-Perret, France

Filed Oct. 12, 1979, Ser. No. 84,442

Claims priority, application France, Oct. 17, 1978, 78 29559

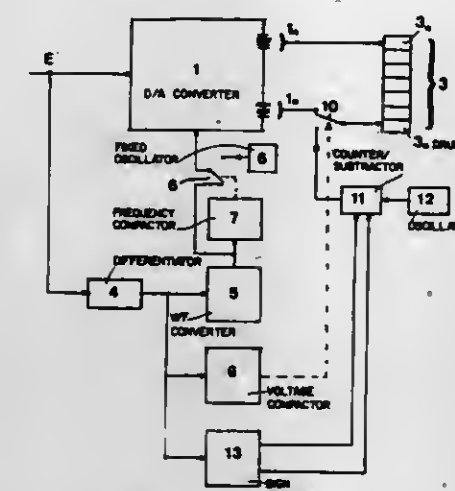
Int. Cl.<sup>3</sup> G08B 5/30

U.S. Cl. 340—378.1

6 Claims

1. A control device for digital display indicators having electromagnet drums of the type containing an analogue/digital convertor capable of receiving in analogue form an information to be displayed, the convertor having an output connected to the digital display indicator drums and a second input for controlling the rate of conversion operations at a selected frequency, the improvement comprising:
- a differentiating circuit capable of producing as its output the time derivative of the quantity inputted to it; and
- circuit means, whose input is connected to the output of said

differentiating circuit, for producing as its output a selected frequency depending on quantity inputted to it, whereby when the quantity inputted to said differentiating circuit is the same as the information inputted to said



analogue/digital convertor and the output of said circuit means is connected to the second input of said analogue/digital convertor, the rate of conversion of the analogue/digital convertor is controlled by the time rate of change of the information to be displayed.

4,283,716

## MULTI-COLOR TRAFFIC SIGNAL

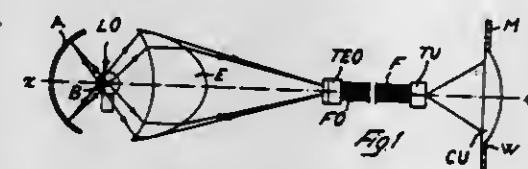
Giancarlo Pasquali, Bologna, Italy, assignor to CIR-S.p.A. Divisione Sasib, Bologna, Italy

Filed Mar. 24, 1980, Ser. No. 133,104

Int. Cl.<sup>3</sup> G08B 5/00

U.S. Cl. 340—380

5 Claims



1. Multi-color traffic signal in particular for railway line signalling installations, of the type presenting for each color a light source comprising a lamp, a collecting optical unit and a fixed chromatic filter, the light sources being connected by means of a optical fiber guide with an irradiating window surface constituting the output optics of the signal, characterized by the fact that said collecting optical unit comprises, arranged along a same optical axis and at opposite sides of the respective lamp, a curved focalized mirror and a spherical-elliptical lens, arranged so as to focalize the light flux emanating directly from said lamp and the flux reflected from said mirror on the corresponding input of said optical fiber guide.

4,283,717

## MONITORING SYSTEM FOR A DIRECT-WIRE ALARM SYSTEM

Carl W. Caldwell, Columbia, and Rick A. Britton, Springfield, both of Mo., assignors to Digital Monitoring Products, Springfield, Mo.

Filed Oct. 1, 1979, Ser. No. 80,291

Int. Cl.<sup>3</sup> G08B 29/00; G08C 9/00

U.S. Cl. 340—506

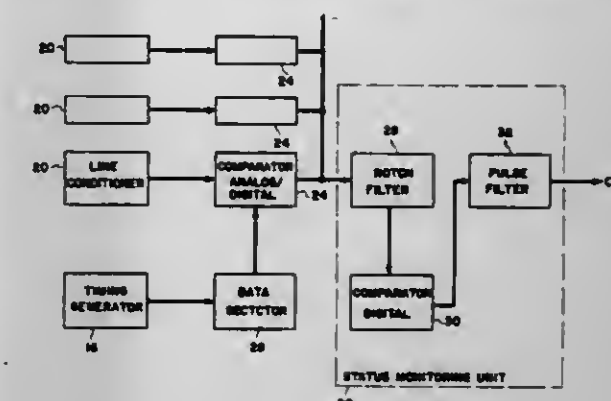
14 Claims

1. A direct-wire alarm monitoring system for high-speed sequential monitoring of a plurality of DC current loops comprising:

- (a) an analog-to-digital converter means for each loop to convert the current level to a digital value;
- (b) a digital notch filter operably connected to the analog-to-

digital converter to eliminate periodic noise of a pre-determined period from each loop sequentially;

(c) a digital comparator operably connected to the output of the notch filter to detect changes in current level;



- (d) a digital pulse filter operably connected to the output of the digital comparator to eliminate pulse noise if a change in current level is detected by the digital comparator; and
- (e) means for sequentially sampling the output of the analog-to-digital converter means for each loop and applying that sample sequentially to the digital notch filter.

4,283,718

## DOOR ALARM DEVICE

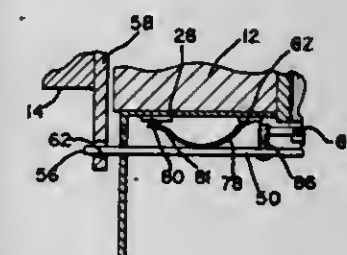
Edward A. Butler, North Kingstown, and Francis R. Savole, Pawtucket, both of R.I., assignors to Synco National Ltd., Providence, R.I.

Filed Jul. 2, 1979, Ser. No. 54,165

Int. Cl.<sup>3</sup> G08B 13/06

U.S. Cl. 340—545

5 Claims



1. A device for signalling door movement as by attempted entry comprising, a door frame, a door mounted in said frame for movement between respective open and closed positions relative to said frame, a housing having an inner wall affixed to said door including an elongated bolt mounted thereon for transverse movement with respect thereto and to said door between a first non-activatable position wherein said door may be freely opened and a second activatable position, one end of said bolt adapted to contact said door frame in said activatable position so as to fixedly position such with respect to said door frame and so as to enable said door and said housing to move at least slightly relative to and towards said bolt, electrical signal means, a pair of electrical signal contacts on said housing and in opposition to said bolt, a leaf spring having one end connected to one of said contacts and the other end normally disposed in spaced relation with said other contact, said leaf spring contacting said bolt so as to spring bias said bolt away from the inner wall of said housing whereby moving said door towards its open position causes said spring other end and said other contact to engage and said signal to be activated.

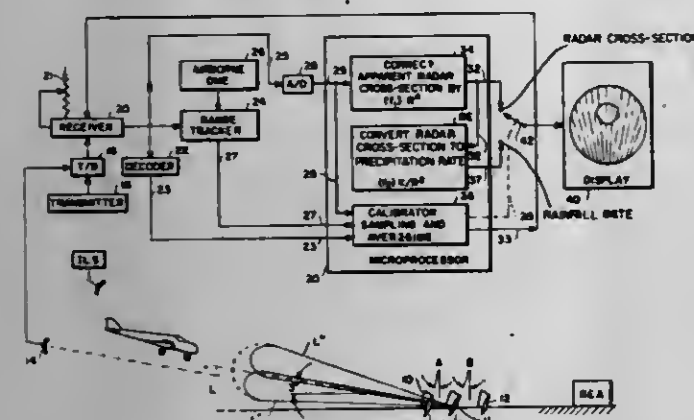






mitter and a receiver and means to adjust the radar sensitivity;

- (d) a decoder coupled to said receiver and operative to deliver signals responsive to decoded reflections from said coded reflector means;
- (e) range measuring means for determining the range from the aircraft to the encoded reflector means, and operative to deliver an enabling signal when the range reaches a predetermined value; and



- (f) calibrator means enabled by signals from said decoder and said range measuring means and operative to compare the intensity level of the output from the receiver representing reflections from the coded reflector means with a reference level, whereby to correct the sensitivity of the receiver to make the output level equal the reference level.

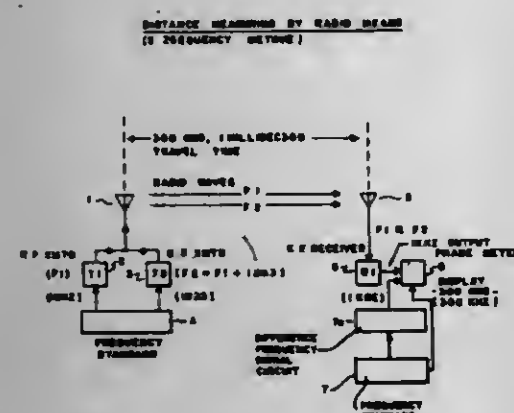
4,283,726

**DUAL FREQUENCY DISTANCE MEASURING SYSTEM**  
Lewis C. Spence, P.O. 10116, Riviera Beach, Fla. 33404, and Stephen Martin, Miami, Fla., assignors to Lewis C. Spence, Riviera Beach, Fla.

Filed Sep. 5, 1978, Ser. No. 939,810  
Int. Cl.<sup>3</sup> G01S 5/06

U.S. Cl. 343—112 D

44 Claims



1. A transmitting station in a radio frequency distance measuring system utilized to determine the distance of an unknown point from a known point, which comprises:

- (a) stable frequency source means for providing a first signal of a given frequency and a given phase;
- (b) means responsive to said first signal for generating a first continuous wave carrier signal of a first frequency;
- (c) means responsive to said first signal for generating a second continuous wave carrier signal of a second frequency, said second frequency displaced from said first frequency by a selected difference frequency; and
- (d) means for radiating said first and second continuous wave carrier signals for reception at said unknown point for providing a difference frequency signal for determining said distance.

4,283,727  
**SEPARABLE MICROWAVE COUPLING AND ANTENNA USING SAME**

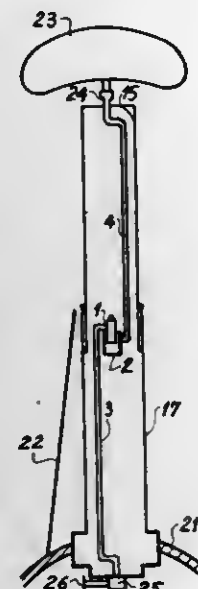
Jacques Martel, and Roger Famin, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 19, 1979, Ser. No. 4,985

Claims priority, application France, Jan. 27, 1978, 78 02337  
Int. Cl.<sup>3</sup> H01Q 1/34

U.S. Cl. 343—710

9 Claims



1. In combination, relatively movable first and second main waveguides respectively connected to a source of microwaves and to a load, and a separable coupling between said main waveguides establishing a continuous transmission path for said microwaves in a first relative position thereof and interrupting said transmission path in a second relative position thereof, said coupling comprising a male and a female ancillary guide portion each rigidly connected with a respective main waveguide, at least the ancillary guide portion connected to said first main waveguide being provided with a dummy load, said guide portions being coaxially disposed and being interfitted in said first relative position but being axially separated in said second relative position.

4,283,728

**FIVE-HORN CASSEGRAIN ANTENNA**

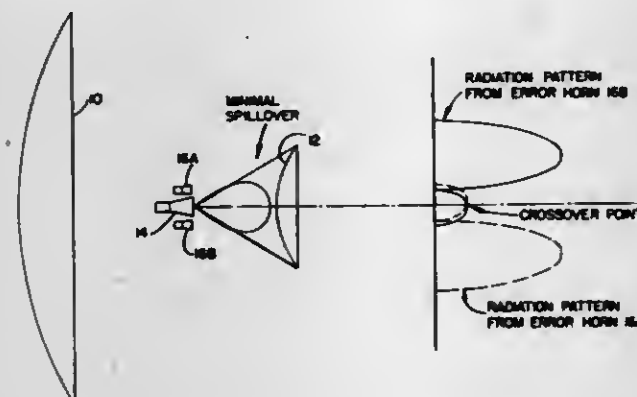
Homer E. Bartlett, Cocoa, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Mar. 10, 1978, Ser. No. 885,191

Int. Cl.<sup>2</sup> H01Q 19/18

U.S. Cl. 343—781 CA

7 Claims



1. An antenna for generating sum and difference patterns for use in tracking applications comprising:

a concave main dish having a boresight axis;

a subreflector having a tapered configuration positioned on said boresight axis;

a sum horn having a large radiating aperture for generating a sum radiation pattern with good directivity, said sum horn being positioned on said boresight axis between said

main dish and said subreflector such that said directive sum radiation pattern is intercepted by said subreflector and reflected therefrom to illuminate said main dish to thereby generate a radiation output wave;

- a plurality of error horns, said error horns being appropriately positioned around said sum horn such that the radiation pattern of each error horn and a second error horn with which it is paired crossover in the sidelobes of their respective patterns and such that said error horns receive radiation reflected from said subreflector with the highest radiation levels being found on the outer edges of the apertures of said error horns to thereby enhance their respective sidelobes; and
- means responsive to signals representative of the radiation patterns received at said sum and error horns for appropriately combining these signals to obtain azimuth and elevation error signals.

4,283,729

**MULTIPLE BEAM ANTENNA FEED**

Phillip N. Richardson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 26, 1979, Ser. No. 106,774

Int. Cl.<sup>3</sup> H01Q 3/26

U.S. Cl. 343—854

14 Claims



1. An array antenna comprising:

- (a) an RF energy feed network having a plurality of input mechanisms for receiving RF power for a plurality of independent beams, a plurality of hybrid junctions selectively connected to the plurality of input mechanisms and a plurality of output mechanisms connected selectively to the plurality of hybrids, said plurality of hybrids selectively interconnected and having coupling ratios for maintaining independent modes of propagation, and selectively dividing the power to provide RF energy at selected amplitudes to the output mechanisms,
- (b) a plurality of radiating elements divided into first and second halves connected to the plurality of hybrid output mechanisms for array excitation, and
- (c) said plurality of hybrids is divided into first, second and third portions, said first and second portions of hybrids operatively connected to the first and second halves of said radiating elements to form two independent, isolated, orthogonal antenna beams, one beam being an optimized low sidelobe sum beam ( $\Sigma$ ) and the other beam being the algebraic difference between an independently, optimized difference beam and sum beam ( $\Delta - \Sigma$ ), and said third portion of said hybrids operatively connected to the first and second portions of said hybrids to form an input power divider to the first and second portions of hybrids.

4,283,730

**DROPLET CONTROL ASPECTS—INK EVAPORATION REDUCTION; LOW VOLTAGE CONTACT ANGLE CONTROL DEVICE; DROPLET TRAJECTORY RELEASE MODES; USES FOR METALLIC INK DROPS IN CIRCUIT WIRING AND PRESS PRINTING**

Ronald E. Graf, Rte. 3, Box 520, Crozet, Va. 22932

Filed Dec. 6, 1979, Ser. No. 100,953

Int. Cl.<sup>3</sup> G01D 15/18

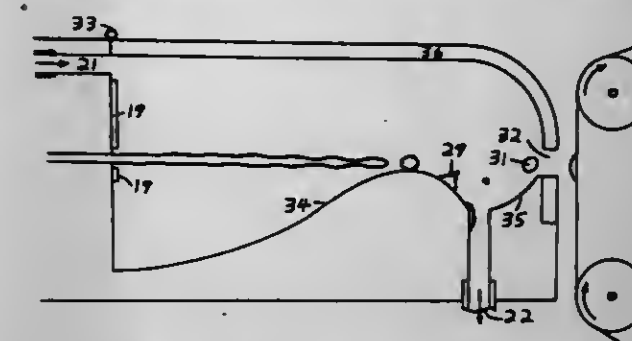
U.S. Cl. 346—75

7 Claims

1. A device wherein an information-containing liquid, such as ink, issues in liquid filament form from at least one orifice, and wherein part of the issuing information-containing liquid is

selected to proceed to an output means, while part of said issuing liquid is controllably collected and eventually made available for reuse, said device comprising

means to produce a region containing a gaseous medium, which said region becomes almost entirely filled with ink solvent laden gas after a device start-up period, said region



enveloping at least almost all that portion of said information containing liquid which is controllably collected after issuing from said at least one orifice, said enveloping occurring during the entire interval after said portion passes from said at least one orifice and before said portion is collected, thus substantially preventing net evaporation from the said portion while in said region.

4,283,731

**INK JET PRINTING APPARATUS**

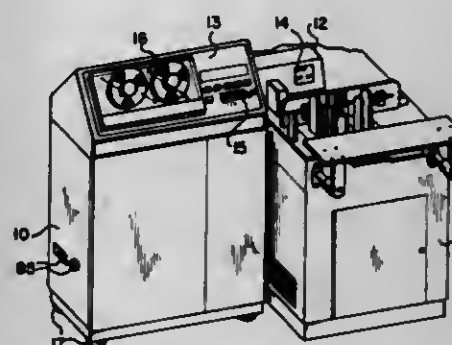
Dennis E. Bok; Patrick E. Bridge, both of Dayton; Robert W. Coulter, Xenia; George W. Denlinger, Springboro; Clifford S. Fernald, Jr., Xenia; Charlie H. Hill, Jr., Dayton; David A. Huliba, Kettering; James R. Meckstroth, and Robert J. Scranton, both of Centerville, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Apr. 22, 1980, Ser. No. 142,787

Int. Cl.<sup>3</sup> G01D 15/18, 9/00

U.S. Cl. 346—75

22 Claims



1. Ink jet printing apparatus for printing documents being transported along an independently operated conveyor comprising:

- a control console;
- a printing arm movably mounted on said control console for movement between a storage position which is clear of said conveyor and a printing position above said conveyor;
- tachometer means supported by said printing arm for sensing the speed of movement of said documents and generating a corresponding tachometer signal;
- printing control means mounted within said control console for receiving said tachometer signals and generating printing control signals in synchronism therewith;
- a print head carriage movably supported by said printing arm;
- print head positioning means for adjusting the vertical position of said carriage relative to said printing arm; and
- an ink jet printing head mounted on said carriage; said ink jet printing head comprising means for generating a plurality of printing jets arranged in at least one line extending in a sideward direction generally transverse to the direction of



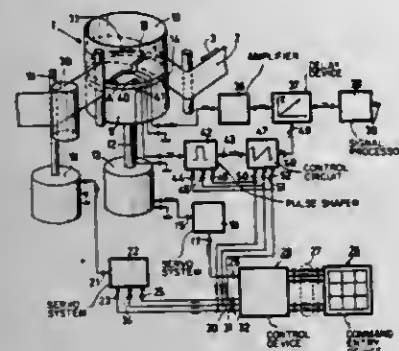








corresponding to the azimuth angles of the pair of heads used for recording said signals, means for moving said tape past said rotary transducer, means for selectively controlling said tape moving means so as to stop movement of said tape or to move said tape at a speed which deviates from said predetermined speed depending on a mode of operation selected by the user, means coupled to said magnetic head for delaying, by a variable amount, signals read from said tape, and second means for



controlling said delay means in dependence on the selected mode, on the line offset between adjacent tracks, and on the magnetic head instantaneously reading a given track so that the signals read from said tape which correspond to consecutive fields of said television signal are delayed by amounts such that the time intervals between every two consecutive vertical synchronizing pulses of each field are substantially equal and there is no phase jump between the horizontal synchronizing pulse trains of consecutive fields.

4,283,745

## EDITING APPARATUS

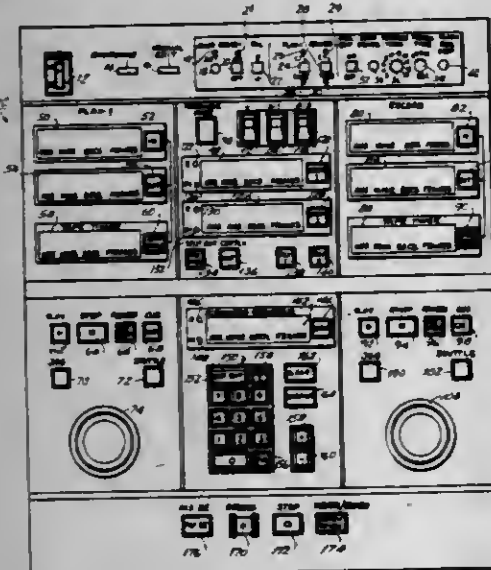
Douglas D. Kuper, Campbell, and William A. Menezes, Mountain View, both of Calif., assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 11, 1980, Ser. No. 139,443

Int. Cl.<sup>3</sup> G11B 27/02

U.S. Cl. 360—13

9 Claims



1. Editing apparatus for controlling the transfer of signals from a playback medium to a recording medium, said apparatus comprising a console including a plurality of display registers, including a play IN register for displaying play IN position data representing an edit-in point along said playback medium, a record IN register for displaying record IN position data representing an edit-in point along said recording medium, a play OUT register for displaying play OUT position data representing an edit-out point along said playback medium and a record OUT register for displaying record OUT position data representing an edit-out point along said recording medium, a plurality of register selector switches, each associated with and adjacent a respective one of said display registers and operable to select the display register associated therewith, and enable means manually operable to enable position data to be displayed in a selected one of said play IN, record IN, play OUT and record OUT registers as a function

of the position data displayed in the remainder of said registers; and central processing means responsive to the operation of said enable means and a selected one of said register selector switches to obtain data representing the duration between the edit-in and edit-out points as represented by the position data displayed in two of said registers, neither of which is associated with said selected register switch, to combine the duration data with the position data displayed in a third register, which third register is not associated with said selected register switch, to produce resultant position data, and to cause said resultant position data to be displayed in the register associated with said register selector switch.

4,283,746

## ACTUATING DEVICE FOR THE ADVANCEMENT OF THE TAPE IN A CASSETTE-TYPE TAPE RECORDING/PLAYBACK APPARATUS

Vittorio Pera, Rome, Italy, assignor to Autovox S.p.A., Rome, Italy

Filed Jan. 18, 1980, Ser. No. 113,424

Claims priority, application Italy, Jan. 18, 1979, 47691 A/79

Int. Cl.<sup>3</sup> G11B 15/26, 15/44, 19/26

U.S. Cl. 360—96.4

7 Claims



1. An actuating device for the advancement of the tape in a cassette-type recording/playback apparatus having a frame, two counterrotating flywheels driven through a belt transmission actuated by a motor, two capstans each of which is integral and coaxial with one of the flywheels, a pressure roller for each capstan, two hub carrying disks made to rotate around a pin attached to the frame, and a center line axis being defined, on said frame plane, which is equidistant from the axis of rotation of the two flywheels and equidistant from the axis of rotation of the hub carrying disks, comprising: a slider bound to the frame so as to translate parallelly with respect to the center line axis in order to assume an operative position and an idle position and biased by return springs towards the idle position; unidirectional motion transmitting means which transmit the motion of one fly-wheel to the slider when the latter is in its idle position, and carry out the translation thereof towards its operating position, against the action of said return springs; an oscillating guide apt to perform an angular displacement between two set positions around a pivot which is integral with the frame, placed on the center line axis, said guide having two abutments thereon, each engageable with one of the pressure roller supports, depending on its set position, said guide being also provided with a guiding profile; a rocking arm which oscillates between two positions around a pivot fixed to said slider and having an elongation which, during travel of the slider towards its operative position, is apt to be guided by said guiding profile on the guide and that during translation of the slider towards its idle position is apt to push said guide towards its other set position and to assume the other of its two positions to engage with said guiding profile on the guide; a bistable element which rotates around a pivot which is integral with the frame, controlled by said rocking arm during travel of the slider towards its operative position, in order to move from one of its stable positions to the other, said bistable element being apt to control rotation of one or the other of said hub carrying disks depending on either one or the other of its two positions; two pressure roller supports connected with said slider to rotate, each of said rollers rotatably supporting a pressure

roller and biased resiliently towards their corresponding capstans, said supports being provided with an end shaped to comprise a support abutment for one of the stopping abutments on the guide so as to prevent, depending on the set position taken up by the guide, engagement of the pressure roller held by its corresponding support, with its related capstan so that with the guide in a first of its two set positions, translation of the slider towards the operative position carries a pressure roller into engagement with its corresponding capstan and maintains the other pressure roller disengaged from the capstan, so as to transfer and wind the tape in one of the two travelling directions, while returning of the slider to its idle position causes the guide to assume its other position, so that a further translation of the slider towards the operative position determines travel and winding of the magnetic tape in the opposite travel direction.

4,283,747

## METHODS OF MAKING A GAS TUBE SURGE PROTECTOR

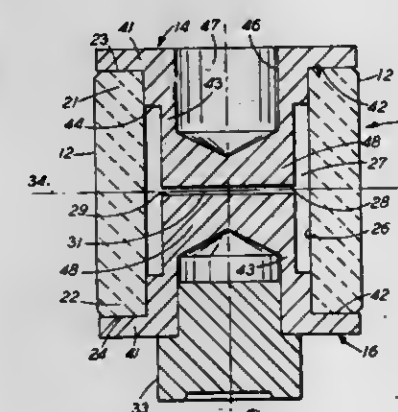
Carl C. Perkins, Jr., Prairie Village, Kans., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,106

Int. Cl.<sup>3</sup> H02H 3/22

U.S. Cl. 361—117

6 Claims



1. A method of making a surge protector having an elongate, electrically insulating housing including at least two electrodes one of which is mounted into each of two opposite ends of such housing, such electrodes having opposing surfaces transverse to a longitudinal axis of the housing which comprises:

assembling the at least two electrodes and the housing to form a gastight envelope holding the electrodes in spaced relationship opposite one another within the envelope; testing electrical characteristics between such electrodes to determine a deviation of the width of a gap between such electrodes from a predetermined width; and straining at least one tubular portion of said at least two electrodes of said envelope in the direction of the longitudinal axis of the housing to move at least one of the electrodes toward a face of one other of the at least two electrodes until the gap of a predetermined width has been established therebetween.

4,283,748

## CIRCUIT ARRANGEMENT FOR OPERATING HEAVY-DUTY EQUIPMENT USING ELECTRICAL RELAYING DEVICE

Miyuki Gotoh, Tokorozawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 14, 1979, Ser. No. 20,469

Claims priority, application Japan, Apr. 12, 1978, 53-42080

Int. Cl.<sup>3</sup> H01H 47/10

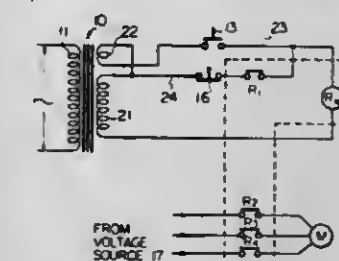
U.S. Cl. 361—154

6 Claims

1. A circuit arrangement for operating heavy-duty electrical equipment, comprising:

an electrical relay device having a relay coil, first relay

contacts connected in a circuit for supplying a large amount of current from a first voltage source to said heavy-duty electrical equipment in response to energization of said relay coil and second relay contacts having the same current-carrying capacity as said first relay contacts; a normally open switch connected in a circuit for supplying a small amount of current to said relay coil from a second voltage source to energize said coil in response to a closure of the switch, thereby closing said first and second relay contacts;



a holding circuit for supplying a small amount of current through said second relay contacts to said relay coil from said second voltage source for holding said relay coil in the energized condition in response to the closure of said second relay contacts and establishing a low impedance closed circuit through the closed, normally open switch and the closed second relay contacts; and means for supplying a voltage to said closed low impedance circuit and causing a current to pass through said closed second relay contacts with sufficient magnitude to produce an arc that burns out objects which have collected between said second relay contacts.

4,283,749

## APPARATUS FOR THE CONTROLLED DISCHARGE OF A CHARGED OBJECT

Rudolf G. Buser, Wall, and Hans E. Inslerman, Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 25, 1979, Ser. No. 78,628

Int. Cl.<sup>3</sup> H05F 3/02

U.S. Cl. 361—218

18 Claims



1. Apparatus for the controlled discharge of a charged object which comprises:

a first metallic member for contacting the object to be discharged;

a second metallic member for contacting the ground;

a plurality of conductive elements in loose contact one with the other for establishing a resistive discharge path from said first to said second metallic member; and

a corresponding plurality of discharge members connected to said conductive elements to provide additional discharge paths to the atmosphere, prior to contact of said apparatus with the ground.

4,283,750

## CAPACITOR HAVING A HOUSING PROVIDED WITH A CREASE WHICH IS EXPANDABLE IN REACTION TO OVERPRESSURE

Francois Deschanel, and Roger Gard, both of Tours, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,736

Claims priority, application France, Nov. 20, 1978, 78 32623

Int. Cl.<sup>3</sup> H01G 1/11

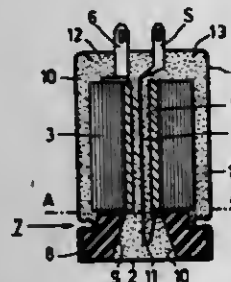
U.S. Cl. 361—274

5 Claims

1. A capacitor having a housing which is closed on one end



by means of a bottom and which accommodates a capacitor wrap, said wrap being provided with electrical connections which are fed out of the housing through the end opposite the bottom, said housing having a circumferential crease which is expandable in the axial direction of the wrap and which crease, when expanded, on its upper side supports the wrap and on its



lower side a plug-like member for anchoring one end of one of said electrical connections of the wrap, characterized in that the plug-like member is located between the expandable crease and the bottom of the housing and includes a hole which widens towards the bottom of said housing, which hole is filled with a synthetic resin in which one end of one of said electrical connections is anchored by means of a loop in said end.

4,283,751

## VARIABLE CAPACITOR

Tetsuo Tatsumi, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

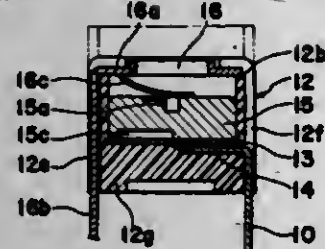
Filed Mar. 26, 1979, Ser. No. 24,022

Claims priority, application Japan, Mar. 27, 1978, 53-39548[U]

Int. Cl.<sup>3</sup> H01G 5/06

U.S. Cl. 361-293

11 Claims



1. (Thrice Amended) A variable capacitor, comprising:  
a) a dielectric plate having first and second flat major surfaces;

b) a film of electrically conductive material [in contact with] formed on said second surface of said dielectric plate and defining a stator member;

c) a first elongated terminal plate having one end electrically connected to said film;

d) a substantially cylindrical casing made of electrically nonconductive material and having a bottom wall and a substantially cylindrical side wall integral therewith and being open at the top, said first elongated terminal plate and said dielectric plate being directly embedded in said casing in such a manner that:

(1) said first elongated terminal plate is maintained in contact with said film on said dielectric plate;

(2) said dielectric plate is stationarily positioned inside said casing and non-rotatable with respect to said casing with said second flat major surface against said bottom wall;

(3) said first major flat surface of said dielectric plate faces said open top of said casing; and

(4) said elongated terminal plate extends outside of said casing through said cylindrical wall;

e) a disc shaped rotor member made of electrically conductive material and having first and second flat surfaces, said rotor member being rotatably accommodated in said casing with said first surface thereof being held in contact with said first flat major surface of said dielectric plate;

f) a cap member made of electrically conductive material,

said cap member being secured to said open top end of said cylindrical casing and enclosing said rotor member inside said casing; said cap member having an opening for affording access to the interior of said casing when said cap member is so secured; and said cap member being electrically connected to said rotor member;

g) spring means integral with said cap member and positioned between said cap member and said rotor member for urging said rotor member against said dielectric plate; and

h) a second elongated terminal plate integral with said cap member and having one end electrically connected to said cap member, and extending outside of said cylindrical casing.—

4,283,752

## TERNARY NIOBATE DIELECTRIC COMPOSITIONS

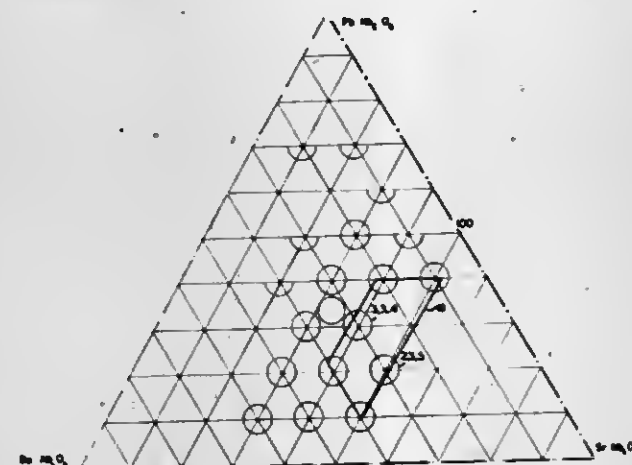
Margaret M. Layton, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 1, 1978, Ser. No. 901,984

Int. Cl.<sup>3</sup> H01G 4/12; H01B 3/12

U.S. Cl. 361-321

28 Claims



1. A dielectric material consisting essentially of a fired ternary niobate composition having an approximate formula:



where x, y and z represent the mole fractions of each of Pb, Ba and Sr in said composition, the sum of x, y and z being 1,

x is from 0.1 to 0.4

y is from 0.1 to 0.4 and

z is from 0.4 to 0.5.

4,283,753

## LOW FIRING MONOLITHIC CERAMIC CAPACITOR WITH HIGH DIELECTRIC CONSTANT

Ian Burn, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Sep. 28, 1979, Ser. No. 79,685

The portion of the term of this patent subsequent to Jan. 3, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> H01G 4/12; C04B 35/46

U.S. Cl. 361-321

12 Claims

1. A ceramic capacitor comprising: a dielectric ceramic body, at least two spaced metal electrodes in contact with said body having a dielectric constant at 25° C. of at least 5000, said body containing a major portion of barium titanate, the positive ions in said body consisting essentially of:

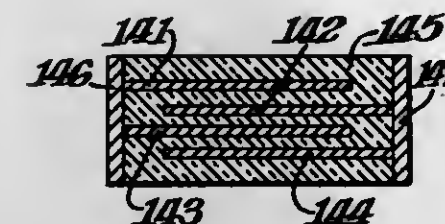
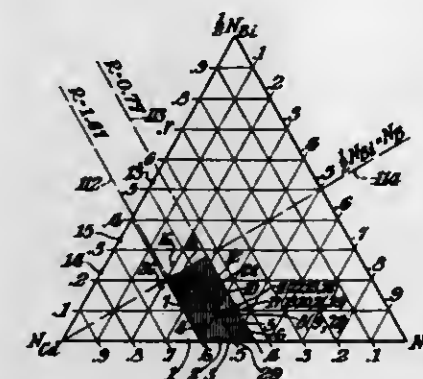
a number  $N_D$  of large divalent ions selected from Ba, Pb, Sr, Ca, and combinations thereof,

a number  $N_Q$  of small quadravalent ions selected from Ti, Zr, Sn, Mn, and combinations thereof,

a number  $N_X$  of donor ions capable of having a valence of greater than +4 as a small cation selected from Bi, Nb, Sb, Ta, W, Mo, and combinations thereof,

a number  $N_{CC}$  of charge compensating acceptor ions capable of having a valence of +1 as a large cation selected from Cd, Zn, Cu, Li, Na, and combinations thereof, and a

number  $N_G$  of glass-forming ions selected from B, Si, Ge, P, V, and combinations thereof wherein



$$\frac{1}{2} N_{Bi} + N_{Nb} + N_{Ta} + M_{Sb} + 2N_{W} + 2N_{Mo} = N_X$$

$$0.4 \leq \frac{N_{CC}}{N_X + N_G - (N_D - N_Q)} \leq 3.0 \text{ and}$$

$$0.003 \leq \frac{N_G}{N_X + N_{CC} + N_G + N_D + N_Q} \leq 0.022.$$

4,283,754

## COOLING SYSTEM FOR MULTIWAFAER HIGH DENSITY CIRCUIT

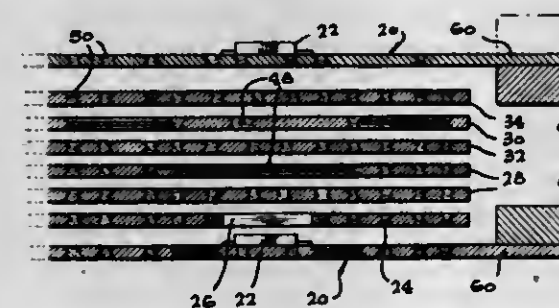
Howard L. Parks, Woodland Hills, Calif., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Mar. 26, 1979, Ser. No. 23,968

Int. Cl.<sup>3</sup> H05K 7/20

U.S. Cl. 361-382

6 Claims



1. A high density arrangement of integrated circuit devices comprising:

a stack of wafers including a plurality of component mount wafers formed primarily of metal and having overhanging edge portions along one side of the stack which extend beyond the side edges of other wafers of the stack; and a plurality of connect wafers disposed between said mount wafers, at least some of the adjacent wafers having through-wafer connections comprising a metal pad surrounded by a tube of dielectric material which is, in turn, surrounded by metal, and a multiplicity of said connection pads of adjacent wafers being aligned;

a multiplicity of button portions of malleable metal disposed between the connection pads of adjacent wafers;

a cooling arrangement including a field conduit extending along said one side of said stack;

a first clamp arrangement holding a portion of said stack inside said overhanging edges, in sufficient compression to deform said button portions into low resistance contact with said pads; and

a second clamp arrangement holding said fluid conduit arrangement in tight thermal coupling to said overhanging mount wafer portions.

4,283,755

## MODULATOR MULTILAYER DETECTOR

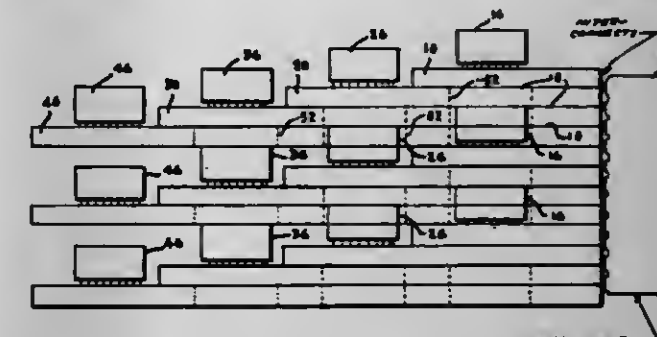
John M. Tracy, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 5, 1980, Ser. No. 118,384

Int. Cl.<sup>3</sup> H05K 1/14

U.S. Cl. 361-393

1 Claim



1. A modular multilayer detector interface comprising: a plurality of stacked circuit boards including, a plurality of modular integrated circuits mounted thereon, wherein said boards are of variable length and in juxtaposition and said boards have a recessed area for receiving the integrated circuit mounted on the board abutting said board, and lead means extending from said integrated circuit to one end of said board for connection to a detector.

4,283,756

## FLASHING-LIGHT BELT

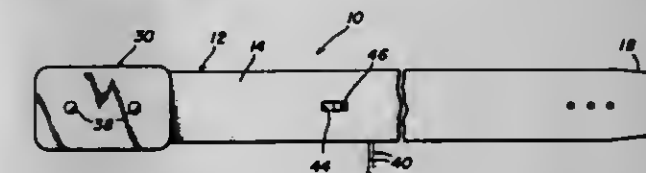
Turan M. Beamon, 2722 E. 77th St., Chicago, Ill. 60649

Filed Jun. 15, 1979, Ser. No. 48,709

Int. Cl.<sup>3</sup> F21L 15/14

U.S. Cl. 362-108

7 Claims



1. A belt comprising a flat flexible strip for encircling one's torso, and having an inside surface and an outside surface and two ends, a buckle on one end of said strip for removable attachment to a point on said strip adjacent the other end thereof, light means in said buckle having at least two bulbs and circuit means for flashing said bulb when energized, each of said bulbs and said circuit means being cased in a single package, conductor means on the inside surface of said strip and being electrically attached to said light means, which means electrically connected to said conductor means for selectively opening and closing the current path defined thereby, and terminal means on said conductor means for attachment to a portable source of electrical power.

4,283,757

## ILLUMINATED SCREWDRIVER

A. Eugene Nalbandian, Brea, and James P. Sullivan, Tustin, both of Calif., assignors to Tweezer-Lite, Inc., Brea, Calif.

Filed Jul. 9, 1979, Ser. No. 56,280

Int. Cl.<sup>3</sup> B25B 23/18

U.S. Cl. 362-120

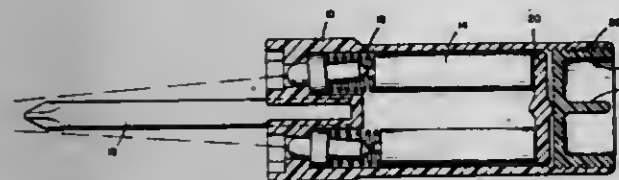
15 Claims

1. An illuminated hand tool comprising a tool member mounted at the front end of a hollow handle body in which are



disposed a pair of two terminal light sources, a pair of spring members having a first end and a second end, and a pair of two terminal power sources;

each of said spring members being disposed between a respective light source and power source, the first end of each spring contacting one terminal of its respective light source, the second end of each spring being in electrical contact with one terminal of its respective power source, each said spring acting to bias the other terminal of each respective light source out of contact with the other terminal of each respective power source;



a single switch means rotatably mounted on the back end of said body for causing movement of said power sources upon rotation of said switch means so as to cause the other terminal of each respective power source to independently contact the other terminal of each respective light source thereby completing the respective circuits and lighting the respective light sources either serially or simultaneously.

4,283,758

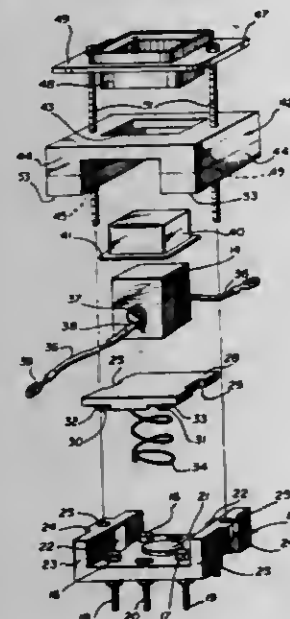
## ENCAPSULATED NEON LAMPS

James H. Irving, 119 Ross Ave., Ottawa, Ontario, Canada  
Filed Jul. 23, 1979, Ser. No. 60,032

Int. Cl.<sup>3</sup> F21V 23/04

U.S. Cl. 362-251

10 Claims



1. A compact light module for use with normal electrical utility supply voltage, the module comprising an assembly of a plurality of miniature neon lamps and resistors and two terminals, the lamps and resistors being connected to the terminals to provide a plurality of circuits connected permanently across the terminals, each circuit comprising a neon lamp and a resistor, the assembly being encapsulated in a rigid translucent plastics material through which the terminals project for connection to the supply voltage.

4,283,759  
SWITCHING REGULATOR

Tsutomu Koiki, Higashi Matsuyama, Japan, assignor to Toko, Inc., Tokyo, Japan

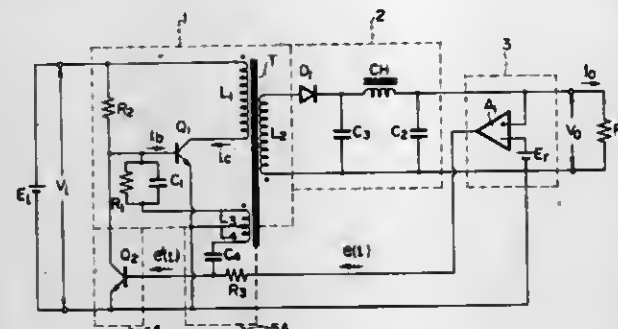
Filed Jul. 27, 1978, Ser. No. 928,441

Claims priority, application Japan, Aug. 1, 1977, 52/91425; Sep. 29, 1977, 52/117210; Feb. 24, 1978, 53/20480; Mar. 2, 1978, 53/23991; Apr. 26, 1978, 53/49453

Int. Cl.<sup>3</sup> H02M 3/335

U.S. Cl. 363-19

7 Claims



1. A switching regulator comprising a relaxation oscillator circuit for chopping a DC voltage supplied from an input power source to thereby drive a transformer; a rectifier circuit for rectifying the AC output of said transformer; a feedback circuit for comparing the rectified output voltage derived from said rectifier circuit with a reference voltage and applying a negative feedback to the base of the transistor or said oscillator circuit in accordance with the deviation of said rectified output voltage from said reference voltage; and means for permitting said negative feedback to be applied only during that period of the relaxation oscillation cyclic periods which is required to effect pulse width control when said transistor is switched from conduction to non-conduction.

4,283,760

## METHOD AND APPARATUS FOR CONTROLLING DATA TRANSFER DIRECTION ON A DATA BUS

Yuzo Kita, Fuchu; Noboru Yamaguchi; Masaru Shihukawa, both of Kokubunji, and Kazuo Minorikawa, Nishi-oozumimachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

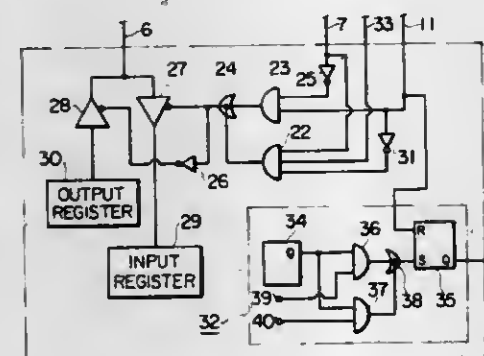
Filed Oct. 10, 1978, Ser. No. 949,575

Claims priority, application Japan, Oct. 11, 1977, 52-120939

Int. Cl.<sup>3</sup> G06F 13/00

U.S. Cl. 364-200

6 Claims



3. In a system comprising a memory, and input/output controller for controlling data transfer to and from an input/output device, a data bus, and a direct memory access controller which generates a control signal applied in non-inverted form to at least one of said memory and said input/output controller, said control signal determining the direction of the data transfer in said input/output controller and said memory, an arrangement for controlling the direction of data transfer on said data bus comprising first means in said input/output controller for recognizing in an inverted manner the level of the control signal in said input/output controller only during the data transfer

cycle in the direct memory access transfer mode under a cycle steal mode, and second means in said input/output controller for controlling the direction of transferring the data via said data bus in response to said control signal being recognized by said first means.

4,283,761

## BINARY INPUT/OUTPUT PROCESSING IN A DIGITAL COMPUTER USING ASSIGNED TIMES FOR INPUT AND OUTPUT DATA

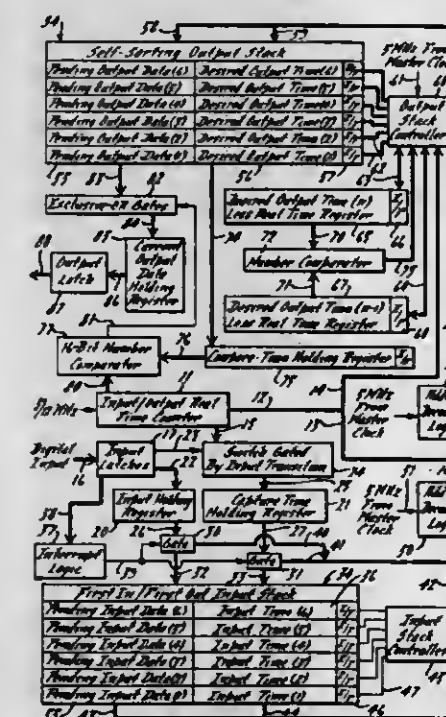
Brian S. Edelman, Dearborn, and Ralph L. Robinson, Jr., Canton Township, Wayne Co., both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 13, 1979, Ser. No. 48,200

Int. Cl.<sup>3</sup> G06F 3/00

U.S. Cl. 364-200

9 Claims



1. In a digital computer that has a master clock for generating master clock pulses at a first frequency and that uses binary input data comprising a plurality of bits of information to produce binary output data in response to a program operating at least in part on one or more bits of the binary input data, improved processing of both the input and output data comprising the steps of:

- generating secondary clock pulses having a frequency that is less than the frequency of the master clock pulses;
- counting secondary clock pulses in a counter; and
- using the count of the secondary clock pulses in the assignment of real time to bytes to input data and in the comparison of real times with desired output times assigned to binary output data.

4,283,762

## ANALOG COMPUTER CIRCUIT FOR CONTROLLING A FUEL INJECTION SYSTEM DURING ENGINE CRANKING

William J. Graessley, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 9, 1979, Ser. No. 83,018

Int. Cl.<sup>3</sup> F02B 3/10; F02M 51/00

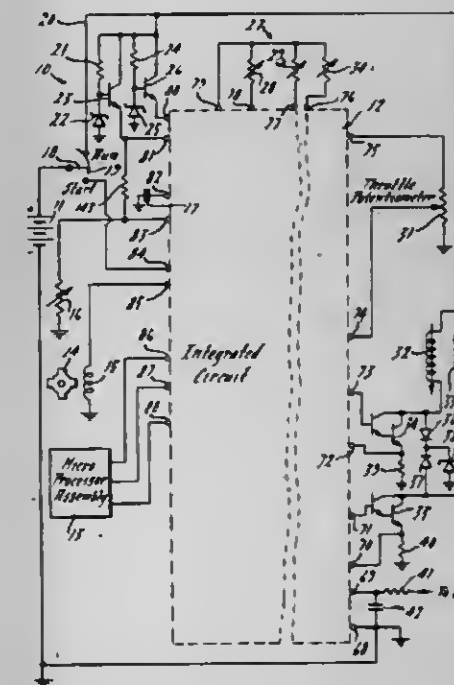
U.S. Cl. 364-431

8 Claims

1. An analog computer circuit for controlling a fuel injection system for an internal combustion engine during engine cranking, the fuel injection system being of the type including at least one electrically controllable fuel injector which, when energized, delivers a quantity of fuel to the engine that is proportional to the duration of the energization of the fuel injector, the fuel injection system further including circuit means coupled to the fuel injector for controlling the energiza-

tion of the fuel injector in response to, and for the duration of, a cyclical logic level signal, applied by the aforementioned circuit means, the analog computer circuit generating the cyclical logic level signal and comprising:

- means for supplying a DC voltage;
- a plurality of switching
- a capacitor;
- a plurality of electrical impedances coupled to the switching devices, the electrical impedances being selectively switched into conductive circuit with the capacitor by the switching devices;
- circuit means for controlling the switching devices as a function of the ratio of the voltage across the capacitor to the DC supply voltage;



- circuit means for charging the capacitor from the DC supply voltage through the plurality of electrical impedances;
- circuit means for discharging the capacitor at a frequency proportional to engine speed; and
- circuit means coupled to the electrically controllable fuel injector for generating the cyclical logic level signal, the logic level signal having a cyclically recurring duration, at one logic voltage level, that is proportional to the time over which the capacitor is charged from the DC supply voltage prior to its being discharged by the discharge circuit means.

4,283,763

## SYSTEM FOR GRAPHIC REPRESENTATION OF VESSEL'S POSITION ON MERCATOR MAP

Lev V. Bylinsky, Pervomaisky prospekt, 46/1, kv. 14; Vladimir I. Gavrilenko, ulitsa Ostrovskogo, 24, korpus 1, kv. 35, both of Ryazan; Ivan F. Glumov, ulitsa Kotovskogo, 11, kv. 59, Gendzhik Krasnodarskogo kraia; Vasily F. Denisov, ulitsa Internatskaya, 1, and Vadim V. Meer, ulitsa Poletayeva, 32, kv. 42, both of Ryazan, all of U.S.S.R.

Filed Sep. 13, 1979, Ser. No. 75,337

Int. Cl.<sup>3</sup> G01C 21/22

U.S. Cl. 364-449

4 Claims

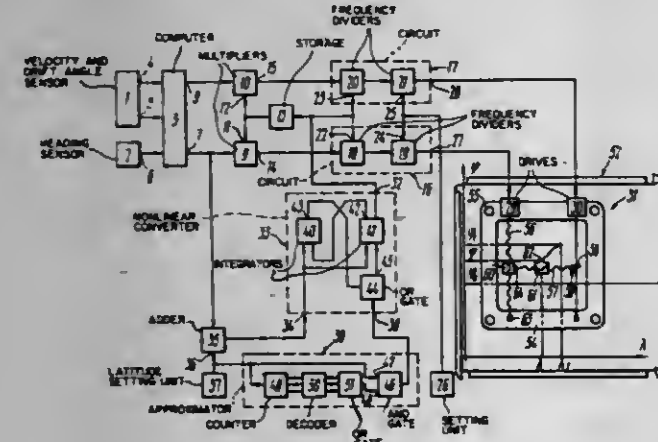
1. A system for graphic representation of a vessel's position on the Mercator map, comprising:

- a velocity and drift angle sensor having a signal generated at a first output corresponding to the speed of the vessel, and a signal generated at a second output signal corresponding to the drift angle of the vessel;
- a computer computing the longitudinal and latitudinal velocity components, and having a first input and a second input respectively connected to said first and second outputs of said velocity and drift angle sensor, a third input,



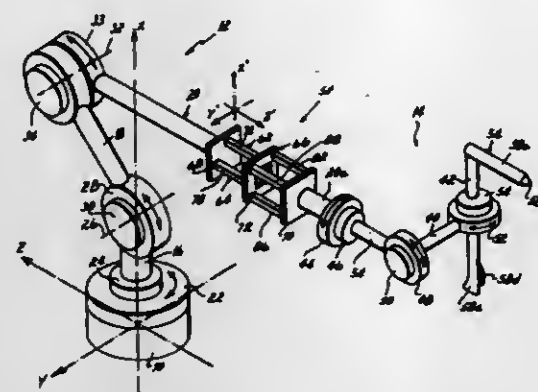
and first and second outputs at which electric signals corresponding to longitudinal and latitudinal motion of the vessel are generated;

- a heading sensor having an output connected to said third input of said computer;
- a first multiplier having a first input connected to said first output of said computer, a second input and an output;
- a second multiplier having a first input connected to said second output of said computer, a second input connected to said second input of said first multiplier, and an output;
- a storage having an input and an output connected to said second inputs of said first and second multipliers;
- a first frequency divider with a controlled division coefficient and having a first input connected to said output of said first multiplier, a second input and an output;
- a second frequency divider with a controlled division coefficient and having a first input connected to said output of said first frequency divider, a second input and an output;
- a third frequency divider with a controlled division coefficient and having a first input connected to said output of said second multiplier, a second input connected to said second input of said first frequency divider, and an output;
- a fourth frequency divider with a controlled division coefficient and having a first input connected to said output of said third frequency divider, a second input connected to said second input of said second frequency divider, and an output;



- a plotter indicating the position of the vessel on the Mercator map and electrically coupled to said second frequency divider and said fourth frequency divider;
- a first integrating drive of said plotter having an input connected to said output of said second frequency divider;
- a second integrating drive of said plotter having an input connected to said output of said fourth frequency divider;
- a unit for setting the scale of the standard parallel of the Mercator map having an output connected to said second inputs of said second and fourth frequency dividers;
- a nonlinear converter reproducing an electric signal in the form of trigonometric latitude functions, and having a correction input, an information input and an output connected to said input of said storage and to said second inputs of said first and third frequency dividers;
- an adder having a first input, a second input and an output, said first input of said adder being connected to said second output of said computer and said output of said adder being connected to said information input of said nonlinear converter;
- a latitude setting unit successively setting the latitude of the standard parallel and the latitude of the initial position of the vessel, and having an output connected to said second input of said adder; and
- an approximator, of the correction for the meridional minute length at the location of the vessel, having an input connected to said output of said latitude setting unit and an output connected to said correction input of said nonlinear converter.

4,283,764  
**MANUALLY PROGRAMMABLE ROBOT WITH POWER-ASSISTED MOTION DURING PROGRAMMING**  
 Gerald W. Crum, Elyria, and Brian M. Rooney, Amherst, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio  
 Filed Oct. 12, 1979, Ser. No. 84,359  
 Int. Cl.<sup>3</sup> G05B 19/42; G06F 15/46  
 U.S. Cl. 364—513 23 Claims

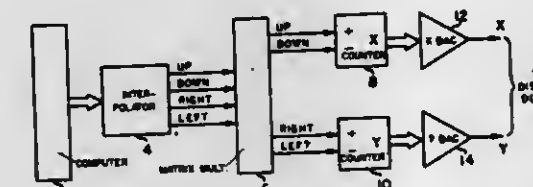


1. A robot which can be manually programmed to repetitively execute a series of programmed motions, comprising:
  - a base engageable with a supporting structure for supporting said robot,
  - at least one relatively massive elongated link, said massive link having first and second extremities,
  - first means interconnecting said base and said first extremity of said massive link for facilitating selective movement of said massive link in a first direction relative to said base to provide a first degree of freedom for said robot,
  - at least one relatively lightweight elongated link having an outer end to which a device is connectable for programmed movement in a path having at least two degrees of freedom, said lightweight link also having an inner end,
  - second means interconnecting said inner end of said lightweight link to said second extremity of said massive link for facilitating selective movement of said lightweight link in a second direction relative to said massive link, said second direction being different from said first direction to provide said robot with a second degree of freedom and facilitate motion thereof in two different directions,
  - said lightweight link being movable relative to said massive link in said second direction without power assistance when a manual force is applied to the outer end of said lightweight link during manual programming of said robot, said massive link being relatively immovable in said first direction without power assistance in response to application of manual force to said outer end of said lightweight link during manual programming,
  - a first actuator associated with said massive link for moving, when actuated, said massive link in said first direction relative to said base,
  - a second actuator associated with said lightweight link for moving, when actuated, said lightweight link in said second direction,
  - a first position transducer associated with said massive link for providing a signal correlated to the position of said massive link,
  - a second position transducer associated with said lightweight link for providing a signal correlated to the position of said lightweight link,
  - a force transducer mounted in series with said massive and lightweight links between said base and said second interconnecting means for sensing the force to which said massive link is subjected to said first direction by the application of a manual programming force to said outer end of said lightweight link during manual programming of said robot, said manual programming force being applied in an arbitrary direction non-coincident with either of said first or second directions, but having force compo-

nents simultaneously in both said first and second directions to induce movement of said massive and lightweight links simultaneously in both said first and second directions, respectively, said force transducer providing an output signal having components correlated to (a) said manual programming force component applied to said outer end of said lightweight link in said first direction and (b) the inertial force due to acceleration of said lightweight link in said first direction.

inertial force compensation circuit means for cancelling at least a portion of said component of said force transducer output signal correlated to the inertial force of said lightweight link in said first direction and providing an inertial force compensated signal to said first actuator which is correlated to the component of said manual programming force applied in said first direction for producing, during manual programming, power-assisted movement of said massive link in said first direction while said lightweight link moves unpowered in said second direction, said power-assisted motion of said massive link and unpowered motion of said lightweight link combining to move said outer end of said lightweight link in said arbitrary direction in which said manual programming force is applied, means to record the signals of said position transducers during manual programming, and means to reproduce said recorded position transducer signals and apply them to their respectively associated actuators to execute said programmed motions without manual assistance.

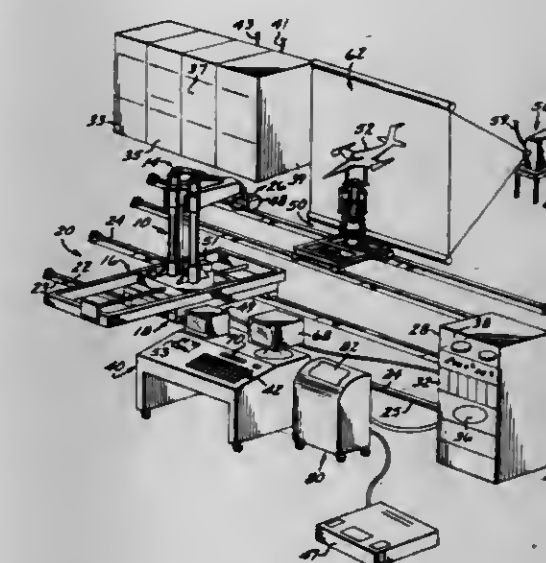
4,283,765  
**GRAPHICS MATRIX MULTIPLIER**  
 Michael L. Rieger, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.  
 Continuation of Ser. No. 896,538, Apr. 14, 1978, abandoned.  
 This application May 25, 1979, Ser. No. 42,392  
 Int. Cl.<sup>3</sup> G06F 15/347, 3/14  
 U.S. Cl. 364—521 4 Claims



1. A graphic display system for transforming and displaying computer-generated images of a pre-determined number of dimensions, D, on a display device, the display system comprising:
  - a digital interpolator for converting a computer instruction into digital clock pulses for driving the display device;
  - a matrix multiplier coupled to said digital interpolator for receiving said digital clock pulses and altering the sequence thereof according to data stored in said matrix multiplier, said matrix multiplier including accumulators which are each divided into an integer part and a fractional part, said integer part accumulating m bits and said fractional part accumulating n bits and having a carry/borrow output;
  - m-bit counters comprising said integer part and also comprising axis counters of the display system for counting said digital clock pulses; and
  - digital-to-analog converters connected to receive the output of said m-bit counters for converting said output to analog signals for driving the display device.

4,283,766  
**AUTOMATIC CAMERA CONTROL FOR CREATING SPECIAL EFFECTS IN MOTION PICTURE PHOTOGRAPHY**

R. David Snyder, Donald W. Iwerks, both of Burbank; Robert R. Otto, Tarzana, all of Calif.; Lee R. Richardson, Scottsdale, Ariz., and David S. English, La Crescenta, Calif., assignors to Walt Disney Productions, Burbank, Calif.  
 Filed Sep. 24, 1979, Ser. No. 78,302  
 Int. Cl.<sup>3</sup> G03B 21/32; G06F 15/20  
 U.S. Cl. 364—525 22 Claims



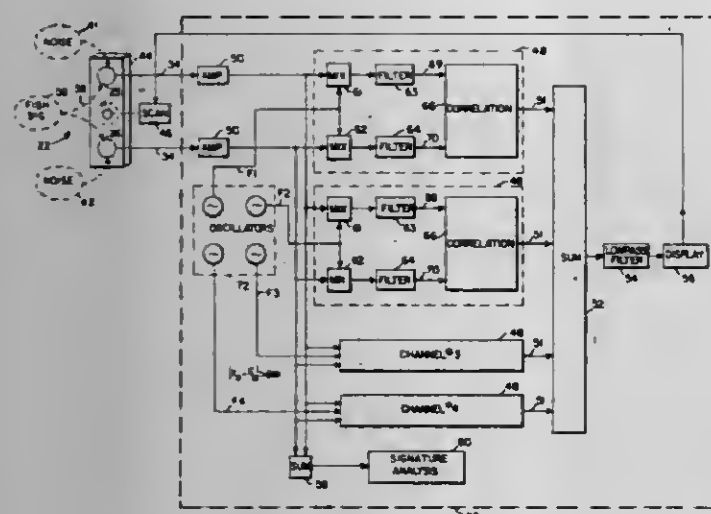
1. An automated motion picture camera control system comprising:
  - camera positioning means for positioning and holding a motion picture camera along a plurality of independent position axes,
  - memory means for storing electronically encoded desired co-ordinates of said positioning means for each of said position axes for each of a plurality of separated and enumerated film frames,
  - operator input means connected to said memory means for manually providing co-ordinates and for designating an associated film frame by number,
  - means connected to said memory means for deriving position-co-ordinates for each position axis for each frame between sequential designated frames,
  - actuating means for cycling said means for deriving sequentially through film frames between sequential designated film frames and for coupling said memory means and said means for deriving to said camera positioning means to direct said camera positioning means to the co-ordinate positions of sequential film frames.

4,283,767  
**MULTIPLE CORRELATOR REFERENCE PROCESSOR**  
 Hoyt S. Roantree, Portsmouth, R.I., assignor to Raytheon Company, Lexington, Mass.  
 Filed May 3, 1979, Ser. No. 35,750  
 Int. Cl.<sup>3</sup> G06F 15/20; G06G 7/19; G01S 3/86  
 U.S. Cl. 364—574 7 Claims

1. A data processing system comprising:
  - a plurality of pairs of signal processing channels each channel of a pair being response to a different one of two input signals, each of said channels having mixing means for translating said input signal to an intermediate frequency, each of said channels producing output signals having the same waveform in the absence of noise;
  - means for generating a set of reference signals of different frequencies, individual ones of said reference signals being coupled to said mixing means in respective pairs of said channels to provide mixer output frequency signals having a frequency less than said input signals, the frequencies of respective ones of said reference signals being separated



by an amount of frequency which is larger than the bandwidth of said input signals;  
means for multiplying the output signal of the mixer of one channel of a pair with the output signal of the mixer in the other channel of said pair to provide a channel pair output signal; and  
means for combining the channel pair output signals pro-



duced by the multiplying means of each pair of said signal processing channels to produce a combined signal wherein undulations induced by noise in the input signals each of said channels combine incoherently for a reduction in noise power while a component of said combined signal obtained from said input signals is coherently combined for increasing the ratio of signal power relative to noise power.

4,283,768

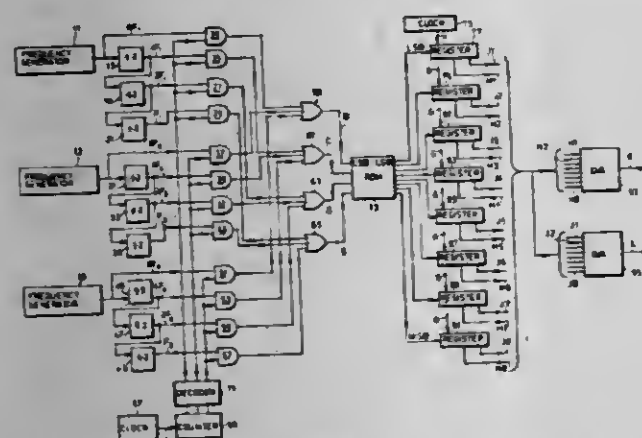
## SIGNAL GENERATOR

Robert J. Scott, Furlong, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1979, Ser. No. 34,887  
Int. Cl.<sup>3</sup> G06J 1/00; H03B 19/00

U.S. Cl. 364—607

7 Claims



1. Apparatus for producing a waveform, comprising:  
generating means for producing a first signal of a plurality of predetermined non-equal frequencies and harmonics thereof;  
multiplexing means connected to receive the first signal for multiplexing each of the frequencies and its associated harmonic with the other frequencies and harmonics to produce a second signal consisting of a series of parallel digital addresses; and  
array means responsive to the second signal for producing a third signal consisting of a plurality of complex waveforms having different time delays.

# 4,283,769 TIME INFORMATION PRINT OUT AT A PRESELECTED CONDITION IN AN ELECTRONIC CALCULATOR

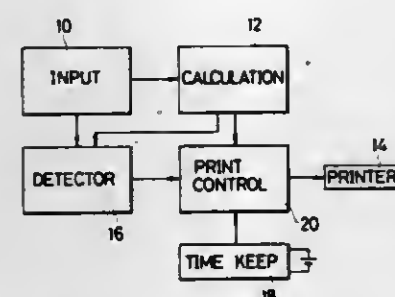
Atsushi Asada, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 7, 1979, Ser. No. 18,328

Claims priority, application Japan, Mar. 15, 1978, 53-30343  
Int. Cl.<sup>3</sup> G06F 3/12, 15/02

U.S. Cl. 364—710

5 Claims



1. An electronic calculator system having a printer for printing desired data produced by said calculator system, said system comprising:  
a time generator for producing data representative of current time information;  
counter means for producing an incremental count and for generating an output signal when said count reaches a predetermined level; and  
printing selection means responsive to the output signal generated by said counter means for converting said current time information produced by said time generator into desired data and presenting this data to said printer; said printer printing said time information when count within said counter means reaches a predetermined level.

4,283,770

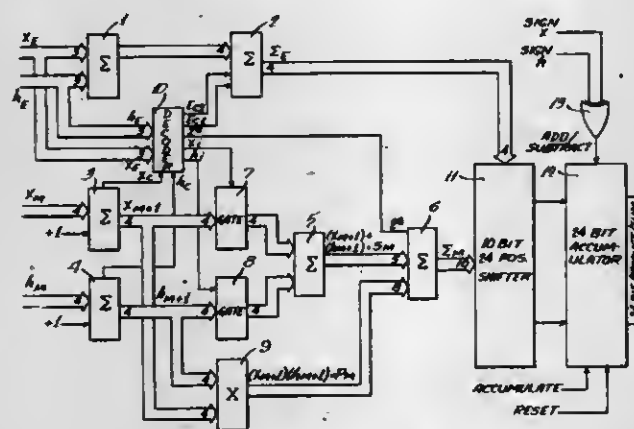
## SIGNAL PROCESSOR FOR DIGITAL ECHO CANCELLER

Robert C. Stewart, Hinsdale, Ill., assignor to Tellabs, Inc., Lisle, Ill.

Filed Oct. 9, 1979, Ser. No. 82,710  
Int. Cl.<sup>3</sup> H04B 3/20; G06F 7/52

U.S. Cl. 364—757

37 Claims



1. A system for multiplying first and second multibit factors quantized in conformity with a pseudo-logarithmic compression characteristic, wherein each factor has an exponent and a mantissa, comprising first circuit means for receiving the mantissas and for generating a data signal having a value in accordance with the sum and the product of the mantissas, said first circuit means also generating exponent carry signals as required by the values of the mantissas; second circuit means for receiving the exponents and said carry signals and for generating a control signal having a value in accordance with the sum thereof; and shifter circuit means for receiving said data and said control signals, said shifter circuit means having a plurality of outputs greater in number than the number of bits in said

data signal and generating said data signal at individual ones of said outputs in accordance with the value of said control signal.

4,283,771

## ON-CHIP BUBBLE DOMAIN RELATIONAL DATA BASE SYSTEM

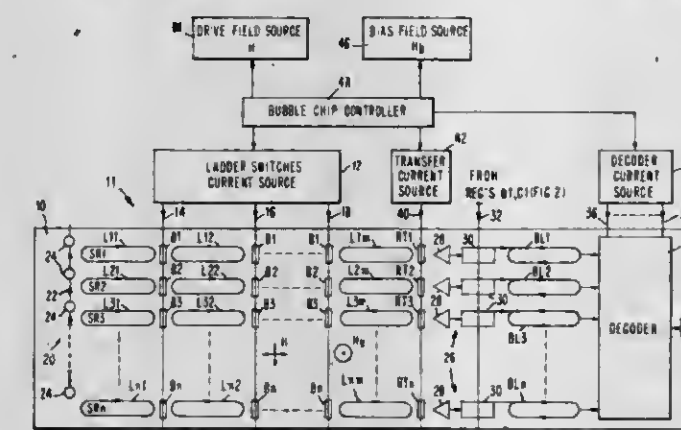
Hsu Chang, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,584

Int. Cl.<sup>3</sup> G11C 11/14, 19/00, 15/02

U.S. Cl. 364—900

13 Claims



1. A magnetic bubble domain relational data base system using magnetic bubble domain devices, comprising:

a plurality of interconnected bubble domain chips, each of which includes at least one magnetic bubble domain storage chip for storing in tabular form on said chip a table of data forming a relation, said table including a plurality of rows and columns wherein said data is represented by coded magnetic bubble domains arranged in said columns and rows in said magnetic storage chip, said data having a predetermined relationship determined by said table of related data, and wherein each said storage chip includes:  
a plurality of rows of parallel shift registers on said chip for storage of said data in the form of said coded bubble domains, each of which is segmented into loops located along said rows where the loops of adjacent shift registers form columns of loops, and the loops of any one shift register form a row of said loops;  
switch means on said chip and between adjacent loops in each row of loops for cross-linking said adjacent loops to interchange data between cross-linked loops, said switch means including means to cross-link loops in two columns of loops in said storage;

a plurality of associative search means on said magnetic chip for receiving data transferred from said shift registers to said associative search means and for parallel comparison of data from each row of shift registers with test criteria delivered to said associative search means wherein data which satisfies said test criteria is termed qualified data, said associative search means including gate means for blocking passage to an output means of bubble domains from those shift registers where mismatch with said test criteria is obtained and for allowing passage to said output means of bubble domains representing qualified data, there being one said associative search means for each shift register in said storage chip;  
transfer means located on said chip for transferring data in parallel from a column of loops in said shift registers to said plurality of associative search means;  
output means on said bubble domain chip for connecting each associative search means having qualified data therein with a single input/output port wherein simultaneous search of each row of shift registers occurs on said bubble chip prior to retrieval of qualified data items;  
interconnection means connecting the output of a first bubble domain chip to the plurality of associative search

4,283,772

## PROGRAMMABLE TIME REGISTERING AC ELECTRIC ENERGY METER HAVING ELECTRONIC ACCUMULATORS AND DISPLAY

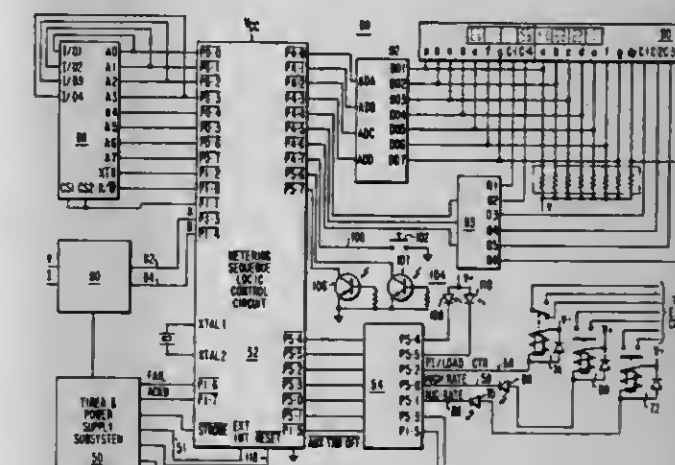
Paul M. Johnston, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 30, 1979, Ser. No. 25,647

Int. Cl.<sup>3</sup> G01R 11/57, 11/24, 21/06; G06F 15/56

U.S. Cl. 364—900

15 Claims



1. A time registering electric energy meter for measuring an AC electric energy quantity in response to time differentiated rates, said meter comprising:

means producing metering pulse signals at a rate responsive to said AC electric energy quantity to be measured;  
means including first read-write memory means responsive to said metering pulse signals for accumulating variable coded values of one parameter of said AC electric energy quantity in separate ones of plural measuring data storage register means;  
means producing regularly occurring timing signals;  
means including second read-write memory means responsive to said timing signals for accumulating variable real time and date coded data in separate ones of plural storage register means, said plural storage register means including minutes, hours, day of the week and day of the year storage register means;  
means including third read-write memory means for storing a plurality of fixed rate switch control point data codes in sequential ones of plural storage registers with each of said rate switch point data codes having identical data formats including encoded hour and encoded minutes data in time of day storage register means, an encoded one of a day of the week and a day of the year in a type of day storage register means and an encoded one of said time differentiated rates in a rate code storage register means; and  
control logic means for sequentially comparing at a predetermined rate of said timing signals the real time and date coded data of said second memory means with the stored rate switch point data codes in a sequential order of comparison being the same as the sequential order of the storage thereof in said third memory means, said control logic further including means responsive to matching of common time and date coded and encoded data of said second and third memory means for producing a current rate switch time logic state therein, said control logic means further including means responsive to said current rate switch time logic state to effect a change in the accumulation of said coded values of said one parameter from one to another of said measuring data storage register means such that said parameter is accumulated in response to the encoded time differentiated rate of the rate switch point



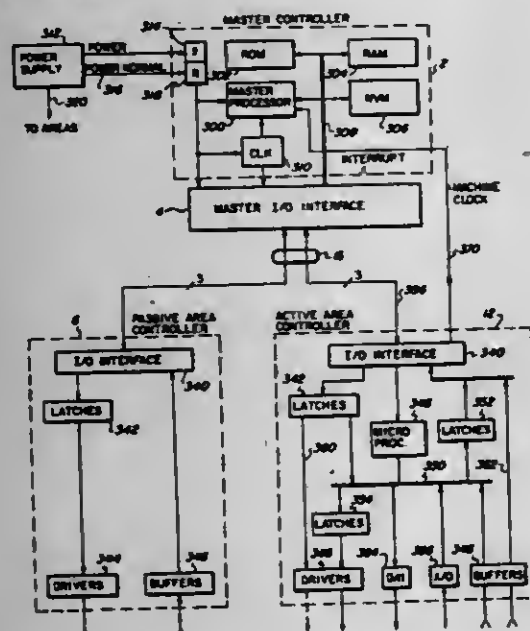
data code producing the matched comparison of said second and third memory means.

4,283,773

# PROGRAMMABLE MASTER CONTROLLER COMMUNICATING WITH PLURAL CONTROLLERS

John W. Daughton, Perinton, N.Y.; Kenneth Gillett, Redondo Beach, and Frank M. Nelson, Sherman Oaks, both of Calif., assignors to Xerox Corporation, Stamford, Conn.  
Division of Ser. No. 829,013, Aug. 30, 1977, Pat. No. 4,183,089.  
This application Apr. 30, 1979, Ser. No. 34,872  
Int. Cl.<sup>3</sup> G06F 3/04, 9/06; G03G 15/00  
U.S. Cl. 364-900

9 Claims



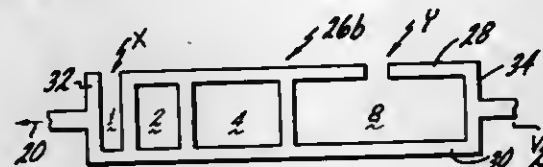
1. A data communication system comprising:
  - a. a programmable master controller including:
    1. master program memory storage means for storing program words defining an operating program,
    2. means for addressing said program words of said master program memory storage means,
    3. an arithmetic and logic unit for processing said program words of said master program storage means, and
    4. means for generating command bytes, said generating means operatively connected to said arithmetic and logic unit of said master controller.
  - b. a plurality of additional controllers, each of said additional controllers including:
    1. means for receiving command bytes from said master controller, and
    2. means for providing input data bytes to said master controller in response to said command bytes,
  - c. means for ORing selected input data bits of said input data bytes together to provide at least one of said input data bytes, and
  - d. said additional controllers each including means for simultaneously transmitting said selected input bits to said master controller in response to a pre-determined command byte from said master controller, corresponding bits of said simultaneously transmitted bytes of said additional controllers having mutually exclusive data therein.

## 4,283,774 ON-CHIP METHOD OF BALANCING MEMORY DETECTORS AND BALANCED DETECTORS FORMED THEREBY

Sidney J. Schwartz, Vista; Farooq M. Quadri, San Jose, and Chung-Herng Hsin, Irvine, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.  
Filed Jun. 13, 1979, Ser. No. 48,087  
Int. Cl.<sup>3</sup> G11C 19/08

U.S. Cl. 365-8

10 Claims



1. A method of enhancing the detecting means in a magnetic bubble device which has structure for supporting bubbles thereon and elements disposed in an arrangement in which bubbles propagate serially in response to a rotating in-plane magnetic field, the steps of,
  - forming a detector of a bridge type configuration on said structure and connected to said elements so as to receive said bubbles propagated thereto,
  - forming parallel spaced apart end connected lines of resistance material with transverse spaced apart legs of resistance therebetween to form a ladder, said ladder being located in the output of said bridge configuration, and
  - balancing the bridge, if necessary, by disconnecting certain portions of the ladder to vary the resistance through the ladder.

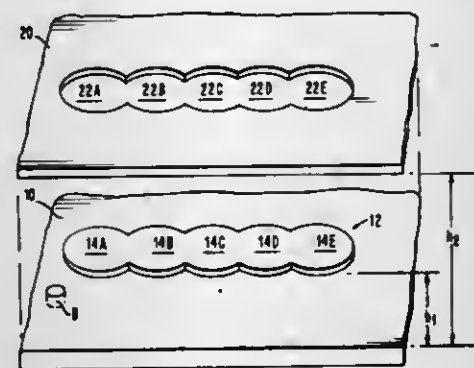
4,283,775

# CONTIGUOUS DISK BUBBLE STORAGE

Mitchell S. Cohen, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.  
Filed Jul. 18, 1979, Ser. No. 58,718  
Int. Cl.<sup>3</sup> G11C 19/08

U.S. Cl. 365-32

15 Claims



1. A propagation structure for movement of magnetic bubble domains in a substrate including a magnetic medium in which said bubble domains can be moved, comprising:
  - a first magnetic drive layer comprised of a magnetically soft material which is patterned to form contiguous propagation elements for movement of bubble domains therealong in response to the reorientation of a magnetic field in the plane of said first drive layer, the edges of said contiguous propagation elements along which said bubble domains move forming a generally undulating edge having cusp regions therealong,
  - a second magnetic drive layer comprised of a magnetically soft material and being non coplanar with said first magnetic drive layer, said second drive layer being on the same side of said substrate as said first drive layer and having a different spacing from said substrate than said first magnetic layer, said second drive layer including

magnetic means for forming potential wells in said cusp regions for substantial control of bubble domain motion in said cusp regions, said bubble domain motion in regions outside of said cusp regions being substantially controlled by said first magnetic drive layer.

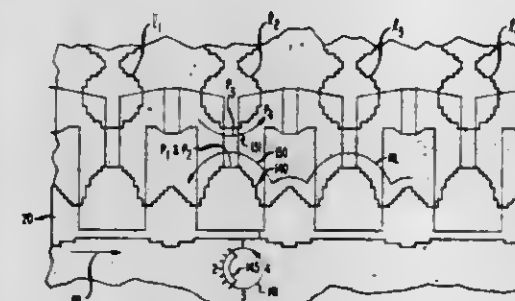
4,283,776

# ION-IMPLANTED MAGNETIC BUBBLE MEMORY

Terence J. Nelson, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Dec. 3, 1979, Ser. No. 99,554  
Int. Cl.<sup>3</sup> G11C 19/08

U.S. Cl. 365-36

7 Claims



1. A magnetic bubble memory comprising a host layer of magnetic material in which magnetic bubbles can be moved along first and second paths in response to a magnetic field reorienting in the plane of said layer, a pattern of nonimplanted regions in said host layer for defining said paths in implanted regions thereabout, said nonimplanted regions defining first and second sets of periodic elements and an implanted gap separating said sets wherein said host layer has a three-fold axis of symmetry said memory being CHARACTERIZED IN THAT said gap has an axis aligned at about 90 degrees with respect to one of said axes of symmetry for permitting a relatively small gap to be achieved.

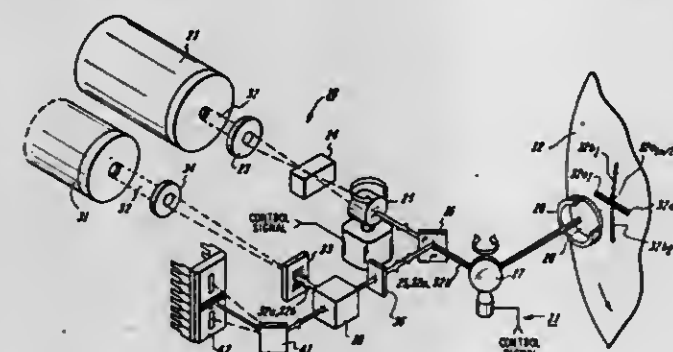
4,283,777

# OPTICAL MEMORY HAVING A PARALLEL READ OUT

Donald J. Curry, Los Altos; Gordon R. Knight, Cupertino, and Daniel C. Kowalski, Portola Valley, all of Calif., assignors to Xerox Corporation, Stamford, Conn.  
Filed May 14, 1979, Ser. No. 39,092  
Int. Cl.<sup>3</sup> G11C 13/04

U.S. Cl. 369-32

8 Claims



1. In an optical memory having a recording medium with at least one band of tracks including a plurality of data tracks, a head containing a laser for supplying a beam of coherent radiation, and a plurality of detectors for generating individual video signals in response to radiation propagated from respective ones of said data tracks; the improvement comprising a diffraction grating disposed between said laser and said recording medium for dividing said beam into a plurality of discrete read beams of substantially equal intensity, and means disposed between said diffraction grating and said recording medium for simultaneously focusing said read beams onto respective ones of said data tracks, whereby said data tracks are read out in parallel.

beams onto respective ones of said data tracks, whereby said data tracks are read out in parallel.

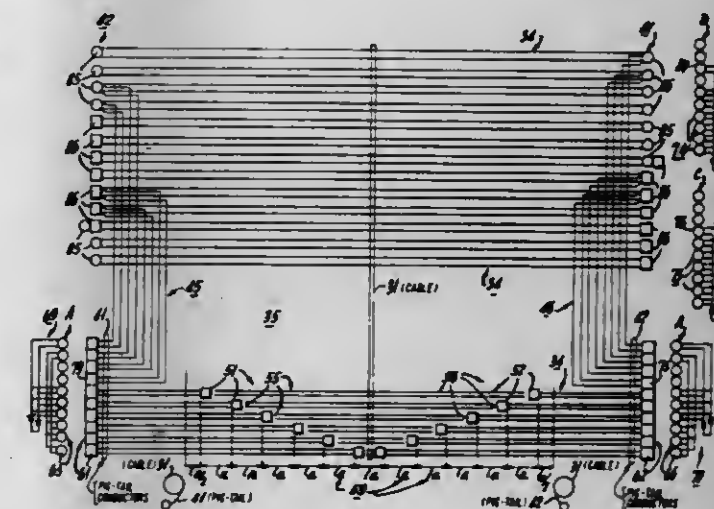
4,283,778

# PROGRAMMABLE SEISMIC CABLE

Herbert J. Meyer, Bellaire, and Thomas L. Smitherman, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.  
Filed May 29, 1979, Ser. No. 43,201  
Int. Cl.<sup>3</sup> G01V 1/22, 1/16

U.S. Cl. 367-58

5 Claims



1. Programmable seismic cable for use in connecting a plurality of geophones to a recording station, comprising in combination
  - a predetermined length of cable having a plurality of conductor-pairs for connecting said geophones to said recording station,
  - a plurality of take-out connectors spaced apart along said cable for providing connections from said geophones to predetermined ones of said conductor-pairs,
  - a portion of said take-out connectors being electrically connected to first conductor-pairs extending to one end only of said cable,
  - another portion of said take-out connectors being electrically connected to second conductor-pairs extending to the other end only of said cable, and
  - a multi-circuit connector at each end of said cable with pig-tail conductor-pairs for making selectable group connections of said take-out connectors with third conductor-pairs of said cable, whereby predetermined groups of said take-out connectors may be selectively connected to said recording station.

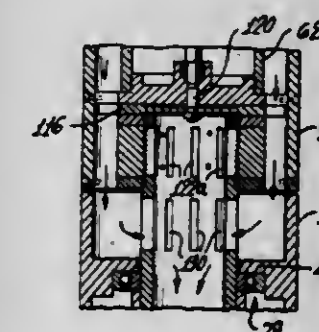
4,283,779

# TORSIONAL WAVE GENERATOR

Arthur E. Lamel, Arcadia, Calif., assignor to American Petroscience Corporation, Bakersfield, Calif.  
Filed Mar. 19, 1979, Ser. No. 21,578  
Int. Cl.<sup>3</sup> G01V 1/40

U.S. Cl. 367-82

16 Claims



1. A torsional wave generator capable of propagating tor-



sional waves along a drill string for the purpose of transmitting information signals, said torsional wave generator comprising: reaction mass means rotatably coupled to the drill string; and means effective independently of drill-string angular velocity, for producing a torque between said reaction mass means and the drill string, whereby a torsional wave is generated for propagation along the drill string.

#### 4,283,780 RESONANT ACOUSTIC TRANSDUCER SYSTEM FOR A WELL DRILLING STRING

Anthony P. Nardi, Burlington, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 114,038  
Int. Cl.<sup>3</sup> G01V 1/40

U.S. Cl. 367-82

7 Claims



1. In a system for the acoustic propagation of data along a bore-hole drilling string, primarily during drilling operation thereof, an acoustic transducer physically coupled to said bore-hole drilling string and comprising:

- a piezoelectric transmitter having a first axis and adapted for compression and elongation along said first axis when excited by a variable electric field disposed thereacross,
- a first fastener extending through said piezoelectric transducer means along said first axis,
- a second fastener for affixing said piezoelectric transmitter means against a surface of said bore-hole drilling string and for holding said piezoelectric transmitter in cooperation with said first fastener in substantially fixed compression,
- a corrugated tubular bellows-like spring affixed to and extending from said second fastener opposite said piezoelectric transmitter and having an axis colinear with said first axis, and
- an elongate cylindrical mass having a cylindrical axis colinear with said first axis and extending from and coupled integrally with said corrugated tubular bellows-like spring into the interior thereof opposite said second fastener, said first axis extending substantially parallel to the axis of said bore-hole drilling string.

#### 4,283,781 IN-FLIGHT HYDROPHONE DEPLOYMENT SYSTEM FOR UNDERWATER VEHICLES

Orrin W. Albert, Jr., Escondido, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 21, 1980, Ser. No. 113,917

Int. Cl.<sup>3</sup> H04R 1/44

U.S. Cl. 367-131

13 Claims



1. A hydrophone deployment apparatus for a torpedo shaped underwater vehicle comprising: an annular drum releasably mounted about the tail portion of the vehicle;
- a plurality of arms pivotally connected to the aft portion of the drum and capable of swinging from forward positions flush with the vehicle to aft positions behind the drum;
- means for enabling retention and selective releasing of the arms from the forward flush positions;
- a hydrophone releasably mounted on the inside of one of the arms; and
- a cable connected between the hydrophone and the vehicle with an intermediate portion wound on said drum whereby, upon travel of the vehicle, a release of the arms releases the drum and the vehicle swims away from the drum pulling the cable from the drum until all the cable is pulled, at which time the hydrophone is pulled from its arm and the drum is jettisoned to make the hydrophone operational.

#### 4,283,782 ALARM TIMEPIECE

Munetaka Tamaru, and Minoru Natori, both of Tokyo, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

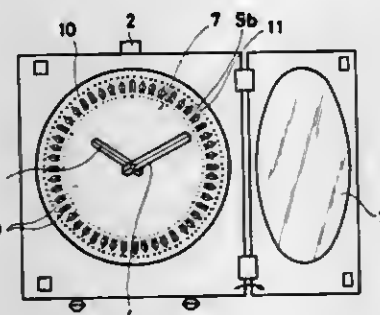
Filed Jan. 9, 1979, Ser. No. 2,216

Claims priority, application Japan, Jan. 18, 1978, 53-4035; Feb. 25, 1978, 53-21214

Int. Cl.<sup>3</sup> G04B 23/02, 19/04; G04C 21/16

U.S. Cl. 368-72

8 Claims



1. An alarm timepiece comprising: a case having a dial face;
- at least one time indicating hand;
- time measurement means for generating a signal indicative of the time and for driving said at least one hand in response to said signal;
- an alarm;
- a plurality of time memory means, each of said time memory having a respective alarm time index rotatably mounted on a shaft, each of said time memory means for storing alarm energization information provided by the rotation of said shaft, said alarm energization information being stored in the time memory means corresponding to the time at which the alarm is to be energized, said respective alarm time index being rotated by said shaft to indicate the contents of its respective time memory means when said alarm energization information is stored, each of said time

memory means having alarm energization information stored thereon energizing said alarm when the respective time said memory means is associated with is reached; a manually operated crown positioned outside the case; and alarm set means for transmitting the motion of said crown to a desired one of said respective alarm index shafts to provide said shaft with said alarm energization information.

#### 4,283,783 DRIVE CONTROL SYSTEM FOR STEPPING MOTOR

Fumio Nakajima; Takayasu Machida; Kenji Yamada, and Fumio Kanno, all of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

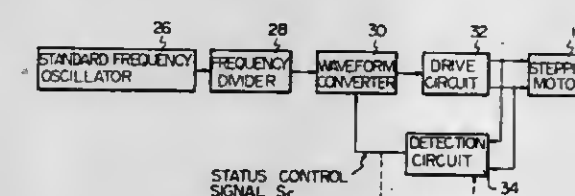
Filed Nov. 21, 1979, Ser. No. 96,450

Claims priority, application Japan, Nov. 28, 1978, 53/145983; Dec. 5, 1978, 53/150909; Jul. 26, 1979, 54/94256

Int. Cl.<sup>3</sup> G04B 19/00; G04C 3/00; G05B 19/40

U.S. Cl. 368-76

39 Claims



1. An electronic timepiece powered by a battery, comprising, in combination: a source of a standard frequency signal;
- a frequency divider circuit responsive to said standard frequency signal for producing a unit time signal comprising a train of pulses;
- waveform converter means responsive to said unit time signal in conjunction with a relatively high frequency signal produced by said frequency divider circuit for producing a drive input signal;
- a drive circuit responsive to said drive input signal for producing a drive signal;
- a stepping motor having a drive coil coupled to receive said drive signal, and periodically actuated by said drive signal to rotate a rotor thereof through a predetermined angle;
- time indicating means driven by said stepping motor for indicating time information;
- a sampling signal generating circuit for generating sampling signal pulses of a different phase in dependence on a state of said stepping motor; and
- a detection circuit having input terminals coupled across said stepping motor drive coil and responsive to said sampling signal pulses for detecting the amplitude of a voltage developed across said drive coil during a sampling interval and producing a status control signal at first and second logic levels in dependence on said detected drive coil voltage;
- said waveform converter means including means responsive to said first logic level of the status control signal for producing a first drive input signal to cause said drive circuit to drive said stepping motor in a first operating state, and responsive to said second logic level of the status control signal for producing a second drive input signal to cause said drive circuit to drive said stepping motor in a second operating state.

#### 4,283,784 MULTIPLE TIME ZONE, ALARM AND USER PROGRAMMABLE CUSTOM WATCH

Douglas F. Horan, Los Gatos, Calif., assignor to Timex Corporation, Waterbury, Conn.

Filed May 9, 1978, Ser. No. 904,228

Int. Cl.<sup>3</sup> G04C 19/00, 3/00; H03K 19/08

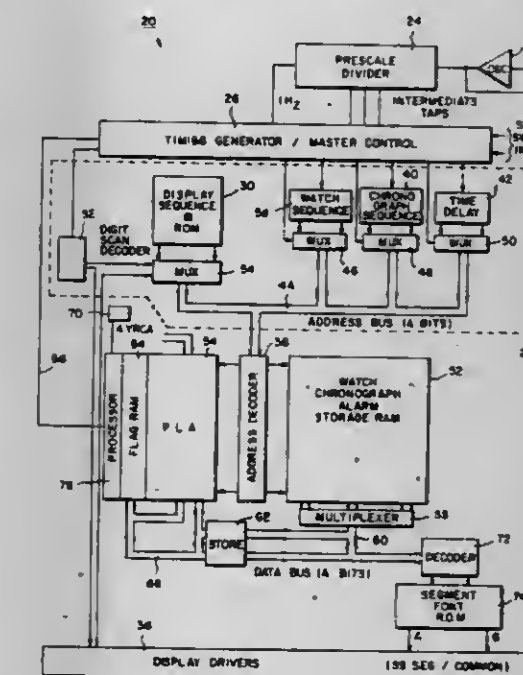
U.S. Cl. 368-87

37 Claims

1. A timekeeping circuit in an integrated circuit watch hav-

ing a main random access memory for storing binary words and having a programmable logic array coupled to said main random access memory for selectively implementing timekeeping operations, said timekeeping circuit comprising:

- a flag random access memory coupled to said programmable logic array for selectively storing a plurality of sets of flag bits, one or more of said flag bits being selectively transmitted to said programmable logic array for use during implementation of timekeeping operations; and



- a processor coupled to said flag random access memory to process said plurality of sets of flag bits in response to a mode selection signal,
- whereby a plurality of watch modes and functions are efficiently accommodated within said timekeeping circuit in a minimum amount of chip space, and whereby said integrated circuit permits user selection of watch functions.

#### 4,283,785 OPTICAL INFORMATION RECORDING APPARATUS

Toshimitsu Miyauchi, Hachioji, and Yoshito Tsunoda, Mitaka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

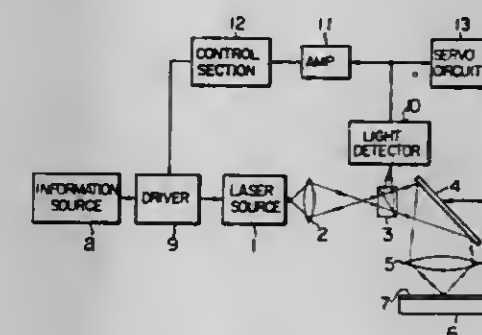
Filed Apr. 26, 1979, Ser. No. 33,806

Claims priority, application Japan, Apr. 28, 1978, 53-49831

Int. Cl.<sup>3</sup> G11B 7/00

U.S. Cl. 369-116

4 Claims



1. An optical information recording apparatus comprising: (a) a light source;
- (b) a recording medium on which predetermined pulse information is successively recorded through the irradiation of recording light pulses emitted from said light source and modulated in accordance with said predetermined pulse information, the reflectivity of said recording medium being variable during the period of irradiation of the recording light pulse so that a reflected version of the







of tunable channels in a receiver, a respective frequency signal, and means for comparing said respective frequency signal with a frequency reference oscillation and producing a resultant signal supplied to said voltage controlled tuning oscillator for the desired tuning, the improvement comprising:

- (a) a control panel having push buttons;
- (b) first means actuable by at least one of said push buttons to produce signals representing at least one binary coded number K indicative of the number of a channel to which said receiver is to be tuned according to a predetermined assigned channel frequency;
- (c) second means for producing output signals representing in binary coded form the value of the respective frequency of said voltage controlled oscillator, said value corresponding, for the various tunable channels, to the sum of a first constant binary coded number with the product of said binary coded number K and a second constant binary coded number and being obtained indirectly from said first and second constant binary coded numbers through intermediate expressions for each channel in response to the signals produced by said first means; and
- (d) third means for obtaining said number N by multiplying said value of the respective frequency of said voltage controlled tuning oscillator obtained from said second means by a coefficient depending on the value of said reference oscillation frequency.

4,283,792

## AUTOMATIC FINE TUNING CIRCUIT

Masayuki Hongu, Kawasaki; Shigeru Ohmuro, Higashimine, and Masaharu Tokuhara, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

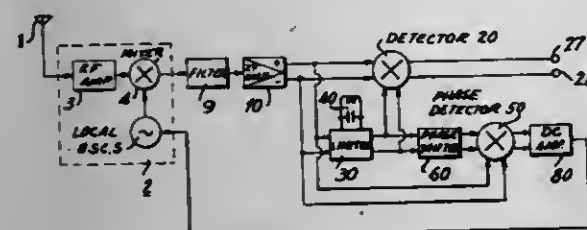
Filed Mar. 29, 1979, Ser. No. 25,034

Claims priority, application Japan, Mar. 30, 1978, 53-37115; Mar. 30, 1978, 53-37116

Int. Cl.<sup>3</sup> H04B 1/26; H04N 5/50

U.S. Cl. 455-192

6 Claims



1. A circuit for a radio frequency receiving system of the type having means for providing a radio frequency input and a tuning circuit including a local oscillator effective to generate a local oscillator frequency for producing an intermediate frequency signal comprising: electrical means for varying said local oscillator frequency in response to an automatic fine tuning control signal so that said intermediate frequency signal will substantially have a desired intermediate frequency; means for deriving an intermediate frequency carrier signal from said intermediate frequency signal; capacitor means for shifting the phase of said intermediate frequency carrier signal 90 electrical degrees; phase detector means including resonant means resonant at substantially said desired intermediate frequency, and being responsive to a predetermined phase difference between said phase shifted intermediate frequency carrier signal and a signal having substantially the same fundamental frequency and phase as said intermediate frequency signal for producing said automatic fine tuning control signal; and means for preventing interaction between said resonant means of said phase detector means and said means for deriving an intermediate frequency carrier signal, said means for preventing including buffer amplifier means to which a phase shifted signal from said capacitor means is applied said buffer amplifier means being effective to isolate its input from phase changes at its output.

# 4,283,793 MUTING SIGNAL GENERATION CIRCUIT FOR AN FM RECEIVER

Tatsuo Numata, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

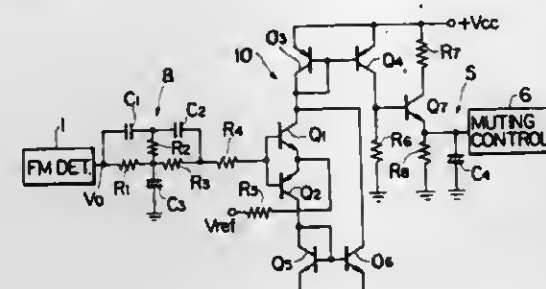
Filed Oct. 2, 1979, Ser. No. 81,240

Claims priority, application Japan, Oct. 6, 1978, 53/123743

Int. Cl.<sup>3</sup> H04B 1/16

U.S. Cl. 455-213

10 Claims



1. In an FM receiver of the type having an FM detector, a muting circuit comprising:  
a band elimination filter means connected to said FM detector for eliminating the information content of the output of said FM detector and passing to an output thereof high frequency noise and the d.c. component in the FM detector output, and  
circuit means connected to the output of said band elimination filter means for generating a muting output signal in response to either one of said d.c. component and said noise being above a predetermined level.

4,283,794

## MEASURING RADIO-FREQUENCY IMPEDANCE

Michael J. Underhill, Faygate, and Peter A. Lewis, Brighton, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

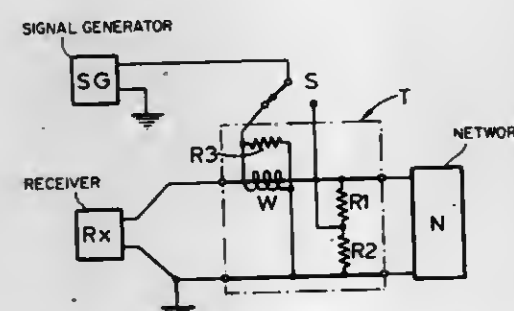
Filed Mar. 19, 1979, Ser. No. 21,760

Claims priority, application United Kingdom, Mar. 20, 1978, 10888/78

Int. Cl.<sup>3</sup> H04B 17/00; G01R 27/08, 27/16

U.S. Cl. 455-226

8 Claims



4. A method of deriving radio-frequency impedance information of an electrical network, wherein the method comprises:  
coupling a radio receiver to a port of the network;  
generating two radio-frequency signals consisting respectively of a predetermined radio-frequency current and a predetermined radio-frequency voltage;  
injecting said radio-frequency current in parallel with said port of said network and injecting said radio-frequency voltage in series both with said port and with said radio receiver for producing resultant signals in said radio receiver;  
detecting said resultant signals with said radio receiver; and  
deriving, from the detected signals, information of the radio-frequency impedance presented by said network at said port.

4,283,795

## ADAPTIVE CROSS-POLARIZATION INTERFERENCE CANCELLATION ARRANGEMENTS

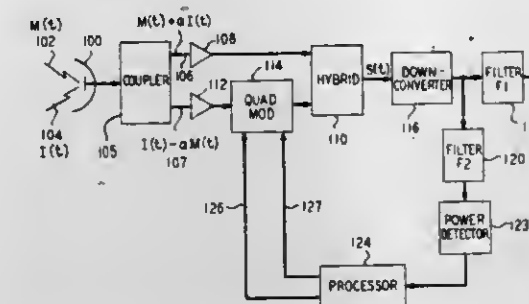
Michael L. Steinberger, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 3, 1979, Ser. No. 81,366

Int. Cl.<sup>3</sup> H04B 1/10

U.S. Cl. 455-283

9 Claims



1. An adaptive cross-polarization interference cancellation arrangement comprising:  
an antenna (100) capable of receiving a signal which may include a first desired signal (102) polarized in a first direction and a second interfering signal (104) polarized in a second direction orthogonal to the first direction and comprising cross-polarization components thereof;  
means (105) coupled to the antenna capable of separating the received signal into third and fourth signals comprising only components of the received signal including the first and the second polarization directions, respectively, and transmitting the third and fourth signals along respective first (106) and second (107) paths;  
means (114) capable of adjusting the phase and amplitude of the fourth signal in the second path in response to control signals;  
means (110) capable of combining the third and the adjusted fourth signals to generate an output signal which primarily includes the first desired signal; and  
means (124) capable of generating the appropriate control signals to the adjusting means to appropriately adjust the amplitude and phase of the fourth signal characterized in that  
the generating means (124) comprises:  
means (120, FIG. 1; 172, 179, 180, FIG. 5) coupled to the output of the combining means capable of extracting a sample of the cross-polarization components of the second interfering signal remaining in the output signal from the combining means;  
power detection means (123, FIG. 1; 181, FIG. 5) capable of

generating an output signal representative of the power envelope of the output signal of said extracting means; and  
a processor (124) capable of generating the appropriate control signals, in response to the output signal from said power detection means, for transmission to the adjusting means for appropriately adjusting the phase and amplitude of the fourth signal to achieve maximum cancellation of cross-polarization components of the second interfering signal in the third signal at the output of the combining means.

4,283,796

## PORTABLE DEVICE WITH HOUSING FOR BATTERY AND PLUG-IN MODULE

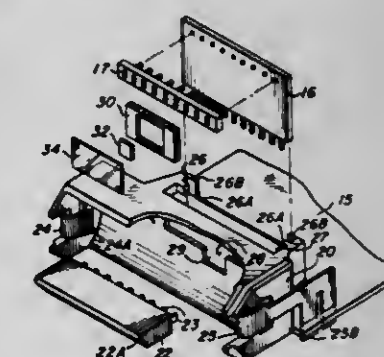
Mark F. Hughes, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 28, 1980, Ser. No. 144,134

Int. Cl.<sup>3</sup> H04B 1/08; H05K 7/00

U.S. Cl. 455-349

9 Claims



1. In a portable electronic device which includes a housing having an opening for receiving a battery for energizing the device, and which device is adapted for different operations and includes a removable module for controlling its operation, the combination including:  
retainer means within the housing for receiving the battery when inserted through the housing opening, said retainer means having an opening for receiving the module, connector means within the housing for receiving the module and making connections thereto, and  
support means for said connector means adjacent said retainer means for holding said connector means in position to receive a module inserted through the retainer means opening.



# DESIGNS

AUGUST 11, 1981

260,120

## CROSS COUNTRY SKI BOOT

Kjell Aarflot, Gardeveien 2, Oslo 3, Norway

Filed Apr. 20, 1978, Ser. No. 898,541

Claims priority, application Norway, Oct. 24, 1977, 58670

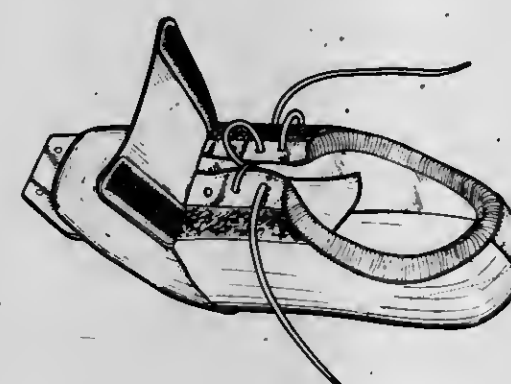
The portion of the term of this patent subsequent to Mar. 31,

1995, has been disclaimed.

Term of patent 14 years

Int. Cl. D2-04

U.S. Cl. D2-276



260,122

## FILM STORAGE BOX

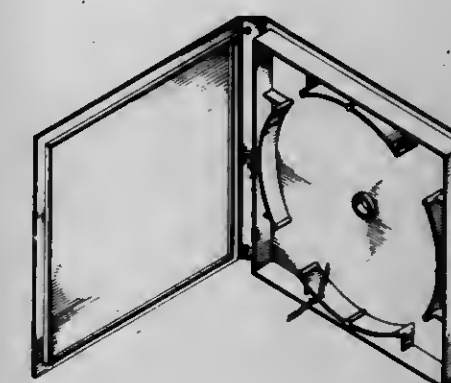
Susan M. Turner, Oceanport, N.J., assignor to Universal City Studios, Inc., Universal City, Calif.

Filed Jun. 15, 1979, Ser. No. 48,873

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D3-35



260,123

## CHAIR

Thomas Lamb, 9180 Weston Rd., Woodbridge, Ontario, Canada

Filed Oct. 30, 1978, Ser. No. 956,145

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-41



260,121

## INFANT CARRIER

Richard B. Cable, and Willie D. Cable, both of 3063 Waterdale Dr., Loveland, Colo. 80537

Filed Nov. 9, 1977, Ser. No. 850,022

Term of patent 14 years

Int. Cl. D3-99

U.S. Cl. D3-31



260,124

## CHAIR

Rosemary T. Henderson, 3684 Walden Pl., Carmel, Ind. 46032

Filed Mar. 19, 1979, Ser. No. 22,034

Term of patent 7 years

Int. Cl. D6-01

U.S. Cl. D6-67

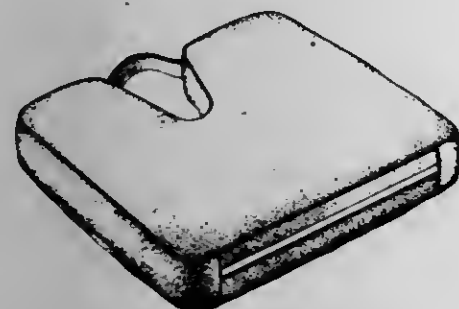




260,125  
SEAT CUSHION

Jody B. Rogers, 2732 Pacific Coast Hwy., Lomita, Calif. 90717  
Filed Jul. 24, 1978, Ser. No. 927,673  
Term of patent 14 years  
Int. Cl. D6—09

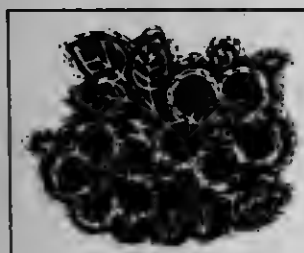
U.S. Cl. D6—201



260,126  
DECAL FOR CULINARY WARE OR THE LIKE

Estelle G. Rothstein, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.  
Filed Jun. 29, 1979, Ser. No. 53,359  
Term of patent 14 years  
Int. Cl. D07—01; D19—08

U.S. Cl. D7—39



260,127  
DECAL FOR A PLATE OR THE LIKE

Estelle G. Rothstein, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.  
Filed Jan. 29, 1979, Ser. No. 53,360  
Term of patent 14 years  
Int. Cl. D07—01; D19—08

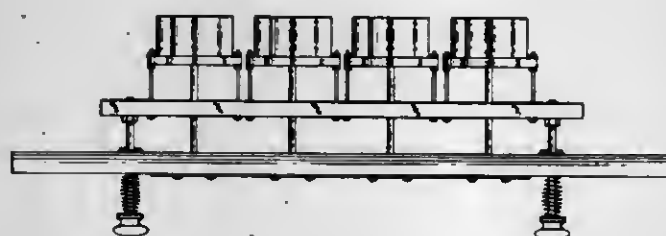
U.S. Cl. D7—39



260,128  
ROSETTE IRON

Michael J. Sommerfeld, 1126 Dennis St., Chippewa Falls, Wis. 54729  
Filed Sep. 20, 1978, Ser. No. 945,178  
The portion of the term of this patent subsequent to Sep. 30, 1994, has been disclaimed.  
Term of patent 14 years  
Int. Cl. D07—02

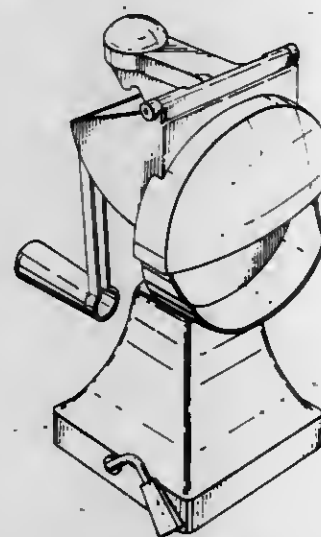
U.S. Cl. D7—43



260,129  
MACHINE FOR GRATING, SLICING AND/OR GRINDING FOODSTUFFS

So Shun, 77, Hoi Yuen Rd., Flat B, 2nd Flr., Yip Fat Industrial Bldg., Kwung, Kowloon, Hong Kong  
Filed Sep. 28, 1979, Ser. No. 79,719  
Claims priority, application United Kingdom, May 8, 1979, 989,814/79

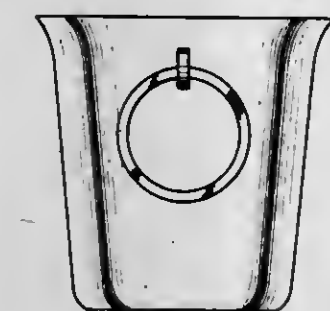
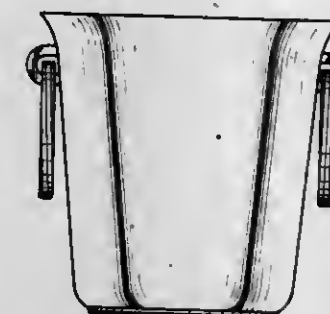
Term of patent 14 years  
Int. Cl. D07—04  
U.S. Cl. D7—47



260,130  
CHAMPAGNE COOLING BUCKET OR THE LIKE

Alain D. Perrin, Rueil Malmaison, France, assignor to Interdica, S.A., Villars-sur-Glane, Switzerland  
Filed Feb. 23, 1979, Ser. No. 14,761  
Claims priority, application Hague, Aug. 29, 1978, 67448  
Term of patent 14 years  
Int. Cl. D07—01

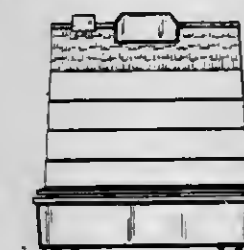
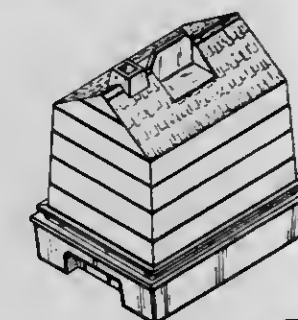
U.S. Cl. D7—70



260,131  
HOT DOG COOKER

Russell D. Hiatt, West Bend, Wis., and David L. Painter, Glenview, Ill., assignors to Dart Industries Inc., Los Angeles, Calif.  
Filed Jun. 8, 1979, Ser. No. 46,879  
Term of patent 14 years  
Int. Cl. D07—02

U.S. Cl. D7—85



260,132  
CABLE CUTTER

Frank E. Shaffer, P.O. Box 1546, Costa Mesa, Calif. 92626  
Filed Sep. 22, 1978, Ser. No. 944,926  
Term of patent 14 years  
Int. Cl. D8—03

U.S. Cl. D8—52

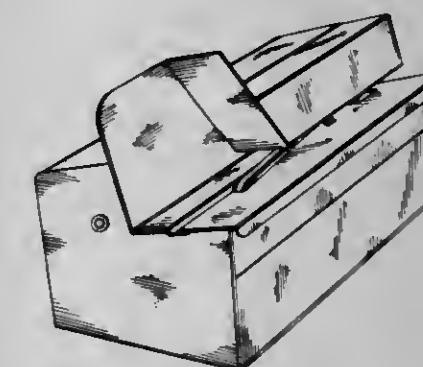


260,133  
LETTER OPENER

John J. Power, Westbury, N.Y.; Raymond H. Van Wagener, Darien, Conn.; John C. Costello, Syracuse, and Arthur J. Pulos, Fayetteville, both of N.Y., assignors to Swingline Inc., Long Island City, N.Y.

Filed May 16, 1978, Ser. No. 906,767  
Term of patent 14 years  
Int. Cl. D8—04

U.S. Cl. D8—61





260,134

**GARDEN HOSE COILING DEVICE**

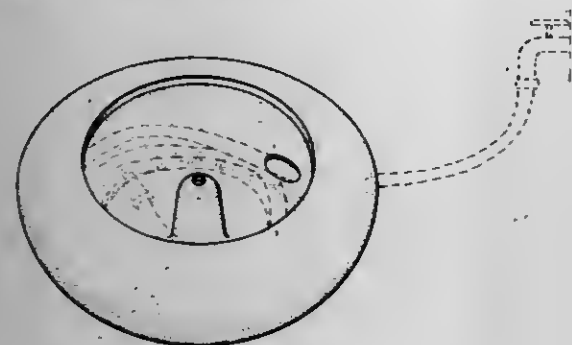
Riffy Berca, 4016 Sawtelle Blvd., Los Angeles, Calif. 90066

Filed Oct. 24, 1979, Ser. No. 87,710

Term of patent 14 years

Int. Cl. D8-08

U.S. Cl. D8-358



260,135

**ADJUSTABLE SHADE MOUNTING HEAD AND PULL-ROPE GUIDE ASSEMBLY**

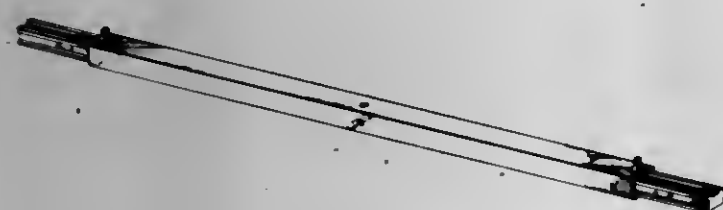
Lyman N. Fairbanks, 840 S. Pickett St., Alexandria, Va. 22304

Filed Jul. 31, 1979, Ser. No. 62,495

Term of patent 14 years

Int. Cl. D8-08

U.S. Cl. D8-377



260,136

**CAN END**

Peter L. Revill, Middle Park, Australia, assignor to The Broken Hill Proprietary Company Limited, Melbourne, Australia

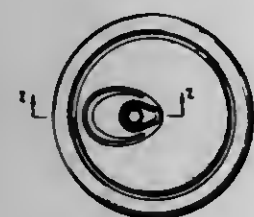
Filed Nov. 28, 1978, Ser. No. 964,338

Claims priority, application Australia, May 30, 1978, 74933/78

Term of patent 14 years

Int. Cl. D09-99

U.S. Cl. D9-438



260,137

**COMBINED CLOCK AND CABINET DOOR PANEL**

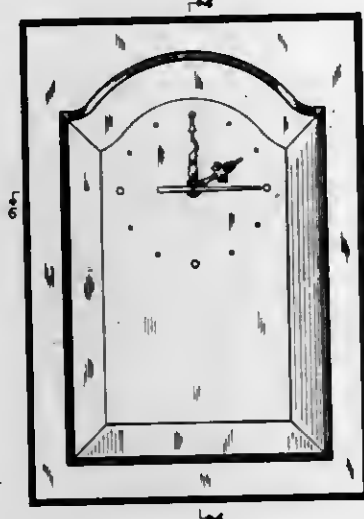
Rodney D. Rush, Rte. 3, Box 282, Lineville, Ala. 36266

Filed Mar. 30, 1979, Ser. No. 25,334

Term of patent 14 years

Int. Cl. D10-01

U.S. Cl. D10-2



260,138

**PHOTOGRAPHIC TIMER**

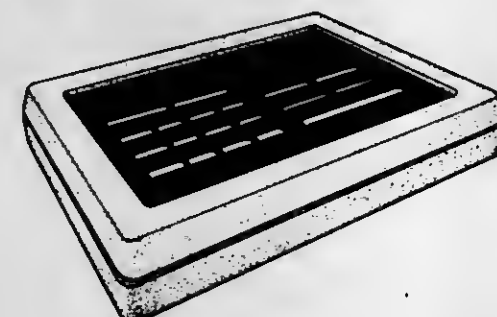
Darwin E. Chapman, 3481 Kenneth Dr., Palo Alto, Calif. 94306, and James M. Zeiszler, 275 Hawthorne St. #127, Palo Alto, Calif. 94301

Filed Mar. 22, 1979, Ser. No. 23,025

Term of patent 14 years

Int. Cl. D10-03

U.S. Cl. D10-40



260,139

**ILLUMINABLE PENDANT, CHARM OR THE LIKE**

Jason W. Gould, P.O. Box 2262, Leucadia, Calif. 92024

Filed Jun. 15, 1979, Ser. No. 48,913

Term of patent 14 years

Int. Cl. D11-01

U.S. Cl. D11-75



260,140

**JEWELRY PENDANT**

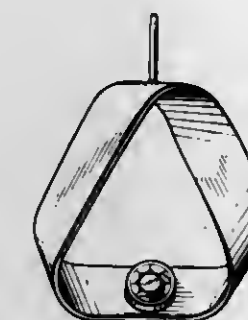
Georges Bicenno, 8 rue Paul Landrin, 83 Toulon, France

Filed Nov. 7, 1978, Ser. No. 959,192

Term of patent 14 years

Int. Cl. D11-01

U.S. Cl. D11-79



260,141

**SLED**

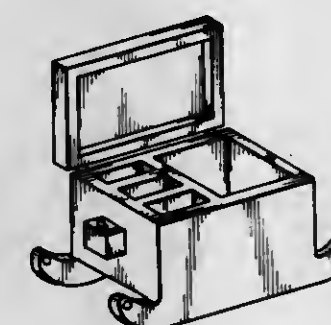
Angelina M. West, 2605 Academy Ave., Holmes, Pa. 19043

Filed Aug. 31, 1977, Ser. No. 808,540

Term of patent 14 years

Int. Cl. D12-14

U.S. Cl. D12-9



260,142

**VEHICLE TIRE**

Hiroyoshi Takigawa, Kodaira, and Hiroshi Kojima, Hino, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

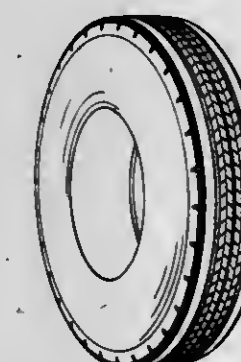
Filed Apr. 26, 1979, Ser. No. 33,632

Claims priority, application Japan, Nov. 22, 1978, 53-49308

Term of patent 14 years

Int. Cl. D12-15

U.S. Cl. D12-142



260,143

**VEHICLE OVERHEAD CONSOLE**

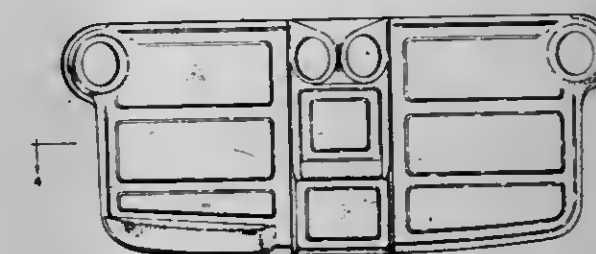
Fred O. Hoese, 30706 Wildcat Dr., Bulverde, Tex. 78163

Filed Jun. 18, 1979, Ser. No. 49,741

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-155



260,144

**IGNITION HIGH VOLTAGE CORD COVER**

Yoshimi Miyamoto, Toyota, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

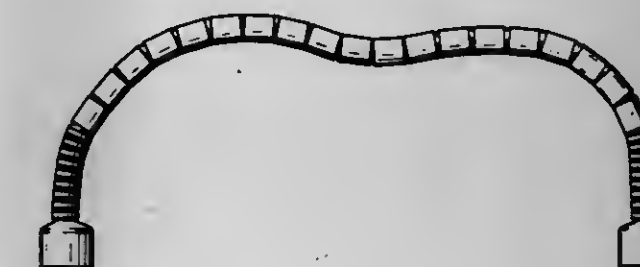
Filed Feb. 28, 1979, Ser. No. 15,921

Claims priority, application Japan, Aug. 29, 1978, 53-36550

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-13



260,145

**IGNITION HIGH VOLTAGE CORD COVER**

Yoshimi Miyamoto, Toyota, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

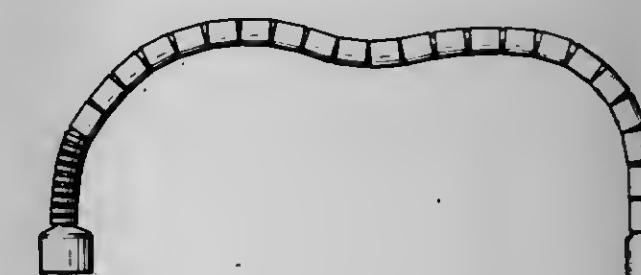
Filed Feb. 28, 1979, Ser. No. 15,922

Claims priority, application Japan, Aug. 29, 1978, 53-36551

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-13





260,146

**ELECTRICAL KILOWATT-HOUR METER POSITION ADAPTER**

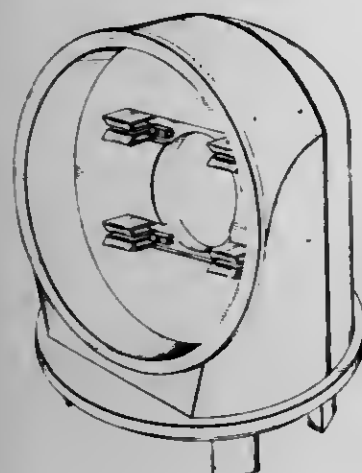
Mario Salazar, 4524 N. Pershing St., San Bernadino, Calif. 92407

Filed Jan. 19, 1979, Ser. No. 4,900

Term of patent 14 years

Int. Cl. D13-03

U.S. Cl. D13-31



260,148

**PORTABLE MOTOR VEHICULAR RADIO OR SIMILAR ARTICLE**

Lennart Berg, Frösön, Sweden, assignor to Polarn Innovation Aktiebolag, Östersund, Sweden

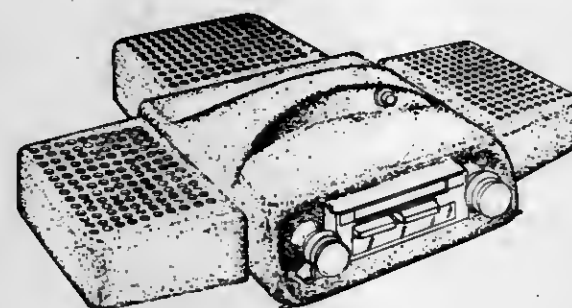
Filed Apr. 24, 1978, Ser. No. 899,631

Claims priority, application Sweden, Oct. 24, 1977, 2135/77

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-70



260,149

**LAWN MOWER COVER**

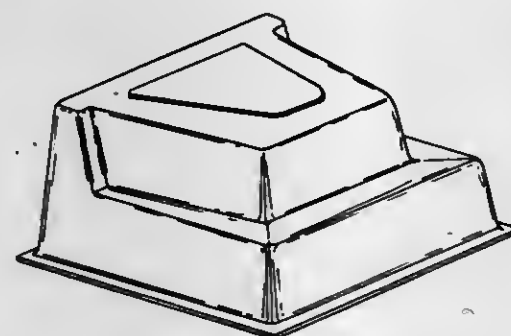
David B. Harris, 3113 Amherst Rd., Rocky Mount, N.C. 27801

Filed Feb. 26, 1979, Ser. No. 15,447

Term of patent 14 years

Int. Cl. D15-03

U.S. Cl. D15-17



260,147

**TELEPHONE**

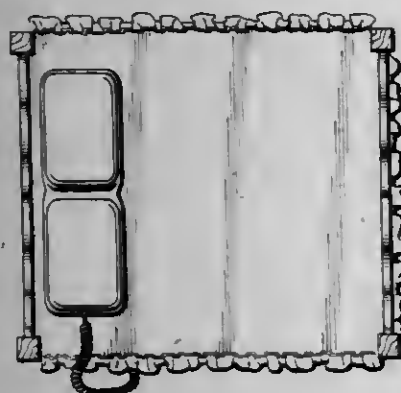
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004

Filed May 7, 1979, Ser. No. 36,585

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-53



260,150

**PORTABLE MIXER**

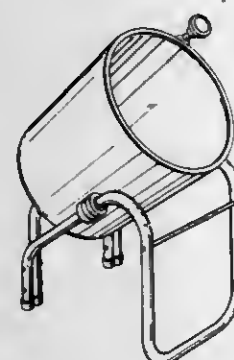
Clarence K. Palmer, R.F.D. #1, Polo, Ill. 61064

Filed Feb. 9, 1979, Ser. No. 11,037

Term of patent 14 years

Int. Cl. D15-04

U.S. Cl. D15-19



260,151

**TOP COVER FOR TANK TYPE SUCTION CLEANER**

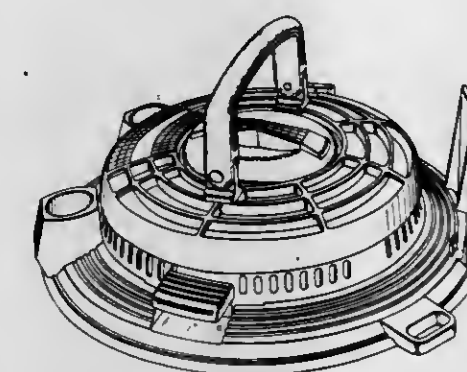
Eugene F. Martinec, East Cleveland, Ohio, assignor to Health-Mor Inc., Chicago, Ill.

Filed Oct. 7, 1977, Ser. No. 840,308

Term of patent 14 years

Int. Cl. D15-05

U.S. Cl. D15-62



260,154

**COMBINED TABLE TENNIS TABLE AND REBOUND SIDE WALLS**

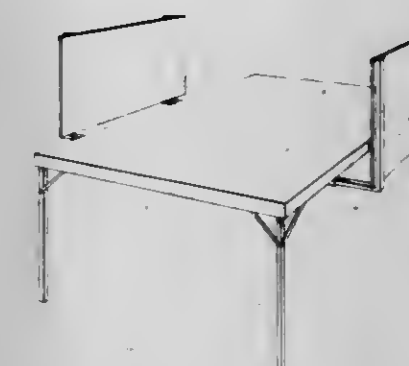
John A. Dremel, 7646 Denio, Citrus Heights, Calif. 95610

Filed Mar. 23, 1979, Ser. No. 23,143

Term of patent 14 years

Int. Cl. D21-07

U.S. Cl. D21-14



260,155

**GAME BOARD**

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91345,

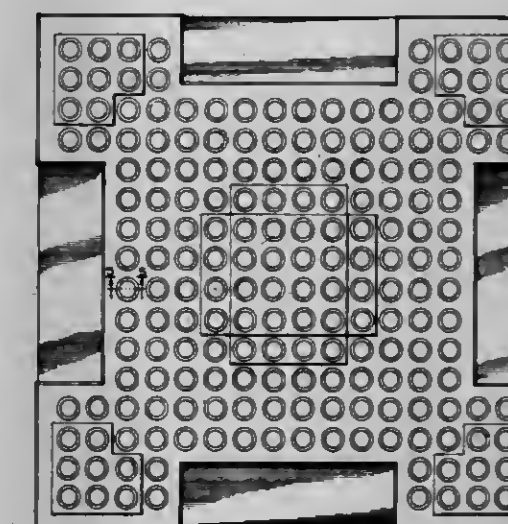
and Hans B. Petersen, San Clemente, Calif., assignors to Adolph E. Goldfarb, Tarzana, Calif.

Filed Feb. 2, 1979, Ser. No. 8,958

Term of patent 14 years

Int. Cl. D21-07

U.S. Cl. D21-20



260,152

**BEVERAGE DISPENSING MACHINE**

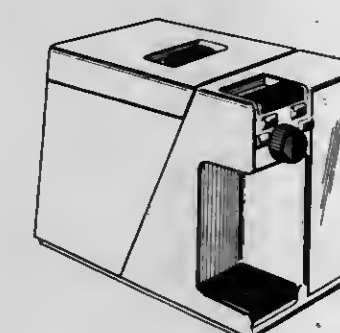
Samuel C. Crosby, Jr., Decatur, Ga., and Robert B. Whorton, III, Spartanburg, S.C., assignors to Tannetics, Inc., Erie, Pa.

Filed Jul. 2, 1979, Ser. No. 53,948

Term of patent 14 years

Int. Cl. D15-08

U.S. Cl. D15-112



260,153

**MEDICAL IDENTIFICATION CARD**

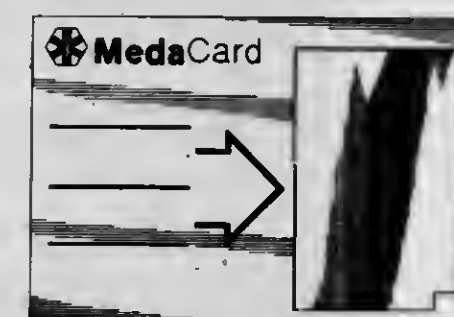
Norman R. Koltys, Marietta, Ga., assignor to Charles F. Manley, Farmington Hills, Mich. and Pamela Toze, Atlanta, Ga., part interest to each

Filed Sep. 18, 1978, Ser. No. 943,109

Term of patent 14 years

Int. Cl. D19-05

U.S. Cl. D19-10



260,156

**DECK OF CARDS**

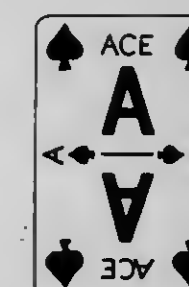
Angelus M. Persons, 112 Conklin St., Syracuse, N.Y. 13209

Filed Aug. 21, 1978, Ser. No. 935,732

Term of patent 14 years

Int. Cl. D21-07

U.S. Cl. D21-45





260,157

## TOY FASTENER

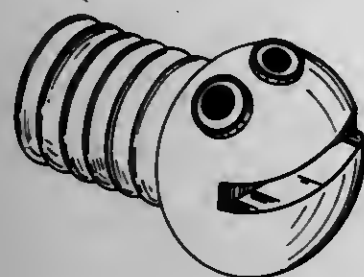
Mel Appel, 9 Nottingham Rd., Livingston, N.J. 07039, and Paul B. Means, Basking Ridge, N.J., assignors to Mel Appel, Livingston, N.J.

Filed Feb. 23, 1979, Ser. No. 14,599

Term of patent 14 years

Int. Cl. D21-01; D8-08

U.S. Cl. D21-109



260,158

## TOY CRANE TRUCK

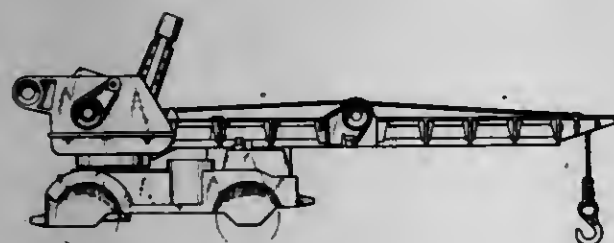
Jack L. Breneman, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Oct. 19, 1978, Ser. No. 952,697

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-131



260,159

## ROLLER SKATING FIGURINE TOY

Osamu Takahashi, Gardena, Calif., assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Jan. 15, 1979, Ser. No. 3,271

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-150

260,160  
PUTTER HEAD

Charles Giebel, Phoenix, Ariz.; Charles D. Rambo, Escondido, Calif., and Gary Spencer, Phoenix, Ariz., assignors to Acushnet Company, New Bedford, Mass.

Filed May 29, 1979, Ser. No. 43,351

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-217



260,161

## ROLLER SKATE

Georg Spreng, Weiherstrasse 10, D-7272 Altensteig, Fed. Rep. of Germany

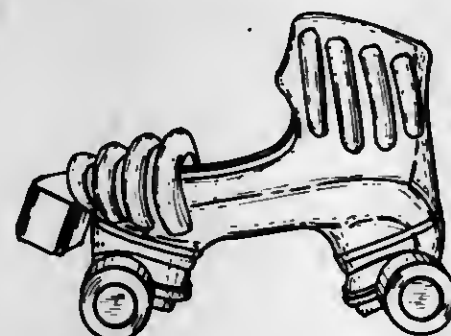
Filed Nov. 19, 1979, Ser. No. 95,330

Claims priority, application Fed. Rep. of Germany, May 19, 1979, 568

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-226



260,162

## LIFE JACKET

Peter J. Hume, 51 Chesterton St., Johnsonville, Wellington, New Zealand

Filed Sep. 20, 1978, Ser. No. 945,174

Claims priority, application New Zealand, Mar. 31, 1978, 15422

Term of patent 14 years

Int. Cl. D21-02

U.S. Cl. D21-238



260,163

## TENT

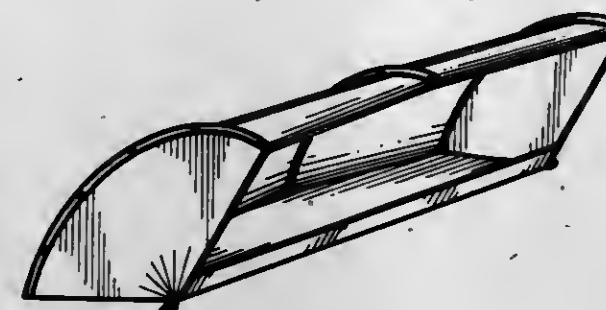
Arthur H. Stewart, Jr., 1904 S. Glendon Dr., Melbourne, Fla. 32901

Filed Sep. 12, 1978, Ser. No. 941,478

Term of patent 14 years

Int. Cl. D21-04

U.S. Cl. D21-253



260,164

## CARTRIDGE

Terry J. Johnson, One E. Schiller, Chicago, Ill. 60611

Filed Dec. 17, 1979, Ser. No. 104,148

Term of patent 14 years

Int. Cl. D22-03

U.S. Cl. D22-10



260,165

## OPTICAL GUN SIGHT MOUNT

Cecil J. Ross, El Paso, Tex., assignor to W. R. Weaver Company, El Paso, Tex.

Filed Oct. 22, 1979, Ser. No. 86,918

Term of patent 14 years

Int. Cl. D22-01

U.S. Cl. D22-7



260,166

## FISHING REEL

Seiji Myojo, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

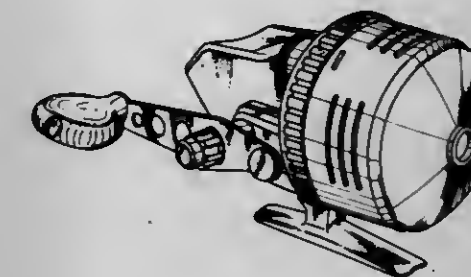
Filed Nov. 2, 1979, Ser. No. 90,625

Claims priority, application Japan, May 18, 1979, 54-20439

Term of patent 14 years

Int. Cl. D22-05

U.S. Cl. D22-25



260,167

## FISHING LURE

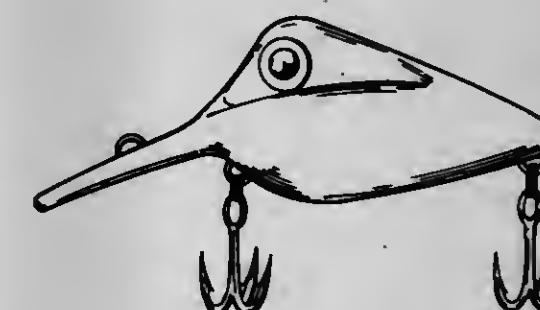
William T. Neavin, 3736 Berry Dr., Studio City, Calif. 91604

Filed Sep. 20, 1979, Ser. No. 77,385

Term of patent 14 years

Int. Cl. D22-05

U.S. Cl. D22-28



260,168

## SUPPORT STRUCTURE FOR A FISH NET

Karl T. Sterner, Box 5188, S-793 00 Leksand, Sweden

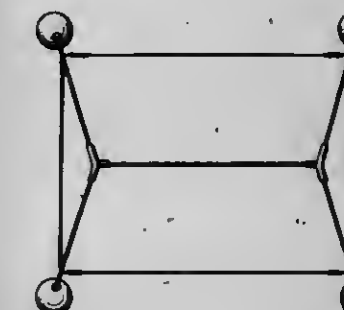
Filed May 17, 1978, Ser. No. 907,273

Claims priority, application Sweden, Nov. 30, 1977, 77/2496

Term of patent 14 years

Int. Cl. D22-05

U.S. Cl. D22-30





260,169

## IRRIGATION SPRAY HEAD

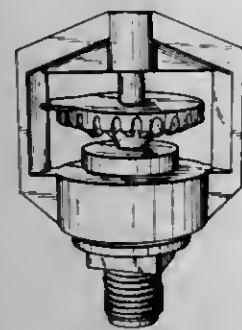
Merle A. Vikre, 32 Windward Way, Gulf Harbors, New Port Richey, Fla. 33552

Filed Apr. 24, 1980, Ser. No. 143,412

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—35



260,170

## PROTECTIVE COVER FOR A SEWER PIPE FLANGE

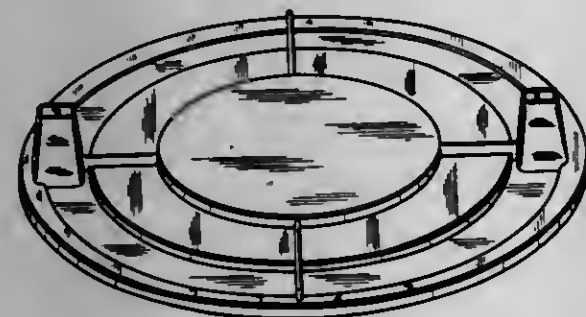
Kenneth R. Cornwall, Livonia, Mich., assignor to Ken-Wall, Incorporated, Livonia, Mich.

Filed Dec. 26, 1978, Ser. No. 973,379

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—41



260,171

## WOOD STOVE

Francois Fluttaz, 5365, 10e Ave., Rosemont, Quebec, Canada (H1X 2Z6)

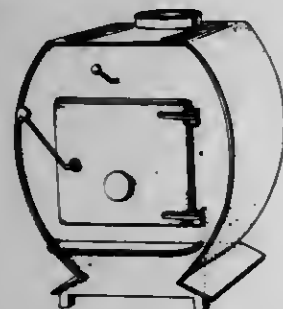
Filed May 21, 1979, Ser. No. 41,047

Claims priority, application Canada, Apr. 9, 1979, 0904795

Term of patent 14 years

Int. Cl. D23—03

U.S. Cl. D23—97



260,172

## OSTEOPATHIC EXAMINING TABLE

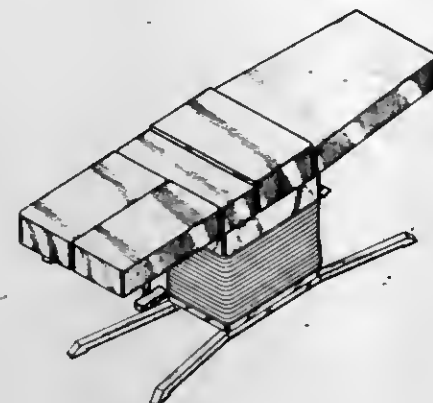
Virgil D. Kyle, 307 Pebblebrook, Arlington, Tex. 76014

Filed Nov. 24, 1978, Ser. No. 963,505

Term of patent 14 years

Int. Cl. D14—01

U.S. Cl. D24—3



260,173

## ELECTROCARDIOGRAPH

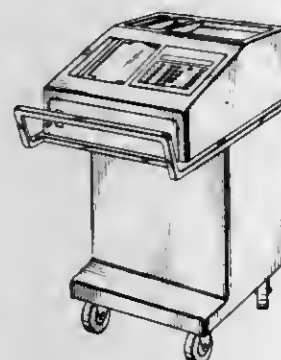
Walter W. Wiebe, Brewster, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1978, Ser. No. 951,217

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—17



260,174

## HOLLOW FIBER ARTIFICIAL KIDNEY

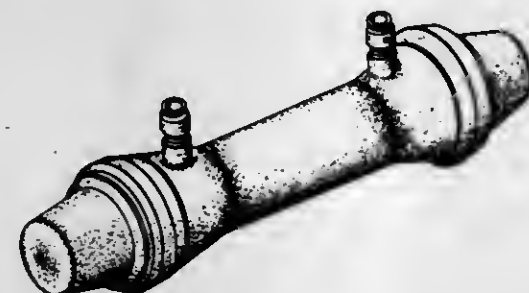
Zane H. Geel, Concord, Calif., assignor to Cordis Dow Corp., Miami, Fla.

Filed May 14, 1979, Ser. No. 39,044

Term of patent 14 years

Int. Cl. D24—01

U.S. Cl. D24—21



260,175

## FLUID FILTER UNIT

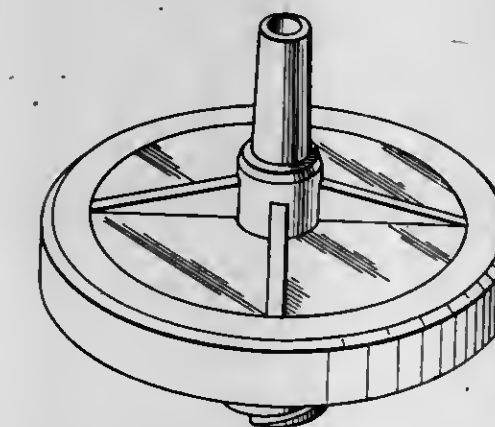
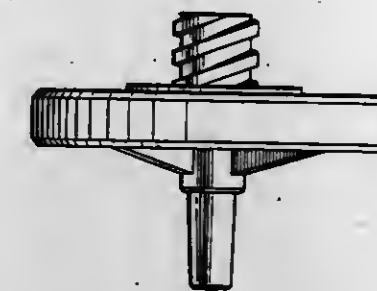
Wolfgang Hein, Dassel, and Peter Grundmann, Bockeroth, both of Fed. Rep. of Germany, assignors to Carl Schleicher & Schuil GmbH & Co., KG, Einbeck, Fed. Rep. of Germany

Filed May 24, 1979, Ser. No. 42,204

Term of patent 14 years

Int. Cl. D24—02; D23—99

U.S. Cl. D24—21



260,176

## PHOTOTHERAPY CABINET

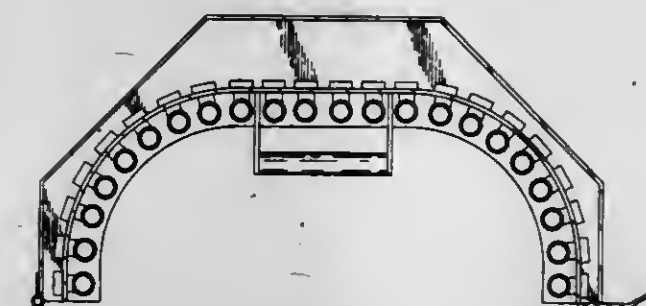
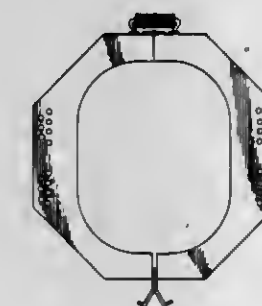
Armando Boschetti, and David W. Swanson, both of Bryan, Ohio, assignors to Paul B. Elder Company, Bryan, Ohio

Filed May 12, 1980, Ser. No. 149,039

Term of patent 14 years

Int. Cl. D24—01

U.S. Cl. D24—39



260,177

## WOUND DRAINAGE BOTTLE

Patricia E. Duncan, Bayport, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 5, 1979, Ser. No. 9,641

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—54



260,178

## DISPENSING CONTAINER FOR PHARMACEUTICAL DILUENTS OR THE LIKE

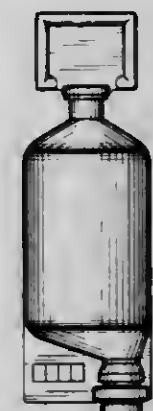
Louis T. Pagels, Hanover Park, Ill., assignor to Automatic Liquid Packaging, Inc., Arlington Heights, Ill.

Filed Sep. 21, 1978, Ser. No. 944,343

Term of patent 14 years

Int. Cl. D24—99

U.S. Cl. D24—63



260,179

## THEATER BUILDING

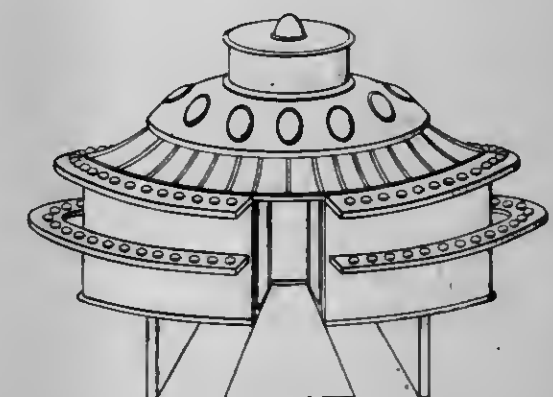
Robert L. Buck, 2701 Chantilly Pl., Greensboro, N.C. 27407

Filed Oct. 15, 1979, Ser. No. 84,810

Term of patent 14 years

Int. Cl. D25—03

U.S. Cl. D25—11





260,180

**CANTILEVERED PEDESTAL HOUSE**

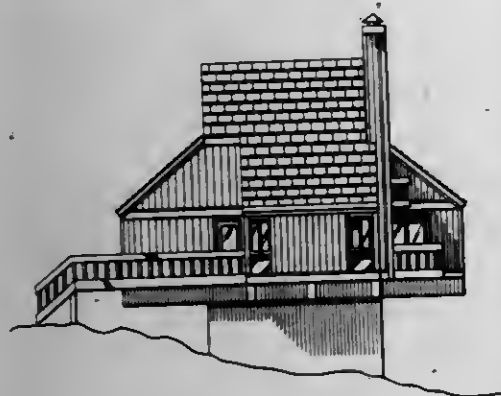
Bertram Zusman, 4112 Montecello Blvd., Youngstown, Ohio 44505

Filed Sep. 10, 1979, Ser. No. 73,738

Term of patent 14 years

Int. Cl. D25-03

U.S. Cl. D25-17



260,181

**WINDOW COMPONENT EXTRUSION**

Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada

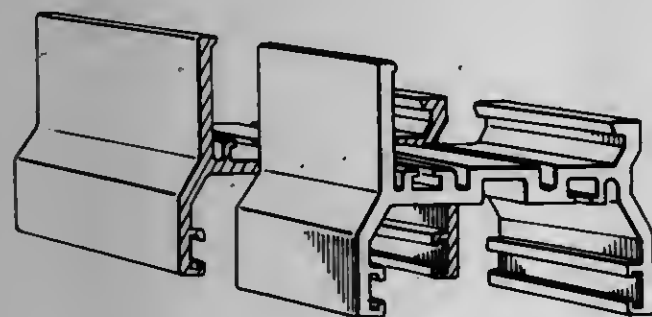
Filed Sep. 14, 1978, Ser. No. 942,391

Claims priority, application Canada, Mar. 17, 1978, 1703782

Term of patent 14 years

Int. Cl. D25-01

U.S. Cl. D25-74



260,182

**WINDOW COMPONENT EXTRUSION**

Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada

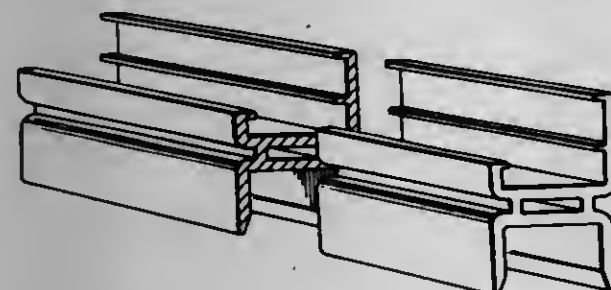
Filed Sep. 14, 1978, Ser. No. 942,752

Claims priority, application Canada, Mar. 17, 1978, 17037814

Term of patent 14 years

Int. Cl. D25-01

U.S. Cl. D25-74



260,183

**WINDOW COMPONENT EXTRUSION**

Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada

Filed Sep. 14, 1978, Ser. No. 942,754

Claims priority, application Canada, Mar. 17, 1978, 17037810

Term of patent 14 years

Int. Cl. D25-01

U.S. Cl. D25-74



260,184

**UTILITY POLE**

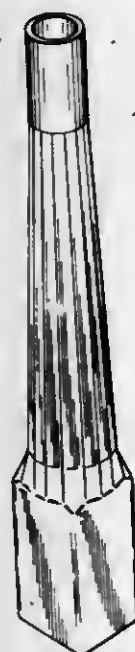
William J. Whatley, 1300 Greenmeadow La., Littleton, Colo. 80121

Filed Jul. 26, 1979, Ser. No. 61,235

Term of patent 14 years

Int. Cl. D25-01; D26-03

U.S. Cl. D25-77



260,185

**PAVING BLOCK**

Geoffrey A. Griffiths, Melton Mowbray, England, assignor to Mono Concrete Limited, Surrey, England

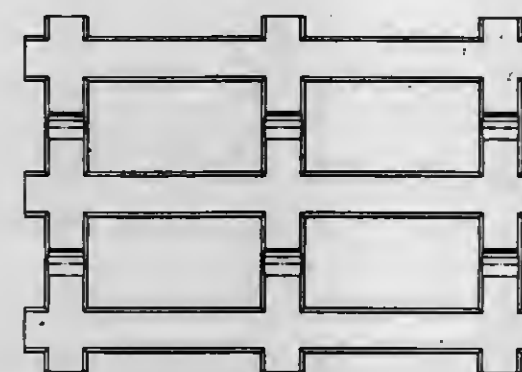
Filed Nov. 28, 1978, Ser. No. 964,179

Claims priority, application United Kingdom, Jun. 16, 1978, 985062/78

Term of patent 14 years

Int. Cl. D25-01

U.S. Cl. D25-91



260,186

**ARTIFICIAL CANDLE**

Darrell L. Busse, 1990 Newark St., Aurora, Colo. 80010

Filed Oct. 10, 1978, Ser. No. 949,505

Term of patent 14 years

Int. Cl. D26-02

U.S. Cl. D26-11



260,187

**LIGHT FIXTURE HOUSING**

Lars Andersson, Halmstad, Sweden, assignor to HAFABRIKS AB, Halmstad, Sweden

Filed Nov. 29, 1978, Ser. No. 964,588

Term of patent 14 years

Int. Cl. D26-05

U.S. Cl. D26-85



260,188

**HAIR ARRANGER**

Harvey L. Boykin, Jr., P.O. Box 8743, Dallas, Tex. 75216

Filed Apr. 16, 1979, Ser. No. 30,429

Term of patent 14 years

Int. Cl. D28-03

U.S. Cl. D28-10



260,189

**HAIR DRYER ATTACHMENT**

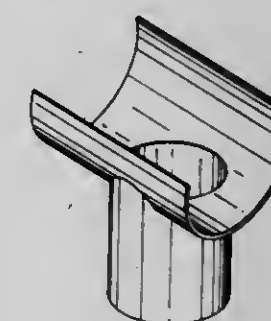
Frederic V. Winkler, 14713 Waterway Dr., Rockville, Md. 20853

Filed Apr. 6, 1978, Ser. No. 893,971

Term of patent 14 years

Int. Cl. D28-03

U.S. Cl. D28-18



260,190

**COMBINED COMB AND CASE**

Loyal E. Williams, 20817 SW. Alexander, Aloha, Ore. 97005

Filed Sep. 4, 1979, Ser. No. 72,339

Term of patent 14 years

Int. Cl. D28-03

U.S. Cl. D28-22





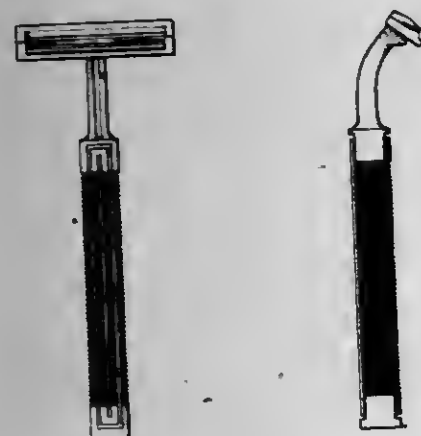
260,191

## DISPOSABLE RAZOR

David O. Chase, Skaneateles, N.Y., and Clemens A. Iten, Staunton, Va., assignors to American Safety Razor Company, Verona, Va.

Filed May 9, 1979, Ser. No. 37,577  
Term of patent 14 years  
Int. Cl. D28—03

U.S. Cl. D28—46



260,192

## CURTAIN MATERIAL

Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland  
Filed Aug. 30, 1979, Ser. No. 71,398

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1979, 305

Term of patent 14 years  
Int. Cl. D5—05

U.S. Cl. D47—6 E



260,193

## EMBOSSED BATHROOM TISSUE SHEET

Frank Elchook, Jr., Whitehall, Pa., and Galyn A. Schulz, Appleton, Wis., assignors to American Can Company, Greenwich, Conn.

Filed Jan. 8, 1979, Ser. No. 1,760  
Term of patent 14 years  
Int. Cl. D5—06

U.S. Cl. D59—2 B



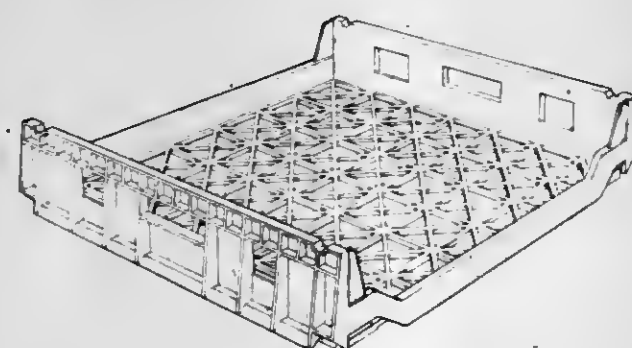
260,194

## BAKERY TRAY OR SIMILAR ARTICLE

James C. Carroll, and Lewis T. Johnson, both of Hopkinsville, Ky., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 825,810, Aug. 18, 1977, abandoned.  
This application Jul. 31, 1979, Ser. No. 62,855  
Term of patent 14 years  
Int. Cl. D99—00

U.S. Cl. D99—44



## LIST OF PATENTEEES

TO WHOM

## PATENTS WERE ISSUED ON THE 11TH DAY OF AUGUST, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A/S Plovfabrikken Fraugde: See—  
Pedersen, Jens S., 4,283,071, Cl. 280-415.00A.
- Abbott Laboratories: See—  
Rosenbrook, William, Jr., 4,283,529, Cl. 536-17.00R.
- Abe, Yoichi, to Toybox Corporation; and Wamy Corporation. Ambulatory worker toy. 4,282,677, Cl. 46-118.000.
- Abe, Yoshiaki, to Diesel Kiki Company, Ltd. Glow plug temperature control apparatus. 4,283,619, Cl. 219-492.000.
- Abeta, Sadaharu: See—  
Nakatsuka, Kiyoharu; and Abeta, Sadaharu, 4,283,195, Cl. 8-524.000.
- Abex Corporation: See—  
Thiele, Arthur M.; and Fabert, Herman A., Jr., 4,282,664, Cl. 37-118.00R.
- Abhiraman, Agaram S.: See—  
Capps, Spencer W.; Hagler, Gerald E.; and Abhiraman, Agaram S., 4,283,364, Cl. 264-176.00F.
- Abrahami, Shoshana, to Ziklag Reinforced Plastics, Ltd. Light-transmitting roofing and cladding panel. 4,283,451, Cl. 428-182.000.
- Abrahamson, Carl-Hugo; and Heed, Bjorn. Solution-concentrating apparatus. 4,283,250, Cl. 159-9.00R.
- ACF Industries, Inc.: See—  
Basch, Walter E.; and Haney, John W., 4,282,801, Cl. 92-102.000.
- Adam, John D., to Westinghouse Electric Corp. Magnetostatic wave signal-to-noise-enhancer. 4,283,692, Cl. 333-17.00L.
- Adams, Frederick J., to Cam Gears Limited. Steering gear and method of assembling such gear. 4,282,770, Cl. 74-498.000.
- Adams, Robert T.; Ahrens, Paul E.; and Granlund, John, to International Telephone and Telegraph Corporation. Cryptographically secure communication system. 4,283,602, Cl. 179-1.50R.
- Aebi, Rudolf: See—  
Vogel, Christian; and Aebi, Rudolf, 4,283,221, Cl. 71-118.000.
- af Ekenstam, Bo T.; and Nordqvist, Erik G. P., to Landstingens Inkopscentral. Method for discharge of quantities of fluid or semi-fluid substances from a container. 4,282,986, Cl. 222-1.000.
- Agency of Industrial Science & Technology: See—  
Kawabata, Yasujiro; and Ogata, Ikuei, 4,283,563, Cl. 568-454.000.
- Agfa-Gevaert AG: See—  
Engelsmann, Dieter; Lermann, Peter; Nicko, Reinhard; Schultes, Herbert; and Wagner, Karl, 4,283,132, Cl. 354-202.000.
- AGFA-Gevaert Aktiengesellschaft: See—  
Zangenfeind, Helmut, 4,282,997, Cl. 226-91.000.
- Ahrens, Paul E.: See—  
Adams, Robert T.; Ahrens, Paul E.; and Granlund, John, 4,283,602, Cl. 179-1.50R.
- Ainscow, Frank; and Anwyl, Edward D., to International Business Machines Corporation. Line scan circuits for cathode ray tube displays. 4,283,662, Cl. 315-364.000.
- Air Industrie: See—  
Billard, Francois, 4,283,223, Cl. 75-25.000.
- Air Preheater Company, Inc., The: See—  
Fernando, James U. R., 4,283,208, Cl. 55-304.000.
- Aisan Industry Co., Ltd.: See—  
Arai, Hisaharu; and Kadowaki, Kunio, 4,283,356, Cl. 261-72.00R.
- Minoura, Mikio, 4,282,846, Cl. 123-568.000.
- Aisin Seiki Kabushiki Kaisha: See—  
Momose, Yutaka; and Nakamura, Kazuaki, 4,282,716, Cl. 62-6.000.
- Akers, Francis I.; and Maklad, Mokhtar S., to International Telephone and Telegraph Corporation. Method of fabrication of single mode optical fibers or waveguides. 4,283,213, Cl. 65-3.00A.
- Akitomo, Nobuo; and Tohyama, Shigeo, to Hitachi, Ltd. Recording system with inter-line space positioning means. 4,283,732, Cl. 346-112.000.
- Akiyama, Fumitake, to San-O Industrial Co., Ltd. Double tubular time-lag fuse having improved breaking capacity. 4,283,700, Cl. 337-166.000.
- Akiyama, Toshiyuki: See—  
Izumita, Morishi; Umemoto, Masuo; Sato, Kazuhiro; Akiyama, Toshiyuki; Takahashi, Kenji; and Nagahara, Shusaku, 4,283,742, Cl. 358-213.000.
- Aktiebolaget Bofors: See—  
Holm, Boris, 4,283,549, Cl. 560-50.000.
- Akzona Incorporated: See—  
Brownell, Kenneth W., Jr., 4,283,592, Cl. 174-21.00R.
- Capps, Spencer W.; Hagler, Gerald E.; and Abhiraman, Agaram S., 4,283,364, Cl. 264-176.00F.
- Zeilstra, Jacobus J.; de Klein, Willem J.; Bik, Joannes D.; and Vis, Jan, 4,283,314, Cl. 260-23.00A.
- Albert, Orrin W., Jr., to United States of America, Navy. In-flight hydrophone deployment system for underwater vehicles. 4,283,781, Cl. 367-131.000.
- Alleghany Pharmacal: See—  
Mathews, Larry, 4,282,877, Cl. 128-355.000.
- Allied Chemical Corporation: See—  
Marshall, Robert M.; and Dardoufas, Kimon C., 4,283,292, Cl. 252-8.800.
- Novotny, Miroslav, 4,283,582, Cl. 568-902.000.
- Sexton, Peter; and De Cristofaro, Nicholas J., 4,283,225, Cl. 75-170.000.
- Alps Electric Co., Ltd.: See—  
Kondo, Shiro; and Oyama, Minoru, 4,283,613, Cl. 200-340.000.
- Ohtani, Takeshi; Nishimura, Susumu; Magami, Kozo; and Osada, Katsuhisa, 4,283,704, Cl. 338-138.000.
- Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. Hydroxyalkyl and oxoalkyl substituted phenols as analgesics and sedatives. 4,283,569, Cl. 568-764.000.
- Aluminum Company of America: See—  
Bonsignore, Patrick V., 4,283,316, Cl. 260-23.00A.
- Peterson, Richard W., 4,283,148, Cl. 366-142.000.
- AM International, Inc.: See—  
Swift, William R.; Herrod, Don W.; and Marsh, James M., 4,283,136, Cl. 355-45.000.
- Amada Company, Limited: See—  
Kojima, Shigeo; and Koyama, Katsumi, 4,282,738, Cl. 72-389.000.
- Amaz Inc.: See—  
Coale, Robert D.; Sarbutt, Keith W.; and Smith, Derrick B., 4,283,017, Cl. 241-24.000.
- Amberg, Eduard. Liner for trousers or skirt. 4,282,608, Cl. 2-227.000.
- Amco Standards International: See—  
Patterson, James A., 4,283,143, Cl. 356-336.000.
- Amerace Corporation: See—  
Trimmer, Paul A., 4,282,913, Cl. 411-303.000.
- American Can Company: See—  
Meyers, George L., 4,283,001, Cl. 229-37.00R.
- American Cyanamid: See—  
Floyd, Middleton B., Jr., 4,283,550, Cl. 560-53.000.
- American Cyanamid Company: See—  
Tomcufcik, Andrew S.; Wright, William B., Jr.; and Marsico, Joseph W., Jr., 4,283,334, Cl. 260-245.500.
- Young, Chi C.; and DeMaria, Francesco, 4,283,365, Cl. 264-206.000.
- American Hoechst Corporation: See—  
Wenghoefer, Johann; Messier, Dennis G.; and Thompson, James E., 4,283,196, Cl. 8-531.000.
- American Optical Corporation: See—  
Swope, C. Hermas, 4,283,139, Cl. 356-125.000.
- American Petroscience Corporation: See—  
Lamel, Arthur E., 4,283,779, Cl. 367-82.000.
- American Screen Printing Equipment Company: See—  
Lala, Louis A., 4,282,805, Cl. 101-38.00R.
- Lala, Louis A., 4,282,806, Cl. 101-38.00R.
- AMP Incorporated: See—  
Bunnell, Edward D., 4,283,106, Cl. 339-125.00R.
- Ferrill, Jess B.; Hughes, Richard L.; and Soderstrom, Melvin A., 4,283,105, Cl. 339-97.00R.
- Amsted-Siemag Kette GmbH: See—  
Janzen, Wolfgang; and Frenker-Hackfort, Ludger, 4,283,183, Cl. 474-162.000.
- Aneschi, Italo: See—  
Schurings, Willy; Aneschi, Italo; and Reinert, Gerhard, 4,283,197, Cl. 8-638.000.
- Anderson-Cook, Inc.: See—  
Jungesjo, Harald N., 4,282,782, Cl. 76-107.00R.
- Anderson, George R.: See—  
Winters, William C.; Chang, Hsien-Hsin; Anderson, George R.; Easter, Ross A.; and Sholl, Jeffrey J., 4,283,427, Cl. 426-107.000.
- Anderson, J. Hilbert, to Sea Solar Power. Boiler structure embodying a plurality of heat exchange units. 4,282,834, Cl. 122-367.00C.
- Anderson, Raymond R. Rock picker. 4,282,932, Cl. 171-63.000.
- Andreades, Sam; Beske, Grant A.; and Lott, John W., to Du Pont de Nemours, E. I., and Company. Use of photosensitive stratum to create through-hole connections in circuit boards. 4,283,243, Cl. 156-237.000.
- Andress, Harry J.: See—  
Schick, John W.; Davis, Robert H.; and Andress, Harry J., 4,283,293, Cl. 252-32.000.
- Andrews, Ronald A., to Xerox Corporation. Development system. 4,282,827, Cl. 118-648.000.
- Aodro, Jean; Bessouat, Roger; Cerdan, Jean-Pierre; and Talieu, Patrick, to Stein Industrie; and Electricite de France. Component for de-spin-



ning a flow of dry vapor or gas and liquid and for separating the liquid from the vapor or gas. 4,283,206, Cl. 55-187.000.

Angle, William M. Corrugated pipe fabricator and installer device and methods of making and using the same. 4,283,160, Cl. 405-156.000.

Anosov, Oleg V.; Mirzoev, Alexander G.; and Obraztsov, Yuri V., to Lackenbach, Lilling & Siegel. High voltage conductor terminal. 4,283,595, Cl. 174-73.00R.

Anthony, Charles; and Portz, Charles A., to Rite-Hite Corporation. Releasable locking device. 4,282,621, Cl. 14-71.100.

Anthony, Walter, to GTE Sylvania Wiring Devices Inc. Lampholder having terminals of the insulation-displaying type. 4,283,107, Cl. 339-147.00R.

Antoku, Mitugu; and Saito, Fumio, to Nissan Motor Company, Limited. Control for supercharger turbines. 4,282,713, Cl. 60-600.000.

Antonini, Joseph: See—  
Staab, Thomas E.; and Antonini, Joseph. 4,283,064, Cl. 277-81.00R.

Antonious, Anthony J. Heel restraint with an adjustable and flexible closure assembly for shoes. 4,282,657, Cl. 36-50.000.

Anwyl, Edward D.: See—  
Ainscow, Frank; and Anwyl, Edward D., 4,283,662, Cl. 315-364.000.

Aomura, Kunio, to Nippon Electric Co., Ltd. Semiconductor integrated circuit device including element for monitoring characteristics of the device. 4,283,733, Cl. 357-68.000.

Aono, Toshiaki; and Hirose, Takeshi, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,283,486, Cl. 430-505.000.

Aoyama, Kazuho: See—  
Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,283,313, Cl. 260-18.0EP.

Aoyama, Tohru: See—  
Obayashi, Nobuharu; Hashizume, Hikaru; Kameyama, Seiji; Ezawa, Sadaaki; Kondo, Tatsunori; Takauji, Kiyomi; and Aoyama, Tohru, 4,282,785, Cl. 84-1.010.

Arai, Hisaharu; and Kadowaki, Kunio, to Aisan Industry Co., Ltd. Carburetor for internal combustion engines. 4,283,356, Cl. 261-72.00R.

Araki, Yoshihiko: See—  
Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,283,313, Cl. 260-18.0EP.

Arco Industries, Ltd.: See—  
Tsui, Kwok W., 4,282,678, Cl. 46-175.00R.

ARES, Inc.: See—  
Stoner, Eugene M.; and Gillum, Richard R., 4,282,796, Cl. 89-198.000.

Arlt, Dieter: See—  
Jautelat, Manfred; and Arlt, Dieter, 4,283,544, Cl. 548-216.000.

Armond, John W.: See—  
Graham, David J.; and Armond, John W., 4,283,212, Cl. 62-18.000.

Armstrong, George H.; Gerkin, Richard M.; and Critchfield, Frank E., to Union Carbide Corporation. Polymer/polyisocyanates. 4,283,500, Cl. 521-137.000.

Arnold, Dan M.: See—  
Pitts, Robert W., Jr.; Arnold, Dan M.; and Paap, Hans J., 4,282,760, Cl. 73-861.020.

Arzi, Amatzia; and Chiel, David, to Arzi, Amatzia; and Metal Works Ramat David. Method and apparatus for irrigation of fields by means of flexible hoses. 4,283,010, Cl. 239-1.000.

Asada, Atsushi, to Sharp Kabushiki Kaisha. Time information print out at a preselected condition in an electronic calculator. 4,283,769, Cl. 364-710.000.

Asahi Glass Company, Ltd.: See—  
Henmi, Ichiro; Noda, Akinori; and Ono, Takuro, 4,283,360, Cl. 264-63.000.

Asai, Akira: See—  
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,150, Cl. 400-666.000.

Asano, Noriyuki: See—  
Tsunekawa, Tokuchichi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,283,137, Cl. 356-4.000.

ASEA Aktiebolag: See—  
Syvakari, Pertti, 4,283,172, Cl. 432-247.000.

Asfandiyarov, Khalim A.: See—  
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexander I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexander I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.

Ashauer, Karl; and Blumenstein, Fritz, to Volkswagenwerk Aktiengesellschaft. Angle gear for vehicle steering mechanism. 4,282,765, Cl. 74-417.000.

Ashiwa, Jun: See—  
Masuda, Yoshio; Fukasawa, Atsushi; Ashiwa, Jun; and Sato, Takuro, 4,283,697, Cl. 333-202.000.

Aspro, Inc.: See—  
St. John, Richard C., 4,282,962, Cl. 192-105.0CD.

Associated Metals & Minerals Corporation: See—  
King, Thomas C., 4,283,625, Cl. 250-272.000.

Atalla, Martin M., to Atalla Technovations. Method and apparatus for securing data transmissions. 4,283,599, Cl. 178-22.100.

Atalla Technovations: See—  
Atalla, Martin M., 4,283,599, Cl. 178-22.100.

Atsumi, Toshio; Takebayashi, Yoshiaki; and Okajima, Hideki, to Sumitomo Chemical Company, Limited; and Kao Soap Company, Limited. 3-Amino-4-homoisotwistane derivatives. 4,283,422, Cl. 424-325.000.

Atwood Vacuum Machine Company: See—  
Gostomski, John J.; Gostomski, Arnold R.; and Davel, Eugene F., 4,283,073, Cl. 280-508.000.

Austin, George O., to Austin, Wilma D. Spare tire bracket lock for pick-up trucks and like vehicles. 4,282,995, Cl. 224-42.230.

Austin, Wilma D.: See—  
Austin, George O., 4,282,995, Cl. 224-42.230.

Auto Fire Corporation: See—  
Byars, Garner B., 4,282,854, Cl. 126-25.00B.

Autoelektronik AG: See—  
Diener, Rudolf, 4,283,358, Cl. 261-88.000.

Automotive Products Limited: See—  
Young, Alastair J.; and Burke, John P., 4,282,800, Cl. 92-37.000.

Autovox S.p.A.: See—  
Pera, Vittorio, 4,283,746, Cl. 360-96.400.

Avant, William W., to Garrett Corporation, The. Control system and method for a pressure responsive fuel regulator. 4,282,710, Cl. 60-39.28R.

Avco Everett Research Laboratory, Inc.: See—  
Daugherty, Jack D.; Kantrowitz, Arthur R.; Sutton, George W.; and Zappa, Oswald L., 4,283,686, Cl. 331-94.50G.

Avon Products, Inc.: See—  
Duffy, John A., 4,283,324, Cl. 260-31.20N.

B-Line Systems, Inc.: See—  
Kowalski, Joseph W., 4,283,157, Cl. 403-297.000.

Bach, Hanswilhelm: See—  
Bernhagen, Wolfgang; Bach, Hanswilhelm; Brundin, Eike; Gick, Wilhelm; Springer, Helmut; and Hack, Adolf, 4,283,564, Cl. 568-461.000.

Bacha, F. Timothy, to Carrier Corporation. Gas metal arc welding method for preparing misaligned tube holes. 4,283,616, Cl. 219-76.140.

Bakuniak, Edmund: See—  
Witek, Stanislaw; Grobelny, Damian; Ptaszkowska, Janina; Bielecki, Andrzej; Bakuniak, Edmund; Fulde, Stefan; and Gorska-Poczopko, Jadwiga, 4,283,399, Cl. 424-248.400.

Ballas, George C., Sr., to Emerson Electric Co. Apparatus for cutting vegetation. 4,282,652, Cl. 30-276.000.

Bally Manufacturing Corporation: See—  
Burnside, Walter M., 4,282,892, Cl. 133-1.00R.

Balmer, Alden M., to Honeywell Inc. Load demand control system. 4,283,635, Cl. 307-35.000.

Baltimore Aircoil Co., Inc.: See—  
Richards, Edward G., 4,283,612, Cl. 200-334.000.

Banks, Kristen E.; Johnson, Anderson F., Jr.; Large, Donald M.; and Reinhard, Fred J., to Western Electric Co., Inc. Transferring and transporting elongated magnetic articles for treatment such as lead straightening. 4,282,908, Cl. 140-147.000.

Barlow, Gordon A.: See—  
Karlin, Richard A.; Barlow, Gordon A.; and Krutsch, John R., 4,283,049, Cl. 273-38.000.

Barlow, Roland J.; and Keem, David L., to Ex-Cell-O Corporation. Control valve unit for hydraulic linear actuator. 4,282,798, Cl. 91-358.00R.

Barone, Bruno J.; and Click, Gaylon T., to Denka Chemical Corporation. Catalyst structure for the partial oxidation of n-butane to produce maleic anhydride. 4,283,307, Cl. 252-432.000.

Barthol, Klaus. Non-woven organic mulch blanket with polyvinylacetate copolymer binder. 4,283,445, Cl. 428-17.000.

Bartlett, Homer E., to Harris Corporation. Five-horn cassegrain antenna. 4,283,728, Cl. 343-781.0CA.

Bartley, Francis A., to Paccar Inc. Wheel assembly. 4,282,952, Cl. 188-18.00A.

Basch, Walter E.; and Haney, John W., to ACF Industries, Inc. Crash-worthy fuel pump. 4,282,801, Cl. 92-102.000.

BASF Aktiengesellschaft: See—  
Goetz, Norbert; and Hupler, Leopold, 4,283,534, Cl. 544-174.000.

Schirmer, Ulrich; Becker, Rainer; and Wuerzer, Bruno, 4,283,547, Cl. 548-307.000.

Bassan, Benjamin; and Grandinetti, Michael A., to Varian Associates, Inc. Cooling structure for an oil sealed rotary vacuum pump. 4,283,167, Cl. 418-13.000.

Bassett, J. Thomas: See—  
Wingert, Conrad C.; and Bassett, J. Thomas, 4,283,188, Cl. 493-89.000.

Bates, Erwin F.; and Snyder, Michael D., to Universal Instruments Corporation. Feeding and orienting device. 4,282,965, Cl. 198-380.000.

Bates, Erwin F.; and Snyder, Michael D., to Universal Instruments Corporation. Feeding and orienting device. 4,282,966, Cl. 198-382.000.

Battershill, Ronald. Rigid collapsible boat. 4,282,616, Cl. 9-2.00C.

Battle Creek Equipment Co.: See—  
Doty, Wendell E., 4,283,661, Cl. 315-360.000.

Bauditz, Reinwald: See—  
von Bittera, Miklos; Voegel, Herbert; and Bauditz, Reinwald, 4,283,400, Cl. 424-250.000.

Bauer, Fritz, to Suspa Federungsstechnik, Fritz Bauer & Sohne oHG. Apparatus for securing chair or table columns to the underside of chair seats, table tops or the like. 4,283,033, Cl. 248-188.000.

Bauer, William A.; Frohlich, Charles R., Jr.; Griffin, Raymond H.; and Henderson, Joseph G., to Western Electric Co., Inc. Electronic

control system for reciprocating mechanism. 4,283,020, Cl. 242-25.00R.

Bauman, Robert A., to Colgate-Palmolive Company. N-substituted short chain carbamides as antistatic agents for laundered fabrics. 4,283,192, Cl. 8-137.000.

Baumgartner, Hans: See—  
Henke, Ulrich; and Baumgartner, Hans, 4,282,746, Cl. 73-114.000.

Baxter Travenol Laboratories, Inc.: See—  
Lamadrid, Rene G., 4,283,004, Cl. 233-1.00C.

Meyst, Richard P.; and Porten, Ronald M., 4,283,289, Cl. 210-448.000.

Schnell, William J., 4,283,284, Cl. 210-321.300.

Wiochell, David A., 4,282,980, Cl. 215-100.00A.

Bayer Aktiengesellschaft: See—  
Brack, Alfred, 4,283,540, Cl. 546-165.000.

Hildebrand, Dietrich, 4,283,193, Cl. 8-400.000.

Jautelat, Manfred; and Arlt, Dieter, 4,283,544, Cl. 548-216.000.

Kramer, Wolfgang; Knops, Hans-Joachim; Buchel, Karl H.; and Brandes, Wilhelm, 4,283,406, Cl. 424-269.000.

Rottmaier, Ludwig; and Merten, Rudolf, 4,283,546, Cl. 548-264.000.

von Bittera, Miklos; Voegel, Herbert; and Bauditz, Reinwald, 4,283,400, Cl. 424-250.000.

Wagner, Kuno; Niggemann, Johannes; Findeisen, Kurt; and Scheinplug, Hans, 4,283,219, Cl. 71-28.000.

BBC Brown, Boveri & Co. Ltd.: See—  
Bodmer, Maurice A.; and Svoboda, Robert, 4,283,200, Cl. 23-230.00C.

Beamon, Turan M. Flashing-light belt. 4,283,756, Cl. 362-108.000.

Becker, Gert; Oesch, Johann U.; Poeselt, Horst; Tomlinson, Alan D.; and Walz, Kurt, to Lever Brothers Company. Production of detergent compositions. 4,283,299, Cl. 252-90.000.

Becker, Harry R., to Joy Manufacturing Company. Conveyor belt chain and method for its use. 4,282,971, Cl. 198-846.000.

Becker, Rainer: See—  
Schirmer, Ulrich; Becker, Rainer; and Wuerzer, Bruno, 4,283,547, Cl. 548-307.000.

Becker, Reinhold; and Michel, Wolfgang, to Hoechst Aktiengesellschaft. Article of manufacture comprising a hollow rod of longitudinally gathered tubing with a support sheath surrounding the hollow rod, process for producing same, and use of the article in producing sausages. 4,282,904, Cl. 138-109.000.

Beckerman, Howard L.; and Trimmer, William S. N., to Singer Company, The. Display system utilizing incandescent lamp multiplexing. 4,283,659, Cl. 315-161.000.

Becton Dickinson & Company: See—  
Haynes, John L., 4,282,902, Cl. 137-636.100.

Lynn, Robert W., 4,283,495, Cl. 435-240.000.

Beecham Group Limited: See—  
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,283,411, Cl. 424-283.000.

Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,283,412, Cl. 424-283.000.

Beeder, Wayne A. Board game apparatus. 4,283,059, Cl. 273-254.000.

Beigler, Myron A.; and Khoury, Amin J. Methods of preparing and using intravenous nutrient compositions. 4,282,863, Cl. 128-1.00R.

Bell & Howell Company: See—  
Parker, Robert R., 4,283,658, Cl. 315-117.000.

Bell Telephone Laboratories, Incorporated: See—  
Cerbone, Ralph L., 4,283,603, Cl. 179-18.0FA.

Nelson, Terence J., 4,283,776, Cl. 365-36.000.

Sparber, Richard G., 4,283,675, Cl. 324-57.00R.

Steinberger, Michael L., 4,283,795, Cl. 455-283.000.

Belletire, John L.; and Sarges, Reinhard, to Pfizer Inc. Imidazolone derivatives. 4,283,409, Cl. 424-273.00R.

Bellus, Daniel: See—  
Zweifel, Hans; and Bellus, Daniel, 4,283,509, Cl. 525-375.000.

Bendix Corporation, The: See—  
Deem, Brian C., 4,283,009, Cl. 236-86.000.

Benjamin, Jack W.: See—  
Hirshaut, Yashar, 4,283,497, Cl. 435-289.000.

Bennett, Robert A. Dust cover for lock. 4,282,732, Cl. 70-455.000.

Bennick, Edward T., Jr., to Quality Craft, Inc. Camera for recording the output of an instrument. 4,283,129, Cl. 354-81.000.

Benoit, Horst A. Bottle labelling apparatus. 4,283,245, Cl. 156-476.000.

Beretta, Pier C., to Fabbrica d'Armi Pietro Beretta S.p.A. Safety for an automatic pistol. 4,282,795, Cl. 89-148.000.

Berri S.p.A.: See—  
Fiocchi, Giulio, 4,282,714, Cl. 60-632.000.

Berg, Winfried M., to Winfried M. Berg, Inc. Non-metallic silent chain. 4,283,184, Cl. 474-203.000.

Bernacki, Stephen E.: See—  
Raffai, Jack I.; and Bernacki, Stephen E., 4,283,235, Cl. 148-175.000.

Bernhagen, Wolfgang; Bach, Hanswilhelm; Brundin, Eike; Gick, Wilhelm; Springer, Helmut; and Hack, Adolf, to Ruhrchemie AG. Process for preparing methacrolein. 4,283,564, Cl. 568-461.000.

Bernhard, Robert J.: See—  
Lloyd, Wayne B.; Bernhardt, Robert J.; Logan, Dale R.; and Minarik, Ronald W., 4,283,688, Cl. 331-94.50D.

Bernhardt, Gunther; and Daum, Gerhard, to Dynamit Nobel AG. Process for preparing benzylalcohols. 4,283,565, Cl. 568-648.000.

Berry, Howard S.: See—  
Parker, Herman; Walker, Leon; and Berry, Howard S., 4,283,053, Cl. 273-86.00D.

Bertelsen, William R. Air suspension system for vehicle track. 4,283,094, Cl. 305-16.000.

Berthet, Jeanne; and Gaussens, Gilbert, to Commissariat a l'Energie Atomique. Hydrophobic substrate which is able to release a chemical substance. 4,283,325, Cl. 260-37.00M.

Bertus, Brent J.: See—  
McKay, Dwight L.; and Bertus, Brent J., 4,283,274, Cl. 208-120.000.

Beske, Grant A.: See—  
Andreades, Sam; Beske, Grant A.; and Lott, John W., 4,283,243, Cl. 156-237.000.

Bessey, Robert L., to Grand Rapids Spring Service Co. Suspension modifying device for leaf spring suspensions. 4,282,945, Cl. 180-71.000.

Bessouat, Roger: See—  
Andro, Jean; Bessouat, Roger; Cerdan, Jean-Pierre; and Talieu, Patrick, 4,283,206, Cl. 55-187.000.

Best, Ijsbrand, to Wessanen Nederland B.V. Process and apparatus for use in treating materials in hydrocyclones. 4,283,232, Cl. 127-71.000.

Bethlehem Steel Corporation: See—  
Bobb, Frank P., 4,283,030, Cl. 246-468.000.

Bezzarides, Paul A. Guidance system for agricultural implements. 4,282,934, Cl. 172-26.000.

BFG Glassgroup: See—  
Stehl, Otto; and Spakowski, Hans, 4,282,856, Cl. 126-417.000.

Bickley, Robert H.; and Genrich, Thad J., to Motorola Inc. Apparatus and method for providing digital and/or bar graph displays of measured quantities. 4,283,723, Cl. 340-722.000.

Bielecki, Andrzej: See—  
Witek, Stanislaw; Grobelny, Damian; Ptaszkowska, Janina; Bielecki, Andrzej; Bakuniak, Edmund; Fulde, Stefan; and Gorska-Poczopko, Jadwiga, 4,283,399, Cl. 424-248.400.

Bik, Joannes D.: See—  
Zeilstra, Jacobus J.; de Klein, Willem J.; Bik, Joannes D.; and Vis, Jan, 4,283,314, Cl. 260-23.0AR.

Bilger, Gerhard; Hewig, Gert; Pfisterer, Fritz; and Schock, Hans-Werner, to Bloss, Werner H. Method for production of solar cells and solar cells produced thereby. 4,283,590, Cl. 136-251.000.

Billard, Francois, to Air Industrie. Process for treating smoke from steel plants. 4,283,223, Cl. 75-25.000.

Billig, Ernst; and Bunning, Donald L., to Union Carbide Corporation. Hydroformylation process using stable rhodium catalyst. 4,283,562, Cl. 568-454.000.

Binau, Douglas E.; and Speicher, Emmett J., to Du Pont de Nemours & Co., Inc. and Company. Methylamines purification by distillation and purge. 4,283,254, Cl. 203-4.000.

Bindman, Stanley, to Business Concepts Marketing Corporation. Telephone display device. 4,283,037, Cl. 248-441.00B.

Bingham, Mary E.: See—  
Phillips, Kenneth G.; and Bingham, Mary E., 4,283,507, Cl. 525-344.000.

Binkowski, Constance J., to Verbatim Corporation. Package for flexible magnetic media and method therefor. 4,282,973, Cl. 206-444.000.

Bio-Rad Laboratories, Inc.: See—  
Langham, Maurice E., 4,282,882, Cl. 128-676.000.

Birkmeyer, William J., to PPG Industries, Inc. Beverage containers coated with a water-based liner. 4,283,428, Cl. 426-131.000.

Birney, Sharon R.: See—  
Yuan, Mary W.; and Birney, Sharon R., 4,283,425, Cl. 426-102.000.

Bisping, Hans-Jurgen. Electrode for implantation in the heart. 4,282,885, Cl. 128-785.000.

Bissell, Inc.: See—  
Rosendall, Henry J.; and Shaffer, Arlan J., 4,282,622, Cl. 15-41.00R.

Bittner, Joseph E.: See—  
Szydlowski, Donald F.; Kuzminskas, Vaidotas; and Bittner, Joseph E., 4,282,832, Cl. 122-28.000.

Black, Thomas C., to J. P. Stevens & Co., Inc. Narrow elastic fabric. 4,282,906, Cl. 139-422.000.

Black, Thomas J., Jr.: See—  
Ryffel, Henry; and Black, Thomas J., Jr., 4,282,777, Cl. 74-804.000.

Blessing, Hubert, to Levi Strauss & Co. Facing ply separator. 4,283,047, Cl. 271-10.000.

Blevins, Anne M.: See—  
Freedman, Betty; and Blevins, Anne M., 4,282,609, Cl. 2-239.000.

Bloch, R. Ramon: See—  
Gordon, Joseph H.; and Bloch, R. Ramon, 4,283,657, Cl. 315-86.000.

Bloss, Werner H.: See—  
Bilger, Gerhard; Hewig, Gert; Pfisterer, Fritz; and Schock, Hans-Werner, 4,283,590, Cl. 136-251.000.

Blount, David H. Process for the production of broken down cellulose copolymers. 4,283,311, Cl. 260-9.000.

Blue Ridge Industrial Technologies, Inc.: See—  
Mashburn, Harry G., 4,282,736, Cl. 72-345.000.

Blumenstein, Fritz: See—  
Ashauer, Karl; and Blumenstein, Fritz, 4,282,765, Cl. 74-417.000.

Bobb, Frank P., to Bethlehem Steel Corporation. Railway switch heel block. 4,283,030, Cl. 246-468.000.

BOC Limited: See—  
Graham, David J.; and Armond, John W., 4,283,212, Cl. 62-18.000.

Bodmer, Maurice A.; and Svoboda, Robert, to BBC Brown, Boveri & Co. Ltd. Method and apparatus for detecting corrosion in steam turbine installations. 4,283,200, Cl. 23-230.00C.

Boebel, Manfred, to Richard Wolf GmbH. Device for obtaining tissue samples. 4,282,884, Cl. 128-751.000.



Boeing Company, The: See—  
Church, Royce F., 4,283,707, Cl. 340-58.000.  
Lauba, Andu; and Pettersen, Egil R., 4,282,900, Cl. 137-625.300.  
Wilke, William H., 4,283,028, Cl. 244-54.000.  
Boer, Karl W., to SES, Incorporated. Photovoltaic cell, 4,283,591, Cl. 136-256.000.  
Bohnenstingl, Josef: See—  
Koepe, Werner; Bohnenstingl, Josef; and Mastera, Stanislaus G., 4,283,367, Cl. 422-159.000.  
Bohr, Mark T.: See—  
Ya, Kenneth K.; Bohr, Mark T.; and Seidenfeld, Mark B., 4,282,648, Cl. 29-571.000.  
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernald, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., to Mead Corporation, The Ink jet printing apparatus, 4,283,731, Cl. 346-75.000.  
Bolind, Michael L.: See—  
Watkins, Kenneth R.; and Bolind, Michael L., 4,283,423, Cl. 426-69.000.  
Boling, Harry O.; and Brzycki, Larry R., to Maxi-Tronic, Inc. Grain elevator controls, 4,282,967, Cl. 198-571.000.  
Bon Aqua: See—  
Zimmerman, George M., 4,283,283, Cl. 210-282.000.  
Bonar, Henry B., II. Oil separator and heat exchanger for vapor compression refrigeration system, 4,282,717, Cl. 62-84.000.  
Bone, David P.: See—  
Manoski, Paula M.; and Bone, David P., 4,283,424, Cl. 426-94.000.  
Bonsignore, Patrick V., to Aluminum Company of America. Surface modification of alumina hydrate with liquid fatty acids, 4,283,316, Cl. 260-23.00A.  
Booth, David L.; and Rodebaugh, Richard M., to Morton-Norwich Products, Inc. Process for preparing the compound 5-t-butyl-2-methylamino-1,3,4-triazole, 4,283,543, Cl. 548-138.000.  
Boots Hercules Agrochemicals Co.: See—  
Minn, James, 4,283,335, Cl. 260-326.00E.  
Minn, James, 4,283,338, Cl. 260-326.00E.  
Borg-Warner Corporation: See—  
Klicker, James D., 4,283,572, Cl. 568-783.000.  
Kountz, Kenneth J.; Erth, Richard A.; and Norbeck, Dean K., 4,282,718, Cl. 62-115.000.  
Kountz, Kenneth J.; Erth, Richard A.; and Norbeck, Dean K., 4,282,719, Cl. 62-115.000.  
Schachner, Julian, 4,282,959, Cl. 192-35.000.  
Bornfeld, Horst: See—  
Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Bornfeld, Horst; Seiler, Hans G.; and Johann, Walter, 4,282,784, Cl. 82-19.000.  
Borsuk, Leslie M., to International Telephone and Telegraph Corporation. Fiber optic connector, 4,283,125, Cl. 350-96.200.  
Boudenant, Pierre; Scholl, Heinz; and Zortea, Michel, to Saint-Gobain Industries. Process for manufacture of plastic sheets, 4,283,363, Cl. 264-171.000.  
Bourgela, Roger: See—  
Zucco, Louis, 4,282,662, Cl. 37-94.000.  
Bourque, Rene; and Overbaugh, Lorne S., to Gamebridge, Inc. Sports boot strap closure system, 4,282,659, Cl. 36-121.000.  
Bowers Industries, Inc.: See—  
Bowers, Richard S., Jr., 4,282,858, Cl. 126-425.000.  
Bowers, Richard S., Jr., to Bowers Industries, Inc. Solar energy system and method, 4,282,858, Cl. 126-425.000.  
Bowles, Louis G., Jr., to Gulf & Western Manufacturing Company. Seat construction, 4,283,046, Cl. 267-102.000.  
Bowman, Jeffery B., to W. L. Gore & Associates, Inc. Composite polytetrafluoroethylene article and a process for making the same, 4,283,448, Cl. 428-36.000.  
Brack, Alfred, to Bayer Aktiengesellschaft. Process for the preparation of cationic naphtholactam dyestuffs, 4,283,540, Cl. 546-165.000.  
Bracke, William J. I.; and Lanza, Emmanuel, to Labofina, S.A. Process for preparing rubber reinforced styrenic resins, 4,283,506, Cl. 525-309.000.  
Brady, Thomas P.; and Langer, Horst G., to Dow Chemical Company, The. Fire-retardant composition containing derivatives of polyphosphoric acid partial esters, 4,283,501, Cl. 525-2.000.  
Bramow, Scott B.; Laakaniemi, Richard N.; and Wichman, Paul E., to Johnson Controls, Inc. Multiple load integrated fluid control units, 4,283,007, Cl. 236-44.00C.  
Brandes, Wilhelm: See—  
Kramer, Wolfgang; Knops, Hans-Joachim; Buchel, Karl H.; and Brandes, Wilhelm, 4,283,406, Cl. 424-269.000.  
Brandt, Claude R. Method and apparatus for breaking hard snow, 4,282,666, Cl. 37-195.000.  
Branstetter, Ronald L., to Deere & Company. Hydrostatic transmission control system, 4,282,711, Cl. 60-395.000.  
Braun, Frank D.: See—  
Browne, Laurence S.; Braun, Frank D.; and Witt, Walter, 4,283,173, Cl. 433-34.000.  
Braun, Heinz; Kiesel, Karl; and Stotz, Wolf-Gunter, to Escher Wyss GmbH. Winder apparatus for a paper machine, 4,283,023, Cl. 242-67.10R.  
Braunschweiler, H. Georg. Target having limited rotational movement upon impact, 4,283,060, Cl. 273-383.000.  
Brayley, Elwin J.: See—  
Newberry, Richard D.; and Brayley, Elwin J., 4,282,839, Cl. 123-335.000.

Break, Douglas O., to Van Mark Products Corporation. Brake for sheet metal or the like, 4,282,735, Cl. 72-319.000.  
Brendamour, David A., to Cincinnati Milacron Inc. Compliant apparatus with remote smeared centers, 4,283,153, Cl. 403-53.000.  
Brereton, Paul A., to Triplex Safety Glass Company Limited. Producing glass sheets of required curved shape, 4,283,216, Cl. 65-106.000.  
Brett, Jack, to Duro-Test Corporation. High emissivity filament for energy conserving incandescent lamps with infrared radiation returning envelopes, 4,283,653, Cl. 313-341.000.  
Bridge, Patrick E.: See—  
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernald, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.  
Bridgestone Tire Co., Ltd.: See—  
Takigawa, Hiroyoshi; Miyamura, Nobuhiro; Ogawa, Hiroshi; and Ohkuni, Shinichiro, 4,282,914, Cl. 152-209.00D.  
Brightman, Ben W., to Whirlpool Corporation. Cam control mechanism, 4,283,607, Cl. 200-38.00R.  
Brison, Robert J.; and Gathje, John C., to Stauffer Chemical Company. Beneficiation of iron by flotation, 4,283,277, Cl. 209-166.000.  
British Broadcasting Corporation: See—  
Chambers, John P., 4,283,787, Cl. 371-38.000.  
British Leyland UK Limited: See—  
Smith, Sydney J.; and Chambers, Peter F., 4,283,152, Cl. 403-3.000.  
Britton, Rick A.: See—  
Caldwell, Carl W.; and Britton, Rick A., 4,283,717, Cl. 340-506.000.  
Britzke, Ingo; and Horn, Manfred, to Gebr. Bode & Co. Swinging door for vehicles, 4,282,686, Cl. 49-253.000.  
Broger, Emil A.; Cramer, Yvo; Leuenberger, Hans G. W.; Widmer, Erich; and Zell, Reinhard, to Hoffmann-La Roche Inc. Process for the manufacture of cyclohexene derivatives, 4,283,559, Cl. 568-11.000.  
Broll, Madeleine: See—  
Pigerol, Charles; Vernieres, Jean-Claude; Eymard, Pierre; Simiand, Jacques; Broll, Madeleine; and Lacolle, Jean-Yves, 4,283,420, Cl. 424-317.000.  
Bronnec, Jean A. L., to Etablissements Generaux de Mecanique de l'Ouest. Heating device, 4,283,171, Cl. 432-112.000.  
Brother Kogyo Kaisha: See—  
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,150, Cl. 400-666.000.  
Brown, Bertrand H.: See—  
Picard, Harrison R.; Rotondo, Claude P.; Shaffer, Harold K.; and Brown, Bertrand H., 4,283,096, Cl. 308-207.00R.  
Brown, Carl E.; and Rosenberger, Edwin C., to Chem-Lawn Corporation. Tank support for a tank truck, 4,283,066, Cl. 280-5.00D.  
Brown, James M.; Kaiser, Hermann; and Olson, Jerry A., to Eaton Corporation. Fluid flowmeter, 4,282,751, Cl. 73-202.000.  
Brown, William L. Universal golf bag, 4,282,912, Cl. 150-1.50C.  
Brown Wooten Mills, Inc.: See—  
Dunlap, Albert R.; and Nester, Dallas G., 4,282,727, Cl. 66-172.00E.  
Browne, Laurence S.; Braun, Frank D.; and Witt, Walter, to Jet-Ceramic Dental GmbH & Co. KG. Device for the production of a dental working model for the preparation of prosthetic works, 4,283,173, Cl. 433-34.000.  
Brownell, Kenneth W., Jr., to Akzona Incorporated. Filled electrical splice case, 4,283,592, Cl. 174-21.00R.  
Brownlee Labs, Inc.: See—  
Brownlee, Robert, 4,283,280, Cl. 210-198.200.  
Brownlee, Robert, to Brownlee Labs, Inc. Cartridge type separation column and holder assembly for liquid chromatographs, 4,283,280, Cl. 210-198.200.  
Brundin, Eike: See—  
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Bryant, David R.; and Galley, Richard A., to Union Carbide Corporation. Process for removing triorganophosphine from a liquid composition, 4,283,304, Cl. 252-413.000.  
Bryant, Melvin B.: See—  
Parker, Eugene R., Jr.; and Bryant, Melvin B., 4,283,162, Cl. 405-244.000.  
Brzycki, Larry R.: See—  
Boling, Harry O.; and Brzycki, Larry R., 4,282,967, Cl. 198-571.000.  
Buchanan, Relva C.; and Wittmer, Dale E., to University of Illinois Foundation. Low temperature densification of PZT ceramics, 4,283,228, Cl. 106-73.300.  
Buchanan, Robert D., to Porritt & Spencer Inc. Papermakers wet felt with ribbed and smooth surface textures, 4,283,454, Cl. 428-233.000.  
Buchel, Karl H.: See—  
Kramer, Wolfgang; Knops, Hans-Joachim; Buchel, Karl H.; and Brandes, Wilhelm, 4,283,406, Cl. 424-269.000.  
Buchenkov, Leonid N.: See—  
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.

Buck, Marshall D., to Cerwin Vega, Inc. Coaxial loudspeaker system, 4,283,606, Cl. 179-115.50H.  
Bulgakov, Rishad T.: See—  
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.  
Bull, David W., to Nartron Corporation. Electrical switch, 4,283,611, Cl. 200-252.000.  
Bunker Ramo Corporation: See—  
Parks, Howard L., 4,283,754, Cl. 361-382.000.  
Bunnell, Edward D., to AMP Incorporated. Symmetrical connector for solar panel arrays, 4,283,106, Cl. 339-125.00R.  
Bunning, Donald L.: See—  
Billig, Ernst; and Bunning, Donald L., 4,283,562, Cl. 568-454.000.  
Burgoon, John R., to Hewlett-Packard Company. Crystal oscillator having low noise signal extraction circuit, 4,283,691, Cl. 331-116.00R.  
Burke, John P.: See—  
Young, Alastair J.; and Burke, John P., 4,282,800, Cl. 92-37.000.  
Burlington Industries, Inc.: See—  
McGee, James N., 4,283,455, Cl. 428-240.000.  
Teague, Edward W.; Hance, Max H.; and Neal, Carl R., 4,283,194, Cl. 8-494.000.  
Burn, Ian, to Sprague Electric Company. Low firing monolithic ceramic capacitor with high dielectric constant, 4,283,753, Cl. 361-321.000.  
Burnside, Walter M., to Bally Manufacturing Corporation. Paper money dispensing means, 4,282,892, Cl. 133-1.00R.  
Burr, Kenneth J., to English Clays Lovering Pochin & Company Ltd. Particle size determination, 4,282,745, Cl. 73-61.400.  
Burroughs Corporation: See—  
Schwartz, Sidney J.; Quadri, Farooq M.; and Hsin, Chung-Herng, 4,283,774, Cl. 365-8.000.  
Burrows, Ronald W.: See—  
Lea, Bernard A.; and Burrows, Ronald W., 4,283,487, Cl. 430-522.000.  
Burton, Thomas A., to Waters Instruments, Inc. Locker cabinet, 4,283,099, Cl. 312-351.000.  
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van Mal, Harmannus H.; van Esveld, Hendrik A.; van Wieringen, Johannes S.; and Buschow, Kurt H. J., 4,283,226, Cl. 75-175.500.  
Buser, Rudolf G.; and Inslerman, Hans E., to United States of America, Army. Apparatus for the controlled discharge of a charged object, 4,283,749, Cl. 361-218.000.  
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Bindman, Stanley, 4,283,037, Cl. 248-441.00B.  
Butler, Edward A.; and Savoie, Francis R., to Synco National Ltd. Door alarm device, 4,283,718, Cl. 340-545.000.  
B.V. Scheepswerf en Reparatie bedrijf "Breebot": See—  
Nagelkerke, Willem, 4,282,661, Cl. 37-58.000.  
Byars, Garner B., to Auto Fire Corporation. Charcoal lighter, 4,282,854, Cl. 126-25.00B.  
Bylinsky, Lev V.; Gavrilenko, Vladimir I.; Glumov, Ivan F.; Denisov, Vasily F.; and Meer, Vadim V. System for graphic representation of vessel's position on Mercator map, 4,283,763, Cl. 364-449.000.  
Byrd, Geoffrey C. M., to Imperial Chemical Industries Limited. Expandable electrode, 4,283,265, Cl. 204-252.000.  
C-R-O, Inc.: See—  
Griebeler, Elmer L., 4,282,763, Cl. 74-89.150.  
C. Stiefelmayer KG: See—  
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Cabot Corporation: See—  
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Caldwell, Carl W.; and Britton, Rick A., to Digital Monitoring Products. Monitoring system for a direct-wire alarm system, 4,283,717, Cl. 340-506.000.  
California Institute of Technology: See—  
Schneider, Horst W., 4,282,626, Cl. 15-320.000.  
Calspan Corporation: See—  
Sterbutzel, Gerald A., 4,282,813, Cl. 102-431.000.  
Cam Oears Limited: See—  
Adams, Frederick J., 4,282,770, Cl. 74-498.000.  
Campbell, Fannie L.: See—  
Pines, Arthur N.; Johnson, Gordon C.; and Campbell, Fannie L., 4,283,519, Cl. 528-26.000.  
Campbell, Gerald A.; Hollister, Kenneth R.; and Sutton, Richard C., to Eastman Kodak Company. Crosslinkable polymers containing acrylamidophenol units, 4,283,504, Cl. 525-261.000.  
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: See—  
Portier, Joseph G. A., 4,282,870, Cl. 128-203.140.  
Cannon, William N., to Eli Lilly and Company. Novel oxodinium and thiodinium compounds, 4,283,349, Cl. 260-305.00R.  
Canon Kabushiki Kaisha: See—  
Matsumura, Isao, 4,283,124, Cl. 351-7.000.  
Tsunekawa, Tokuchi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,283,137, Cl. 356-4.000.  
Canron Corp.: See—  
von Beckmann, Helmuth, 4,282,815, Cl. 104-12.000.  
Capps, Spencer W.; Hagler, Gerald E.; and Abhiraman, Agaram S., to Akzona Incorporated. Melt spinning of synthetic yarns, 4,283,364, Cl. 264-176.00F.  
Carlson, Carl A. Easily mounted anti-skid tire chain, 4,282,916, Cl. 152-241.000.  
Carmel Energy, Inc.: See—  
Krajicek, Richard W., 4,282,929, Cl. 166-303.000.  
Carnation Company: See—  
Doster, Robert C.; Judson, Beth R.; and Soo Hoo, Kathleen G., 4,283,430, Cl. 426-284.000.  
Carr, Albert A.; and Farr, Robert A., to Richardson-Merrell Inc. Aroylenylpiperidinobutyrophenone antipsychotic agents, 4,283,404, Cl. 424-267.000.  
Carrier Corporation: See—  
Bacha, F. Timothy, 4,283,616, Cl. 219-76.140.  
Carroll, Howard E.; and Sweitzer, Gerald M., to SCM Corporation. Semi-gloss latex paint, 4,283,320, Cl. 260-29.6RW.  
Carson, William W., to Waters Associates, Inc. Spatially homogenizing optical modulator, 4,283,140, Cl. 356-130.000.  
Catanzaro, James R.; Meyer, August R.; and Willis, David L., to Cincinnati Milacron Inc. Hydraulic injection molding machine stuffing box, 4,283,062, Cl. 277-12.000.  
Caterpillar Tractor Co.: See—  
Cline, Lawrence R., 4,283,093, Cl. 305-10.000.  
Davidson, Harold C.; and Parks, John H., 4,282,838, Cl. 123-198.00B.  
Grawey, Charles E., 4,283,366, Cl. 264-502.000.  
Harmon, James L.; and Junck, John A., 4,282,898, Cl. 137-596.130.  
Cavender, Patricia: See—  
Ganguly, Ashit K.; Giniyavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., 4,283,531, Cl. 544-30.000.  
Cavil, David T., to Outboard Marine Corporation. DC Motor control with alternate action solenoid drive circuit, 4,283,668, Cl. 318-549.000.  
Celanese Corporation: See—  
Howell, Carl J., Jr.; Trott, David W.; and Riley, Jesse L., 4,282,890, Cl. 131-332.000.  
Keith, Charles H.; and Tucker, Richard O., 4,283,186, Cl. 493-42.000.  
Century Machine, Inc.: See—  
Eddy, George R., 4,282,734, Cl. 72-54.000.  
Cerbone, Ralph L., to Bell Telephone Laboratories, Incorporated. On-hook/off-hook status check circuit, 4,283,603, Cl. 179-18.0FA.  
Cerdan, Jean-Pierre: See—  
Andro, Jean; Bessouat, Roger; Cerdan, Jean-Pierre; and Talleu, Patrick, 4,283,206, Cl. 55-187.000.  
Cerwin Vega, Inc.: See—  
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Chakrabarti, Paritosh M.; and Kirchner, Darrell G., to GAF Corporation. Alkyl aryl ethyleneoxy sulfonate surfactants for vinyl acetate polymerization, 4,283,321, Cl. 260-29.6MQ.  
Chambers, Charles W., Jr., to Tellabs, Inc. Current source circuits with common mode noise rejection, 4,283,604, Cl. 179-70.000.  
Chambers, John P., to British Broadcasting Corporation. Cyclic redundancy data check encoding method and apparatus, 4,283,787, Cl. 371-38.000.  
Chambers, Peter F.: See—  
Smith, Sydney J.; and Chambers, Peter F., 4,283,152, Cl. 403-3.000.  
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Voinir, Robert; Mathieu, Pierre; and Chambu, Claude, 4,283,380, Cl. 423-574.00R.  
Champion International Corporation: See—  
Lillibridge, Harold R., 4,283,003, Cl. 229-77.000.  
Mode, Duane R., 4,283,002, Cl. 229-41.00R.  
Chan, David C. K., to Chevron Research Company. Fungicidal, miticidal and ovicidal alkoxyalkylalkyl-substituted and carbamylalkyl-substituted N-haloalkylthiosulfonamides, 4,283,416, Cl. 424-305.000.  
Chandra, Bala P.; Greaves, Jeffrey C.; and Lovelock, Victor G., to Imperial Chemical Industries Limited. Method of treating polymerlatices, 4,283,526, Cl. 528-500.000.  
Chang, Hsien-Hsin: See—  
Winters, William C.; Chang, Hsien-Hsin; Anderson, George R.; Easter, Ross A.; and Sholl, Jeffrey J., 4,283,427, Cl. 426-107.000.  
Chang, Hsu, to International Business Machines Corporation. On-chip bubble domain relational data base system, 4,283,771, Cl. 364-900.000.  
Chao, Chien C.; and Sherman, John D., to Union Carbide Corporation. Bulk cyclohexanol/cyclohexanone separation by selective adsorption on zeolitic molecular sieves, 4,283,560, Cl. 568-366.000.  
Charles, John J.; and Gasman, Robert C., to GAF Corporation. PBT Molding compositions containing mica and a composite polymer, 4,283,326, Cl. 260-40.00R.  
Chauvin, Yves; Commereuc, Dominique; Gaillard, Jean; Leger, Gerard; and Phung, Nhu Hung, to Institut Francais du Pétrole. Catalytic composition and its use for oligomerizing olefins, 4,283,305, Cl. 252-431.00C.  
Cheetham, Stuart E., to GR-Stein Refractories Limited. Regenerative heat exchange systems, 4,282,923, Cl. 165-9.100.  
Chem-Lawn Corporation: See—  
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Chemische Werke Huls AG: See—  
Disteldorf, Josef; Hubel, Werner; and Wolf, Elmar, 4,283,535, Cl. 544-193.000.  
Chen, Kuen-Ming. Double-volumed tape cartridge operative at two ends, 4,283,022, Cl. 242-55.19A.



Chessler, Bernard. Closure device for a dispensing container. 4,282,992, Cl. 222-538.000.

Chester, Arthur W.; and Chu, Yung F., to Mobil Oil Corporation. Manufacture of aromatic compounds. 4,283,584, Cl. 585-481.000.

Chevron Research Company: See—

Chan, David C. K., 4,283,416, Cl. 424-305.000.

deVries, Louis; and King, John M., 4,283,295, Cl. 252-46.400.

Rosenthal, Joel W.; and Kuehler, Christopher W., 4,283,268, Cl. 208-8.0LE.

Wilkes, John B., 4,283,581, Cl. 568-864.000.

Chiel, David: See—

Arzi, Amatzia; and Chiel, David, 4,283,010, Cl. 239-1.000.

Chinoio Gyogyszer es Vegyeszeti Termek Gyara RT.: See—

Szabo, Tibor; Institoris, Laszlo; Kovacs, Gabor; Stadler, Istvan; and Koszegi, Bela, 4,283,413, Cl. 424-285.000.

Chisholm, John P. In-flight aircraft weather radar calibration. 4,283,725, Cl. 343-5.00W.

Chiulli, Robert D. Pan for angiographic catheters. 4,282,972, Cl. 206-303.000.

Chodorow, Ingram S.; and Hall, Richard, to Technalitics Inc. Nasogastric tube stabilizer. 4,282,871, Cl. 128-207.180.

Choiniski, Edward J., to Polaroid Corporation. Method and apparatus for coating webs. 4,283,443, Cl. 427-295.000.

Choisnet, Joel, to Jaeger. Control of display devices with electromagnetic drums. 4,283,715, Cl. 340-378.100.

Chow, Wai Y.; Hurley, Daniel J.; Rea, James H.; and Thackaberry, S. Paul, to Gulf Oil Corporation. Novel acetylene end-capped polyesters. 4,283,551, Cl. 560-56.000.

Christ, Alfred; and Lehmann, Rolf, to Escher Wyss Limited. Controlled deflection roll. 4,282,638, Cl. 29-116.0AD.

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Christian, Damon N.: See—

Fletcher, Robert N.; and Christian, Damon N., 4,282,665, Cl. 37-142.00A.

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Church, Royce F., to Boeing Company. The Aircraft low pressure tire warning system having comparator circuit for each axle pair of a four wheel bogie configuration. 4,283,707, Cl. 340-58.000.

Ciba-Geigy Corporation: See—

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Dexter, Martin; and Winter, Roland A. E., 4,283,327, Cl. 260-45.8NT.

Moser, Roland; and Renner, Alfred, 4,283,520, Cl. 528-93.000.

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Seitz, Karl; and Mausezahl, Dieter, 4,283,331, Cl. 260-153.000.

Vogel, Christian; and Aebi, Rudolf, 4,283,221, Cl. 71-118.000.

Zweifel, Hans; and Bellus, Daniel, 4,283,509, Cl. 525-375.000.

Cincinnati Milacron Inc.: See—

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Catanzaro, James R.; Meyer, August R.; and Willis, David L., 4,283,062, Cl. 277-12.000.

Cincotta, Louis; and Foley, James W., to Polaroid Corporation. Thiazine-1,1-dioxide and isothiazole-1,1-dioxide derivatives and process for preparation. 4,283,537, Cl. 546-94.000.

CIR-S.p.A. Divisione Sasib: See—

Pasquali, Giancarlo, 4,283,716, Cl. 340-380.000.

Citelli, Kenneth J. Multiple speed bicycle drive. 4,283,069, Cl. 280-236.000.

Citizen Watch Company Limited: See—

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Clardy, Edwin K.: See—

DeFord, Donald D.; Clardy, Edwin K.; and Fuller, Edward N., 4,283,201, Cl. 23-230.00A.

Clarion Co., Ltd.: See—

Okada, Masataka, 4,283,740, Cl. 358-124.000.

Clark, Charles R.; Hanson, Lowell R.; and Steele, Gerald G., to Parker-Hannifin Corporation. Aerial refueling device. 4,282,909, Cl. 141-98.000.

Clarke, Christopher T., to Exxon Research & Engineering Co. Lubricating oil composition. 4,283,294, Cl. 252-32.70R.

Clarke, John T.: See—

Luck, Allan J.; Clarke, John T.; and Hoffman, Michael R., 4,283,450, Cl. 428-171.000.

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Clayton, John P.: See—

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Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,283,412, Cl. 424-283.000.

Clementoni, Dominick; and Corbett, Luke W., to Exxon Research & Engineering Co. Air-treated propane-precipitated asphalt. 4,283,230, Cl. 106-274.000.

Clementoni, Dominick; and Corbett, Luke W., to Exxon Research & Engineering Company. Sulfur-treated propane-precipitated asphalt. 4,283,231, Cl. 106-274.000.

Click, Gaylon T.: See—

Barone, Bruno J.; and Click, Gaylon T., 4,283,307, Cl. 252-432.000.

Cline, Lawrence R., to Caterpillar Tractor Co. Track adjuster and guard. 4,283,093, Cl. 305-10.000.

Clock, Donald P.; and Easter, Finis C., to Sperry Corporation. Transistorized modulator for pulse radar. 4,283,790, Cl. 375-71.000.

Coale, Robert D.; Sarbutt, Keith W.; and Smith, Derrick B., to Amax Inc. Selective flotation of cubanite and chalcopyrite from copper/nickel mineralized rock. 4,283,017, Cl. 241-24.000.

Coane, Philip J., to Hughes Aircraft Company. Process for forming semiconductor devices using electron-sensitive resist patterns with controlled line profiles. 4,283,483, Cl. 430-296.000.

Cobb, James R. Oil field storage tank attachment for cleaning. 4,282,624, Cl. 15-210.00B.

Cogan, Leo M., to Textile Industries, Inc. High pressure filter vessel. 4,283,281, Cl. 210-232.000.

Cohen, Joel M. Recirculationless concert hall simulation and enhancement system. 4,283,600, Cl. 179-1.00J.

Cohen, Mitchell S., to International Business Machines Corporation. Contiguous disk bubble storage. 4,283,775, Cl. 365-32.000.

Cohn, Alan R., to Grove Valve and Regulator Company. Device for detecting rate of change in pressure. 4,282,757, Cl. 73-714.000.

Coleman, Mark S.: See—

Zuhone, Daniel M.; and Coleman, Mark S., 4,282,936, Cl. 172-512.000.

Colgate-Palmolive Company: See—

Bauman, Robert A., 4,283,192, Cl. 8-137.000.

Colt Industries Operating Corp.: See—

Miller, Robert J., 4,283,353, Cl. 261-41.00D.

Columbus, Richard L., to Eastman Kodak Company. Film pack. 4,283,134, Cl. 354-275.000.

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Commissariat a l'Energie Atomique: See—

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Commissariat l'Energie: See—

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Legendre, Michel; and Engelhard, Philippe, 4,283,585, Cl. 585-482.000.

Compagnie Generale des Etablissements Michelin: See—

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Pommier, Jean, 4,282,917, Cl. 152-352.00R.

Compagnie Industrielle des Telecommunications Cit-Alcatel: See—

Herledan, Jean R., 4,283,720, Cl. 340-653.000.

Compudrive Corporation: See—

Ryffel, Henry; and Black, Thomas J., Jr., 4,282,777, Cl. 74-804.000.

Computer Operations: See—

Edwards, Philip K., 4,283,724, Cl. 340-731.000.

Comyns-Carr, Cecil A.; and Platts, Michael J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Energy in Her Britannic Majesty's Government of the. Devices for extracting energy from waves. 4,282,712, Cl. 60-500.000.

Conaway, Everett T. Poultry pinning and de-hairing machine. 4,282,632, Cl. 17-11.10R.

Concepts for Women, Inc.: See—

Freedman, Betty; and Blevins, Anne M., 4,282,609, Cl. 2-239.000.

Conoco, Inc.: See—

Leach, Bruce E., 4,283,574, Cl. 568-804.000.

Mazza, Raymond L.; Dahl, H. Douglas; and Umphrey, Ronald W., 4,283,089, Cl. 299-16.000.

Weimer, Dean R.; and Starks, Charles M., 4,283,514, Cl. 526-84.000.

Consan Pacific Incorporated: See—

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Rethmeier, Gerhard, 4,283,149, Cl. 400-617.000.

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Cools, Antoon S. P., to Sperry Corporation. Twine wrapper for round bale forming machine. 4,282,803, Cl. 100-5.000.

Cools, Antoon S. P., to Sperry Corporation. Twine wrapper for round bale forming machine. 4,282,804, Cl. 100-5.000.

Cooper, James J., Jr., to International Telephone and Telegraph Corporation. Wide-range insulating/sealing sleeve. 4,283,597, Cl. 174-138.00F.

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Corbett, Luke W.: See—

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Du Toit, Rudolph M., 4,282,867, Cl. 128-66.000.

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Van Herck, Andre J. B. M.; and Cornelissen, Gerardus A. P. M., 4,283,652, Cl. 313-217.000.

Corning Glass Works: See—

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Coulter, Robert W.: See—

Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernald, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.

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Cramer, Yvo: See—

Broger, Emil A.; Cramer, Yvo; Leuenberger, Hans G. W.; Widmer, Erich; and Zell, Reinhard, 4,283,559, Cl. 568-11.000.

Crass, Gunther: See—

Sieffried, Walter; Janocha, Siegfried; and Crass, Gunther, 4,283,453, Cl. 428-212.000.

Crawford, Thomas C., to Pfizer Inc. Ascorbic acid intermediates. 4,283,340, Cl. 260-340.700.

Creasy, Walter, to GAF Corporation. Permeation resistant covering material. 4,283,456, Cl. 428-282.000.

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Armstrong, George H.; Gerkin, Richard M.; and Critchfield, Frank E., 4,283,500, Cl. 521-137.000.

Crivello, James V., to General Electric Company. Heat curable processable epoxy compositions containing aromatic iodonium salt catalyst and copper salt cocatalyst. 4,283,312, Cl. 260-18.0EP.

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CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: See—

Tamburelli, Giovanni, 4,283,788, Cl. 375-14.000.

Cummins Engine Company: See—

Glasson, Richard E.; and Lauterbach, Jerre F., 4,282,960, Cl. 192-58.00C.

Currie, James R., to United States of America, National Aeronautics and Space Administration. Multi-channel temperature measurement amplification system. 4,282,752, Cl. 73-341.000.

Curry, Byron V., Jr. Composite container structure. 4,282,984, Cl. 220-404.000.

Curry, Donald J.; Knight, Gordon R.; and Kowalski, Daniel C., to Xerox Corporation. Optical memory having a parallel read out. 4,283,777, Cl. 369-32.000.

Curry, John L., to NCR Corporation. Multiline charge transfer panel input and hold system. 4,283,660, Cl. 315-169.200.

Curtis, Stanley F.: See—

Herd, William H., Jr.; Curtis, Stanley F.; Mullican, Vernon T.; and Jones, Robert W., 4,283,355, Cl. 261-44.00F.

Czaban, John D.: See—

Cormier, Alan D.; Webster, Milo E.; Czaban, John D.; Silverman, Neil D.; and Noble, Lynn W., 4,283,262, Cl. 204-195.00M.

Dahl, H. Douglas: See—

Mazza, Raymond L.; Dahl, H. Douglas; and Umphrey, Ronald W., 4,283,089, Cl. 299-16.000.

Dahlgrun, Rolf, to Hauni-Werke Korber & Co. KG. Method and apparatus for influencing the permeability of wrappers of filter cigarettes or the like. 4,282,889, Cl. 131-281.000.

Daimler-Benz Aktiengesellschaft: See—

Sacco, Bruno; and Renner, Hermann, 4,283,085, Cl. 296-84.00R.

Weber, Andreas; and Schaefer, Manfred, 4,283,067, Cl. 280-5.00A.

Daleus, Marcel; and Haas, Armand, to Societe des Plastiques de Carmaux Scasar; and Societe Chimique des Charbonnages CdF Chimie. Method of mulching with antistatic synthetic polymer film. 4,282,682, Cl. 47-9.000.

D'Amico, John J.; and Marvel, John T., to Monsanto Company. Imidamides derived from 2-oxo-3-benzothiazoline acetic acid plant growth regulants. 4,283,220, Cl. 71-90.000.

Damminger, Rudolf. Composite material with a core and an adhering coating united thereto. 4,283,449, Cl. 428-72.000.

Dana Corporation: See—

Staab, Thomas E.; and Antonini, Joseph, 4,283,064, Cl. 277-81.00R.

Dancsi, Lajos: See—

Szantay, Csaba; Szabo, Lajos; Kalas, Gyorgy; Dancsi, Lajos; Keve, Tibor; Karpati, Egon; and Szporny, Laszlo, 4,283,401, Cl. 424-256.000.

Danfoss A/S: See—

Hansen, Poul E.; and Dyhr, Jan, 4,283,646, Cl. 310-126.000.

Daniels, Peter J. L.; and Nagabhushan, Tattanahalli L., to Schering Corporation. 1-N-aminoalkoxyacyl derivatives of gentamicin B. 4,283,528, Cl. 536-17.00R.

Dappen, Glen M., to Eastman Kodak Company. Analytical elements with improved reagent stability. 4,283,491, Cl. 435-10.000.

Dardoufas, Kimon C.: See—

Marshall, Robert M.; and Dardoufas, Kimon C., 4,283,292, Cl. 252-8.800.

Darling, Richard D.; and Lazarz, Christine A., to Hooker Chemicals & Plastics Corp. Electrolytic cell separator, tubular member component thereof and methods for manufacturing and using such separator and component. 4,283,264, Cl. 204-252.000.

Date, Kazuo H.; and Wainio, Ronald A., to McGraw-Edison Company. Operator for a circuit interrupter and disconnect switch combination. 4,283,610, Cl. 200-146.00R.

Dauel, Eugene F.: See—

Gostomski, John J.; Gostomski, Arnold R.; and Dauel, Eugene F., 4,283,073, Cl. 280-508.000.

Daugherty, Jack D.; Kantrowitz, Arthur R.; Sutton, George W.; and Zappa, Oswald L., to Avco Everett Research Laboratory, Inc. Laser operation with closed gas and tuned duct pulsing. 4,283,686, Cl. 331-94.50G.

Daughton, John W.; Gillett, Kenneth; and Nelson, Frank M., to Xerox Corporation. Programmable master controller communicating with plural controllers. 4,283,773, Cl. 364-900.000.

Daum, Gerhard: See—

Bernhardt, Gunther; and Daum, Gerhard, 4,283,565, Cl. 568-648.000.

Davenport, James D., to Eli Lilly and Company. Substituted isoxazolines for control of plant phytopathogens. 4,283,403, Cl. 424-263.000.

Davidson, Harold C.; and Parks, John H., to Caterpillar Tractor Co. Engine overspeed shut-down system. 4,282,838, Cl. 123-198.0DB.

Davidson, William A., to United States of America, Transportation. Combination absolute and differential temperature system. 4,282,753, Cl. 73-342.000.

Davies, Graham A., to Davy International (Oil & Chemicals) Ltd. Purification utilizing liquid membrane with electrostatic coalescence. 4,283,290, Cl. 210-643.000.

Davies, William D.; Skelhorse, Graham G.; and Warren, John B., to Diamond Shamrock Industrial Chemicals Limited. Photopolymerizable compositions, methods for their preparation, and methods for their use in coating substrates. 4,283,480, Cl. 430-270.000.

Davis, Robert E., to Ideal Toy Corporation. Mechanical sound mechanism. 4,282,676, Cl. 46-118.000.

Davis, Robert H.: See—

Schick, John W.; Davis, Robert H.; and Andress, Harry J., 4,283,293, Cl. 252-32.000.

Davy International (Oil & Chemicals) Ltd.: See—

Davies, Graham A., 4,283,290, Cl. 210-643.000.

Dayco Corporation: See—

Somers, M. John, 4,283,594, Cl. 174-47.000.

Debbaut, Christian A. M.: See—

Corke, Nicholas T.; and Debbaut, Christian A. M., 4,283,239, Cl. 156-85.000.

de Cadier, Eugene A. E.: See—

de Cadier, Marie, 4,283,058, Cl. 273-236.000.

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De Cristofaro, Nicholas J.: See—

Sexton, Peter; and De Cristofaro, Nicholas J., 4,283,225, Cl. 75-170.000.

Deem, Brian C., to Bendix Corporation. The Control valve for fluid-operated clutch. 4,283,009, Cl. 236-86.000.

Deere & Company: See—

Branstetter, Ronald L., 4,282,711, Cl. 60-395.000.

McBee, Steve H., 4,282,702, Cl. 56-10.300.

Wilson, John E.; and Hengen, Edward J., 4,282,703, Cl. 56-14.600.

DeFord, Donald D.; Clardy, Edwin K.; and Fuller, Edward N., to Phillips Petroleum Company. Method and apparatus suitable for repeated, accurate chemical analyses. 4,283,201, Cl. 23-230.00A.

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Saint-Dizier, Gilbert; Le Fur, Jean; and Louboutin, Robert, 4,283,282, Cl. 210-236.000.

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Engel, Jurgen; Kleemann, Axel; Stroman, Fritz; and Thieme, Klaus, 4,283,405, Cl. 424-267.000.

de Klein, Willem J.: See—

Zeilstra, Jacobus J.; de Klein, Willem J.; Bik, Joannes D.; and Vis, Jan, 4,283,314, Cl. 260-23.0AR.

Delagi, Richard G.: See—

Trenkler, George; Delagi, Richard G.; and Padovani, Francois A., 4,283,714, Cl. 340-365.00L.

Delavarenne, Serge Y.; Dubreux, Bernard; and Tellier, Pierre, to Produits Chimiques Ugine Kuhlmann. Process for the preparation of mononitro-1,2,3,4-tetrahydroanthraquinones. 4,283,345, Cl. 260-369.000.

De Lena, Oscar: See—

Paudice, Ciro; and De Lena, Oscar, 4,283,440, Cl. 427-108.000.

DeLoach, Frank Jr. Integral vehicle trailer hitch and electrical system. 4,283,072, Cl. 280-422.000.

DeMaria, Francesco: See—

Young, Chi C.; and DeMaria, Francesco, 4,283,365, Cl. 264-206.000.

deMauriac, Richard A.: See—

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de Mey, Charles F., II, to Perkin-Elmer Corporation. The Valve assembly for pressurized fluid systems. 4,282,897, Cl. 137-515.700.

Demrick, Carl J.; and Greene, Frederick C., to Herder N.V. Socket for caster mounting. 4,282,629, Cl. 16-43.000.

Denisov, Vasily F.: See—

Bylinsky, Lev V.; Gavrilenko, Vladimir I.; Glumov, Ivan F.; Denisov, Vasily F.; and Meer, Vadim V., 4,283,763, Cl. 364-449.000.

Denka Chemical Corporation: See—

Barone, Bruno J.; and Click, Gaylon T., 4,283,307, Cl. 252-432.000.

Turner, Nathan L., 4,283,510, Cl. 525-379.000.

Denlinger, George W.: See—

Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernald, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba,



- David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.
- Desai, Rohit: See—  
Shroff, James R.; and Desai, Rohit, 4,283,541, Cl. 546-336.000.
- Deschanel, Francois; and Gard, Roger, to U.S. Philips Corporation. Capacitor having a housing provided with a crease which is expandable in reaction to overpressure. 4,283,750, Cl. 361-274.000.
- de Sousa, Bernardo; Muntwyler, Rene; and Schmid, Werner, to Ciba-Geigy Corporation. Method of protecting keratinous material from attack by insects that feed on keratin by treatment with 5-phenylcarbamoylbarbituric acid compounds. 4,283,444, Cl. 427-421.000.
- De Steur, Hubert; Vandenbossche, Chris; and Heyneman, Guido, to Siemens Aktiengesellschaft. Two beam alternating light collimator. 4,283,142, Cl. 356-319.000.
- Deutsch, Leslie J.: See—  
Deutsch, Ralph; and Deutsch, Leslie J., 4,282,786, Cl. 84-1.010.
- Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instruments Mfg. Co., Ltd. Automatic chord type and root note detector. 4,282,786, Cl. 84-1.010.
- Deutsche Gold und Silber-Scheideanstalt Vormals Roessler: See—  
Lussling, Theodor; Maierhofer, Alfred; and Scherberich, Paul, 4,283,337, Cl. 260-326.147.
- Deutsche Texaco Aktiengesellschaft: See—  
Grodde, Karl-Heinz; and Volz, Hartwig, 4,282,930, Cl. 166-305.00R.
- Devorak, Dwight F. Mobile spreader apparatus drive system. 4,283,014, Cl. 239-677.000.
- deVries, Louis; and King, John M., to Chevron Research Company. Process for preparing a sulfurized molybdenum-containing composition and lubricating oil containing said composition. 4,283,295, Cl. 252-46.400.
- Dexter, Martin; and Winter, Roland A. E., to Ciba-Geigy Corporation. 2-(2-Hydroxy-3,5-di-tert-octylphenyl)-2H-benzotriazole stabilized compositions. 4,283,327, Cl. 260-45.8NT.
- Dexter, Theodore H.; and Fuller, Willard A., to Hooker Chemicals & Plastics Corp. Stable non-caking aqueous slurry of sodium chlorate and sodium chloride and method of making. 4,283,287, Cl. 252-187.00R.
- Dhabhar, Dadi J.; and Shah, Nutan B., to Richardson-Merrell Inc. Dentifrices with improved soluble fluoride availability. 4,283,385, Cl. 424-52.000.
- Diamond, Julius; and Zalipsky, Jerome J., to William H. Rorer, Inc. Aminooureas. 4,283,555, Cl. 564-53.000.
- Diamond Shamrock Industrial Chemicals Limited: See—  
Davies, William D.; Skelthorne, Graham G.; and Warren, John B., 4,283,480, Cl. 430-270.000.
- Diamond Shamrock Plastics Corporation: See—  
Peoples, William D., 4,283,516, Cl. 526-202.000.
- Dick, Bernard M., to Western Electric Co., Inc. Leak testing hermetically sealed electronic articles. 4,282,744, Cl. 73-49.300.
- Diehl, Francis L., to Procter & Gamble Company. The Bleaching process and compositions. 4,283,301, Cl. 252-102.000.
- Diener, Rudolf, to Autoelektronik AG. Rotor-carburetor having an idling mixture arrangement for internal combustion engines. 4,283,358, Cl. 261-88.000.
- Diesel Kiki Company, Ltd.: See—  
Abe, Yoshiaki, 4,283,619, Cl. 119-492.000.
- Sato, Yuji, 4,282,901, Cl. 137-625.640.
- Dietrich, William J., to DMI, Inc. Multiple section, adjustable width plow. 4,282,935, Cl. 172-284.000.
- Dietz, Hermann: See—  
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- Dietze, Guenther; and Wicklmayr, Matthias, to THERA Gesellschaft fur Patentverwertung mbH. Infusion solutions containing amino acids and mineral salts. 4,283,392, Cl. 424-177.000.
- Digital Monitoring Products: See—  
Caldwell, Carl W.; and Britton, Rick A., 4,283,717, Cl. 340-506.000.
- Di Lorenzo, Eugene L. End threaded locking device and method for using same. 4,282,977, Cl. 211-74.000.
- Dinger, Edward H., to General Electric Company. Motor field esciter. 4,283,667, Cl. 318-356.000.
- Disko, Harry: See—  
Hanson, Steven P.; Schoenfeld, Palmer J.; and Disko, Harry, 4,282,674, Cl. 46-39.000.
- Rosenwinkel, Donald A.; and Disko, Harry, 4,283,127, Cl. 351-158.000.
- Disteldorf, Josef; Hubel, Werner; and Wolf, Elmar, to Chemische Werke Huls AG. Method for the production of 2,4,6-triketoheptahydrotriazines. 4,283,535, Cl. 544-193.000.
- Divers, Edward F.; and LaScola, John C., to United States of America. Interior. Slideboard device for underground mine face ventilation. 4,282,802, Cl. 98-50.000.
- DMI, Inc.: See—  
Dietrich, William J., 4,282,935, Cl. 172-284.000.
- Dobroskok, Boris E.: See—  
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafikhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiayarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.
- Dolhy, Serge R.: See—  
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- Domtar Inc.: See—  
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- Dopkin, Raymond J.; and Hochberg, Jerome, to Du Pont de Nemours, E. I., and Company. Manufacture of seamless laminated tubing. 4,282,905, Cl. 156-74.000.
- Doster, Robert C.; Judson, Beth R.; and Soo Hoo, Kathleen G., to Carnation Company. Preparing centerfilled food product. 4,283,430, Cl. 426-284.000.
- Doty, Wendell E., to Battle Creek Equipment Co. Irradiation device and removable timer useful therewith. 4,283,661, Cl. 315-360.000.
- Dow Chemical Company, The: See—  
Brady, Thomas P.; and Langer, Horst G., 4,283,501, Cl. 525-2.000.
- Gibbs, Ronald L., 4,283,515, Cl. 526-127.000.
- Lane, George A.; and Rossow, Harold E., 4,283,298, Cl. 252-70.000.
- McDonald, Charles J.; Van Landingham, John V.; and Givens, Steven P., 4,282,928, Cl. 166-274.000.
- Downing, James W., to McDonnell Douglas Corporation. Large clearance fairlead grommet. 4,282,627, Cl. 16-2.000.
- Drake, Cyril F., to International Standard Electric Corporation. ZnO-ScO<sub>2</sub>-R<sub>2</sub>O soluble glass. 4,283,227, Cl. 106-47.00R.
- Drescher, Heinz; Imbusch, Heirich; and Lampe, Hans H., to International Business Machines Corporation. Arrangement for determining the length of arbitrary shift registers. 4,283,620, Cl. 235-92.0SH.
- Dresser Industries, Inc.: See—  
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- Dreyfus, Marc G.; and Pellman, Arnold, to Dreyfus-Pellman. Electro-optical scanning system. 4,283,147, Cl. 356-445.000.
- Dreyfus-Pellman: See—  
Dreyfus, Marc G.; and Pellman, Arnold, 4,283,147, Cl. 356-445.000.
- DSO "Montaji"—Kontrolno Zavarachno Upravljenje: See—  
Kulekov, Stefan I.; and Pavlov, Alexander S., 4,283,628, Cl. 250-358.00P.
- DuBois, Grant E.; and Stephenson, Rebecca A. G. Sulfamo dihydrochalcone sweeteners. 4,283,434, Cl. 426-548.000.
- Dubreux, Bernard: See—  
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- Duceppe, Antoine, to Revelations Antoine Ltee. Fingernail treating device. 4,282,891, Cl. 132-73.500.
- Duffy, John A., to Avon Products, Inc. Nail enamel composition. 4,283,324, Cl. 260-31.20N.
- Dunckhorst, William H. Timed shower head valve. 4,282,899, Cl. 137-624.180.
- Dunlap, Albert R.; and Nester, Dallas G., to Brown Wooten Mills, Inc. Decorative footlet-type sock. 4,282,727, Cl. 66-172.00E.
- Dunlop Limited: See—  
Harrison, Reginald, 4,282,816, Cl. 105-224.100.
- Du Pont de Nemours, E. I., and Company: See—  
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- Binau, Douglas E.; and Speicher, Emmett J., 4,283,254, Cl. 203-4.000.
- Dopkin, Raymond J.; and Hochberg, Jerome, 4,282,905, Cl. 156-74.000.
- Forgey, James H.; Stephens, Donald R.; and Tan, Engnam A., 4,282,812, Cl. 102-318.000.
- Grant, John W., 4,283,276, Cl. 209-155.000.
- Hartmann, Hans S., 4,282,922, Cl. 164-97.000.
- Herkes, Frank E., 4,283,306, Cl. 252-432.000.
- Longworth, Ruskin, 4,283,361, Cl. 264-120.000.
- Murphy, Charles V.; and Statz, Robert J., 4,283,317, Cl. 260-27.00R.
- Richardson, Paul N., 4,283,502, Cl. 525-66.000.
- Richter, John W., 4,283,533, Cl. 544-171.000.
- Urban, Edward J.; and Vitcuskys, William P., 4,283,459, Cl. 428-379.000.
- Durand, Tulvio S., to United States of America, Army. Automatic integrator control for transientless switching of controller gains in manual tracking systems. 4,283,670, Cl. 318-591.000.
- Durkoppwerke GmbH: See—  
Fenzl, Horst, 4,282,820, Cl. 112-121.150.
- Duro-Test Corporation: See—  
Brett, Jack, 4,283,653, Cl. 313-341.000.
- Du Toit, Rudolph M., to Edward, Christopher; Kabutz, Hans Rudolf; and Corker, Frank. Cleaning fluid injection device. 4,282,867, Cl. 128-66.000.
- Duwel, Edward C.: See—  
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- Dyakov, Valery M.: See—  
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- Dyban, Andrei P.: See—  
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- Dyhr, Jan: See—  
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- Dynamit Nobel AG: See—  
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- Dynamit Nobel Aktiengesellschaft: See—  
Spielau, Paul; Putz, Peter; Weiss, Richard; and Schraube, Hansfritz, deceased, 4,282,697, Cl. 52-746.000.
- Dyneer Corporation: See—  
Kraft, Derald H., 4,283,182, Cl. 474-110.000.
- Spraul, Nolte V., 4,283,181, Cl. 474-110.000.
- Easter, Finis C.: See—  
Clock, Donald P.; and Easter, Finis C., 4,283,790, Cl. 375-71.000.
- Easter, Ross A.: See—  
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- Eastman Kodak Company: See—  
Campbell, Gerald A.; Hollister, Kenneth R.; and Sutton, Richard C., 4,283,504, Cl. 525-261.000.
- Columbus, Richard L., 4,283,134, Cl. 354-275.000.
- Dappen, Glen M., 4,283,491, Cl. 435-10.000.
- Farnsworth, Gary V.; Gandy, Gerald C.; and Richards, Hugh W., 4,283,476, Cl. 430-140.000.
- Fletcher, George L., Jr.; deMauriac, Richard A.; and Merrill, Stewart H., 4,283,477, Cl. 430-141.000.
- Frank, David S.; and Sundberg, Michael W., 4,283,382, Cl. 424-8.000.
- Gompf, Thomas E.; Hammond, Howell A.; and Mooberry, Jared B., 4,283,472, Cl. 430-17.000.
- Gourley, Robert N., 4,283,332, Cl. 260-155.000.
- Van Lare, Earl J., 4,283,488, Cl. 430-588.000.
- Eaton Corporation: See—  
Brown, James M.; Kaiser, Hermann; and Olson, Jerry A., 4,282,751, Cl. 73-202.000.
- Kolze, Lawrence A., 4,283,040, Cl. 251-30.000.
- Roscoe, Charles S., 4,282,961, Cl. 192-58.00B.
- Ebert, Hermann, to Siemens Aktiengesellschaft. Control signal generator for the commutating device of a brushless electronics motor. 4,283,664, Cl. 318-138.000.
- Eckardt, Rudolf: See—  
Gutlich, Karl-Friedrich; Kappus, Wolfgang; Zweigardt, Herbert; and Eckardt, Rudolf, 4,283,467, Cl. 429-51.000.
- Eckert, Alton B.; and Duwel, Edward C., to Pitney Bowes Inc. Electronic postage meter having check date warning. 4,283,721, Cl. 340-680.000.
- Eddy, George R., to Century Machine, Inc. Structure of truing piston cylinders. 4,282,734, Cl. 72-54.000.
- Edelman, Brian S.; and Robinson, Ralph L., Jr., to Ford Motor Company. Binary input/output processing in a digital computer using assigned times for input and output data. 4,283,761, Cl. 364-200.000.
- Edelman, Seymour: See—  
Wooden, Bruce J.; and Edelman, Seymour, 4,283,461, Cl. 428-422.000.
- Eden, Dayton D. Optical modulation with vanadium oxide thin films. 4,283,113, Cl. 350-96.150.
- Edwall, Bengt; and Kullendorff, Anders. Method and apparatus for preventing corrosion in a steam power plant. 4,282,715, Cl. 60-646.000.
- Edward, Christopher: See—  
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- Edwards, Philip K., to Computer Operations. Variable size dot matrix character generator in which a height signal and an aspect ratio signal actuate the same. 4,283,724, Cl. 340-731.000.
- Eggler, James F.; and Hess, Hans-Jurgen E., to Pfizer Inc. Bronchodilation with 13,14-dihydro-15-aklenyl prostaglandins. 4,283,417, Cl. 424-305.000.
- Ehrgott, Roland; and Meindl, Gerhard, to Siemens Aktiengesellschaft. Holder for an electromagnet coil. 4,283,699, Cl. 336-67.000.
- Ehrlich, Stefan; and Levenson, William L., to Levor, Incorporated. Power generation by exchange of latent heats of phase transition. 4,283,211, Cl. 62-4.000.
- Electric Power Research Institute, Inc.: See—  
Levin, Harry P., 4,283,643, Cl. 307-309.000.
- Electricite de France: See—  
Andro, Jean; Bessouat, Roger; Cerdan, Jean-Pierre; and Talieu, Patrick, 4,283,206, Cl. 55-187.000.
- Eli Lilly and Company: See—  
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- Davenport, James D., 4,283,403, Cl. 424-263.000.
- Gesellchen, Paul D.; and Shuman, Robert T., 4,283,329, Cl. 260-112.50R.
- Koch, Kay F.; and Kastner, Ralph E., 4,283,390, Cl. 424-122.000.
- Ose, Earl E., 4,283,388, Cl. 424-114.000.
- Shuman, Robert T., 4,283,330, Cl. 260-112.50R.
- Elias, Luis R.: See—  
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- Eller, Fritz D. Overload protection for transmission system with planetary gear train. 4,282,776, Cl. 74-801.000.
- Elliott, Richard A.; Massey, Gail A.; and Shaw, John B., to Oregon Graduate Center for Study and Research. Light-beam streaking employing crystal with traveling lens and multiple cross-crystal reflections. 4,283,122, Cl. 350-379.000.
- Ellis, Harold G. Side view mirror apparatus for vehicles. 4,283,117, Cl. 350-289.000.
- Ellis, James F. Print roller. 4,282,810, Cl. 101-376.000.
- Ellis, Leonard C., to Virginia Chemicals Inc. Process for manufacture of stable sodium dithionite slurries. 4,283,303, Cl. 252-188.000.
- Elsasser, Heinrich; to Sulzer Morat GmbH. Control magnet system. 4,282,724, Cl. 66-75.200.
- Eltra Corporation: See—  
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- Enders, Max L. Shock proof fastener assembly for vehicle wheels and other applications. 4,283,091, Cl. 301-9.0DN.
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- Engels, Walter, to Milliken Research Corporation. Pile fabric sculpturing apparatus. 4,282,635, Cl. 26-16.000.
- Engelsmann, Dieter; Lermann, Peter; Nicko, Reinhard; Schultes, Herbert; and Wagner, Karl, to Agfa-Gevaert AG. Photographic camera. 4,283,132, Cl. 354-202.000.
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- Ephrath, Linda M., to International Business Machines Corporation. Reactive ion etching. 4,283,249, Cl. 156-643.000.
- Erickson, Donald C. Regenerable manganese oxide hot gas desulfurization process. 4,283,374, Cl. 423-230.000.
- Erickson, John W., to Kobe, Inc. Pump and centrifugal separator apparatus. 4,283,005, Cl. 233-47.00A.
- Ernst Leitz Wetzlar GmbH: See—  
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- Wieber, Karl; Janke, Heinrich; Kraft, Winfried; and Lisfeld, Robert, 4,283,111, Cl. 350-39.000.
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- Erwin Sick Gesellschaft mit beschrankter Haftung Optik-Elektronik: See—  
von Stein, Walter; and Fetzer, Gunter, 4,283,623, Cl. 235-465.000.
- Escher Wyss GmbH: See—  
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- Heinbockel, Wolfgang; Siewert, Wolfgang; Kahmann, Albrecht; and Lambrecht, Gerhard, 4,283,275, Cl. 209-3.000.
- Escher Wyss Limited: See—  
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- Evans, Donald J.: See—  
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- Extranuclear Laboratories, Inc.: See—  
Siegel, Melvin W., 4,283,626, Cl. 250-292.000.
- Exxon Production Research Company: See—  
Maus, L. Donald; Speers, Jerry M.; and Howell, James D., 4,282,939, Cl. 175-7.000.
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- Clementoni, Dominick; and Corbett, Luke W., 4,283,230, Cl. 106-274.000.
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- Gladrow, Elroy M., 4,283,309, Cl. 252-455.00Z.
- Greenwood, Sydney H. J., 4,283,269, Cl. 208-45.000.
- Maa, Peter S.; and Vernon, Lonnie W., 4,283,267, Cl. 208-8.0LE.
- Savage, David W., 4,283,204, Cl. 55-3.000.
- Zimmerman, Abraham A., 4,283,203, Cl. 44-62.000.
- Eymard, Pierre: See—  
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Obayashi, Nobuharu; Hashizume, Hikaaru; Kameyama, Seiji; Ezawa, Sadaaki; Kondo, Tatsunori; Takauji, Kiyomi; and Aoyama, Tohru, 4,282,785, Cl. 84-1.010.
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Beretta, Pier C., 4,282,795, Cl. 89-148.000.
- Fabert, Herman A., Jr.: See—  
Thiele, Arthur M.; and Fabert, Herman A., Jr., 4,282,664, Cl. 37-118.00R.



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- Famin, Roger: See—  
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- Fan, Lucy L.; Wohlman, Alan; and Longan, Bobby J., to Frito-Lay, Inc. Method for frying foods and fried food products. 4,283,437, Cl. 426-637.000.
- Fancher, Llewellyn W., to Stauffer Chemical Company. S-Alkyl and alkenyl-thiophenylacetamido thiophosphates and phosphonates and method of controlling insects. 4,283,395, Cl. 424-211.000.
- Faretta, Ronald A., to Varian Associates, Inc. Apparatus for mechanically clamping semiconductor wafer against pliable thermally conductive surface. 4,282,924, Cl. 165-80.00E.
- Farina, Attilio, to Indesit Industria Elettrodomestici Italiana S.p.A. Circuit arrangement with frequency synthesis for the tuning of receiving sets. 4,283,791, Cl. 455-183.000.
- Farnsworth, Gary V.; Gandy, Gerald C.; and Richards, Hugh W., to Eastman Kodak Company. Photographic element having a magnetic recording stripe overlying an antistatic layer. 4,283,476, Cl. 430-140.000.
- Farr, Robert A.: See—  
Carr, Albert A.; and Farr, Robert A., 4,283,404, Cl. 424-267.000.
- Farrell, Roscoe M.: See—  
Shields, Harper; and Farrell, Roscoe M., 4,282,725, Cl. 66-157.000.
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Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.
- Fatkullina, Neili N., administrator: See—  
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.
- Fedewitz, James A. Thermally-activated closure device. 4,283,006, Cl. 236-1.00G.
- Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Borefeld, Horst; Seiler, Hans G.; and Johann, Walter, to Goetze A.G. Method and lathe for machining out-of-round circumferences. 4,282,784, Cl. 82-19.000.
- Fenner, Jurgent, to Th. Goldschmidt A.G. Process for the preparation of basic zirconium carbonate of high purity. 4,283,377, Cl. 423-419.00P.
- Fenton, Donald M.; and Gowdy, Hugh W., to Union Oil Company of California. Method for removing hydrogen sulfide from gas streams. 4,283,379, Cl. 423-571.000.
- Fenzl, Horst, to Durkoppwerke GmbH. Workpiece-clamping assembly at sewing station. 4,282,820, Cl. 112-121.150.
- Fernald, Clifford S., Jr.: See—  
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernald, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.
- Fernando, James U. R., to Air Preheater Company, Inc., The. Filter bag cleaning system. 4,283,208, Cl. 55-304.000.
- Ferrill, Jess B.; Hughes, Richard L.; and Soderstrom, Melvin A., to AMP Incorporated. Terminal for cross connect apparatus. 4,283,105, Cl. 339-97.00R.
- Fetzer, Gunter: See—  
von Stein, Walter; and Fetzer, Gunter, 4,283,623, Cl. 235-465.000.
- Fiat-Allis Construction Machinery, Inc.: See—  
Sandrock, Don G., 4,282,769, Cl. 74-475.000.
- Field, Arthur K.; and Harwood, Richard J., to Merck & Co., Inc. Topical application of interferon inducers. 4,283,393, Cl. 424-180.000.
- Fikse, Tyman H., to Robbins Company, The. Conveyor mounted excavator. 4,283,090, Cl. 299-33.000.
- Finch, Colin M. System controlling apparatus which compares signals from sensors monitoring passing objects with pre-determined parameter information to control the system. 4,283,031, Cl. 246-128.000.
- Findeisen, Kurt: See—  
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- Fine, Francois: See—  
Jequier, William; Ghenassia, Elie; Fine, Francois; and Krempf, Gerard, 4,283,577, Cl. 568-841.000.
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Fridrich, Janos; Hetesi, Zoltan; Kistelegi, Gusztav; Misangyi, Laszlo; Szegletes, Emil; and Szabo, Jozsef, 4,283,598, Cl. 174-169.000.
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- Firmenich SA: See—  
Pickenhagen, Wilhelm, 4,283,433, Cl. 426-534.000.
- Fischer, Arthur. Contact block with resilient socket contacts. 4,283,108, Cl. 339-198.00K.
- Fitzgerald, Robert E. Display holder. 4,282,976, Cl. 211-59.100.
- Flaherty, Robert, to United States of America, Energy. Ultra high vacuum seal arrangement. 4,283,079, Cl. 285-381.000.
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- Fletcher, John M. Inert atmosphere indigo dyeing. 4,283,198, Cl. 8-653.000.
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- Floyd, Middleton B., Jr., to American Cyanamid. 1-Descarboxy-1-keto-ester(ketoacid)-prostaglandins. 4,283,550, Cl. 560-53.000.
- Flynn, Vincent J. Radiopaque polyurethane, resin compositions. 4,282,876, Cl. 128-349.00R.
- Flynn, Vincent J. Radiopaque polyurethane resin compositions. 4,283,447, Cl. 428-36.000.
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Kondo, Kiyoshi; Takashima, Toshiyuki; and Tunemoto, Daiei, 4,283,341, Cl. 260-343.30R.
- Orlando, Franklin P., 4,282,706, Cl. 56-330.000.
- Focks, Dana A.; and Hock, John W. Flying insect trap. 4,282,673, Cl. 43-113.000.
- Foley, James W., to Polaroid Corporation. Novel triarylmethane compounds. 4,283,538, Cl. 546-94.000.
- Foley, James W.: See—  
Cincotta, Louis; and Foley, James W., 4,283,537, Cl. 546-94.000.
- Fomac, Inc.: See—  
Forrestall, Richard J.; and Wilson, David G., 4,283,070, Cl. 280-274.000.
- Fontaine, Jean F. L., to Goodyear Tire & Rubber Company, The. Pneumatic tire. 4,282,915, Cl. 152-209.00R.
- Fontan, Andre. Grape picking machine. 4,282,705, Cl. 56-330.000.
- Forberg, Horst; Hegner, Gueter; and Stoewe, Anneliese, to Krone GmbH. Electrical crimp connector. 4,283,103, Cl. 339-59.00M.
- Ford Motor Company: See—  
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- Fox, David H.; and Kostan, Charles C., 4,282,836, Cl. 123-146.50A.
- Gracessley, William J., 4,283,762, Cl. 364-431.000.
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- Forgey, James H.; Stephens, Donald R.; and Tan, Engnam A., to Du Pont de Nemours, E. I., and Company. Field-primeable chub cartridge having a longitudinal threading tunnel integral therewith. 4,282,812, Cl. 102-318.000.
- Forrestall, Richard J.; and Wilson, David G., to Fomac, Inc. Recumbent bicycle. 4,283,070, Cl. 280-274.000.
- Forsyth Dental Infirmary for Children: See—  
Szabo, Elek I., 4,283,199, Cl. 23-230.00B.
- Fortino, Andres G.; Geipel, Henry J., Jr.; Heller, Lawrence G.; and Silverman, Ronald, to International Business Machines Corporation. Method of making a transistor array. 4,282,646, Cl. 29-571.000.
- Fortune, William S. Handles for pliers. 4,282,783, Cl. 81-428.00R.
- Fowler, Stephen L., to W. R. Grace & Co. Irradiated film. 4,283,630, Cl. 250-492.00B.
- Fox, David H.; and Kostan, Charles C., to Ford Motor Company. Lightweight distributor rotor driveshaft. 4,282,836, Cl. 123-146.50A.
- Fox, Robert O. Chain breaking tool. 4,282,707, Cl. 59-7.000.
- Fraissl, Klaus, to Richard Wolf GmbH. Beam splitters for endoscopes comprising a dual observation system. 4,283,115, Cl. 330-171.000.
- Franch, Gino. Rotational speed and torque mechanical transducer. 4,282,772, Cl. 74-679.000.
- Franezki, Manfred; Gagneur, Klaus; and Prestele, Karl, to Siemens Aktiengesellschaft. Device for the pre-programmable infusion of liquids. 4,282,872, Cl. 128-213.00R.
- Frank, David S.; and Sundberg, Michael W., to Eastman Kodak Company. Fluorescent labels comprising rare earth chelates. 4,283,382, Cl. 424-8.000.
- Frank, Dieter; and Henoig, Kurt, to Robert Bosch GmbH. Cross-track distributor for video signals. 4,283,711, Cl. 340-166.00R.
- Frank, Robert I.: See—  
Kaplow, Roy; and Frank, Robert I., 4,283,589, Cl. 136-249.000.
- Frankel, Bernard. Floral arrangement containers. 4,282,683, Cl. 47-41.00R.
- FranRica Mfg. Inc.: See—  
Hay, Lloyd F.; Rica, Albert F.; and Webber, J. R., 4,282,925, Cl. 165-94.000.
- Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: See—  
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- Frech, Kenneth J.; and Tazuma, James J., to Goodyear Tire & Rubber Company, The. Method for removal of sulfur compounds from a gas. 4,283,373, Cl. 423-226.000.
- Freedman, Betty; and Blevins, Anne M., to Concepts for Women, Inc. Appearance modifying panty hose. 4,282,609, Cl. 2-239.000.
- Freeman, Roger K.; and Goebel, Franz, to GTE Products Corporation. Anode structure for an electrochemical cell. 4,283,470, Cl. 429-209.000.
- Freestone, Frank J.: See—  
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- Frenker-Hackfort, Ludger: See—  
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- Fridrich, Janos; Hetesi, Zoltan; Kistelegi, Gusztav; Misangyi, Laszlo; Szegletes, Emil; and Szabo, Jozsef, to Finomkeramiaipari Muvek. Line post insulator with swinging stirrup and clamping jaws for overhead lines of more than 1000 volts. 4,283,598, Cl. 174-169.000.

- Friedrichs, Josef, to Ringfeder G.m.b.H. Force absorbing arrangement. 4,282,979, Cl. 213-29.000.
- Friese, Karl-Hermann: See—  
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- Maurer, Helmut; Muller, Klaus; Rieger, Franz; Linder, Ernst; Dietz, Hermann; Friese, Karl-Hermann; and Ziegler, Bodo, 4,283,261, Cl. 204-195.00S.
- Friis-Hansen, J. Method and apparatus for burning CaCO<sub>3</sub> and MgCO<sub>3</sub> materials. 4,283,202, Cl. 23-230.00A.
- Frint, William R.; Copenhafer, William C.; and Plosky, Michael L., to Intermountain Research and Devel. Corp. Recovery of alkali values from sodium bicarbonate-containing ore with ammonia. 4,283,372, Cl. 423-206.00T.
- Frito-Lay, Inc.: See—  
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- Fritzmeier AG: See—  
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- Frohlich, Charles R., Jr.: See—  
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- Hamaoka, Tsutomu; and Kasama, Yasuo, 4,283,479, Cl. 430-264.000.
- Hirai, Hiroyuki; Matsushita, Sachio; Tsuyuki, Isao; and Watase, Kazumi, 4,283,266, Cl. 204-263.000.
- Igarashi, Akira; and Sato, Kozo, 4,283,458, Cl. 428-341.000.
- Kawamura, Koichi; Katsuyama, Harumi; and Sato, Hiden, 4,283,475, Cl. 430-70.000.
- Kubotera, Kikuo; and Kashiwabara, Akira, 4,283,478, Cl. 430-156.000.
- Fujii, Setsuro; Watanabe, Tsuyoshi; Shiota, Masashi; Okumoto, Itsuo; and Kayama, Naohiro, to Ono Pharmaceutical Co., Ltd. Guanidino-benzoic acid derivatives and process for their preparation. 4,283,418, Cl. 424-310.000.
- Fujisawa Pharmaceutical Co., Ltd.: See—  
Imanaka, Hiroshi; Hosoda, Junji; Jomoo, Kazuyoshi; Sakai, Heiichi; Ueda, Ikuo; and Morino, Daizou, 4,283,492, Cl. 435-47.000.
- Fujisawa, Yoshiho. Magnet device for animals, in particular cattle. 4,283,698, Cl. 335-306.000.
- Fujitsu Fanuc Limited: See—  
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- Fukasawa, Atsushi: See—  
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- Fukazawa, Nobuyuki: See—  
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- Fukuhara, Toru: See—  
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- Fukui, Yutaka; and Kagohara, Hiromi, to Hitachi, Ltd. Gas turbine nozzle. 4,283,234, Cl. 148-32.500.
- Fukunaga, Kazuo: See—  
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- Fukuyashu, Harumi: See—  
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- Fuller, Edward N.: See—  
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- Fuller, Willard A.: See—  
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- Furuya, Katsuke: See—  
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- Fusek, Richard L.: See—  
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- Fuyama, Hiroshi; and Tsuji, Kozo, to Sumitomo Chemical Company Limited. Oil-in-Water insecticidal and acaricidal emulsion. 4,283,415, Cl. 424-304.000.
- Gacuzana, Delancey J. Scrubber apparatus. 4,282,623, Cl. 15-97.00R.
- GAF Corporation: See—  
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- Charles, John J.; and Gasman, Robert C., 4,283,326, Cl. 260-40.00R.
- Creasy, Walter, 4,283,456, Cl. 428-282.000.
- Gagneur, Klaus: See—  
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- Gallagher, Donald A., to Westworld Enterprises. Motorcycle cover. 4,283,084, Cl. 296-78.100.
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- Gamebridge, Inc.: See—  
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- Gandy, Gerald C.: See—  
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- Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., to Schering Corporation. Synthesis of  $\beta$ -lactams having a substituted hydroxymethylene group at the position  $\alpha$  to the lactam carbonyl group. 4,283,531, Cl. 544-30.000.
- Gard, Roger: See—  
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- Gardiner, Bayard G.; and Leber, George W., to Technicare Corporation. Transducer drive and control. 4,282,755, Cl. 73-634.000.
- Gardiner, Bayard G.; Herings, James A.; and Mandel, Paul, to Technicare Corporation. Water circulation and maintenance system for an ultrasound mammary scanning apparatus. 4,282,880, Cl. 128-660.000.
- Garrett Corporation, The: See—  
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- Garrett, Randall M.: See—  
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- Garwood, William E.; and Silk, Murray R., to Mobil Oil Corporation. Manufacture of hydrocracked low pour lubricating oils. 4,283,271, Cl. 208-59.000.
- Garwood, William E.; and Silk, Murray R., to Mobil Oil Corporation. Manufacture of hydrocracked low pour lubricating oils. 4,283,272, Cl. 208-59.000.
- Gasman, Robert C.: See—  
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- Gathje, John C.: See—  
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- Gaussens, Gilbert: See—  
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- Gavrilenko, Vladimir I.: See—  
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- Gaylord, Norman G.: See—  
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- Gebr. Bode & Co.: See—  
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- Geipel, Henry J., Jr.: See—  
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- General Electric Company: See—  
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- Dinger, Edward H., 4,283,667, Cl. 318-356.000.
- Liebermann, Howard H., 4,282,921, Cl. 164-463.000.
- Mark, Victor, 4,283,566, Cl. 568-726.000.
- Orser, David A.; Towilson, Howard E.; and True, Thomas T., 4,283,120, Cl. 350-361.000.
- Ryckman, William D., Jr., 4,283,701, Cl. 337-341.000.
- Stottmann, Richard L.; and Losert, Gerhard K., 4,282,720, Cl. 62-180.000.
- Zarchy, Andrew S., 4,282,741, Cl. 73-23.000.
- General Foods Corporation: See—  
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- General Motors Corporation: See—  
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- Kopich, Leonard F.; and Steele, James A., 4,282,949, Cl. 180-252.000.
- Martyniuk, Ernest T., 4,283,207, Cl. 55-282.000.
- Wize, Gary A., 4,283,075, Cl. 280-804.000.
- Genest, Leonard J.; and Madenlian, Vache B., to J.S. Lock Company; and Uniqey, S.A. Security system. 4,283,710, Cl. 340-149.00R.
- Genrich, Thad J.: See—  
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- Gentzkow, Wolfgang V.: See—  
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- Genz, Earl J., to Illinois Tool Works Inc. Electrical keylock switch. 4,283,608, Cl. 200-44.000.
- Gerkin, Richard M.: See—  
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- Gesellchen, Paul D.; and Shuman, Robert T., to Eli Lilly and Company. Pharmacologically active peptides. 4,283,329, Cl. 260-112.50R.
- Gewerkschaft Eisenhutte Westfalen: See—  
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- Ohahramani, Iraj: See—  
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- Ghenassia, Elie: See—  
Jequier, William; Ghenassia, Elie; Fine, Francois; and Krempf, Gerard, 4,283,577, Cl. 568-841.000.
- Gibbs, Ronald L., to Dow Chemical Company, The. Support, catalyst and process for polymerizing olefins. 4,283,515, Cl. 526-127.000.
- Gibson, Walter G., to RCA Corporation. Signal separation networks. 4,283,741, Cl. 358-197.000.



Gick, Wilhelm: See—  
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Gijbels, Jozef: See—  
Gijbels, Peter; and Gijbels, Jozef, 4,283,633, Cl. 290-1.00R.

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Gillespie, Janice M., executrix: See—  
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Giordano, Flora: See—  
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Giordano, Gene; and Giordano, Flora. Method of making a multi-layer pizza type product, 4,283,431, Cl. 426-296.000.

Girg, Friedrich; and Knittel, Volker, to Hoechst Aktiengesellschaft. Process for the preparation and use of stable cellulose ether suspensions, 4,283,229, Cl. 106-171.000.

Girjavalabhan, Viyyoor M.: See—  
Ganguly, Ashit K.; Girjavalabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., 4,283,531, Cl. 544-30.000.

Givens, Steven P.: See—  
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Glade, Gaston M. Advertising poster display frame, 4,282,667, Cl. 40-16.000.

Gladrow, Elroy M., to Exxon Research & Engineering Co. Hydrocarbon conversion catalyst, 4,283,309, Cl. 252-455.00Z.

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Glasson, Richard E.; and Lauterbach, Jerre F., to Cummins Engine Company. Viscous fluid clutch, 4,282,960, Cl. 192-58.00C.

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Godfrey, Norman B., to Highland Resources, Inc. Preparation of dioxane and co-products, 4,283,339, Cl. 260-340.600.

Goebel, Franz; and Morgan, Cyril, to GTE Products Corporation. Electrochemical cell insensitive to physical orientation, 4,283,468, Cl. 429-81.000.

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Goebel, Franz: See—  
Freeman, Roger K.; and Goebel, Franz, 4,283,470, Cl. 429-209.000.

Goetz, Norbert; and Hupfer, Leopold, to BASF Aktiengesellschaft. Reductive alkylation of nitrogen heterocycles, 4,283,534, Cl. 544-174.000.

Goetze AG: See—  
Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Bornfeld, Horst; Seiler, Hans G.; and Johann, Walter, 4,282,784, Cl. 82-19.000.

Golben, Peter M., to United States of America, Interior. Metal hydride actuation device, 4,282,931, Cl. 169-61.000.

Gold, Nicholas, to Polaroid Corporation. Method and apparatus for making a self-coiling sheet, 4,283,362, Cl. 264-160.000.

Goldstein, David; Jones, Richard E.; and Sery, Robert S., to United States of America, Navy. Method of modifying the transition temperature range of TiNi base shape memory alloys, 4,283,233, Cl. 148-11.50R.

Goldstein, Joseph. Stretch wrapper for palletized load, 4,282,700, Cl. 53-556.000.

Gompf, Thomas E.; Hammond, Howell A.; and Mooberry, Jared B., to Eastman Kodak Company. Silver halide elements containing blocked pyrazolone magenta dye-forming couplers, 4,283,472, Cl. 430-17.000.

Goodman, Howard M.; Shine, John; and Horst, Peter, to University of California, The Regents of the. Purification of nucleotide sequences suitable for expression in bacteria, 4,283,489, Cl. 435-6.000.

Goody, Roy W. Portable exercise totalizer, 4,283,712, Cl. 340-323.00R.

Goodyear Tire & Rubber Company, The: See—  
Footaine, Jean F. L., 4,282,915, Cl. 152-209.00R.

Frech, Kenneth J.; and Tazuma, James J., 4,283,373, Cl. 423-226.000.

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Gorbunov, Andrei T.: See—  
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Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.

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Gordon, Joseph H.; and Bloch, R. Ramon, to Lampiridae Associates. Exit illuminating system, 4,283,657, Cl. 315-86.000.

Goring Kerr Limited: See—  
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Witek, Stanislaw; Grobelny, Damian; Ptaszkowska, Janina; Bielecki, Andrzej; Bakuniak, Edmund; Fulde, Stefan; and Gorska-Poczopko, Jadwiga, 4,283,399, Cl. 424-248.400.

Goser, Karl, to Siemens Aktiengesellschaft. Method and circuit arrangement for the operation of recursive filter circuits or analog storage circuits constructed according to the charge coupled device (CCD) principle, 4,283,696, Cl. 333-165.000.

Gostomski, Arnold R.: See—  
Gostomski, John J.; Gostomski, Arnold R.; and Dael, Eugene F., 4,283,073, Cl. 280-508.000.

Gostomski, John J.; Gostomski, Arnold R.; and Dael, Eugene F., to Atwood Vacuum Machine Company. Ball type gooseneck hitch, 4,283,073, Cl. 280-508.000.

Goto, Genichi; and Hanihara, Sadamasa, to Nippon Electric Co., Ltd. Traveling wave tube devices, 4,283,656, Cl. 315-3.500.

Gotoh, Miyuki, to Nissan Motor Company, Limited. Circuit arrangement for operating heavy-duty equipment using electrical relaying device, 4,283,748, Cl. 361-154.000.

Gould, James S.: See—  
Gould, Samuel; and Gould, James S., 4,283,101, Cl. 339-2.00L.

Gould, Samuel; and Gould, James S., to Indicator Controls Corp. Rotatable lamp socket for incandescent pedestrian traffic signal, or the like, 4,283,101, Cl. 339-2.00L.

Gourley, Robert N., to Eastman Kodak Company. Azo dyes containing fluorinated carboxylic or sulphonic ester groups on the diazo moiety, 4,283,332, Cl. 260-155.000.

Gowdy, Hugh W.: See—  
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GR-Stein Refractories Limited: See—  
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Graessley, William J., to Ford Motor Company. Analog computer circuit for controlling a fuel injection system during engine cranking, 4,283,762, Cl. 364-431.000.

Graf, Ronald E. Droplet control aspects—ink evaporation reduction; low voltage contact angle control device; droplet trajectory release modes; uses for metallic ink drops in circuit wiring and press printing, 4,283,730, Cl. 346-75.000.

Graf, Werner; and Schlottner, Willy, to Montanwerke Walter GmbH. Cutting tool with replaceable edge cutting bit, 4,283,163, Cl. 407-104.000.

Graham, David J.; and Armond, John W., to BOC Limited. Treatment of gas streams, 4,283,212, Cl. 62-18.000.

Graham, Johnny R.: See—  
Graham, Kenneth Z.; and Graham, Johnny R., 4,282,633, Cl. 17-45.000.

Graham, Kenneth Z.; and Graham, Johnny R. Line divider, 4,282,633, Cl. 17-45.000.

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Bessey, Robert L., 4,282,945, Cl. 180-71.000.

Grandeur Motorcar Corp.: See—  
Phillips, Charles W., 4,282,641, Cl. 29-416.000.

Grandinetti, Michael A.: See—  
Bassan, Benjamin; and Grandinetti, Michael A., 4,283,167, Cl. 418-13.000.

Granlund, John: See—  
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Grant, John W., to Du Pont de Nemours, E. I., and Company. Rotor for sedimentation field flow fractionation, 4,283,276, Cl. 209-155.000.

Grawey, Charles E., to Caterpillar Tractor Co. Tire curing method, 4,283,366, Cl. 264-502.000.

Great Lakes Carbon Corporation: See—  
Horne, Otis J., Jr.; and Ramsey, David E., Jr., 4,283,375, Cl. 423-345.000.

Greaves, Jeffrey C.: See—  
Chandra, Bala P.; Greaves, Jeffrey C.; and Lovelock, Victor G., 4,283,526, Cl. 528-500.000.

Green, Robert S., to National Semiconductor Corporation. Regulation of current through depletion devices in a MOS integrated circuit, 4,283,642, Cl. 307-297.000.

Greene, Frederick C.: See—  
Demrick, Carl J.; and Greene, Frederick C., 4,282,629, Cl. 16-43.000.

Greene, Gordon A.: See—  
Menz, Fredric L.; and Greene, Gordon A., 4,282,814, Cl. 102-318.000.

Greene, Janice L., to Standard Oil Company, The. Process for polymerization of composition comprising (1) alpha,beta-unsaturated monocarboxylic acid or ammonium salt thereof and (2) ammonia, 4,283,524, Cl. 528-363.000.

Greenwood, Sydney H. J., to Exxon Research & Engineering Co. Process for the production of a feedstock for carbon artifact manufacture, 4,283,269, Cl. 208-45.000.

Griebeler, Elmer L., to C-R-O, Inc. Compound oscillator, 4,282,763, Cl. 74-89.150.

Griffin, Raymond H.: See—  
Bauer, William A.; Frohlich, Charles R., Jr.; Griffin, Raymond H.; and Henderson, Joseph G., 4,283,020, Cl. 242-25.00R.

Griffin, Rodney B.; and Swenson, William A., to Western Electric Company, Inc. Jumper plug, 4,283,100, Cl. 339-19.000.

Grobelyny, Damian: See—  
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Grodde, Karl-Heinz; and Volz, Hartwig, to Deutsche Texaco Aktiengesellschaft. Process for the recovery of petroleum from subterranean formations, 4,282,930, Cl. 166-305.00R.

Grove Valve and Regulator Company: See—  
Cohn, Alan R., 4,282,757, Cl. 73-714.000.

Grubb, Lawrence B.; Simpson, Danny E.; Hoffman, Louis S.; and Williams, David M., to Johnson & Johnson Baby Products Company. Infant's toy—rattle and peek-a-boo ball, 4,282,679, Cl. 46-193.000.

Grube, William L., to MacLean-Fogg Company. Railroad hand brake with spring clutch, 4,282,771, Cl. 74-505.000.

GTE Laboratories Inc.: See—  
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GTE Products Corporation: See—  
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Goebel, Franz; and Morgan, Cyril, 4,283,468, Cl. 429-81.000.

Goebel, Franz; and Schlaikjer, Carl R., 4,283,469, Cl. 429-196.000.

Vanderpool, Clarence D.; and MacInnis, Martin B., 4,283,257, Cl. 204-86.000.

Vanderpool, Clarence D.; and McClintic, Robert P., 4,283,258, Cl. 204-102.000.

GTE Sylvania Wiring Devices Inc.: See—  
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Guichard, Roland R., to Societe pour l'Equiptement de Vehicules. Reduction gear, 4,282,767, Cl. 74-427.000.

Guiot, Alain: See—  
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Gulf Oil Corporation: See—  
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Gulf & Western Manufacturing Company: See—  
Bowles, Louis G., Jr., 4,283,046, Cl. 267-102.000.

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Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.

Gutlich, Karl-Friedrich; Kappus, Wolfgang; Zweigardt, Herbert; and Eckardt, Rudolf, to Varta Batterie Aktiengesellschaft. Electric storage battery with gas driven electrolyte movement, 4,283,467, Cl. 429-51.000.

Gutterman, Gary. Expandable furniture, 4,282,817, Cl. 108-11.000.

H. Krantz GmbH & Co.: See—  
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Haas, Armand: See—  
Dalens, Marcel; and Haas, Armand, 4,282,682, Cl. 47-9.000.

Haataja, Bruce A.: See—  
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Habermehl, Adolf; and Ridder, Hans-Werner, to Habermehl, Adolf. Method and apparatus for testing materials such as disease in living trees, 4,283,629, Cl. 250-445.00T.

Hack, Adolf: See—  
Bernhagen, Wolfgang; Bach, Hanswilhelm; Brundin, Eike; Gick, Wilhelm; Springer, Helmut; and Hack, Adolf, 4,283,564, Cl. 568-461.000.

Haecker, Wolf-Dieter; and Friese, Karl-Hermann, to Robert Bosch GmbH. Method of making an ion conductive gas sensor body with a cermet electrode thereon, 4,283,441, Cl. 427-126.200.

Hagen, Jens; and Bruns, Klaus, to Henkel Kommanditgesellschaft auf Aktien. Mixture of aldehydes resulting from hydroformylation of  $\alpha$ -terpinene, 4,283,561, Cl. 568-446.000.

Hagler, Gerald E.: See—  
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Hale, Timothy E.: See—  
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Haley, Howard E.: See—  
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Hall, Richard: See—  
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Hallenbeck, Norman P.; and Willard, Stephen F., to N. P. Halenbeck Company. Gearing power amplification unit for presses, 4,282,739, Cl. 72-449.000.

Halter, Matthew R., to Watteredge-Uniflex, Inc. Cable condition analyzing system for electric arc furnace conductors, 4,283,678, Cl. 324-140.00R.

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Kaji, Hisatsugu; Kameyama, Iwawo; Hamaguti, Takashi; and Miyamori, Tamotsu, 4,283,369, Cl. 422-193.000.

Hamaoka, Tsutomu; and Kasama, Yasuo, to Fuji Photo Film Co., Ltd. Silver halide photographic materials and a process forming relief images, 4,283,479, Cl. 430-264.000.

Hamashima, Yoshio: See—  
Yoshioka, Mitsuru; Hamashima, Yoshio; and Nagata, Wataru, 4,283,333, Cl. 260-239.00A.

Hammermill Paper Company: See—  
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Hammond, Howell A.: See—  
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Hanada, Toshihide: See—  
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Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, to Brother Kogyo Kaisha. Typewriter, 4,283,150, Cl. 400-666.000.

Hance, Max H.: See—  
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Handte, Herbert; and Kollmar, Friedrich, to MOOG GmbH. Signal generator, 4,283,637, Cl. 307-228.000.

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Hanihara, Sadamasa: See—  
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Hannah, John, to Merck & Co., Inc. 7-N-Heterocyclol cephalosporins and antibiotic pharmaceutical compositions containing them, 4,283,397, Cl. 424-246.000.

Hannah, John, to Merck & Co., Inc. 6-N-Heterocyclol-3-tetrazolylpenicillins, 4,283,402, Cl. 424-256.000.

Hansen, Poul E.; and Dyhr, Jan, to Danfoss A/S. Brushless electric motor, 4,283,646, Cl. 310-126.000.

Hansen, Rob R.: See—  
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Hanson, Chris A., to Hanson Industries Incorporated. Leg-size adjusting form fitting boot, 4,282,660, Cl. 36-121.000.

Hanson, Harold W., to Par-way Mfg. Co. Self-cleaning nozzle construction for product enrobing apparatus, 4,283,012, Cl. 239-118.000.

Hanson Industries Incorporated: See—  
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Hanson, Chris A., 4,282,660, Cl. 36-121.000.

Hanson, Lowell R.: See—  
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Hanson, Steven P.; Schoenfeld, Palmer J.; and Disko, Harry, to Marvin Glass & Associates. Toy cash register, 4,282,674, Cl. 46-39.000.

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Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuo, 4,283,313, Cl. 260-18.00EP.

Harada, Setsuo; and Yokooku, Katsuhiko, to Toyo Kogyo Co., Ltd. Radial flow catalytic converter, 4,283,368, Cl. 422-181.000.

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Harmon, James L.; and Junck, John A., to Caterpillar Tractor Co. Flow metering valve with operator selectable boosted flow, 4,282,898, Cl. 137-596.130.

Harney, Donald W. G.; Lehman, Peter G.; and Rundle, Joseph C., to ICI Australia Limited. Pesticidal fluorinated esters of the pyrethrin or pyrethroid type, 4,283,414, Cl. 424-304.000.

Harper, George C., Jr., to Pittsburgh-Des Moines Steel Company. Joint for space frames, 4,283,156, Cl. 403-218.000.

Harris, Bernard, to Rexnord Inc. Rotary to linear actuator and method of making the same, 4,282,764, Cl. 74-89.150.

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Sirsi, Ramesh M., 4,283,236, Cl. 148-187.000.

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Hartkorn, Alfred. Joint bridging construction for bridges or like structures, 4,282,620, Cl. 14-16.500.

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- Hashizume, Hikaru: See—  
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- Hashmi, Tas, to Sherwood Medical Industries Inc. Method of making fabric-lined articles. 4,283,244, Cl. 156-242.000.
- Hattori, Shuzo; and Morita, Shinzo, to Nihon Shinku Gijutsu Kabushiki Kaisha. Dry Lithographic Process. 4,283,482, Cl. 430-296.000.
- Hauni-Werke Korber & Co. KG: See—  
Dahlgrun, Rolf, 4,282,889, Cl. 131-281.000.
- Havens Steel Company: See—  
Rooney, Craig E., 4,282,619, Cl. 14-6.000.
- Hay, Lloyd F.; Rica, Albert F.; and Webber, J. R., to FranRica Mfg. Inc. Scraped surface heat exchanger. 4,282,925, Cl. 165-94.000.
- Hayashi, Kiyotaka: See—  
Kimura, Shigeo; Kamiya, Tadashi; and Hayashi, Kiyotaka, 4,283,706, Cl. 340-58.000.
- Haynes, John L., to Becton Dickinson & Company. Valve apparatus for simultaneous control of a plurality of fluid paths. 4,282,902, Cl. 137-636.100.
- Hayward, Norman G. Solar heater. 4,282,859, Cl. 126-428.000.
- Hazard, Robert E., to Polytop Corporation. Dispensing closure seals. 4,282,991, Cl. 222-531.000.
- Heed, Bjorn: See—  
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- Hegner, Gunter: See—  
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- Heidelberger Druckmaschinen AG: See—  
Müller, Hans, 4,283,048, Cl. 271-302.000.
- Heimann GmbH: See—  
Meyer, Juergen; and Schaaf, Norbert, 4,283,702, Cl. 338-13.000.
- Heinbockel, Wolfgang; Siewert, Wolfgang; Kahmann, Albrecht; and Lambrecht, Gerhard, to Escher Wyss GmbH. Apparatus for processing waste paper. 4,283,275, Cl. 209-3.000.
- Heinouchi, Yoshiaki, to Murata Manufacturing Co., Ltd. Piezoelectric ultrasonic transducer with resonator laminate. 4,283,649, Cl. 310-324.000.
- Held, Kurt. Continuous laminating machine. 4,283,246, Cl. 156-555.000.
- Helfgott, Samson: See—  
Hirshaut, Yashar, 4,283,497, Cl. 435-289.000.
- Heller, Lawrence G.: See—  
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- Henderson, George S.: See—  
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- Henderson, Joseph G.: See—  
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- Hengen, Edward J.: See—  
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- Henke, Ulrich; and Baumgartner, Hans, to Pierburg GmbH & Co. KG. Rate-of-use fuel consumption indicator for combustion engines. 4,282,746, Cl. 73-114.000.
- Henkel Kommanditgesellschaft auf Aktien: See—  
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- Henni, Ichiro; Noda, Akinori; and Ono, Takuro, to Asahi Glass Company, Ltd. Process for producing molded ceramic or metal. 4,283,360, Cl. 264-63.000.
- Hennig, Kurt: See—  
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- Herbert Schwind GmbH & Co. KG: See—  
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- Herd, William H., Jr.; Curtis, Stanley F.; Mullican, Vernon T.; and Jones, Robert W., to Pollution Controls Industries, Inc. Carburetor. 4,283,355, Cl. 261-44.00F.
- Herder N.V.: See—  
Demrick, Carl J.; and Greene, Frederick C., 4,282,629, Cl. 16-43.000.
- McCarroll, Raymond A., 4,282,628, Cl. 16-18.00A.
- Heremans, Joseph F.: See—  
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- Heringes, James A.: See—  
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- Herkes, Frank E., to Du Pont de Nemours, E. I., and Company. Crystalline silica and use in alkylation of aromatics. 4,283,306, Cl. 252-432.000.
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- Herr, John A.; and Jaffe, Wolfgang, to Singer Company, The. Annular segment permanent magnet single air gap electric motor. 4,283,647, Cl. 310-154.000.
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- Herron, Jake, Jr.: See—  
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- Hess, Hans-Jürgen E.: See—  
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- Hetesi, Zoltan: See—  
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- Hewig, Gert: See—  
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- Hewlett-Packard Company: See—  
Burgoon, John R., 4,283,691, Cl. 331-116.00R.
- Heymes, Rene; and Lutz, Andre, to Roussel Uclaf. 3-Acetoxyethyl-7-(hydroxyiminoacetamido)-cephalosporanic acid derivatives. 4,283,396, Cl. 424-246.000.
- Heyneman, Guido: See—  
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- Hibbard, George A., to Joy Manufacturing Company. Hammer. 4,282,937, Cl. 173-1.000.
- Higashinakagawa, Iwao; Sima, Syohei; and Moriya, Takahiko, to VLSI Technology Research Association. Method of manufacturing a semiconductor device by forming a tungsten silicide or molybdenum silicide electrode. 4,283,439, Cl. 427-89.000.
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Godfrey, Norman B., 4,283,339, Cl. 260-340.600.
- Hikoaki, Sugimoto: See—  
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- Hildebrand, Dietrich, to Bayer Aktiengesellschaft. Process for dyeing cellulose materials with reactive dyestuffs by the exhaustion method. 4,283,193, Cl. 8-400.000.
- Hill, Charlie H., Jr.: See—  
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- Hill, John O. Rewinder device. 4,282,954, Cl. 191-12.400.
- Hilliard, Raymond C. Wheel carrier assembly. 4,282,994, Cl. 224-42.060.
- Hiraga, Masaharu, to Sankyo Electric Company, Limited. Fluid suction and discharge apparatus. 4,283,166, Cl. 417-269.000.
- Hirai, Hiroyuki; Matsushita, Sachio; Tsuyuki, Isao; and Watase, Kazumi, to Fuji Photo Film Co., Ltd. Method and apparatus for controlling halogen ion concentration in a photographic processing solution. 4,283,266, Cl. 204-263.000.
- Hirao, Mamoru, to Kagaku Kenkyujo Kabushiki Kaisha Hayashibara Seibutsu. Apparatus to prevent leakage of liquid. 4,283,065, Cl. 277-135.000.
- Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; Tsukamoto, Shini-chi; Ito, Noriki; Isomura, Yasuo; and Takeda, Masaaki, to Yamanouchi Pharmaceutical Co., Ltd. Guanidinothiazole compounds, process for preparation and gastric inhibiting compositions containing them. 4,283,408, Cl. 424-270.000.
- Hirose, Takeshi: See—  
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- Hirowatari, Noriyuki: See—  
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- Hirsch, Arthur E., to J. I. Case Company. Protective fluid system. 4,282,797, Cl. 91-1.000.
- Hirshaut, Yashar, to Helfgott, Samson; and Benjamin, Jack W., part interest to each. Microbiological systems. 4,283,497, Cl. 435-289.000.
- Hisamatsu, Takashi: See—  
Ezaki, Norio; Miyadoh, Shinji; Ogawa, Yasuaki; Hisamatsu, Takashi; Fukuyasu, Harumi; and Yamada, Yujiro, 4,283,389, Cl. 424-116.000.
- Hischmann Technik AG: See—  
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- Hitachi Chemical Company, Ltd.: See—  
Konii, Susumu; Sase, Shigen; Yoshida, Masatoshi; Kuroda, Shoei; and Sumi, Takeshi, 4,283,319, Cl. 260-29.300.
- Takahashi, Akio; Itoh, Yutaka; Wajima, Motoyn; Morishita, Hirosada; and Tsukanishi, Kenji, 4,283,522, Cl. 528-170.000.
- Hitachi, Ltd.: See—  
Akitomo, Nobuo; and Tohyama, Shigeo, 4,283,732, Cl. 346-112.000.
- Fukui, Yutaka; and Kagohara, Hiromi, 4,283,234, Cl. 148-32.500.
- Isakozawa, Shigetaro; and Shii, Kazuo, 4,283,627, Cl. 250-311.000.
- Izumita, Morishi; Umamoto, Masuo; Sato, Kazuhiro; Akiyama, Toshiyuki; Takahashi, Kenji; and Nagahara, Shusaku, 4,283,742, Cl. 358-213.000.
- Kita, Yuzo; Yamaguchi, Noboru; Shibukawa, Masaru; and Minorikawa, Kazuo, 4,283,760, Cl. 364-200.000.
- Kominami, Yasuo; Yamamura, Masahiro; Mizumoto, Katsuji; and Hanada, Toshihide, 4,283,674, Cl. 323-313.000.
- Kuribayashi, Tetsuzo; and Hashimoto, Tsuguo, 4,282,708, Cl. 60-39.020.
- Miyauchi, Toshimitsu; and Tsunoda, Yoshito, 4,283,785, Cl. 369-116.000.
- Nagatomo, Hiroto; Takagaki, Tetsuya; Seki, Hisao; Terasaki, Shiro; and Horimuki, Hitoshi, 4,282,825, Cl. 118-58.000.
- Nakajima, Akira; Ichikawa, Akira; and Nakata, Kazuo, 4,283,601, Cl. 179-1.05D.
- Sasayama, Takao, 4,282,842, Cl. 123-440.000.
- Hochberg, Jerome: See—  
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- Hock, John W.: See—  
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- Hoechst Aktiengesellschaft: See—  
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- Girg, Friedrich; and Knittel, Volker, 4,283,229, Cl. 106-171.000.
- Knorr, Harald; Maier, Thomas; Mildnerberger, Hilmar; and Korbanka, Helmut, 4,283,545, Cl. 548-262.000.
- Peters, Heinrich; and Surma, Erich, 4,283,297, Cl. 252-70.000.
- Schenk, Harald; Winter, Hermann; and Spietschka, Walter, 4,283,426, Cl. 426-105.000.
- Siefried, Walter; Janocha, Siegfried; and Crass, Gunther, 4,283,453, Cl. 428-212.000.
- Hoerbiger Ventilwerke Aktiengesellschaft: See—  
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- Hoffman, Louis S.: See—  
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- Hoffman, Michael R.: See—  
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- Hoffmann-La Roche Inc.: See—  
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- Liu, Chao-Min; and Westley, John, 4,283,493, Cl. 435-119.000.
- Hofmann, Horst, to Siemens Aktiengesellschaft. Method of producing spacing elements for electro-optical display devices and such display devices. 4,283,119, Cl. 350-344.000.
- Hofmann, Kurt H. Electrical drive motor, in particular for water pumps in the field of aquaria. 4,283,645, Cl. 310-87.000.
- Hogenkamp, Wilhelm; and Westbrock, Gert, to Otto Hansel GmbH. Article transfer device. 4,282,964, Cl. 198-358.000.
- Holger Reeh: See—  
Jakob, Franz, 4,283,618, Cl. 219-130.500.
- Holland, Kenneth B. D., to James Howden and Company Australia Pty. Limited. Cooling of fluid streams. 4,282,926, Cl. 165-1.000.
- Hollister, Kenneth R.: See—  
Campbell, Gerald A.; Hollister, Kenneth R.; and Sutton, Richard C., 4,283,504, Cl. 525-261.000.
- Hollmann, Josef G., to Hischmann Technik AG. Method of producing a tire for a pneumatic tire arrangement. 4,283,241, Cl. 156-117.000.
- Holm, Boris, to Aktiebolaget Bofors. Method of producing alkandiol-diaminobenzoates. 4,283,549, Cl. 560-30.000.
- Holtman, Robert L.; and McClure, Robert B., to General Motors Corporation. Two-cycle diesel engine with piston ring stabilizing accumulator volume. 4,282,837, Cl. 123-193.00P.
- Holzinger, Otto, to Robert Bosch GmbH. System for registering operating parameters of internal combustion engines. 4,282,747, Cl. 73-116.000.
- Honda Giken Kogyo Kabushiki Kaisha: See—  
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- Honeywell Inc.: See—  
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- Kompelien, Arlon D., 4,283,638, Cl. 307-580.000.
- Hong, Chung I.: See—  
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- Hong, Enrique: See—  
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- Schut, Robert N.; Safdy, Max E.; and Hong, Enrique, 4,283,410, Cl. 424-274.000.
- Hongu, Masayuki; Ohmuro, Shigeru; and Tokuhara, Masaharu, to Sony Corporation. Automatic fine tuning circuit. 4,283,792, Cl. 455-192.000.
- Hooker Chemicals & Plastics Corp.: See—  
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- Dexter, Theodore H.; and Fuller, Willard A., 4,283,287, Cl. 252-187.00R.
- Salee, Gideon; and Rosenfeld, Jerold C., 4,283,523, Cl. 528-176.000.
- Horan, Douglas F., to Times Corporation. Multiple time zone, alarm and user programmable custom watch. 4,283,784, Cl. 368-87.000.
- Hori, Haruo: See—  
Uehara, Takeo; and Hori, Haruo, 4,282,631, Cl. 16-102.000.
- Horide, Fumio; and Tsuji, Kozo, to Sumitomo Chemical Company, Limited. Emulsifiable concentrate for weed control. 4,283,222, Cl. 71-120.000.
- Horimuki, Hitoshi: See—  
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- Horn, Manfred: See—  
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- Horne, Otis J., Jr.; and Ramsey, David E., Jr., to Great Lakes Carbon Corporation. Production of SiC whiskers. 4,283,375, Cl. 423-345.000.
- Horst, Peter: See—  
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- Horwitt, Laurence G., to Sun Chemical Corporation. Vibration-resistant probe-like electrical heaters. 4,283,703, Cl. 338-34.000.
- Hoshiyama, Satoshi: See—  
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- Hosoda, Junzi: See—  
Imanaka, Hiroshi; Hosoda, Junzi; Jomon, Kazuyoshi; Sakai, Heichi; Ueda, Ikuo; and Morino, Daizou, 4,283,492, Cl. 435-47.000.
- Hosoe, Kazuya: See—  
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- Hotta, Hisashi: See—  
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- Hottinger Baldwin Measurements, Inc.: See—  
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- Howard, Peter; and Weetman, David, to Ricardo Consulting Engineers Limited. Method and apparatus for measuring the strength of the air/fuel mixture supplied e.g. to an I.C. engine. 4,283,256, Cl. 204-1.00T.
- Howell, Carl J., Jr.; Trott, David W.; and Riley, Jesse L., to Celanese Corporation. Open cell structure foamed cellulose acetate filters. 4,282,890, Cl. 131-332.000.
- Howell, James D.: See—  
Maus, L. Donald; Speers, Jerry M.; and Howell, James D., 4,282,939, Cl. 175-7.000.
- Howell, Thomas J., to Rohm and Haas Company. Resins. 4,283,499, Cl. 521-38.000.
- Hsia, Lih M.: See—  
Yang, An T.; and Hsia, Lih M., 4,282,778, Cl. 74-820.000.
- Hsin, Chung-Herng: See—  
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- Hubel, Werner: See—  
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- Huber, Rudolf, to Hoerbiger Ventilwerke Aktiengesellschaft. Adjusting mechanism for regulating devices. 4,282,766, Cl. 74-424.8VA.
- Huff, Lloyd; and Fusek, Richard L. Method and apparatus for making wide exit pupil viewable holograms. 4,283,109, Cl. 350-3.760.
- Hughes Aircraft Company: See—  
Coane, Philip J., 4,283,483, Cl. 430-296.000.
- Hughes, Mark F., to Motorola, Inc. Portable device with housing for battery and plug-in module. 4,283,796, Cl. 455-349.000.
- Hughes, Richard L.: See—  
Ferrill, Jess B.; Hughes, Richard L.; and Soderstrom, Melvin A., 4,283,105, Cl. 339-97.00R.
- Hulber, Clarence E., Jr., to Williams, Burch I.; and Malouf, B. J., part interest to each. Apparatus for facilitating flow of solid particles by gravity through a container having an opening in the bottom thereof. 4,282,988, Cl. 222-184.000.
- Hulet, Robert L. Scraping tool for cleaning cooking grills. 4,282,625, Cl. 15-236.00R.
- Huliba, David A.: See—  
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernald, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.
- Humlong, Robert F., to Wald Manufacturing Co., Inc. Quick release bicycle basket and carrier rack therefor. 4,282,993, Cl. 224-31.000.
- Hummert, George T.; Garrett, Randall M.; and Schultz, Roy D., to Westinghouse Electric Corp. Switching circuit for high current brushes in a dynamoelectric machine. 4,283,651, Cl. 310-223.000.
- Hung, William M.: See—  
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- Hupfer, Leopold: See—  
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- Hurley, Daniel J.: See—  
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- Hurst, Howard B. Table for use with end-for-end rotatable hospital bed. 4,282,614, Cl. 5-507.000.
- Hurst, Ronald C.: See—  
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- Huyck Corporation: See—  
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- Ichikawa, Akira: See—  
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- ICI Australia Limited: See—  
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- Ideal Toy Corporation: See—  
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- Igarashi, Akira; and Sato, Kozo, to Fuji Photo Film Co., Ltd. Heat-sensitive recording paper containing a novel electron accepting compound. 4,283,458, Cl. 428-341.000.
- Igarashi, Kazuo: See—  
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- Ii, Akira: See—  
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- Iino, Yousuke: See—  
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- Iio, Junji: See—  
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- Ikedo Mohando Co., Ltd.: See—  
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Ikeda, Takayoshi: See—  
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Ikuta, Yasuhiro; and Matsuo, Masashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system for internal combustion engine. 4,282,847, Cl. 123-568.000.

Illinois Tool Works Inc.: See—  
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Ima, Seichiro: See—  
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Imanaka, Hiroshi; Hosoda, Junji; Jomon, Kazuyoshi; Sakai, Heiichi; Ueda, Ikuo; and Morino, Daizou, to Fujisawa Pharmaceutical Co., Ltd. Production of antibiotics WS-3442 A, B, C, D and E, and their acyl derivatives. 4,283,492, Cl. 435-47.000.

Imbusch, Heinrich: See—  
Drescher, Heinz; Imbusch, Heinrich; and Lampe, Hans H., 4,283,620, Cl. 235-92.0SH.

Imperial Chemical Industries Limited: See—  
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Chandra, Bala P.; Greaves, Jeffrey C.; and Lovelock, Victor G., 4,283,526, Cl. 528-500.000.

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Indesit Industria Elettrodomestici Italiana S.p.A.: See—  
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Indicator Controls Corp.: See—  
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Industria Espanola de Manufacturas Especiales, S.A. (IEMESA): See—  
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Industrie Pirelli S.p.A.: See—  
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Inglish, David S.: See—  
Snyder, R. David; Iwerks, Donald W.; Otto, Robert R.; Richardson, Lee R.; and Inglish, David S., 4,283,766, Cl. 364-525.000.

Ingram, Gary L., to Spencer Wright Industries, Inc. Motion transfer apparatus for tufting machines. 4,282,818, Cl. 112-79.00R.

Inokuchi, Nobuyuki: See—  
Matsunami, Muneharu; Saito, Toshio; Yoshida, Akio; and Inokuchi, Nobuyuki, 4,283,076, Cl. 280-806.000.

Inoue, Chozo; and Moriguchi, Soyo, to Showa Denko Kabushiki Kaisha. Process for production of  $\beta$ -chloroalanine. 4,283,554, Cl. 562-574.000.

Inoue, Yukihiro, to Sharp Kabushiki Kaisha. Liquid crystal display with a substrate carrying display electrodes and integrated circuit chip connected thereto. 4,283,118, Cl. 350-334.000.

Inslerman, Hans E.: See—  
Buser, Rudolf G.; and Inslerman, Hans E., 4,283,749, Cl. 361-21.000.

Institutoris, Laszlo: See—  
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Instrumentation Laboratory Inc.: See—  
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Intel Corporation: See—  
Yu, Kenneth K.; Bohr, Mark T.; and Seidenfeld, Mark B., 4,282,648, Cl. 29-571.000.

Intermountain Research and Devel. Corp.: See—  
Frint, William R.; Copenhagen, William C.; and Pinsky, Michael L., 4,283,372, Cl. 423-206.00T.

International Business Machines Corporation: See—  
Ainscow, Frank; and Anwyl, Edward D., 4,283,662, Cl. 315-364.000.

Chang, Hsu, 4,283,771, Cl. 364-900.000.

Cohen, Mitchell S., 4,283,775, Cl. 365-32.000.

Drescher, Heinz; Imbusch, Heinrich; and Lampe, Hans H., 4,283,620, Cl. 235-92.0SH.

Ephraim, Linda M., 4,283,249, Cl. 156-643.000.

Fortino, Andres G.; Geipel, Henry J., Jr.; Heller, Lawrence G.; and Silverman, Ronald, 4,282,646, Cl. 29-571.000.

Konian, Richard R.; and Walsh, James L., 4,283,640, Cl. 307-270.000.

Melcher, Robert L.; Romankiw, Lubomir T.; and von Gutfeld, Robert J., 4,283,259, Cl. 204-129.300.

Monrolin, Jean L.; and Vachee, Pierre, 4,283,789, Cl. 375-55.000.

International Flavors & Fragrances Inc.: See—  
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,283,576, Cl. 568-826.000.

International Standard Electric Corporation: See—  
Drake, Cyril F., 4,283,227, Cl. 106-47.00R.

International Telephone and Telegraph Corporation: See—  
Adams, Robert T.; Ahrens, Paul E.; and Granlund, John, 4,283,602, Cl. 179-1.50R.

Akers, Francis J.; and Maklad, Mokhtar S., 4,283,213, Cl. 65-3.00A.

Borsuk, Leslie M., 4,283,125, Cl. 350-96.200.

Cooper, James J., Jr., 4,283,597, Cl. 174-138.00F.

Kalotay, Paul Z.; and Ghahramani, Iraj, 4,282,742, Cl. 73-32.00A.

Irving, James H. Encapsulated neon lamps. 4,283,758, Cl. 362-251.000.

Isakozawa, Shigeto; and Shii, Kazuo, to Hitachi, Ltd. Electron microscope. 4,283,627, Cl. 250-311.000.

Ishigaki, Isao: See—  
Machi, Sugo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,283,442, Cl. 427-171.000.

Ishii, Yoshio: See—  
Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; Tsukamoto, Shinichi; Ito, Noriki; Isomura, Yasuo; and Takeda, Masaaki, 4,283,408, Cl. 424-270.000.

Ishizaka, Sunao; and Fukuhara, Toru, to Nippon Kogaku K.K. Large aperture ratio interchangeable lens for a single lens reflex camera. 4,283,133, Cl. 354-270.000.

Isibasi, Masayasu: See—  
Nambu, Hirohiko; Nakagawa, Hiroaki; and Isibasi, Masayasu, 4,283,567, Cl. 568-754.000.

Isomura, Yasuo: See—  
Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; Tsukamoto, Shinichi; Ito, Noriki; Isomura, Yasuo; and Takeda, Masaaki, 4,283,408, Cl. 424-270.000.

Ito, Makoto: See—  
Kitamura, Yoichi; Hotta, Hisashi; and Ito, Makoto, 4,282,981, Cl. 220-75.000.

Ito, Noriki: See—  
Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; Tsukamoto, Shinichi; Ito, Noriki; Isomura, Yasuo; and Takeda, Masaaki, 4,283,408, Cl. 424-270.000.

Ito, Sumio: See—  
Nohira, Hidetaka; Ito, Sumio; and Oki, Hisashi, 4,282,845, Cl. 123-568.000.

Ito, Susumu; and Nagao, Morimasa, to Nippon Electric Co., Ltd. Rotational direction detection device for a motor or the like. 4,283,679, Cl. 324-165.000.

Itoh, Tsutomu, to Onoda Cement Co., Ltd. Method of making and seam sealing a paper container. 4,283,189, Cl. 493-109.000.

Itoh, Yutaka: See—  
Takahashi, Akio; Itoh, Yutaka; Wajima, Motoyo; Morishita, Hirosada; and Tsukanishi, Kenji, 4,283,522, Cl. 528-170.000.

ITT Industries, Inc.: See—  
Schadow, Rudolf, 4,283,609, Cl. 200-67.00D.

Ivanchev, Sergei S.; Syrov, Anatoly A.; Pavljuchenko, Valery N.; Lesnikova, Ninel N.; and Rozhkova, Diana A. Hydroperoxide derivatives of hydroxyethylated compounds and method of producing same. 4,283,553, Cl. 560-176.000.

Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Transmission throttle valve of automatic power transmission. 4,282,781, Cl. 74-869.000.

Iwasaki, Shinjiro: See—  
Kokusho, Yoshitaka; Machida, Haruo; and Iwasaki, Shinjiro, 4,283,494, Cl. 435-198.000.

Iwase, Takayuki: See—  
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,130, Cl. 400-666.000.

Iwashita, Toru; Nagano, Mineo; and Tanaka, Koji, to Toyo Soda Manufacturing Co., Ltd. Process for manufacturing a petroleum resin. 4,283,518, Cl. 526-237.000.

Iwerks, Donald W.: See—  
Snyder, R. David; Iwerks, Donald W.; Otto, Robert R.; Richardson, Lee R.; and Inglish, David S., 4,283,766, Cl. 364-525.000.

Izumita, Morishi; Umemoto, Masuo; Sato, Kazuhiro; Akiyama, Toshiyuki; Takahashi, Kenji; and Nagahara, Shusaku, to Hitachi, Ltd. Solid-state imaging apparatus with fixed pattern noise reduction. 4,283,742, Cl. 358-213.000.

J. I. Case Company: See—  
Hirsch, Arthur E., 4,282,797, Cl. 91-1.000.

J. M. Voith GmbH: See—  
Schiel, Christian, 4,282,656, Cl. 34-110.000.

J. P. Stevens & Co., Inc.: See—  
Black, Thomas C., 4,282,906, Cl. 139-422.000.

J.S. Lock Company: See—  
Genest, Leonard J.; and Madenlian, Vache B., 4,283,710, Cl. 340-149.00R.

Jackson, Robert. Boat hull anti-fouling shroud. 4,282,822, Cl. 114-222.000.

Jacmir Nominees Pty. Ltd.: See—  
Teleskivi, Peter F., 4,282,687, Cl. 49-503.000.

Jacoby, Hans-Dieter, to Ernst Leitz Wetzlar GmbH. Process and apparatus for the automatic measuring of a workpiece. 4,283,669, Cl. 318-578.000.

Jacquemart, Patrick, to Les Cables de Lyon. Method of reconstituting the external conductor of a coaxial cable and cable thus reconstituted. 4,283,238, Cl. 156-49.000.

Jacquet, Bernard; Mondet, Jean; and Papantonios, Christos, to L'Oreal. Cosmetic compositions containing polymers produced in the presence of cerium ions. 4,283,384, Cl. 424-47.000.

Jaeger: See—  
Choisnet, Joel, 4,283,715, Cl. 340-378.100.

Jaffe, Wolfgang: See—  
Herr, John A.; and Jaffe, Wolfgang, 4,283,647, Cl. 310-154.000.

Jagenberg-Werke AG: See—  
Wohlfeil, Gerhard, 4,282,826, Cl. 118-118.000.

Jagger, David. Method and apparatus for selectively deleting during video tape recording. 4,283,735, Cl. 358-4.000.

Jakob, Franz, to Holger Reeh. Welding apparatus with stepping circuit current control. 4,283,618, Cl. 219-130.500.

James Howden and Company Australia Pty. Limited: See—  
Holland, Kenneth B. D., 4,282,926, Cl. 165-1.000.

James, Kenneth; and Smith, Frederick J., to Talres Development (N.A.) N.V. P.V.C. Compositions for extrusion moulding. 4,283,310, Cl. 260-23.0XA.

James, Kenneth; and Smith, Frederick J., to Talres Development (N.A.) N.V. Gramophone record composition. 4,283,315, Cl. 260-23.0XA.

James, Robert; and Lovelace, Alan M. System for providing an integrated display of instantaneous information relative to aircraft attitude, heading, altitude, and horizontal situation. 4,283,705, Cl. 340-27.0NA.

Janke, Heinrich: See—  
Wieber, Karl; Janke, Heinrich; Kraft, Winfried; and Lisfeld, Robert, 4,283,111, Cl. 350-39.000.

Janocha, Siegfried: See—  
Siefert, Walter; Janocha, Siegfried; and Crass, Gunther, 4,283,453, Cl. 428-212.000.

Janome Sewing Machine Co., Ltd.: See—  
Watanabe, Kazuo; Makabe, Hachiro; Kume, Toshiaki; Kakinuma, Toshihide; and Takenoya, Hideaki, 4,282,821, Cl. 112-158.00E.

Janzen, Wolfgang; and Frenker-Hackfort, Ludger, to Amsted-Siemag Kette GmbH. Chain wheel system. 4,283,183, Cl. 474-162.000.

Japan Atomic Energy Research Institute: See—  
Machi, Sugo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,283,442, Cl. 427-171.000.

Japan Exlan Company Ltd.: See—  
Tsutsumi, Nobuhiko; Takao, Seiji; and Murase, Ichiki, 4,283,359, Cl. 264-22.000.

Japan Synthetic Rubber Co., Ltd.: See—  
Yoshida, Yoshinori; and Oka, Hiroshi, 4,283,579, Cl. 568-857.000.

Jautelat, Manfred; and Arlt, Dieter, to Bayer Aktiengesellschaft. Preparation of 2-(2,2-dimethyl-3-buten-1-yl)-2-oxazolines. 4,283,544, Cl. 548-216.000.

Jequier, William; Ghenassia, Elie; Fine, Francois; and Krempf, Gerard, to Produits Chimiques Ugine Kuhlmann. Method for making ethylene chlorohydrin. 4,283,577, Cl. 568-841.000.

Jerome, George A. Motor vehicle propulsion system. 4,282,948, Cl. 180-165.000.

Jersey Nuclear-Avco Isotopes, Inc.: See—  
Weis, John A., 4,283,116, Cl. 350-174.000.

Jet-Ceramic Dental GmbH & Co. KG: See—  
Browne, Laurence S.; Braun, Frank D.; and Witt, Walter, 4,283,173, Cl. 433-34.000.

Jim Walter Doors North American, Div. of The Celotex Corp.: See—  
Kremm, Paul E., 4,282,920, Cl. 160-133.000.

Joachim Kreyenberg & Co.: See—  
Schmitt, Bernhard, 4,282,989, Cl. 222-316.000.

Johann, Walter: See—  
Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Bornefeld, Horst; Seiler, Hans G.; and Johann, Walter, 4,282,784, Cl. 82-19.000.

Johnson, Albert O.; and Personette, David. Protective shroud for offshore oil wells. 4,283,159, Cl. 405-60.000.

Johnson, Anderson F., Jr.: See—  
Bankes, Kristen E.; Johnson, Anderson F., Jr.; Large, Donald M.; and Reinhard, Fred J., 4,282,908, Cl. 140-147.000.

Johnson Controls, Inc.: See—  
Bramow, Scott B.; Laakaniemi, Richard N.; and Wichman, Paul E., 4,283,007, Cl. 236-44.00C.

Johnson, Gordon C.: See—  
Pines, Arthur N.; Johnson, Gordon C.; and Campbell, Fannie L., 4,283,519, Cl. 528-26.000.

Johnson & Johnson Baby Products Company: See—  
Grubb, Lawrence B.; Simpson, Danny E.; Hoffman, Louis S.; and Williams, David M., 4,282,679, Cl. 46-193.000.

Mesek, Frederick K., 4,282,874, Cl. 128-287.000.

Johnson, Keith A., to Tavolek, Inc. Shower vaccination apparatus. 4,282,828, Cl. 119-3.000.

Johnson, Michael R.: See—  
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,283,569, Cl. 568-764.000.

Johnson, Raymond L. Vehicle-attached article carrier. 4,283,083, Cl. 296-24.00R.

Johnston, Paul M., to Westinghouse Electric Corp. Programmable time registering AC electric energy meter having electronic accumulators and display. 4,283,772, Cl. 364-900.000.

Jolkovski, Robert M., to Product Planning & Development, Inc. Mounting system and method. 4,282,668, Cl. 40-155.000.

Jomon, Kazuyoshi: See—  
Imanaka, Hiroshi; Hosoda, Junji; Jomon, Kazuyoshi; Sakai, Heiichi; Ueda, Ikuo; and Morino, Daizou, 4,283,492, Cl. 435-47.000.

Jones, Richard E.: See—  
Goldstein, David; Jones, Richard E.; and Sery, Robert S., 4,283,233, Cl. 148-11.50R.

Jones, Robert J., to TRW Inc. Curable aromatic epoxy-polyimide and cycloaliphatic epoxy-polyimide compositions. 4,283,521, Cl. 528-117.000.

Jones, Robert W.: See—  
Herd, William H., Jr.; Curtis, Stanley F.; Mullican, Vernon T.; and Jones, Robert W., 4,283,355, Cl. 261-44.00F.

Jordan, Rolf W. Blow gun dart. 4,283,061, Cl. 273-423.000.

Joy Manufacturing Company: See—  
Becker, Harry R., 4,282,971, Cl. 198-846.000.

Hibbard, George A., 4,282,937, Cl. 173-1.000.

Joyce, Patrick H.: See—  
White, William L., 4,283,000, Cl. 229-17.00B.

JSJ Corporation: See—  
Osborn, Charles, 4,282,768, Cl. 74-473.00R.

Judson, Beth R.: See—  
Doster, Robert C.; Judson, Beth R.; and Soo Hoo, Kathleen G., 4,283,430, Cl. 426-284.000.

Junck, John A.: See—  
Harmon, James L.; and Junck, John A., 4,282,898, Cl. 137-596.130.

Jung, Nicholas R.: See—  
Fairhead, Michael J. B.; and Jung, Nicholas R., 4,283,484, Cl. 430-306.000.

Jungesjo, Harald N., to Anderson-Cook, Inc. Method of making rotary die racks. 4,282,782, Cl. 76-107.00R.

Junker, Ralph D., to Junker Systems, Incorporated. Consumable caseless ammunition and firearm for utilizing same. 4,282,670, Cl. 42-16.000.

Junker Systems, Incorporated: See—  
Junker, Ralph D., 4,282,670, Cl. 42-16.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: See—  
Obayashi, Nobuharu; Hashizume, Hikaru; Kameyama, Seiji; Ezawa, Sadaaki; Kondo, Tatsunori; Takauji, Kiyomi; and Aoyama, Tooru, 4,282,785, Cl. 84-1.010.

Kabushiki Kaisha Kito: See—  
Kito, Miyoshi; and Igarashi, Kazuo, 4,283,722, Cl. 340-685.000.

Kabushiki Kaisha Komatsu Seisakusho: See—  
Suganami, Takashi; Takeda, Tashiro; Nakayama, Tetsuya; Shimizu, Koh; and Manseki, Teruo, 4,282,933, Cl. 172-4.500.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: See—  
Matsunami, Muneharu; Saito, Toshio; Yoshida, Akio; and Inokuchi, Nobuyuki, 4,283,076, Cl. 280-806.000.

Kabutz, Hans Rudolf: See—  
Du Toit, Rudolph M., 4,282,867, Cl. 128-66.000.

Kadowaki, Kunio: See—  
Arai, Hisaharu; and Kadowaki, Kunio, 4,283,356, Cl. 261-72.00R.

Kafura, Frederick G.; and Medland, Thomas M., to Hammermill Paper Company. Barrier guard. 4,282,963, Cl. 192-133.000.

Kagaku Kenkyujo Kabushiki Kaisha Hayashibara Seibutsu: See—  
Hirao, Mamoru, 4,283,065, Cl. 277-135.000.

Kagohara, Hiromi: See—  
Fukui, Yutaka; and Kagohara, Hiromi, 4,283,234, Cl. 148-32.500.

Kahmann, Albrecht: See—  
Heinbockel, Wolfgang; Siewert, Wolfgang; Kahmann, Albrecht; and Lambrecht, Gerhard, 4,283,275, Cl. 209-3.000.

Kai, Toshio: See—  
Tanaka, Junzo; Kai, Toshio; and Kurita, Hitoshi, 4,283,614, Cl. 219-10.55R.

Kaiser, Hermann: See—  
Brown, James M.; Kaiser, Hermann; and Olson, Jerry A., 4,282,751, Cl. 73-202.000.

Kaiser, Theodore, to Motorola, Inc. Yoke mounting assembly for a video camera. 4,283,743, Cl. 358-248.000.

Kaji, Hisatsugu; Kameyama, Iwawo; Hamaguti, Takashi; and Miyamori, Tamotsu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Apparatus for making pitch fiber infusible. 4,283,369, Cl. 422-193.000.

Kakinuma, Toshihide: See—  
Watanabe, Kazuo; Makabe, Hachiro; Kume, Toshiaki; Kakinuma, Toshihide; and Takenoya, Hideaki, 4,282,821, Cl. 112-158.00E.

Kakugo, Masahiro: See—  
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Ima, Seichiro, 4,283,463, Cl. 428-512.000.

Kakuhashi, Takeshi; and Fukunaga, Kazuo, to Nitto Electric Industrial Co., Ltd. Etching solution for tin-nickel alloy and process for etching the same. 4,283,248, Cl. 156-637.000.

Kalaus, Gyorgy: See—  
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; Karpati, Egon; and Szporny, Laszlo, 4,283,401, Cl. 424-256.000.

Kalian, Alan. Cutting torch attachment. 4,283,043, Cl. 266-66.000.

Kalotay, Paul Z.; and Ghahramani, Iraj, to International Telephone and Telegraph Corporation. Densitometer. 4,282,742, Cl. 73-32.00A.

Kalsec, Inc.: See—  
Todd, Paul H., Jr.; and Haley, Howard E., 4,283,429, Cl. 426-250.000.

Kambara, Masahiro: See—  
Mori, Minoru; Nakamura, Tadahiko; Kambara, Masahiro; and Kubota, Yukio, 4,283,736, Cl. 358-4.000.

Kameyama, Iwawo: See—  
Kaji, Hisatsugu; Kameyama, Iwawo; Hamaguti, Takashi; and Miyamori, Tamotsu, 4,283,369, Cl. 422-193.000.

Kameyama, Seiji: See—  
Obayashi, Nobuharu; Hashizume, Hikaru; Kameyama, Seiji; Ezawa, Sadaaki; Kondo, Tatsunori; Takauji, Kiyomi; and Aoyama, Tooru, 4,282,785, Cl. 84-1.010.

Kamiya, Tadashi: See—  
Kimura, Shigeo; Kamiya, Tadashi; and Hayashi, Kiyotaka, 4,283,706, Cl. 340-58.000.

Kane, Bernard J.; and Traynor, Sean G., to SCM Corporation. Paramenth-1-ene-7-sulfonic acid and salts thereof. 4,283,347, Cl. 260-429.900.

Kane, Robert J. Cleaning device for swimming pools. 4,282,893, Cl. 134-167.00R.

Kaneko, Tadashi; Shimura, Takeo; Matsumoto, Masanori; Moriguchi, Hiroyuki; and Nomori, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Oleophilic resin encapsulates photoconductive zinc oxide parti-



- cles dispersed in vinyl chloride and vinyl acetate resin binder for electrophotorecording layer. 4,283,474, Cl. 430-69.000.
- Kanno, Fumio: See—  
Nakajima, Fumio; Machida, Takayasu; Yamada, Kenji; and Kanno, Fumio, 4,283,783, Cl. 368-76.000.
- Kantrowitz, Arthur R.: See—  
Daugherty, Jack D.; Kantrowitz, Arthur R.; Sutton, George W.; and Zappa, Oswald L., 4,283,686, Cl. 331-94.50G.
- Kao Soap Company, Limited: See—  
Atsumi, Toshio; Takebayashi, Yoshiaki; and Okajima, Hideki, 4,283,422, Cl. 424-325.000.
- Kap & Kor, Inc.: See—  
Randall, James E., 4,282,607, Cl. 2-197.000.
- Kaplan, Leonard, to Union Carbide Corporation. Process for making glycol. 4,283,578, Cl. 568-852.000.
- Kaplow, Roy; and Frank, Robert I., to Massachusetts Institute of Technology. High-intensity, solid-state solar cell. 4,283,589, Cl. 136-249.000.
- Kappus, Wolfgang: See—  
Gutlich, Karl-Friedrich; Kappus, Wolfgang; Zweigardt, Herbert; and Eckardt, Rudolf, 4,283,467, Cl. 429-51.000.
- Karlin, Richard A.; Barlow, Gordon A.; and Krusch, John R., to Gordon Barlow Design. Bowling ball game. 4,283,049, Cl. 273-38.000.
- Karpati, Egon: See—  
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; Karpati, Egon; and Szporoy, Laszlo, 4,283,401, Cl. 424-256.000.
- Kasama, Yasuo: See—  
Hamada, Tsutomu; and Kasama, Yasuo, 4,283,479, Cl. 430-264.000.
- Kaschavtsev, Vladimir E.: See—  
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladimir E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.
- Kashiwabara, Akira: See—  
Kubotera, Kikuo; and Kashiwabara, Akira, 4,283,478, Cl. 430-156.000.
- Kashiwagi, Shigeru: See—  
Miyoshi, Tadayoshi; and Kashiwagi, Shigeru, 4,283,663, Cl. 315-400.000.
- Kastner, Ralph E.: See—  
Koch, Kay F.; and Kastner, Ralph E., 4,283,390, Cl. 424-122.000.
- Kato, Heizaburo, to Sankyo Manufacturing Company, Ltd. Indexing drive apparatus. 4,282,779, Cl. 74-822.000.
- Kato, Takaaki: See—  
Totani, Shinzo; and Kato, Takaaki, 4,282,780, Cl. 74-866.000.
- Katsumata, Masaaki: See—  
Takagi, Yasuo; Onoda, Michio; Katsumata, Masaaki; and Yoneda, Kenji, 4,282,841, Cl. 123-425.000.
- Katsuyama, Harumi: See—  
Kawamura, Koichi; Katsuyama, Harumi; and Sato, Hideo, 4,283,475, Cl. 430-70.000.
- Kaus, Wolfgang; and Muncke, Ludwig, to Fritzmeier AG. Support unit for a driver's cab in a utility vehicle. 4,283,087, Cl. 296-190.000.
- Kawabata, Yasujiro; and Ogata, Ikuei, to Agency of Industrial Science & Technology. Process for preparation of aldehydes. 4,283,563, Cl. 568-454.000.
- Kawada, Yoshinosuke: See—  
Koizumi, Hisao; Kawada, Yoshinosuke; and Matsui, Koichi, 4,282,860, Cl. 126-429.000.
- Kawai Musical Instruments Mfg. Co., Ltd.: See—  
Deutsch, Ralph; and Deutsch, Leslie J., 4,282,786, Cl. 84-1.010.
- Kawamura, Koichi; Katsuyama, Harumi; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Pentamethine thiopyrylium salts, process for production thereof, and photoconductive compositions containing said salts. 4,283,475, Cl. 430-70.000.
- Kawamura, Osamu. Method of forming a shaped fluorescent light bulb envelope. 4,283,217, Cl. 65-108.000.
- Kayama, Naohiro: See—  
Fujii, Setsuro; Watanabe, Tsuyoshi; Shiota, Masaaki; Okumoto, Itsuo; and Kayama, Naohiro, 4,283,418, Cl. 424-310.000.
- Kayser-Roth Hosiery, Inc.: See—  
Shields, Harper; and Farrell, Roscoe M., 4,282,725, Cl. 66-157.000.
- Kazuomi, Yamamura; Takasuke, Fukui; Yoshinao, Iwamoto; Yuichi, Shirasaka; Masayuki, Fujise; Hikoaki, Sugimoto; Kikuo, Shirai; and Minoru, Yoshida, to Kokusai Denso Denwa Co., Ltd. System for detecting an underwater buried cable. 4,283,681, Cl. 324-326.000.
- Keem, David L.: See—  
Barlow, Roland J.; and Keem, David L., 4,282,798, Cl. 91-358.00R.
- Keim, Karl-Heinz; Kiauk, Reinhard; and Meisenburg, Ewald, to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft. Process for the catalytic isomerization of o-cresol. 4,283,571, Cl. 568-783.000.
- Keith, Charles H.; and Tucker, Richard O., to Celanese Corporation. Method of forming cigarette filter material. 4,283,186, Cl. 493-42.000.
- Kelsey-Hayes Company: See—  
Zenker, Richard L., 4,282,762, Cl. 73-862.520.
- Kemmel, Patrice J., to Pfaff Haushaltmaschinen GmbH. Speed control device for a home sewing machine. 4,283,666, Cl. 318-349.000.
- Kemper, Yves J., to Vadetec Corporation. Hybrid vehicular power system and method. 4,282,947, Cl. 180-165.000.
- Kendall Company, The: See—  
Steigerwald, Carl J.; and Villari, Frank K., 4,282,610, Cl. 2-414.000.
- Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung: See—  
Koeppel, Werner; Bohnenstingl, Josef; and Mastera, Stanislaus G. J., 4,283,367, Cl. 422-159.000.
- Kernforschungsanlage Julich, Gesellschaft mit beschränkter Haftung: See—  
Putral, Alexander; and Schwochau, Klaus, 4,283,370, Cl. 423-6.000.
- Kerr, Bruce G., to Goring Kerr Limited. Electrical bridge balancing circuit. 4,283,680, Cl. 324-234.000.
- Kerr-McGee Corporation: See—  
Rado, Theodore A., 4,283,371, Cl. 423-126.000.
- Keve, Tibor: See—  
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- Khouri, Amin J.: See—  
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- Kiauk, Reinhard: See—  
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- Kiesel, Karl: See—  
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- Kikuo, Shirai: See—  
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- Kimoto, Koichi: See—  
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- Kimura, Shigeo; Kamiya, Tadashi; and Hayashi, Kiyotaka, to Honda Giken Kogyo Kabushiki Kaisha. Puncture detecting device. 4,283,706, Cl. 340-58.000.
- Kimura, Shigeru: See—  
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- King, John M.: See—  
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- King, Joseph L. Adjustable shower and massage apparatus. 4,282,612, Cl. 4-601.000.
- King, Thomas C., to Associated Metals & Minerals Corporation. X-Ray fluorescence analysis. 4,283,625, Cl. 250-272.000.
- King, Wendell L., to Medtronic, Inc. Adhesive bonded positive fixation epicardial lead. 4,282,886, Cl. 128-785.000.
- Kirchner, Darrell G.: See—  
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- Kirin Beer Kabushiki Kaisha: See—  
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- Kishi, Yoshio: See—  
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- Kiwala, Jacob: See—  
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- Kleeberg, Wolfgang; Rogler, Wolfgang; Gentzkow, Wolfgang V.; and Rubner, Roland, to Siemens Aktiengesellschaft. Method for cross-linking and stabilizing polymers which can be cross-linked radically. 4,283,505, Cl. 525-281.000.
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- Kleen-Rite, Inc.: See—  
Smith, Robert G., 4,283,279, Cl. 210-123.000.
- Klicker, James D., to Borg-Warner Corporation. Conversion of alkyl phenyl ether to alkylphenol. 4,283,572, Cl. 568-783.000.
- Klieger, Erich: See—  
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- Kljuchnikov, Sergei I.: See—  
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- Klockner-Humboldt-Deutz AG: See—  
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- Paschen, Peter; Rao, Chatty; and Preuss, Helmut, 4,283,285, Cl. 210-326.000.
- Knight, Gordon R.: See—  
Curry, Donald J.; Knight, Gordon R.; and Kowalski, Daniel C., 4,283,777, Cl. 369-32.000.

- Knittel, Volker: See—  
Girg, Friedrich; and Knittel, Volker, 4,283,229, Cl. 106-171.000.
- Knops, Hans-Joachim: See—  
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- Knorr, Harald; Maier, Thomas; Mildnerberger, Hilmar; and Korbanka, Helmut, to Hoechst Aktiengesellschaft. Process for the preparation of 1,2,4-triazole. 4,283,545, Cl. 548-262.000.
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- Kobayashi, Kengo: See—  
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- Kobayashi, Yoshiro: See—  
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- Kobé, Inc.: See—  
Erickson, John W., 4,283,005, Cl. 233-47.00A.
- Koch, Kay F.; and Kastner, Ralph E., to Eli Lilly and Company. Antibiotics and process for production thereof. 4,283,390, Cl. 424-122.000.
- Kochs Adler AG: See—  
Sartor, Friedhelm, 4,282,819, Cl. 112-121.120.
- Kodaira, Tsumoru; Kobayashi, Yoshiro; and Kurono, Hitoshi, to Nihon Nohyaku Co., Ltd. Process for producing 1,1,3,3-tetrafluoro-1,3-dihydro-isobenzofuran. 4,283,344, Cl. 260-346.220.
- Koeppel, Werner; Bohnenstingl, Josef; and Mastera, Stanislaus G. J., to Kernforschungsanlage Julich Gesellschaft mit beschränkter Haftung. Plant for separating krypton and xenon from radioactive waste gases. 4,283,367, Cl. 422-159.000.
- Koerner, Gotz; Nickel, Friedhelm; and Schmidt, Gunter, to Th. Goldschmidt AG. Preparation for shrinkproofing wool. 4,283,191, Cl. 8-128.00A.
- Koiki, Tsutomu, to Toko, Inc. Switching regulator. 4,283,759, Cl. 363-19.000.
- Koizumi, Hisao; Kawada, Yoshinosuke; and Matsui, Koichi, to Tokyo Shibaura Electric Co., Ltd. Hot air type solar heat-collecting apparatus. 4,282,860, Cl. 126-429.000.
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- Kokusai Denso Denwa Co., Ltd.: See—  
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- Kolaky, Rodger E.; and Naar, Raymond Z., to Huyck Corporation. Laminate structures for acoustical applications and method of making them. 4,283,457, Cl. 428-285.000.
- Kolze, Lawrence A., to Eaton Corporation. Pressure operated pilot control shut-off valve. 4,283,040, Cl. 251-30.000.
- Komai, Takeshi: See—  
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- Kominami, Yasuo; Yamamura, Masahiro; Mizumoto, Katsuji; and Hanada, Toshihide, to Hitachi, Ltd.; and Pioneer Electronic Corp. Constant voltage output circuit. 4,283,674, Cl. 323-313.000.
- Kompelien, Arlon D., to Honeywell Inc. Field effect transistor switched temperature control circuit. 4,283,638, Cl. 307-580.000.
- Koodo, Kiyoshi; Takashima, Toshiyuki; and Tunemoto, Daici, to FMC Corporation. Process to bicyclic lactones. 4,283,341, Cl. 260-343.30R.
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- Kondo, Shiro; and Oyama, Minoru, to Alps Electric Co., Ltd. Construction for attaching knob to manipulation rod of push-button type mechanism. 4,283,613, Cl. 200-340.000.
- Kondo, Tatsunori: See—  
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- Konii, Susumu; Sase, Shigeo; Yoshida, Masatoshi; Kuroda, Shoji; and Sumi, Takeshi, to Hitachi Chemical Company, Ltd. Process for preparing foundry cores or molds and binder materials used therefor. 4,283,319, Cl. 260-29.300.
- Konishiroku Photo Industry Co., Ltd.: See—  
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- Ohnuki, Mitsuo; and Yamada, Masashi, 4,283,131, Cl. 354-195.000.
- Kopich, Leonard F.; and Steele, James A., to General Motors Corporation. Hub locks for independently suspended wheels. 4,282,949, Cl. 180-252.000.
- Korbanka, Helmut: See—  
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- Kornev, Boris P.: See—  
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- Kostan, Charles C.: See—  
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- Koszegi, Bela: See—  
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- Kountz, Kenneth J.; Erth, Richard A.; and Norbeck, Dean K., to Borg-Warner Corporation. Control system for regulating large capacity rotating machinery. 4,282,719, Cl. 62-115.000.
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- Kowalski, Daniel C.: See—  
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- Kowalski, Joseph W., to B-Line Systems, Inc. Connector. 4,283,157, Cl. 403-297.000.
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- Koyama, Tamotsu; and Kuroda, Yoshiharu, to Sharp Kabushiki Kaisha. Piezo-vibrator unit ceramic package with integral capacitor. 4,283,630, Cl. 310-344.000.
- Kraft, Derald H., to Dyneer Corporation. Hydraulic belt tensioner construction. 4,283,182, Cl. 474-110.000.
- Kraft, Winfried: See—  
Wieber, Karl; Janke, Heinrich; Kraft, Winfried; and Lisfeld, Robert, 4,283,111, Cl. 350-39.000.
- Krajicek, Richard W., to Carmel Energy, Inc. Method of controlling scale in oil recovery operations. 4,282,929, Cl. 166-303.000.
- Kramer, Wolfgang; Knops, Hans-Joachim; Buchel, Karl H.; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating Botrytis fungi with 1-(2,4-dichlorophenyl)-1-(2,6-dihalogenbenzoyloximino)-2-(1,2,4-triazol-1-yl)-ethanes. 4,283,406, Cl. 424-269.000.
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- Krauss, Jack. Buckle. 4,282,634, Cl. 24-230.00R.
- Krauss-Maffei Aktiengesellschaft: See—  
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- Kremm, Paul E., to Jim Walter Doors North American, Div. of The Celotex Corp. Grille. 4,282,920, Cl. 160-133.000.
- Krempf, Gerard: See—  
Jequier, William; Ghenassia, Elie; Fine, Francois; and Krempf, Gerard, 4,283,577, Cl. 568-841.000.
- Krim, Michael K., to Perkin-Elmer Corporation. The Adjustable CTE graphite-epoxy bar. 4,282,688, Cl. 52-1.000.
- Kron, Gerald J.; and Hale, Timothy E., to Singer Company, The. Vision loss simulator. 4,283,177, Cl. 434-59.000.
- Krone GmbH: See—  
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- Krupp-Koppers GmbH: See—  
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- Krusch, John R.: See—  
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- Kubota, Yukio: See—  
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- Kubotera, Kikuo; and Kashiwabara, Akira, to Fuji Photo Film Co., Ltd. Light-sensitive material for preparing a lithographic printing plate and a process using the same. 4,283,478, Cl. 430-156.000.
- Kuehler, Christopher W.: See—  
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- Kuehae, Martin E., to University of Vermont. Preparation of vincadif-formine and related derivatives. 4,283,536, Cl. 546-51.000.
- Kuhl, Manfred: See—  
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- Kujawski, Edmund. Metering valve. 4,283,041, Cl. 251-205.000.
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- Kulesza, Ralph J.; Meyer, Burton C.; and Nia, Donald F., to Marvin Glass & Associates. Batting practice apparatus. 4,282,848, Cl. 124-16.000.
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- Kume, Toshiaki: See—  
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- Kuper, Douglas D.; and Menezes, William A., to Sony Corporation. Editing apparatus, 4,283,745, Cl. 360-13.000.
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- Yamauchi, Takashi; and Nanbu, Hirofumi, 4,283,352, Cl. 568-311.000.
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- Kurita, Hitoshi: See—  
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- Kuroda, Shoji: See—  
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- Kuroda, Yoshiharu: See—  
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- Kurtz, James L., to Procter & Gamble Company. The Method and composition to inhibit staining of porcelain surfaces by manganese, 4,283,300, Cl. 252-95.000.
- Kurtz, Thomas D. Mirror mounting device, 4,283,038, Cl. 248-478.000.
- Kuzminkas, Vaidotas: See—  
Szydowski, Donald F.; Kuzminkas, Vaidotas; and Bittner, Joseph E., 4,282,832, Cl. 122-28.000.
- Kuznetsov, Igor G.: See—  
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- Kuzuwata, Masayuki; Machida, Hazime; Tamura, Hiroshi; and Saito, Tadashi, to Ricoh Co., Ltd. Method for desensitizing offset printing plates, 4,282,811, Cl. 101-451.000.
- Kuzuya, Susumu: See—  
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- Laakaniemi, Richard N.: See—  
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- Labaz: See—  
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- Labofina, S.A.: See—  
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- Lai, So S. Low-flying object velocity-position tracing system, 4,283,138, Cl. 356-28.000.
- Laimins, Eric: See—  
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- Lala, Louis A., to American Screen Printing Equipment Company. Drive for printing elongated articles, 4,282,805, Cl. 101-38.00R.
- Lala, Louis A., to American Screen Printing Equipment Company. Silk screen printing machine, 4,282,806, Cl. 101-38.00R.
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- Lambrecht, Gerhard: See—  
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- Lamel, Arthur E., to American Petroscience Corporation. Torsional wave generator, 4,283,779, Cl. 367-82.000.
- Lampe, Hans H.: See—  
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- Lampiridae Associates: See—  
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- Landstingens Inkopsentral: See—  
af Ekenstam, Bo T.; and Nordqvist, Erik G. P., 4,282,986, Cl. 222-1.000.
- Lane, George A.; and Rossow, Harold E., to Dow Chemical Company. The Hydrated Mg(NO<sub>3</sub>)<sub>2</sub>/NH<sub>4</sub>NO<sub>3</sub> reversible phase change compositions, 4,283,298, Cl. 252-70.000.
- Lang, Philip C., to Toms River Chemical Corporation. Process for the manufacture of substantially pure 3-amino-4-alkoxy-acylanilides from 2,4-dinitrochlorobenzene, 4,283,556, Cl. 564-144.000.
- Langer, Horst G.: See—  
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- Langham, Maurice E., to Bio-Rad Laboratories, Inc. Apparatus for modifying intraocular pressure, 4,282,882, Cl. 128-676.000.
- Lanza, Emmanuel: See—  
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- LaScola, John C.: See—  
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- Lauba, Andu; and Pettersen, Egil R., to Boeing Company. The Extended life spool valve, 4,282,900, Cl. 137-625.300.
- Laubie, Michel: See—  
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- Lauck, Robert M., to Stauffer Chemical Company. Oxidized whey protein concentrate enriched shortening-containing biscuits, 4,283,435, Cl. 426-551.000.
- Laurel Bank Machine Co., Ltd.: See—  
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- Lauterbach, Jerre F.: See—  
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- Lawson, John R. Sequencing camera, 4,283,130, Cl. 354-120.000.
- Layton, Margaret M., to Corning Glass Works. Ternary niobate dielectric compositions, 4,283,752, Cl. 361-321.000.
- Lazarz, Christine A.: See—  
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- Lea, Bernard A.; and Burrows, Ronald W., to Minnesota Mining and Manufacturing Company. Thermolabile acutance dyes for dry silver, 4,283,487, Cl. 430-522.000.
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- Leber, George W.: See—  
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- Lee, Chin K., to R. J. Reynolds Tobacco Company. Preparation and use of glucose isomerase, 4,283,496, Cl. 435-253.000.
- Lee, Larry F., to Rowe International, Inc. Paper currency acceptor, 4,283,708, Cl. 340-146.30Z.
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- Lehmann, Rolf: See—  
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- Lems, Peter: See—  
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- Lermann, Peter: See—  
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- Les Cables de Lyon: See—  
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- Lesnikova, Ninel N.: See—  
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- Letraset USA, Inc.: See—  
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- Leuvenberger, Hans G. W.: See—  
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- Levenson, William L.: See—  
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- Leveque, Jean-Luc; Guiolet, Alain; and Garson, Jean-Claude, to L'Oreal. Dispenser for a liquid product, 4,283,013, Cl. 239-304.000.
- Lever Brothers Company: See—  
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- Foret, Roger; and van der Hoeven, Philippus C., 4,283,302, Cl. 252-102.000.
- Soeters, Cornelis J.; Paulussen, Cornelis N.; Padley, Frederick B.; and Tresser, David, 4,283,436, Cl. 426-607.000.
- Levi Strauss & Co.: See—  
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- Levin, Harry P., to Electric Power Research Institute, Inc. Hall sensing apparatus, 4,283,643, Cl. 307-309.000.
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- Lewinton, Colin H.; and Savit, Joseph, to Domtar Inc. Electrophotographic sheet material, 4,283,473, Cl. 430-64.000.
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- Leybold-Heraeus: See—  
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- Liebermann, Howard H., to General Electric Company. Method for melt puddle control and quench rate improvement in melt-spinning of metallic ribbons, 4,282,921, Cl. 164-463.000.
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- Lovelace, Alan M.: See—  
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- Skinner, Robert T. J., 4,282,844, Cl. 123-502.000.
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- Lucioni, Enrico: See—  
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- Maierhofer, Alfred: See—  
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- Main, William E., to Motorola Inc. Audio bridge circuit, 4,283,683, Cl. 330-262.000.
- Makabe, Hachiro: See—  
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- Makino, Yoshihiro, to Shinei Mfg. Co., Ltd. Pilot operated check valve, 4,282,896, Cl. 137-495.000.



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- Malouf, B. J.: See—  
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- Mandel, Paul: See—  
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- Mark, Victor, to General Electric Company. Process for obtaining halogenated diphenols. 4,283,566, Cl. 568-726.000.
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- Martyniuk, Ernest T., to General Motors Corporation. Diesel exhaust filter-incinerator. 4,283,207, Cl. 55-282.000.
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- Rosenwinkel, Donald A.; and Disko, Harry, 4,283,127, Cl. 351-158.000.
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- Raffai, Jack I.; and Bernacki, Stephen E., 4,283,235, Cl. 148-175.000.
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- Matsui Universal Joint Mfg. Co.: See—  
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- Matsushita, Sachio: See—  
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- Maurer, Helmut; Muller, Klaus; Rieger, Franz; Linder, Ernst; Dietz, Hermann; Friese, Karl-Hermann; and Ziegler, Bodo, to Robert Bosch GmbH. Electrochemical sensor structure to determine oxygen content in combustion exhaust gases. 4,283,261, Cl. 204-195.00S.
- Maus, L. Donald; Speers, Jerry M.; and Howell, James D., to Exxon Production Research Company. Method and apparatus for compensating well control instrumentation for the effects of vessel heave. 4,282,939, Cl. 175-7.000.
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- Maxi-Tronic, Inc.: See—  
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- Maximov, Vladimir P.: See—  
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- Mayhew, Raymond L.: See—  
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- McBee, Steve H., to Deere & Company. Picker drum slip clutch monitor. 4,282,702, Cl. 56-10.300.
- McBride, Edward F.: See—  
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- McClure, Robert B.: See—  
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- McCombie, Stuart W.: See—  
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- McGee, James N., to Burlington Industries, Inc. Production of cover fabrics for V belts which function as wear indicators due to different layer characteristics. 4,283,455, Cl. 428-240.000.
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- McHale, William D., to Mobil Oil Corporation. Process for removing sulfur from petroleum oils. 4,283,270, Cl. 208-50.000.
- McKay, Dwight L.; and Bertus, Brent J., to Phillips Petroleum Company. Process for cracking hydrocarbons with a cracking catalyst passivated with thallium. 4,283,274, Cl. 208-120.000.
- McKibbin, John R.; and Tyler, Frederick B., Jr. Apparatus for guiding a tool along a curved path. 4,283,044, Cl. 266-67.000.
- McLain, Philippe H., to Shakespeare Company. Fiber reinforced plastic members. 4,283,446, Cl. 428-36.000.
- McLandriff, Matthew N., to United States of America, Navy. Method of fiber interferometry zero fringe shift referencing using passive optical couplers. 4,283,144, Cl. 356-350.000.
- McLellan, Norvel J. Band type plant transplanter. 4,282,684, Cl. 47-73.000.
- Mead Corporation, The: See—  
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernald, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.
- Embro, Joseph J., Jr., 4,282,699, Cl. 53-298.000.
- Mead, Harold C., to Nixdorff Krein Industries, Inc. Grain bin floor support system. 4,282,694, Cl. 52-508.000.
- Mechanex Corporation, The: See—  
Prescott, David B., 4,283,063, Cl. 277-37.000.
- Meckstroth, James R.: See—  
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernald, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.
- Medland, Thomas M.: See—  
Kafura, Frederick G.; and Medland, Thomas M., 4,282,963, Cl. 192-133.000.
- Medtronic, Inc.: See—  
King, Wendell L., 4,282,886, Cl. 128-785.000.
- Meer, Vadim V.: See—  
Bylinaky, Lev V.; Gavrilenko, Vladimir I.; Glumov, Ivan F.; Denisov, Vasily F.; and Meer, Vadim V., 4,283,763, Cl. 364-449.000.
- Meheun, H. Jne. Precast building construction. 4,282,690, Cl. 52-79.110.
- Meiji Seika Kaisha Ltd.: See—  
Ezaki, Norio; Miyadoh, Shinji; Ogawa, Yasuaki; Hisamatsu, Takashi; Fukuyasu, Harumi; and Yamada, Yujiro, 4,283,389, Cl. 424-116.000.
- Meindl, Gerhard: See—  
Ehrgott, Roland; and Meindl, Gerhard, 4,283,699, Cl. 336-67.000.
- Meisenburg, Ewald: See—  
Keim, Karl-Heinz; Klauk, Reinhard; and Meisenburg, Ewald, 4,283,571, Cl. 568-783.000.
- Meissner, Bruno: See—  
Regler, Dieter; Meissner, Bruno; and Moritz, Alfred, 4,283,242, Cl. 156-154.000.
- Meito Sangyo Kabushiki Kaisha: See—  
Kokusho, Yoshitaka; Machida, Haruo; and Iwasaki, Shinjiro, 4,283,494, Cl. 435-198.000.
- Melcher, Gerhard; and Weigel, Horst, to Klockner-Humboldt-Deutz AG. Apparatus for the continuous recovery of tin from iron rich concentrates. 4,283,045, Cl. 266-162.000.
- Melcher, Robert L.; Romankiw, Lubomir T.; and von Outfeld, Robert J., to International Business Machines Corporation. Method for maskless chemical and electrochemical machining. 4,283,259, Cl. 204-129.300.
- Melvin, Lawrence S., Jr.: See—  
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,283,569, Cl. 568-764.000.
- Melwich, Harold E.; and Suz, Dietfried, to U.S. Philips Corporation. Video reproducing apparatus with variable delay means. 4,283,744, Cl. 360-10.000.
- Menezes, William A.: See—  
Kuper, Douglas D.; and Menezes, William A., 4,283,745, Cl. 360-13.000.
- Menz, Fredric L.; and Greene, Gordon A., to United States of America, Navy. Dual-end warhead initiation system. 4,282,814, Cl. 102-318.000.
- Merck & Co., Inc.: See—  
Field, Arthur K.; and Harwood, Richard J., 4,283,393, Cl. 424-180.000.
- Hannah, John, 4,283,397, Cl. 424-246.000.
- Hannah, John, 4,283,402, Cl. 424-256.000.
- Merklinger, Richard. Prefabricated house. 4,282,693, Cl. 52-282.000.
- Merrell, Jimmy D., to United States of America, Army. Method and apparatus for non-destructive testing of beam-lead integrated circuit connections. 4,282,759, Cl. 73-827.000.
- Merrick, George J.; Cook, George E.; and Modglin, Donald D., to Merrick Welding International, Inc. Automatic pipe welding system. 4,283,617, Cl. 219-125.100.
- Merrick Welding International, Inc.: See—  
Merrick, George J.; Cook, George E.; and Modglin, Donald D., 4,283,617, Cl. 219-125.100.
- Merrill, Stewart H.: See—  
Fletcher, George L., Jr.; deMauriac, Richard A.; and Merrill, Stewart H., 4,283,477, Cl. 430-141.000.
- Merten, Rudolf: See—  
Rottmaier, Ludwig; and Merten, Rudolf, 4,283,546, Cl. 548-264.000.
- Mesek, Frederick K., to Johnson & Johnson Baby Products Company. Disposable absorbent article of manufacture. 4,282,874, Cl. 128-287.000.
- Messier, Dennis G.: See—  
Wenghoefer, Johann; Messier, Dennis G.; and Thompson, James E., 4,283,196, Cl. 8-531.000.
- Metaalgieterij G. Giesen, B.V.: See—  
Giesen, Gerardus J., 4,282,833, Cl. 122-158.000.
- Metal Works Ramat David: See—  
Arzi, Amatzia; and Chiel, David, 4,283,010, Cl. 239-1.000.
- Meyer, August R.: See—  
Catanzaro, James R.; Meyer, August R.; and Willis, David L., 4,283,062, Cl. 277-12.000.
- Meyer, Burton C.: See—  
Kulesza, Ralph J.; Meyer, Burton C.; and Nix, Donald F., 4,282,848, Cl. 124-16.000.
- Meyer, Herbert J.; and Smitherman, Thomas L., to Texaco Inc. Programmable seismic cable. 4,283,778, Cl. 367-58.000.
- Meyer, Juergen; and Schaaf, Norbert, to Heimann GmbH. Contactless conductance potentiometer. 4,283,702, Cl. 338-15.000.
- Meyer, Nicolas; and Schuller, Leon, to Societe Chimiques des Charbonnages. Phenolic laminates with furan resin coating. 4,283,462, Cl. 428-506.000.
- Meyer, Raymond A.; and Freestone, Frank J., to United States of America, U.S. Environmental Protection Agency. Photomicrographic system for flowing fluids. 4,283,128, Cl. 354-79.000.
- Meyer, Robert, to Commissariat l'Energie. Electrolytic display cells with a metal deposit. 4,283,121, Cl. 350-363.000.
- Meyers, Bernard L.: See—  
Udovich, Carl A.; and Meyers, Bernard L., 4,283,288, Cl. 252-437.000.
- Meyers, George L., to American Can Company. Tubular carton with polygonal cross-section. 4,283,001, Cl. 229-37.00R.
- Meyst, Richard P.; and Porten, Ronald M., to Baxter Travenol Laboratories, Inc. Blood filter for leukocytes. 4,283,289, Cl. 210-448.000.
- Michel, Bertrand, to Societe Nord-France d'Entreprises, Genesales et de Constructions en beton arme, FRX. Method for fabricating and erecting unitary structural elements. 4,282,696, Cl. 52-745.000.
- Michel, Wolfgang: See—  
Becker, Reinhold; and Michel, Wolfgang, 4,282,904, Cl. 138-109.000.
- Michigan Technological University: See—  
Kilpela, Tauno B.; and Haataja, Bruce A., 4,282,910, Cl. 144-3.00K.
- Microwave Development Laboratories: See—  
Wilson, Ronald A., 4,282,649, Cl. 29-600.000.
- Miffitt, Donald C., to Gillette Company, The. Battery operated portable hydromassage appliance. 4,282,866, Cl. 128-66.000.
- Mikami, Ryuzo, to Toray Silicone Company, Ltd. Siloxane-modified epoxy resin composition. 4,283,513, Cl. 525-476.000.
- Milchem Incorporated: See—  
Perricone, Alphonse C.; and Lucas, James M., 4,283,517, Cl. 526-229.000.
- Mildenberger, Hilmar: See—  
Knorr, Harald; Maier, Thomas; Mildenberger, Hilmar; and Korbanks, Helmut, 4,283,545, Cl. 548-262.000.
- Miles Laboratories, Inc.: See—  
Schut, Robert N.; Safdy, Max E.; and Hong, Enrique, 4,283,336, Cl. 260-326.14R.
- Schut, Robert N.; Safdy, Max E.; and Hong, Enrique, 4,283,410, Cl. 424-274.000.
- Miller, Avy L., deceased; by Miller, Roberta L., deceased; and Miller-Lerman, Lindsey. Self-propelled off-road vehicle. 4,282,794, Cl. 89-36.00M.
- Miller, Douglas C.; and Wolfe, Terry W., to Westvaco Corporation. Thermoplastic film extrusion apparatus. 4,283,168, Cl. 425-465.000.
- Miller, Franklin C. Process for simulating game of golf. 4,283,056, Cl. 273-176.00A.
- Miller-Lerman, Lindsey: See—  
Miller, Avy L., deceased; Miller, Roberta L., deceased; and Miller-Lerman, Lindsey, 4,282,794, Cl. 89-36.00M.
- Miller, Robert J., to Colt Industries Operating Corp. Tamper proof sealing plug. 4,283,353, Cl. 261-41.00D.
- Miller, Roberta L., deceased: See—  
Miller, Avy L., deceased; Miller, Roberta L., deceased; and Miller-Lerman, Lindsey, 4,282,794, Cl. 89-36.00M.
- Milliken Research Corporation: See—  
Engels, Walter, 4,282,635, Cl. 26-16.000.
- Marco, Francis W., 4,283,452, Cl. 428-206.000.



Mills, Walter C.; and Patterson, James W., to Northern Natural Gas Company. Pressure-operated portable siphon apparatus for removing concentrations of liquid from a gas pipeline. 4,282,894, Cl. 137-15.000.

Mills, William R., Jr., to Mobil Oil Corporation. Epithermal neutron decay logging. 4,283,624, Cl. 250-264.000.

Minamide, Makoto, to Yokosuka Boat Kabushiki Kaisha. Vibration insulation device for handle of vibratory machine. 4,282,938, Cl. 173-162.00H.

Minarik, Ronald W.: See—  
Lloyd, Wayne B.; Bernhard, Robert J.; Logan, Dale R.; and Minarik, Ronald W., 4,283,688, Cl. 331-94.50D.

Minn, James, to Boots Hercules Agrochemicals Co. Process for producing dialkyl dithiophosphoric acid esters. 4,283,335, Cl. 260-326.00E.

Minn, James, to Boots Hercules Agrochemicals Co. Process for producing O,O-dialkyl dithiophosphoric acid esters. 4,283,338, Cl. 260-326.00E.

Minnesota Mining and Manufacturing Company: See—  
Lea, Bernard A.; and Burrows, Ronald W., 4,283,487, Cl. 430-522.000.

Minorioka, Kazuo: See—  
Kita, Yuzo; Yamaguchi, Noboru; Shibukawa, Masaru; and Minorioka, Kazuo, 4,283,760, Cl. 364-200.000.

Minoru, Yoshida: See—  
Kazumi, Yamamura; Takasuke, Fukui; Yoshino, Iwamoto; Yuchi, Shirasaki; Masayuki, Fujise; Hikoaki, Sugimoto; Kikuo, Shirai; and Minoru, Yoshida, 4,283,681, Cl. 324-326.000.

Minoura, Mikio, to Aisan Industry Co., Ltd. Exhaust gas recirculating device. 4,282,846, Cl. 123-568.000.

Mirabelli, Bruno, to Industrie Pirelli S.p.A. Cover for electrolytic cells. 4,283,263, Cl. 204-219.000.

Miro, Juan C., to Industria Espanola de Manufacturas Especiales, S.A. (IEMESA). Racking mechanism for bobbin machine. 4,282,956, Cl. 192-4.00R.

Mirzoev, Alexandr G.: See—  
Anosov, Oleg V.; Mirzoev, Alexandr G.; and Obratsov, Jury V., 4,283,595, Cl. 174-73.00R.

Misangyi, Laszlo: See—  
Fridrich, Janos; Hetesi, Zoltan; Kistelegi, Gusztav; Misangyi, Laszlo; Szegletes, Emil; and Szabo, Jozsef, 4,283,598, Cl. 174-169.000.

Mitchell, Cheryl R.: See—  
Mitchell, William A.; Mitchell, John L. A.; and Mitchell, Cheryl R., 4,283,432, Cl. 426-466.000.

Mitchell, John L. A.: See—  
Mitchell, William A.; Mitchell, John L. A.; and Mitchell, Cheryl R., 4,283,432, Cl. 426-466.000.

Mitchell, William A.; Mitchell, John L. A.; and Mitchell, Cheryl R. Natural beverage powders from dahlia extracts. 4,283,432, Cl. 426-466.000.

Mitsubishi Jukogyo Kabushiki Kaisha: See—  
Yamasaki, Koyu; and Iino, Yousuke, 4,282,643, Cl. 29-527.200.

Mitsui Petrochemical Industries Ltd.: See—  
Nakagawa, Hiroaki; Hirowatari, Noriyuki; and Nakamura, Takayuki, 4,283,570, Cl. 568-768.000.

Nambu, Hirohiko; Nakagawa, Hiroaki; and Isibasi, Masayasu, 4,283,567, Cl. 568-754.000.

Mitsui Toatsu Chemicals, Inc.: See—  
Matsubara, Akira; Sakai, Hideaki; Suganuma, Toshio; Fukazawa, Nobuyuki; and Nakano, Takuo, 4,283,398, Cl. 424-246.000.

Miyadoh, Shinji: See—  
Ezaki, Norio; Miyadoh, Shinji; Ogawa, Yasuaki; Hisamatsu, Takashi; Fukuyasu, Harumi; and Yamada, Yujiro, 4,283,389, Cl. 424-116.000.

Miyamori, Tamotsu: See—  
Kaji, Hisatsugu; Kameyama, Iwao; Hamaguti, Takashi; and Miyamori, Tamotsu, 4,283,369, Cl. 422-193.000.

Miyamura, Nobuhiko: See—  
Takigawa, Hiroyoshi; Miyamura, Nobuhiko; Ogawa, Hiroshi; and Ohkuni, Shinichi, 4,282,914, Cl. 152-209.00D.

Miyashita, Kiyoshi. Dispenser for granular material. 4,282,990, Cl. 222-339.000.

Miyauchi, Toshimitsu; and Tsunoda, Yoshito, to Hitachi, Ltd. Optical information recording apparatus. 4,283,785, Cl. 369-116.000.

Miyazaki, Yozoro; and Furuya, Katsuke, to Laurel Bank Machine Co., Ltd. Method of setting packaging paper in coin packaging machine. 4,282,701, Cl. 53-465.000.

Miyazawa, Takashi, to Kirin Beer Kabushiki Kaisha. Optical system for the detection of flaws in bottles or the like. 4,283,145, Cl. 356-364.000.

Miyoshi, Tadayoshi; and Kashiwagi, Shigeru, to Victor Company of Japan, Ltd. Horizontal deflection circuit in a television device. 4,283,663, Cl. 315-400.000.

Mizumoto, Katsuji: See—  
Kominami, Yasuo; Yamamura, Masahiro; Mizumoto, Katsuji; and Hanada, Toshihide, 4,283,674, Cl. 323-313.000.

Mizumoto, Katsuji, to Pioneer Electronic Corporation. Method and apparatus for eliminating ripple component from motor control loop. 4,283,665, Cl. 318-317.000.

Mobil Oil Corporation: See—  
Chester, Arthur W.; and Chu, Yung F., 4,283,584, Cl. 585-481.000.

Garwood, William E.; and Silk, Murray R., 4,283,271, Cl. 208-59.000.

Garwood, William E.; and Silk, Murray R., 4,283,272, Cl. 208-59.000.

McHale, William D., 4,283,270, Cl. 208-50.000.

Mills, William R., Jr., 4,283,624, Cl. 250-264.000.

Owen, Hartley, 4,283,273, Cl. 208-113.000.

Schick, John W.; Davis, Robert H.; and Andress, Harry J., 4,283,293, Cl. 252-32.000.

Young, Lewis B., 4,283,573, Cl. 568-794.000.

Mochida, Shigeru; and Ogasawara, Takayuki, to NGK Insulators, Ltd. Ceramic honeycomb filter and a method of producing the same. 4,283,210, Cl. 55-523.000.

Mode, Duane R., to Champion International Corporation. Self opening carton. 4,283,002, Cl. 229-41.00R.

Modglin, Donald D.: See—  
Merrick, George J.; Cook, George E.; and Modglin, Donald D., 4,283,617, Cl. 219-125.100.

Moen, Lenard E. H-divider containers. 4,282,999, Cl. 229-15.000.

Molins, Desmond W.; and Soborowski, Michael J., to Molins Limited. Apparatus for forming composite rods. 4,283,187, Cl. 493-48.000.

Molins Limited: See—  
Molins, Desmond W.; and Soborowski, Michael J., 4,283,187, Cl. 493-48.000.

Molins Machine Company, Inc.: See—  
Woolstoo, A. Brent; and Evans, Donald J., 4,283,185, Cl. 493-15.000.

Molnar, Albert J.; Wolff, Fred H.; and Ramey, Donald G., to Westinghouse Electric Corp. Apparatus for estimating the strain on an inaccessible portion of a rotating shaft. 4,282,756, Cl. 73-650.000.

Momose, Yutaka; and Nakamura, Kazuaki, to Aisin Seiki Kabushiki Kaisha. Stirling cycle refrigerator. 4,282,716, Cl. 62-6.000.

Mona Industries: See—  
O'Lenick, Anthony J., Jr.; and Mayhew, Raymond L., 4,283,542, Cl. 548-112.000.

Mondet, Jean: See—  
Jacquet, Bernard; Mondet, Jean; and Papantoniou, Christos, 4,283,384, Cl. 424-47.000.

Monotype Corporation Limited, The: See—  
Throssell, Raymond W., 4,283,672, Cl. 318-696.000.

Monrolin, Jean L.; and Vachee, Pierre, to International Business Machines Corp. Data transmission method and devices for practicing said method. 4,283,789, Cl. 375-55.000.

Monsanto Company: See—  
D'Amico, John J.; and Marvel, John T., 4,283,220, Cl. 71-90.000.

Maender, Otto W., 4,283,508, Cl. 525-351.000.

Montanwerke Walter GmbH: See—  
Grafe, Werner; and Schlotterer, Willy, 4,283,163, Cl. 407-104.000.

Montreal General Hospital Research Inst.: See—  
Zidulka, Arnold, 4,282,869, Cl. 128-200.280.

Mooberry, Jared B.: See—  
Gompf, Thomas E.; Hammond, Howell A.; and Mooberry, Jared B., 4,283,472, Cl. 430-17.000.

MOOG GmbH: See—  
Handte, Herbert; and Kollmar, Friedrich, 4,283,637, Cl. 307-228.000.

Morgan, Cyril: See—  
Goebel, Franz; and Morgan, Cyril, 4,283,468, Cl. 429-81.000.

Moriguchi, Hiroyuki: See—  
Kaneko, Tadashi; Shimura, Takeo; Matsumoto, Masanori; Moriguchi, Hiroyuki; and Nomori, Hiroyuki, 4,283,474, Cl. 430-69.000.

Moriguchi, Soyan: See—  
Inoue, Chozo; and Moriguchi, Soyan, 4,283,554, Cl. 562-574.000.

Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Matsuzawa, Kenji, to Nippon Dia Clevite Co., Ltd. Porous body of aluminum or its alloy and a manufacturing method thereof. 4,283,465, Cl. 428-566.000.

Morin, Andre M. R., to SOVAM. Body for vehicles and vehicles carrying said body. 4,283,086, Cl. 296-178.000.

Morino, Daizou: See—  
Imanaka, Hiroshi; Hosoda, Junji; Jomon, Kazuyoshi; Sakai, Heiichi; Ueda, Ikuo; and Morino, Daizou, 4,283,492, Cl. 435-47.000.

Morio, Minoru; Nakamura, Tadahiko; Kambara, Masahiro; and Kubota, Yukio, to Sony Corporation. Video signal reproducing apparatus for converting a video signal from a first format to a second format. 4,283,736, Cl. 358-4.000.

Morishita, Hirosada: See—  
Takahashi, Akio; Itoh, Yutaka; Wajima, Motoyo; Morishita, Hirosada; and Tsukanishi, Kenji, 4,283,522, Cl. 528-170.000.

Morita, Shinzo: See—  
Hattori, Shuzo; and Morita, Shinzo, 4,283,482, Cl. 430-296.000.

Moritz, Alfred: See—  
Regler, Dieter; Meissner, Bruno; and Moritz, Alfred, 4,283,242, Cl. 156-154.000.

Moriya, Takahiko: See—  
Higashinakagawa, Iwao; Sima, Syohei; and Moriya, Takahiko, 4,283,439, Cl. 427-89.000.

Morton-Norwich Products, Inc.: See—  
Booth, David L.; and Rodebaugh, Richard M., 4,283,543, Cl. 548-138.000.

Moser, Roland; and Renner, Alfred, to Ciba-Geigy Corporation. Storage-stable, homogeneous mixture containing epoxide resin, curing agent and curing accelerator, and the use of the mixture for producing cured products. 4,283,520, Cl. 528-93.000.

Moss, Anthony R. L.: See—  
Stockdale, Trevor J.; and Moss, Anthony R. L., 4,283,141, Cl. 356-246.000.

Mosseri, Giuseppe; and Lucioni, Enrico, to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A. Nozzle for the texturization of yarns. 4,282,637, Cl. 28-254.000.

Mossman, Ralph A.; and Stinger, Kenneth R., to Tektronix, Inc. Cathode ray tube with multiple internal gratules. 4,283,655, Cl. 313-462.000.

Motorola Inc.: See—  
Bickley, Robert H.; and Genrich, Thad J., 4,283,723, Cl. 340-722.000.

Hughes, Mark F., 4,283,796, Cl. 455-349.000.

Kaiser, Theodore, 4,283,743, Cl. 358-248.000.

Main, William E., 4,283,683, Cl. 330-262.000.

Tarbouriech, Jean-Claude, 4,283,690, Cl. 331-111.000.

Mowbray, Dorian F.: See—  
Seilly, Alec H.; and Mowbray, Dorian F., 4,282,843, Cl. 123-450.000.

Muchnick, Samuel N., to Research Development Systems, Inc. Composite drum head. 4,282,793, Cl. 84-414.000.

Muenz, Wolf-Dieter; and Poetzlberger, Hans W., to Siemens Aktiengesellschaft. Conductor crossover for integrated RC-circuits. 4,283,485, Cl. 430-314.000.

Muller, Hans, to Heidelberger Druckmaschinen AG. Device for separating out folded spoiled copies in web-fed rotary printing machines. 4,283,048, Cl. 271-302.000.

Muller, Klaus: See—  
Maurer, Helmut; Muller, Klaus; Rieger, Franz; Linder, Ernst; Dietz, Hermann; Friese, Karl-Hermann; and Ziegler, Bodo, 4,283,261, Cl. 204-195.00S.

Mullican, Vernon T.: See—  
Herd, William H., Jr.; Curtis, Stanley F.; Mullican, Vernon T.; and Jones, Robert W., 4,283,355, Cl. 261-44.00F.

Muncke, Ludwig: See—  
Kaus, Wolfgang; and Muncke, Ludwig, 4,283,087, Cl. 296-190.000.

Munc, Isao: See—  
Musa, Yoshikazu; and Munc, Isao, 4,283,318, Cl. 260-28.50B.

Muntwyler, Rene: See—  
de Sousa, Bernardo; Muntwyler, Rene; and Schmid, Werner, 4,283,444, Cl. 427-421.000.

Murakawa, Masao: See—  
Maeda, Teizo; and Murakawa, Masao, 4,282,996, Cl. 225-2.000.

Murase, Ichiko: See—  
Tsutsui, Nobuhiro; Takao, Seiji; and Murase, Ichiko, 4,283,359, Cl. 264-22.000.

Murata, Kazuo: See—  
Machi, Saeo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,283,442, Cl. 427-171.000.

Murata Manufacturing Co., Ltd.: See—  
Heinouchi, Yoshiaki, 4,283,649, Cl. 310-324.000.

Tatsumi, Tetsuo, 4,283,751, Cl. 361-293.000.

Murphy, Charles V.; and Stutz, Robert J., to Du Pont de Nemours, E. I., and Company. Wax-free, hot melt adhesive compositions. 4,283,317, Cl. 260-27.00R.

Musa, Yoshikazu; and Munc, Isao, to Nitto Electric Industrial Co., Ltd. Non-aqueous composite gel and process for production thereof. 4,283,318, Cl. 260-28.50B.

Muschelknautz, Hertz, deceased: See—  
Sauka, Klaus; and Muschelknautz, Hertz, deceased, 4,283,092, Cl. 303-3.000.

Muschelknautz, Ingeborg, heiress: See—  
Sauka, Klaus; and Muschelknautz, Hertz, deceased, 4,283,092, Cl. 303-3.000.

Mutzel, Wolfgang: See—  
Speck, Ulrich; Klieger, Erich; and Mutzel, Wolfgang, 4,283,381, Cl. 424-5.000.

N. Greening Limited: See—  
Savage, Norman; and Sumner, Douglas A., 4,283,278, Cl. 209-395.000.

N. P. Halebeck Company: See—  
Hallenbeck, Norman P.; and Willard, Stephen F., 4,282,739, Cl. 72-449.000.

Naar, Raymond Z.: See—  
Kolsky, Rodger E.; and Naar, Raymond Z., 4,283,457, Cl. 428-285.000.

Nagabhusan, Tattanahalli L.: See—  
Daniels, Peter J. L.; and Nagabhusan, Tattanahalli L., 4,283,528, Cl. 536-17.00R.

Nagahara, Shusaku: See—  
Izumita, Morishi; Umemoto, Masuo; Sato, Kazuhiro; Akiyama, Toshiyuki; Takahashi, Kenji; and Nagahara, Shusaku, 4,283,742, Cl. 358-213.000.

Nagamoto, Itsushi, to Nippon Gakki Seizo Kabushiki Kaisha. Racket frame. 4,283,050, Cl. 273-73.00K.

Nagano, Mineo: See—  
Iwashita, Toru; Nagano, Mineo; and Tanaka, Koji, 4,283,518, Cl. 526-237.000.

Nagao, Morimasa: See—  
Ito, Susumu; and Nagao, Morimasa, 4,283,679, Cl. 324-165.000.

Nagata, Wataru: See—  
Yoshioka, Mitsuru; Hamashima, Yoshio; and Nagata, Wataru, 4,283,333, Cl. 260-239.00A.

Nagatomo, Hiroto; Takagaki, Tetsuya; Seki, Hisao; Terasaki, Shirou; and Horimuki, Hitoshi, to Hitachi, Ltd. Surface treatment device. 4,282,825, Cl. 118-58.000.

Nagelkerke, Willem, to B.V. Scheepwerf en Reparatie bedrijf "Breebot". Towing suction device for a dredging craft. 4,282,661, Cl. 37-58.000.

Naito, Kyohei, to Shinwa Kabushiki Kaisha. Tape feeder in a tape recorder. 4,283,027, Cl. 242-208.000.

Naito, Yukio: See—  
Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Ima, Seichiro, 4,283,463, Cl. 428-512.000.

Nakada, Akira: See—  
Yamaga, Eiichi; Iio, Junji; Takeda, Toshio; Nakada, Akira; and Imamura, Akio, 4,282,788, Cl. 84-1.050.

Nakagawa, Hiroaki; Hirowatari, Noriyuki; and Nakamura, Takayuki, to Mitsui Petrochemical Industries Ltd. Process for preparing resorcinol. 4,283,570, Cl. 568-768.000.

Nakagawa, Hiroaki: See—  
Nambu, Hirohiko; Nakagawa, Hiroaki; and Isibasi, Masayasu, 4,283,567, Cl. 568-754.000.

Nakagawa, Seiichi; and Ikeda, Takayoshi, to Nihon Denshi Kabushiki Kaisha. Electron beam aperture device. 4,283,632, Cl. 250-503.000.

Nakai, Toshio: See—  
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,150, Cl. 400-666.000.

Nakajima, Akira; Ichikawa, Akira; and Nakata, Kazuo, to Hitachi, Ltd. Preprocessing method and device for speech recognition device. 4,283,601, Cl. 179-1.05D.

Nakajima, Fumio; Machida, Takayasu; Yamada, Kenji; and Kanno, Fumio, to Citizen Watch Company Limited. Drive control system for stepping motor. 4,283,783, Cl. 368-76.000.

Nakajima, Kenji. Flange for a duct. 4,283,080, Cl. 285-405.000.

Nakajima, Shoji, to Matsushita Electric Industrial Co., Ltd. Piezoelectric speaker. 4,283,605, Cl. 179-110.00A.

Nakamura, Kazuaki: See—  
Momose, Yutaka; and Nakamura, Kazuaki, 4,282,716, Cl. 62-6.000.

Nakamura, Kazuo: See—  
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,150, Cl. 400-666.000.

Nakamura, Tadahiko: See—  
Morio, Minoru; Nakamura, Tadahiko; Kambara, Masahiro; and Kubota, Yukio, 4,283,736, Cl. 358-4.000.

Nakano, Kenji; and Nakamura, Tadahiko, 4,283,671, Cl. 318-608.000.

Nakamura, Takayuki: See—  
Nakagawa, Hiroaki; Hirowatari, Noriyuki; and Nakamura, Takayuki, 4,283,570, Cl. 568-768.000.

Nakano, Jiro: See—  
Sugimoto, Hiroshi; and Nakano, Jiro, 4,282,957, Cl. 192-9.000.

Nakano, Kenji; and Nakamura, Tadahiko, to Sony Corporation. Automatic residual phase error compensation circuit for a digital servo control system. 4,283,671, Cl. 318-608.000.

Nakano, Takuo: See—  
Matsubara, Akira; Sakai, Hideaki; Suganuma, Toshio; Fukazawa, Nobuyuki; and Nakano, Takuo, 4,283,398, Cl. 424-246.000.

Nakata, Kazuo: See—  
Nakajima, Akira; Ichikawa, Akira; and Nakata, Kazuo, 4,283,601, Cl. 179-1.05D.

Nakatsuka, Kiyoharu; and Abeta, Sadaharu, to Sumitomo Chemical Company, Limited. Dyestuff composition for dyeing or printing cellulose fiber materials. 4,283,195, Cl. 8-524.000.

Nakayama, Masaharu: See—  
Matsushima, Masaru; Komai, Takeshi; and Nakayama, Masaharu, 4,283,512, Cl. 525-438.000.

Nakayama, Tetsuya: See—  
Suganami, Takashi; Takeda, Tashiro; Nakayama, Tetsuya; Shimizu, Koh; and Manseki, Teruo, 4,282,933, Cl. 172-4.500.

Nalbandian, A. Eugene; and Sullivan, James P., to Tweezer-Lite, Inc. Illuminated screwdriver. 4,283,757, Cl. 362-120.000.

Nalco Chemical Company: See—  
Phillips, Kenneth G.; and Bingham, Mary E., 4,283,507, Cl. 525-344.000.

Nambu, Hirohiko; Nakagawa, Hiroaki; and Isibasi, Masayasu, to Mitsui Petrochemical Industries Ltd. Method for recovering resorcinol. 4,283,567, Cl. 568-754.000.

Nambu, Hirofumi: See—  
Yamauchi, Takashi; and Nambu, Hirofumi, 4,283,352, Cl. 568-311.000.

Napp Systems (USA) Inc.: See—  
Okai, Sakuo; and Kimoto, Koichi, 4,283,481, Cl. 430-271.000.

Nardi, Anthony P., to Sperry Corporation. Resonant acoustic transducer system for a well drilling string. 4,283,780, Cl. 367-82.000.

Nartro Corporation: See—  
Bull, David W., 4,283,611, Cl. 200-252.000.

Nash, John E., to Syntex (U.S.A.) Inc. Dental scaler having scaling tip with rounded edge work surfaces particularly suitable for circular or ellipsoidal patterns of vibration. 4,283,175, Cl. 433-119.000.

National Power Corporation: See—  
Powell, Charles A., 4,282,903, Cl. 137-893.000.

National Semiconductor Corporation: See—  
Green, Robert S., 4,283,642, Cl. 307-297.000.

National Starch and Chemical Corporation: See—  
Rao, Krishna K., 4,283,525, Cl. 528-489.000.

Natmar, Inc.: See—  
Clay, Bobby J., 4,282,808, Cl. 101-93.070.

Natori, Minoru: See—  
Tamaru, Munetaka; and Natori, Minoru, 4,283,782, Cl. 368-72.000.

Natsuume, Tadao: See—  
Yamato, Motoyuki; and Natsuume, Tadao, 4,283,343, Cl. 260-346.300.

NCR Corporation: See—  
Curry, John L., 4,283,660, Cl. 315-169.200.

Passer, Barry E.; and Sculley, George A., 4,283,622, Cl. 235-462.000.



- Neal, Carl R.: See—  
Teague, Edward W.; Hance, Max H.; and Neal, Carl R., 4,283,194, Cl. 8-494,000.
- Nearby, Joseph F., to Troller Corporation. Diving plane for fishing. 4,282,672, Cl. 43-43,130.
- Nebzdyoski, John W.; and Patmore, Edwin L., to Texaco Inc. Amine salt of N-triazolyl-hydrocarbyl succinamic acid and lubricating oil composition containing same. 4,283,296, Cl. 252-49,900.
- Neiman S.A.: See—  
Lipschutz, Paul, 4,282,730, Cl. 70-184,000.
- Nelson, Frank M.: See—  
Daughton, John W.; Gillett, Kenneth; and Nelson, Frank M., 4,283,773, Cl. 364-900,000.
- Nelson, James L.: See—  
Lucero, Andres R.; Williams, David E.; and Nelson, James L., 4,283,709, Cl. 340-147,00R.
- Nelson, Terence J., to Bell Telephone Laboratories, Incorporated. Ion-implanted magnetic bubble memory. 4,283,776, Cl. 365-36,000.
- Nester, Dallas G.: See—  
Dunlap, Albert R.; and Nester, Dallas G., 4,282,727, Cl. 66-172,00E.
- Newberry, Richard D.; and Brayley, Elwin J., to Eltra Corporation. Breakerless magneto ignition system. 4,282,839, Cl. 123-335,000.
- NGK Insulators, Ltd.: See—  
Mochida, Shigeru; and Ogasawara, Takayuki, 4,283,210, Cl. 55-523,000.
- Nichols, Lawrence J.: See—  
MacMaster, George H.; and Nichols, Lawrence J., 4,283,685, Cl. 330-286,000.
- Nickel, Friedhelm: See—  
Koerner, Gotz; Nickel, Friedhelm; and Schmidt, Gunter, 4,283,191, Cl. 8-128,00A.
- Nicko, Reinhard: See—  
Engelsmann, Dieter; Lermann, Peter; Nicko, Reinhard; Schultes, Herbert; and Wagner, Karl, 4,283,132, Cl. 354-202,000.
- Nifco Inc.: See—  
Yamazaki, Haruo; Matsumoto, Masaharu; and Kimura, Shigeru, 4,283,155, Cl. 403-163,000.
- Niggemann, Johannes: See—  
Wagner, Kuno; Niggemann, Johannes; Findeisen, Kurt; and Scheinplug, Hans, 4,283,219, Cl. 71-28,000.
- Nihon Denshi Kabushiki Kaisha: See—  
Nakagawa, Seichi; and Ikeda, Takayoshi, 4,283,632, Cl. 250-503,000.
- Nihon Nohyaku Co., Ltd.: See—  
Kodaira, Tsumoru; Kobayashi, Yoshiro; and Kurono, Hitoshi, 4,283,344, Cl. 260-346,220.
- Nihon Shinku Gijutsu Kabushiki Kaisha: See—  
Hattori, Shuzo; and Morita, Shinzo, 4,283,482, Cl. 430-296,000.
- Nikami, Akira, to Sony Corporation. Video signal reproducing apparatus with circuit avoiding skew distortion when operated at abnormal speed and/or direction. 4,283,737, Cl. 358-8,000.
- Nilsen, Norman P. Back flow check and self-cleaning spring biased water valve. 4,282,831, Cl. 119-75,000.
- Nippon Dia Cleveite Co., Ltd.: See—  
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Matsuzawa, Kenji, 4,283,465, Cl. 428-566,000.
- Nippon Electric Co., Ltd.: See—  
Aomura, Kunio, 4,283,733, Cl. 357-68,000.
- Goto, Genichi; and Hanihara, Sadamasa, 4,283,656, Cl. 315-3,500.
- Ito, Susumu; and Nagao, Morimasa, 4,283,679, Cl. 324-165,000.
- Nippon Gakki Seizo Kabushiki Kaisha: See—  
Nagamoto, Itsushi, 4,283,050, Cl. 273-73,00K.
- Wachi, Masatada, 4,282,790, Cl. 84-1,210.
- Yamaga, Eiichi; Ito, Junji; Takada, Toshio; Nakada, Akira; and Imamura, Akio, 4,282,788, Cl. 84-1,030.
- Nippon Kokaku K.K.: See—  
Ishizaka, Sunao; and Fukuhara, Toru, 4,283,133, Cl. 354-270,000.
- Nippon Oil Company, Ltd.: See—  
Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuo, 4,283,313, Cl. 260-18,0EP.
- Nippon Oil and Fats Co., Ltd.: See—  
Matsushima, Masaru; Konai, Takeshi; and Nakayama, Masaharu, 4,283,512, Cl. 525-438,000.
- Nippon Shokubai Kagaku Kogyo Co., Ltd.: See—  
Odanaka, Hiroshi; Saotome, Minoru; and Kumazawa, Toshihiko, 4,283,580, Cl. 568-858,000.
- Ohara, Takashi; Ono, Tetsuji; Yonehara, Kiyoshi; and Yamauchi, Shin, 4,283,308, Cl. 252-435,000.
- Nippon Zeon Co., Ltd.: See—  
Yamato, Motoyuki; and Natsume, Tadao, 4,283,343, Cl. 260-346,300.
- Nippondenso Co., Ltd.: See—  
Totani, Shinzo; and Kato, Takaaki, 4,282,780, Cl. 74-866,000.
- Yamada, Kenji; Takata, Akira; Ii, Akira; and Ohiwa, Katsuhiko, 4,282,840, Cl. 123-412,000.
- Nishida, Shigeki, to Noritsu Koki Co., Ltd. Automatic film retriever. 4,283,021, Cl. 242-55,000.
- Nishimori Kogyo Co., Ltd.: See—  
Maeda, Teizo; and Murakawa, Masao, 4,282,996, Cl. 225-2,000.
- Nishimura, Susumu: See—  
Ohtani, Takeshi; Nishimura, Susumu; Magami, Kozo; and Osada, Katsuhisa, 4,283,704, Cl. 338-138,000.
- Nissan Chemical Industries, Ltd.: See—  
Yoshimura, Masahito; Hoshiyama, Satoshi; Takamatsu, Hideki; Kobayashi, Hiroshi; and Takigawa, Shinichiro, 4,283,586, Cl. 585-512,000.
- Nissan Motor Company, Limited: See—  
Antoku, Mitugu; and Saito, Fumio, 4,282,713, Cl. 60-600,000.
- Gotoh, Miyuki, 4,283,748, Cl. 361-154,000.
- Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,282,781, Cl. 74-869,000.
- Ohtsuka, Kunio, 4,282,773, Cl. 74-688,000.
- Takagi, Yasuo; Onoda, Michio; Katsumata, Masaaki; and Yoneda, Kenji, 4,282,841, Cl. 123-425,000.
- Tsuda, Hiroshi; and Matsuoka, Hideoki, 4,283,036, Cl. 248-429,000.
- Nissin Oil Mills, Ltd., The: See—  
Ouchi, Hiroo; and Saito, Noriyasu, 4,283,346, Cl. 260-424,000.
- Nissin Kogyo Kabushiki Kaisha: See—  
Takeuchi, Hiroo, 4,282,799, Cl. 91-369,00A.
- Nitto Electric Industrial Co., Ltd.: See—  
Kakuhashi, Takeshi; and Fukunaga, Kazuo, 4,283,248, Cl. 156-637,000.
- Musa, Yoshikazu; and Mune, Isao, 4,283,318, Cl. 260-28,50B.
- Niwa, Shoji. Clamp type galvanometer. 4,283,677, Cl. 324-127,000.
- Niwa, Yukichi: See—  
Tsunekawa, Tokuchi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, 4,283,137, Cl. 356-4,000.
- Nix, Donald F.: See—  
Kulesza, Ralph J.; Meyer, Burton C.; and Nix, Donald F., 4,282,848, Cl. 124-16,000.
- Nix, Robert J.: See—  
Massion, Robert J.; Lema, Peter; and Nix, Robert J., 4,282,907, Cl. 140-93,400.
- Nixdorf Krein Industries, Inc.: See—  
Mead, Harold C., 4,282,694, Cl. 52-508,000.
- NL Industries, Inc.: See—  
Schaeper, Gary R.; and Olson, Richard A., 4,283,039, Cl. 251-1,00B.
- Noble, Lynn W.: See—  
Cormier, Alan D.; Webster, Milo E.; Czaban, John D.; Silverman, Neil D.; and Noble, Lynn W., 4,283,262, Cl. 204-195,00M.
- Noda, Akinori: See—  
Henmi, Ichiro; Noda, Akinori; and Ono, Takuro, 4,283,360, Cl. 264-63,000.
- Nohara, Fujio, to Ikeda Mohando Co., Ltd. Process for preparation of o-(2,6-dichloroanilino)phenylacetic acid and novel intermediate for use in preparation of the same. 4,283,532, Cl. 544-165,000.
- Nohira, Hidetaka; Ito, Sumio; and Oki, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with exhaust gas accumulation chamber. 4,282,845, Cl. 123-568,000.
- Nomori, Hiroyuki: See—  
Kaneko, Tadashi; Shimura, Taken; Matsumoto, Masanori; Moriguchi, Hiroyuki; and Nomori, Hiroyuki, 4,283,474, Cl. 430-69,000.
- Norbeck, Dean K.: See—  
Kountz, Kenneth J.; Erth, Richard A.; and Norbeck, Dean K., 4,282,718, Cl. 62-115,000.
- Kountz, Kenneth J.; Erth, Richard A.; and Norbeck, Dean K., 4,282,719, Cl. 62-115,000.
- Nordqvist, Erik G. P.: See—  
af Ekenstam, Bo T.; and Nordqvist, Erik G. P., 4,282,986, Cl. 222-1,000.
- Nordson Corporation: See—  
Crum, Gerald W.; and Rooney, Brian M., 4,283,764, Cl. 364-513,000.
- Noritsu Koki Co., Ltd.: See—  
Nishida, Shigeki, 4,283,021, Cl. 242-55,000.
- Norlin Industries, Inc.: See—  
Walborn, Richard M., 4,282,787, Cl. 84-1,010.
- Northern Natural Gas Company: See—  
Mills, Walter C.; and Patterson, James W., 4,282,894, Cl. 137-15,000.
- Novello, Peter P., to Vaughn Corporation. Electrode structure for electrocardiograph and related physiological measurements and the like. 4,282,878, Cl. 128-641,000.
- Novotny, Miroslav, to Allied Chemical Corporation. Pre-pressuring methanol-cobalt with carbon monoxide in homologation of methanol. 4,283,582, Cl. 568-902,000.
- Nuesslein, Alfred. Tube closure device. 4,282,982, Cl. 220-237,000.
- Numata, Tatsuo, to Pioneer Electronic Corporation. Muting signal generation circuit for an FM receiver. 4,283,793, Cl. 455-213,000.
- N.V. Raychem S.A.: See—  
Corke, Nicholas T.; and Debbaut, Christian A. M., 4,283,239, Cl. 156-85,000.
- Obayashi, Nobuharu; Hashizume, Hikaru; Kameyama, Seiji; Ezawa, Sadaki; Kondo, Tatsunori; Takauji, Kiyomi; and Aoyama, Tohru, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 4,282,785, Cl. 84-1,010.
- Obraztsov, Jury V.: See—  
Anosov, Oleg V.; Mirzoev, Alexandr G.; and Obraztsov, Jury V., 4,283,595, Cl. 174-73,00R.
- Obrezkov, Alexandr I.: See—  
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Platonov, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.

- Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2,000.
- Odanaka, Hiroshi; Saotome, Minoru; and Kumazawa, Toshihiko, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Process for the production of alkylene glycols. 4,283,580, Cl. 568-858,000.
- O'Day, Gerald L. Sanitary urinal. 4,282,611, Cl. 4-144,100.
- Oepen, Heinz: See—  
Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Bornefeld, Horst; Seiler, Hans G.; and Johann, Walter, 4,282,784, Cl. 82-19,000.
- Oesch, Johann U.: See—  
Becker, Gert; Oesch, Johann U.; Poeselt, Horst; Tomlinson, Alan D.; and Walz, Kurt, 4,283,299, Cl. 252-90,000.
- Ogasawara, Takayuki: See—  
Mochida, Shigeru; and Ogasawara, Takayuki, 4,283,210, Cl. 55-523,000.
- Ogata, Ikuei: See—  
Kawahata, Yasujiro; and Ogata, Ikuei, 4,283,563, Cl. 568-454,000.
- Ogawa, Hiroshi: See—  
Takigawa, Hiroyoshi; Miyamura, Nobuhiro; Ogawa, Hiroshi; and Ohkuni, Shinichiro, 4,282,914, Cl. 152-209,00D.
- Ogawa, Yasuaki: See—  
Ezaki, Norio; Miyadob, Shinji; Ogawa, Yasuaki; Hisamatsu, Takashi; Fukuyasu, Harumi; and Yamada, Yujiro, 4,283,389, Cl. 424-116,000.
- Ogilvie, John T.: See—  
Thompson, David G.; and Ogilvie, John T., 4,282,645, Cl. 29-570,000.
- Ohara, Takashi; Ono, Tetsuji; Yonehara, Kiyoshi; and Yamauchi, Shin, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Auto exhaust gas catalyst, and process for production thereof. 4,283,308, Cl. 252-435,000.
- Ohi Seisakusho Co., Ltd.: See—  
Yamazaki, Haruo; Matsumoto, Masaharu; and Kimura, Shigeru, 4,283,155, Cl. 403-163,000.
- Ohiwa, Katsuhiko: See—  
Yamada, Kenji; Takata, Akira; Ii, Akira; and Ohiwa, Katsuhiko, 4,282,840, Cl. 123-412,000.
- Ohkawa, Toshio: See—  
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Matsuzawa, Kenji, 4,283,465, Cl. 428-566,000.
- Ohkuni, Shinichiro: See—  
Takigawa, Hiroyoshi; Miyamura, Nobuhiro; Ogawa, Hiroshi; and Ohkuni, Shinichiro, 4,282,914, Cl. 152-209,00D.
- Ohmuro, Shigeru: See—  
Hongu, Masayuki; Ohmuro, Shigeru; and Tokuhara, Masaharu, 4,283,792, Cl. 455-192,000.
- Ohnuki, Mitsuo; and Yamada, Masashi, to Konishiroku Photo Industry Co., Ltd. Manual focus setting apparatus for photographic camera having automatic focus adjusting mechanism. 4,283,131, Cl. 354-195,000.
- Ohsaki, Tsuyoshi: See—  
Morimoto, Toru; Ohsaki, Tsuyoshi; Ohkawa, Toshio; and Matsuzawa, Kenji, 4,283,465, Cl. 428-566,000.
- Ohtani, Takeshi; Nishimura, Susumu; Magami, Kozo; and Osada, Katsuhisa, to Alps Electric Co., Ltd. Variable resistor. 4,283,704, Cl. 338-138,000.
- Ohtsuka, Kunio, to Nissan Motor Company, Limited. Change-speed transmission. 4,282,773, Cl. 74-688,000.
- Ohtsuka, Kunio: See—  
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,282,781, Cl. 74-869,000.
- Ojembarrena, Luciano G.; and Robles, Francisco I. Arrangement for supporting a curtain holding rod. 4,283,035, Cl. 248-263,000.
- Oka, Hiroshi: See—  
Yoshida, Yoshinori; and Oka, Hiroshi, 4,283,579, Cl. 568-857,000.
- Okada, Masataka, to Clarion Co., Ltd. Apparatus for discriminating television signal. 4,283,740, Cl. 358-124,000.
- Okai, Sakuo; and Kimoto, Koichi, to Napp Systems (USA) Inc. Element having phosphine activated photosensitive compositions therein. 4,283,481, Cl. 430-271,000.
- Okajima, Hideki: See—  
Atsumi, Toshio; Takebayashi, Yoshiaki; and Okajima, Hideki, 4,283,422, Cl. 424-325,000.
- Okamura, Kiyohito: See—  
Yajima, Seishi; Okamura, Kiyohito; and Hasegawa, Yoshio, 4,283,376, Cl. 423-345,000.
- Okamura, Shiro. Digital transmission system. 4,283,786, Cl. 371-2,000.
- Oki Electric Industry Co., Ltd.: See—  
Masuda, Yoshio; Fukasawa, Atsushi; Ashiwa, Jun; and Sato, Takuro, 4,283,697, Cl. 333-202,000.
- Oki, Hisashi: See—  
Nohira, Hidetaka; Ito, Sumio; and Oki, Hisashi, 4,282,845, Cl. 123-568,000.
- Okumoto, Ituo: See—  
Fujii, Setsuro; Watanabe, Tsuyoshi; Shiota, Masashi; Okumoto, Ituo; and Kayama, Naohiro, 4,283,418, Cl. 424-310,000.
- O'Lenick, Anthony J., Jr.; and Mayhew, Raymond L., to Mona Industries. Process for the preparation of phosphobetaines. 4,283,542, Cl. 548-112,000.
- Olin Corporation: See—  
Wood, John C.; and Thompson, Charles W., 4,282,671, Cl. 42-75,00A.
- Olson, Jerry A.: See—  
Brown, James M.; Kaiser, Hermann; and Olson, Jerry A., 4,282,751, Cl. 73-202,000.
- Olson, Richard A.: See—  
Schaeper, Gary R.; and Olson, Richard A., 4,283,039, Cl. 251-1,00B.
- Olympus Optical Company Limited: See—  
Osana, Akira, 4,283,095, Cl. 308-139,000.
- Tojyo, Tsutomu, 4,283,123, Cl. 350-414,000.
- Yonekubo, Ken, 4,283,110, Cl. 350-33,000.
- Omara, Julio A. Air rifle with piston impelled by compressed gas. 4,282,852, Cl. 124-67,00B.
- Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuo, to Nippon Oil Company, Ltd. Cathode-precipitating electrodeposition coating composition. 4,283,313, Cl. 260-18,0EP.
- Ono Pharmaceutical Co., Ltd.: See—  
Fujii, Setsuro; Watanabe, Tsuyoshi; Shiota, Masashi; Okumoto, Ituo; and Kayama, Naohiro, 4,283,418, Cl. 424-310,000.
- Ono, Takuro: See—  
Henmi, Ichiro; Noda, Akinori; and Ono, Takuro, 4,283,360, Cl. 264-63,000.
- Ono, Tetsuji: See—  
Ohara, Takashi; Ono, Tetsuji; Yonehara, Kiyoshi; and Yamauchi, Shin, 4,283,308, Cl. 252-435,000.
- Onoda Cement Co., Ltd.: See—  
Itoh, Tsutomu, 4,283,189, Cl. 493-109,000.
- Onoda, Hiroshi: See—  
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,150, Cl. 400-666,000.
- Onoda, Michio: See—  
Takagi, Yasuo; Onoda, Michio; Katsumata, Masaaki; and Yoneda, Kenji, 4,282,841, Cl. 123-425,000.
- Orain, Michel A., to Glaenger Spicer. Device for protecting in particular the articulation and bearing of a transmission shaft. 4,282,722, Cl. 64-32,00F.
- Oreco III, Inc.: See—  
Evans, Orde R.; Rhodes, William D.; and Trahan, Joseph O., 4,283,161, Cl. 405-216,000.
- Oregon Graduate Center for Study and Research: See—  
Elliott, Richard A.; Massey, Gail A.; and Shaw, John B., 4,283,122, Cl. 350-379,000.
- Orlando, Franklin P., to FMC Corporation. Shaker units for harvesting machines. 4,282,706, Cl. 56-330,000.
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- Osana, Akira, to Olympus Optical Company Limited. Capstan shaft thrust pad device. 4,283,095, Cl. 308-139,000.
- Osborn, Charles, to JSJ Corporation. Vibration isolation mount for gear shifter. 4,282,768, Cl. 74-473,00R.
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- Otto Hansel GmbH: See—  
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- Otto, Robert R.: See—  
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- Stevens, Myron T., 4,282,704, Cl. 56-320,100.
- Ovadia, Joseph. Jewelry display tray. 4,282,975, Cl. 206-566,000.
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- Owada, Mitsutoshi: See—  
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- Sherman, James E., 4,283,215, Cl. 65-79,000.
- Swartzbaugh, Peter T., 4,282,983, Cl. 220-335,000.
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- Paap, Hans J.: See—  
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- Paccar Inc.: See—  
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- Padley, Frederick B.: See—  
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- Padovani, Francois A.: See—  
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- Papantoniou, Christos: See—  
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- Par-way Mfg. Co.: See—  
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- Park Mobile, Inc.: See—  
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- Parks, Howard L., to Bunker Ramo Corporation. Cooling system for multiwafer high density circuit, 4,283,754, Cl. 361-382.000.
- Parks, John H.: See—  
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- Paschen, Peter; Rao, Chatty; and Preuss, Helmut, to Klockner-Humboldt-Deutz AG. Apparatus for the production of molded bodies from filter cakes, 4,283,285, Cl. 210-326.000.
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- Passer, Barry E.; and Sculley, George A., to NCR Corporation. Bar code reader, 4,283,622, Cl. 235-462.000.
- Patella, Gianfranco; and Patella, Luciano. Disk game apparatus, 4,283,054, Cl. 273-126.000.
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- Patmore, Edwin L.: See—  
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- Patterson, James A., to Amco Standards International. Optical characterization of a suspension, 4,283,143, Cl. 356-336.000.
- Patterson, James W.: See—  
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- Paulussen, Cornelis N.: See—  
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- Pavlov, Alexander S.: See—  
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- Pemberton, Donald S., to Lucas Industries Limited. Electrical terminal assembly, 4,283,104, Cl. 339-97.000.
- Pembroke, Robert. Apparatus and method of storing and retrieving information, 4,283,621, Cl. 235-375.000.
- Pera, Vittorio, to Autovox S.p.A. Actuating device for the advancement of the tape in a cassette-type tape recording/playback apparatus, 4,283,746, Cl. 360-96.400.
- Perez, Sergio J. Police night stick, 4,283,051, Cl. 273-84.000.
- Perkin-Elmer Corporation: See—  
de Mey, Charles F., II, 4,282,897, Cl. 137-515.700.
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- Perkin, Gregg S., to Smith International Inc. Underreamer with large cutter elements and axial fluid passage, 4,282,941, Cl. 175-267.000.
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- Perry, Charles. Fireplace screen system, 4,282,855, Cl. 126-121.000.
- Personette, David: See—  
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- Peterson, Richard W., to Aluminum Company of America. Apparatus and method for solid particle bulk density measurements, 4,283,148, Cl. 366-142.000.
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- Pettersen, Egil R.: See—  
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- Pfaff Haushaltsmaschinen GmbH: See—  
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- Pfizer Inc.: See—  
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- Belletiere, John L.; and Sarges, Reinhard, 4,283,409, Cl. 424-273.00R.
- Crawford, Thomas C., 4,283,340, Cl. 260-340.700.
- Egglar, James F.; and Hess, Hans-Jurgen E., 4,283,417, Cl. 424-305.000.
- Schnur, Rodney C., 4,283,539, Cl. 546-141.000.
- Sciavolino, Frank C., 4,283,527, Cl. 536-9.000.
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- Phillips, Charles W., to Grandeur Motorcar Corp. Method of converting motor car, 4,282,641, Cl. 29-416.000.
- Phillips, Kenneth G.; and Bingham, Mary E., to Nalco Chemical Company. Hydrolysis of acrylamide polymers, 4,283,507, Cl. 525-344.000.
- Phillips Petroleum Company: See—  
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- McKay, Dwight L.; and Bertus, Brent J., 4,283,274, Cl. 208-120.000.
- Wright, Roy F., 4,283,503, Cl. 525-89.000.
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- Phy, Charles L.: See—  
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- Schauer, Walter; and Rosgen, Josef, 4,283,354, Cl. 261-41.00D.
- Pigerol, Charles; Vernieres, Jean-Claude; Eymard, Pierre; Simiand, Jacques; Broll, Madeleine; and Lacolle, Jean-Yves, to Labaz. Pharmaceutically active cyclohexyl compounds and their preparation, 4,283,420, Cl. 424-317.000.
- Pilatovsky, Viktor P.: See—  
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- Pillsbury Company, The: See—  
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- Pinkham, Jesse R., to R. J. Reynolds Tobacco Company. Apparatus for stripping leaves from a stalk cured tobacco plant, 4,282,888, Cl. 130-30.00R.
- Pinsky, Michael L.: See—  
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- Pioneer Electronic Corp.: See—  
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- Mizumoto, Katsuji, 4,283,665, Cl. 318-317.000.
- Numata, Tatsuo, 4,283,793, Cl. 455-213.000.
- Pitney Bowes Inc.: See—  
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- Pitts, Robert W., Jr.; Arnold, Dan M.; and Paap, Hans J., to Texaco Inc. Multiphase fluid flow meter (D76,244), 4,282,760, Cl. 73-861.020.
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- Pizer, Robert S. Method and apparatus for inducing a pre-hypnotic state, 4,282,864, Cl. 128-1.00C.
- Plakas, Chris J. Method for detection of low level bacterial concentration by luminescence, 4,283,490, Cl. 435-8.00Q.
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- Platts, Michael J.: See—  
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- Plessey Handel und Investments AG: See—  
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- Poetzlberger, Hans W.: See—  
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- Pogue, William F. Apparatus for exercising a limb of a patient, 4,282,865, Cl. 128-25.00R.
- Polaroid Corporation: See—  
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- Cincotta, Louis; and Foley, James W., 4,283,537, Cl. 546-94.000.
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- Gold, Nicholas, 4,283,362, Cl. 264-160.000.
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- Polytop Corporation: See—  
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- Ponomarev, Viktor I.: See—  
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- Portier, Joseph G. A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Breathing mixture controller, 4,282,870, Cl. 128-203.140.
- Porritts & Spencer Inc.: See—  
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- Porten, Ronald M.: See—  
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- Portz, Charles A.: See—  
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- Powell, Charles A., to National Power Corporation. Steam cleaning machine, 4,282,903, Cl. 137-893.000.
- PPG Industries, Inc.: See—  
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- Temple, Chester S., 4,283,322, Cl. 260-29.6WB.
- Prats, Michael; and Williamson, Alexander S., to Shell Oil Company. Process for measuring the formation water pressure within an oil layer in a dipping reservoir, 4,282,750, Cl. 73-155.000.
- Prescott, David B., to Mechanex Corporation. The. Self aligning installation resistant lubricant seal, 4,283,063, Cl. 277-37.000.
- Prestele, Karl: See—  
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- Preuss, Helmut: See—  
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- Price, Raymond M.: See—  
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- Procter & Gamble Company, The: See—  
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- Kurtz, James L., 4,283,300, Cl. 252-95.000.
- Product Planning & Development, Inc.: See—  
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- Produits Chimiques Ugine Kuhlmann: See—  
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- Jequier, William; Ghenassia, Elie; Fine, Francois; and Krempf, Gerard, 4,283,577, Cl. 568-841.000.
- Protasov, Alexandr K.: See—  
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- Ptaszkowska, Janina: See—  
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- Pujado, Peter R., to UOP Inc. Process for the recovery of phenol from a reaction mixture resulting from the acid cleavage of cumene hydroperoxide, 4,283,568, Cl. 568-754.000.
- Putral, Alexander; and Schwachau, Klaus, to Kernforschungsanlage Julich; Gesellschaft mit beschränkter Haftung. Method of quantita-

tively separating uranium from specimens of natural water by sorption on silica, 4,283,370, Cl. 423-6.000.

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Ragan, James T. Golf club, 4,283,057, Cl. 273-186.00A.

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Ramsey, David E., Jr.: See—  
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van Raalte, John A., 4,283,654, Cl. 313-422.000.

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- Research Development Systems, Inc.: See—  
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- Rethmeier, Gerhard, to Control Commerce AG. Paper transporting device for cash registers, data processing machines or the like. 4,283,149, Cl. 400-617.000.
- Revelations Antoine Ltee: See—  
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- Reznord Inc.: See—  
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- Reynolds, Howard R. Weight compensator for adjustable broiler oven. 4,282,853, Cl. 126-19.00R.
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- Rica, Albert F.: See—  
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- Ricardo Consulting Engineers Limited: See—  
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- Richard, Alyre J. Shredding accessory for rotary lawn mower. 4,283,018, Cl. 241-101.100.
- Richard Wolf GmbH: See—  
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- Fraissal, Klaus, 4,283,115, Cl. 350-171.000.
- Richards, Edward G., to Baltimore Aircraft Co., Inc. Machine guarding apparatus. 4,283,612, Cl. 200-334.000.
- Richards, Hugh W.: See—  
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- Richardson, Lee R.: See—  
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- Richardson, Paul N., to Du Pont de Nemours, E. I., and Company. Polyamide resins. 4,283,502, Cl. 525-66.000.
- Richardson, Phillip N., to Texas Instruments Incorporated. Multiple beam antenna feed. 4,283,729, Cl. 343-854.000.
- Richier, Paul. Electric socket-outlet. 4,283,102, Cl. 339-42.000.
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- Richter Gedeon Vegyeszeti Gyas RT: See—  
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- Richter, John W., to Du Pont de Nemours, E. I., and Company. N-type betaines of 2-hydroxy-1,1,2,3,3-pentahydroperfluoroalkylamines. 4,283,333, Cl. 544-171.000.
- Ricoh Co., Ltd.: See—  
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- Sifford, Bruce M.; and Magill, D. Thomas, 4,283,682, Cl. 329-50.000.
- Ridder, Hans-Werner: See—  
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- Rieger, Franz: See—  
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- Rieger, Michael L., to Tektronix, Inc. Graphics matrix multiplier. 4,283,765, Cl. 364-521.000.
- Rieter Machine Works, Ltd.: See—  
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- Rieumont, Jose. Illuminated picture frame. 4,282,669, Cl. 40-453.000.
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- Risdon, David G. Weep hole device. 4,282,691, Cl. 52-101.000.
- Rite-Hite Corporation: See—  
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- Roach, Sally A.; and Hansen, Rob R. Ear ornament. 4,282,721, Cl. 63-14.00R.
- Roark, Charles F. Water heating system using solar energy. 4,282,861, Cl. 126-435.000.
- Robbins Company, The: See—  
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- Robert Bosch GmbH: See—  
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- Haecker, Wolf-Dieter; and Friese, Karl-Hermann, 4,283,441, Cl. 427-126.200.
- Holzinger, Otto, 4,282,747, Cl. 73-116.000.
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- Robinson, Ralph L., Jr.: See—  
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- Robles, Francisco I.: See—  
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- Rockwell International Corporation: See—  
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- Saenz, Eliseo, 4,283,693, Cl. 333-18.000.
- Rodebaugh, Richard M.: See—  
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- Rodgers, Robert E., Jr. Method of making composite racquet construction. 4,282,642, Cl. 29-469.500.
- Roesler, Helmut, to Siemens Aktiengesellschaft. Device for producing two clock pulse trains from a periodic signal of any waveform. 4,283,639, Cl. 307-269.000.
- Roger, Pierre: See—  
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- Rogers, Norman H.: See—  
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- Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,283,412, Cl. 424-283.000.
- Rogler, Wolfgang: See—  
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- Rohner, Friedbert. Belt drive for a winding machine and a pulley for generating a periodically changing drive speed. 4,283,180, Cl. 474-8.000.
- Romankiw, Lubomyr T.: See—  
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- Rooney, Brian M.: See—  
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- Rooney, Craig E., to Havens Steel Company. Truss structure. 4,282,619, Cl. 14-6.000.
- Roques, Rodney A.; and Wakefield, Gene F., to Texas Instruments Incorporated. Liquid phase epitaxial process for magnetic garnet. 4,283,247, Cl. 156-601.000.
- Rosen, Nils G. Fluid flow meter. 4,282,761, Cl. 73-861.580.
- Rosback, Donald H., deceased; and by Gillespie, Janice M., executrix, to UOP Inc. Adsorptive separation of aromatic isomers. 4,283,587, Cl. 585-828.000.
- Roscoe, Charles S., to Eaton Corporation. Fan drive with torque transmitting device. 4,282,961, Cl. 192-58.00B.
- Rosenberger, Edwin C.: See—  
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- Rosenbrook, William, Jr., to Abbott Laboratories. 3-O-Demethyl derivatives of Sannamycin C and antibiotic AX-127B-1. 4,283,529, Cl. 536-17.00R.
- Rosendall, Henry J.; and Shaffer, Arlan J., to Bissell, Inc. Floor sweeper with integral housing. 4,282,622, Cl. 15-41.00R.
- Rosenfeld, Jerold C.: See—  
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- Rosenthal, Joel W.; and Kuehler, Christopher W., to Chevron Research Company. Two-stage coal liquefaction process with interstage guard bed. 4,283,268, Cl. 208-8.0LE.
- Rosenwinkel, Donald A.; and Diako, Harry, to Marvin Glass & Associates. Novelty eyeglasses. 4,283,127, Cl. 351-158.000.
- Rosgen, Josef: See—  
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- Ross, Victor H.; and Ross, Victor H., Jr. Flexible joint protector. 4,283,078, Cl. 285-45.000.
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- Rossow, Harold E.: See—  
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- Roth, Robert A. Medical irrigation device. 4,282,873, Cl. 128-276.000.
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- Rottmaier, Ludwig; and Merten, Rudolf, to Bayer Aktiengesellschaft. 1,2,4-Triglycidyl triazolidines-3,5-diones and a process for the preparation thereof. 4,283,546, Cl. 548-264.000.
- Rountree, Hoyt S., to Raytheon Company. Multiple correlator reference processor. 4,283,767, Cl. 364-574.000.
- Roussel, Philippe, to Lasag S.A. Optical detector. 4,283,146, Cl. 356-445.000.
- Roussel Uclaf: See—  
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- Rowe International, Inc.: See—  
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- Royer, George R. Portable door covering for indoor heat savings. 4,282,689, Cl. 52-79.600.

- Rozhkova, Diana A.: See—  
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- Rubner, Roland: See—  
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- Rudin & Roth, Inc.: See—  
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- Rudolph, Peter K. C. Actuating apparatus for a flap system having an upper surface blowing powered lift system. 4,283,029, Cl. 244-215.000.
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- Rundle, Joseph C.: See—  
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- Russ, Dwayne A. Bow and arrow holder. 4,282,849, Cl. 124-23.00R.
- Russell, John D. Strain measuring system. 4,282,749, Cl. 73-862.580.
- Rutishauser, Ernst A. O., to RCA Corporation. NTSC to PAL transcoder. 4,283,738, Cl. 358-11.000.
- Ryckman, William D., Jr., to General Electric Company. Overshoot compensated thermostat. 4,283,701, Cl. 337-341.000.
- Ryffel, Henry; and Black, Thomas J., Jr., to Computdrive Corporation. Pancake planetary drive. 4,282,777, Cl. 74-804.000.
- S.S.O.S. Sub Sea Oil Services S.p.A.: See—  
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- Sacco, Bruno; and Renner, Hermann, to Daimler-Benz Aktiengesellschaft. Pivotal hood arrangement, especially in motor vehicles. 4,283,085, Cl. 296-84.00R.
- Saenz, Eliseo, to Rockwell International Corporation. Amplitude tilt compensating apparatus. 4,283,693, Cl. 333-18.000.
- Safdy, Max E.: See—  
Schut, Robert N.; Safdy, Max E.; and Hong, Enrique, 4,283,336, Cl. 260-326.14R.
- Schut, Robert N.; Safdy, Max E.; and Hong, Enrique, 4,283,410, Cl. 424-274.000.
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- Saint-Gobain Industries: See—  
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- St. John, Richard C., to Aspro, Inc. Pivotal mounting assembly. 4,282,962, Cl. 192-105.00D.
- St. Louis University: See—  
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- Saito, Fumio: See—  
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- Saito, Noriyasu: See—  
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- Saito, Tadashi: See—  
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- Saito, Toshio: See—  
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- Sakai, Hideaki: See—  
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- Sandrock, Don G., to Fiat-Allis Construction Machinery, Inc. Transmission shifter neutral lock. 4,282,769, Cl. 74-475.000.
- Sankyo Electric Company, Limited: See—  
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- Santi, Junio G., to S.S.O.S. Sub Sea Oil Services S.p.A. Underwater hull or tank. 4,282,823, Cl. 114-341.000.
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- Saotome, Minoru: See—  
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- Sarre, Olga: See—  
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- Sasayama, Takao, to Hitachi, Ltd. Fuel supply control system for internal combustion engine. 4,282,842, Cl. 123-440.000.
- Sase, Shigeo: See—  
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- Sato, Hideo: See—  
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- Sato, Kazuhiro: See—  
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- Sato, Kozo: See—  
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- Sato, Takuro: See—  
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- Satoh, Yuji, to Diesel Kiki Co., Ltd. Proportional control type remote-control direction switching control valve device. 4,282,901, Cl. 137-625.640.
- Sauka, Klaus; and Muschelkautz, Hertz, deceased (by Muschelkautz, Ingeborg, heiress), to Voith Turbo GmbH & Co. KG. Vehicular braking system utilizing a hydrodynamic brake and friction brake. 4,283,092, Cl. 303-3.000.
- Saurenman, Donald G., to Consan Pacific Incorporated. Ion dispenser usable for treating poultry or animal zones. 4,282,830, Cl. 119-21.000.
- Savage, David W., to Exxon Research & Engineering Co. Process for the separation of contaminants from feed streams using magnetic beds. 4,283,204, Cl. 55-3.000.
- Savage, Norman; and Sumner, Douglas A., to N. Greening Limited. Screens. 4,283,278, Cl. 209-395.000.
- Savit, Joseph: See—  
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- Savoie, Francis R.: See—  
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- Scandurra, Aldo M. High isolation multicoupling apparatus. 4,283,695, Cl. 333-124.000.
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- Schachner, Julian, to Borg-Warner Corporation. Automatic clutch. 4,282,959, Cl. 192-35.000.
- Schadow, Rudolf, to ITT Industries, Inc. Electrical snap-action switch. 4,283,609, Cl. 200-67.00D.
- Schaefer, Manfred: See—  
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- Schaeper, Gary R.; and Olson, Richard A., to NL Industries, Inc. Annular blowout preventer with upper and lower spherical sealing surfaces. 4,283,039, Cl. 251-1.00B.
- Schaefer Werke GmbH: See—  
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- Schauer, Walter; and Rosgen, Josef, to Pierburg GmbH & Co. KG. Carburetor for internal-combustion engines. 4,283,354, Cl. 261-41.00D.
- Scheimpflug, Hans: See—  
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- Schenk, Harald; Winter, Hermann; and Spietschka, Walter, to Hoechst Aktiengesellschaft. Cellulose hydrate tubing with aging-resistant barrier layer and processes for the manufacture thereof. 4,283,426, Cl. 426-105.000.
- Scherberich, Paul: See—  
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- Schering Aktiengesellschaft: See—  
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- Vidic, Hans-Jorg, 4,283,530, Cl. 536-21.000.
- Schering Corporation: See—  
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- Ganguly, Ashit K.; Girijavallabhan, Viyyoor M.; Cavender, Patricia; Sarre, Olga; and McCombie, Stuart W., 4,283,531, Cl. 544-30.000.
- Schick, John W.; Davis, Robert H.; and Andress, Harry J., to Mobil Oil Corporation. Metal working lubricant compositions. 4,283,293, Cl. 252-32.000.
- Schiel, Christian, to J. M. Voith GmbH. Cylinder for a paper machine, or the like. 4,282,656, Cl. 34-110.000.
- Schirmer, Ulrich; Becker, Rainer; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Parabanic acid derivatives. 4,283,547, Cl. 548-307.000.
- Schlaikjer, Carl R.: See—  
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- Schlesinger, Joseph D. Biological specimen collection and transport system. 4,283,498, Cl. 435-296.000.
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- Schmalhofer, Markus. Separator for separating out particles of fatty substances from a gas current, more specifically from waste air from



kitchens, and a waste air duct for the separator. 4,283,209, Cl. 55-325.000.

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Schneider, Horst W., to California Institute of Technology. Cleaning devices. 4,282,626, Cl. 15-320.000.

Schnell, William J., to Baxter Travenol Laboratories, Inc. Hollow fiber dialyzer and seal system. 4,283,284, Cl. 210-321.300.

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Schurings, Willy; Anceschi, Italo; and Reinert, Gerhard, to Ciba-Geigy Corporation. Process for whitening polyester fibres by the exhaust method. 4,283,197, Cl. 8-638.000.

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Schut, Robert N.; Safdy, Max E.; and Hong, Enrique, to Miles Laboratories, Inc. 3-Amino or amido-2-(1H-indol-3-yl) propanoic acid derivatives. 4,283,410, Cl. 424-274.000.

Schwartz, Sidney J.; Quadri, Farooq M.; and Hsin, Chung-Heng, to Burroughs Corporation. On-chip method of balancing memory detectors and balanced detectors formed thereby. 4,283,774, Cl. 365-8.000.

Schwochau, Klaus: See—  
Putral, Alexander; and Schwochau, Klaus, 4,283,370, Cl. 423-6.000.

Scivolino, Frank C., to Pfizer Inc. Erythromycylamine 11,12-carbonate and derivatives thereof. 4,283,527, Cl. 536-9.000.

Science Union et Cie: See—  
Malen, Charles; Roger, Pierre; and Laubie, Michel, 4,283,407, Cl. 424-270.000.

Scitex Corporation Ltd.: See—  
Yerushalmy, Moshe, 4,282,883, Cl. 128-726.000.

SCM Corporation: See—  
Carroll, Howard E.; and Sweitzer, Gerald M., 4,283,320, Cl. 260-29.6RW.

Kane, Bernard J.; and Traynor, Sean G., 4,283,347, Cl. 260-429.900.

Scott Paper Company: See—  
Singh, Rudra P., 4,283,251, Cl. 162-17.000.

Scott, Robert J., to United States of America, Navy. Signal generator. 4,283,768, Cl. 364-607.000.

Scranton, Robert J.: See—  
Bok, Dennis E.; Bridge, Patrick E.; Coulter, Robert W.; Denlinger, George W.; Fernald, Clifford S., Jr.; Hill, Charlie H., Jr.; Huliba, David A.; Meckstroth, James R.; and Scranton, Robert J., 4,283,731, Cl. 346-75.000.

Sculley, George A.: See—  
Passer, Barry E.; and Sculley, George A., 4,283,622, Cl. 235-462.000.

Sea Solar Power: See—  
Anderson, J. Hilbert, 4,282,834, Cl. 122-367.00C.

Seidenfeld, Mark B.: See—  
Yu, Kenneth K.; Bohr, Mark T.; and Seidenfeld, Mark B., 4,282,648, Cl. 29-571.000.

Seiler, Hans G.: See—  
Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Bornefeld, Horst; Seiler, Hans G.; and Johann, Walter, 4,282,784, Cl. 82-19.000.

Selly, Alec H.; and Mowbray, Dorian F., to Lucas Industries Limited. Liquid fuel injection pump. 4,282,843, Cl. 123-450.000.

Seitz, Karl; and Mausezahl, Dieter, to Ciba-Geigy Corporation. Azo dyes, their preparation and use. 4,283,331, Cl. 260-153.000.

Seki, Hisao: See—  
Nagatomo, Hiroto; Takagaki, Tetsuya; Seki, Hisao; Terasaki, Shiro; and Horimuki, Hitoshi, 4,282,825, Cl. 118-58.000.

Sekiguchi, Kazuhiko, to Zebra Co., Ltd. Compound writing instrument. 4,283,151, Cl. 401-33.000.

Senoo, Keizi: See—  
Machi, Sugo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,283,442, Cl. 427-171.000.

Serbinenko, Fedor A.; and Kljuchnikov, Sergei I. Occlusive device. 4,282,875, Cl. 128-325.000.

Sertich, Anthony T. Dental scaler having scaling tip particularly suitable for circular or ellipsoidal patterns of vibration. 4,283,174, Cl. 433-119.000.

Service (Engineers) Limited: See—  
Turnock, Frederick A., 4,282,807, Cl. 101-41.000.

Sery, Robert S.: See—  
Goldstein, David; Jones, Richard E.; and Sery, Robert S., 4,283,233, Cl. 148-11.50R.

SES, Incorporated: See—  
Boer, Karl W., 4,283,591, Cl. 136-256.000.

Sexton, Peter; and De Cristofaro, Nicholas J., to Allied Chemical Corporation. Process for fabricating homogeneous, ductile brazing foils and products produced thereby. 4,283,225, Cl. 75-170.000.

Shaffer, Arlan J.: See—  
Rosendall, Henry J.; and Shaffer, Arlan J., 4,282,622, Cl. 15-41.00R.

Shaffer, Harold K.: See—  
Picard, Harrison R.; Rotondo, Claude P.; Shaffer, Harold K.; and Brown, Bertrand H., 4,283,096, Cl. 308-207.00R.

Shah, Nutan B.: See—  
Dhabhar, Dadi J.; and Shah, Nutan B., 4,283,385, Cl. 424-52.000.

Shakespeare Company: See—  
McLain, Philippe H., 4,283,446, Cl. 428-36.000.

Shalash, Vitaly I.; Protasov, Alexandr K.; Vasiliev, Vladimir I.; and Ponomarev, Viktor I. Lock for portable container. 4,283,081, Cl. 292-113.000.

Sharp Kabushiki Kaisha: See—  
Asada, Atsushi, 4,283,769, Cl. 364-710.000.

Inoue, Yukihiko, 4,283,118, Cl. 350-334.000.

Koyama, Tamotsu; and Kuroda, Yoshiharu, 4,283,650, Cl. 310-344.000.

Shaw, Clifford O., to United States of America, Navy. Direct reading capacitance meter. 4,283,676, Cl. 324-60.00C.

Shaw, John B.: See—  
Elliott, Richard A.; Massey, Gail A.; and Shaw, John B., 4,283,122, Cl. 350-379.000.

Sheehan, Maurice J., to McBride, Edward F., a part interest. Curtain rod bracket construction. 4,283,034, Cl. 248-263.000.

Shell Oil Company: See—  
Prats, Michael; and Williamson, Alexander S., 4,282,750, Cl. 73-155.000.

Shemanski, Robert M., Sr., to Goodyear Tire & Rubber Company, The. Aromatic triazoles and alkylamine borates for increased surface protection and improved adhesion of brass-coated steel to rubber. 4,283,460, Cl. 428-389.000.

Shepherd, Joel D. Coupling device. 4,283,154, Cl. 403-78.000.

Sherman, James E., to Owens-Illinois Inc. Two-piece bottom plate for making crown bottom glassware on the HE-28 machines. 4,283,215, Cl. 65-79.000.

Sherman, John D.: See—  
Chao, Chien C.; and Sherman, John D., 4,283,560, Cl. 568-366.000.

Sherwood Medical Industries Inc.: See—  
Hashmi, Tas, 4,283,244, Cl. 156-242.000.

Shibukawa, Masaru: See—  
Kita, Yuzo; Yamaguchi, Noboru; Shibukawa, Masaru; and Minorikawa, Kazuo, 4,283,760, Cl. 364-200.000.

Shields, Harper; and Farrell, Roscoe M., to Kayser-Roth Hosiery, Inc. Circular knitting machine with latch detector. 4,282,725, Cl. 66-157.000.

Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Ima, Seiichiro, to Sumitomo Chemical Company, Limited. Molded products of polypropylene. 4,283,463, Cl. 428-512.000.

Shii, Kazuo: See—  
Isakozawa, Shigeto; and Shii, Kazuo, 4,283,627, Cl. 250-311.000.

Shimizu, Kanryo; and Kobayashi, Kengo, to Fujitsu Fanuc Limited. Rotary shaft control system. 4,282,955, Cl. 192-0.096.

Shimizu, Koh: See—  
Suganami, Takashi; Takeda, Tashiro; Nakayama, Tetsuya; Shimizu, Koh; and Manseki, Teruo, 4,282,933, Cl. 172-4.300.

Shimoji, Toshikuni: See—  
Kunii, Yutaka; Shimoji, Toshikuni; and Tsutsumi, Masaaki, 4,282,879, Cl. 128-660.000.

Shimura, Takeo: See—  
Kaneko, Tadashi; Shimura, Takeo; Matsumoto, Masanori; Moriguchi, Hiroyuki; and Nomori, Hiroyuki, 4,283,474, Cl. 430-69.000.

Shine, John: See—  
Goodman, Howard M.; Shine, John; and Horst, Peter, 4,283,489, Cl. 435-6.000.

Shinei Mfg. Co., Ltd.: See—  
Makino, Yoshihiro, 4,282,896, Cl. 137-495.000.

Shinwa Kabushiki Kaisha: See—  
Naito, Kyohei, 4,283,027, Cl. 242-208.000.

Shionogi & Co., Ltd.: See—  
Yoshioka, Mitsuru; Hamashima, Yoshio; and Nagata, Wataru, 4,283,333, Cl. 260-239.00A.

Shiota, Masashi: See—  
Fujii, Setsuro; Watanabe, Tsuyoshi; Shiota, Masashi; Okumoto, Itsuo; and Kayama, Naohiro, 4,283,418, Cl. 424-310.000.

Shnirelman, Alexandr I.: See—  
Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Raffhat A.; Shnirelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.

Sholl, Jeffrey J.: See—  
Winters, William C.; Chang, Hsien-Hsin; Anderson, George R.; Easter, Ross A.; and Sholl, Jeffrey J., 4,283,427, Cl. 426-107.000.

Showa Denko Kabushiki Kaisha: See—  
Inoue, Chozo; and Moriguchi, Soyao, 4,283,554, Cl. 562-574.000.

Shroff, James R.; and Desai, Rohit, to USV Pharmaceutical Corporation. Pyridylacyl-hydroxamates. 4,283,541, Cl. 546-336.000.

Shuman, Robert T., to Eli Lilly and Company. Pharmacologically active peptides. 4,283,330, Cl. 260-112.50R.

Shuman, Robert T.: See—  
Gesellchen, Paul D.; and Shuman, Robert T., 4,283,329, Cl. 260-112.50R.

Sibral, Walter; and Schmidt, Oskar, to Lim-Holding S.A. Diisatoic acid or trisatoic acid derivatives. 4,283,548, Cl. 548-310.000.

Sidery, David, to Trodhjems Mek. Versted A/S. Device for distribution of a gas in a liquid medium. 4,283,357, Cl. 261-87.000.

Siefried, Walter; Janocha, Siegfried; and Crass, Gunther, to Hoechst Aktiengesellschaft. Biaxially stretched polypropylene composite film and electrical insulating film made therefrom. 4,283,453, Cl. 428-212.000.

Siegel, Melvin W., to Extranuclear Laboratories, Inc. Methods and apparatus for analysis of mixtures by mass spectrometry. 4,283,626, Cl. 250-292.000.

Siemens Aktiengesellschaft: See—  
De Stur, Hubert; Vandenbosche, Chris; and Heyneman, Guido, 4,283,142, Cl. 356-319.000.

Ebert, Hermann, 4,283,664, Cl. 318-138.000.

Ehrigott, Roland; and Meindl, Gerhard, 4,283,699, Cl. 336-67.000.

Frantetzki, Manfred; Gagneur, Klaus; and Prestele, Karl, 4,282,872, Cl. 128-213.00R.

Goser, Karl, 4,283,696, Cl. 333-165.000.

Hofmann, Horst, 4,283,119, Cl. 350-344.000.

Kleeberg, Wolfgang; Rogler, Wolfgang; Gentzkow, Wolfgang V.; and Rubner, Roland, 4,283,505, Cl. 525-281.000.

Muenz, Wolf-Dieter; and Poetzlberger, Hans W., 4,283,485, Cl. 430-314.000.

Roesler, Helmut, 4,283,639, Cl. 307-269.000.

Spirk, Franz, 4,283,648, Cl. 310-269.000.

Zitzelsberger, Helmut, 4,283,588, Cl. 136-246.000.

Siemens Corporation: See—  
Provasnik, Robert, 4,282,754, Cl. 73-346.000.

Sienkiewicz, Henry R., to Spadone Machine Company, Inc. Material process machinery. 4,283,024, Cl. 242-75.300.

Siewert, Wolfgang: See—  
Heinbockel, Wolfgang; Siewert, Wolfgang; Kahmann, Albrecht; and Lambrecht, Gerhard, 4,283,275, Cl. 209-3.000.

Sifford, Bruce M.; and Magill, D. Thomas, to Ricoh Company, Ltd. Erasure zone decision feedback phase lock loop for carrier recovery in data modems. 4,283,682, Cl. 329-50.000.

Signetics Corporation: See—  
Lieux, J. Darryl, 4,283,673, Cl. 323-316.000.

Signode Corporation: See—  
Massion, Robert J.; Lems, Peter; and Nix, Robert J., 4,282,907, Cl. 140-93.400.

Sih, John C., to Upjohn Company, The. 19,20-Didehydro-PG<sub>2</sub> amides. 4,283,350, Cl. 564-189.000.

Sih, John C., to Upjohn Company, The. 19,20-Didehydro-13,14-dihydro-PG<sub>2</sub> amides. 4,283,351, Cl. 564-189.000.

Sih, John C., to Upjohn Company, The. 11-Deoxy-11-hydroxymethyl-inter-oxa-19-oxo-PGE<sub>2</sub> compounds. 4,283,552, Cl. 560-121.000.

Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-19-hydroxy-PG compounds. 4,283,558, Cl. 564-305.000.

Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-19-hydroxy-6a-carba-PG<sub>2</sub> compounds. 4,283,575, Cl. 568-819.000.

Silk, Murray R.: See—  
Garwood, William E.; and Silk, Murray R., 4,283,271, Cl. 208-59.000.

Garwood, William E.; and Silk, Murray R., 4,283,272, Cl. 208-59.000.

Silverman, Neil D.: See—  
Cormier, Alan D.; Webster, Milo E.; Czaban, John D.; Silverman, Neil D.; and Noble, Lynn W., 4,283,262, Cl. 204-195.00M.

Silverman, Ronald: See—  
Fortino, Andres G.; Geipel, Henry J., Jr.; Heller, Lawrence G.; and Silverman, Ronald, 4,282,646, Cl. 29-571.000.

Sima, Syohei: See—  
Higashinakagawa, Iwao; Sima, Syohei; and Moriya, Takahiko, 4,283,439, Cl. 427-89.000.

Simbirsev, Nikolai L.: See—  
Voronkov, Mikhail G.; Platonova, Ada T.; Simbirsev, Nikolai L.; Dyakov, Valery M.; Dyban, Andrei P.; and Kuznetsov, Igor G., 4,283,419, Cl. 424-316.000.

Simiand, Jacques: See—  
Pigerol, Charles; Vernieres, Jean-Claude; Eymard, Pierre; Simiand, Jacques; Broll, Madeleine; and Lacolle, Jean-Yves, 4,283,420, Cl. 424-317.000.

Simmons, Carl E., to United Aircraft Products, Inc. Multi-pass heat exchanger circuit. 4,282,927, Cl. 165-166.000.

Simpson, Danny E.: See—  
Grubb, Lawrence B.; Simpson, Danny E.; Hoffman, Louis S.; and Williams, David M., 4,282,679, Cl. 46-193.000.

Singer Company, The: See—  
Beckerman, Howard L.; and Trimmer, William S. N., 4,283,659, Cl. 315-161.000.

Herr, John A.; and Jaffe, Wolfgang, 4,283,647, Cl. 310-154.000.

Kroo, Gerald J.; and Hale, Timothy E., 4,283,177, Cl. 434-59.000.

Singh, Rudra P., to Scott Paper Company. Ozone effluent bleaching. 4,283,251, Cl. 162-17.000.

Sirsi, Ramesh M., to Harris Corporation. Method of fabricating lateral PNP transistors utilizing selective diffusion and counter doping. 4,283,236, Cl. 148-187.000.

Skelthorne, Graham G.: See—  
Davies, William D.; Skelthorne, Graham G.; and Warren, John B., 4,283,480, Cl. 430-270.000.

Skingley, John A., to Plessey Handel und Investments AG. Feedback biasing circuit arrangement for transistor amplifier. 4,283,641, Cl. 307-297.000.

Skinner, Robert T. J., to Lucas Industries Limited. Fuel pumping apparatus. 4,282,844, Cl. 123-502.000.

Skrobek, Alois: See—  
Feller, Otto; Oepen, Heinz; Kuhl, Manfred; Skrobek, Alois; Bornefeld, Horst; Seiler, Hans G.; and Johann, Walter, 4,282,784, Cl. 82-19.000.

Smith, Derrick B.: See—  
Coale, Robert D.; Sarbutt, Keith W.; and Smith, Derrick B., 4,283,017, Cl. 241-24.000.

Smith, Frederick J.: See—  
James, Kenneth; and Smith, Frederick J., 4,283,310, Cl. 260-23.0XA.

James, Kenneth; and Smith, Frederick J., 4,283,315, Cl. 260-23.0XA.

Smith, Gregg H.: See—  
Todd, Robert J.; Smith, Gregg H.; and Reynolds, Gordon S., 4,282,881, Cl. 128-674.000.

Smith International Inc.: See—  
Longmore, Thomas L., 4,282,942, Cl. 175-269.000.

Perkin, Gregg S., 4,282,941, Cl. 175-267.000.

Smith, Kenneth R., to Kross, Inc. Automotive engine lub-oil drainage and disposal structure. 4,283,032, Cl. 248-97.000.

Smith, Larry G., to United Merchants and Manufacturers, Inc. Foam random dyeing system. 4,282,729, Cl. 68-205.00R.

Smith, Robert G., to Kleen-Rite, Inc. Method and apparatus for reclaiming drycleaning fluid. 4,283,279, Cl. 210-123.000.

Smith, Sydney J.; and Chambers, Peter F., to British Leyland UK Limited. Hand and guard rails. 4,283,152, Cl. 403-3.000.

Smith, Todd I.: See—  
Madedy, John M. J.; Elias, Luis R.; and Smith, Todd I., 4,283,687, Cl. 331-94.5PE.

Smith, William J., to Weatherly Foundry & Manufacturing Co. Apparatus for removing no-bake coatings from foundry sand, and classifying the reclaimed sand according to particle size. 4,283,015, Cl. 241-5.000.

Smitherman, Thomas L.: See—  
Meyer, Herbert J.; and Smitherman, Thomas L., 4,283,778, Cl. 367-58.000.

Smock, William L. Oscillating-accumulating conveyor. 4,282,970, Cl. 198-772.000.

Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A.: See—  
Mosseri, Giuseppe; and Lucioni, Enrico, 4,282,637, Cl. 28-254.000.

Snyder, Michael D.: See—  
Bates, Erwin F.; and Snyder, Michael D., 4,282,965, Cl. 198-380.000.

Bates, Erwin F.; and Snyder, Michael D., 4,282,966, Cl. 198-382.000.

Snyder, R. David; Iwerks, Donald W.; Otto, Robert R.; Richardson, Lee R.; and English, David S., to Walt Disney Productions. Automatic camera control for creating special effects in motion picture photography. 4,283,766, Cl. 364-525.000.

Soborowski, Michael J.: See—  
Molins, Desmond W.; and Soborowski, Michael J., 4,283,187, Cl. 493-48.000.

Societa' Italiana Vetro-SIV S.p.A.: See—  
Paudice, Ciro; and De Lena, Oscar, 4,283,440, Cl. 427-108.000.

Societe Chimique des Charbonnages CdF Chimie: See—  
Dalens, Marcel; and Haas, Armand, 4,282,682, Cl. 47-9.000.

Societe Chimiques des Charbonnages: See—  
Meyer, Nicolas; and Schuller, Leon, 4,283,462, Cl. 428-506.000.

Societe des Plastiques de Carmaux Scazar: See—  
Dalens, Marcel; and Haas, Armand, 4,282,682, Cl. 47-9.000.



Societe Nationale Elf Aquitaine (Production): See—  
Votrin, Robert; Mathieu, Pierre; and Chambu, Claude, 4,283,380, Cl. 423-574.00R.

Societe Nord-France d'Entreprises, Genesales et de Constructions en beton arme: See—  
Michel, Bertrand, 4,282,696, Cl. 52-745.000.

Societe pour l'Equiptement de Vehicules: See—  
Guichard, Roland R., 4,282,767, Cl. 74-427.000.

Soderstrom, Melvin A.: See—  
Ferrill, Jess B.; Hughes, Richard L.; and Soderstrom, Melvin A., 4,283,105, Cl. 339-97.00R.

Sociers, Cornelis J.; Paulussen, Cornelis N.; Padley, Frederick B.; and Tresser, David, to Lever Brothers Company. Hard fat replacer and chocolate containing same, 4,283,436, Cl. 426-607.000.

Soleau, Bertrand S. Thin-line collectors, 4,282,862, Cl. 126-439.000.

Somers, M. John, to Dayco Corporation. Vacuum apparatus having protective device for operator and method, 4,283,594, Cl. 174-47.000.

Sony Corporation: See—  
Hongu, Masayuki; Ohmuro, Shigeru; and Tokubara, Masaharu, 4,283,792, Cl. 455-192.000.

Kondo, Masayuki; and Kishi, Yoshio, 4,283,644, Cl. 310-68.00R.

Kuper, Douglas D.; and Menezes, William A., 4,283,745, Cl. 360-13.000.

Morio, Minoru; Nakamura, Tadahiko; Kambara, Masahiro; and Kubota, Yuki, 4,283,736, Cl. 358-4.000.

Nakano, Kenji; and Nakamura, Tadahiko, 4,283,671, Cl. 318-608.000.

Nikami, Akira, 4,283,737, Cl. 358-8.000.

Soo Hoo, Kathleen G.: See—  
Doster, Robert C.; Judson, Beth R.; and Soo Hoo, Kathleen G., 4,283,430, Cl. 426-284.000.

Sorenson Research Co., Inc.: See—  
Todd, Robert J.; Smith, Gregg H.; and Reynolds, Gordon S., 4,282,881, Cl. 128-674.000.

Sontheimer Company: See—  
Stewart, Maxson L., 4,283,224, Cl. 75-99.000.

SOVAM: See—  
Morin, Andre M. R., 4,283,086, Cl. 296-178.000.

Spadone Machine Company, Inc.: See—  
Sienkiewicz, Henry R., 4,283,024, Cl. 242-75.300.

Spakowski, Hans: See—  
Stehl, Otto; and Spakowski, Hans, 4,282,856, Cl. 126-417.000.

Sparber, Richard O., to Bell Telephone Laboratories, Incorporated. Impedance/admittance measuring circuit, 4,283,675, Cl. 324-57.00R.

Speck, Ulrich; Klieger, Erich; and Mutzel, Wolfgang, to Schering Aktiengesellschaft. Triiodinated aminoacetamide isophthalamide x-ray contrast agents, 4,283,381, Cl. 424-5.000.

Spektor, Gerald A. Height extender for use in connection with an apparatus for repairing and straightening, 4,282,740, Cl. 72-461.000.

Spector, Donald. Scented sticker, 4,283,011, Cl. 239-36.000.

Speer, Lawrence L. Method for repairing grained or embossed vinyl sheeting with imprinted vinyl molds, 4,283,240, Cl. 156-98.000.

Speers, Jerry M.: See—  
Maus, L. Donald; Speers, Jerry M.; and Howell, James D., 4,282,939, Cl. 175-7.000.

Speicher, Emmett J.: See—  
Binas, Douglas E.; and Speicher, Emmett J., 4,283,254, Cl. 203-4.000.

Spence, Lewis C.; and Martin, Stephen, to Spence, Lewis C. Dual frequency distance measuring system, 4,283,726, Cl. 343-112.00D.

Spencer Wright Industries, Inc.: See—  
Ingram, Gary L., 4,282,818, Cl. 112-79.00R.

Sperry Corporation: See—  
Clock, Donald P.; and Easter, Finis C., 4,283,790, Cl. 375-71.000.

Cools, Antoon S. P., 4,282,803, Cl. 100-5.000.

Cools, Antoon S. P., 4,282,804, Cl. 100-5.000.

Nardi, Anthony P., 4,283,780, Cl. 367-82.000.

Zipper, Randall E., 4,282,969, Cl. 198-747.000.

Spielau, Paul; Putz, Peter; Weiss, Richard; and Schraube, Hansfritz, deceased (by Schraube, Maria Katharina, sole heir and legal representative), to Dynamit Nobel Aktiengesellschaft. Insulating panel for roof coverings, 4,282,697, Cl. 52-746.000.

Spitschka, Walter: See—  
Schenk, Harald; Winter, Hermann; and Spitschka, Walter, 4,283,426, Cl. 426-105.000.

Spirk, Franz, to Siemens Aktiengesellschaft. Synchronous electric machine with salient poles in the rotor, 4,283,648, Cl. 310-269.000.

Sportelli, Frank A. Printing screen and method of making same, 4,283,471, Cl. 430-6.000.

Sprague Electric Company: See—  
Burn, Ian, 4,283,753, Cl. 361-321.000.

Thompson, David G.; and Ogilvie, John T., 4,282,645, Cl. 29-570.000.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Cyclohexenemethanols, 4,283,576, Cl. 568-826.000.

Springer, Helmut: See—  
Bernhagen, Wolfgang; Bach, Hanswilhelm; Brundin, Eike; Gick, Wilhelm; Springer, Helmut; and Hack, Adolf, 4,283,564, Cl. 568-461.000.

Sproul, Nolte V., to Dyneer Corporation. Hydraulic belt tensioner construction, 4,283,181, Cl. 474-110.000.

Staab, Thomas E.; and Antonini, Joseph, to Dana Corporation. Rotary shaft seal, 4,283,064, Cl. 277-81.00R.

Stadler, Istvan: See—  
Szabo, Tibor; Institoris, Laszlo; Kovacs, Gabor; Stadler, Istvan; and Koszegi, Bela, 4,283,413, Cl. 424-285.000.

Staley, Warren D., to Corning Glass Works. Mold mechanism, 4,283,218, Cl. 65-360.000.

Stammer, Charles H., to Research Corporation. Preparation of dehydropeptides, 4,283,328, Cl. 260-112.50R.

Standard Microsystems Corporation: See—  
Richman, Paul, 4,282,647, Cl. 29-571.000.

Standard Oil Company, The: See—  
Greene, Janice L., 4,283,524, Cl. 528-363.000.

Velenyi, Louis J.; and Dolhyj, Serge R., 4,283,583, Cl. 585-467.000.

Standard Oil Company (Indiana): See—  
Udovich, Carl A.; and Meyers, Bernard L., 4,283,288, Cl. 252-437.000.

Starks, Charles M.: See—  
Weimer, Dean R.; and Starks, Charles M., 4,283,514, Cl. 526-84.000.

Statz, Robert J.: See—  
Murphy, Charles V.; and Statz, Robert J., 4,283,317, Cl. 260-27.00R.

Stauffer Chemical Company: See—  
Brison, Robert J.; and Osthe, John C., 4,283,277, Cl. 209-166.000.

Fancher, Llewellyn W., 4,283,395, Cl. 424-211.000.

Lauck, Robert M., 4,283,435, Cl. 426-551.000.

Steele, Gerald G.: See—  
Clark, Charles R.; Hanson, Lowell R.; and Steele, Gerald G., 4,282,909, Cl. 141-98.000.

Steele, James A.: See—  
Kopich, Leonard F.; and Steele, James A., 4,282,949, Cl. 180-252.000.

Stehl, Otto; and Spakowski, Hans, to BFG Glassgroup. Solar-energy collector, 4,282,856, Cl. 126-417.000.

Steigerwald, Carl J.; and Villari, Frank K., to Kendall Company, The. Protective headgear, 4,282,610, Cl. 2-414.000.

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Andro, Jean; Bessouat, Roger; Cerdan, Jean-Pierre; and Talieu, Patrick, 4,283,206, Cl. 55-187.000.

Steinberger, Michael L., to Bell Telephone Laboratories, Incorporated. Adaptive cross-polarization interference cancellation arrangements, 4,283,795, Cl. 455-283.000.

Stephens, Donald R.: See—  
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DuBois, Grant E.; and Stephenson, Rebecca A. G., 4,283,434, Cl. 426-548.000.

Sterbutzel, Gerald A., to Calspan Corporation. Two piece caseless round and gun therefor, 4,282,813, Cl. 102-431.000.

Sterling Drug Inc.: See—  
Schmidt, Paul J.; and Hung, William M., 4,283,077, Cl. 282-27.500.

Sterzer, Fred, to RCA Corporation. Ridge-waveguide applicator for treatment with electromagnetic energy, 4,282,887, Cl. 128-804.000.

Stevens, Myron T., to Outboard Marine Corporation. Filament trimmer mower with folding shield, 4,282,704, Cl. 56-320.100.

Stewart, Maxson L., to Southwire Company. Separative treatment of anode slime, 4,283,224, Cl. 75-99.000.

Stewart, Robert C., to Tellabs, Inc. Signal processor for digital echo canceller, 4,283,770, Cl. 364-757.000.

Stewart, Vernon. Mailbox letter canceler, 4,282,809, Cl. 101-212.000.

Stiles, Walter J.: See—  
Salisbury, Winfield W.; and Stiles, Walter J., 4,282,940, Cl. 175-11.000.

Stinger, Kenneth R.: See—  
Mossman, Ralph A.; and Stinger, Kenneth R., 4,283,655, Cl. 313-462.000.

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Stoewe, Anneliese: See—  
Forberg, Horst; Hegner, Gunter; and Stoewe, Anneliese, 4,283,103, Cl. 339-59.00M.

Stoner, Eugene M.; and Gillum, Richard R., to ARES, Inc. Double acting, pneumatic bolt and sear buffer for automatic cannon, 4,282,796, Cl. 89-198.000.

Stottmann, Richard L.; and Losert, Gerhard K., to General Electric Co. Refrigerator air baffle control, 4,282,720, Cl. 62-180.000.

Stotz, Wolf-Gunter: See—  
Braun, Heinz; Kiesel, Karl; and Stotz, Wolf-Gunter, 4,283,023, Cl. 242-67.10R.

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Engel, Jurgen; Kleemann, Axel; Stroman, Fritz; and Thiemer, Klaus, 4,283,405, Cl. 424-267.000.

Suganami, Takashi; Takeda, Tashiro; Nakayama, Tetsuya; Shimizu, Koh; and Manseki, Teruo, to Kabushiki Kaisha Komatsu Seisakusho. Automatic control device for an earth working equipment, 4,282,933, Cl. 172-4.500.

Sugano, Kazuhiko: See—  
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,282,781, Cl. 74-869.000.

Suganuma, Toshio: See—  
Matsubara, Akira; Sakai, Hideaki; Suganuma, Toshio; Fukazawa, Nobuyuki; and Nakano, Takuo, 4,283,398, Cl. 424-246.000.

Sugimoto, Hiroshi; and Nakano, Jiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Sub-transmission control system for providing engine braking, 4,282,957, Cl. 192-9.000.

Sugo, Takano: See—  
Machi, Sueo; Ishigaki, Isao; Sugo, Takano; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,283,442, Cl. 427-171.000.

Sullivan, James P.: See—  
Nalbandian, A. Eugene; and Sullivan, James P., 4,283,757, Cl. 362-120.000.

Sulzer Morat GmbH: See—  
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Sumi, Takeshi: See—  
Konii, Susumu; Sase, Shigeo; Yoshida, Masatoshi; Kuroda, Shoji; and Sumi, Takeshi, 4,283,319, Cl. 260-29.300.

Sumitomo Chemical Company, Limited: See—  
Atsumi, Toshio; Takebayashi, Yoshiaki; and Okajima, Hideki, 4,283,422, Cl. 424-325.000.

Fuyama, Hiroshi; and Tsuji, Kozo, 4,283,415, Cl. 424-304.000.

Horide, Fumio; and Tsuji, Kozo, 4,283,222, Cl. 71-120.000.

Nakatsuka, Kiyoharu; and Abeta, Sadaharu, 4,283,195, Cl. 8-524.000.

Shiga, Akinobu; Matsuyama, Kiyoshi; Kakugo, Masahiro; Naito, Yukio; and Ima, Seichiro, 4,283,463, Cl. 428-512.000.

Tsutsui, Nobuhiro; Takao, Seiji; and Murase, Ichiki, 4,283,359, Cl. 264-22.000.

Ueno, Katsuji; and Maruyama, Takashi, 4,283,511, Cl. 525-392.000.

Sumitomo, Kojiro, to Sanyei Corporation. Combined hanger and bag for a hanger bag, 4,282,911, Cl. 150-1.000.

Summit Systems, Inc. (Interscience Systems): See—  
Lucero, Andres R.; Williams, David E.; and Nelson, James L., 4,283,709, Cl. 340-147.00R.

Sumner, Douglas A.: See—  
Savage, Norman; and Sumner, Douglas A., 4,283,278, Cl. 209-395.000.

Sun Chemical Corporation: See—  
Horwitt, Laurence G., 4,283,703, Cl. 338-34.000.

Sun, Liang-Hung. Attache case having drawer apparatus, 4,283,098, Cl. 312-319.000.

Sundberg, Michael W.: See—  
Frank, David S.; and Sundberg, Michael W., 4,283,382, Cl. 424-8.000.

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Peters, Heinrich; and Surma, Erich, 4,283,297, Cl. 252-70.000.

Suspa Federungsstechnik, Fritz Bauer & Sohne oHG: See—  
Bauer, Fritz, 4,283,033, Cl. 248-188.000.

Susz, Dietfried: See—  
Melwisch, Harald E.; and Susz, Dietfried, 4,283,744, Cl. 360-10.000.

Sutton, George W.: See—  
Daugherty, Jack D.; Kantrowitz, Arthur R.; Sutton, George W.; and Zappa, Oswald L., 4,283,686, Cl. 331-94.50G.

Sutton, Richard C.: See—  
Campbell, Gerald A.; Hollister, Kenneth R.; and Sutton, Richard C., 4,283,504, Cl. 525-261.000.

Svoboda, Robert: See—  
Bodmer, Maurice A.; and Svoboda, Robert, 4,283,200, Cl. 23-230.00C.

Swartzbach, Peter T., to Owens-Illinois, Inc. Container with improved spring-like hinge, 4,282,983, Cl. 220-335.000.

Sweitzer, Gerald M.: See—  
Carroll, Howard E.; and Sweitzer, Gerald M., 4,283,320, Cl. 260-29.6RW.

Swenson, William A.: See—  
Griffin, Rodney B.; and Swenson, William A., 4,283,100, Cl. 339-19.000.

Swift, William R.; Herrod, Don W.; and Marsh, James M., to AM International, Inc. Microfiche reader printer having multi-format capabilities, 4,283,136, Cl. 355-45.000.

Swope, C. Hermas, to American Optical Corporation. Instrument for optically measuring soft contact lens parameters, 4,283,139, Cl. 356-125.000.

Synco National Ltd.: See—  
Butler, Edward A.; and Savoie, Francis R., 4,283,718, Cl. 340-545.000.

Syntex (U.S.A.) Inc.: See—  
Nash, John E., 4,283,175, Cl. 433-119.000.

Syrov, Anatoly A.: See—  
Ivanchev, Sergei S.; Syrov, Anatoly A.; Pavljuchenko, Valery N.; Lesnikova, Ninel N.; and Rozhkova, Diana A., 4,283,553, Cl. 560-176.000.

Syvaki, Pertti, to ASEA Aktiebolag. Hot isostatic pressure furnace with enhanced insulation properties, 4,283,172, Cl. 432-247.000.

Szabo, Elek I., to Forsyth Dental Infirmary for Children. Method of resolving biological solutions, 4,283,199, Cl. 23-230.00B.

Szabo, Jozsef: See—  
Fridrich, Janos; Hetesi, Zoltan; Kisteletki, Gusztav; Misangyi, Laszlo; Szegetes, Emil; and Szabo, Jozsef, 4,283,598, Cl. 174-169.000.

Szabo, Lajos: See—  
Szantay, Csaba; Szabo, Lajos; Kalas, Gyorgy; Dancsi, Lajos; Keve, Tibor; Karpati, Egon; and Szepory, Laszlo, 4,283,401, Cl. 424-256.000.

Szabo, Tibor; Institoris, Laszlo; Kovacs, Gabor; Stadler, Istvan; and Koszegi, Bela, to Chincin Gyogyszer es Vegyeszeti Termekek Gyara RT. Method for inhibiting aggregation of human thrombocytes, 4,283,413, Cl. 424-285.000.

Szantay, Csaba; Szabo, Lajos; Kalas, Gyorgy; Dancsi, Lajos; Keve, Tibor; Karpati, Egon; and Szepory, Laszlo, to Richter Gedeon

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Szegetes, Emil: See—  
Fridrich, Janos; Hetesi, Zoltan; Kisteletki, Gusztav; Misangyi, Laszlo; Szegetes, Emil; and Szabo, Jozsef, 4,283,598, Cl. 174-169.000.

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Szydlowski, Donald F.; Kuzminskas, Vaidotas; and Bittner, Joseph E., to United Technologies Corporation. Process for vaporizing a liquid hydrocarbon fuel, 4,282,832, Cl. 122-28.000.

Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shurelman, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullov, Airat K., deceased (by Fatkullov, Neili N., administrator). Thermal-mining method of oil production, 4,283,088, Cl. 299-2.000.

Takagaki, Tetsuya: See—  
Nagatomo, Hiroto; Takagaki, Tetsuya; Seki, Hisao; Terasaki, Shiro; and Horimuki, Hitoshi, 4,282,825, Cl. 118-58.000.

Takagi, Yasuo; Onoda, Michio; Katsumata, Masaaki; and Yoneda, Kenji, to Nissan Motor Company, Limited. Ignition timing control system for an internal combustion engine, 4,282,841, Cl. 123-425.000.

Takahashi, Akio; Itoh, Yutaka; Wajima, Motoyo; Morishita, Hirosada; and Tsukanishi, Kenji, to Hitachi Chemical Company, Ltd. Process for preparing thermosetting prepolymer from mixture of polyfunctional maleimide and bis-maleimide, 4,283,522, Cl. 528-170.000.

Takahashi, Ken: See—  
Tomoda, Hajime; and Takahashi, Ken, 4,282,918, Cl. 152-353.00C.

Takahashi, Kenji: See—  
Izumita, Morishii; Umemoto, Masuo; Sato, Kazuhiro; Akiyama, Toshiyuki; Takahashi, Kenji; and Nagahara, Shusaku, 4,283,742, Cl. 358-213.000.

Takahata, Kenichi, to Matsui Universal Joint Mfg. Co. Coupling device, 4,283,158, Cl. 403-322.000.

Takamatsu, Hideki: See—  
Yoshimura, Masahito; Hoshiyama, Satoshi; Takamatsu, Hideki; Kobayashi, Hiroshi; and Takigawa, Shinichiro, 4,283,586, Cl. 585-512.000.

Takao, Seiji: See—  
Tsutsui, Nobuhiro; Takao, Seiji; and Murase, Ichiki, 4,283,359, Cl. 264-22.000.

Takashima, Toshiyuki: See—  
Kondo, Kiyoshi; Takashima, Toshiyuki; and Tunemoto, Daiei, 4,283,341, Cl. 260-343.30R.

Takasuke, Fukui: See—  
Kazuomi, Yamamura; Takasuke, Fukui; Yoshinai, Iwamoto; Yuchi, Shiroaki; Masayuki, Fujise; Hikoaki, Sngimoto; Kikuo, Shirai; and Minoru, Yoshida, 4,283,681, Cl. 324-326.000.

Takata, Akira: See—  
Yamada, Kenji; Takata, Akira; Ii, Akira; and Ohiwa, Katsuhiko, 4,282,840, Cl. 123-412.000.

Takauji, Kiyomi: See—  
Obayashi, Nobuharu; Hashizume, Hikaru; Kameyama, Seiji; Ezawa, Sadaaki; Kondo, Tatsunori; Takauji, Kiyomi; and Aoyama, Tohru, 4,282,785, Cl. 84-1.010.

Takebayashi, Yoshiaki: See—  
Atsumi, Toshio; Takebayashi, Yoshiaki; and Okajima, Hideki, 4,283,422, Cl. 424-325.000.

Takeda, Masaaki: See—  
Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; Tsukamoto, Shinichi; Ito, Noriki; Isomura, Yasuo; and Takeda, Masaaki, 4,283,408, Cl. 424-270.000.

Takeda, Tashiro: See—  
Suganami, Takashi; Takeda, Tashiro; Nakayama, Tetsuya; Shimizu, Koh; and Manseki, Teruo, 4,282,933, Cl. 172-4.500.

Takeda, Toshio: See—  
Yamaga, Eiichi; Iio, Junji; Takeda, Toshio; Nakada, Akira; and Imamura, Akio, 4,282,788, Cl. 84-1.030.

Takenoya, Hideaki: See—  
Watanabe, Kazuo; Makabe, Hachiro; Kume, Toshiaki; Kakinuma, Toshihide; and Takenoya, Hideaki, 4,282,821, Cl. 112-158.00E.

Takeuchi, Hiroo, to Nissin Kogyo Kabushiki Kaisha. Negative pressure booster, 4,282,799, Cl. 91-369.00A.

Takigawa, Hiroyoshi; Miyamura, Nobuhiro; Ogawa, Hiroshi; and Ohkuni, Shinichiro, to Bridgestone Tire Co., Ltd. Pneumatic tire for heavy load vehicles, 4,282,914, Cl. 152-209.00D.

Takigawa, Shinichiro: See—  
Yoshimura, Masahito; Hoshiyama, Satoshi; Takamatsu, Hideki; Kobayashi, Hiroshi; and Takigawa, Shinichiro, 4,283,586, Cl. 585-512.000.

Taksony, Joseph G. Pin-tumbler-type lock having antipick security action, 4,282,731, Cl. 70-364.00A.

Tallien, Patrick: See—  
Andro, Jean; Bessouat, Roger; Cerdan, Jean-Pierre; and Tallien, Patrick, 4,283,206, Cl. 55-187.000.

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James, Kenneth; and Smith, Frederick J., 4,283,310, Cl. 260-23.0XA.

James, Kenneth; and Smith, Frederick J., 4,283,315, Cl. 260-23.0XA.



Tamura, Munetaka; and Natori, Minoru, to Citizen Watch Co., Ltd. Alarm timepiece. 4,283,782, Cl. 368-72.000.

Tamburelli, Giovanni, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Equalization system with reshaping filter. 4,283,788, Cl. 375-14.000.

Tamura, Hiroshi: See—  
Kuzuwata, Masayuki; Machida, Hazime; Tamura, Hiroshi; and Saito, Tadashi, 4,282,811, Cl. 101-451.000.

Tan, Engnam A.: See—  
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Tanaka, Junzo; Kai, Toshio; and Kurita, Hitoshi, to Matsushita Electric Industrial Co., Ltd. Cooking device with high-frequency heating means and resistance heating means. 4,283,614, Cl. 219-10.55R.

Tanaka, Koji: See—  
Iwashita, Toru; Nagano, Mineo; and Tanaka, Koji, 4,283,518, Cl. 526-237.000.

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Tapp, Robert H.; and Wall, Clarence W., to Rudin & Roth, Inc. Knee protective sock. 4,282,728, Cl. 66-182.000.

Tarbouriech, Jean-Claude, to Motorola, Inc. Low power CMOS oscillator. 4,283,690, Cl. 331-111.000.

Tarr, Allan L. Detachable jet propulsion unit for water craft and method of cyclic propulsion. 4,283,179, Cl. 440-38.000.

Tatsumi, Tetsuo, to Murata Manufacturing Co., Ltd. Variable capacitor. 4,283,751, Cl. 361-293.000.

Tavolek, Inc.: See—  
Johnson, Keith A., 4,282,828, Cl. 119-3.000.

Tazuma, James J.: See—  
Frech, Kenneth J.; and Tazuma, James J., 4,283,373, Cl. 423-226.000.

Tchang, Liang-ing, to LITA. Electronically controlled power supply rail. 4,283,636, Cl. 307-38.000.

Teague, Edward W.; Hance, Max H.; and Neal, Carl R., to Burlington Industries, Inc. Brushed stretch denim fabric and process therefor: indigo dyeing. 4,283,194, Cl. 8-494.000.

Technalytics Inc.: See—  
Chodorow, Ingram S.; and Hall, Richard, 4,282,871, Cl. 128-207.180.

Technicare Corporation: See—  
Gardineer, Bayard G.; and Lettler, George W., 4,282,755, Cl. 73-634.000.

Gardineer, Bayard G.; Heringes, James A.; and Mandel, Paul, 4,282,880, Cl. 128-660.000.

Technicon Instruments Corporation: See—  
Masson, Pierre L.; and Heremans, Joseph F., 4,283,383, Cl. 424-12.000.

Tektronix, Inc.: See—  
Mossmann, Ralph A.; and Stieger, Kenneth R., 4,283,655, Cl. 313-462.000.

Philipp, Harald, 4,283,713, Cl. 340-347.0SH.

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Stewart, Robert C., 4,283,770, Cl. 364-757.000.

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Delavarenne, Serge Y.; Dubreux, Bernard; and Tellier, Pierre, 4,283,345, Cl. 260-369.000.

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Terasaki, Shiro: See—  
Nagatomo, Hiroto; Takagaki, Tetsuya; Seki, Hisao; Terasaki, Shiro; and Horimuki, Hitoshi, 4,282,825, Cl. 118-58.000.

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Texaco Inc.: See—  
Meyer, Herbert J.; and Smitherman, Thomas L., 4,283,778, Cl. 367-58.000.

Nebzydoski, John W.; and Patmore, Edwin L., 4,283,296, Cl. 252-49.900.

Pitts, Robert W., Jr.; Arnold, Dan M.; and Paap, Hans J., 4,282,760, Cl. 73-861.020.

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Martinez, Anthony, 4,283,739, Cl. 358-24.000.

Richardson, Phillip N., 4,283,729, Cl. 343-854.000.

Roques, Rodney A.; and Wakefield, Gene F., 4,283,247, Cl. 156-601.000.

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Th. Goldschmidt AG: See—  
Fenner, Jürgen, 4,283,377, Cl. 423-419.00P.

Koerner, Gutz; Nickel, Friedhelm; and Schmidt, Gunter, 4,283,191, Cl. 8-128.00A.

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Chow, Wai Y.; Hurley, Daniel J.; Rea, James H.; and Thackaberry, S. Paul, 4,283,551, Cl. 560-86.000.

THERA Gesellschaft für Patentverwertung mbH: See—  
Dietze, Günther; and Wicklmayr, Matthias, 4,283,392, Cl. 424-177.000.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Track working machine with a ballast plow arrangement. 4,282,663, Cl. 37-104.000.

Thiele, Arthur M.; and Fabert, Herman A., Jr., to Abex Corporation. Dipper door retainer. 4,282,664, Cl. 37-118.00R.

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Engel, Jürgen; Kleemann, Axel; Stroman, Fritz; and Thiemer, Klaus, 4,283,405, Cl. 424-267.000.

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Reed, Russell, Jr.; and Price, Raymond M., 4,283,237, Cl. 149-19.910.

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Piasceki, Raymond F.; and Kun, Ted L. C., 4,283,593, Cl. 174-36.000.

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Wood, John C.; and Thompson, Charles W., 4,282,671, Cl. 42-75.00A.

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Martel, Jacques; and Famin, Roger, 4,283,727, Cl. 343-710.000.

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Tidwell, Hubert. Narrow track economy motor vehicle. 4,283,074, Cl. 280-772.000.

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Comer, Robert C.; and Tillotson, Henry B., 4,282,653, Cl. 30-276.000.

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Horan, Douglas F., 4,283,784, Cl. 368-87.000.

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Toko, Inc.: See—  
Koiki, Tsutomu, 4,283,759, Cl. 363-19.000.

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Hongu, Masayuki; Ohmuro, Shigeru; and Tokuhara, Masaharu, 4,283,792, Cl. 455-192.000.

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Kunii, Yutaka; Shimoi, Toshikuni; and Tsutsumi, Masaaki, 4,282,879, Cl. 128-660.000.

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Koizumi, Hisao; Kawada, Yoshinosuke; and Matsui, Koichi, 4,282,860, Cl. 126-429.000.

Tom, Dale M. Carpenter's surface protecting tool. 4,282,615, Cl. 7-164.000.

Tomcufcik, Andrew S.; Wright, William B., Jr.; and Marsico, Joseph W., Jr., to American Cyanamid Company. 2,3-Disubstituted-2,3,6,7,8,9-hexahydro-5H-thiazolo[3,2-a]-[1,3]diazocin-3-ols. 4,283,334, Cl. 260-245.500.

Tomlinson, Alan D.: See—  
Becker, Gert; Oesch, Johann U.; Poeselt, Horst; Tomlinson, Alan D.; and Walz, Kurt, 4,283,299, Cl. 252-90.000.

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Lang, Philip C., 4,283,556, Cl. 564-144.000.

Toray Silicone Company, Ltd.: See—  
Mikami, Ryuzo, 4,283,513, Cl. 525-476.000.

Toro Company, The: See—  
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Totani, Shinzo; and Kato, Takaaki, to Nippondenso Co., Ltd. Electric control apparatus for automatic transmissions. 4,282,780, Cl. 74-866.000.

Towson, Howard E.: See—  
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Toyo Seikan Kaisha, Ltd.: See—  
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Toyo Soda Manufacturing Co., Ltd.: See—  
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Toyota Jidosha Kogyo Kabushiki Kaisha: See—  
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Matsunami, Muneharu; Saito, Toshio; Yoshida, Akio; and Inokuchi, Nobuyuki, 4,283,076, Cl. 280-806.000.

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Tracy, John M., to United States of America, Air Force. Modulator multilayer detector. 4,283,755, Cl. 361-393.000.

Tracy, Wayne R. Tool for retaining and releasing ringed elements. 4,283,082, Cl. 294-15.000.

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Trimmer, Paul A., to Amerace Corporation. Self-locking nut and manufacture and component therefor. 4,282,913, Cl. 411-303.000.

Trimmer, William S. N.: See—  
Beckerman, Howard L.; and Trimmer, William S. N., 4,283,659, Cl. 315-161.000.

Triplex Safety Glass Company Limited: See—  
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Troller Corporation: See—  
Neary, Joseph F., 4,282,672, Cl. 43-43.130.

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Howell, Carl J., Jr.; Trott, David W.; and Riley, Jesse L., 4,282,890, Cl. 131-332.000.

Trotta, Robert A., to Gillette Company, The. Razor blade assembly. 4,282,650, Cl. 30-47.000.

Trotta, Robert A., to Gillette Company, The. Razor handle. 4,282,651, Cl. 30-89.000.

True, Thomas T.: See—  
Orser, David A.; Towson, Howard E.; and True, Thomas T., 4,283,120, Cl. 350-361.000.

Trumpy, J. Walter. Wind power system. 4,282,944, Cl. 180-2.00A.

TRW Inc.: See—  
Jones, Robert J., 4,283,521, Cl. 528-117.000.

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Tsui, Kwok W., to Arco Industries, Ltd. Toy to simulate heartbeats and a stethoscope. 4,282,678, Cl. 46-175.00R.

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Horide, Fumio; and Tsuji, Kozo, 4,283,222, Cl. 71-120.000.

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Tsukanishi, Kenji: See—  
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Tsunekawa, Tokuchi; Masunaga, Makoto; Hosoe, Kazuya; Niwa, Yukichi; Owada, Mitsutoshi; and Asano, Noriyuki, to Canon Kabushiki Kaisha. Image scanning system. 4,283,137, Cl. 356-4.000.

Tsunoda, Yoshito: See—  
Miyachi, Toshimitsu; and Tsunoda, Yoshito, 4,283,785, Cl. 369-116.000.

Tsutsui, Nobuhiro; Takao, Seiji; and Murase, Ichiki, to Japan Exlan Company Ltd.; and Sumitomo Chemical Company, Ltd. Process for producing polyacrylonitrile reverse osmotic membranes. 4,283,359, Cl. 264-22.000.

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Tuomala, Leon A. Hand operable emergency signaling device. 4,283,169, Cl. 431-359.000.

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Turner, Norman L., to Varian Associates, Inc. Beam scanning and method of use for ion implantation. 4,283,631, Cl. 250-492.00B.

Turnock, Frederick A., to Service (Engineers) Limited. Off-set screen-printing machine for decorating ceramic ware. 4,282,807, Cl. 101-41.000.

Tweed, Dennis O. Animal observatory and toy apparatus. 4,282,829, Cl. 119-19.000.

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Nalbandian, A. Eugene; and Sullivan, James P., 4,283,757, Cl. 362-120.000.

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Udovich, Carl A.; and Meyers, Bernard L., to Standard Oil Company (Indiana). Oxidation of butane to maleic anhydride. 4,283,288, Cl. 252-437.000.

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Imanaka, Hiroshi; Hosoda, Junzi; Jomon, Kazuyoshi; Sakai, Heiichi; Ueda, Ikuro; and Morino, Daizou, 4,283,492, Cl. 435-47.000.

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Umamoto, Masuo: See—  
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Union Carbide Corporation: See—  
Armstrong, George H.; Gerkin, Richard M.; and Critchfield, Frank E., 4,283,500, Cl. 521-137.000.

Billig, Ernst; and Buoning, Donald L., 4,283,562, Cl. 568-454.000.

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Union Oil Company of California: See—  
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Keim, Karl-Heinz; Klauf, Reinhard; and Meisenburg, Ewald, 4,283,571, Cl. 568-783.000.

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United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Energy in Her Britannic Majesty's Government of the: See—  
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United Merchants and Manufacturers, Inc.: See—  
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United States Gypsum Company: See—  
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Air Force: See—  
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Madey, John M. J.; Elias, Luis R.; and Smith, Todd I., 4,283,687, Cl. 331-94.5PE.

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McLandrich, Matthew N., 4,283,144, Cl. 356-350.000.  
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Scott, Robert J., 4,283,768, Cl. 364-607.000.  
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Walton, Theodore R., 4,283,557, Cl. 564-272.000.  
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Wooden, Bruce J.; and Edelman, Seymour, 4,283,461, Cl. 428-422.000.  
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U.S. Environmental Protection Agency: See—  
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U.S. Philips Corporation: See—  
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Fujado, Peter R., 4,283,568, Cl. 568-754.000.  
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Sih, John C., 4,283,351, Cl. 564-189.000.  
Sih, John C., 4,283,552, Cl. 560-121.000.  
Sih, John C., 4,283,558, Cl. 564-305.000.  
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Tabakov, Vladimir P.; Kornev, Boris P.; Buchenkov, Leonid N.; Gorbunov, Andrei T.; Kaschavtsev, Vladilen E.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Obrezkov, Alexandr I.; Vakhitov, Gadel G.; Bulgakov, Rishad T.; Maximov, Vladimir P.; Maxutov, Rafkhat A.; Shniel'man, Alexandr I.; Dobroskok, Boris E.; Asfandiyarov, Khalim A.; and Fatkullin, Airat K., deceased, 4,283,088, Cl. 299-2.000.  
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van der Lely, Cornelis. Torque converter, 4,282,774, Cl. 74-690.000.  
Vanderpool, Clarence D.; and MacInnis, Martin B., to GTE Products Corporation. Process for preparing ammonium metatungstate, 4,283,257, Cl. 204-86.000.  
Vanderpool, Clarence D.; and McClintic, Robert P., to GTE Products Corporation. Recovery of tungsten from heavy metal alloys, 4,283,258, Cl. 204-102.000.  
Van Dest, Jean-Claude, to Massey-Ferguson Inc. Transmission having a two-speed planetary gear set, 4,282,775, Cl. 74-740.000.  
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van Mal, Harmannus H.; van Esveld, Hendrik A.; van Wieringen, Johannes S.; and Buschow, Kurt H. J., 4,283,226, Cl. 75-175.500.  
Van Herck, Andre J. B. M.; and Cornelissen, Gerardus A. P. M., to U.S. Philips Corporation. Gas discharge lamp having supporting tongue formed from electrode feedthrough, 4,283,652, Cl. 313-217.000.  
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van Mal, Harmannus H.; van Esveld, Hendrik A.; van Wieringen, Johannes S.; and Buschow, Kurt H. J., to U.S. Philips Corporation. Method of preparing titanium iron-containing material for hydrogen storage, 4,283,226, Cl. 75-175.500.  
van Raalte, John A., to RCA Corporation. Modular tube shadow mask support system, 4,283,654, Cl. 313-422.000.  
Van Scott, Eugene J.; and Yu, Rucy J. Method for hair care, 4,283,386, Cl. 424-70.000.  
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Venale, Thomas C. Telescope guiding system, 4,283,112, Cl. 350-80.000.  
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Vidic, Hans-Jorg, to Schering Aktiengesellschaft. Process for the preparation of heparin, 4,283,530, Cl. 536-21.000.  
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- Voirin, Robert; Mathieu, Pierre; and Chambu, Claude, to Societe Nationale Elf Aquitaine (Production). Process and installation for desulphurizing gases containing SO<sub>2</sub>, 4,283,380, Cl. 423-574.00R.  
Voith Turbo GmbH & Co. KG: See—  
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von Beckmann, Helmuth, to Canon Corp. Railroad tamping machine, 4,282,815, Cl. 104-12.000.  
von Bittera, Miklos; Voegel, Herbert; and Bauditz, Reinwald, to Bayer Aktiengesellschaft. Medicated animal feed based on liver meal, 4,283,400, Cl. 424-250.000.  
von Gutfeld, Robert J.: See—  
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von Stein, Walter; and Fetzer, Gunter, to Erwin Sick Gesellschaft mit beschränkter Haftung Optik-Elektronik. Reading apparatus for reading colored markings applied to objects, 4,283,623, Cl. 235-465.000.  
Voorthuyzen, Peter. Counter pressure system for stringed instruments, 4,282,792, Cl. 84-295.000.  
Voronkov, Mikhail G.; Platonova, Ada T.; Simbirtsev, Nikolai L.; Dyakov, Valery M.; Dyban, Andrei P.; and Kuznetsov, Igor G. Preparation for raising the fertility of animals, 4,283,419, Cl. 424-316.000.  
Vrillon, Bernard, to Commissariat a l'Energie Atomique. Device for stopping a leak in a straight portion of a heat-exchanger tube, 4,283,615, Cl. 219-66.000.  
W. L. Gore & Associates, Inc.: See—  
Bowman, Jeffery B., 4,283,448, Cl. 428-36.000.  
W. R. Grace & Co.: See—  
Fowler, Stephen L., 4,283,630, Cl. 250-492.00B.  
Peckna, Andres, 4,282,998, Cl. 226-97.000.  
Wachi, Masatada, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument, 4,282,790, Cl. 84-1.210.  
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Wakefield, Gene F.: See—  
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Walborn, Richard M., to Norlin Industries, Inc. Electronic musical instrument simultaneously operable in monophonic and polyphonic modes, 4,282,787, Cl. 84-1.010.  
Weld Manufacturing Co., Inc.: See—  
Humlong, Robert F., 4,282,993, Cl. 224-31.000.  
Walker, Leon: See—  
Parker, Herman; Walker, Leon; and Berry, Howard S., 4,283,053, Cl. 273-86.00D.  
Wall, Clarence W.: See—  
Tapp, Robert H.; and Wall, Clarence W., 4,282,728, Cl. 66-182.000.  
Walsh, James L.: See—  
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Walt Disney Productions: See—  
Snyder, R. David; Iwerks, Donald W.; Otto, Robert R.; Richardson, Lee R.; and English, David S., 4,283,766, Cl. 364-525.000.  
Walton, Theodore R., to United States of America, Navy. Acetylene-terminated dianil monomer and the polymer therefrom, 4,283,557, Cl. 564-272.000.  
Walz, Kurt: See—  
Becker, Gert; Oesch, Johann U.; Poeselt, Horst; Tomlinson, Alan D.; and Walz, Kurt, 4,283,299, Cl. 252-90.000.  
Wamy Corporation: See—  
Abe, Yoichi, 4,282,677, Cl. 46-118.000.  
Wandrack, Joseph, to United States of America, Navy. Fiber optic light valve, 4,283,114, Cl. 350-96.200.  
Warnicke, Allen E. Archery bow with arrow guide apparatus, 4,282,850, Cl. 124-24.00R.  
Warren, John B.: See—  
Davies, William D.; Skelthorne, Graham G.; and Warren, John B., 4,283,480, Cl. 430-270.000.  
Watanabe, Kazuo; Makabe, Hachiro; Kume, Toshiaki; Kakinuma, Toshihide; and Takemura, Hideaki, to Janome Sewing Machine Co., Ltd. Electronic control system for sewing machines, 4,282,821, Cl. 112-158.00E.  
Watanabe, Tomoyoshi: See—  
Hanazono, Masami; Watanabe, Tomoyoshi; Nakai, Toshio; Kuzuya, Susumu; Asai, Akira; Iwase, Takayuki; Nakamura, Kazuo; and Onoda, Hiroshi, 4,283,150, Cl. 400-666.000.  
Watanabe, Tsuyoshi: See—  
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Watase, Kazumi: See—  
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Waters Associates, Inc.: See—  
Carson, William W., 4,283,140, Cl. 356-130.000.  
Waters Instruments, Inc.: See—  
Burton, Thomas A., 4,283,099, Cl. 312-351.000.  
Watine, Didier J. M.: See—  
Vidakovits, Lajos J.; and Watine, Didier J. M., 4,283,596, Cl. 174-84.00R.  
Watkins, Kenneth R.; and Bolind, Michael L., to United States Gypsum Company. Free-flowing granular urea nutrient supplements, 4,283,423, Cl. 426-69.000.  
Watteredge-Uniflex, Inc.: See—  
Halter, Matthew R., 4,283,678, Cl. 324-140.00R.  
Wayne Gossard, Inc.: See—  
Wilkins, Donald L., 4,282,726, Cl. 66-172.00E.  
Weatherly Foundry & Manufacturing Co.: See—  
Smith, William J., 4,283,015, Cl. 241-5.000.  
Webber, J. R.: See—  
Hay, Lloyd F.; Rica, Albert F.; and Webber, J. R., 4,282,925, Cl. 165-94.000.  
Weber, Andreas; and Schaefer, Manfred, to Daimler-Benz Aktiengesellschaft. Passenger motor vehicle with a tank arranged behind the rear seats, 4,283,067, Cl. 280-5.00A.  
Webster, Milo E.: See—  
Cormier, Alan D.; Webster, Miln E.; Czaban, John D.; Silverman, Neil D.; and Noble, Lynn W., 4,283,262, Cl. 204-195.00M.  
Weetman, David: See—  
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Weigel, Horst: See—  
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Weimer, Dean R.; and Starks, Charles M., to Conoco, Inc. Chemicals for termination of polyvinylchloride polymerizations, 4,283,514, Cl. 526-84.000.  
Weiss, John A., to Jersey Nuclear-Avco Isotopes, Inc. Beam combiner, 4,283,116, Cl. 350-174.000.  
Weiss, Richard: See—  
Spiellau, Paul; Putz, Peter; Weiss, Richard; and Schraube, Hansfritz, deceased, 4,282,697, Cl. 52-746.000.  
Wenghoefer, Johann; Messier, Dennis G.; and Thompson, James E., to American Hoechst Corporation. Process for coloring fiber materials with azo dyestuff containing —SO<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>OSO<sub>2</sub>H and —N(CH<sub>2</sub>CH<sub>2</sub>OSO<sub>2</sub>H)<sub>2</sub> groups, 4,283,196, Cl. 8-531.000.  
Werner, Franz, to U.S. Philips Corporation. Magnetic tape cassette, 4,283,026, Cl. 242-199.000.  
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Best, Ijsbrand, 4,283,232, Cl. 127-71.000.  
West, Charles R.; and Hong, Chung L., to Research Corporation. Cytotoxic nucleoside-corticosteroid phosphodiester, 4,283,394, Cl. 424-182.000.  
Western Electric Co., Inc.: See—  
Banks, Kristen E.; Johnson, Anderson F., Jr.; Large, Donald M.; and Reinhard, Fred J., 4,282,908, Cl. 140-147.000.  
Bauer, William A.; Frohlich, Charles R., Jr.; Griffin, Raymond H.; and Henderson, Joseph O., 4,283,020, Cl. 242-25.00R.  
Dick, Bernard M., 4,282,744, Cl. 73-49.300.  
Griffin, Rodney B.; and Swenson, William A., 4,283,100, Cl. 339-19.000.  
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Petree, Edwyn H., 4,282,644, Cl. 29-566.300.  
Zelins, Ronald P., 4,282,951, Cl. 182-221.000.  
Westinghouse Electric Corp.: See—  
Adam, John D., 4,283,692, Cl. 333-17.00L.  
Hummert, George T.; Garrett, Randall M.; and Schultz, Roy D., 4,283,651, Cl. 310-223.000.  
Johnston, Paul M., 4,283,772, Cl. 364-900.000.  
Livera, Phillip A., 4,283,214, Cl. 65-70.000.  
Molnar, Albert J.; Wolff, Fred H.; and Ramey, Donald G., 4,282,756, Cl. 73-650.000.  
Yannone, Robert A.; and Reed, Terry J., 4,283,634, Cl. 290-40.00R.  
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Westvaco Corporation: See—  
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Westworld Enterprises: See—  
Gallagher, Donald A., 4,283,084, Cl. 296-78.100.  
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Whirlpool Corporation: See—  
Brightman, Ben W., 4,283,607, Cl. 200-38.00R.  
Whisenunt, Kelsie C. Motorized attachment for a fishing reel, 4,283,025, Cl. 242-84.10A.  
White, William L., to Joyce, Patrick H., a part interest. Sample holder/dispenser, 4,283,000, Cl. 229-17.00B.



- Wichman, Paul E.: See—  
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- Wicklmayr, Matthias: See—  
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- Widmer, Erich: See—  
Broger, Emil A.; Cramer, Yvo; Leuenberger, Hans G. W.; Widmer, Erich; and Zell, Reinhard, 4,283,559, Cl. 568-11.000.
- Wieber, Karl; Janke, Heinrich; Kraft, Winfried; and Lisfeld, Robert, to Ernst Leitz Wetzlar GmbH. Microscope stand with protected turret, 4,283,111, Cl. 350-39.000.
- Wilke, William H., to Boeing Company. The Adjustable wedge fitting for sharing the thrust load of a jet engine, 4,283,028, Cl. 244-54.000.
- Wilkes, John B., to Chevron Research Company. Hydrogenation process, 4,283,581, Cl. 568-864.000.
- Wilkesmann, Helmut, to Krauss-Maffei Aktiengesellschaft. Centrifuge with product accelerator, 4,283,286, Cl. 210-365.000.
- Wilkins, Donald L., to Wayne Gossard, Inc. Anti-slip footlet sock, 4,282,726, Cl. 66-172.00E.
- Willard, Stephen F.: See—  
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- Wm. D. Peterson & Associates: See—  
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- William H. Rorer, Inc.: See—  
Diamond, Julius; and Zalipsky, Jerome J., 4,283,555, Cl. 564-53.000.
- Williams, Brian; and Kratsas, Richard. Quick opening window for trailers and mobile homes, 4,282,685, Cl. 49-141.000.
- Williams, Burch I.: See—  
Hulber, Clarence E., Jr., 4,282,988, Cl. 222-184.000.
- Williams, David E.: See—  
Lucero, Andres R.; Williams, David E.; and Nelson, James L., 4,283,709, Cl. 340-147.00R.
- Williams, David G.; and Harris, Paul A., to Lucas Industries Limited. Liquid level sensing circuit, 4,283,719, Cl. 340-620.000.
- Williams, David M.: See—  
Grubb, Lawrence B.; Simpson, Danny E.; Hoffman, Louis S.; and Williams, David M., 4,282,679, Cl. 46-193.000.
- Williams, Donald F.; and Phy, Charles L. Method for forming paper boxes and the like, 4,283,190, Cl. 493-131.000.
- Williamson, Alexander S.: See—  
Prats, Michael; and Williamson, Alexander S., 4,282,750, Cl. 73-155.000.
- Willis, David L.: See—  
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- Wilson, David G.: See—  
Forrestall, Richard J.; and Wilson, David G., 4,283,070, Cl. 280-274.000.
- Wilson, John E.; and Hengen, Edward J., to Deere & Company. Feeder house for a crop harvester, 4,282,703, Cl. 56-14.600.
- Wilson, Ronald A., to Microwave Development Laboratories. Interlocked waveguide assembly, 4,282,649, Cl. 29-600.000.
- Winchell, David A., to Baxter Travenol Laboratories, Inc. Plastic hanger for containers, 4,282,980, Cl. 215-100.00A.
- Windisch, Anthony J. Electronic amusement apparatus and circuit, 4,283,052, Cl. 273-85.00G.
- Winfred M. Berg, Inc.: See—  
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- Wingter, Conrad C.; and Bassett, J. Thomas, to Marq Packaging Systems, Inc. H-section carton forming machine, 4,283,188, Cl. 493-89.000.
- Winter, Hermann: See—  
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- Winter, Roland A. E.: See—  
Dexter, Martin; and Winter, Roland A. E., 4,283,327, Cl. 260-45.8NT.
- Winters, William C.; Chang, Hsien-Hsin; Anderson, George R.; Easter, Ross A.; and Sholl, Jeffrey J., to Pillsbury Company. The Microwave heating package, method and susceptor composition, 4,283,427, Cl. 426-107.000.
- Witek, Stanislaw; Grobelny, Damian; Ptaszkowska, Janina; Bielecki, Andrzej; Bakuniak, Edmund; Fulde, Stefan; and Gorska-Poczopko, Jadwiga. Parasticide, 4,283,399, Cl. 424-248.400.
- Witt, Walter: See—  
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- Wittmer, Dale E.: See—  
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- Wize, Gary A., to General Motors Corporation. Passive occupant shoulder belt, 4,283,075, Cl. 280-804.000.
- Wohlfeil, Gerhard, to Jagenberg-Werke AG. Apparatus for regulation of the coating thickness in the coating of continuous webs of material, 4,282,826, Cl. 118-118.000.
- Wohlman, Alan: See—  
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- Wolf, Elmar: See—  
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- Wolfe, Terry W.: See—  
Miller, Douglas C.; and Wolfe, Terry W., 4,283,168, Cl. 425-465.000.
- Wolff, Fred H.: See—  
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- Wood, John C.; and Thompson, Charles W., to Olin Corporation. Bolt-on fore stock, 4,282,671, Cl. 42-75.00A.
- Wooden, Bruce J.; and Edelman, Seymour, to United States of America. Navy. Piezoelectric polymer antifouling coating, 4,283,461, Cl. 428-422.000.
- Woolston, A. Brent; and Evans, Donald J., to Molins Machine Company, Inc. Stacker conveyor run separation control, 4,283,185, Cl. 493-15.000.
- Wooten, Richard M.; and Herroo, Jake, Jr., to United States of America. Army. Individual lead pull test for beam leaded devices, 4,282,758, Cl. 73-827.000.
- Wostbrock, Gert: See—  
Hogenkamp, Wilhelm; and Wostbrock, Gert, 4,282,964, Cl. 198-358.000.
- Wright, Roy F., to Phillips Petroleum Co. Polyphenylene oxide blending, 4,283,503, Cl. 525-89.000.
- Wright, William B., Jr.: See—  
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- Wuerzer, Bruno: See—  
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- Xerox Corporation: See—  
Andrews, Ronald A., 4,282,827, Cl. 118-648.000.
- Curry, Donald J.; Knight, Gordon R.; and Kowalski, Daniel C., 4,283,777, Cl. 369-32.000.
- Daughton, John W.; Gillett, Kenneth; and Nelson, Frank M., 4,283,773, Cl. 364-900.000.
- Yajima, Seishi; Okamura, Kiyohito; and Hasegawa, Yoshio, to Research Institute for The Foundation: Special Inorganic Materials. The Method of producing silicon carbide fibers, 4,283,376, Cl. 423-345.000.
- Yamada, Kenji; Takata, Akira; Ii, Akira; and Ohiwa, Katsuhiko, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with altitude compensation device, 4,282,840, Cl. 123-412.000.
- Yamada, Kenji: See—  
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- Yamada, Masashi: See—  
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- Yamada, Yujiro: See—  
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- Yamaga, Eiichi; Iio, Junji; Takeda, Toshio; Nakada, Akira; and Imamura, Akio, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with automatic chord performance device, 4,282,788, Cl. 84-1.030.
- Yamaguchi, Noboru: See—  
Kita, Yuzo; Yamaguchi, Noboru; Shibukawa, Masaru; and Minorikawa, Kazuo, 4,283,760, Cl. 364-200.000.
- Yamamoto, Ray. Seed plate, 4,282,985, Cl. 221-254.000.
- Yamamura, Masahiro: See—  
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- Yamanouchi Pharmaceutical Co., Ltd.: See—  
Hirata, Yasufumi; Yanagisawa, Isao; Ishii, Yoshio; Tsukamoto, Shinichi; Ito, Noriki; Isomura, Yasuo; and Takeda, Masaaki, 4,283,408, Cl. 424-270.000.
- Yamasaki, Koyu; and Iino, Yousuke, to Mitsubishi Jukogyo Kabushiki Kaisha. Method of making metal gaskets, 4,282,643, Cl. 29-527.200.
- Yamato, Motoyuki; and Natsuume, Tadao, to Nippon Zeon Co. Ltd. Process for producing liquid dibasic acid anhydrides, 4,283,343, Cl. 260-346.300.
- Yamauchi, Shin: See—  
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- Yamauchi, Takashi; and Nanbu, Hirofumi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for the production of  $\alpha$ -tetralone, 4,283,352, Cl. 568-311.000.
- Yamazaki, Haruo; Matsumoto, Masaharu; and Kimura, Shigeru, to Nifco Inc.; and Ohi Seisakusho Co., Ltd. Apparatus for connection of operating rod, 4,283,155, Cl. 403-163.000.
- Yanagisawa, Isao: See—  
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- Yang, An T.; and Hsia, Lih M., to University of California, The Regents of the. Multi-stage Geneva mechanism, 4,282,778, Cl. 74-820.000.
- Yannone, Robert A.; and Reed, Terry J., to Westinghouse Electric Corp. System and method for monitoring and controlling operation of industrial gas turbine apparatus and gas turbine electric power plants preferably with a digital computer control system, 4,283,634, Cl. 290-40.00R.
- Yates, Barrie J.; and Hurst, Ronald C., to Cabot Corporation. Production of high surface area carbon blacks, 4,283,378, Cl. 423-456.000.
- Yerushalmi, Moshe, to Scitec Corporation Ltd. Spirometers, 4,282,883, Cl. 128-726.000.
- Yokohama Rubber Co., Ltd.: See—  
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- Yokooku, Katsuhiko: See—  
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- Yokosuka Boat Kabushiki Kaisha: See—  
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- Yolles, Seymour, to University of Delaware. Anticancer agents and methods of manufacture, 4,283,342, Cl. 260-345.100.
- Yoneda, Kenji: See—  
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- Yonehara, Kiyoshi: See—  
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- Yonekubo, Ken, to Olympus Optical Co., Ltd. Optical system for discussion-microscope, 4,283,110, Cl. 350-33.000.
- Yoshida, Akio: See—  
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- Yoshida Kogyo K.K.: See—  
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- Yoshida, Masatoshi: See—  
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- Yoshida, Yoshinori; and Oka, Hiroshi, to Japan Synthetic Rubber Co., Ltd. Process for producing diol, 4,283,579, Cl. 568-857.000.
- Yoshimura, Masahito; Hoshiyama, Satoshi; Takamatsu, Hideki; Kobayashi, Hiroshi; and Takigawa, Shinichiro, to Nissan Chemical Industries, Ltd. Process for dimerizing or codimerizing lower monolefin, 4,283,586, Cl. 585-512.000.
- Yoshino, Iwamoto: See—  
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- Yoshioka, Mitsuru; Hamashima, Yoshio; and Nagata, Wataru, to Shionogi & Co., Ltd.  $\alpha$ -(4-Oxoazetidin-1-yl)-acetic acid compounds useful as intermediates in preparing 1-oxadethiacephalosporins, 4,283,333, Cl. 260-239.00A.
- Young, Alastair J.; and Burke, John P., to Automotive Products Limited. Fluid pressure actuator, 4,282,800, Cl. 92-37.000.
- Young, Chi C.; and DeMaria, Francesco, to American Cyanamid Company. Process for melt-spinning acrylonitrile polymer fiber using vertically disposed compression zone, 4,283,365, Cl. 264-206.000.
- Young, Lewis B., to Mobil Oil Corporation. Long-chain alkylphenols, 4,283,573, Cl. 568-794.000.
- Young, Prussin, MGK, J.V.: See—  
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,283,387, Cl. 424-78.000.
- Young, Richard E., to Valve Engineering Service Corp. Freeze-proof, pollution free valve, 4,282,895, Cl. 137-281.000.
- Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., to Young, Prussin, MGK, J.V. Adherent controlled release pesticide, 4,283,387, Cl. 424-78.000.
- Yu, Kenneth K.; Bohr, Mark T.; and Seidenfeld, Mark B., to Intel Corporation. CMOS process, 4,282,648, Cl. 29-571.000.
- Yu, Ruey J.: See—  
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- Yuan, Mary W.; and Birney, Sharon R., to General Foods Corporation. Process for preparing low fat content potato chips and product thereof, 4,283,425, Cl. 426-102.000.
- Yuasa Battery Co. Ltd.: See—  
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- Yuichi, Shirasaki: See—  
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- Zalipsky, Jerome J.: See—  
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- Zambon, Antonio. Bridge crane for the emplacement of elongate prefabricated members of structures spanning a multiplicity of spaced-apart supports, 4,282,978, Cl. 212-205.000.
- Zangenfeind, Helmut, to AGFA-Gevaert Aktiengesellschaft. Apparatus for removing exposed films and backing strips from cassettes, 4,282,997, Cl. 226-91.000.
- Zappa, Oswald L.: See—  
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- Zarchy, Andrew S., to General Electric Company. Device and method for detecting alkali metals, 4,282,741, Cl. 73-23.000.
- Zaruba, John V., to Marvin Glass & Associates. Manually operated frequency changer on wheeled toy with LED's, 4,282,680, Cl. 46-227.000.
- Zebra Co., Ltd.: See—  
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- Zeilstra, Jacobus J.; de Klein, Willem J.; Bik, Joannes D.; and Vis, Jan, to Akzona Incorporated. Resin composition having improved internal and external lubricating properties employing branched chain high molecular weight ester derivatives of monocarboxylic acids, 4,283,314, Cl. 260-23.00A.
- Zelins, Ronald P., to Western Electric Company, Inc. Gaff guard for linemen's climbers, 4,282,951, Cl. 182-221.000.
- Zell, Reinhard: See—  
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- Zenker, Richard L., to Kelsey-Hayes Company. Load sensing transducer, 4,282,762, Cl. 73-862.520.
- Zidulka, Arnold, to Montreal General Hospital Research Inst. Apparatus for oxygen treatment, 4,282,869, Cl. 128-200.280.
- Ziegler, Bodo: See—  
Maurer, Helmut; Muller, Klaus; Rieger, Franz; Linder, Ernst; Dietz, Hermann; Fries, Karl-Hermann; and Ziegler, Bodo, 4,283,261, Cl. 204-195.00S.
- Ziklag Reinforced Plastics, Ltd.: See—  
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- Zimmerman, Abraham A., to Exxon Research & Engineering Co. Petroleum fuel composition containing an anti-haze additive, 4,283,203, Cl. 44-62.000.
- Zimmerman, George M., to Bon Aqua. Water filter, 4,283,283, Cl. 210-282.000.
- Zimmermann, Guenter. Liquid filling machine, 4,282,698, Cl. 53-282.000.
- Zindler, Hugh A. Drive transmission, 4,282,958, Cl. 192-17.00R.
- Zipser, Randall E., to Sperry Corporation. Material moving apparatus for a bale wagon, 4,282,969, Cl. 198-747.000.
- Zitzelsberger, Helmut, to Siemens Aktiengesellschaft. Automatic guidance system for radiation-responsive systems, 4,283,588, Cl. 136-246.000.
- Zortea, Michel: See—  
Boudenant, Pierre; Scholl, Heinz; and Zortea, Michel, 4,283,363, Cl. 264-171.000.
- Zucco, Louis, to Bourgeia, Roger. Rotary trench digging machine, 4,282,662, Cl. 37-94.000.
- Zuhone, Daniel M.; and Coleman, Mark S. Quick acting coupler for cultivator attachment, 4,282,936, Cl. 172-512.000.
- Zweifel, Hans; and Bellus, Daniel, to Ciba-Geigy Corporation. Photocrosslinkable polymers with side tricyclic imidyl groups, 4,283,509, Cl. 525-375.000.
- Zweigardt, Herbert: See—  
Gutlich, Karl-Friedrich; Kappus, Wolfgang; Zweigardt, Herbert; and Eckardt, Rudolf, 4,283,467, Cl. 429-51.000.



## LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF AUGUST, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Adomeit, Heinz-Dieter. Safety belt clamping device. Re. 30,707, Cl. 242-107.200.
- Bustos, Rafael T., to Leggett & Platt, Incorporated. Display rack with improved shelf assembly. Re. 30,706, Cl. 211-49.00D.
- Canon Kabushiki Kaisha: See—  
Moriyama, Kikuo, Re. 30,708, Cl. 350-465.000.
- Cherry, Thomas A.: See—  
Keller, Alex J.; Dellinger, Keith S.; Ray, James L.; Cherry, Thomas A.; and Fechner, Erhard A., Re. 30,702, Cl. 57-268.000.
- Dellinger, Keith S.: See—  
Keller, Alex J.; Dellinger, Keith S.; Ray, James L.; Cherry, Thomas A.; and Fechner, Erhard A., Re. 30,702, Cl. 57-268.000.
- Fechner, Erhard A.: See—  
Keller, Alex J.; Dellinger, Keith S.; Ray, James L.; Cherry, Thomas A.; and Fechner, Erhard A., Re. 30,702, Cl. 57-268.000.
- Hines, Charles E., to Outboard Marine Corporation. Soil aerating device. Re. 30,705, Cl. 172-22.000.
- Hughes, Lloyd M., to Lloyd M. Hughes Enterprises, Inc. Self-lighting cigarette having a protective cap. Re. 30,704, Cl. 131-351.000.
- JoPaul Industries, Inc.: See—  
Paulson, John K.; and Steffan, Walter J., Re. 30,703, Cl. 124-1.000.
- Keller, Alex J.; Dellinger, Keith S.; Ray, James L.; Cherry, Thomas A.; and Fechner, Erhard A. Doffer with pneumatic control system. Re. 30,702, Cl. 57-268.000.
- Leggett & Platt, Incorporated: See—  
Bustos, Rafael T., Re. 30,706, Cl. 211-49.00D.
- Lloyd M. Hughes Enterprises, Inc.: See—  
Hughes, Lloyd M., Re. 30,704, Cl. 131-351.000.
- Miller, George H.: See—  
Williams, Ben; and Miller, George H., Re. 30,701, Cl. 24-90.00R.
- Moriyama, Kikuo, to Canon Kabushiki Kaisha. Telephoto objective. Re. 30,708, Cl. 350-465.000.
- Outboard Marine Corporation: See—  
Hines, Charles E., Re. 30,705, Cl. 172-22.000.
- Paulson, John K.; and Steffan, Walter J., to JoPaul Industries, Inc. Ball throwing device with rotary wheel, and pad means for compressing a ball against the wheel. Re. 30,703, Cl. 124-1.000.
- Ray, James L.: See—  
Keller, Alex J.; Dellinger, Keith S.; Ray, James L.; Cherry, Thomas A.; and Fechner, Erhard A., Re. 30,702, Cl. 57-268.000.
- Steffan, Walter J.: See—  
Paulson, John K.; and Steffan, Walter J., Re. 30,703, Cl. 124-1.000.
- Williams, Ben; and Miller, George H. Button locking device. Re. 30,701, Cl. 24-90.00R.

## LIST OF DESIGN PATENTEEES

- Aarflot, Kjell. Cross country ski boot. 260,120, 8-11-81, Cl. D2-276.000.
- Acushnet Company: See—  
Giebel, Charles; Rambo, Charles D.; and Spencer, Gary, 260,160, Cl. D21-217.000.
- American Can Company: See—  
Elchhook, Frank, Jr.; and Schulz, Galyn A., 260,193, Cl. D59-2.00B.
- American Safety Razor Company: See—  
Chase, David O.; and Iten, Clemens A., 260,191, Cl. D28-46.000.
- Anderson, Lars, to HAFA Fabriks AB. Light fixture housing. 260,187, 8-11-81, Cl. D26-85.000.
- Appel, Mel; and Means, Paul B., to Appel, Mel. Toy fastener. 260,157, 8-11-81, Cl. D21-109.000.
- Automatic Liquid Packaging, Inc.: See—  
Pagels, Louis T., 260,178, Cl. D24-63.000.
- Bercu, Riffy. Garden hose coiling device. 260,134, 8-11-81, Cl. D8-358.000.
- Berg, Lennart, to Polarn Innovation Aktiebolag. Portable motor vehicular radio or similar article. 260,148, 8-11-81, Cl. D14-70.000.
- Bicenlo, Georges. Jewelry pendant. 260,140, 8-11-81, Cl. D11-79.000.
- Boschetti, Armando; and Swanson, David W., to Paul B. Elder Company. Phototherapy cabinet. 260,176, 8-11-81, Cl. D24-39.000.
- Boykin, Harvey L., Jr. Hair arranger. 260,188, 8-11-81, Cl. D28-10.000.
- Breneman, Jack L., to Quaker Oats Company. The Toy crane truck. 260,158, 8-11-81, Cl. D21-131.000.
- Bridgestone Tire Co., Ltd.: See—  
Takigawa, Hiroyoshi; and Kojima, Hiroshi, 260,142, Cl. D12-142.000.
- Broken Hill Proprietary Company Limited. The: See—  
Revill, Peter L., 260,136, Cl. D9-438.000.
- Buck, Robert L. Theater building. 260,179, 8-11-81, Cl. D25-11.000.
- Busse, Darrell L. Artificial candle. 260,186, 8-11-81, Cl. D26-11.000.
- Cable, Richard B.; and Cable, Willie D. Infant carrier. 260,121, 8-11-81, Cl. D3-31.000.
- Cable, Willie D.: See—  
Cable, Richard B.; and Cable, Willie D., 260,121, Cl. D3-31.000.
- Carl Schleicher & Schull GmbH & Co., KG: See—  
Hein, Wolfgang; and Grundmann, Peter, 260,175, Cl. D24-21.000.
- Carroll, James C.; and Johnson, Lewis T., to Phillips Petroleum Company. Bakery tray or similar article. 260,194, 8-11-81, Cl. D99-44.000.
- Chapman, Darwin E.; and Zeisler, James M. Photographic timer. 260,138, 8-11-81, Cl. D10-40.000.
- Chase, David O.; and Iten, Clemens A., to American Safety Razor Company. Disposable razor. 260,191, 8-11-81, Cl. D28-46.000.
- Cordia Dow Corp.: See—  
Geel, Zane H., 260,174, Cl. D24-21.000.
- Corning Glass Works: See—  
Rothstein, Estelle G., 260,126, Cl. D7-39.000.
- Rothstein, Estelle G., 260,127, Cl. D7-39.000.
- Cornwall, Kenneth R., to Ken-Wall, Incorporated. Protective cover for a sewer pipe flange. 260,170, 8-11-81, Cl. D23-41.000.
- Costello, John C.: See—  
Power, John J.; Van Wagener, Raymond H.; Costello, John C.; and Pulos, Arthur J., 260,133, Cl. D8-61.000.
- Crosby, Samuel C., Jr.; and Whorton, Robert B., III, to Tannetics, Inc. Beverage dispensing machine. 260,152, 8-11-81, Cl. D15-112.000.
- Dallaire, Raymond. Window component extrusion. 260,181, 8-11-81, Cl. D25-74.000.
- Dallaire, Raymond. Window component extrusion. 260,182, 8-11-81, Cl. D25-74.000.
- Dallaire, Raymond. Window component extrusion. 260,183, 8-11-81, Cl. D25-74.000.
- Dart Industries Inc.: See—  
Hiatt, Russell D.; and Painter, David L., 260,131, Cl. D7-85.000.
- Dremel, John A. Combined table tennis table and rebound side walls. 260,154, 8-11-81, Cl. D21-14.000.
- Duncan, Patricia E., to Minnesota Mining and Manufacturing Company. Wound drainage bottle. 260,177, 8-11-81, Cl. D24-54.000.
- Elchhook, Frank, Jr.; and Schulz, Galyn A., to American Can Company. Embossed bathroom tissue sheet. 260,193, 8-11-81, Cl. D59-2.00B.
- Fairbanks, Lyman N. Adjustable shade mounting head and pull-rope guide assembly. 260,135, 8-11-81, Cl. D8-377.000.
- Fluttaz, Francois. Wood stove. 260,171, 8-11-81, Cl. D23-97.000.
- Gardisette International AG: See—  
Stocker, Hans, 260,192, Cl. D47-6.00E.
- Geel, Zane H., to Cordis Dow Corp. Hollow fiber artificial kidney. 260,174, 8-11-81, Cl. D24-21.000.
- Giebel, Charles; Rambo, Charles D.; and Spencer, Gary, to Acushnet Company. Putter head. 260,160, 8-11-81, Cl. D21-217.000.
- Goldfarb, Adolph E.; and Petersen, Hans B., to Goldfarb, Adolph E. Game board. 260,155, 8-11-81, Cl. D21-20.000.
- Gould, Jason W. Illuminable pendant, charm or the like. 260,139, 8-11-81, Cl. D11-75.000.
- Griffiths, Geoffrey A., to Mono Concrete Limited. Paving block. 260,185, 8-11-81, Cl. D25-91.000.
- Grundmann, Peter: See—  
Hein, Wolfgang; and Grundmann, Peter, 260,175, Cl. D24-21.000.
- HAFA Fabriks AB: See—  
Anderson, Lars, 260,187, Cl. D26-85.000.
- Harris, David B. Lawn mower cover. 260,149, 8-11-81, Cl. D15-17.000.

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- Health-Mor Inc.: See—  
Martinez, Eugene F., 260,151, Cl. D15-62.000.
- Hein, Wolfgang; and Grundmann, Peter, to Carl Schleicher & Schull GmbH & Co., KG. Fluid filter unit. 260,175, 8-11-81, Cl. D24-21.000.
- Henderson, Rosemary T. Chair. 260,124, 8-11-81, Cl. D6-67.000.
- Hiatt, Russell D.; and Painter, David L., to Dart Industries Inc. Hot dog cooker. 260,131, 8-11-81, Cl. D7-85.000.
- Hoes, Fred O. Vehicle overhead console. 260,143, 8-11-81, Cl. D12-155.000.
- Hume, Peter J. Life jacket. 260,162, 8-11-81, Cl. D21-238.000.
- Interdica, S.A.: See—  
Perrin, Alain D., 260,130, Cl. D7-70.000.
- International Business Machines Corporation: See—  
Wiebe, Walter W., 260,173, Cl. D24-17.000.
- Iten, Clemens A.: See—  
Chase, David O.; and Iten, Clemens A., 260,191, Cl. D28-46.000.
- Johnson, Lewis T.: See—  
Carroll, James C.; and Johnson, Lewis T., 260,194, Cl. D99-44.000.
- Johnson, Terry J. Cartridge. 260,164, 8-11-81, Cl. D22-10.000.
- Ken-Wall, Incorporated: See—  
Cornwall, Kenneth R., 260,170, Cl. D23-41.000.
- Kojima, Hiroshi: See—  
Takigawa, Hiroyoshi; and Kojima, Hiroshi, 260,142, Cl. D12-142.000.
- Koltys, Norman R., to Manley, Charles F.; and Toze, Pamela, part interest to each. Medical identification card. 260,153, 8-11-81, Cl. D19-10.000.
- Kyle, Virgil D. Osteopathic examining table. 260,172, 8-11-81, Cl. D24-3.000.
- Lamb, Thomas. Chair. 260,123, 8-11-81, Cl. D6-41.000.
- Manley, Charles F.: See—  
Koltys, Norman R., 260,153, Cl. D19-10.000.
- Martinez, Eugene F., to Health-Mor Inc. Top cover for tank type suction cleaner. 260,151, 8-11-81, Cl. D15-62.000.
- Means, Paul B.: See—  
Appel, Mel; and Means, Paul B., 260,157, Cl. D21-109.000.
- Minnesota Mining and Manufacturing Company: See—  
Duncan, Patricia E., 260,177, Cl. D24-54.000.
- Miyamoto, Yoshimi, to Nippondenso Co., Ltd. Ignition high voltage cord cover. 260,144, 8-11-81, Cl. D13-13.000.
- Miyamoto, Yoshimi, to Nippondenso Co., Ltd. Ignition high voltage cord cover. 260,145, 8-11-81, Cl. D13-13.000.
- Mono Concrete Limited: See—  
Griffiths, Geoffrey A., 260,185, Cl. D25-91.000.
- Myojo, Seiji, to Shimano Industrial Company, Limited. Fishing reel. 260,166, 8-11-81, Cl. D22-25.000.
- Neavin, William T. Fishing lure. 260,167, 8-11-81, Cl. D22-28.000.
- Nippondenso Co., Ltd.: See—  
Miyamoto, Yoshimi, 260,144, Cl. D13-13.000.
- Miyamoto, Yoshimi, 260,145, Cl. D13-13.000.
- Pagels, Louis T., to Automatic Liquid Packaging, Inc. Dispensing container for pharmaceutical diluents or the like. 260,178, 8-11-81, Cl. D24-63.000.
- Painter, David L.: See—  
Hiatt, Russell D.; and Painter, David L., 260,131, Cl. D7-85.000.
- Palmer, Clarence K. Portable mixer. 260,150, 8-11-81, Cl. D15-19.000.
- Paul B. Elder Company: See—  
Boschetti, Armando; and Swanson, David W., 260,176, Cl. D24-39.000.
- Perrin, Alain D., to Interdica, S.A. Champagne cooling bucket or the like. 260,130, 8-11-81, Cl. D7-70.000.
- Persons, Angelus M. Deck of cards. 260,156, 8-11-81, Cl. D21-45.000.
- Petersen, Hans B.: See—  
Goldfarb, Adolph E.; and Petersen, Hans B., 260,155, Cl. D21-20.000.
- Phillips Petroleum Company: See—  
Carroll, James C.; and Johnson, Lewis T., 260,194, Cl. D99-44.000.
- Polarn Innovation Aktiebolag: See—  
Berg, Lennart, 260,148, Cl. D14-70.000.
- Power, John J.; Van Wagener, Raymond H.; Costello, John C.; and Pulos, Arthur J., to Swingline Inc. Letter opener. 260,133, 8-11-81, Cl. D8-61.000.
- Pulos, Arthur J.: See—  
Power, John J.; Van Wagener, Raymond H.; Costello, John C.; and Pulos, Arthur J., 260,133, Cl. D8-61.000.
- Quaker Oats Company, The: See—  
Breneman, Jack L., 260,158, Cl. D21-131.000.
- Rambo, Charles D.: See—  
Giebel, Charles; Rambo, Charles D.; and Spencer, Gary, 260,160, Cl. D21-217.000.
- Revill, Peter L., to Broken Hill Proprietary Company Limited, The. Can end. 260,136, 8-11-81, Cl. D9-438.000.
- Rogers, Jody B. Seat cushion. 260,125, 8-11-81, Cl. D6-201.000.
- Ross, Cecil J., to W. R. Weaver Company. Optical gun sight mount. 260,165, 8-11-81, Cl. D22-7.000.
- Rothstein, Estelle G., to Corning Glass Works. Decal for culinary ware or the like. 260,126, 8-11-81, Cl. D7-39.000.
- Rothstein, Estelle G., to Corning Glass Works. Decal for a plate or the like. 260,127, 8-11-81, Cl. D7-39.000.
- Rush, Rodney D. Combined clock and cabinet door panel. 260,137, 8-11-81, Cl. D10-2.000.
- Salazar, Mario. Electrical kilowatt-hour meter position adapter. 260,146, 8-11-81, Cl. D13-31.000.
- Schulz, Galyn A.: See—  
Elchhook, Frank, Jr.; and Schulz, Galyn A., 260,193, Cl. D59-2.00B.
- Shaffer, Frank E. Cable cutter. 260,132, 8-11-81, Cl. D8-52.000.
- Shimano Industrial Company, Limited: See—  
Myojo, Seiji, 260,166, Cl. D22-25.000.
- Shun, So. Machine for grating, slicing and/or grinding foodstuffs. 260,129, 8-11-81, Cl. D7-47.000.
- Sommerfeld, Michael J. Rosette iron. 260,128, 8-11-81, Cl. D7-43.000.
- Spencer, Gary: See—  
Giebel, Charles; Rambo, Charles D.; and Spencer, Gary, 260,160, Cl. D21-217.000.
- Spreng, Georg. Roller skate. 260,161, 8-11-81, Cl. D21-226.000.
- Stern, Karl T. Support structure for a fish net. 260,168, 8-11-81, Cl. D22-30.000.
- Stewart, Arthur H., Jr. Tent. 260,163, 8-11-81, Cl. D21-253.000.
- Stocker, Hans, to Gardisette International AG. Curtain material. 260,192, 8-11-81, Cl. D47-6.00E.
- Swanson, David W.: See—  
Boschetti, Armando; and Swanson, David W., 260,176, Cl. D24-39.000.
- Swingline Inc.: See—  
Power, John J.; Van Wagener, Raymond H.; Costello, John C.; and Pulos, Arthur J., 260,133, Cl. D8-61.000.
- Takahashi, Osamu, to Tomy Kogyo Co., Inc. Roller skating figurine toy. 260,159, 8-11-81, Cl. D21-150.000.
- Takigawa, Hiroyoshi; and Kojima, Hiroshi, to Bridgestone Tire Co., Ltd. Vehicle tire. 260,142, 8-11-81, Cl. D12-142.000.
- Tannetics, Inc.: See—  
Crosby, Samuel C., Jr.; and Whorton, Robert B., III, 260,152, Cl. D15-112.000.
- Thomas, Wesley L. Telephone. 260,147, 8-11-81, Cl. D14-53.000.
- Tomy Kogyo Co., Inc.: See—  
Takahashi, Osamu, 260,159, Cl. D21-150.000.
- Toze, Pamela: See—  
Koltys, Norman R., 260,153, Cl. D19-10.000.
- Turner, Susan M., to Universal City Studios, Inc. Film storage box. 260,122, 8-11-81, Cl. D3-35.000.
- Universal City Studios, Inc.: See—  
Turner, Susan M., 260,122, Cl. D3-35.000.
- Van Wagener, Raymond H.: See—  
Power, John J.; Van Wagener, Raymond H.; Costello, John C.; and Pulos, Arthur J., 260,133, Cl. D8-61.000.
- Vikre, Merle A. Irrigation spray head. 260,169, 8-11-81, Cl. D23-35.000.
- W. R. Weaver Company: See—  
Ross, Cecil J., 260,165, Cl. D22-7.000.
- West, Angelina M. Sled. 260,141, 8-11-81, Cl. D12-9.000.
- Whitley, William J. Utility pole. 260,184, 8-11-81, Cl. D25-77.000.
- Whorton, Robert B., III: See—  
Crosby, Samuel C., Jr.; and Whorton, Robert B., III, 260,152, Cl. D15-112.000.
- Wiebe, Walter W., to International Business Machines Corporation. Electrocardiograph. 260,173, 8-11-81, Cl. D24-17.000.
- Williams, Loyal E. Combined comb and case. 260,190, 8-11-81, Cl. D28-22.000.
- Winkler, Frederic V. Hair dryer attachment. 260,189, 8-11-81, Cl. D28-18.000.
- Zeisler, James M.: See—  
Chapman, Darwin E.; and Zeisler, James M., 260,138, Cl. D10-40.000.
- Zusman, Bertram. Cantilevered pedestal house. 260,180, 8-11-81, Cl. D25-17.000.

## LIST OF PLANT PATENTEEES

- Conard-Pyle Company, The: See—  
Corliss, Clifford D., 4,757, Cl. 63.000.
- Corliss, Clifford D., to Conard-Pyle Company, The. Euonymus plant—Cormast variety. 4,757, 8-11-81, Cl. 63.000.



## CLASSIFICATION OF PATENTS

ISSUED AUGUST 11, 1981

NOTE.—First number, class; second number, subclass; third number, patent number.

CLASS 2		1 M	4,282,654	CLASS 60		427	4,282,767	121.15	4,282,820	CLASS 131		
197	4,282,607			39.02	4,282,708	473 R	4,282,768	158 E	4,282,821	281	4,282,889	
227	4,282,608	110	4,282,656	39.16 S	4,282,709	475	4,282,769			332	4,282,890	
239	4,282,609			39.28 R	4,282,710	498	4,282,770	CLASS 114		351	Re.30,704	
414	4,282,610			39.5	4,282,711	505	4,282,771	222	4,282,822	CLASS 132		
CLASS 4		50	4,282,657		4,282,712	679	4,282,772	341	4,282,823	73.5	4,282,891	
144.1	4,282,611	121	4,282,658		4,282,713	688	4,282,773	CLASS 116			CLASS 133	
601	4,282,612		4,282,659		4,282,714	690	4,282,774	308	4,282,824		1 R	4,282,892
CLASS 5			4,282,660	CLASS 37		801	4,282,776	CLASS 118				CLASS 134
90	4,282,613	58	4,282,661	4	4,283,211	804	4,282,777	58	4,282,825		167 R	4,282,893
507	4,282,614	94	4,282,662	6	4,282,716	820	4,282,778	118	4,282,826			CLASS 136
CLASS 7		104	4,282,663	18	4,283,212	822	4,282,779	3	4,282,828	246	4,283,588	
164	4,282,615	118 R	4,282,664	84	4,282,717	866	4,282,780	19	4,282,829	249	4,283,589	
CLASS 8		142 A	4,282,665	115	4,282,718	869	4,282,781	21	4,282,830	251	4,283,590	
128 A	4,283,191	195	4,282,666	180	4,282,720			75.5	4,283,226	256	4,283,591	
137	4,283,192	CLASS 40		CLASS 62				CLASS 119				
400	4,283,193	16	4,282,667	14 R	4,282,721			CLASS 122		15	4,282,894	
494	4,283,194	155	4,282,668	CLASS 64				CLASS 123		281	4,282,895	
524	4,283,195	453	4,282,669	19	4,282,723			CLASS 124		495	4,282,896	
531	4,283,196	CLASS 42		32 F	4,282,722			CLASS 82		515.7	4,282,897	
638	4,283,197	16	4,282,670	CLASS 65				CLASS 84		596.13	4,282,898	
653	4,283,198	75 A	4,282,671	3 A	4,283,213			CLASS 88		624.18	4,282,899	
CLASS 9				70	4,283,214			CLASS 89		625.3	4,282,900	
2 C	4,282,616	43.13	4,282,672	79	4,283,215			CLASS 91		625.64	4,282,901	
6 R	4,282,617	113	4,282,673	106	4,283,216			CLASS 92		636.1	4,282,902	
CLASS 10				108	4,283,217			CLASS 96		893	4,282,903	
111	4,282,618	62	4,283,203	360	4,283,218			CLASS 100		CLASS 138		
CLASS 14				CLASS 66				CLASS 101		109	4,282,904	
6	4,282,619	CLASS 46		75.2	4,282,724			CLASS 104		422	4,282,906	
16.5	4,282,620	39	4,282,674	157	4,282,725			CLASS 106		CLASS 140		
71.1	4,282,621	81	4,282,675	172 E	4,282,726			CLASS 108		93.4	4,282,907	
CLASS 15		118	4,282,676	182	4,282,727			CLASS 110		147	4,282,908	
41 R	4,282,622	175 R	4,282,678	CLASS 68				CLASS 112		CLASS 141		
97 R	4,282,623	193	4,282,679	205 R	4,282,729			CLASS 114		98	4,282,909	
210 B	4,282,624	227	4,282,680	CLASS 70				CLASS 116		CLASS 144		
236 R	4,282,625	228	4,282,681	184	4,282,730			CLASS 118		3 K	4,282,910	
320	4,282,626	CLASS 47		364 A	4,282,731			CLASS 120		CLASS 148		
CLASS 16		9	4,282,682	435	4,282,732			CLASS 122		11.5 R	4,283,233	
2	4,282,627	41 R	4,282,683	456 R	4,282,733			CLASS 124		32.5	4,283,234	
18 A	4,282,628	73	4,282,684	CLASS 71				CLASS 126		175	4,283,235	
43 A	4,282,629			28	4,283,219			CLASS 128		187	4,283,236	
93 D	4,282,630	141	4,282,685	90	4,283,220			CLASS 130		CLASS 149		
102	4,282,631	253	4,282,686	118	4,283,221			CLASS 132		19.91	4,283,237	
CLASS 17		503	4,282,687	120	4,283,222			CLASS 134		1	4,282,911	
11.1 R	4,282,632	CLASS 52		CLASS 72				CLASS 136		1.5 C	4,282,912	
45	4,282,633	1	4,282,688	34	4,282,734			CLASS 138		CLASS 152		
CLASS 23		79.11	4,282,690	319	4,282,735			CLASS 140		209 D	4,282,914	
230 A	4,283,201	79.6	4,282,689	345	4,282,736			CLASS 142		209 R	4,282,915	
230 B	4,283,199	101	4,282,691	388	4,282,737			CLASS 144		352 R	4,282,917	
230 C	4,283,200	236.3	4,282,692	389	4,282,738			CLASS 146		353 C	4,282,918	
CLASS 24		282	4,282,693	449	4,282,739			CLASS 148		CLASS 156		
90 R	Re.30,701	508	4,282,694	461	4,282,740			CLASS 150		49	4,283,238	
230 R	4,282,634	668	4,282,695	CLASS 73				CLASS 152		74	4,282,905	
CLASS 26		745	4,282,696	23	4,282,741			CLASS 154		85	4,283,239	
16	4,282,635	746	4,282,697	32 A	4,282,742			CLASS 156		98	4,283,240	
91	4,282,636	282	4,282,698	46	4,282,743			CLASS 158		117	4,283,241	
CLASS 28		298	4,282,699	49.3	4,282,744			CLASS 160		154	4,283,242	
254	4,282,637	465	4,282,701	61.4	4,282,745			CLASS 162		237	4,283,243	
CLASS 29		556	4,282,700	114	4,282,746			CLASS 164		242	4,283,244	
116 AD	4,282,638	CLASS 58		116	4,282,747			CLASS 166		256	4,283,245	
240	4,282,639	3	4,283,204	155	4,282,750			CLASS 168		475	4,283,246	
416	4,282,640	128	4,283,205	202	4,282,751			CLASS 170		601	4,283,247	
469.5	4,282,641	187	4,283,206	341	4,282,752			CLASS 172		637	4,283,248	
527.2	4,282,642	282	4,283,207	342	4,282,753			CLASS 174		643	4,283,249	
566.3	4,282,643	304	4,283,208	346	4,282,754			CLASS 176		CLASS 159		
570	4,282,644	325	4,283,209	634	4,282,755			CLASS 178		9 R	4,283,230	
571	4,282,645	523	4,283,210	650	4,282,756			CLASS 180		23 R	4,282,919	
CLASS 30				714	4,282,757			CLASS 182		133	4,282,920	
47	4,282,650	CLASS 56		827	4,282,758			CLASS 184		CLASS 162		
89	4,282,651	10.3	4,282,702	861.02	4,282,759			CLASS 186		17	4,283,251	
276	4,282,652	14.6	4,282,703	861.58	4,282,760			CLASS 188		23	4,283,252	
CLASS 33		320.1	4,282,704	862.52	4,282,761			CLASS 190		CLASS 164		
1 C	4,282,653	330	4,282,705	862.58	4,282,762			CLASS 192		CLASS 166		
CLASS 34			4,282,706	862.66	4,282,763			CLASS 194		CLASS 168		
CLASS 35		268	Re.30,702	CLASS 74				CLASS 196		CLASS 170		
CLASS 36				89.15	4,282,764			CLASS 198		CLASS 172		
CLASS 37				417	4,282,765			CLASS 200		CLASS 174		
CLASS 38				424.8 VA	4,282,766			CLASS 202		CLASS 176		
CLASS 39				CLASS 75				CLASS 204		CLASS 178		
CLASS 40				CLASS 76				CLASS 206		CLASS 180		
CLASS 41				CLASS 77				CLASS 208		CLASS 182		
CLASS 42				CLASS 78				CLASS 210		CLASS 184		
CLASS 43				CLASS 79				CLASS 212		CLASS 186		
CLASS 44				CLASS 80				CLASS 214		CLASS 188		
CLASS 45				CLASS 81				CLASS 216		CLASS 190		
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CLASS 93				CLASS 129				CLASS 312		CLASS 286		
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CLASS 97				CLASS 133				CLASS 320		CLASS 294		



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463	340	4,283,613	CLASS 201	23 XA	4,283,310	405	4,283,080	286	4,283,685
CLASS 165	30	4,283,253	CLASS 203	27 R	4,283,317	1 R	4,283,633	94.5 D	4,283,688
1	4	4,283,254	CLASS 204	28 B	4,283,318	40 R	4,283,634	94.5 G	4,283,686
9.1	49	4,283,255	CLASS 233	29.3	4,283,319	113	4,283,081	94.5 PE	4,283,687
80 E	4	4,283,256	CLASS 235	29.6 MQ	4,283,321	15	4,283,082	101	4,283,689
94	4	4,283,257	CLASS 236	29.6 RW	4,283,320	113	4,283,082	111	4,283,690
166	4	4,283,258	CLASS 237	29.6 WB	4,283,322	15	4,283,082	116 R	4,283,691
CLASS 166	86	4,283,259	CLASS 238	31.2 N	4,283,324	15	4,283,082	CLASS 333	
274	102	4,283,260	CLASS 239	37 M	4,283,326	15	4,283,082	17 L	4,283,692
303	129.3	4,283,261	CLASS 240	40 R	4,283,327	24 R	4,283,083	18	4,283,693
305 R	192 R	4,283,262	CLASS 241	45.8 NT	4,283,328	78.1	4,283,084	34	4,283,694
CLASS 169	195 M	4,283,263	CLASS 242	112.5 R	4,283,329	84 R	4,283,085	124	4,283,695
61	195 S	4,283,264	CLASS 243	153	4,283,330	178	4,283,086	165	4,283,696
CLASS 171	219	4,283,265	CLASS 244	155	4,283,331	190	4,283,087	202	4,283,697
63	232	4,283,266	CLASS 245	239 A	4,283,332	2	4,283,088	306	4,283,698
CLASS 172	263	4,283,267	CLASS 246	245.5	4,283,333	16	4,283,089	CLASS 336	
4.5	303	4,283,268	CLASS 247	326 E	4,283,334	33	4,283,090	67	4,283,699
22	444	4,283,269	CLASS 248	326.14 R	4,283,335	9 DN	4,283,091	CLASS 337	
26	509	4,283,270	CLASS 249	326.14 T	4,283,336	3	4,283,092	166	4,283,700
284	566	4,283,271	CLASS 250	340.6	4,283,337	166	4,283,701	341	4,283,701
512	566	4,283,272	CLASS 251	340.7	4,283,338	3	4,283,092	CLASS 338	
CLASS 173	162 H	4,283,273	CLASS 252	343.3 R	4,283,339	10	4,283,093	15	4,283,702
1	21 R	4,283,274	CLASS 253	345.1	4,283,340	16	4,283,094	34	4,283,703
36	47	4,283,275	CLASS 254	346.22	4,283,341	35	4,283,635	138	4,283,704
73 R	64 R	4,283,276	CLASS 255	346.3	4,283,342	38	4,283,636	CLASS 339	
138 F	169	4,283,277	CLASS 256	346.33	4,283,343	228	4,283,637	2 L	4,283,701
CLASS 175	7	4,283,278	CLASS 257	346.34	4,283,344	269	4,283,638	19	4,283,702
11	267	4,283,279	CLASS 258	346.35	4,283,345	270	4,283,639	42	4,283,703
267	394	4,283,280	CLASS 259	346.36	4,283,346	297	4,283,640	59 M	4,283,704
CLASS 176	22.1	4,283,281	CLASS 260	346.37	4,283,347	35	4,283,641	59 R	4,283,705
1 J	1 SD	4,283,282	CLASS 261	346.38	4,283,348	38	4,283,642	97 R	4,283,706
1.5 R	18 FA	4,283,283	CLASS 262	346.39	4,283,349	228	4,283,643	125 R	4,283,707
70	110 A	4,283,284	CLASS 263	346.4	4,283,350	269	4,283,644	147 R	4,283,708
115.5 H	115.5 H	4,283,285	CLASS 264	346.41	4,283,351	309	4,283,645	198 K	4,283,709
CLASS 180	2 A	4,283,286	CLASS 265	346.42	4,283,352	380	4,283,646	CLASS 340	
71	128	4,283,287	CLASS 266	346.43	4,283,353	139	4,283,647	27 NA	4,283,705
165	252	4,283,288	CLASS 267	346.44	4,283,354	207 R	4,283,648	58	4,283,706
CLASS 181	257	4,283,289	CLASS 268	346.45	4,283,355	68 R	4,283,649	146.3 Z	4,283,707
CLASS 182	221	4,283,290	CLASS 269	346.46	4,283,356	87	4,283,650	147 R	4,283,708
CLASS 183	18 A	4,283,291	CLASS 270	346.47	4,283,357	126	4,283,651	149 R	4,283,709
189	12.4	4,283,292	CLASS 271	346.48	4,283,358	134	4,283,652	166 R	4,283,710
CLASS 191	0.096	4,283,293	CLASS 272	346.49	4,283,359	223	4,283,653	323 R	4,283,711
CLASS 192	4 R	4,283,294	CLASS 273	346.5	4,283,360	269	4,283,654	347 SH	4,283,712
9	17 R	4,283,295	CLASS 274	346.51	4,283,361	324	4,283,655	365 L	4,283,713
35	35	4,283,296	CLASS 275	346.52	4,283,362	344	4,283,656	378.1	4,283,714
58 B	58 C	4,283,297	CLASS 276	346.53	4,283,363	223	4,283,657	380	4,283,715
105 CD	133	4,283,298	CLASS 277	346.54	4,283,364	319	4,283,658	380	4,283,716
CLASS 198	358	4,283,299	CLASS 278	346.55	4,283,365	351	4,283,659	506	4,283,717
380	382	4,283,300	CLASS 279	346.56	4,283,366	351	4,283,660	545	4,283,718
382	571	4,283,301	CLASS 280	346.57	4,283,367	351	4,283,661	620	4,283,719
735	747	4,283,302	CLASS 281	346.58	4,283,368	351	4,283,662	633	4,283,720
772	846	4,283,303	CLASS 282	346.59	4,283,369	351	4,283,663	680	4,283,721
CLASS 200	38 R	4,283,304	CLASS 283	346.6	4,283,370	351	4,283,664	685	4,283,722
44	67 D	4,283,305	CLASS 284	346.61	4,283,371	351	4,283,665	722	4,283,723
146 R	252	4,283,306	CLASS 285	346.62	4,283,372	351	4,283,666	731	4,283,724
252		4,283,307	CLASS 286	346.63	4,283,373	351	4,283,667	CLASS 343	

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202	4,283,132	CLASS 365		226	4,283,373	108	4,283,440	10	4,283,491		
270	4,283,133		8	230	4,283,374	126.2	4,283,441	47	4,283,492	CLASS 544	
275	4,283,134		32	345	4,283,375	171	4,283,442	119	4,283,493	30	4,283,531
293	4,283,135		36		4,283,376	295	4,283,443	198	4,283,494	165	4,283,532
		CLASS 385		419 P	4,283,377	421	4,283,444	240	4,283,495	171	4,283,533
45	4,283,136		142	456	4,283,378			253	4,283,496	174	4,283,534
		CLASS 386		571 R	4,283,379	CLASS 428		289	4,283,497	193	4,283,535
				574 R	4,283,380		4,283,445	296	4,283,498	CLASS 546	
4	4,283,137		58		CLASS 424		4,283,446			51	4,283,536
28	4,283,138		82				4,283,447	CLASS 440		94	4,283,537
125	4,283,139			5	4,283,381		4,283,448	38	4,283,179		4,283,538
130	4,283,140		131	8	4,283,382	72	4,283,449				4,283,539
246	4,283,141			12	4,283,383	171	4,283,450	CLASS 485		141	4,283,539
319	4,283,142			47	4,283,384	182	4,283,451	183	4,283,791	165	4,283,540
336	4,283,143		72	52	4,283,385	206	4,283,452	192	4,283,792	336	4,283,541
350	4,283,144		76	70	4,283,386	212	4,283,453	213	4,283,793	CLASS 548	
364	4,283,145		87	78	4,283,387	233	4,283,454	226	4,283,794	112	4,283,542
445	4,283,146			114	4,283,388	240	4,283,455	283	4,283,795	138	4,283,543
	4,283,147	CLASS 369		116	4,283,389	282	4,283,456	349	4,283,796	216	4,283,544
			32	122	4,283,390	285	4,283,457			262	4,283,545
CLASS 357			116		4,283,391	341	4,283,458	CLASS 474		264	4,283,546
68	4,283,733			177	4,283,392	379	4,283,459	8	4,283,180	307	4,283,547
81	4,283,734	CLASS 371		180	4,283,393	389	4,283,460	110	4,283,181	310	4,283,548
			2	182	4,283,394	422	4,283,461		4,283,182		
CLASS 358			38	211	4,283,395	506	4,283,462	162	4,283,183	CLASS 560	
4	4,283,735	CLASS 375		246	4,283,396	512	4,283,463	203	4,283,184	50	4,283,549
8	4,283,736		14		4,283,397	566	4,283,465	CLASS 493		53	4,283,550
11	4,283,737		55	248.4	4,283,398	594	4,283,464	15	4,283,185	86	4,283,551
24	4,283,738		71	250	4,283,399	CLASS 429		42	4,283,186	121	4,283,552
124	4,283,740	CLASS 400		256	4,283,400		4,283,466	45	4,283,187	176	4,283,553
197	4,283,741		617		4,283,401	13	4,283,467	89	4,283,188	CLASS 562	
213	4,283,742		666	263	4,283,402	51	4,283,468	48	4,283,189	574	4,283,554
248	4,283,743			267	4,283,403	81	4,283,469	109	4,283,190	CLASS 564	
		CLASS 401			4,283,404	196	4,283,470	131			
			33	269	4,283,405	209				53	4,283,555
10	4,283,744	CLASS 360		270	4,283,406	CLASS 430		38	4,283,499	144	4,283,556
13	4,283,745		3		4,283,407		4,283,471	137	4,283,500	189	4,283,557
96.4	4,283,746	CLASS 403		273 R	4,283,408	6	4,283,472			272	4,283,558
			53	274	4,283,409	17	4,283,473	2	4,283,501	305	4,283,559
117	4,283,747	CLASS 361		283	4,283,410	64	4,283,474	66	4,283,502		
154	4,283,748		78	304	4,283,411	69	4,283,475	89	4,283,503	CLASS 568	
218	4,283,749		163	305	4,283,412	140	4,283,476	261	4,283,504	11	4,283,559
274	4,283,750		218	310	4,283,413	141	4,283,477	281	4,283,505	311	4,283,560
293	4,283,751	CLASS 405	297	316	4,283,414	156	4,283,478	309	4,283,506	366	4,283,561
321	4,283,752		322	317	4,283,415	264	4,283,479	344	4,283,507	446	4,283,562
382	4,283,753			325	4,283,416	270	4,283,480	351	4,283,508	454	4,283,563
393	4,283,754	CLASS 407		465	4,283,417	271	4,283,481	375	4,283,509		
	4,283,755		104		4,283,418	296	4,283,482	351	4,283,510	461	4,283,564
		CLASS 411			4,283,419	306	4,283,483	392	4,283,511	648	4,283,565
108	4,283,756		303	325	4,283,420	314	4,283,484	438	4,283,512	726	4,283,566
120	4,283,757	CLASS 414			4,283,421	315	4,283,485	476	4,283,513	754	4,283,567
251	4,283,758			CLASS 425	4,283,422	522	4,283,486			764	4,283,568
		CLASS 426			4,283,168	588	4,283,487	CLASS 526		768	4,283,569
19	4,283,759						4,283,488		4,283,514	783	4,283,570
		CLASS 417		69	4,283,423	359	4,283,169	84	4,283,515		4,283,571
200	4,283,760		396	94	4,283,424			127	4,283,516	794	4,283,572
431	4,283,761	CLASS 344		102	4,283,425			202	4,283,517	804	4,283,573
449	4,283,762		733	105	4,283,426	1	4,283,170	229	4,283,518	819	4,283,574
513	4,283,763			107	4,283,427	112	4,283,171	237		826	4,283,575
521	4,283,764	CLASS 418		131	4,283,428	247	4,283,172			841	4,283,576
525	4,283,765		269	131	4,283,428			26	4,283,519	841	4,283,577
574	4,283,766			250	4,283,429	CLASS 433		93	4,283,520	857	4,283,578
575	4,283,767			284	4,283,430		4,283,173	173	4,283,521	857	4,283,579
607	4,283,768	CLASS 422		296	4,283,431	119	4,283,174	170	4,283,522	858	4,283,580
710	4,283,769		13	466	4,283,432		4,283,175	176	4,283,523	864	4,283,581
757	4,283,770			534	4,283,433	173	4,283,176	363	4,283,524	902	4,283,582
900	4,283,771	CLASS 423		548	4,283,434			489	4,283,525	CLASS 585	
	4,283,772		159	551	4,283,435	CLASS 434		500	4,283,526	467	4,283,583
	4,283,773		181	607	4,283,436		4,283,177			481	4,283,584
			193	637	4,283,437	CLASS 435		9	4,283,527	512	4,283,585
		CLASS 427					4,283,178	17 R	4,283,528	582	4,283,586
			6	47	4,283,438	6	4,283,489		4,283,529	828	4,283,587



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01 : 4,282,752	4,282,969	4,283,725	4,282,669	4,283,049	4,282,993
4,282,758	4,282,973	4,283,745	4,282,673	4,283,064	4,283,161
4,282,759	4,282,984	4,283,754	4,282,675	4,283,093	4,283,309
4,283,044	4,282,999	4,283,755	4,282,698	4,283,094	4,283,018
04 : 4,283,198	4,283,003	4,283,757	4,282,717	4,283,100	4,282,657
4,282,710	4,283,005	4,283,766	4,282,796	4,283,127	4,282,679
4,282,865	4,283,012	4,283,774	4,282,822	4,283,201	4,282,882
4,282,893	4,283,032	4,283,777	4,282,903	4,283,228	4,283,004
4,282,940	4,283,043	4,283,779	4,283,025	4,283,281	4,283,020
4,282,995	4,283,056	4,283,781	4,283,072	4,283,284	4,283,162
4,283,083	4,283,069	4,283,784	4,283,106	4,283,288	4,283,164
4,283,448	4,283,084	4,283,790	4,283,236	4,283,289	4,283,233
4,283,683	4,283,091	4,282,658	4,283,347	4,283,366	4,283,291
4,283,723	4,283,101	4,282,660	4,283,365	4,283,423	4,283,374
05 : 4,283,014	4,283,125	4,282,690	4,283,424	4,283,431	4,283,431
4,283,421	4,283,128	4,282,695	4,283,430	4,283,461	4,283,612
06 : 4,282,612	4,283,143	4,283,063	4,283,796	4,283,307	4,283,688
4,282,616	4,283,144	4,283,277	4,283,529	4,283,543	4,283,724
4,282,626	4,283,169	4,283,660	4,282,633	4,282,645	4,282,645
4,282,627	4,283,178	4,282,676	4,282,644	4,282,649	4,282,649
4,282,672	4,283,190	4,282,688	4,282,699	4,283,604	4,282,650
4,282,674	4,283,237	4,282,732	4,282,726	4,283,608	4,282,651
4,282,681	4,283,268	4,282,739	4,282,810	4,283,658	4,282,668
4,282,700	4,283,280	4,282,832	4,283,224	4,283,675	4,282,748
4,282,706	4,283,283	4,282,897	4,283,328	4,283,743	4,282,839
4,282,733	4,283,295	4,283,024	4,282,623	4,283,756	4,282,866
4,282,742	4,283,311	4,283,057	4,283,770	4,282,873	4,282,873
4,282,749	4,283,355	4,283,096	4,282,610	4,282,878	4,282,924
4,282,757	4,283,379	4,283,114	4,282,664	4,282,972	4,282,972
4,282,778	4,283,395	4,283,147	4,282,680	4,282,976	4,283,034
4,282,783	4,283,416	4,283,249	4,282,703	4,282,970	4,283,070
4,282,786	4,283,430	4,283,340	4,282,718	4,283,117	4,283,082
4,282,793	4,283,434	4,283,385	4,282,719	4,283,329	4,283,130
4,282,794	4,283,481	4,283,417	4,282,721	4,283,330	4,283,139
4,282,809	4,283,489	4,283,527	4,282,753	4,283,349	4,283,140
4,282,814	4,283,495	4,283,539	4,282,769	4,283,388	4,283,167
4,282,824	4,283,498	4,283,541	4,282,771	4,283,390	4,283,199
4,282,830	4,283,521	4,283,569	4,282,791	4,283,403	4,283,235
4,282,831	4,283,581	4,283,703	4,282,805	4,283,438	4,283,262
4,282,853	4,283,596	4,283,721	4,282,806	4,283,566	4,283,362
4,282,863	4,283,599	4,283,735	4,282,838	4,283,603	4,283,378
4,282,895	4,283,606	4,282,614	4,282,848	4,283,607	4,283,443
4,282,899	4,283,610	4,282,632	4,282,874	4,283,616	4,283,468
4,282,902	4,283,643	4,282,905	4,282,892	4,282,907	4,283,469
4,282,909	4,283,670	4,282,922	4,282,898	4,282,935	4,283,470
4,282,925	4,283,673	4,283,306	4,282,907	4,282,711	4,283,501
4,282,934	4,283,676	4,283,317	4,282,935	4,282,734	4,283,537
4,282,941	4,283,682	4,283,342	4,282,936	4,282,976	4,283,538
4,282,942	4,283,687	4,283,361	4,282,959	4,283,028	4,283,589
4,282,943	4,283,691	4,283,502	4,282,976	4,283,038	4,283,600
4,282,944	4,283,705	4,283,516	4,283,008		
4,282,948	4,283,710	4,282,864	4,283,038		

## GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

PI 49

4,283,631	4,283,597	4,282,787	4,283,194	4,282,640	4,283,247
4,283,685	4,283,717	4,282,792	4,283,364	4,282,683	4,283,267
4,283,686	4,282,994	4,282,813	4,283,454	4,282,707	4,283,307
4,283,753	4,283,068	4,282,817	4,283,455	4,282,754	4,283,339
4,283,780	Re.30,705	4,282,827	4,283,496	4,282,756	4,283,437
26 : 4,282,611	4,283,073	4,282,877	4,283,592	4,282,802	4,283,510
4,282,613	4,283,709	4,282,920	4,283,701	4,282,834	4,283,517
4,282,622	4,282,777	4,282,921	4,283,772	4,282,858	4,283,551
4,282,628	4,282,937	4,282,965	38 : 4,282,932	4,282,908	4,283,624
4,282,629	4,282,737	4,282,966	39 : 4,282,607	4,282,916	4,283,625
4,282,735	4,282,755	4,282,975	4,282,615	4,282,954	4,283,693
4,282,751	4,282,871	4,282,977	4,282,655	4,282,971	4,283,729
4,282,761	4,282,876	4,282,992	4,282,665	4,283,015	4,283,778
4,282,762	4,282,880	4,283,037	4,282,685	4,283,030	4,283,881
4,282,768	4,283,041	4,282,689	4,283,078	4,283,055	4,283,881
4,282,782	4,282,913	4,283,051	4,282,691	4,283,079	4,283,881
4,282,798	4,282,951	4,283,059	4,282,723	4,283,112	4,283,881
4,282,836	4,283,006	4,283,120	4,282,743	4,283,148	4,283,881
4,282,851	4,283,011	4,283,134	4,282,763	4,283,156	30 : 4,282,646
4,282,910	4,283,107	4,283,135	4,282,808	4,283,175	4,283,536
4,282,919	4,283,185	4,282,855	4,282,855	4,282,859	51 : 4,282,859
4,282,928	4,283,192	4,283,177	4,282,857	4,283,257	4,282,862
4,282,945	4,283,203	4,283,184	4,282,868	4,283,258	4,283,129
4,282,947	4,283,204	4,283,208	4,282,927	4,283,276	4,283,168
4,282,949	4,283,205	4,283,218	4,282,962	4,283,296	4,283,179
4,282,961	4,283,214	4,283,259	4,282,983	4,283,316	4,283,213
4,283,075	4,283,225	4,283,264	4,283,001	4,283,322	4,283,292
4,283,207	4,283,231	4,283,287	4,283,009	4,283,386	4,283,303
4,283,215	4,283,243	4,283,327	4,283,062	4,283,393	4,283,490
4,283,256	4,283,270	4,283,382	4,283,066	4,283,428	4,283,557
4,283,298	4,283,336	4,283,387	4,283,077	4,283,459	4,283,667
4,283,336	4,283,351	4,283,394	4,283,109	4,283,499	4,283,730
4,283,350	4,283,353	4,283,425	4,283,153	4,283,533	53 : 4,282,731
4,283,351	4,283,353	4,283,435	4,283,181	4,283,555	4,282,789
4,283,410	4,283,321	4,283,457	4,283,182	4,283,591	4,282,828
4,283,429	4,283,324	4,283,471	4,283,211	4,283,626	4,282,835
4,283,515	4,283,334	4,283,472	4,283,240	4,283,634	4,282,900
4,283,552	4,283,397	4,283,476	4,283,244	4,283,651	4,282,985
4,283,558	4,283,402	4,283,477	4,283,300	4,283,692	4,283,016
4,283,575	4,283,432	4,283,483	4,283,301	4,283,768	4,283,029
4,283,611	4,283,447	4,283,488	4,283,320	4,282,991	4,283,090
4,283,708	4,283,456	4,283,491	4,283,373	4,283,196	4,283,116
4,283,761	4,283,493	4,283,497	4,283,404	4,283,714	4,283,188
4,283,762	4,283,525	4,283,504	4,283,460	4,283,718	4,283,252
27 : 4,282,653	4,283,528	4,283,519	4,283,508	4,283,767	4,283,707
4,282,740	4,283,531	4,283,523	4,283,583	4,282,729	54 : 4,282,812
4,282,829	4,283,532	4,283,530	4,282,815	4,282,729	4,283,089
4,282,886	4,283,542	4,283,560	4,282,854	4,282,815	4,283,254
4,282,931	4,283,556	4,283,573	4,282,912	4,282,912	4,283,304
4,283,002	4,283,573	4,283,602	4,283,731	4,283,446	4,283,348
4,283,008	4,283,576	4,283,622	4,283,764	4,283,452	4,283,300
4,283,017	4,283,582	4,283,630	4,282,624	4,283,452	4,283,562
4,283,018	4,283,582	4,283,653	4,282,952	4,282,818	4,283,572
4,283,099	4,283,593	4,283,657	4,282,988	4,282,987	4,283,578
4,283,427	4,283,602	4,283,695	4,283,053	4,283,375	55 : Re.30,701
4,283,635	4,283,647	4,283,752	4,283,154	4,283,617	4,282,621
4,283,638	4,283,654	4,283,771	4,283,274	4,282,642	4,282,692
4,282,854	4,283,659	4,283,775	4,283,371	4,282,652	4,282,704
28 : 4,282,854	4,283,741	4,282,635	4,283,303	4,282,684	4,282,764
4,283,338	4,283,749	4,282,670	4,283,514	4,282,750	4,282,849
4,282,625	4,283,776	4,282,725	4,283,574	4,282,760	4,282,958
4,282,744	4,283,795	4,282,727	Re.30,703	4,282,894	4,282,963
4,282,801	4,282,609	4,282,736	4,282,648	4,282,929	4,282,980
4,283,052	4,282,634	4,282,888	4,282,850	4,282,939	4,282,998
4,283,157	4,282,647	4,282,890	4,283,122	4,282,967	4,283,007
4,283,160	4,282,666	4,283,046	4,283,655	4,283,039	4,283,409
4,283,220	4,282,728	4,283,105	4,283,713	4,283,047	4,283,668
4,283,279	4,283,391	4,283,186	4,283,765	4,283,113	56 : 4,282,946
			4,282,630	4,283,159	4,283,372

## DESIGN PATENTS

01 : 260,137	260,154	260,169	26 : 260,170	260,173	260,193
04 : 260,160	260,155	260,152	27 : 260,177	260,191	48 : 260,143
06 : 260,125	260,159	260,153	34 : 260,122	260,149	260,165



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Vol. 1009 Number 3

# OFFICIAL GAZETTE

of the  
UNITED STATES PATENT AND TRADEMARK OFFICE



AUGUST 15, 1995

U.S.  
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Patent  
and  
Trademark  
Office



# OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

August 18, 1981

Volume 1009

Number 3

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## PATENT AND TRADEMARK OFFICE NOTICES

### Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90-95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee .....	\$ 35.00
Search fee .....	300.00
International Basic Fee (for the first 30 sheets of an international application) . . .	215.00
Basic Supplemental Fee (for each sheet over 30) .....	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought) .....	50.00
RENE D. TEGMEYER, Assistant Commissioner for Patents.	

### REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,065,410, Re. S.N. 257,434, Filed Apr. 24, 1981, Cl. 521/51, POLYURETHANE FOAMS HAVING AN INTEGRAL SKIN USING A MIXTURE OF POLYOLS AS THE CHAIN EXTENDER, Hermann Schafer, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany*, Attorney or Agent: Gene Harsh, et al., Ex. Gp.: 143

4,217,345, Re. S.N. 256,433, Filed Apr. 22, 1981, Cl. 424/180, 3-O-(BETA-D-GLUCURONOPYRANOSYL)-SOYASAPOGENOL B, Masanao Shinohara, et al., Owner of Record: *Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan*, Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 125

### REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,160,264, Reexam. No. 90/000,028, Requested: July 16, 1981, Cl. 198/851, CONVEYOR CHAIN, Delmar H. Raybould, Owner of Record: *Inventor*, Attorney or Agent: Huebner & Worrel, Ex. Gp.: 313 Requester: Thokol Corp., Newtown, Pa.

3,625,268, Reexam. No. 90/000,031, Requested: July 20, 1981, Cl. 144/34, FELLING HEAD RECIPROCATING BLADE TYPE, Carl Kempe, Owner of Record: *Logging Development Corp.*, Attorney or Agent: Craig & Antonelli, Ex. Gp.: 324, Requester: Morbark Industries, Inc., Winn, Mich.

3,654,090, Reexam. No. 90,000,015, Requested: July 2, 1981, Cl. 435/7, METHOD FOR THE DETERMINA-

TION OF ANTIGENS AND ANTIBODIES, Antonius Hermanus Wilhelmus Maria Schuurs, Owner of Record: *Organon, Inc.*, Attorney or Agent: Robert H. Falk, Ex. Gp.: 170, Requester: Organon, Inc., West Orange, N.J.

4,032,816, Reexam. No. 90/000,029, Requested: July 16, 1981, Cl. 315/73, SAFETY SWITCH WHICH RENDERS HID LAMP INOPERATIVE ON ACCIDENTAL BREAKAGE OF OUTER ENVELOPE, Ferdinand Rokosz, Owner of Record: *Westinghouse Electric Corp.*, Attorney or Agent: W. D. Palmer, Ex. Gp.: 250, Requester: Westinghouse Electric Corp., Pittsburgh, Pa.

4,156,830, Reexam. No. 90/000,030, Requested: July 16, 1981, Cl. 315/73, HIGH INTENSITY DISCHARGE LAMP WITH INTEGRAL MEANS FOR ARC EXTINGUISHING, Herbert S. Strauss, et al., Owner of Record: *Duro-Test Corp.*, Attorney or Agent: Darby and Darby, Ex. Gp.: 256, Requester: Westinghouse Electric Corp., Pittsburgh, Pa.

### Vacancy Announcement

#### Chairman, Trademark Trial and Appeal Board

In accordance with the Senior Executive Service, the position of Chairman of the Trademark Trial and Appeal Board is being advertised. This appointment will be made at a salary of \$50,113 per annum, which is the current statutory limit before awards and bonuses are distributed.

Persons interested in being considered for the vacancy, PTO-81-112, are invited to submit their applications to the address given below, on or before Sept. 30, 1981. Applications must be in the Office of Personnel by Sept. 30, 1981. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

**Duties:** Serves as Chairman, Trademark Trial and Appeal Board. Manages the administrative functions of the Board and supervises the technical work of the Board. As a member of the TTAB, exercises original jurisdiction in *inter partes* proceedings and appellate jurisdiction of *ex parte* appeals. Renders written decisions representing the position of the PTO.

**Qualifications:** Evaluation of qualified candidates will be on the basis of education (self-development), awards, supervisory performance appraisals, managerial/executive qualifications and technical/professional qualifications. Candidates should address all these qualifications in their supplemental statements. Copies of the Qualification Standard are available in Crystal Plaza 2, Room 9C05.

#### Factors Which Will be Considered in Evaluating Qualified Candidates:

The six managerial/executive factors for SES positions are:

1. Integration of internal and external program policy issues;
2. Organization representation and liaison;
3. Direction and guidance of program, projects or policy development;
4. Resource acquisition and administration;
5. Utilization of human resources;
6. Review of implementation and results.

The technical/professional qualifications are:

1. Law degree and bar membership;

2. Professional legal experience which has provided a comprehensive knowledge of Appellate matters in Trademark law, rules of evidence, the Federal Rules of Civil Procedures, and general principles of ancillary legal subjects;
3. Demonstrated ability to express thoroughly, clearly and accurately the material facts, legal principles and reasons for arriving at a stated conclusion by the application of law to the facts.

Employees of the Department of Commerce may apply by submitting a Merit Program Interest Statement (CD-261), OPM Form 1386, current performance appraisal, updated Personal Qualifications Statement (SF-171) and supplemental statement showing how the qualifications are met. Persons who are not employees of the Department of Commerce should submit a current

performance appraisal, Personal Qualifications Statement (SF-171), OPM Form 1386, and supplemental statement. The completed forms should be sent to:

U.S. Patent and Trademark Office  
Office of Personnel  
Crystal Plaza 2, Room 9C05  
2011 Jefferson Davis Hwy.  
Arlington, Va. 22202

Questions concerning this notice should be directed to Ms. Marilyn Gannon, Office of Personnel, Room 2-9C05, Telephone (703) 557-3631.

July 27, 1981

MARGARET M. LAURENCE  
Assistant Commissioner  
for Trademarks.



# PATENT NOTICES

## Certificates of Correction for the Week of Aug. 18, 1981

PP. 4,684	4,242,233	4,260,490	4,266,384
Re. 30,613	4,243,109	4,260,631	4,266,515
3,829,903	4,243,905	4,260,702	4,266,658
3,860,008	4,244,492	4,260,876	4,266,660
3,954,835	4,244,519	4,260,986	4,266,761
3,964,548	4,244,787	4,260,990	4,266,802
3,997,566	4,245,851	4,261,222	4,266,991
4,053,485	4,247,089	4,261,227	4,267,017
4,082,702	4,247,107	4,261,312	4,267,038
4,088,610	4,247,604	4,261,367	4,267,045
4,104,474	4,247,863	4,261,581	4,267,118
4,118,484	4,248,237	4,262,074	4,267,151
4,138,573	4,248,338	4,262,118	4,267,224
4,162,115	4,248,524	4,262,463	4,267,387
4,179,518	4,249,398	4,262,481	4,267,495
4,180,188	4,249,411	4,262,651	4,267,800
4,180,657	4,249,946	4,262,736	4,267,806
4,182,254	4,250,856	4,262,829	4,267,862
4,194,472	4,251,125	4,263,350	4,267,893
4,197,230	4,251,287	4,263,355	4,267,935
4,198,234	4,251,464	4,263,550	4,268,018
4,198,707	4,251,743	4,263,689	4,268,049
4,201,096	4,251,875	4,263,944	4,268,162
4,211,398	4,251,956	4,263,958	4,268,189
4,211,731	4,252,112	4,264,054	4,268,603
4,212,780	4,252,228	4,264,061	4,268,637
4,218,364	4,252,913	4,264,106	4,268,675
4,220,183	4,253,481	4,264,107	4,268,869
4,220,925	4,254,262	4,264,274	4,269,022
4,221,735	4,254,517	4,264,297	4,269,076
4,222,893	4,255,367	4,264,478	4,269,151
4,223,146	4,255,805	4,264,522	4,269,237
4,223,479	4,255,910	4,264,617	4,269,321
4,224,324	4,256,381	4,264,705	4,269,385
4,225,528	4,256,565	4,264,874	4,269,412
4,226,781	4,256,760	4,264,952	4,269,564
4,226,820	4,257,068	4,265,127	4,269,659
4,229,023	4,258,133	4,265,133	4,269,881
4,231,459	4,258,227	4,265,153	4,269,884
4,232,369	4,258,324	4,265,206	4,269,921
4,233,163	4,258,518	4,265,277	4,269,997
4,233,199	4,258,796	4,265,278	4,270,123
4,233,244	4,258,838	4,265,299	4,270,130
4,234,541	4,258,980	4,265,483	4,270,132
4,234,892	4,259,220	4,265,761	4,270,203
4,235,250	4,259,406	4,265,773	4,270,263
4,235,950	4,259,639	4,265,863	4,270,363
4,236,076	4,259,903	4,265,867	4,270,426
4,236,514	4,260,107	4,265,927	4,271,050
4,237,265	4,260,311	4,265,953	4,272,019
4,239,004	4,260,335	4,266,088	
4,239,601	4,260,406	4,266,180	

## Disclaimers

3,936,828.—Allen R. Muesse; Orange and Jess C. Wright, El Cajon, Calif. VLF NAVIGATION SYSTEM. Patent dated Feb. 3, 1976. Disclaimer filed June 18, 1981, by the assignee, Rockwell International Corp.

Hereby enters this disclaimer to all claims of said patent.

4,045,176.—Gary J. Proksch and Dean P. Bonderman, Indianapolis, Ind. PREPARATION OF OPTICALLY CLEAR SERUM. Patent dated Aug. 30, 1977. Disclaimer filed May 12, 1981, by the inventors.

Hereby enters this disclaimer to claim 10 of said patent.

4,196,561.—Gary L. Kruse, Spring Lake, Mich. PACK-1009 OG 20

AGING MACHINE WITH INTERCHANGEABLE CONTAINER SUPPORTS AND CAM-OPERATED CUTTER. Patent dated Apr. 8, 1980. Disclaimer filed Apr. 17, 1981, by the assignee, Dake Corp., Division of JSJ Corp.

Hereby enters this disclaimer to claims 22-24 and 28 of said patent.

4,207,616.—Richard H. Heeren, Palatine, Ill. LOGIC ARRAY HAVING IMPROVED SPEED CHARACTERISTICS. Patent dated June 10, 1980. Disclaimer filed May 15, 1981, by the assignee, Teletype Corp.

Hereby enters this disclaimer to claim 1 of said patent.

4,210,439.—Frederic G. Bollinger, Creve Coeur, and John J. D'Amico, Olivette, Mo. N-SUBSTITUTED OXOBENZOTHAZOLINES AND THEIR USE AS PLANT GROWTH REGULATORS. Patent dated July 1, 1980. Disclaimer filed June 23, 1981, by the assignee, Monsanto Co.

Hereby enters this disclaimer to claims 1 to 8 of said patent.

4,244,607.—Thomas L. Blase, Houston, Tex. CYLINDRICAL THREADED CONNECTION. Patent dated Jan. 13, 1981. Disclaimer filed May 28, 1981, by the assignee, Hydril Co.

Hereby enters this disclaimer to all claims of said patent.

4,251,398.—Erling Sundt; Vessy/Ge, Roland Aschiero; Bernex, Ge, and Walter Schenk; Geneva, Switzerland. CYCLOHEXYLPENTANOLIDES AND THEIR USE IN PERFUME. Patent dated Feb. 17, 1981. Disclaimer filed May 11, 1981, by the assignee, Firmenich SA.

Hereby enters this disclaimer to claim 1 of said patent.

## National Technical Information Services

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DOUGLAS J. CAMPION,  
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Office of Government Inventions and Patents  
National Technical Information Service  
U.S. Department of Commerce.

AUGUST 18, 1981

U.S. PATENT AND TRADEMARK OFFICE

1009 OG 21

## U.S. DEPARTMENT OF THE AIR FORCE

### AF/JACP

1900 Half St., S.W.  
Washington, D.C. 20324

Patent 4,249,177. Target Discrimination Apparatus. Filed May 3, 1979. Patented Feb. 3, 1981. Not available NTIS.

Patent 4,249,411. Zero-G Massmeter. Filed May 31, 1979. Patented Feb. 10, 1981. Not available NTIS.

Patent 4,251,738. Balanced-Input Zero Differential Detector. Filed Aug. 10, 1978. Patented Feb. 17, 1981. Not available NTIS.

## U.S. DEPARTMENT OF THE NAVY

### Director, Navy Patent Program/

### Patent Counsel for the Navy

### Office of Naval Research

### Code 302

Arlington, Va. 22217

Patent application 6-169,577. Electrical Augmentation of Detonation Wave. Filed July 17, 1980.

Patent application 6-217,282. Void Filler Foam Fire Suppression System. Filed Dec. 16, 1980.

Patent application 6-226,986. Low Noise Remote Optical Fiber Sound Detector. Filed Jan. 21, 1981.

Patent 4,215,631. Sealed Pyrotechnic Delay. Filed Feb. 25, 1971. Patented Aug. 5, 1980. Not available NTIS.

Patent 4,249,422. Apparatus and Process for Determining the Composition of Fluid-Filled Cavities. Filed Oct. 22, 1979. Patented Feb. 10, 1981. Not available NTIS.

## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

### Assistant General Counsel for Patent Matters

### NASA Code GP-4

Washington, D.C. 20546

Patent 4,239,057. Pressure Control Valve. Filed July 13, 1979. Patented Dec. 16, 1980. Not available NTIS.

Patent 4,240,290. Skin Friction Measuring Device for Aircraft. Filed Aug. 7, 1979. Patented Dec. 23, 1980. Not available NTIS.

## TENNESSEE VALLEY AUTHORITY

### Division of Law

Muscle Shoals, Al. 25660

Patent 4,238,459. Chemical Beneficiation of Phosphatic Limestone and Phosphate Rock with alpha-Hydroxysulfonic Acids. Filed June 18, 1979. Patented Dec. 9, 1980. Not available NTIS.



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California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Louisiana	Baton Rouge: Troy H. Middleton Library Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(404) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

\*Collection organized by subject matter.

\*\*Call only between the hours of 10:00 a.m. and 5:00 p.m.

## PATENT EXAMINING CORPS RENE D. TEGMEYER, Assistant Commissioner WILLIAM FELDMAN, Deputy Assistant Commissioner CONDITION OF PATENT APPLICATIONS AS OF June 27, 1981

### PATENT EXAMINING GROUPS

	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director	4-29-80
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal-lurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director	10-11-79
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director	6-25-80
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthetics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director	7-01-80
Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director	1-15-80
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufac-ture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director	1-03-80
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director	10-01-79
Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Op-tics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Composi-tions; Thermal and Photoelectric Batteries.	
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT	1-23-80
Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director	6-08-79
Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-79
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGN, GROUP 290—KENNETH L. CAGE, Director	9-24-79
Industrial Arts; Household; Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	1-09-80
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprin-klng; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director	3-05-80
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director	9-13-79
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Infor-mation Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director	10-22-79
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Genera-tion and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director	3-19-79
Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscel-laneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	

Expiration of patents: The patents within the range of numbers indicated below expire during June 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1934 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,134,981 to 3,139,621, inclusive  
Plant Patents . . . . . Numbers 2,407 to 2,415, inclusive



# REISSUES

AUGUST 18, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,709

## METHOD OF REMOVING IMPURITIES AND SIMILAR MATTER FROM STAPLE FIBRES IN RINGLESS SPINNING AND DEVICE FOR PERFORMING SAID METHOD

Stanislav Kabele; Ctibor Doudlebsky; Frantisek Jaros; Zdenek Svec, and Bohumir Brozek, all of Usti nad Orlici, Czechoslovakia, assigns to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia

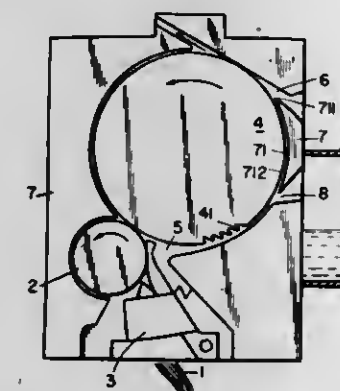
Original No. 3,777,466, dated Dec. 11, 1973, Ser. No. 36,883, May 13, 1970. Continuation of Ser. No. 541,412, Jan. 16, 1975, abandoned. Application for reissue May 5, 1977, Ser. No. 794,237

Claims priority, application Czechoslovakia, May 16, 1969, 3496/69

Int. Cl.<sup>2</sup> D01H 1/12

U.S. Cl. 57—58.95

22 Claims



4. In an apparatus for ringless spinning of fibers, a combination comprising fiber passage means for advancement of fibers towards a spinning chamber; supply means for supplying unopened fibers into said fiber passage means; fiber opening means for opening said fibers during advancement thereof in said fiber passage means towards said spinning chamber; impurities discharge passage means communicating with said fiber passage means for continuous discharge of impurities which are liberated from the opened fibers; and suction means in open communication with said impurities discharge passage means for continuous withdrawal from the same of discharged impurities.

Re. 30,710

## TIERED CONTAINER WITH FLOW DISTRIBUTION SYSTEM

Robert C. Johnson, Winston-Salem, N.C., assignor to Reynolds Leasing Corporation, Jacksonville, Fla.

Original No. 4,062,367, dated Dec. 13, 1977, Ser. No. 682,413, May 3, 1976. Application for reissue Nov. 21, 1979, Ser. No. 96,610

Int. Cl.<sup>3</sup> A24B 3/18

U.S. Cl. 131—302

9 Claims

11. An improved apparatus for increasing the filling capacity of tobacco having a pressure vessel for receiving the tobacco and which utilizes a volatile organic compound to impregnate the tobacco and a hot gas to vaporize the compound in the tobacco, said improved apparatus comprising:

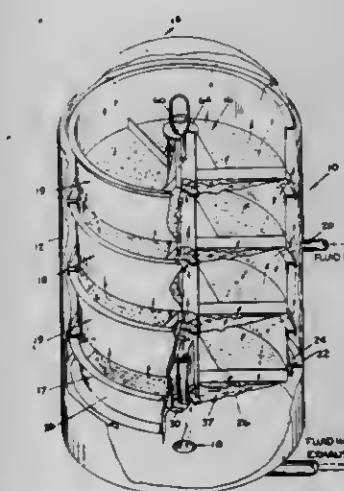
a stack or tier of containers mounted within said pressure vessel and comprising a plurality of spaced apart, individual containers each comprising a basket including:

- (a) a bottom with an aperture therein;
- (b) a side wall secured to and circumscribing said bottom;
- (c) a perforated member positioned above said bottom and within said side wall providing a flow passage between said

perforated member and said bottom, said perforated member receiving a portion of the total quantity of tobacco to be processed; and

(d) a conduit communicating with the flow passage and said aperture within its basket and the aperture and flow passage of an adjacent basket, whereby a fluid can pass upwardly through said apertures into said flow passages and through the perforated members into the tobacco beds and downwardly through said beds into said flow passages and into said conduits adjacent said basket,

means operably connected to said central flow passage for supplying a volatile organic impregnating fluid upwardly through said central flow passage and substantially simulta-



neously upwardly and outwardly through the flow passages and perforated members of said individual containers to contact and treat tobacco confined within the individual containers with the impregnating fluid in a bottom-to-top manner, and

means operably connected to said vessel and communicating with the spaces between said individual containers for supplying a hot gas into said spaces and downwardly through the perforated members and flow passages of said individual containers and into and downwardly through said central flow passage to contact the tobacco confined within said individual containers with the hot gas in a top-to-bottom manner to vaporize the impregnating fluid and expand the tobacco.

Re. 30,711

## WELL COMPLETION METHOD AND SYSTEM

George O. Suman, Jr., 3701 Kirby Dr., Suite 458, Houston, Tex. 77098

Original No. 3,918,522, dated Nov. 11, 1975, Ser. No. 437,231, Jan. 28, 1974. Application for reissue Apr. 27, 1978, Ser. No. 901,017

Int. Cl.<sup>3</sup> E21B 33/127, 33/14, 43/11

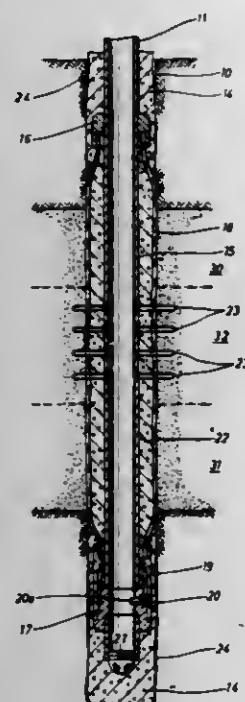
U.S. Cl. 166—285

8 Claims

6. In a well system wherein a formation is penetrated by an open borehole, a packer assembly positioned in the open borehole opposite said formation, said packer assembly having a radially expansible sleeve type packing element [mounted on] surrounding a portion of a mandrel and having [a] the extremities of said packing element in fluid tight mechanical connection with the exterior of [a] said mandrel, a time setting solid mass between the mandrel and packing element in sufficient quantity that the packing element is radially expanded into continu-



ous supporting engagement with said formation, and at least one continuously open perforation extending from the interior of



the packer assembly through the mandrel, the solid mass and the packing element to said formation.

Re. 30,712

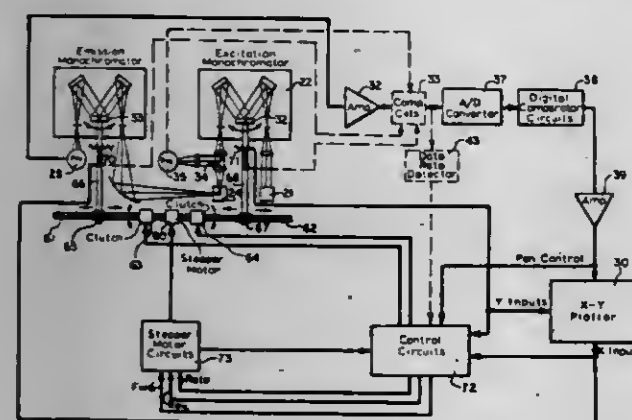
# SYSTEM AND APPARATUS FOR CONTOUR PLOTTING THE TOTAL LUMINESCENCE SPECTRUM OF A SAMPLE

James H. Macemon, Severna Park, Md., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.  
Original No. 4,037,961, dated Jul. 26, 1977, Ser. No. 702,495, Jul. 6, 1976. Application for release Jun. 4, 1979, Ser. No. 45,420

Int. Cl.<sup>3</sup> G01N 21/64

U.S. Cl. 356—318

5 Claims



5. A system for producing a two-dimensional contour plot of the total luminescence spectrum of a sample comprising, in combination:

- excitation means including a monochromator having a variable operating wavelength dependent on applied pulses for generating a source of monochromatic light for application to said sample;
- emission detection means, including a monochromator having a variable operating wavelength dependent on applied pulses for generating an output signal dependent on the amplitude of fluorescent light emitted from said sample;
- an X-Y plotter including a marking pen responsive to an applied control effect and X and Y axis positioning means;
- means coupled between said monochromators and said position means for controlling the position of said pen on said plotter in response to the operating wavelength of said monochromators;
- pen control means responsive to the presence of a predetermined

level at the output of said emission means for actuating said pen; and

scanning means for progressively scanning one of said monochromators through a predetermined range of wavelengths, and for incrementally advancing the other of said monochromators upon the completion of each such scan, to form said desired contour plot.

Re. 30,713

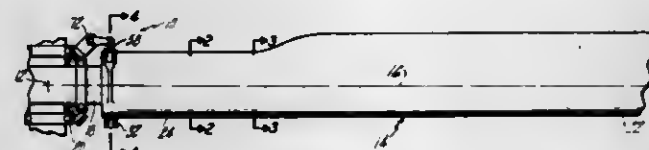
# CROSS BEAM ROTOR

Donald L. Ferris, Newtown, and Timothy A. Krauss, Sandy Hook, both of Conn., assignors to United Technologies Corp., Hartford, Conn.  
Original No. 4,087,203, dated May 2, 1978, Ser. No. 757,168, Jan. 7, 1977. Application for release Aug. 1, 1979, Ser. No. 62,851

Int. Cl.<sup>3</sup> B64C 27/38

U.S. Cl. 416—141

4 Claims



1. A helicopter cross beam rotor having a pair of opposed blades supported by a common flexible spar for rotation about an axis of rotation, each blade shaped at its inner end to envelope the spar in spaced relation, the inner end of the blade having a pitch horn to receive control inputs, said blade inner end centered about said spar by a bearing assembly including first and second bearing surfaces to produce relative sliding motion between the spar and blade inner end upon blade pitch angle changes, blade lead-lag, and blade flapwise bending, wherein said first bearing surface is spherical and said second bearing surface is flat, and wherein said second bearing surface is located closer to the spar than said first bearing surface.

Re. 30,714

# REMOVAL OF COPPER CONTAINING INCRUSTATIONS FROM FERROUS SURFACES

Lester W. Harriman, Angleton; Paul E. Muehlberg, Jackson, both of Tex., and Fred N. Teunac, Charlotte, S.C., assignors to The Dow Chemical Company, Midland, Mich.  
Original No. 3,438,811, dated Apr. 15, 1969, Ser. No. 497,530, Oct. 18, 1965. Continuation-in-part of Ser. No. 387,481, Aug. 4, 1964, abandoned. Application for release Sep. 14, 1978, Ser. No. 942,208

Int. Cl.<sup>3</sup> C23G 1/14

U.S. Cl. 134—2

26 Claims

1. A process for removing copper from a ferrous metal surface containing copper thereon by contacting said surface with an aqueous alkaline solution wherein the solution employed contains as an essential constituent at least one member of the group consisting of ferric chelates of [polycarboxylic] alkylene polyamine polyacetic acid chelating agents and mixtures of ferric and ferrous chelates of [polycarboxylic] alkylene polyamine polyacetic acid chelating agents in amount sufficient and for a time sufficient at a reaction temperature above about 68° F. and up to about 300° F., to dissolve said copper, wherein said solution may also contain a salt of the group consisting of ammonium, amine, and hydroxyalkylamine salts of alkylene polyamine polyacetic acid chelating agents.

Re. 30,715

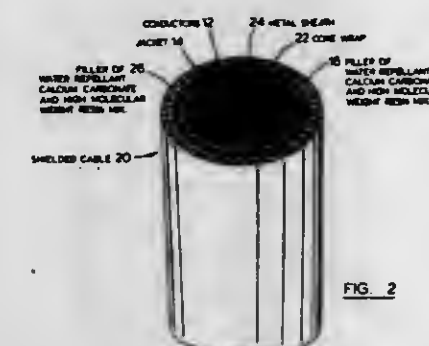
# WATER BLOCKED ELECTRIC CABLES

Leo V. Woytluk, Pointe Claire, Canada, assignor to Northern Telecom Limited, Ottawa, Canada  
Original No. 4,002,819, dated Jan. 11, 1977, Ser. No. 695,845, Jun. 14, 1976. Continuation-in-part of Ser. No. 556,294, Mar. 7, 1975, Pat. No. 4,004,077. Application for release Nov. 1, 1978, Ser. No. 957,046

Int. Cl.<sup>3</sup> H01B 7/28

U.S. Cl. 174—23 C

10 Claims



1. An electric cable having a core of a plurality of insulated conductors and a jacket, the interstices between the conductors and within the jacket being at least partially filled with a mixture of water repellant treated calcium carbonate and at least one high molecular weight resin rapidly hydratable to form a viscous solution.

Re. 30,716

# SWITCH ACTIVATING HINGE HAVING RECIPROCATING CAM FOLLOWER SWITCH ACTUATOR

Charles R. Suaka, Roxbury, Conn., assignor to The Stanley Works, New Britain, Conn.  
Original No. 4,066,857, dated Jan. 3, 1978, Ser. No. 598,716, Jul. 24, 1975. Application for release Aug. 10, 1978, Ser. No. 932,760

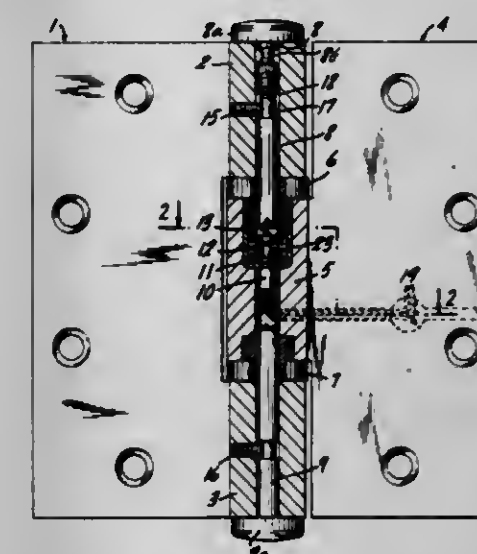
Int. Cl.<sup>3</sup> H01H 3/16

U.S. Cl. 200—61.7

8 Claims

5. A hinge construction comprising first and second pivotally connected hinge leaves, each said leaf including means adapting same for attachment to a door or a door frame, or the like, each

leaf further including at least one knuckle which is disposed adjacent to and is movable relative to the knuckle on the other of said leaves, an electrical circuit component carried by one of said knuckles, actuator means associated with said circuit component, and capable of producing a change in condition thereof, operating means carried by the other of said knuckles, such that upon movement of said hinge leaves relative to each other, said operating means will be moved relative to said circuit component and said actuator means to operate said actuator means and thereby produce a change in the condition of said electrical circuit component, which change in condition may be used as an indication of a change in the relative orientation of said hinge leaves, said actua-



tor means comprising a movable plunger on said component for altering the condition thereof, and piston means non-rotatably mounted with respect to said circuit component, but being movable axially with respect to said circuit component for engagement and operation of said plunger, said piston means including cam means on the end thereof remote from said circuit component, said operating means carried by the other of said hinge knuckles comprising a member adapted to be fixedly positioned with respect to said other knuckle for movement therewith relative to said circuit component and said piston means; said member including cam means formed thereon engageable with the cam means on piston means to produce axial movement thereof and operation of said plunger, as an incident to movement of said hinge leaves.



## PLANT PATENTS

GRANTED AUGUST 18, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,758

### FLOWERING CRABAPPLE TREE

William H. Collins, Circleville, Ohio, assignor to American  
Garden Cole, Inc., Circleville, Ohio

Filed May 5, 1980, Ser. No. 146,781

Int. Cl.<sup>3</sup> A01H 5/00

U.S. Cl. Plt.—34

1. A new and distinct variety of flowering crabapple tree, *Malus* sp., substantially as described and illustrated, characterized by its rapid growth habit of numerous, compact, sturdy, upright branches, branching freely at the base; attractive purplish red foliage, appearing resistant to scab and mildew; and

sparse but pleasing purplish red flowers and dark red to deep purple fruits.

4,759

### CAMOTE PLANT

Steven H. Pollock, 6738 Spring Brook, San Antonio, Tex. 78249

Filed Jul. 11, 1979, Ser. No. 56,772

Int. Cl.<sup>3</sup> A01H 15/00

U.S. Cl. Plt.—89

1. A new and distinct variety of camote plant substantially as shown and described.



# PATENTS

GRANTED AUG. 18, 1981

## ERRATA

For	See
CLASS	PATENT NO.
354-025 .....	4,283,863
411-340 .....	4,283,986
493-004 .....	4,283,998
105-310 .....	4,284,001
411-119 .....	4,284,114
294-152 .....	4,284,219
254-271 .....	4,284,253
369-063 .....	4,284,279
585-006 .....	4,284,522
564-365 .....	4,284,587
252-609 .....	4,284,732
370-081 .....	4,284,850



# PATENTS

GRANTED AUGUST 18, 1981

## GENERAL AND MECHANICAL

4,283,797

### VIDEO BOW TIE

Murray Seider, 402 Ocean Pkwy., Brooklyn, N.Y. 11218

Filed Feb. 6, 1964, Ser. No. 343,037

The portion of the term of this patent subsequent to Aug. 18, 1985, has been disclaimed.

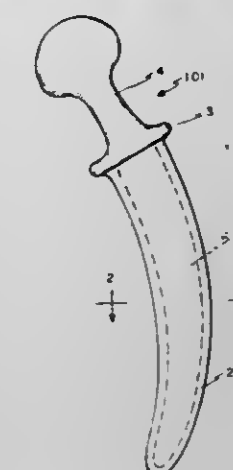
Int. Cl.<sup>3</sup> A43D 25/02; G09F 21/02; F21L 15/14

U.S. Cl. 2—151

12 Claims

1. A novelty bow necktie structure comprising a narrow strip of fabric folded into juxtaposed folds, a tube sleeved around the folds midway the ends thereof, an electric lamp structure supported and concealed within the confines of the tube, conductors connected at one end to the lamp structure, an electric battery connected to the other ends of the conductors, and a flexible band connected at one end to the fabric for fastening the strip around the neck of the wearer, the outer surface of the outermost fold having removable indicia thereon adapted to be illuminated by the lamp structure.

cavity with a cement coating, applying a cement pre-coating to said stem prior to insertion into said cavity, permitting the



4,283,798

### ATTITUDE INDICATOR FOR DIVERS

Lorne A. Kuehn, Downsview, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Division of Ser. No. 887,771, Mar. 17, 1978, Pat. No. 4,172,327.

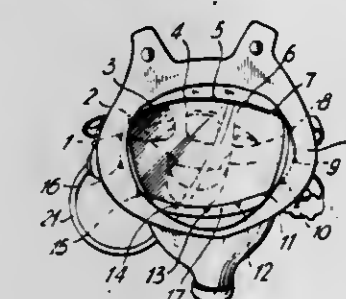
This application Aug. 1, 1979, Ser. No. 62,627

Claims priority, application Canada, Apr. 22, 1977, 276795

Int. Cl.<sup>3</sup> A61F 9/02

U.S. Cl. 2—426

3 Claims



1. Diver's headwear comprising a body portion having means for securing it to a person's head;  
a window opening in said body portion, to be positioned in use so as to enable the diver to see through it;  
a transparent window sealedly mounted in said window opening; and  
a multiplicity of illuminating means disposed peripherally of said window opening, said illuminating means being connectible to an electrical circuit to energize the illuminating means selectively, illumination from the selectively energized illuminating means simulating natural daylight from above to the diver when underwater, thereby enabling said diver to sense visually and instinctively vertical and horizontal directions relative to his own orientation in the water.

cement both in the cavity and on the stem to cure, applying a further quantity of the cement into the cavity and introducing the stem into the cavity.

4,283,800

### ADJUSTABLE PROSTHETIC ELEMENT

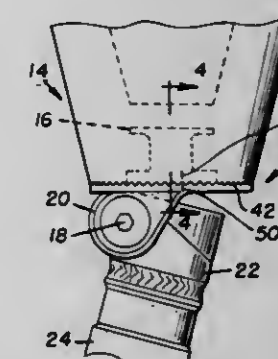
Michael T. Wilson, 1259 Monument Blvd., Concord, Calif. 94520

Filed Mar. 19, 1979, Ser. No. 11,126

Int. Cl.<sup>3</sup> A61F 1/08

U.S. Cl. 3—21

7 Claims



1. A prosthesis comprising:  
a prosthetic element adapted on the inferior side for fixture to a second inferior prosthetic element and having formed on the superior side and in the transverse plane a toothed surface;  
a socket molded for mating with said toothed surface; and  
means molded in said socket for fixing said socket to said prosthetic element;  
said toothed surface permitting incremental rotation about an axis perpendicular to the transverse plane of said socket relative to said prosthetic element.

4,283,799

### PRE-COATED BODY IMPLANT

George W. Pratt, Jr., Wayland; Robert Poss, Marblehead, and Jeremy K. Chang, Cambridge, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 10, 1979, Ser. No. 73,834

Int. Cl.<sup>3</sup> A61F 1/00, 1/03

U.S. Cl. 3—1913

4 Claims

1. A method of implanting a prosthesis into a skeletal member of a human, that comprises: preparing a cavity in the skeletal member to receive the prosthesis which comprises a stem that is introduced into said cavity, covering the surface of the

HYDRAULIC CYLINDER FOR MULTILEVEL SUBMERSIBLE SAFETY DECK OR DECKS FOR POOLS  
Francis C. Smith, 9 Glenview Rd., Strathmore, Victoria 3041, Australia

Filed Feb. 27, 1978, Ser. No. 881,545

Claims priority, application Australia, Mar. 8, 1977, 9320/77

Int. Cl.<sup>3</sup> E04H 3/16

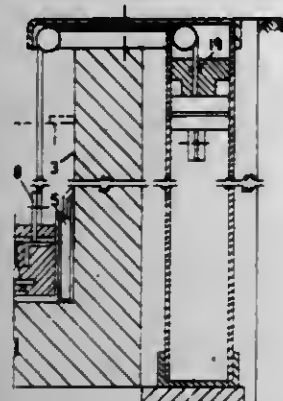
U.S. Cl. 4—496

2 Claims

1. In either an in or above ground pool provided with walls



including single acting low pressure hydraulic cylinders externally and stationary positioned relative to and approximately flush with the head and base of said walls which can be used to control the level of a rigid traversible deck or decks in said pool with an inverted reaction through the novel use of a



circular flexible plastic-coated wire rope sealed with "O" rings as the transfer medium of the applied hydraulic force within the cylinders and said plastic-coated rope is guided by pulleys supported by an extended arm on cylinder caps provided over the wall to connect to the decks and this extended arm can be clear of the wall when such a condition is required.

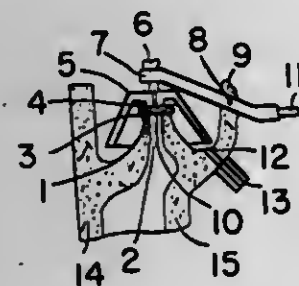
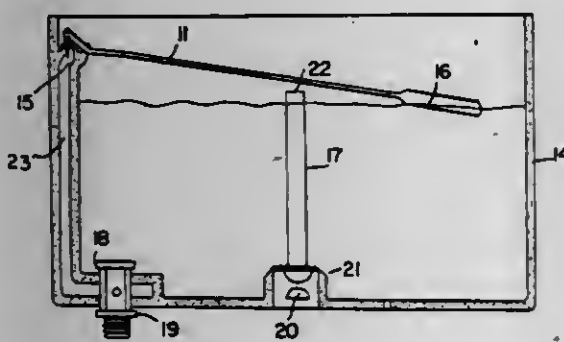
4,283,802

#### TOILET TANKS WITH BUILT-IN WATER SUPPLY VALVE

Andrés A. Y. Icaran, Monterrey, Mexico, assignor to Nacional de Ceramica, S.A., Monterrey, Mexico  
Filed Jul. 16, 1979, Ser. No. 57,653  
Int. Cl.<sup>3</sup> E03D 1/00, 1/32

U.S. Cl. 4-353

10 Claims



1. A toilet tank comprising  
a tank having unitary walls and base;  
an inlet duct formed as a unitary portion of one of said tank walls, said inlet duct having an inlet valve at an upper end thereof and means for coupling said inlet duct to a water supply at a lower end thereof, said inlet valve having a valve seat formed as a unitary portion of said upper end of said inlet duct with a bore therethrough which communicates with the inside of said inlet duct; and  
an overflow duct formed as a unitary portion of one of said tank walls, said overflow duct having an open mouth at an upper end thereof at a predetermined position in said tank

and means for connecting said overflow duct to a toilet basin at a lower end thereof.

4,283,803

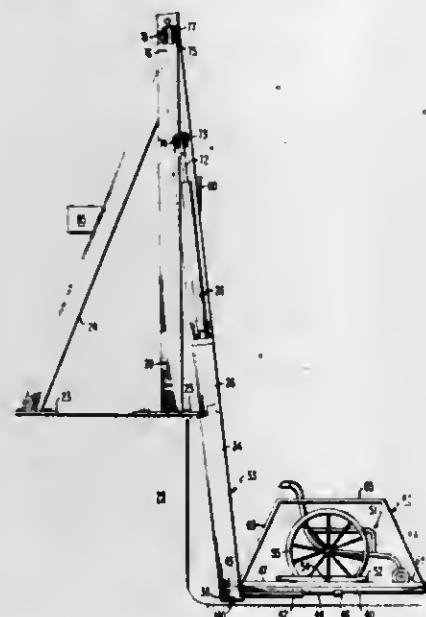
#### PROCESS FOR IMMERSING IN A SWIMMING POOL DISABLED PERSONS USING A WHEELCHAIR

Keith Krumbeck, Milwaukee, Wis., assignor to The Cheney Company, Inc., New Berlin, Wis.  
Continuation of Ser. No. 801,466, May 31, 1977, Pat. No. 4,141,089. This application Feb. 14, 1979, Ser. No. 12,058  
The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> E04H 3/19; B66B 9/00

U.S. Cl. 4-496

3 Claims



1. A process of immersing disabled persons who use a wheelchair into a swimming pool for swimming therein, said process comprising:  
wheeling a wheelchair with a disabled person thereon onto a chair lift;  
attaching the chair securely to the lift so that the chair remains secure and stable against buoyancy effects when immersed in the pool and the disabled person swims away from the chair;  
lowering the lift and attached chair with disabled person into the pool and enabling the person to swim away from the attached chair while the unoccupied chair remains attached to the lift in a secure and stable condition so that the unoccupied chair can be elevated or the person can swim back to the immersed chair and reseat himself thereon;  
elevating the chair lift with the unoccupied attached chair while the person is swimming in the pool, lowering the chair lift and unoccupied attached chair in order to enable the swimmer to return to the chair, and, thereupon, elevating the chair and swimmer from the pool;  
whereby disabled persons can be immersed in a swimming pool within their individual capabilities to swim away from and return to the secured wheel chairs without the assistance of an attendant.

4,283,804

#### SWIMMING POOL STRUCTURE

Morgan D. Mahoney, P.O. Box 69, Hastings, Ontario, Canada (K0L 1Y0)

Continuation of Ser. No. 960,185, Nov. 13, 1978, abandoned.

This application Dec. 31, 1979, Ser. No. 108,715

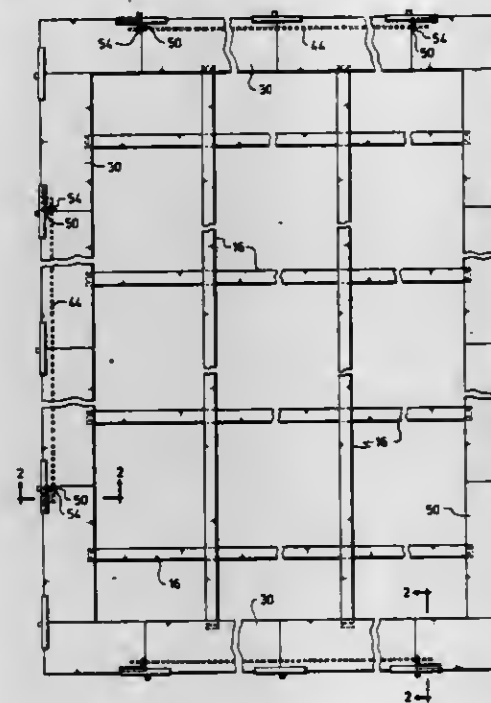
Int. Cl.<sup>3</sup> E04H 3/18

U.S. Cl. 4-506 Q

5 Claims

1. Above ground pool framework comprising:  
means defining substantially straight side walls for the pool,

means preventing outward movement of the lower portion of such side walls under water pressure,  
a deck structure comprising members designed to be attached to a side wall adjacent the upper edge of such side wall,  
said deck members each including a wall arranged to extend approximately horizontally outwardly relative to the side wall to which said deck member is attached,  
said deck members being arranged end to end along a side wall, said horizontally extending walls corresponding to a side wall, attached together to form a connected unit, tensioning means corresponding to a side wall located beneath said horizontally extending deck wall and attached



only at each end to the horizontally extending walls of different deck members attached to the corresponding side wall,  
said tensioning means extending in a straight line between said ends and generally longitudinally relative to said side walls,  
said attached ends being located nearer the outer than the inner edge of said horizontally extending deck walls, said tension members being adjustable in length whereby the outer portions of the corresponding deck member horizontal walls may be placed in compression and the inner portion of said horizontal walls placed in tension by shortening said tension members.

4,283,805

#### HORSE HOOF PICK

Larry C. Stacy, 4851 S. Mission, Fallbrook, Calif. 92028

Filed Oct. 22, 1979, Ser. No. 87,003

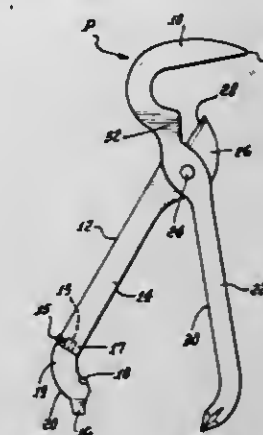
Int. Cl.<sup>3</sup> B25B 7/22

U.S. Cl. 7-127

5 Claims

1. Horse hoof pick comprising a first arm having front and rear portions and a second arm of unequal length to said first arm and having pivot connection to said first arm intermediate its said end portions, said first arm defining at its front end portion a hoof picking head comprising a hook terminally pointed and rearwardly tapered in the plane of said first arm insertable between the frog and horn portions of the horse's hoof, said second arm being angularly adjustable relative to the rear end portion of said first arm to define a hand-gripping means for said pick variable between a narrow first and second

arm spread for prying picking action against accumulated matter, and a wide arm spread for facilitated torque twisting



picking action against said matter in first arm plane rotating relation.

4,283,806

#### SHOE MACHINE AIR BLAST MECHANISM AND AIR BLAST SAFETY DEVICE

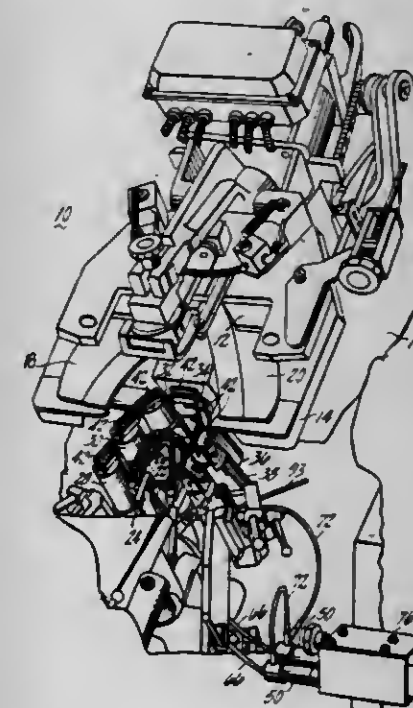
Alphonse C. Kulik, Ipswich, Mass., and Josef J. Walter, Johnson City, N.Y., assignors to USM Corporation, Farmington, Conn.

Filed Jun. 12, 1979, Ser. No. 47,829

Int. Cl.<sup>3</sup> A43D 9/00, 21/00, 23/00

U.S. Cl. 12-142 R

7 Claims



1. A machine for lasting shoes in which the margin of a shoe upper is secured to the bottom of an insole by cement applied along the margin of the forepart of the insole bottom including:  
a nozzle engageable generally along at least portions of the bottom margin of said insole, for applying molten cement to said insole;  
a cement feed apparatus for supplying molten cement to said nozzle; and  
a safety apparatus for preventing any molten cement from being discharged from said nozzle when an insole and an upper are absent nozzle, said safety apparatus comprising a reciprocally movable pincer having a set of jaws with which to grab and tension said upper, and which senses any absence of an insole and upper therewith to effect the shutting off said cement feed apparatus.



4,283,807

**CLEANING OF HEAT EXCHANGERS COMPOSED OF TUBES**

Andre G. M. A. Bizard, Paris, France, assignor to Technos, Paris, France

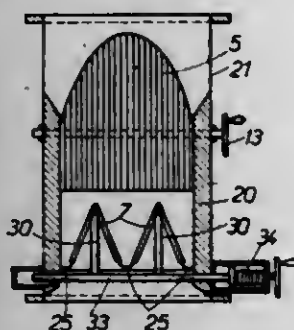
Filed Sep. 28, 1979, Ser. No. 80,144

Claims priority, application France, Oct. 11, 1978, 7829014

Int. Cl.<sup>3</sup> B01D 35/02; B08B 9/04

U.S. Cl. 15—3.51

9 Claims



1. A device for cleaning a heat exchanger, having tubes through which a heat exchanging fluid flows, comprising:

- (a) at least one grid having bar means, located downstream of the tubes, for separating balls from the flow of the heat exchanging fluid after passage through the tubes;
- (b) at least one movable comb having teeth means for passing through the space between the bar means of said at least one grid; and
- (c) means for moving said at least one movable comb between an operative position, in which the teeth means pass through the space between the bar means so as to clean said at least one grid, and an inoperative position, in which the teeth means are clear of the space between the bar means.

4,283,808

**GRIPPING DEVICE FOR TOOTH BRUSHES**

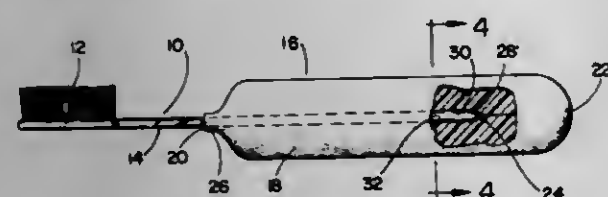
Lee M. Beebe, 2089 Garden La., Costa Mesa, Calif. 92627

Filed Sep. 17, 1979, Ser. No. 76,248

Int. Cl.<sup>3</sup> A46B 17/02

U.S. Cl. 15—145

1 Claim



1. A removable gripping device in combination with a tooth brush, comprising:

- an elongated body having an open end and a closed end, said body being formed from a pliable foam plastic material;
- a slot centrally positioned longitudinally from said open end to a point adjacent the closed rear end, and adapted to receive the handle portion of said tooth brush, said slot having opposing surfaces to frictionally engage said tooth-brush handle, whereby said body is removably mounted to said tooth-brush handle, said body being provided with a substantially cylindrical cross sectional configuration having a sufficient diameter to be grasped in one's hand;
- said open end of said body formed to include a protruding lip portion; and
- said body including a cover member formed thereon to encapsulate said body, said cover member being impervious to water.

4,283,809

**SWAB HOLDING TOOL**

Claude D. Prost, 4009 Port Cleburne La., Hermitage, Tenn. 37076

Filed Nov. 5, 1979, Ser. No. 91,456

Int. Cl.<sup>3</sup> A46B 17/02

U.S. Cl. 15—145

9 Claims



1. A tool for holding a swab having an elongate rod with an absorbent tip for use in cleaning interior components of machinery, electronic devices and the like through narrow passageways, comprising:

- an elongate electrically insulated handle dimensioned for being handheld;
- a passageway formed in said handle and extending longitudinally through the length thereof;
- a tube having an exterior diameter approximately equal to the interior diameter of said passageway and having a forward and a rearward end, the rearward end of said tube being secured in said passageway;
- the forward end of said tool being adapted to receive the elongate rod of the swab, and
- at least one indent formed in said tube and extending inwardly with respect to said tube for securing the elongate rod in the forward end of said tube.

4,283,810

**DUAL WHEEL CASTER BODY STRUCTURE**

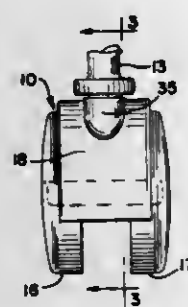
Carl J. Demrick, Birmingham, Mich., assignor to Herder N.V., Willemstat, Netherlands Antilles

Filed Feb. 28, 1979, Ser. No. 16,095

Int. Cl.<sup>3</sup> B60B 33/00

U.S. Cl. 16—47

9 Claims



1. A caster body structure comprised of a body frame member and a separate wheel cover member, said body frame member having multi-plate structure throughout a major portion of the member, a horizontal axle bearing formed in the multi-plate structure, a vertical swivel stem socket formed integrally as a part of each plate of said multi-plate structure and extending upwardly through said wheel cover member, one of said swivel stem sockets comprising a cylindrical well portion and the other swivel stem socket comprising a socket portion nested in such well portion, and a pair of supporting wheels mounted on an axle extending through said bearing, said multi-plate structure being disposed between said supporting wheels.

4,283,811

**IMPROVED KNUCKLE HINGE**

Peter J. George, 8 Myrtle Grove, Altona, 3018, Victoria, Australia

Filed Aug. 3, 1978, Ser. No. 930,714

Int. Cl.<sup>3</sup> E05D 15/00

U.S. Cl. 16—128 R

5 Claims



1. A hinge comprising:

- a pair of leaves formed of sheet-like material, each of said leaves having at least a pair of triangularly shaped webs extending from a longitudinal side thereof and having terminal ends formed to provide sheet-like tabs oriented generally normal to the leaf, said pair of leaves being juxtapositioned so as to be rotatable about a common axis and so that said tabs are contiguous, with at least one of the tabs of one leaf supporting at least one of the tabs of the other leaf; and
- pivot means located at said common axis for coupling said contiguous tabs together for permitting said leaves to rotate with respect to each other.

4,283,812

**MACHINE FOR MAKING MEAT PATTIES**

Gumersindo P. Corominas, 15 Mirador St. OLOT, Gerona, Spain

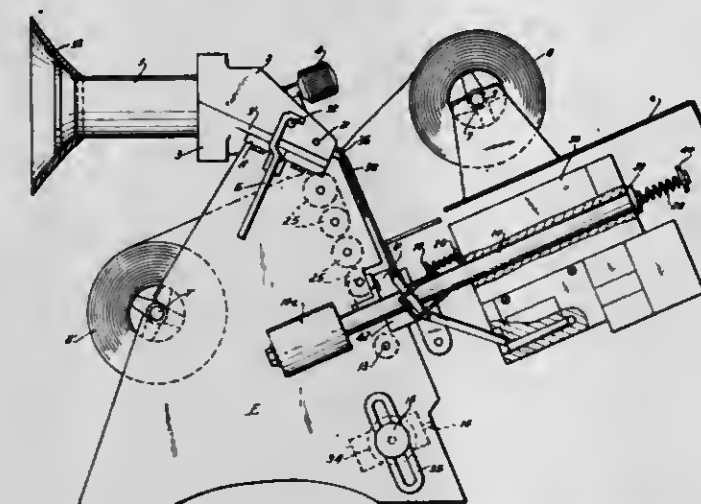
Filed Aug. 29, 1979, Ser. No. 70,911

Claims priority, application Spain, Aug. 31, 1978, 238,001

Int. Cl.<sup>3</sup> A22C 7/00

U.S. Cl. 17—32

7 Claims



1. A machine for making meat patties, which comprises a machine frame defining an inclined slideway including a bed at an output end thereof, a feed member mounted on the machine frame at an upper input end of the slideway, the feed member having an inlet for receiving ground meat and an outlet discharging a layer of the ground meat to the upper input end of the slideway, the slideway being capable of gravity-feeding the layer of ground meat from the input to the output end of the slideway, two supply rolls of sheet material freely rotatably supported at a front and a rear of the machine frame, respectively, for delivering two continuous supplies of the sheet material to the slideway on respective sides of the layer of ground meat whereby the ground meat layer with the sheet material covering the two sides thereof are gravity-fed down

the slideway, a sensing element projecting into the slideway at the output end thereof and arranged to sense a forward edge of the gravity-fed layer of ground meat covered on both sides with the sheet material and to emit a control signal on contact with the forward edge of the layer of ground meat and sheet material, means for adjusting the position of the sensing element with respect to the output end whereby the length of the cut meat patties may be controlled, an electronically controlled knife assembly operable in response to the control signal, the assembly including a knife movable into the slideway to cut the layer of ground meat and the sheet material in response to the control signal and an electromagnet controlling the knife movement, and a driven ejector roller at the output end of the slideway for feeding the cut layer of ground meat covered on both sides by the sheet material to the bed.

4,283,813

**POULTRY INSPECTION APPARATUS AND METHOD**

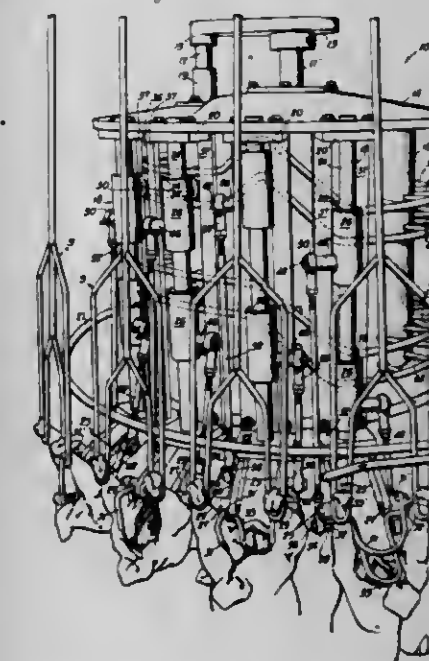
James B. House, Gainesville, Ga., assignor to Stork Gamco, Inc., Gainesville, Ga.

Filed Dec. 3, 1979, Ser. No. 99,640

Int. Cl.<sup>3</sup> A22C 21/00

U.S. Cl. 17—45

17 Claims



1. A poultry inspection method comprising continuously moving birds through an inspection station with each bird hanging head downwardly and back forwardly toward an inspector at said station, each bird having an eviscerated body cavity whose entrance faces upwardly at the entrance to the inspection station, mechanically engaging each bird within said body cavity for automatically swinging each bird upwardly until each bird is held in a generally horizontal position breast upwardly and back downwardly with the entrance of the body cavity facing the inspector, and mechanically engaging the entrance portion of said body cavity at the inspection station and expanding it to a wide open condition to provide a clear unobstructed view of the interior of said cavity, including the air sac area, the sex organ area, and the kidney area, and then disengaging each bird near the exit of the inspection station so that each bird will return automatically to a head down hanging position.

9. A poultry inspection apparatus comprising a stationary frame having stationary camming means thereon, a coaxing rotary frame having guided and movable cam follower means thereon defining plural spaced bird engaging mechanisms which move in synchronism with a poultry shackle line carrying plural birds suspended head downwardly from the shackles of said line, and each bird engaging mechanism comprising a first movable engaging element adapted to engage each bird with the eviscerated body cavity thereof to tilt each bird to a generally horizontal breast up position with the entrance of the body cavity facing an inspector, and each bird engaging mech-



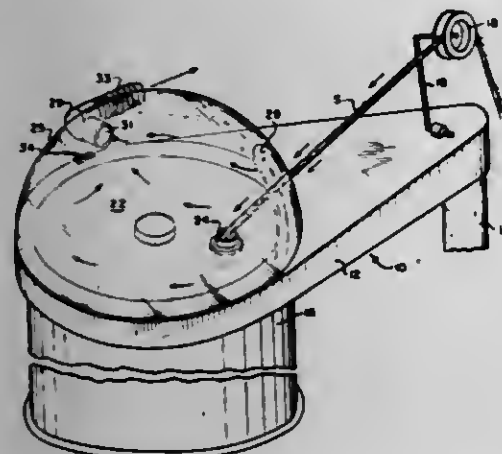
anism comprising a second movable engaging element adapted to move into the entrance of said body cavity to expand it to a wide open condition to promote visual inspection of the interior of said cavity, said first and second engaging elements responding to movements of said cam follower means.

#### 4,283,814 METHOD AND APPARATUS FOR COILER HEAD CLEANING

David M. Ford, and Gary Setzer, both of Charlotte, N.C., assignors to Pneumafil Corporation, Charlotte, N.C.  
Filed Jan. 15, 1979, Ser. No. 3,304  
Int. Cl.<sup>3</sup> B65H 54/80

U.S. Cl. 19—159 R

17 Claims



1. A coiler head cleaner for capturing lint, dust, fly and the like particulate matter released by the passage of sliver into the trumpet of a sliver coiler having a head and trumpet through which sliver is fed to a storage can positioned beneath the trumpet, so that relative rotation is produced between the axis of the trumpet and the axis of the can to produce desired coiling of the sliver in the can, said cleaner comprising: an enclosure overlying and enclosing the head and the trumpet, said enclosure having a single air inlet opening admitting air to the enclosure and through which the sliver to be coiled is fed to the trumpet, said opening dimensioned to permit free passage of the sliver therethrough without contacting the edges of the inlet opening; said enclosure having an air outlet at a point spaced from the air inlet and the trumpet; and a suction hose connected to said enclosure through which air and any particulate matter entrained therein is withdrawn from said enclosure.

#### 4,283,815 BUTTON CONSTRUCTION

Brian H. Henshaw, 2719 Robinson St., Regina, Saskatchewan, Canada

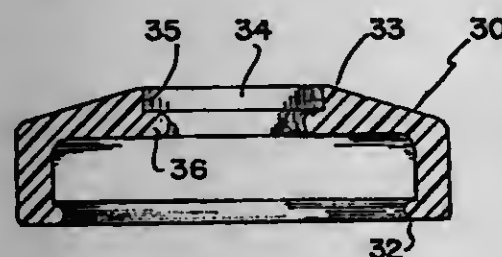
Filed Jan. 10, 1979, Ser. No. 2,374

Claims priority, application Canada, Jan. 9, 1978, 305151

Int. Cl.<sup>3</sup> A44B 1/18

U.S. Cl. 24—90 A

9 Claims



1. A button construction for dressmaking, upholstering use and the like, adapted to be covered with flexible material such as fabrics and the like; comprising in combination a button head and an attaching stem, and apertured locking disc engaging over said attaching stem, means to fixedly engage said locking disc with said head internally thereof, to hold in place, the associated flexible material covering said head and means to

connect said stem and said head together, said last mentioned means comprising a stepped aperture formed centrally through said head, said aperture including an outer portion and an inner portion, the diameter of said outer portion being larger than the diameter of said inner portion, the wall defining said inner portion being convexly curved, said stem including an upper stepped cylindrical portion having an upper portion and a lower portion, the diameter of said upper portion being larger than the diameter of said lower portion, the wall of said lower portion being concavely curved, said stepped stem snap engaging into the stepped aperture within said head with the convexly curved wall of said head engaging within the concavely curved wall of said stem.

#### 4,283,816 BINDING DEVICE

Toshie Tanaka, Machida, Japan, assignor to Nifco Inc., Yokohama, Japan

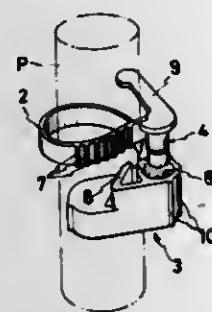
Filed Mar. 17, 1980, Ser. No. 130,893

Claims priority, application Japan, Mar. 26, 1979, 54/37820

Int. Cl.<sup>3</sup> B65D 63/00

U.S. Cl. 24—269

4 Claims



1. A binding device, comprising:  
a band provided on at least one surface thereof with fastening steps,  
a fastening member integrally connected to one end of said band and provided with a round hole,  
a shaft member having a portion thereof integrally connected to the other end of said band and adapted to be inserted into said round hole in said fastening member and rotated about its axis within said round hole, and  
a fastening means disposed on said fastening member and adapted to be brought into checked engagement with said fastening steps on said band when said shaft member is rotated and said band is wound up on said rotated shaft member.

#### 4,283,817 METHOD FOR BONDING ELECTRODE PLATES IN A MULTICELL X-RAY DETECTOR

Deanis J. Cotic, Milwaukee, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Dec. 20, 1978, Ser. No. 971,202

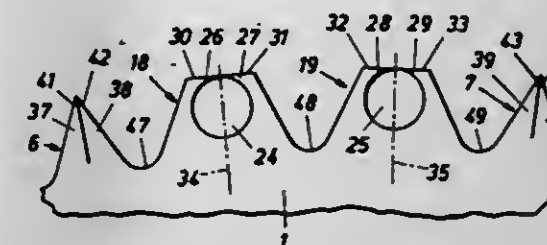
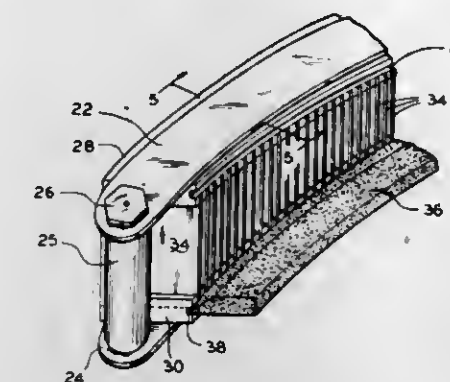
Int. Cl.<sup>3</sup> H01J 1/88

U.S. Cl. 29—25.16

7 Claims

1. A method for securing a plurality of plates into first and second members each having a side in which there is a plurality of grooves adapted to receive one of the opposed ends of the plates, said method comprising:  
positioning the members in spaced apart relationship having their grooved sides facing each other;  
inserting the opposed ends of the plates into the corresponding grooves of the members;  
applying a relatively non-viscous liquid adhesive into contact with one edge of each of the grooves of both members by saturating a cellular applicator with the adhesive and abutting the applicator against the members until

the adhesive flows by capillary action along the length of sides of the plane of the blade, each prong extending between the circular hole and an adjacent one of the peripheral recesses each groove; and



and having a straight outer edge tangential to the circular hole and perpendicular to the plane of symmetry.

#### 4,283,820 SEGMENT-SHAPED BLADE

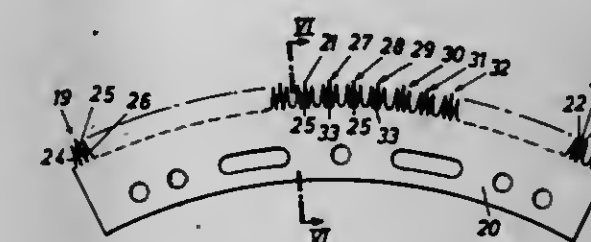
Karl Willinger, Vienna, Austria, assignor to Miha Sintermetall Aktiengesellschaft, Laakirchen, Austria

Filed Nov. 14, 1979, Ser. No. 94,071

Int. Cl.<sup>3</sup> B23D 71/00

U.S. Cl. 29—79

4 Claims



1. A segment-shaped blade for use in a cylindrical tool for machining elastic material by rotating the tool in a direction of rotation, the blade extending in a plane and having a convex periphery extending in a curved plane perpendicular to the plane of the blade, which comprises a plurality of triangular teeth arranged along the periphery between peripheral recesses, each triangular tooth having a root in another curved plane inwardly spaced from, and substantially parallel to, the curved plane wherein the periphery of the blade extends, and each tooth being divided by a substantially radial cut extending no farther than the root of the tooth into prongs having pointed tips, at least alternating ones of the prongs being bent to a side of the plane of the blade and the pointed tips of all prongs lying in the curved plane wherein the periphery of the blade extends and laterally staggered from each other in relation to the plane of the blade.

#### 4,283,821 METHOD FOR PRODUCING FIBER ROLLS

Eero Paakkunainen, Järvenpää, Finland, assignor to Oy Wärtsilä AB, Helsinki, Finland

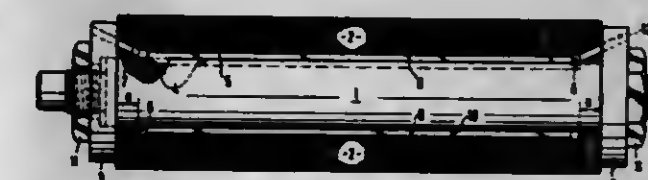
Filed Dec. 13, 1979, Ser. No. 103,220

Claims priority, application Finland, Dec. 29, 1978, 784040

Int. Cl.<sup>3</sup> B21D 39/18; B29C 27/00; B29D 3/00, 31/00

U.S. Cl. 29—129

11 Claims



1. In a method for producing a fiber roll usable as a calendar roll, the roll comprising a load carrying shaft portion and thereon a cover portion made of fiber material forming the outer portion of said roll, said cover portion being made by

curing the adhesive thereby securing the plates into the members.

#### 4,283,818

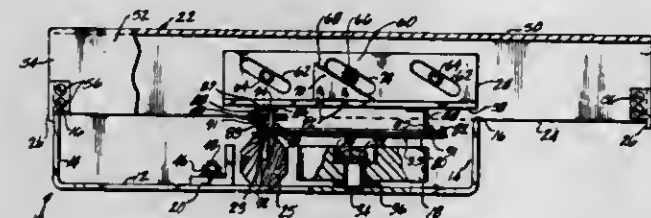
APPARATUS FOR REDUCING RACKET HANDLES  
William C. Kinard, 3710 Alder La., Pasadena, Calif. 91107;  
Donald F. Carter, South Pasadena, and Cecil G. Young, La Canada, both of Calif., assignors to William C. Kinard, Pasadena, Calif.

Filed May 21, 1979, Ser. No. 40,698

Int. Cl.<sup>3</sup> B23D 67/12

U.S. Cl. 29—76 R

19 Claims



1. An apparatus for removing material from a racket handle comprising:  
a base portion having at least one pair of raised opposed sides, the sides having edges that define a guide plane;  
means for securing a racket handle within the base, a center line of the racket handle being parallel to the guide plane;  
a frame slideable upon the edges of said raised sides, said frame having a length greater than the separation between the raised opposed sides of the base portion;  
blade means secured to the frame and movable with the frame in a plane parallel to the guide plane for removing material from the racket handle; and  
means for adjustably extending the blade means between the frame and the racket handle for varying the depth of material removal from the racket handle.

#### 4,283,819

#### SEGMENT-SHAPED BLADE

Karl Willinger, Vienna, Austria, assignor to Miha Sintermetall Aktiengesellschaft, Laakirchen, Austria

Filed Nov. 14, 1979, Ser. No. 94,068

Int. Cl.<sup>3</sup> B23D 71/00

U.S. Cl. 29—79

8 Claims

1. A segment-shaped blade for use in a cylindrical tool for machining elastic material by rotating the tool in a direction of rotation, the blade extending in a plane and having a convex periphery, which comprises a plurality of trapezoidal teeth arranged along the periphery between substantially V-shaped peripheral recesses defining the height of the teeth, each trapezoidal tooth having a radial plane of symmetry and defining a circular hole whose center lies in the plane of symmetry, and each trapezoidal tooth including two prongs bent to different



strong compression of the fiber material, in an axial direction of the roll, of a great number of annular fiber material sheets fitted on said shaft portion, said method including the steps of:

making at least one supply duct leading from an end portion to said roll to the interface of said shaft portion and said cover portion,

after said axial compression of the fiber material, feeding a hardenable fluid through said supply duct, and

applying pressure thereto so as to force said fluid to penetrate between said cover portion and said shaft portion and to fill possible cavities between said shaft portion and said cover portion and hardening said fluid.

4,283,822

# METHOD OF FABRICATING COMPOSITE NOZZLES FOR WATER COOLED GAS TURBINES

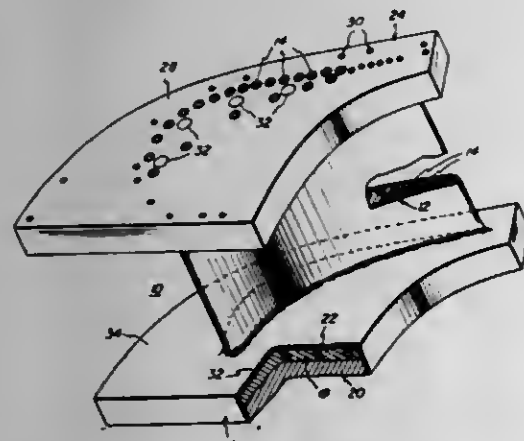
Myron C. Math, Amsterdam; William F. Schilling, Rexford; Edwin L. Teaney, Schenectady, and Leo C. Willmott, Ballston Spa, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,681

Int. Cl.<sup>3</sup> B23P 15/04; B23K 20/14

U.S. Cl. 29—156.8 H

5 Claims



1. An improved method of making a water-cooled turbine nozzle comprising the steps of:

- forming a copper or copper alloy airfoil core having longitudinal holes extending through said core at predetermined locations, and placing a first plurality of cooling tubes in said holes;
- forming a top endwall having a composite structure comprising a first upper layer of stainless steel and a first lower layer of high thermal conductivity copper consolidated from metal powder, said endwall having a second plurality of cooling tubes embedded in said first lower layer and extending through said first upper layer;
- forming a bottom endwall having a composite structure comprising a second lower layer of stainless steel and a second upper layer of high thermal conductivity copper consolidated from metal powder, said endwall having a third plurality of cooling tubes embedded in said second upper layer and extending through said second lower layer;
- performing a corrosion resistant outer cladding in the shape of a hollow body open at both ends and having substantially the external dimensions of said nozzle;
- placing the bottom endwall, the airfoil and the top endwall in said hollow cladding body and joining both endwalls and the airfoil together with a plurality of spar rods;
- welding said spar rods, said cooling tubes and said cladding body to said endwalls to form an assembly;
- evacuating air from said assembly and sealing under vacuum;
- diffusion bonding said assembly under hot isostatic pressure; and
- machining said bonded assembly to the finished product.

4,283,823

# METHOD OF MAKING AN ACTUATING MEMBER FOR A THERMOSTATICALLY CONTROLLED VALVE

Robert E. Buswell, Reading, England, assignor to Western Thomson Controls, Limited, Reading, England

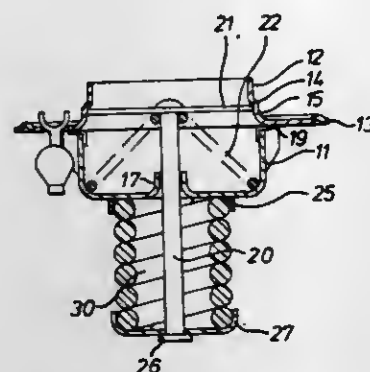
Filed Sep. 13, 1979, Ser. No. 75,119

Claims priority, application United Kingdom, Sep. 22, 1978, 37741/78

Int. Cl.<sup>3</sup> B23P 13/00; F01P 7/16; B23P 15/00

U.S. Cl. 29—157.1 R

5 Claims



1. In a method of making a thermostatically controlled valve having a body provided with a valve seat, a closure member mounted for guided movement relative to the body into and out of engagement with the valve seat to open and close the valve, means biasing the closure member to the closed position, and a temperature-responsive actuating member operatively connected to the body and the closure member for actuating the closure member, the actuating member having a shape memory effect whereby its modulus of elasticity varies with temperature such that it expands little at temperatures up to a critical temperature but expands rapidly at temperatures above the critical temperature, the critical temperature being that temperature at which the valve begins to open by rapid expansion of the actuating member, the improvement comprising the steps of:

- forming the actuating member with a length greater at said critical temperature than a predetermined length required to hold the closure member in the start-to-open position of the valve;
- heating the actuating member to its critical temperature, and
- removing excess material from the actuating member while it is at its critical temperature so as to reduce the length of the actuating member to the said predetermined length.

4,283,824

# METHOD FOR MANUFACTURING HEAT EXCHANGER TUBING

Friedrich Schatz, and Gerhard Ziemek, both of Langenhagen, Fed. Rep. of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshütte AG, Hanover, Fed. Rep. of Germany

Filed Aug. 22, 1979, Ser. No. 68,707

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1978, 2837184

Int. Cl.<sup>3</sup> B23P 15/26

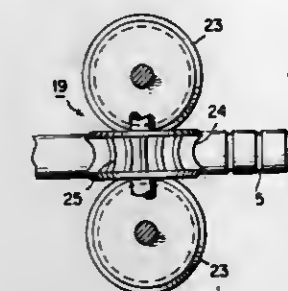
U.S. Cl. 29—157.4

4 Claims

1. A method for manufacturing heat exchanger tubing having a plurality of spaced apart transverse grooves impressed into its outer surfaces, comprising the steps of:

- deforming a metal band in a longitudinal direction into a tubular member;
- continuously welding the longitudinal edges of said tubular member to form a tubular member having a longitudinally welded seam;
- continuously impressing spaced apart transverse grooves into the outer surface of said welded tubular member by means of a groove forming roller means;
- transversely cutting said tubular member along smooth

portions of said tubular member between adjacent transverse grooves to provide discrete tube lengths; and expanding the interior cross section of the end portions of



each of said tube lengths to form a symmetrical polygon each side of which is positioned in a radial direction beyond the outer surface of the portion of said tube length between said end portions.

4,283,825

# HEAVY DUTY PRESS

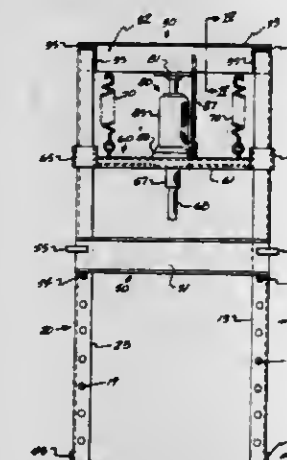
John McKay, and Billy C. Hawkins, both of 41 Hampton Arms, Greenville, S.C. 29607

Filed Sep. 4, 1979, Ser. No. 72,065

Int. Cl.<sup>3</sup> B23P 19/02

U.S. Cl. 29—251

10 Claims



1. An improved heavy duty press comprising:

- a pair of spaced apart vertical support members, each said support member having a generally U-shaped configuration and defining an elongated slot in a base of the U, said slots being opposite each other;
- stabilizing means secured to said vertical support members at a lower end thereof;
- a horizontal support member received between said vertical support members and secured thereto along contiguous surfaces of said vertical and horizontal members;
- a work support table secured between said vertical support members, said work support table being adapted for vertical adjustment along a portion of said vertical support members;
- a carriage assembly received between said vertical support members above said work support table and being guideably movable in the plane of said vertical support members, said carriage assembly having a work element associated therewith;
- spring means secured between said horizontal support member and said carriage assembly, said spring means biasing said carriage assembly in a direction toward said horizontal support member;
- power means received between said horizontal support member and said carriage assembly, said power means being operable to move said carriage assembly against the bias of said spring means to bring said work element into

contact with a workpiece received at said work support table; and

- workpiece holding means receivable within the generally U-shaped configuration of said vertical support members along said elongated vertical slots, said holding means being adapted to receive a portion of an elongated workpiece adjacent at least one of said elongated slots and hold same against rotation when acted upon by said work element.

4,283,826

# TUBE EXTRACTING MECHANISM

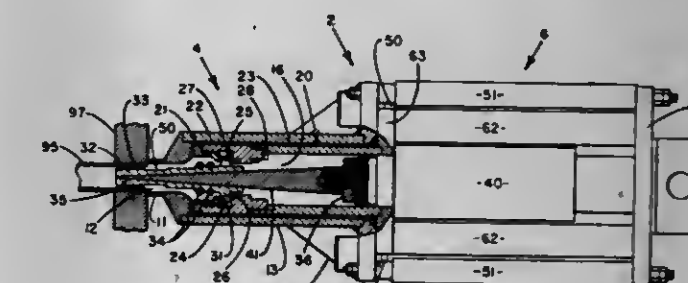
Charlie D. Miller, East Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Continuation-in-part of Ser. No. 907,239, May 18, 1978, abandoned. This application Mar. 8, 1979, Ser. No. 18,549

Int. Cl.<sup>3</sup> B23P 19/04

U.S. Cl. 29—252

15 Claims



- A tube extracting mechanism comprising:
  - an elongated frame defining an opening in the front end thereof and a longitudinally extending passageway in communication with the opening;
  - a back plate located rearward of the frame;
  - a mid plate located between the back plate and the frame; connecting means connecting the back and mid plates for unitary longitudinal movement;
  - a sleeve positioned in the passageway, slidably supported by the frame for longitudinal movement within the passageway in a first direction towards the opening and in a second direction away from the opening, and connected to the mid plate for unitary longitudinal movement therewith;
  - expandable jaw means supported by the sleeve for longitudinal movement therewith, wherein the jaw means is movable through the opening;
  - expansion means in communication with the expandable jaw means for expanding the jaw means, wherein longitudinal movement of the expansion means in the first direction expands the jaw means;
  - expansion power means connected to the back plate for unitary longitudinal movement therewith, and connected to the expansion means for imparting longitudinal movement in the first direction to the expansion means; and
  - pulling power means connected to the frame and the back plate for imparting longitudinal movement in the second direction to the back plate, the mid plate, the sleeve, and the expandable jaw means.

4,283,827

# TOOL FOR REMOVING AXLE SPINDLES

Oliver R. Abel, 1831 Broad Ave. NW., Canton, Ohio 44708

Filed Sep. 4, 1979, Ser. No. 72,485

Int. Cl.<sup>3</sup> B23P 19/04

U.S. Cl. 29—254

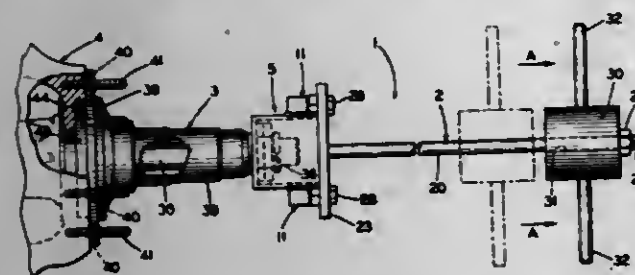
5 Claims

1. An improved tool construction for removing a spindle from an axle housing including:

- a housing having side wall means terminating in an open first end and an opposite axially spaced second end;
- end wall means mounted on the second end of the side wall means;



- (c) a circular opening formed in the center of the end wall means adapted to receive an end of a spindle there-through;
- (d) a plurality of lug means provided on the housing side wall means adjacent the open first end and spaced equally circumferentially about said open end;
- (e) slide hammer means mounted on the housing and attached to the lug means for applying an axial force on said housing to remove the spindle from the axle housing, said



- slide hammer means including a rod, a weight slidably mounted on the rod, a stop mounted on one end of the rod, and an attachment plate mounted on the other end of the rod;
- (f) openings formed in the attachment plate and having a spacing complementary to the spacing of the spaced lug means; and
- (g) a pair of bolts extending through the plate openings and threadedly engaged with the lug means to mount the slide hammer means on the housing.

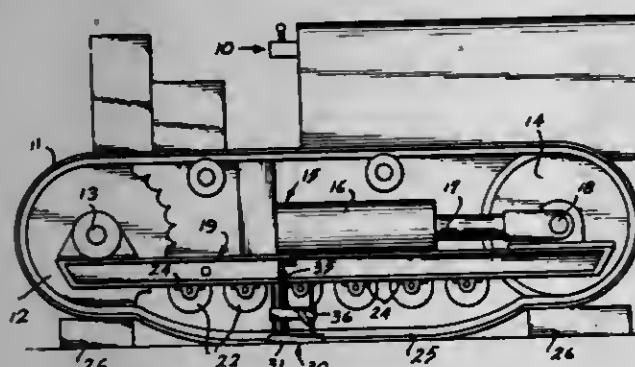
4,283,828

## ENDLESS TRACK SUPPORT TOOL

Wilbur C. Cole, Sr., 360 Fort Lewis Blvd., Salem, Va. 24153  
Filed Jan. 7, 1980, Ser. No. 110,154  
Int. Cl.<sup>3</sup> B23P 19/04

U.S. Cl. 29—256

6 Claims



1. A portable apparatus for removing and replacing a support and guidance roller on a vehicle having an endless track, comprising a base, a travelling block means adjustably mounted on said base, a first adjusting means for moving said travelling block means relative to said base in a generally vertical direction, a second adjusting means carried by said travelling block means for movement in a horizontal direction, cradle means carried by said second adjusting means and being movable toward and from said travelling block means selectively, first guide means for guiding said travelling block means relative to said base, second guide means for guiding said cradle means relative to said travelling block means, means for stabilizing said base in a direction parallel to said second guide means when said first guide means is engaged, and means for selectively operating said first and second adjusting means, whereby said cradle means may be moved into intimate supporting engagement with a support and guidance roller mounted on a vehicle and thereafter the apparatus is operated to remove the roller from the vehicle.

4,283,829  
PROTECTIVE DEVICE FOR MOUNTING BLADES ON  
ARROWHEAD

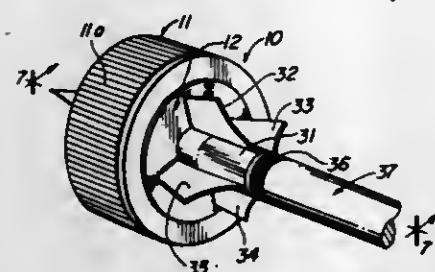
Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Company, Columbus, Nebr.

Filed May 14, 1979, Ser. No. 38,495

Int. Cl.<sup>3</sup> B25B 27/14

U.S. Cl. 29—278

7 Claims



1. A hand-held protective device to facilitate the safe loading of blade elements into an arrowhead, said device comprising
- a spool-like body formed with a principal central bore extending axially into said body,
- an array of spaced blade receiving slots formed in said body, said slots communicating with and extending radially from said central bore at selectable arcuate spacings from one another within the body of said device along the length of said bore, and the arcuate spacing of said slots being in correspondence with arcuate spacing of blade elements as secured in the head of an arrow, and
- a protuberance carried by a wall bounding each said slot, said protuberance extending into to invade said slot and terminating in a blade engaging surface for abutment against a face of a blade inserted into each of said slots, thereby frictionally to engage to secure the blades within said device during manipulation thereof.

4,283,830  
METHOD AND APPARATUS OF MONITORING THE  
SCREWING HOME OF A THREADED ELEMENT BY A  
POWER TOOL

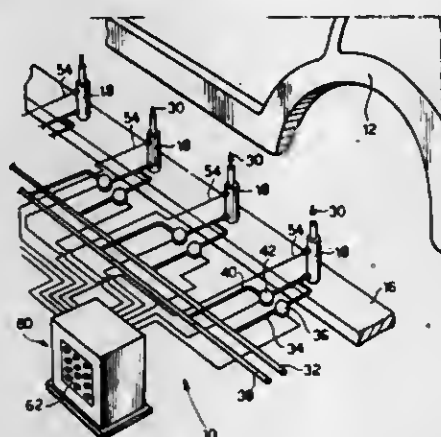
Gabriele Gallizio, Turin, and Giovanni Balestrino, Orbassano, both of Italy, assignors to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Jan. 12, 1979, Ser. No. 47,965

Claims priority, application Italy, Sep. 27, 1978, 69226 A/78  
Int. Cl.<sup>3</sup> B25B 23/14

U.S. Cl. 29—407

8 Claims



1. A method of monitoring the screwing home of a threaded element by a power tool, the method comprising the steps of: measuring the number of revolutions made by the threaded element during the operation of screwing home the element,

subdividing the duration of the screwing operation into a plurality of intervals, and verifying that the number of revolutions made by the threaded element from the beginning of the screwing operation up to the end of each time interval lies between two threshold values respectively corresponding to a maximum and a minimum number of revolutions acceptable at that stage during the screwing operation.

n. casting molten metal in said formed investment to form a finished casting to be used as the frame for said object.

4,283,832

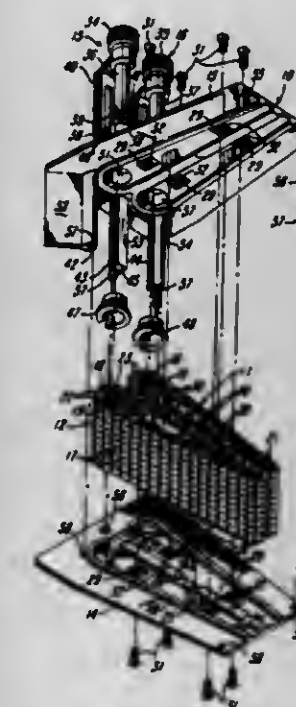
METHOD OF MAKING PRINT HEAD ASSEMBLY  
Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Aug. 23, 1979, Ser. No. 69,217

Int. Cl.<sup>3</sup> B23P 11/00

U.S. Cl. 29—434

12 Claims



4,283,831  
METHOD OF MANUFACTURING AND INTERLOCKING  
JEWELRY WITH PRECISE PREFORMS

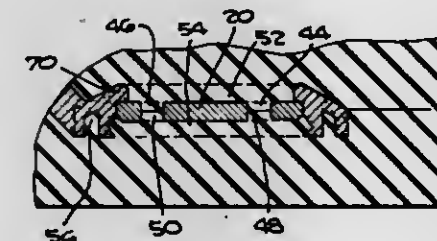
Shigeru Jhomo, Los Angeles, Calif., assignor to Tempo G, Los Angeles, Calif.

Filed May 5, 1980, Ser. No. 146,488

Int. Cl.<sup>3</sup> B22C 9/04

U.S. Cl. 29—423

18 Claims



12. In the art of casting metal so that the finished casting will hold precise dimensions in certain critical areas to enable the finished casting to be used as a frame for encasing an object of precise dimensions, the method of making the frame metal casting comprising the steps of:

- selecting an object to be encased in a metal frame;
- selecting an original casting model containing a cavity disposed therein;
- forming an interior portion of the inner wall adjacent said cavity of said casting model to dimensions which are substantially one percent larger than the dimensions of said object to be encased;
- selecting a model form key whose dimensions are substantially one percent larger than said object to be encased;
- placing said model form key in said cavity of said casting model and rigidly attaching said model form key to said inner wall of said casting model;
- attaching the end of a rod to a portion of said casting model;
- placing said casting model with said rod and said model form key attached into a mold, surrounding said casting model and attachments with a material of yieldable consistency and solidifying said material in the form of a completed first stage mold;
- separating said first stage mold into opposite complementary portions and allowing a section of one edge to remain intact so that the two complementary portions can be fit together precisely;
- removing said casting model and attachment and placing a duplicate model form key in the area of said first stage mold where said model form key was located inside said casting model;
- closing both portions of said first stage mold with said duplicate model form key inside and injecting casting wax into said first stage mold so that the wax surrounds said duplicate model form key and forms a wax pattern inside said first stage mold;
- removing said wax pattern from said first stage mold;
- then removing said duplicate model form key from said wax pattern and surrounding said wax pattern with casting investment compound;
- extracting the material of said wax pattern to leave a formed investment;

- Method of making a print head assembly, comprising the steps of: providing mounting means having a concave mounting surface, providing supporting means disposed opposite the concave mounting surface, providing a series of drive wheels having holes, providing a series of printing bands each having a plurality of different printing elements, providing a selector, providing a pair of first and second side plates with the second side plate having an opening, placing the mounting means and supporting means in a fixture, assembling the drive wheels and the respective printing bands onto the mounting means so that the drive wheels are rotatably supported on the concave mounting surface with their holes in general alignment and with the printing bands being trained about the respective drive wheels and the supporting means to provide a subassembly, removing the subassembly from the fixture, and connecting the first and second side plates to opposite sides of the subassembly in precise orientation with the selector extending through the opening in the second side plate and into the holes to engage any selected wheel to provide an assembly.

4,283,833

METHOD OF ATTACHING A BALL JOINT TO A  
SUSPENSION MEMBER

Elliot T. Pyles, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 16, 1979, Ser. No. 21,038

Int. Cl.<sup>3</sup> B23P 11/00

U.S. Cl. 29—441 R

5 Claims

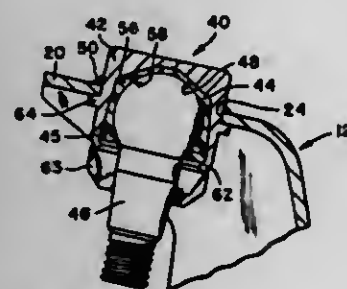
1. A method of attaching a ball joint assembly to a suspension member for connecting a wheel assembly to a vehicle frame, the ball joint assembly including a socket for receiving a bearing and a stud, said method comprising the steps of: providing an opening on said suspension member; inserting said socket into said opening; welding said socket to said suspension member to fixedly position said socket within said opening; machining said socket after said socket is welded to said suspension member to provide a cavity within said socket



to receive said bearing and to further provide a contoured surface on said cavity engageable with said bearing; and mounting said bearing and said stud within said cavity of said socket after the latter is welded to said suspension member and machined to provide said contoured surface.

4. The method of attaching a ball joint assembly to a suspension member for connecting a wheel assembly to a vehicle frame wherein the ball joint assembly includes a socket providing a cavity therein, a bearing received within said cavity, and a stud coupled to the bearing, said method comprising the steps of:

providing an opening on said suspension member; inserting said socket into said opening to abut a first portion of said socket with said suspension member and to extend a second portion of said socket outwardly from said opening;



welding said second portion of said socket to said suspension member to permanently fix said socket to said suspension member;

engaging a tool with said socket to generate a contoured surface within said cavity on said socket after said socket is welded to said suspension member, said contoured surface having a predetermined shape which substantially matches the outer surface of said bearing;

inserting said bearing and said stud which is coupled thereto into said cavity to engage said bearing outer surface with said contoured surface; and

deforming said socket to prevent separation between said bearing and said socket, thereby forming said ball joint assembly on said suspension member.

4,283,834

#### APPARATUS AND METHOD FOR ALIGNING FINE WIRE FOR THERMAL BONDING

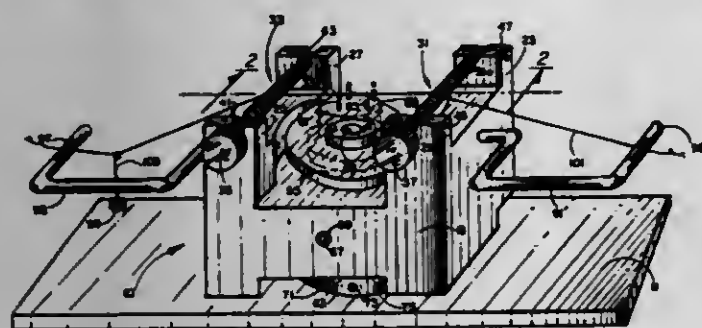
Richard F. Nicholas, Whittier, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 19, 1979, Ser. No. 21,404

Int. Cl.<sup>3</sup> B23K 37/04; H01R 43/02

U.S. Cl. 29—468

6 Claims



1. An alignment fixture for relatively positioning a fine wire and a workpiece comprising, in combination:

- a base;
- a housing supported by the base;
- a pair of spaced apart lead screws independently rotatably supported by the housing;
- a first spacer arm extending outwardly from the housing in a direction away from one of said screws;

a second spacer arm extending outwardly of the housing in a direction away from the other of said screws; and

means for supporting the workpiece between said spacer arms;

said wire extending from one of the spacer arms to the other of the spacer arms via the threads of said screws whereby rotation of one or both of the screws translates the wire relative to the workpiece.

4,283,835

#### CAMBERED CORE POSITIONING FOR INJECTION MOLDING

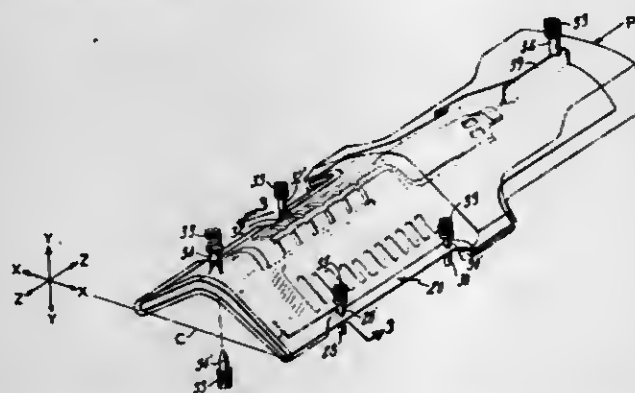
Frank T. Obrochta, East Hartford, Conn., and Ralph E. Disa, Hampden, Mass., assignors to Ualied Technologies Corporation, Hartford, Conn.

Filed Apr. 2, 1980, Ser. No. 136,600

Int. Cl.<sup>3</sup> B22C 7/02

U.S. Cl. 29—527.6

7 Claims



1. Apparatus for improving the precision of location of a core in an injection molding die usable for forming a thin walled cambered airfoil shape surrounding a cambered core having a longitudinal z axis and x and y axes perpendicular thereto, where the x axis lies generally along a chord of the core, the die having similar axes corresponding to the core and having two opposing sides generally facing the x-z plane, comprising:

- a first set of at least three fixed peripheral locators positioned in a first side of the die at a core surface datum, the set having at least two locators spaced apart on one side of the z axis and at least one locator on the opposing side;
- at least two resiliently movable centerline locators positioned in the second side of the die and spaced apart generally along the z axis, adapted to engage a core, said centerline locators being movable generally parallel to the y axis;
- means for urging a core against the locators on the first side;
- 4. The method of producing a precision cambered hollow article, such as a gas turbine blade, using a cambered ceramic core and an injection molding die to produce a lost wax pattern, which comprises:
  - mounting the concave side of the core in the die on at least three fixed locators;
  - urging the core against the fixed locators by applying force to the convex side;
  - forming a pattern about the core within the die, forming a mold from the pattern and core, and forming an article from the mold, to bias deviations caused by the core into the convex side wall of the article; and
  - altering the dimension of the external convex surface of the article, to thereby compensate for deviations in the core and produce an accurate finished part.

5. In the casting of cambered gas turbine components using an expandable pattern, such as in the lost wax method, the process of improving the location in a thermoplastic injection die of a core having a longitudinal z axis and x and y axes perpendicular thereto, where the x axis lies generally along a chord of the core, comprising:

- contacting a first side of the core at its periphery by means of

fixed locators, to accurately position the core along the y axis;

contacting a second side of the core along its centerline by means of resilient movable locators, to accurately position the core along the x and z axes without interfering with the functioning of the fixed locators; and

resiliently urging the core by said resilient movable locators in the direction of the fixed locators, to maintain the position of the core during injection of thermoplastic into the die.

4,283,836

#### MULTI-MODULE DIP TRANSFER AND INSERTION MACHINE

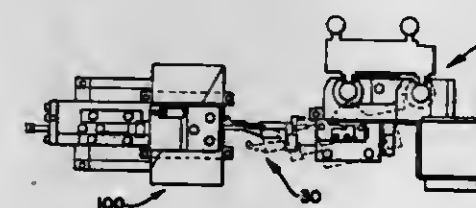
Stanley Janisiewicz, Endwell, and Robert H. Holmes, Binghamton, both of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Sep. 25, 1979, Ser. No. 78,682

Int. Cl.<sup>3</sup> H05K 3/30

U.S. Cl. 29—564.1

27 Claims



1. An apparatus for inserting electronic components, said components having a body and dual in-line parallel leads extending therefrom, said apparatus comprising:

- a magazine for supplying said components one at a time at a first station;
- an insert head means for receiving an individual component at a second station, rotating to an insert position, and inserting said component into a printed circuit board; and
- a shuttle means for engaging said magazine, and releasing and removing an individual component from said magazine assembly at said first station, transporting said component to said second station, loading said insert head means with said component, and returning to said magazine assembly.

4,283,837

#### SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME

Arie Slob, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 837,032, Sep. 27, 1977, Pat. No. 4,161,745.

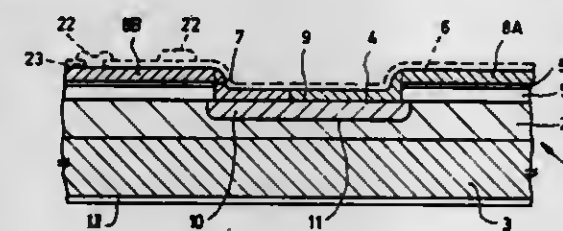
This application Apr. 12, 1979, Ser. No. 29,424

Claims priority, application Netherlands, Nov. 19, 1976, 7612883

Int. Cl.<sup>3</sup> H01L 21/365, 21/42, 21/44

U.S. Cl. 29—578

8 Claims



1. A method of manufacturing a semiconductor device having a semiconductor body of monocrystalline silicon, which comprises:

- providing an electrically insulating layer on the surface of said silicon semiconductor body;

providing a window in said insulating layer to expose a portion of the silicon body surface;

forming a surface zone of a first type conductivity at least partly adjacent the surface-adjointing portion of the silicon body exposed by said window;

depositing a silicon layer from the gaseous phase on the insulating layer and on the exposed silicon surface within said window;

doping at least a part of the silicon layer within said window in a first doping step to obtain a first silicon lower part of the first type conductivity, the first silicon layer part within the window contacting said surface zone of the first type conductivity;

masking a part of the silicon layer extending within a part of the window and on the insulating layer outside the window; and

converting a further nonmasked part of the silicon layer situated partly within the window and partly on the insulating layer outside the window to a second type conductivity opposite to that of the first type in a second doping step to obtain a second silicon layer part of the second type conductivity, said second silicon layer part being formed adjoining the first silicon layer part at least within said window.

4,283,838

#### METHOD OF MAKING PLASTIC ENCAPSULATED SEMICONDUCTOR DEVICES

Masahiro Yamane; Toshimi Watanabe; Keiji Itoga; Kiyoshi Ishibashi; Yutaka Morita; Isamu Yamamoto, and Kiyoji Imanaka, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 780,437, Mar. 23, 1977, abandoned.

This application Feb. 12, 1979, Ser. No. 11,639

Claims priority, application Japan, Mar. 31, 1976, 51-35314; Mar. 31, 1976, 51-38987[U]; Apr. 7, 1976, 51-43356[U]

Int. Cl.<sup>3</sup> H01L 21/28

U.S. Cl. 29—588

5 Claims



1. A method of preparing plastic encapsulated semiconductor devices which comprises the steps of:

- preparing a connected metal plate in which a plurality of semiconductor element holding parts are connected in series in one direction with at least two connecting arms, disposed between each pair of semiconductor holding parts, said connecting arms each having an area smaller than that of said semiconductor element holding parts;
- forming all of said connecting arms inside the side surfaces of said semiconductor element holding parts in the connecting direction for substantially preventing the formation of dells caused by punching a metal plate;
- providing semiconductor elements having a pair of main surfaces in parallel with each other and a pn junction in said semiconductor elements, the exposed pn junction being coated with one of a glass passivation and a nitride passivation;
- bonding the semiconductor elements on one main surface of said semiconductor element holding parts;
- providing a lead frame having a plurality of spaced parallel ribbon lead electrodes extending from a common connecting part;
- bonding the free ends of the ribbon lead electrodes on the other of the main surfaces of said semiconductor elements;
- plastic encapsulating said semiconductor elements, said semiconductor element holding parts and said ribbon lead



electrodes except said connecting arms, the other main surface of said semiconductor element holding parts and the connecting part of said ribbon lead electrodes; separating said semiconductor devices by cutting said connecting arms of said connected metal plate and the connecting part of said ribbon lead electrodes; and supporting the connecting arms along the entire width of the connecting arms against the action of cutting of the connecting arms so as to prevent deformation of the semiconductor element holding parts.

4,283,839

# METHOD OF BONDING SEMICONDUCTOR DEVICES TO CARRIER TAPES

Michael T. Garsky, Allentown, Pa., assignor to Western Electric Co., Inc., New York, N.Y.

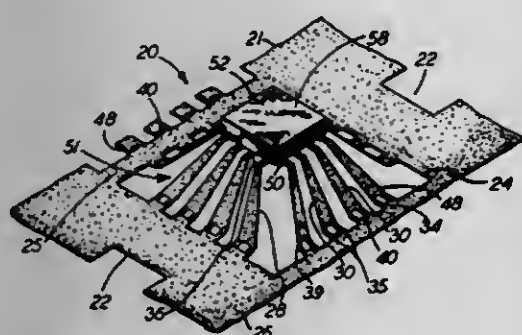
Division of Ser. No. 928,134, Jul. 26, 1978, Pat. No. 4,234,666.

This application Jul. 7, 1980, Ser. No. 166,440

Int. Cl.<sup>3</sup> H01L 21/50

U.S. Cl. 29—589

9 Claims



1. A method of affixing a chip to a tape having leads with free ends extending therefrom while forming a desired shape in the leads comprising:

- bonding the free ends of the leads to the chip;
- stressing the leads to form the free ends of the leads into a spaced relationship with the plane of the tape; and
- relieving the forming stresses in the leads uniformly by concentrating the stresses to plastically deform the leads at a stress relief site in each of the leads located symmetrically about the longitudinal center of each lead.

4,283,840

# METHOD FOR MANUFACTURING A SUPPORT CONSTRUCTION FOR THE WINDING IN AN ELECTRICAL MACHINE

Erkki Merikallio, Espoo, and Paavo Paloaniemi, Helsinki, both of Finland, assignors to Oy Stromberg AB, Helsinki, Finland

Filed Jan. 12, 1979, Ser. No. 47,694

Claims priority, application Finland, Jan. 13, 1978, 781878

Int. Cl.<sup>3</sup> H02K 15/12

U.S. Cl. 29—596

9 Claims



1. A method for the manufacture of a support structure for the coil ends in an electrical machine comprising arranging in the winding at least one hollow supporting body having a porous wall and filled with substantially particulate filler agent and thereafter impregnating the body with a liquid hardenable impregnation agent and hardening the impregnation agent, at least part of the particles and particle size distribution in the

filler agent being of a magnitude suitable for blocking pores in the porous wall and thereby reducing the flow-off of the impregnation agent from the filler agent after the impregnation.

4,283,841

# METHOD OF MANUFACTURING A COMMUTATOR

Akira Kamiyama, Kiryu, Japan, assignor to Mitsuha Electric Mfg. Co., Ltd., Kiryu, Japan

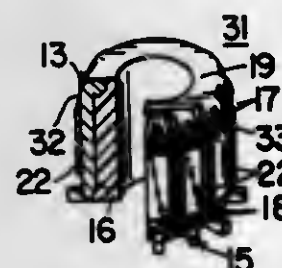
Filed Dec. 13, 1978, Ser. No. 969,277

Claims priority, application Japan, Jan. 26, 1978, 53-6680; Jul. 20, 1978, 53-100447[U]

Int. Cl.<sup>3</sup> H01R 43/08

U.S. Cl. 29—597

7 Claims



1. A method of manufacturing a commutator which may be submerged and used in gasoline for an extended period of time, comprising the steps of:

- (a) fixing a sheet of electrically conductive, gasoline-resistant material to a copper plate;
- (b) blanking said copper plate into a shape to provide claw-forming projections and riser-forming projections;
- (c) rolling said copper plate and affixed sheet to form a cylinder;
- (d) bending said claw-forming projections inwardly of said cylinder and said riser-forming projections outwardly of said cylinder;
- (e) forming a hub of resin within said cylinder with said claw-forming projections at least partially embedded in said hub;
- (f) slitting said cylinder and affixed sheet longitudinally at regular intervals to form a plurality of commutator segments having exposed copper portions and sheet covered portions; and
- (g) forming a cover layer of gasoline-resistant material on said exposed copper portions of said commutator segments.

4,283,842

# METHOD OF MAKING AN ELECTRICAL INDUCTIVE APPARATUS

Angelo A. DeLaurentis, Sharpsville; Frank G. Zola, Jr., and Theodore R. Specht, both of Sharon, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 933, Jan. 4, 1979, Pat. No. 4,200,834. This application Aug. 3, 1979, Ser. No. 63,876

Int. Cl.<sup>3</sup> H01F 41/02

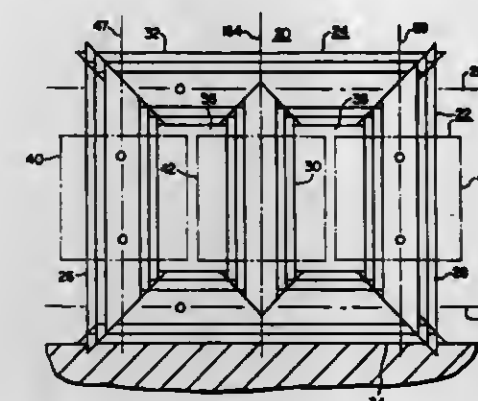
U.S. Cl. 29—606

6 Claims

1. A method of constructing electrical inductive apparatus, comprising the steps of:

- providing leg laminations having first and second ends, and upper and lower yoke laminations,
- stacking said leg laminations to a predetermined build dimension to provide complete leg members having first and second sides defined by the outermost laminations,
- orienting said leg members in spaced parallel relation with their first and second sides in substantially horizontally oriented planes,
- assembling said lower yoke laminations with the first ends of the leg laminations, starting at one side of the leg members and progressing to the other side, to provide a sub-assembly having leg members and a lower yoke member,

uprighting said sub-assembly such that the second ends of the leg laminations are higher than their first ends, providing an electrical winding assembly for at least one of said leg members, telescoping said electrical winding assembly over said at least one leg member,



and assembling said upper yoke laminations with the second ends of the leg members, starting intermediate the first and second sides of the leg members and progressing outwardly therefrom in opposite directions to the first and second sides of the leg members, to define an upper yoke member.

4,283,843

# METHOD OF MAKING VIBRATION RESISTANT ELECTROCHEMICAL CELL HAVING DEFORMED CASING

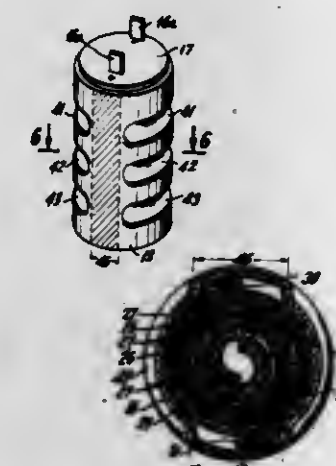
John W. Hooke, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Division of Ser. No. 25,060, Mar. 29, 1979. This application Nov. 2, 1979, Ser. No. 90,597

Int. Cl.<sup>3</sup> H01M 6/10

U.S. Cl. 29—623.1

8 Claims



1. In a method of manufacturing electrochemical cells of the type having an electrode assembly including spirally wound plate electrodes of which at least one electrode has an end terminating among the outer convolutions of the electrode assembly, the improvement comprising:

- providing a generally tubular cell case of permanently deformable material;
- inserting the electrode assembly into said cell case;
- aligning the electrode assembly within the case so that the terminal end of said one electrode is in a predetermined angular position relative to a reference point exterior of the cell case; and
- inwardly deforming said case at locations angularly displaced from said angular position of the terminal end of said one electrode, the deformed casing engaging the electrode assembly with sufficient force to restrain it against movement within the case such that deformations

formed on said casing at said locations do not contact said terminal end of said one electrode.

4,283,844

# METHOD OF MAKING BATTERY ELECTRODE STRUCTURE

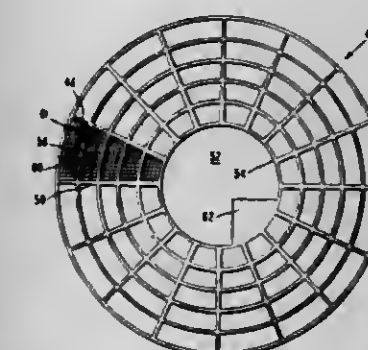
Martin J. Milden, Los Angeles, and Stanley Gordon, Torrance, both of Calif., assignors to Hughes Aircraft Company, Calif.

Filed Aug. 16, 1979, Ser. No. 66,989

Int. Cl.<sup>3</sup> H01M 4/04

U.S. Cl. 29—623.5

6 Claims



1. The method of making a self-supporting electrode substrate for a nickel-hydrogen cell comprising the steps of: coating nickel sheet metal with a photoresist; exposing the photoresist in accordance with a desired electrode pattern to leave a solid outer rim around the electrode substrate, to leave a solid inner rim within said electrode substrate with an inner opening interiorly of the inner rim toward the center of the electrode substrate and with a tab positioned on the inner rim, together with radially directed conductors attached to the inner rim and to the outer rim and being of greater cross-section closer to the inner rim than to the outer rim to reduce electrical resistance drop as current moves through the radial conductors with respect to the inner rim; chemically etching away through the nickel to form a nickel substrate having perforations therethrough in accordance with the photoresist pattern to provide ion flow paths perpendicular to the conductors.

4,283,845

# APPARATUS FOR POSITIONING ELECTRICAL COMPONENTS RELATIVE TO A CARRIER

Pierre L. Sigel, Villeneuve-le-Roi; Raymond L. Delorme, Bagnolet, and Henri Grosjean, Le Plessis Trevisie, all of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

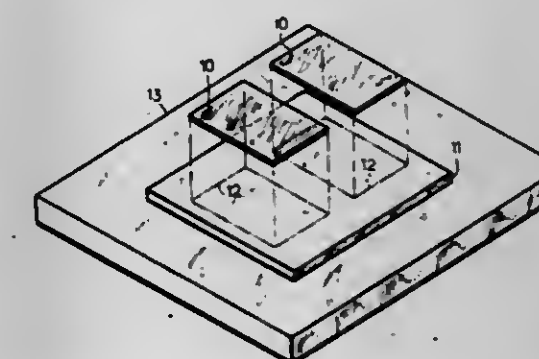
Filed Jan. 20, 1978, Ser. No. 917,279

Claims priority, application France, Jul. 4, 1977, 77 20466

Int. Cl.<sup>3</sup> B23P 19/00

U.S. Cl. 29—739

6 Claims



5. Apparatus for positioning articles relative to a carrier so that articles can be laid down on the carrier and attached at predetermined locations on the carrier comprises a first refer-



ence system defined by at least three rotatable elements against which the lateral edges of the carrier come to bear, first means for bringing the carrier to a predetermined position in relation to said first reference system, a second reference system defined by at least three rotatable elements, second means for defining on the carrier, when it is in said predetermined position, the locations for the articles to be laid down, third means to bring the articles to be laid down to a predetermined position in relation to said second reference system, and said second reference system being disposed with respect to said first reference system so as to enable the carrier to be positioned in relation to the said articles in such a way that the articles are then exactly opposite the predetermined locations for them on the carrier.

4,283,846

**ELECTRICAL TERMINAL CRIMPING APPARATUS**

John C. Collier, York, Pa., assignor to BICC Limited, London, England

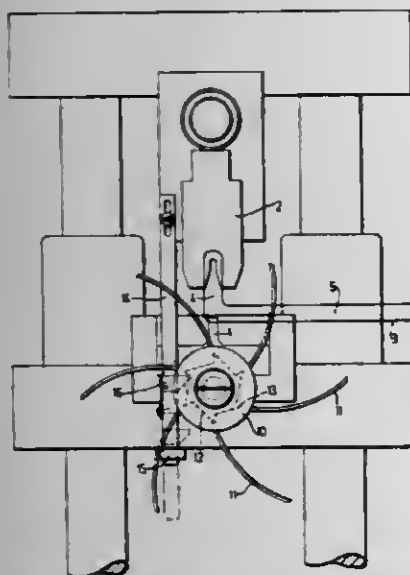
Filed Aug. 31, 1979, Ser. No. 71,538

Claims priority, application United Kingdom, Sep. 4, 1978, 35512/78

Int. Cl.<sup>3</sup> H01R 43/04

U.S. Cl. 29—753

10 Claims



1. For use in crimping an electrical terminal to a stripped end of an electrical lead, electrical crimping apparatus comprising at least two crimping dies so mounted that at least one of the dies is constrained to move towards and away from the other die, wherein a wheel having a number of circumferentially spaced, outwardly extending vanes is rotatably mounted with respect to the crimping dies and wheel-engaging means for effecting at least partial rotation of the wheel is operatively connected to the movable die, the arrangement being such that, after an electrical terminal has been crimped to a stripped end of an electrical lead and as said movable die travels away from the other die, said wheel-engaging means automatically causes the wheel to rotate to such an extent that one of the vanes will push the terminated lead laterally from between the crimping dies to a sufficient extent to permit the stripped end of another lead to be positioned between the dies.

4,283,847

**CIRCUIT BOARD ASSEMBLY**

Gordon M. May, Cedar Springs, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed May 24, 1979, Ser. No. 42,139

Int. Cl.<sup>3</sup> H05K 3/30; B23P 19/00

U.S. Cl. 29—832

38 Claims

1. In an apparatus for assembling integrated circuits having a body and a plurality of leads extending therefrom onto a printed circuit board comprising a plurality of solder-containing pads designed to receive the integrated circuit leads, wherein the leads of the integrated circuits are tinned and bent

downwardly and laterally to form feet to contact the printed circuit pads;

a table for mounting a printed circuit board;

electrode means for soldering the integrated circuit leads to the printed circuit board at a predetermined location on the table;

means for positioning the integrated circuits on the printed circuit board at the predetermined location for soldering by the electrode means; and

means for intermittently moving the table with respect to the electrode means to position different areas of the printed circuit board at the predetermined location beneath the electrode means;

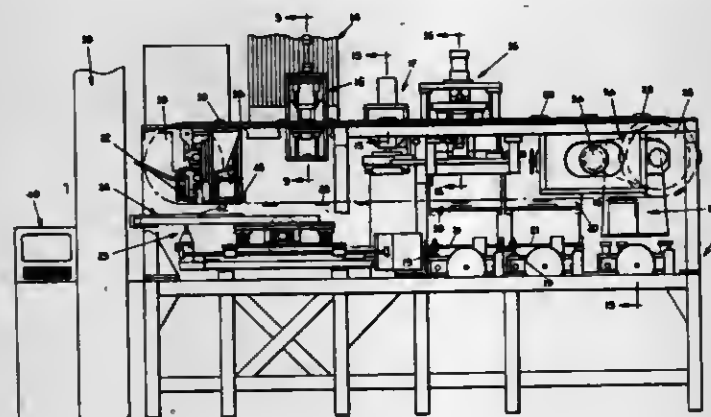
the improvement which comprises:

a frame;

a continuous conveyor means mounted on the frame and having a plurality of spaced support means to support and retain integrated circuits by the leads thereof;

means mounted on the frame for dispensing integrated circuits seriatim onto the integrated circuit support means so that the integrated circuits are supported thereon by the leads;

means on the frame operably associated with the conveyor means for bending the leads downwardly and outwardly to form feet on the leads for contact with the printed circuit board while the leads are supported by the conveyor means integrated circuit support means;



means on the frame in proximate relationship with the conveyor means for coating the leads with solder while the integrated circuits are retained by the integrated circuit support means;

the integrated circuit positioning means comprising means for transferring the integrated circuits from the support means to the printed circuit board on the printed circuit board table into the predetermined location for soldering by the electrode means; and

means for intermittently moving the conveyor means so that the integrated circuit support means move sequentially from the dispensing means to the lead-forming means, the solder coating means and the transferring means.

33. A method of assembling flat pack integrated circuits having a body and a plurality of outwardly extending leads onto circuit boards comprising a plurality of solder-containing pads, the method comprising the steps of:

dispensing flat packs seriatim;

gripping the flat packs as they are dispensed by the leads thereof and while the flat packs are gripped by the leads: bending the leads downwardly and outwardly of the body to form feet for mounting the integrated circuits on the circuit board; and

applying solder to said feet; and

thereafter soldering the leads to pads on the circuit board.

4,283,848

**DRYSHAVER**

Werner Messinger, Kronberg; Roland Ullmann, Hausen, and Otto Schweingruber, Glashütten, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

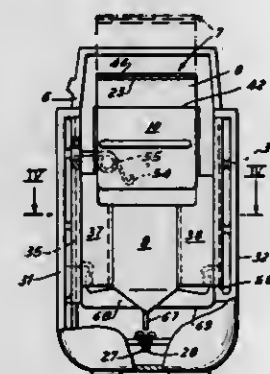
Filed Oct. 1, 1979, Ser. No. 80,784

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1978, 2843947

Int. Cl.<sup>3</sup> B26B 19/00

U.S. Cl. 30—34.1

12 Claims



1. In a dryshaver, a combination comprising a drive; a long-hair trimmer; a first slide mounting said trimmer and being movable to and from in operating position in which said trimmer is operatively coupled with said drive to be powered by the same; and switch means, including a second slide provided at and movable relative to said first slide, for energizing and de-energizing said drive.

4,283,849

**CUTTING UNIT FOR A DRY-SHAVING APPARATUS**

Manfred Engelhardt; Jan Reinink; Jochem J. de Vries, and Eduard W. Tietjens, all of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

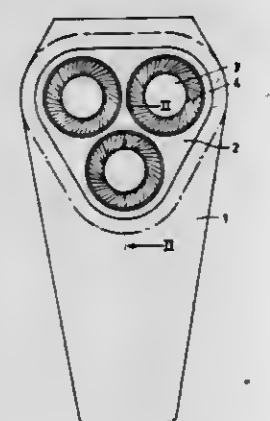
Filed Sep. 4, 1979, Ser. No. 72,277

Claims priority, application Netherlands, Sep. 21, 1978, 7809604

Int. Cl.<sup>3</sup> B26B 19/14

U.S. Cl. 30—43.6

3 Claims



1. A shaving apparatus having a shear plate provided with hair-entrance apertures and a cutting unit associated with and drivable relative to the shear plate; said cutting unit comprising a cutting member, cutters extending from said cutting member toward the shear plate, each cutter having a front wall sloping rearwardly with reference to the direction of movement of the cutting unit, and lead cutters, respectively associated with and movable relative to the cutters, each lead cutter engaging the front wall of its associated cutter along a contact line, each lead cutter being bent in substantially the shape of an L with the open portion of the L facing in the direction of movement of the cutting unit, said L-shaped lead cutter being pivotal in the area of its bend relative to the cutter about said contact line.

1009 O.G.—33

4,283,850

**RAZOR BLADE ASSEMBLY WITH A REMOVABLE BLADE CARTRIDGE**

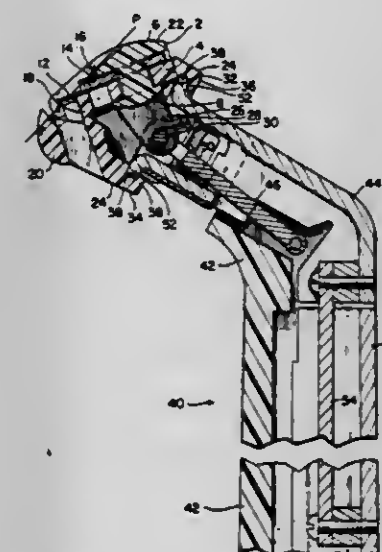
Paul W. Douglass, Winchester, and Robert A. Trotta, Winthrop, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Nov. 13, 1979, Ser. No. 93,677

Int. Cl.<sup>3</sup> B26B 21/06, 21/22

U.S. Cl. 30—47

3 Claims



1. A razor blade assembly comprising a body portion having blade means permanently fixed therein, a first connecting means disposed on said body portion and adapted to engage a razor handle to form a pivotal connection therebetween, and a second connecting means disposed on said body portion and adapted to fixedly interconnect with mounting means on said razor handle, said first connecting means being disposed on a first portion of said body portion and said second connecting means being disposed on a second portion of said body portion, said first and second body portions being pivotally joined to each other, said first connecting means comprising a projection extending from an undersurface of said first portion of said body portion, and said second connecting means comprising rails defining opposed grooves, said projection extending between said rails and beyond a plane defined by said blade assembly rails.

4,283,851

**SCISSOR-TYPE SHEAR, ESPECIALLY A CABLE CUTTER**

Eckhard Wolter, Dürmentigen, Fed. Rep. of Germany, assignor to Bandat E. Wolter KG, Dürmentigen, Fed. Rep. of Germany

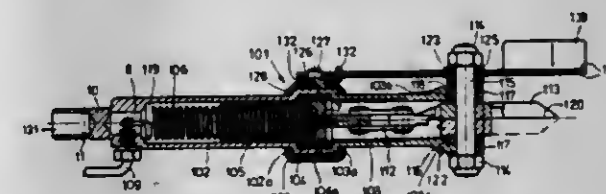
Filed Nov. 28, 1979, Ser. No. 97,970

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1979, 2910544

Int. Cl.<sup>3</sup> B26B 15/00

U.S. Cl. 30—134

20 Claims



1. A shear-type cutting tool, especially a cable cutter, comprising:  
a housing;  
an actuator shiftable in said housing;  
a pair of blades connected to said housing and defining a pivot axis for at least one of said blades with said blades lying against one another and having cutting edges performing a shearing action upon angular displacement of



said one of said blades about said axis whereupon motion of at least one cutting edge defines a cutting plane substantially transverse to said pivot axis; means operatively connecting said actuator to said one of said blades for displacing same; and a mechanism responsive to the operation of said actuator for applying a pressing force to said blades generally in the direction of said axis and dimensioned in accordance with cutting resistance encountered by said blades while relieving said pressing force upon opening of said blades.

4,283,852

## GLASS CUTTER WITH ATTACHMENT

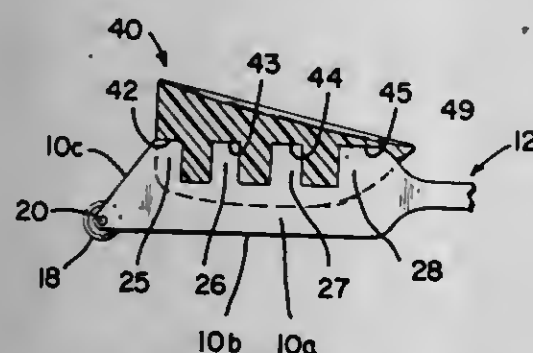
Orville D. Hooper, 3130 Sapp Rd., Tumwater, Wash. 98502

Filed Aug. 13, 1979, Ser. No. 65,976

Int. Cl.<sup>3</sup> C03B 33/12

U.S. Cl. 30—164.95

7 Claims



## 1. A glass cutter comprising:

- a body having an elongated head at the front, a central grip section and a stem at the rear, said head having a rectangular notch at the top for receiving the edge of a glass pane;
- a glass scoring wheel mounted at the front end of the elongated head to extend below and to the front of such head;
- said central grip section being shaped to be gripped in a hand between the thumb at the bottom side and index finger at the top side with the stem between the index and middle fingers when the glass cutter is to be operated by pulling it in the rearward direction; and
- a detachable attachment formed with a bottom channel fitting over said head and having a raised portion in said channel fitting into said notch, said attachment being formed with an upwardly facing thumb grip arranged to have a thumb bear thereagainst with the adjoining index finger resting against the underside of said central grip section when the glass cutter is to be operated by pushing it in the forward direction.

4,283,853

## CUTTING TOOL

Daniel B. Fazzini, 1877 Mathews Rd., Youngstown, Ohio 44514

Filed Mar. 24, 1980, Ser. No. 132,910

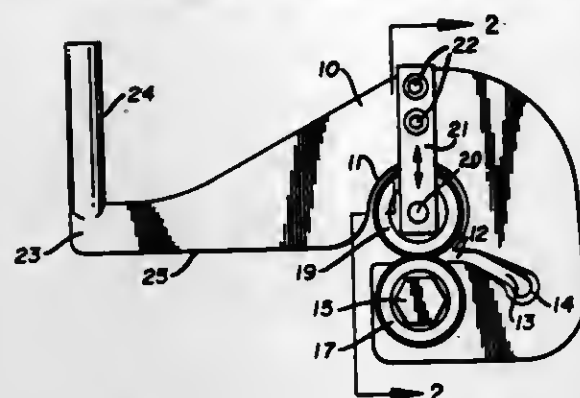
Int. Cl.<sup>3</sup> B26B 13/00

U.S. Cl. 30—265

4 Claims

1. A cutting tool comprising an elongated vertically standing body member having oppositely disposed ends with an upstanding handle portion on one of its ends and having an upwardly extending semi-circular cutaway area therein inwardly of the other of its ends communicating with a slot extending toward said other end so that a first part of said body member lies below the semi-circular cutaway area and the slot and a second part thereof lies above the semi-circular cutaway area and the slot, a pair of spaced circular cutting blades, means for mounting said pair of circular cutting blades on said first part with one blade on either side of said first part with their upper peripheral edges in said semi-circular cutaway area, a single circular cutting blade, secondary means on said second part mounting said single circular cutting blade in said semi-circular cutaway area with the lower peripheral edges of said single circular cutting blade engaging the uppermost peripheral edges of said pair of circular cutting blades whereby move-

ment of said cutting tool along the upper surface of a work piece to be cut causes said circular cutting blades to form a



double cut line in said work piece by separating a narrow strip therefrom.

4,283,854

## HUNTER'S KNIFE

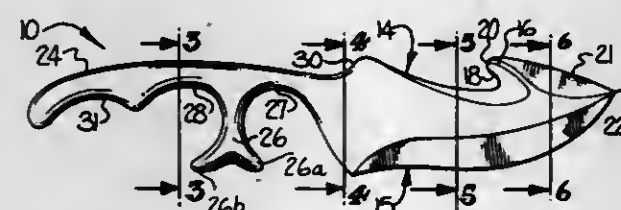
Marvin L. Austin, Rte. 1, Box 117, Mount Pleasant, N.C. 28124

Filed Apr. 22, 1980, Ser. No. 142,730

Int. Cl.<sup>3</sup> B26B 3/00

U.S. Cl. 30—314

12 Claims



1. A knife particularly adapted for use by hunters in eviscerating and skinning animals in the field, and comprising an elongate integral metallic body defining a blade portion and a handle portion of substantially equal lengths, said blade portion including opposite sides, with one side having a hook-shaped portion formed therein, said hook-shaped portion being reversely curved toward said handle portion and having a sharpened arcuate inner edge and a relatively blunt outer end, and with the other side of said blade portion having a continuous cutting edge formed along substantially the full length thereof, and said handle portion including finger engaging means for securing the knife to the user's hand when the palm thereof is closed about the handle portion and the knife is used for cutting, as well as when the palm is open and the hand is used for manipulation of the animal carcass or the like, said finger engaging means being defined at least partially by a pair of open sided adjacent arcuate recesses having generally oppositely and outwardly directed openings, each respective recess defining an upper overhanging portion with said upper overhanging portions being generally oppositely and outwardly directed so as to overlie the corresponding finger received therein.

4,283,855

## SABRE SAW WITH ROTATABLE SAW BAR

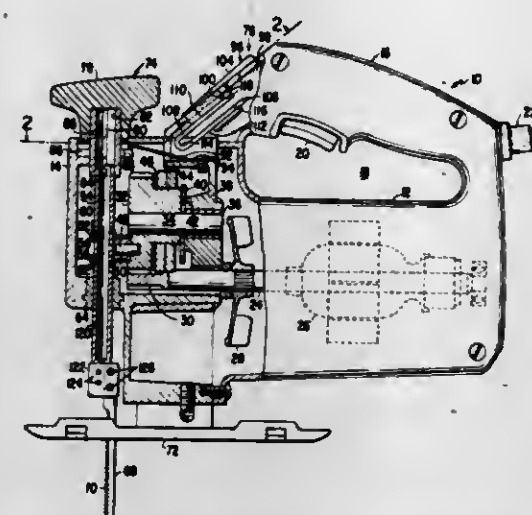
David J. Nalley, Liberty, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Apr. 7, 1980, Ser. No. 137,928

Int. Cl.<sup>3</sup> B27B 11/00, 19/09

U.S. Cl. 30—394

3 Claims



1. In a sabre saw having a generally tubular saw bar journaled for linear movement in a sleeve bearing secured in the bottom portion of the saw housing and a journal bushing secured in the top portion of the housing and rotatable therein and means provided between the top of the saw bar and the journal bushing so that they rotate together, a generally annular collar surrounding said journal bushing provided with a plurality of generally radial notches, a cantilevered leaf spring mounted to the housing with its distal end adjacent said collar and shaped for selective engagement within the notches, a slide trigger slidably carried by the housing at a top portion thereof convenient to an operator's thumb control which when slid towards the saw bar, depresses said cantilevered leaf spring against the collar and into a selective one of the notches when they are aligned for locking the saw bar against rotation.

4,283,856

## GARMENT DESIGNING AID

Fred W. K. R. Werber, 29 Schaumans-kamp, Reinbeck, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 853,668, Nov. 21, 1977, Pat. No. 4,156,969.

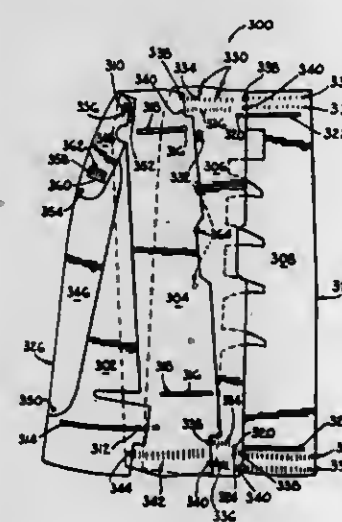
This application Mar. 1, 1979, Ser. No. 16,668

Claims priority, application United Kingdom, Nov. 19, 1976, 48456/76; South Africa, Mar. 9, 1977, 77/1434

Int. Cl.<sup>3</sup> A41H 3/015

U.S. Cl. 33—14

4 Claims



1. A skirt design aid for assisting a person in providing a pattern for a skirt, the design aid including four template sec-

tions that are interconnected and are relatively displaceable as follows:

- a first substantially triangular template section, whose apex is located at the waist side of the pattern and which extends the length of the pattern so that its base is located at the hem line of the pattern;
- a second substantially rectangular template section, an upper portion of which defines part of the waist of the pattern, and which extends to the hem line of the pattern, the first template section being pivotally secured at its apex to an upper corner portion of the second template section, and with the degree of pivotal overlap of the first and second template sections being adjustable;
- a third template section that is also substantially rectangular, which also extends from the waist line to the hem line and is secured to the second template section on the opposite side thereof to the first template section in a linear sliding manner;
- a fourth template section that is also substantially rectangular and which also extends from the waist line to the hem line and which is secured to the third template section on the opposite side thereof to the second template section in a linear sliding manner; and
- a hip dimension varying means which comprises a first member pivotally attached at one end to the first template section and a second member pivotally attached at one end to the first member intermediate the first member's ends, with the free ends of the first and second members being secured to the first template section by means of a screw and nut, the screw passing through suitable slots in the first and second members.

4,283,857

## SPINDLE-HEIGHT GAGE AND METHOD OF CALIBRATION

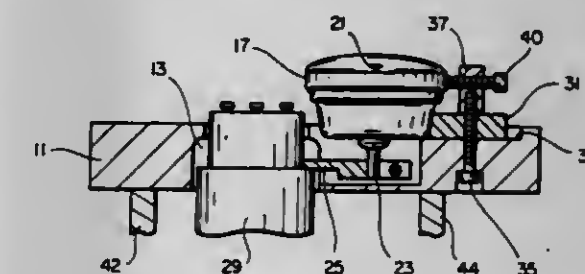
Erwin W. Graham, Saratoga, Calif. and Wayne B. Graham, San Jose, Calif. assignors to Tentel Corp. Campbell, Calif.

Filed Aug. 17, 1979, Ser. No. 67,547

Int. Cl.<sup>3</sup> G01B 3/28, 5/18

U.S. Cl. 33—169 R

11 Claims



1. A gage for measuring the height of a spindle in a cassette tape recorder, comprising:

- a base configured for insertion into said tape recorder, said base having a spindle opening therein into which said spindle protrudes when said gage is inserted into said tape recorder;
- a dial indicator having a bottom section rigidly mounted to said base, a top section which is free to rotate about a central axis, and a pointer;
- a shaft extending from said indicator into said spindle opening in said base, the angular displacement of said pointer of said indicator being responsive to motion of said shaft;
- a foot extending into said spindle opening so that said spindle will come into contact with and cause linear displacement of said foot, said foot acting upon said shaft, causing angular displacement of said pointer to indicate the height of said spindle; and
- a stop screw mounted to the base adjacent to the dial indicator to permit rotation of said top section during calibration



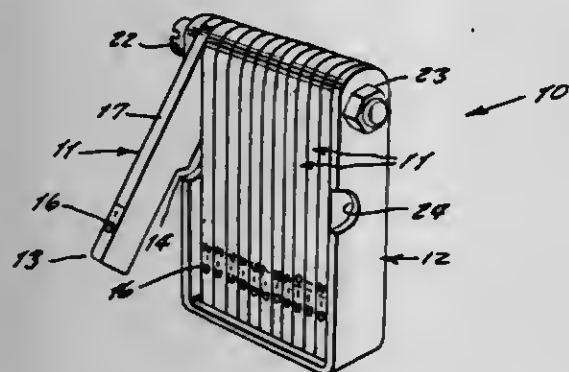
of said gage, but to prevent rotation of said top section at other times.

4,283,858

**45 DEGREE CHAMFER AND RADIUS GAUGE SET**  
Marian Sobczak, 75 Pinedale Rd., Hauppauge, N.Y. 11787  
Filed Nov. 8, 1979, Ser. No. 92,350  
Int. Cl.<sup>3</sup> G01B 3/14

U.S. Cl. 33—174 R

3 Claims



1. A 45 degree chamfer and radius gauge set, comprising in combination, a plurality of flat templates; and a U-shaped frame having fastener means across one of the ends thereof for fastening said templates thereto, said plurality of templates being pivotally mounted by said fastening means; each of said templates comprising a flat structure of rectangular cross-section with a first longitudinal side surface, a second longitudinal side surface, a first rounded transverse end surface at one end of the longitudinal surfaces, and a second transverse end surface at the other end of said longitudinal side surfaces; said second longitudinal side surface having a first surface portion and a second surface portion offset from said first surface portion by a 45 degree angle offset, and that portion adjoining both said first longitudinal side surface and said second transverse end surface being rounded to a specific dimension to define a radius gauge, whereby said offset surface may measure a chamfered surface of a work piece and said rounded portion may measure a rounded surface of a work piece.

4,283,859

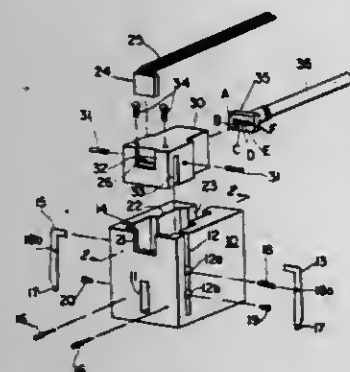
**METHOD AND APPARATUS FOR READING A KEY**  
Max G. Roland, Redwood City, Calif., assignor to Maromatic Co., Inc., Mountain View, Calif.

Filed May 19, 1980, Ser. No. 151,458

Int. Cl.<sup>3</sup> G01B 11/24; G01D 5/32

U.S. Cl. 33—174 F

9 Claims



1. An apparatus for reading indentations in a key, comprising:  
a housing having a key opening, a rectangular key slot extending from said key opening longitudinally into the housing for receiving a key which essentially mates with the cross-section of the key slot, said key slot cross-section having at least one generally flat operative side which faces a side of the key which is generally flat and has indentations therein,  
at least one flag slot extending in a plane perpendicular to the

said, operative side of the key slot and intersecting that side,

a reading pin in the flag slot, said reading pin being movable therein in a direction perpendicular to the said operative side of the key slot and intersecting said side, such that the pin enters the key slot across the said operative side at a point to sense conditions on the facing side of a key inserted into the key slot, limiting means to limit inward movement of the reading pin to an inward limiting position at which its end is in the key slot,

a flag member in the flag slot, said flag member extending longitudinally in a plane which is generally parallel to the said operative side of the key slot, a pivot connection pivotally connecting said flag member in the housing for movement toward and away from the plane of the operative side of the key slot, said flag member engaging the reading pin, and a spring urging the flag member in a direction to urge the pin to its inward limiting position, a light source and a light detector positioned to provide a light path in the housing,

said flag member having a flag portion thereon located farther from the said pivot connection of the flag member than the reading pin is spaced from said pivot connection, such that movement of the flag portion is multiplied relative to corresponding movement of the reading pin, said flag portion being pivotally movable between at least an inward position corresponding to its pin sensing a certain depth of indentation on the said generally flat side of the key, and an outward position pivoted away from the inward position by the reading pin contacting a portion of the key at which the depth of the indentation is less than said certain depth,

the flag portion being positioned to move across the said light path such that in one of said inward or outward positions it blocks the light path, and in the other position it unblocks the light path,

and a clock line means for distinguishing each reading of the key by the pin from readings at successive positions along the key, as the key is moved into the key slot, past the reading pin,

whereby a plurality of different reading positions along the said generally flat side of a key can be read rapidly as the key is inserted and moved into the key slot.

4,283,860

**LENS FIELD OF VIEW SIMULATOR**

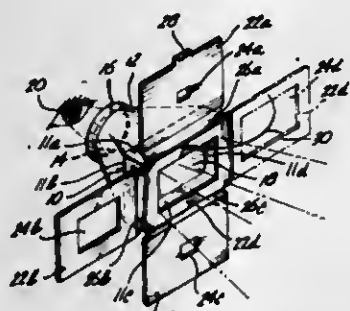
John Rucker, Olympia, Wash., assignor to R. Ideas, Inc., Bainbridge Island, Wash.

Filed Sep. 10, 1979, Ser. No. 73,746

Int. Cl.<sup>3</sup> G01B 11/00; G03B 11/04, 13/02

U.S. Cl. 33—277

7 Claims



1. A lens field of view simulator comprising:  
a central portion having a first and second face and having a viewing aperture formed therein from said first face to said second face, said central portion including four first walls arranged in rectangular orientation, said first face being defined by contiguous first edges of said first walls;  
a plurality of plates, each plate having a lens field of view simulation aperture formed therethrough, the respective lens simulation aperture on each plate being of a different

size and simulating the field of view provided by a lens of predetermined focal length;

means for mounting said plates on said first face of said central portion for selective placement of said plates into register with said viewing aperture, each of said plates being associated with one of said first walls, said mounting means including a plurality of hinges attaching each of said plates to its associated first wall, said central portion, plates and hinges being integrally formed as a single unit.

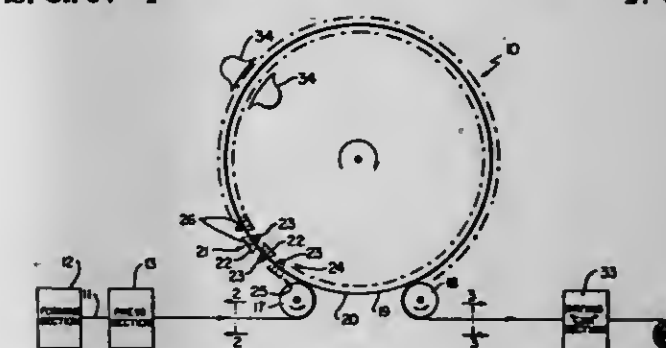
4,283,862

**ELECTROSTATIC METHOD AND APPARATUS FOR TREATING MATERIAL**

James T. Candor, 5440 Cynthia Ln., Dayton, Ohio 45429  
Division of Ser. No. 50,807, Jun. 21, 1979, Pat. No. 4,208,807, which is a continuation-in-part of Ser. No. 925,378, Jul. 17, 1978, abandoned, which is a division of Ser. No. 863,910, Dec. 23, 1977, Pat. No. 4,111,773, which is a continuation-in-part of Ser. No. 732,646, Oct. 15, 1976, Pat. No. 4,081,342, which is a continuation-in-part of Ser. No. 695,068, Jun. 11, 1976, Pat. No. 4,033,841, which is a continuation-in-part of Ser. No. 569,815, Apr. 21, 1975, Pat. No. 3,966,575, which is a continuation-in-part of Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898, which is a continuation-in-part of Ser. No. 383,255, Jul. 27, 1973, Pat. No. 3,849,275, which is a division of Ser. No. 263,605, Jan. 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 53,402, Jul. 9, 1970, abandoned, said Ser. No. 263,605, which is a continuation-in-part of Ser. No. 25,938, Apr. 6, 1970, Pat. No. 3,687,834, which is a continuation-in-part of Ser. No. 864,851, Oct. 2, 1969, abandoned, which is a continuation-in-part of Ser. No. 811,421, Mar. 28, 1969, abandoned. This application Feb. 25, 1980, Ser. No. 124,224

The portion of the term of this patent subsequent to Nov. 19, 1991, has been disclaimed.  
Int. Cl.<sup>3</sup> F26B 3/34; B01D 57/02; C25B 7/00  
U.S. Cl. 34—1

27 Claims



1. In a method for drying material by disposing said material against a heated surface means, the improvement comprising the steps of disposing charged electrode means adjacent said surface means to cooperate therewith to define a plurality of alternately arranged non-uniform electrostatic fields extending between said electrode means and said surface means with each non-uniform field having the higher intensity portion thereof substantially oppositely located relative to the higher intensity portion of an adjacent non-uniform field so that said fields at least partially extend through said material while said material is disposed against said surface means and between said surface means and said electrode means, and causing relative movement between said electrode means and said material so that said non-uniform electrostatic fields serially act on at least a portion of said material while said portion of said material is being heated by said heated surface means.

4,283,863

**RANGE FINDER FOR FOCUSABLE PHOTOGRAPHIC OR CINEMATOGRAPHIC CAMERA**

Wilfred Heiniger, Claude Kreienbühl, and Manuel Millan, all of Yverdon, Switzerland, assignors to Bolex International SA, Ste. Croix, Switzerland

Continuation-in-part of Ser. No. 838,377, Sep. 30, 1977, Pat. No. 4,160,587, which is a continuation-in-part of Ser. No. 789,250, Apr. 20, 1977, abandoned, and Ser. No. 787,497, Apr. 14, 1977, abandoned. This application Feb. 8, 1979, Ser. No. 10,722

Claims priority, application Switzerland, Apr. 15, 1976, 004753/76; Apr. 21, 1976, 004961/76; Oct. 1, 1976, 012428/76. The portion of the term of this patent subsequent to Jul. 10, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> G03B 3/10

U.S. Cl. 354—25

10 Claims

1. In a camera having an objective including an axially shiftable lens member for focusing the objective upon an object

4,283,861

**PLOTTING DEVICE**

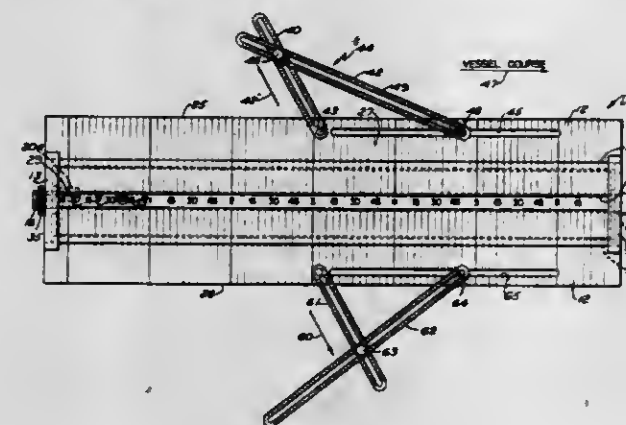
William W. Timmis, 85 Gibson Rd., Bristol, R.I. 02809

Filed Nov. 16, 1979, Ser. No. 94,884

Int. Cl.<sup>3</sup> B43L 13/02

U.S. Cl. 33—449

7 Claims



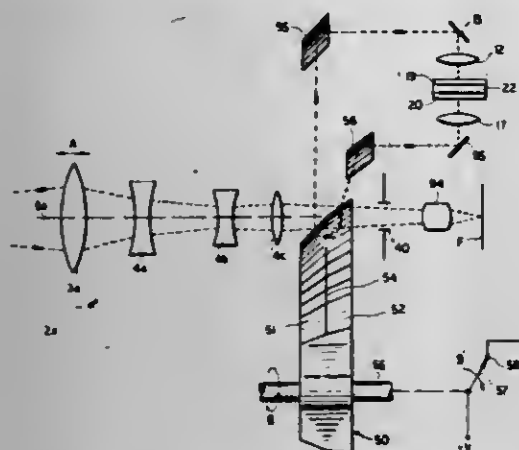
1. A plotting device comprising an elongated body with a straight edge and an arcuate portion extending lengthwise thereof, a window in said arcuate portion extending lengthwise of said arcuate portion, graduations of distance extending away from said straight edge to said window and comparable with the distance on the chart with which the device is intended to be used, a roll mounted in said arcuate portion with its axis parallel to said straight edge, said roll extending below said body to enable said body to be rolled at right angles to said straight edge along a generally flat surface, said roll having a line of time indicia lengthwise thereof along its surface to cooperate with said distance graduations and a speed marking for indicating the line of time indicia exposable through said window.



within its field of view to project an image of said object upon a receiving surface, the combination therewith of:

setting means operable to displace said shiftable lens member over its range of axial shiftability while holding the objective trained upon an object whereby light rays originating at a common point of said object converge upon said receiving surface in a focusing position of said shiftable lens member;

a pair of ancillary projection systems including two light reflectors interposed between said shiftable lens member and said receiving surface for intercepting light rays from



an object and directing the intercepted light rays over two separate paths away from the objective axis in the form of a first beam and a second beam; and photoelectric comparison means illuminable via said projection systems for producing an in-focus signal in response to a coincidence of images produced by said beams, such coincidence occurring whenever said beams are constituted by light rays originating at a common point in an object plane conjugate with said receiving surface.

4,283,864

## CUSHIONING MATERIAL CONSTRUCTION

Donald E. Lipfert, Woolwich, Me., assignor to Deres Development Corporation, Greenwich, Conn.

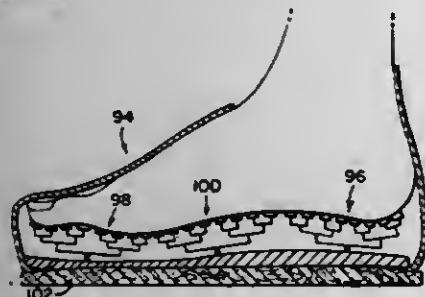
Continuation of Ser. No. 747,681, Nov. 8, 1976, abandoned, and a continuation-in-part of Ser. No. 347,069, Apr. 2, 1973, Pat. No. 4,033,567. This application Nov. 19, 1979, Ser. No. 95,788

Claims priority, application United Kingdom, Oct. 4, 1969, 48860/69

Int. Cl.<sup>3</sup> A43B 13/18; F16F 3/02; A47C 7/02, 23/00

U.S. Cl. 36—28

65 Claims



1. A cushioning material construction comprising a mechanical support system comprising at least one module comprising a plurality of displaceable bearing means, particular ones of said bearing means being interconnected to others of said bearing means by a first lever-type arrangement, so as to define a grouping of bearing means, said first lever-type arrangement being operative upon displacement of one of said load support means in a first direction to apply a force to another of said bearing means in an opposite direction, such that the displaceable bearing means will displace to conform to the shape of an imposed load and provide for distribution of load supporting

forces; wherein selected groupings of interconnected bearing means are further interconnected to other groupings of interconnected bearing means by means comprising a second lever-type arrangement in combination with main support means comprising an article of wearing apparel.

3. The cushioning material construction as claimed in claim 1 in which the article of wearing apparel is footwear.

4,283,865

## OUTSOLE FOR SPORT SHOES

Adolf Dassler, Kreuzgasse, D-8522 Herzogenaurach, Fed. Rep. of Germany

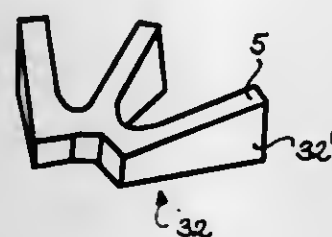
Division of Ser. No. 884,484, Mar. 8, 1978, Pat. No. 4,180,923. This application Jul. 11, 1979, Ser. No. 56,601

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2801964

Int. Cl.<sup>3</sup> A43B 13/04

U.S. Cl. 36—32 R

1 Claim



1. An outsole for a sports shoe comprising an outsole member of resilient material having a lower face, a plurality of profile projections projecting out of said lower face, said profile projections each comprising at least two elongate profile bodies of a slender rectangular shape, a plurality of profile projections being located along the edge of the sole, the profile bodies of said projections along the edge of the sole in each case being located close to one another at one end and diverging from one another from said one end under an acute angle between them laterally with respect to the edge of the sole and their height increasing above said lower face of the sole laterally to said edge of the sole.

4,283,866

## CONVERTIBLE BUCKET ATTACHMENT CAPABLE OF EXCAVATION AND CLASPING

Junji Ogawa, No. 22-13, 2-chome, Hagioka, Hamamatsu-shi, Shizuoka-ken, Japan

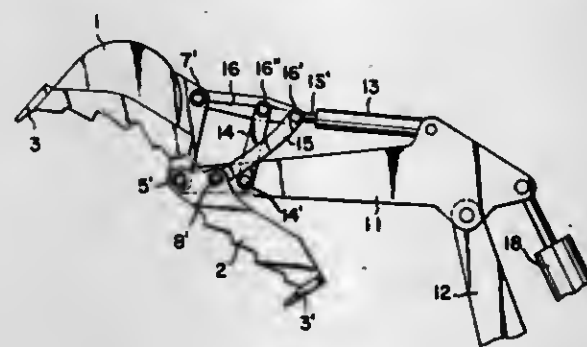
Filed Feb. 15, 1980, Ser. No. 121,733

Claims priority, application Japan, Feb. 17, 1979, 54/19137[U]

Int. Cl.<sup>3</sup> E02F 3/70

U.S. Cl. 37—117.5

5 Claims



1. A convertible bucket attachment for excavation and claspng adapted to be rockingly mounted to an arm which in turn is rockingly connected to a boom of an excavator machine, comprising:

a bucket portion 10 consisting of a bucket proper 1 and a complementary sub-bucket 2 pivotally engaged in the

upper ends for a rocking movement by a pair of common pivot apertures 5,5 for connection of said bucket portion to the distal end of the arm of an excavator machine; a pair of upper stays 4,4 disposed in said proper bucket 1 and each having an upper link aperture; a pair of upper link members 16,16 each having one end pivotally secured in said upper link aperture and the other end pivotally secured to the distal end of a plunger rod; a pair of sub-link members 14,14 each having one end pivotally secured to one another opposed side plates of the arm and the other end pivotally secured to one another of said upper link members for association therewith; and a pair of lower link members 15,15 each having one end pivotally secured to said sub-bucket 2 substantially below said common pivot aperture and associated with said upper link members and said sub-link members; thereby forming a link arrangement which is adapted to be actuated by one single cylinder actuator 13 to allow said bucket proper 1 and said sub-bucket 2 to perform operations of excavation and claspng.

4,283,867

## BACKFILLING APPARATUS WITH ADJUSTABLE FILLING AUGERS

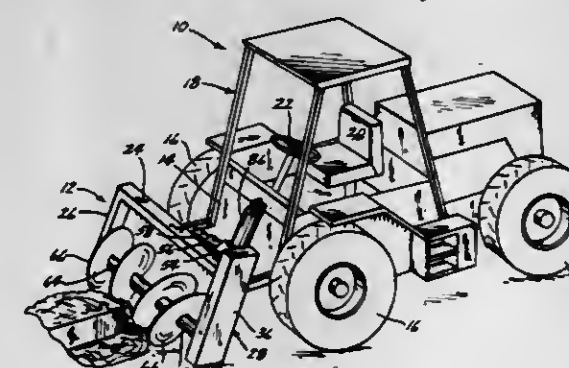
Stanley L. Brown, Lenox, Iowa, assignor to Roscoe Brown Corporation, Lenox, Iowa

Filed Dec. 5, 1979, Ser. No. 100,333

Int. Cl.<sup>3</sup> E02F 5/22

U.S. Cl. 37—142.5

7 Claims



1. A backfiller adapted to be mounted on a vehicle comprising:

a frame having an upper frame portion and two downwardly extending spaced apart side frame members; means for mounting said frame to said vehicle; an elongated torque member extending between said side frame members and having its opposite ends rotatably journaled in said side frame members, first and second tube members mounted over said elongated torque member for longitudinal sliding movement along the longitudinal axis of said torque member; helical flighting means mounted around said first and second tube members, the flighting means on said first tube member being oriented in a direction opposite from the flighting means on said second tube member; securing means for detachably securing said first and second tube members to said torque member in a plurality of positions along the length of said torque member to permit selective adjustment of the relative positions of said first and second tube members with respect to one another; power means connected to said torque member for imparting rotation to said torque member and said first and second tube member;

said first and second tube members each having an outer end adjacent one of said side frame members and an inner end, said inner ends of said first and second tube members being spaced apart a predetermined distance determined by the longitudinal positions of said first and second tube members on said torque member; said securing means comprising at least one diametric hole in each of said first and second tube members, a plurality of

diametric holes spaced longitudinally along the length of said torque member, and first and second bolt means extending through the diametric holes of said first and second tube members, respectively, said first and second bolt means also each extending through one of the diametric holes of said torque member.

4,283,868

## IRONING MANGLE WITH PNEUMATICALLY PRESSURIZABLE ROLLER COVERING

Friedrich Geiger, Todtenweis, Fed. Rep. of Germany, assignor to Kleindienst GmbH & Co. Kg, Augsburg, Fed. Rep. of Germany

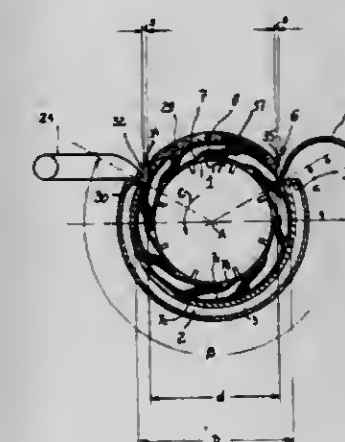
Filed Jun. 1, 1979, Ser. No. 44,589

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824479

Int. Cl.<sup>3</sup> D06F 63/00, 71/36, 83/00

U.S. Cl. 38—56

10 Claims



1. An ironing mangle comprising: an ironing roller having a generally cylindrical outer surface and rotatable about a roller axis in a predetermined rotational sense;

a two-part sleeve substantially completely surrounding said roller and having a cylindrical inner surface juxtaposed with and spaced radially outwardly from said outer surface of said roller, said sleeve being formed with axially extending and angularly spaced intake and output slots subdividing it into an angularly large main part and an angularly small minor part, said minor part being rigid and of insulating material;

at least one cushion having an inner wall lying mainly on said outer surface, an outer wall between said inner wall and said inner surface of said sleeve, and a sealed periphery defining between said walls a pressurizable chamber; and

means for feeding a fluid under pressure into said chamber and thereby pressing an item to be pressed between said outer wall and said inner surface at said main part.

4,283,869

## PORTABLE CHARTHOLDER AND TABLE

Leonard F. Rappa, P.O. Box 656, Linden, N.J. 07036

Filed Apr. 12, 1979, Ser. No. 29,560

Int. Cl.<sup>3</sup> G09F 3/18

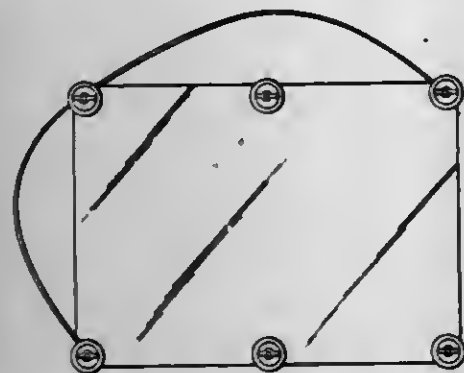
U.S. Cl. 40—10 D

6 Claims

1. A portable chartholder and table comprising two rigid and transparent planar members secured together by manually operable securing means having a release mechanism, at least one flexible grab handle connected to at least one of said planar members and multiple cushioning-supporting means secured



on the perimeter of said planar members, said planar members cooperating in a manner whereby a chart can be positioned



contiguous with an inner surface of each of said planar members and readily read by the helmsperson of a moving boat.

4,283,870

## FRAME DEVICE

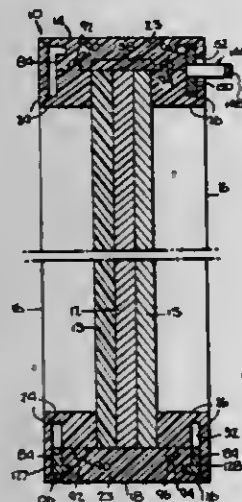
Peter J. Stetler, 144-30 Roosevelt Ave., Flushing, N.Y. 11354

Filed Feb. 18, 1976, Ser. No. 659,138

Int. Cl.<sup>3</sup> G09F 1/12

U.S. Cl. 40-154

18 Claims



1. A frame for artwork having a predetermined thickness and a periphery including a predetermined number of sides defining a plane, said frame comprising a plurality of frame members with opposite mitered end portions, the frame members corresponding in size and number to the predetermined number of sides of said artwork, said frame further including means for joining said opposite mitered end portions together to permit said frame members to surround the periphery of said artwork, at least one of the frame members corresponding to one of the peripheral sides of the artwork being an individual separate member unattached to the other frame members prior to assembly of said frame, said one frame member including a main body portion, first and second spaced and oppositely disposed limb members joined to said main body portion and extending to the opposite mitered end portions of said one frame member, said first and second limb members defining a holding channel for accommodating said artwork such that the plane of said artwork is substantially perpendicular to said main body portion, said one frame member further including engageable latching means provided on said first limb member and said main body portion for latching said first limb member to said main body portion in a first latch engaging position, said first limb member being movable with respect to said main body portion when the latching means on said main body portion and said first limb member is unengaged, said first limb member being immovable with respect to said main body portion when disposed in said first latch engaging position, and wherein engageable latching means are provided on said second limb member and the main body portion of said one frame member for latching said second limb member to said main

body portion in a second latch engaging position, said second limb member being movable with respect to said main body portion when the latching means on said main body portion and said second limb member is unengaged, said second limb member being immovable with respect to said main body portion when disposed in said second latch engaging position, said first and second limb members having respective first and second artwork engaging edges defining opposite sidewalls of said holding channel when said first and second limb members are in said first and second latch engaging positions.

4,283,871

## PANORAMIC PHOTOGRAPH ALBUM, AND METHOD FOR MAKING THE SAME

Melvin Applebaum, 75-03 192nd St., Flushing, N.Y. 11366; Len De Pas, 85-50 Forest Pkwy., Woodhaven, N.Y. 11421, and William C. Little, 2001 McGraw Ave., Bronx, N.Y. 10462

Division of Ser. No. 797,829, May 17, 1977, Pat. No. 4,183,162. This application Mar. 28, 1979, Ser. No. 24,502

Int. Cl.<sup>3</sup> G09F 1/10

U.S. Cl. 40-158 R

4 Claims



1. The method for making a double-wide panoramic photographic print and mounting it into a single-wide photograph album so that it can be displayed lying in a flat plane, said album including a binding edge, and said method including the steps of:

taking a panoramic picture, to produce a negative with a panoramic image thereon which extends horizontally substantially beyond what can be accommodated upon a single-wide sheet of photographic paper;

printing the negative on a single, integral sheet of double-wide photographic paper to produce an elongated, planar panoramic print;

cutting the integrally printed panoramic planar print into two print portions along a cutting line extending at a right angle to the longitudinal axis of the print and forming two planar panels each carrying thereon one of said portions of said print, said cutting line forming mating edges for the two print portions;

selecting separate, flexible hinge members for each of said planar panels, chosen so that the color tone of said hinge members is dark and generally blends with the color tones in the center portion of said panoramic print along said cutting line, each hinge member including a planar outer portion and an inner portion, separated by a transverse hinge portion;

fastening the planar outer portions of said separate, flexible hinge members with adhesive means to the rear sides of the two planar panels along the cut, mating edges of said two print portions, whereby a hinge line is formed immediately adjacent each of said mating edges by said transverse hinge portion; and

securing the inner portions of said separate, flexible hinge members to the said binding edge of said photograph album along a securing line spaced from said hinge lines, whereby to mount said two planar panels so they can be moved between a closed position wherein they are in face-to-face abutment and an open position wherein the panels are presented in side-by-side relationship along said

print cutting line, so that said panels lie in a common plane and display the panoramic image; said separate, flexible hinge members being fastened and secured to provide a narrow gap between said hinge lines and said immediately adjacent cut, mating edges of said print portions when said planar panels are lying in said common plane in said open position, whereby said panels can be pivoted between said closed and said open positions without said cut, mating print portion edges coming into damaging engagement with each other.

4,283,872

## ADJUSTABLE DISPLAY DEVICE

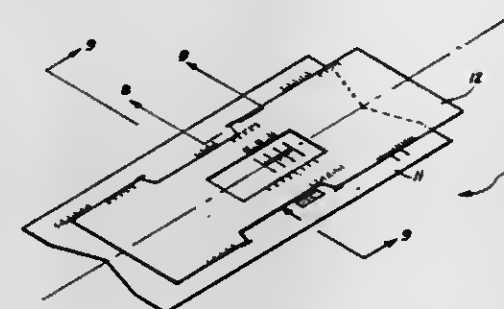
Gerrit A. Van Exel, 2300 Camino Escondido, Fullerton, Calif. 92633

Filed Jan. 31, 1978, Ser. No. 874,030

Int. Cl.<sup>3</sup> G09F 11/00

U.S. Cl. 40-491

5 Claims



1. An adjustable display device, comprising two members which are linearly moveable in relation to each other, and a retaining means to retain and guide the first member in relation to the second member, the retaining means being an integral part of the second member and formed by cutting through the thickness of said member, forming a tab which allows displacement of part of said member to retain and guide the peripheral edge of the first member the tab being defined by a first cut, essentially parallel to the direction of movement of the moveable member, and by a second and third cut on either end of the first cut, said second and third cuts being transverse, extending away from the centerline, and of unequal length, such that the ends of these cuts form guides, which are displaced from each other in the direction perpendicular to the direction of movement by an amount equal to, and in the same direction of, the offset in the guided peripheral edge of the moveable member.

4,283,873

## BREECH LOADING SHOTGUN OR THE LIKE

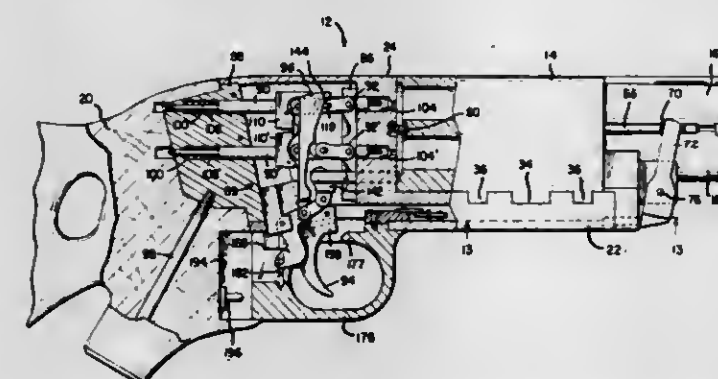
Jack McIntyre, P.O. Box 491, Troy, N.C. 27371

Filed Jan. 8, 1979, Ser. No. 46,956

Int. Cl.<sup>3</sup> F41C 11/10

U.S. Cl. 42-45

12 Claims



1. In a breech-loading firearm having a frame; an extendable and retractable breech-locking mechanism effective when extended to prevent opening of the breech assembly of said

firearm, and when retracted to permit opening of said breech assembly; a firing mechanism including a trigger having a lower portion extending downwardly from said frame and adapted to be pulled rearwardly to actuate said firing mechanism; and a trigger guard encircling said lower portion of said trigger; the improvement comprising:

mounting means mounting said trigger guard upon said frame for sliding movement of said trigger guard longitudinally of said frame between first, second and third spaced positions;

and cooperating means operatively associated with said trigger guard and with said firing and breech-locking mechanisms for retracting said breech-locking mechanism in response to movement of said trigger guard to its said first position, for extending said breech-locking mechanism and preventing operation of said firing mechanism in response to movement of said trigger guard to its said second position; and for permitting operation of said firing mechanism upon movement of said trigger guard to its said third position.

4,283,874

## MUZZLE LOADING FIREARM

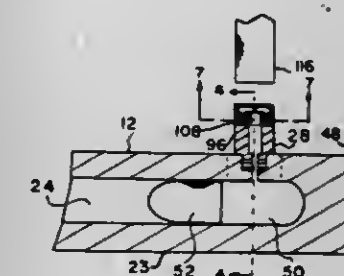
James C. Vaughn, 394 Yancey Rd., Madison, Ala. 35758

Filed Dec. 3, 1979, Ser. No. 99,653

Int. Cl.<sup>3</sup> F41C 27/00

U.S. Cl. 42-51

1 Claim



1. A muzzle loading firearm comprising: a firearm barrel having a breech region through which there is an opening running from exterior to interior of the barrel, and the interior wall of at least an outer end region of said opening being threaded; an elongated tube having: said tube terminating in a plane surface at one end adjacent to said first end region, which plane surface lies generally normal to the direction of said opening, and first and second ends of said tube being threaded, and said first end being adapted to mate with said interior threaded opening in said barrel; a cup having a protrusion on its inner end surface and having inner side wall threads adapted to loosely thread over said second end of said elongated tube; a shot shell primer comprising: a tubular body having an outer diameter corresponding to the inner diameter of said first end region of said elongated tube, an explosive charge contained within said tubular body, a generally flat, circular end member closing one end of said tubular body and extending radially outward from said tubular body to form a flange, and said end member including a central membrane adapted to communicate a firing force to said explosive charge when struck, and said tubular body is positioned within said first end region of said elongated tube with said flange resting against said plane surface of said elongated tube; and spring loaded hammer means supported by said barrel for applying a small area force to said central membrane of said shot shell primer; whereby, when operated, said hammer means provides a force which is communicated through said cup to said



membrane to ignite said explosive charge within said elongated tube, which tube in turn effectively provides a single exit path for the ignited explosive to the interior of the breech of the barrel, enabling a projectile propellant therein to be reliably fired.

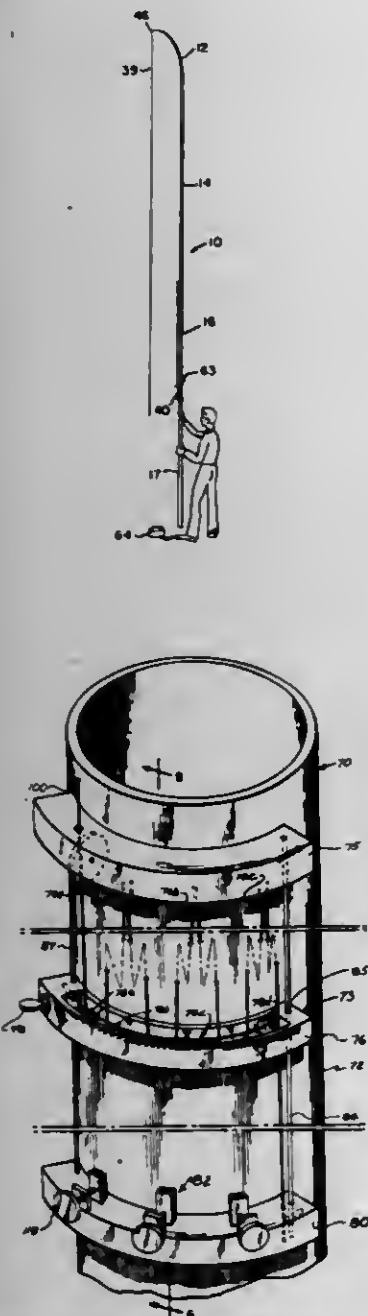
4,283,875

## LINE RETRIEVING AND DISPENSING DEVICE

Dennis Daniels, Rte. 2 Box 782, Quilcene, Wash. 98376  
Continuation-in-part of Ser. No. 949,947, Oct. 10, 1978, Pat. No. 4,216,602. This application Nov. 13, 1979, Ser. No. 93,681  
Int. Cl.<sup>3</sup> A01K 87/00

U.S. Cl. 43—18 R

7 Claims



1. A fishing line retrieving and casting device for use on an elongated pole having at least an outer and inner portion, comprising:

a pole having inner and outer portions,  
line storage means on said inner portion for accumulating wraps of line terminating at a terminal end and adapted to have an object attached to said terminal end,  
said line storage means including a plurality of transversely spaced, stationary, first line guiding means mounted on said outer portion of said pole for receiving a plurality of wraps of said line, a plurality of movable, transversely spaced, second line guiding means freely movably mounted on said inner portion of said pole for movement from a first fully retracted position remote from said first line guiding means to a second fully extended position adjacent said first line guiding means and for receiving respective opposite wraps of said line from said first line guiding means with transversely spaced, non-overlapping partial loops of line each defined by a single wrap only

around each set of corresponding transversely spaced first and second line guiding means, and actuating means for respectively letting out line by allowing reduction in the lengths of said wraps or retracting line by lengthening the wraps, said actuating means including means for moving the second line guiding means in a single movement toward and away from the first line guiding means between said fully extended and fully retracted positions, including wrap retaining means mounted on said inner portion of said pole, said movable second line guiding means being located between said fixed first line guiding means and said wrap retaining means and movable to a retracted position adjacent said wrap retaining means, said wrap retaining means automatically gripping said spaced wraps of line when said movable line guiding means are retracted, and means for releasing said wraps from said wrap retaining means independently of said movable line guiding means whereby said movable line guiding means can be extended to adjacent said first line guiding means and said wraps can thereafter be separately released to move outwardly as the line is extended.

4,283,876

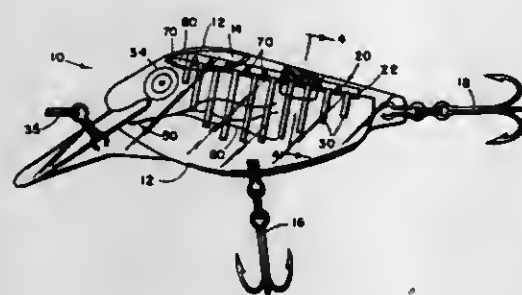
## FISHING PLUG WITH INTERNAL ATTRACTERS

Donald C. Volenec, 5042 Frederick St., Omaha, Nebr. 68106  
Filed Mar. 22, 1979, Ser. No. 22,935

Int. Cl.<sup>3</sup> A01K 85/00

U.S. Cl. 43—42.33

21 Claims



1. A fishing plug having a closed body having an open space therein and having attached hook means on its outer side, a plurality of elongated flexible attracters in said open space in said body, said body being transparent adjacent said attracters and said attracters being sufficiently flexible that when said plug is reeled in on a line in conventional plug-fishing portions of said flexible attracters will bend first in one direction then in an opposite direction to a substantial extent visible to fish through said body, the majority of said attracters being unattached to said body along the majority of their length, and also free of being crushed together so as to remain substantially unmassed during said reeling whereby they are free to move substantially independently of each other during said reeling.

4,283,877

## WEEDLESS MULTI-BARB FISHHOOK

Darrell C. Onstott, and Velma L. Onstott, both of 2550 21st St., Gering, Nebr. 69341

Filed Jun. 16, 1980, Ser. No. 160,011

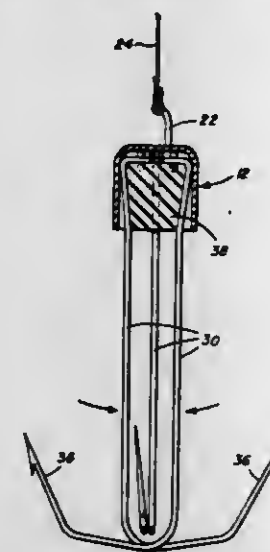
Int. Cl.<sup>3</sup> A01K 83/00

U.S. Cl. 43—34

7 Claims

1. A weedless multi-barb fishhook including a head structure, defining a hollow cavity including an open side opening outwardly of one side of the head structure, said head structure including line anchor means thereon for attaching one end of a fishing line to said head structure, a pair of oppositely facing fishhooks including a pair of shanks yieldingly supported at one pair of corresponding base end portions thereof within said cavity in laterally spaced apart relation and for swinging movement of the other pair of corresponding end portions thereof toward and away from each other, said other pair of corresponding end portions including oppositely curved hook

portions opening toward said one pair of one end portions, said one pair of end portions being telescoped within said cavity in position closely opposing opposite sides of said cavity, and a resilient body disposed within said cavity between said one pair of base end portions of said shanks and yieldingly resisting movement of said base end portions toward each other, said base end portions including angulated terminal ends anchored



in said cavity and projecting toward each other, said cavity defining narrow portions thereof in which said base end portions and said terminal ends are received with said base end portions swingable through said narrow portions toward and away from each other, said cavity including inwardly projecting portions spaced toward said open side of said cavity from said terminal ends preventing withdrawal of the latter and thus said fishhooks from said cavity.

4,283,878

## INSECT TRAP

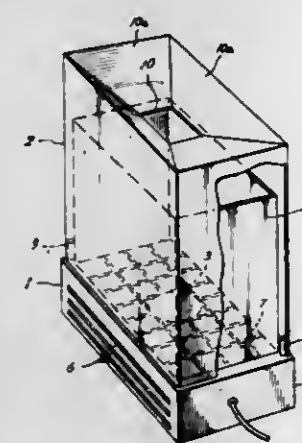
Allstair C. Hill, and Lyn Davies, both of Sittingbourne, England, assignors to Shell Internationale Research Maatschappij B.V., Netherlands

Continuation of Ser. No. 854,784, Nov. 25, 1977, abandoned.  
This application Jan. 16, 1980, Ser. No. 112,792

Int. Cl.<sup>3</sup> A01M 1/14

U.S. Cl. 43—114

8 Claims



1. An insect trap, comprising:

a chimney member;  
an electrically powered heater located underneath the base of said chimney member with the base of said chimney member being mounted directly to said heater so as to allow access thereto only through the top of said chimney;  
a reservoir containing an insect pheromone, located adjacent to and above said heater; and  
a tacky substance located inside said chimney member; whereby the heater evaporates the insect pheromone and generates a convection flow of air which carries the pheromone out of the top of the chimney into the surrounding atmosphere and the insects thereby lured by the phero-

none through the top of the chimney become trapped by the tacky substance.

4,283,879

## TOY VEHICLE WITH FOUR-WHEEL DRIVE

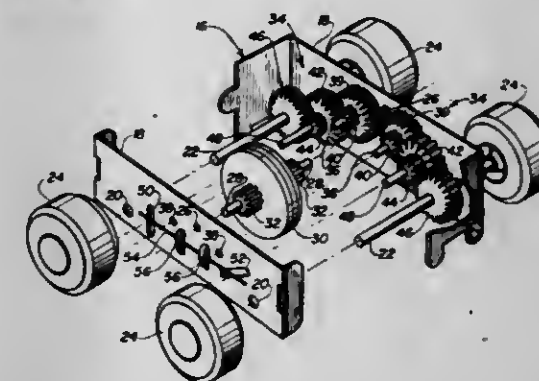
Kwok W. Tsui, Wanchai, Hong Kong, assignor to Arco Industries Ltd., Kowloon, Hong Kong

Filed Apr. 25, 1980, Ser. No. 143,852

Int. Cl.<sup>3</sup> A63H 29/20, 17/00

U.S. Cl. 46—209

2 Claims



1. A toy wheeled vehicle comprising in combination, an elongated chassis, having a pair of parallel side plates, a pair of parallel axles extending transversely through bearing holes in said side plates of said chassis and spaced longitudinally therealong adjacent opposite ends of said chassis, pairs of wheels affixed respectively to opposite ends of both said axles, and a motor mounted on said chassis which comprises an inertia type flywheel supported on a shaft intermediately between said axles in bearing holes in said side plates and interengaging gear trains mounted respectively between the shaft of said flywheel and both axles to produce a unidirectional four-wheel drive for said vehicle, the improvement comprising mounting the gears of said trains upon shafts extending between bearing holes in said side plates disposed substantially along straight lines between the bearing holes for the axles of said wheels and shaft of said flywheel, and including in each of said gear trains, gear throw-out mechanism operable upon one gear of each train automatically to disengage the same from driving connection with other gears in said trains when any of said wheels are stopped from rotating while said flywheel is still rotating and thereby prevent injury to said gear trains, said throw-out mechanism comprising opposite pairs of short slots in said side plates of said chassis supporting the shafts of said one gear of each train, the slots for the shafts of the said throw-out gears being at angles to each other respectively in said side plates.

4,283,880

## PEAT PAPER AND A METHOD FOR ITS MANUFACTURE

Oyvind Fjeldsa, Nedergårdsgatan 16, Lilla Edet, Sweden (463 00)

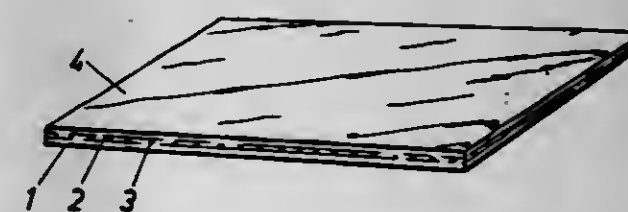
Filed Oct. 23, 1979, Ser. No. 87,473

Claims priority, application Sweden, Oct. 31, 1978, 7811265

Int. Cl.<sup>3</sup> A01G 31/00

U.S. Cl. 47—56

3 Claims



1. An improved peat paper for use in connection with plant-



ing, sowing or weed-control containing peat fibers, cellulose fibers and a bonding agent; the improvement comprising: said cellulose fibers being a sheet or web supporting said peat fibers, said peat fibers being loose, noncompressed fibers and being joined to said cellulose fibers in a dry-formation process and by means of said bonding agent so as to form paper-like sheets or webs having a weight in the range of 100 to 350 g/cm.

4,283,881

## CASEMENT WINDOW SECURITY GUARD

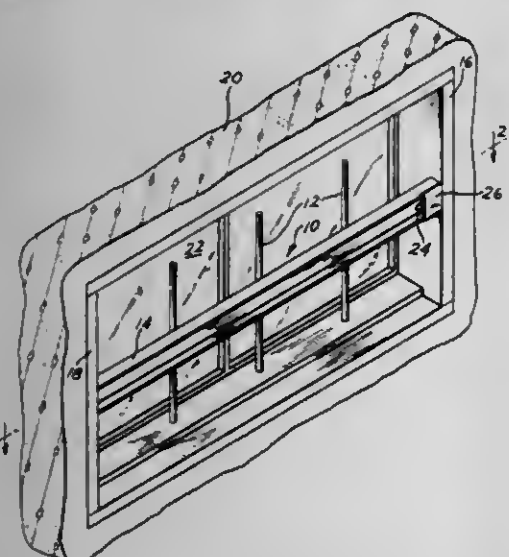
Charles E. Moore, 4426 Manner Dale Dr., Louisville, Ky. 40220; Donald K. Moore, 6922 Peppermill La., Louisville, Ky. 40228, and James M. Moore, 5109 Braidwood Dr., Louisville, Ky. 40219

Filed Jan. 5, 1980, Ser. No. 156,724

Int. Cl.<sup>3</sup> E05B 65/00; E06B 3/68

U.S. Cl. 49—35

7 Claims



1. A security guard for a window having opposed frame members mounted in a building structure, the guard comprising:

- an elongated channel member constructed and arranged to fit within the window opening between said opposed frame members, the channel member having a confined flanged area facing inwardly of the building;
- mounting means fixedly secured to and extending from one end of said channel member and adapted to engage complementary recess means formed in one of the opposed frame members;
- key actuated lock means fixedly secured within said confined flanged area of said channel member at the end opposite said mounting means, said lock means having a retractable bolt adapted to extend from said opposite end of said channel member into a complementary recess formed in the other of said opposed frame members;
- lock cover means fixedly secured to said channel member substantially coextensive of said lock means, said cover means constructed and arranged to envelope said lock means within said confined flanged area at said opposite end of said channel member.

4,283,882

## SAFETY FLUSH BOLT ENTRANCE DOOR SYSTEM

S. Eugene Hubbard, Niles; Richard A. Meisterhelm, Dowagiac, both of Mich., and Ernest B. Symon, South Bend, Ind., assignors to Kawneer Company, Inc., Niles, Mich.

Filed Oct. 17, 1979, Ser. No. 85,606

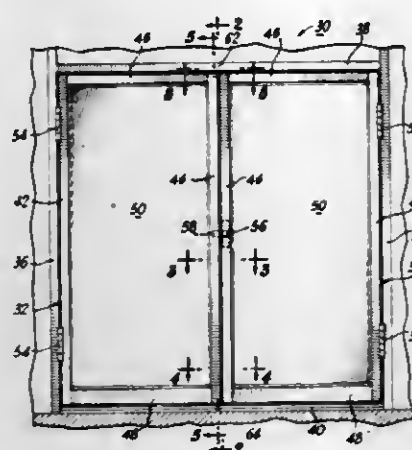
Int. Cl.<sup>3</sup> E05C 15/02; E05B 65/10

U.S. Cl. 49—141

41 Claims

1. A door mounted for movement between open and closed positions with respect to a door frame, comprising:
- latch means on said door movable between a latched position engaging said frame for securing said door in said closed position and an unlatched position disengaged from

said frame permitting movement of said door toward said open position; and control means remote from said latch means for controlling the same to prevent disengagement from said frame in response to opening force applied to said door when said



control means is in a first condition and to permit said latch means to move to said unlatched position, disengaged from said frame in response to opening force applied to said door when said control means is in a second condition, said control means including means normally biasing said latch means toward said unlatched position.

4,283,883

## WINDOW ASSEMBLY HAVING REMOVABLE SASH

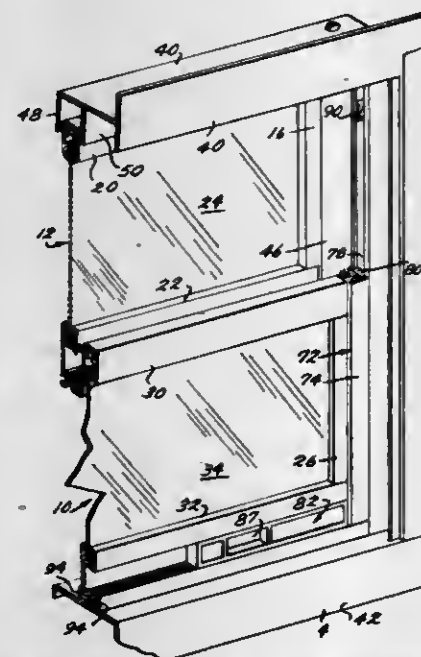
Maurice E. Sterner, Jr., York, Pa., assignor to Schlegel Corporation, Rochester, N.Y.

Filed Jan. 3, 1980, Ser. No. 109,408

Int. Cl.<sup>3</sup> E05D 15/22

U.S. Cl. 49—194

10 Claims



1. In a window assembly of the kind including at least two window sashes having inwardly facing surfaces and outwardly facing surfaces, said sashes being fitted into a perimeter frame formed by spaced apart longitudinal members joined at their ends to the ends of spaced apart transverse members, and means mounting at least one of the sashes for sliding movement in said frame in a longitudinal direction between a closed position and an open position and for inward movement relative to the frame, the improvement comprising a sash retainer mounted on each longitudinal frame member for longitudinal sliding movement relative to the respective frame member, each retainer having a longitudinal dimension about equal to the longitudinal dimension of said slidable sash and being slidable between a first position coextensive with said slidable sash and a second position in which the retainer is longitudi-

nally offset from said slidable sash, each retainer having a longitudinal fin overlying the inwardly facing surface of the respective longitudinal edge of said slidable sash when said sash and said retainer are coextensive to thereby provide support and sealing said surface; and manually releasable latches for releasably connecting said slidable sash to said retainers.

4,283,884

## AUTOMATIC BASE SEAL

Claude G. Dumenil, and Louis P. Dumenil, both of 4075, Route de Neufchatel, 76230 Bois Guillaume, France

Division of Ser. No. 813,076, Jul. 5, 1977, Pat. No. 4,170,846.

This application Jun. 15, 1979, Ser. No. 49,190

Claims priority, application France, Jul. 7, 1976, 76 20773; Apr. 26, 1977, 77 12517

Int. Cl.<sup>3</sup> E06B 7/20

U.S. Cl. 49—307

13 Claims



1. An automatic base seal for a panel comprising, a molding containing a driving means constituted by a one piece deformable rod whose one extremity projects from one extremity of the molding, in the open position of the panel, and whose other extremity is held against movement relative to the molding, said rod being forced axially into the molding by contact with the door frame element of said one extremity at the time of the closing of the panel, and in deforming itself displaces an elongated section supporting a sealing element, wherein said molding comprises a cross-section in the shape of an inverted U having a top wall, downwardly extending side walls, and two flanges projecting inwardly of the molding and toward each other from said side walls, said top wall, side walls, and flanges defining a longitudinal groove within said molding and in which said deformable rod is slidable and guided by surfaces of said walls and flanges, said flanges being cut away near the central part of the base seal to define a slot in said groove through which said rod projects downwardly out of the said groove, along one part of its length, at the time of closing of the panel.

4,283,885

## EMERGENCY RELEASE CLOSURE

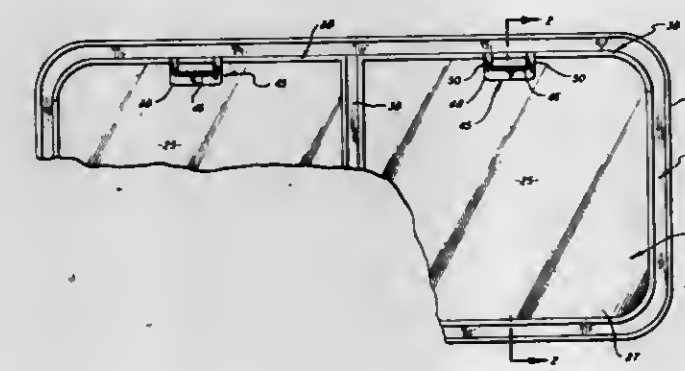
David W. Remick, Camillus, and Charles J. Stankivitz, Sr., Wampsville, both of N.Y., assignors to The O. M. Edwards Company, Inc., Syracuse, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,148

Int. Cl.<sup>3</sup> E06B 7/18

U.S. Cl. 49—466

12 Claims



1. A safety release closure that is capable of opening toward either the interior or the exterior of a vehicle to provide an emergency exit from the vehicle, the closure including a mounting frame having at least one opening for receiving a window sash therein, the inside surface of said opening

having a raised center section extending about the mid-depth of the opening and bevelled walls sloping downwardly and outwardly from the raised section towards the interior and exterior edges of said opening whereby the opening is wider across its two edges than across its mid-depth region,

- a sash generally complementing the opening in the frame which is centered within said opening,
- a first deformable margin seal positioned about the interior edge perimeter of the sash and a second deformable margin seal positioned about the exterior edge perimeter of the sash with the seals being disposed in biasing contact between the sash and the frame to support said sash within said frame,
- first pull means attached to said first deformable margin seal and a second pull means secured to said second deformable margin seal that are independently engagable to enable the seal associated to be pulled from between the frame and the sash thereby allowing the sash to be removed from the frame.

4,283,886

## WORKPIECE CONDITIONING GRINDER SYSTEM

Robert F. Obear, Everett, Wash., assignor to Western Gear Corporation, Everett, Wash.

Continuation of Ser. No. 810,520, Jun. 27, 1977, Pat. No.

4,209,948, which is a division of Ser. No. 748,293, Dec. 7, 1976,

Pat. No. 4,100,700. This application Oct. 1, 1979, Ser. No.

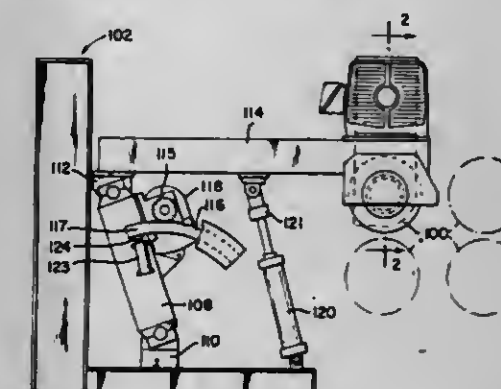
80,927

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> B24B 7/02

U.S. Cl. 51—92 R

4 Claims



1. A high production grinding machine for conditioning an exposed, generally planar surface on an elongated workpiece comprising:

- a grinding station having a rigid frame;
- means for providing relative movement between the workpiece and the grinding station along the longitudinal axis of the workpiece;
- a powered grinding wheel rotatably mounted about an axis which is parallel to the longitudinal axis of said workpiece;
- a first, elongated support arm pivotally secured to said frame about a first axis parallel to the longitudinal axis of said workpiece;
- a second, elongated support arm pivotally secured to said first support arm about a second axis parallel to said first axis, said second support arm carrying said grinding wheel;
- first actuator means for selectively pivoting first support arm about said first axis;
- second linear actuator means having one end pivotally connected to said second arm and the opposite end pivotally connected to said frame, said second actuator means being generally parallel to said first support arm to form a parallelogram structure such that the angle of said second arm



with respect to said frame and the position of said grinding wheel in a direction parallel to the longitudinal axis of said first support arm remains substantially constant as said first arm is pivoted about said first axis.

4,283,887

# SOLAR HELIOSTAT ENCLOSURE, ENCLOSURE FOUNDATION AND INSTALLATION METHOD AND MACHINE THEREFOR

Richard H. Horton, Schenectady, and John J. Zdeb, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

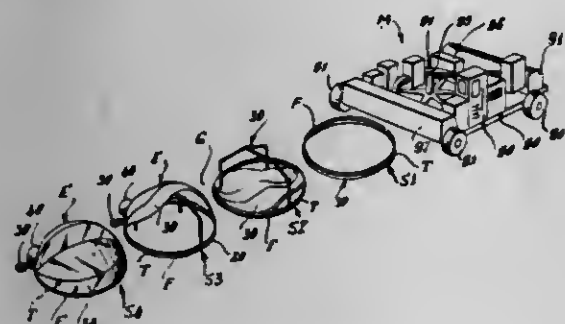
Filed Oct. 21, 1977, Ser. No. 844,401

Int. Cl.<sup>3</sup> E04B 1/345; F24J 3/02

U.S. Cl. 52—2

5 Claims

of air through said fabric so as to avoid condensation of moisture in said empty space.



1. An enclosure for a heliostat reflector or concentrator of a solar energy system comprising:

A. a foundation, said foundation including a toroidal bag positioned by and having its lower portion disposed in a circular trench formed in the ground, said toroidal bag being formed by a sheet of formable material that is partially disposed in the trench, filled with a weighted filler material and shaped so as to be formable into said toroidal bag by having its edges juxtaposed and secured to thereby form an enclosed toroidal space and enclose said filler, said toroidal bag having a circular upwardly facing portion;

B. an air inflatable protective bubble configured and arranged to enclose and protect the heliostat reflector or concentrator, having a lower circular skirt portion secured to said upwardly facing portion of said toroidal bag, and

C. a multilegged metal frame secured in the ground, and configured and arranged not to normally contact said bubble when it is fully inflated but to support it when it is not fully inflated, said frame also functioning as a lightning protector for the contents of said bubble.

4,283,888

# METHOD AND A COVERING FOR HEAT INSULATION AND PROTECTION OF A CONSTRUCTION

Jacques Cros, Cambon, 81210 Roquecourbe, France

Filed Feb. 22, 1979, Ser. No. 14,210

Claims priority, application France, Mar. 7, 1978, 78 06426

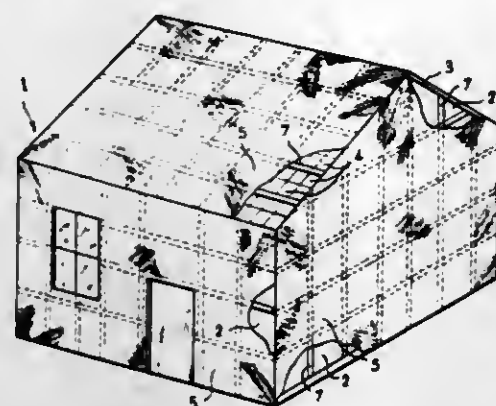
Int. Cl.<sup>3</sup> E04B1/34, 1/74

U.S. Cl. 52—3

4 Claims

1. A house having a roof and impermeable external walls, a translucent open-mesh knitted fabric of glass fiber threads on the exterior of at least said external walls, said meshes being substantially two to six times the diameter of said threads, and means spacing said fabric from said external walls to maintain an empty space between the external surfaces of the external

walls and said fabric thereby to induce a greenhouse effect in said empty space while at the same time permitting circulation



4,283,889

# GREENHOUSE CONSTRUCTION

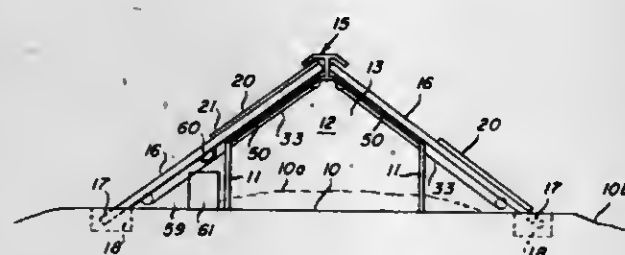
Michael D. Dunn, Emerald Acres, Rte. 2, Mineral, Va. 23117

Filed Dec. 19, 1979, Ser. No. 105,148

Int. Cl.<sup>3</sup> E04B 1/343, 7/16

U.S. Cl. 52—66

9 Claims



1. A greenhouse comprising:

(a) flooring means and side and end wall means defining a plant growing area,

(b) roof structure means comprising ridge means above said growing area, rafter means sloping from said ridge means downwardly and outwardly past said side wall means to terminal end portions, and anchor means securing said terminal end portions to said flooring means,

(c) roof means slidably mounted on said sloping rafter means and slidable up and down the slope thereof between first and second positions, said roof means in said first position extending over said plant growing area between said ridge means and said side wall means and in said second position lying between said side wall means and said anchor means,

(d) roof positioning means coupled to said slidably mounted roof means for sliding and positioning the same between said first and second positions,

(e) retaining means for securing said slidably mounted roof means against disengagement from said rafter means, and

(f) light transmissive ceiling means positioned above said growing area and in spaced relation to said slidably mounted roof means in the first position thereof for providing a heat insulating dead air space therebetween above said growing area and for admitting light to said growing area in other positions of said slidably mounted roof means.

4,283,890

# TRANSPORTABLE BED FOR INDUSTRIAL EQUIPMENT

Shojiro Takeda; Bunji Kinno, and Yutaka Yamaguchi, all of Chiba, Japan, assignors to Toyo Engineering Corporation, Tokyo, Japan

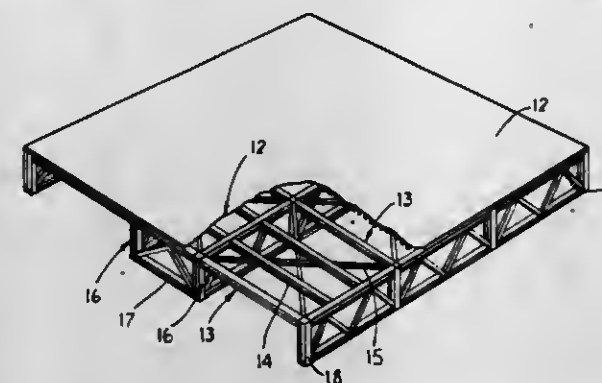
Filed Jan. 24, 1979, Ser. No. 5,953

Claims priority, application Japan, Feb. 7, 1978, 53/11986

Int. Cl.<sup>3</sup> E04B 1/34, 1/35

U.S. Cl. 52—143

6 Claims



1. A transportable bed for supporting industrial equipment and machinery and adapted for use in the construction of industrial installations wherein a part or the entirety of the equipment is erected on the transportable bed at a factory to form a unit structure having a weight ranging from 500 to 5,000 tons including said transportable bed, transporting said unit structure to the installation site by means of a heavy duty transportation vehicle or by a heavy duty transportation vehicle and a vessel in combination, installing said unit structure on foundations prepared at the installation site and connecting said equipment with other parts of the industrial installation thus completing the construction, said transportable bed comprising:

a substantially rectangular, horizontal floor having a width of from about 15 to about 50 meters and a length of from about 15 to about 60 meters, said floor being made of structural floor material adapted to support industrial equipment, machinery, piping and electric wiring of the industrial installation;

a central strengthening column extending downwardly from said floor, said central strengthening column comprising two upright, elongated, parallel, horizontally spaced-apart trusses whose upper ends are secured to said floor, said trusses extending lengthwise of said floor from one longitudinal end to the other longitudinal end of said floor, said trusses being spaced laterally inwardly from the respective side edges of said floor substantially equal distances to provide unobstructed zones located on opposite sides of said central strengthening column which zones each have a size sufficient to receive the load-carrying portion of a heavy duty transportation vehicle, said zones extending lengthwise of said floor, said central strengthening column having coplanar, horizontal, transverse beams attached to and extending between the lower ends of said trusses and defining a horizontal base for said transportable bed, said central strengthening column also having transversely extending pillars and inclined structural members extending between and secured to said trusses at longitudinally spaced positions along the lengths of said trusses, said central strengthening column supporting said floor a distance of from about 0.5 to about 3.0 meters above said horizontal base at the lower end of said central strengthening column;

a pair of upright, elongated, parallel, lateral support trusses extending downwardly from said floor adjacent said side edges of said floor, said lateral support trusses being parallel with the trusses of said central strengthening column and defining the outer sides of said zones, the lower ends of said lateral support trusses being substantially coplanar

with said horizontal base at the lower end of said central strengthening column;

a horizontal floor-reinforcing structure made of reinforcing beams lying directly underneath said floor and extending between the upper end of said central reinforcing column and the upper ends of said lateral support trusses and defining a horizontal bearing surface at the upper ends of said zones for engagement with said load-carrying portion of the heavy duty transportation vehicle.

4,283,891

# CEILING TILE SYSTEM

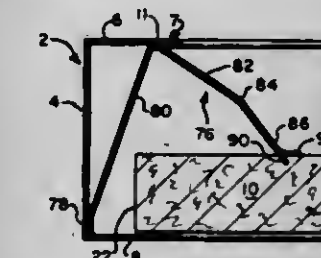
Wolfgang W. Moeller, 4 Glen Cove Dr., Glen Head, N.Y. 11545

Filed Jul. 5, 1979, Ser. No. 55,219

Int. Cl.<sup>3</sup> E04B 5/52

U.S. Cl. 52—144

16 Claims



1. In an acoustical ceiling tile system comprising a molding member within which is disposed at least one fibrous acoustical ceiling tile of the type which can be pierced by a prong wherein urging means are employed to urge said fibrous acoustical ceiling tile downwardly and/or in a direction away from said molding, the improvement to simultaneously urge the fibrous acoustical ceiling tile downwardly and away from a vertical wall of said molding wherein said urging means comprises a unitary resilient spring clip, a resilient portion of which engages against a vertical wall of said molding and thence against an upper surface of a fibrous acoustical ceiling tile and simultaneously, while in engagement with said upper surface of said ceiling tile, against a surface of said molding above said tile and opposed thereto.

4,283,892

# METAL CONSTRUCTION STUD AND WALL SYSTEM INCORPORATING THE SAME

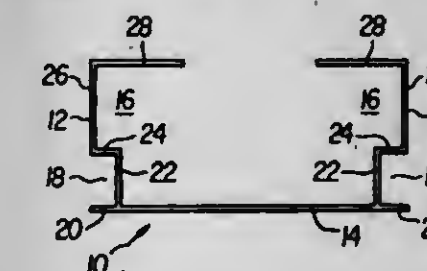
Larry B. Brown, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation of Ser. No. 930,392, Aug. 2, 1978. This application Apr. 7, 1980, Ser. No. 137,734

Int. Cl.<sup>3</sup> E06B 1/06; E04B 2/72

U.S. Cl. 52—213

7 Claims



1. A one-piece, semi-hollow extruded metal construction stud, said stud comprising a pair of opposed sidewalls in parallel spaced relationship, each of said sidewalls comprising a pair of oppositely facing, open channels, said oppositely facing, open channels of each sidewall sharing a common flange, one of said oppositely facing, open channels of each sidewall being open to the interior of said stud and combining with the corresponding channel of the other sidewall open to the interior of said stud to form a common channel and the other of said



oppositely facing, open channels of each sidewall being open to the exterior of said stud to form a pair of oppositely facing, co-planar channels, a flange apart from and parallel to said common flange for each of said channels open to the interior of said stud, said flanges apart from and parallel to said common flange for each of said channels open to the interior of said stud being in co-planar relationship and combining to define a first substantially flat exterior wall of said stud, a flange attached to and perpendicular to said common flange for each of said channels open to the interior of said stud, said flanges attached to and perpendicular to said common flange for each of said channels open to the interior of said stud defining a second and a third substantially flat exterior wall of said stud respectively, the interior of said oppositely facing channels open to the exterior of said stud each defining a groove adapted to receive a straight-cut edge of a piece of construction board or the like, each of said sidewalls being arranged with respect to the other such that said stud is symmetrical about a centerline between said sidewalls, a central web integral with and extending between said sidewalls for connecting said sidewalls together, said web extending between said oppositely facing channels open to the exterior of said stud, and a flange apart from and parallel to said common flange for each of said channels open to the exterior of said stud, said web and said flanges apart from and parallel to said common flange for each of said channels open to the exterior of said stud being integral and in co-planar relationship and combining to define a fourth substantially flat exterior wall of said stud.

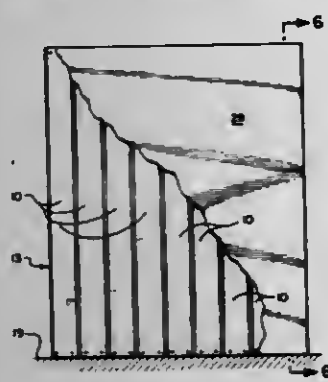
4,283,893

# METHOD AND APPARATUS FOR FORMING A STUDLESS WALL SYSTEM

Duane W. Flake, 10366 S. State, Salt Lake City, Utah 84070  
Filed Apr. 27, 1979, Ser. No. 33,962

Int. Cl.<sup>3</sup> E04B 2/28

U.S. Cl. 52—241



1. A studless wall assembly comprising a plurality of individual, lightweight, composite beams or posts, each independently preformed as a single metal channel filled with a cementitious material, said channel being very narrow relative to its length and having an elongate, flat, web member bordered laterally by respective substantially correspondingly elongate flange members, the said beams or posts being upstanding side-by-side with the flange members of adjoining beams or posts contiguous to make a plurality of mutually spaced panel walls; spacer members between the panel walls; means securing each beam or post of each panel wall to a spacer member, with the cementitious material surface of the outermost panel walls forming an exterior surface of the wall assembly; and means immobilizing at least one spacer member between each said pair of panel walls.

4,283,894

# DECORATIVE ARCH FORM

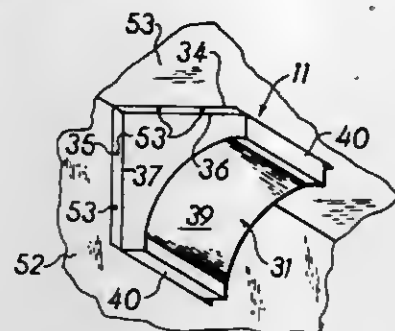
Gary L. Raty, 2323 Belknap Ave., Billings, Mont. 59101  
Continuation of Ser. No. 899,749, Mar. 24, 1978, abandoned.

This application Apr. 7, 1980, Ser. No. 137,905

Int. Cl.<sup>3</sup> B44F 7/00

U.S. Cl. 52—311

5 Claims



1. A decorative arch form molded from a plastic material as an integral unit, said arch form including a pair of side sections, each of said side sections having two edges substantially perpendicular to one another, integral flange members extending along substantially the full length of said perpendicular edges of each of said side sections with lines of reduced thickness at the junctures of the flange members with said sections, said flange members having tapered edges, a plurality of openings arranged along the length of said flange members intermediate the width thereof, said side sections being disposed in a substantially parallel spaced relationship with said flange members of one of said side sections in alignment with said flange members of the other of said side sections, a decorative fascia section connecting corresponding edges of said aligned side sections and extending from the far ends of said aligned flange members of said parallel side sections to the far ends of said flange members which are perpendicular thereto, whereby said arch form can be attached to connecting ceiling and wall panels with major surfaces of said flange members bearing against surfaces of said panels.

4,283,895

# THERMALLY IMPROVED EXPANDED STORE FRONT SYSTEM

Ronald D. Sukolics, Creve Coeur, Mo., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

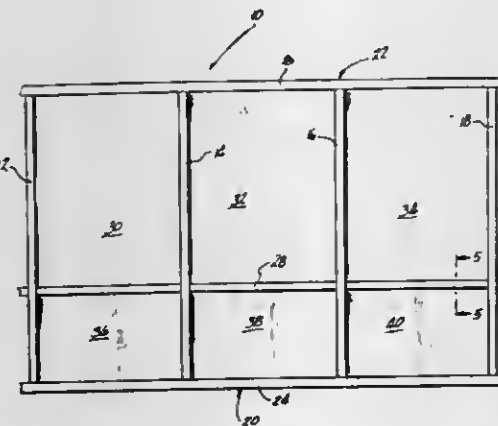
Continuation of Ser. No. 951,921, Oct. 16, 1978, Pat. No.

4,214,415. This application Nov. 5, 1979, Ser. No. 91,256

Int. Cl.<sup>3</sup> E04B 1/62, 2/88

U.S. Cl. 52—395

6 Claims



1. An improved fastener for securing a first cold metal section to a second warm metal section so as to provide a thermal break therebetween comprising:  
a unitary non-metallic insulating portion;  
said insulating portion being provided in part with a threaded hole;

a screw portion;  
said screw portion comprising a head portion and a threaded stem portion;  
said threaded stem portion being received within said threaded hole;  
one of said metal sections being provided with means for securing said head portion thereto;  
the other of said metal sections being provided with means for receiving said insulating portion such that said one metal section abuts one side of a first part of said insulating portion and said other metal section abuts a second side of said first part of said insulating portion so as to provide a thermal break therebetween when said one metal section is assembled to said other metal section wherein said first part and said second part are adapted to be moved relative to each other along the axis of said screw portion.

4,283,896

# TIE ANCHOR FOR SANDWICH PANELS OF REINFORCED CONCRETE

Siegfried Fricker, Wurmbergerstrasse 30-34, 7135 Wiernsheim, Fed. Rep. of Germany, and Horst Reinkensmeier, Niefern-Öschelbronn, Fed. Rep. of Germany, assignors to Siegfried Fricker, Wiernsheim, Fed. Rep. of Germany

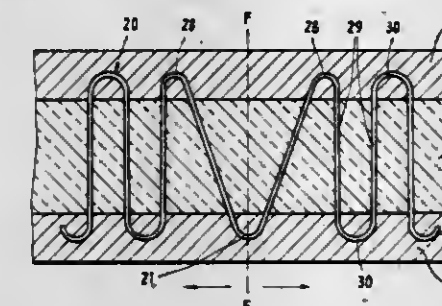
Filed Aug. 30, 1979, Ser. No. 71,373

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849520

Int. Cl.<sup>3</sup> E04C 2/26; E04B 2/30

U.S. Cl. 52—410

4 Claims



1. A tie anchor for sandwich panels and the like, particularly panels of the type which consist of inner and outer panel layers of concrete and an intermediate layer of an at least partially compressible thermally insulating material, the tie anchor comprising:

a continuous strip or band of steel which is shaped into a series of undulations defined by opposing loop portions and substantially straight leg portions connecting the loop portions, the spacing between the opposing loop portions being such that they alternatingly reach into the inner and outer panel layers; and  
means for anchoring the opposing loop portions in the concrete of the associated inner and outer panel layers; and  
wherein

at least one centrally located leg portion is a diagonal leg portion which is oriented at an angle to a transverse plane that is perpendicular to the panels, thereby serving as a diagonal brace between its adjoining loop portions in the inner and outer panel; and

the other leg portions on both sides of the central diagonal leg portion, or portions, respectively, are oriented parallel to each other and to the transverse plane, thereby serving as parallel links which, by bending within the thickness of the compressible intermediate layer, are capable of accommodating longitudinal displacements of their embedded opposing loop portions which occur, when the inner and outer panels expand and contract unequally in response to temperature changes.

4,283,897

# SNAP ACTION PANEL WALL CONSTRUCTION

LeRoy Thompson, Sewickley, Pa., assignor to Steelite, Inc., Pittsburgh, Pa.

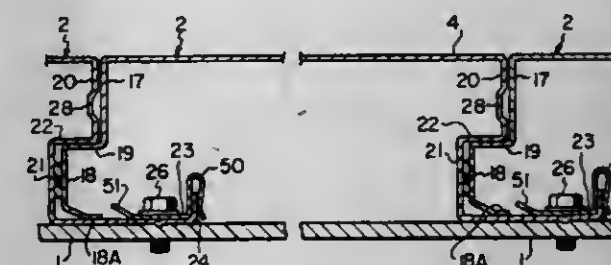
Continuation-in-part of Ser. No. 13,910, Feb. 22, 1979, which is a continuation of Ser. No. 754,756, Dec. 27, 1976, abandoned.

This application Feb. 1, 1980, Ser. No. 117,500

Int. Cl.<sup>3</sup> E06B 3/54; E04B 2/72

U.S. Cl. 52—489

2 Claims



2.-A panel wall construction comprising:

a plurality of spaced girts defining a framework,  
a plurality of construction panels comprising sheet metal sections, said sections defining walls and having opposite interengaging panel edges, one of said edges shaped to define a U-shaped socket and provided with a flange extending away from the socket, the edge of the flange being bent to form a narrow web extending upwardly from said flange, the other edge provided with a U-shaped tongue, said panels being secured to the girts by fasteners passing through said flange, each of said panels interengaging adjacent panels to form a continuous wall; and  
a plurality of clips held against the flange by said fasteners, each of said clips having a folded edge for clamping over the web of the flange on the panels and a flexible tab along the other edge of the clip bent upwardly from said flange and toward said socket such that an unfastened panel may be moved into place by inserting the U-shaped tongue into the U-shaped socket whereby the tab is depressed until the tongue has moved past it toward the socket and then the tab snaps to its undeformed original position for securing the tongue should it be pulled away from the socket.

4,283,898

# WALL PANEL CLAMPING APPARATUS

Jorge C. Claver, Barcelona, Spain, assignor to Chaltas Industrial, S.A., Barcelona, Spain

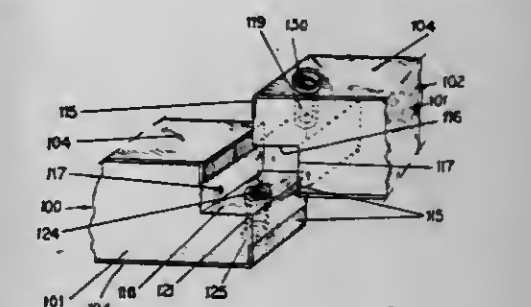
Filed Mar. 22, 1979, Ser. No. 22,892

Claims priority, application Spain, Mar. 22, 1978, 234874

Int. Cl.<sup>3</sup> E04C 1/10, 1/30

U.S. Cl. 52—584

9 Claims



1. A wall panel clamping apparatus comprising:

a first wall panel, said first panel having a first surface and an opposed parallel second surface, said first surface extending beyond said second surface at the end of said panel, said end being comprised of planar portions arranged to form an L-shaped profile, said L-shaped profile including two portions perpendicular to said first and second surfaces and one portion parallel to said first and second surface;

a transverse unthreaded hole in said first surface of said first



panel, said hole extending between said first surface and said parallel portion of said first panel;  
 a second wall panel, said second panel having a first surface and an opposed parallel second surface, said second surface extending beyond said first surface at the end of said panel, said end being comprised of planar portions arranged to form an L-shaped profile, said L-shaped profile including two portions perpendicular to said first and second surfaces and one portion parallel to said first and second surfaces;  
 a transverse threaded hole in said first surface of said second panel, said threaded hole extending between said second surface and said parallel portion of said second panel, said horizontal portions of said panels being overlapped and abutting, and said perpendicular portions abutting;  
 insulating material interposed between the first and second surfaces of each of said panels, said planar portions of said L-shaped profiles including surfaces of said insulating material;  
 a through bolt extended through said unthreaded hole and engaging said threaded hole, the head of said bolt being constrained from passing through said unthreaded hole, whereby said panels are rigidly clamped together.

4,283,899

## ANCHOR BOX EMBEDDED IN CONCRETE

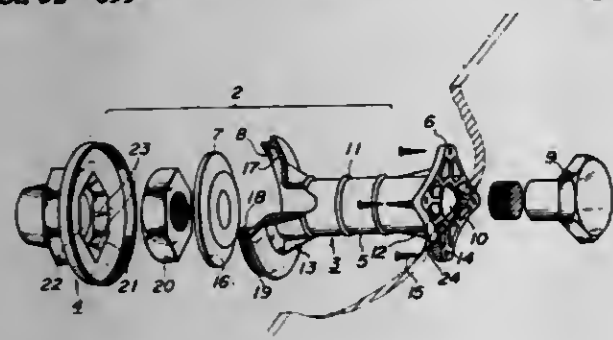
Manatoshi Wakamiya, Yokohama, Japan, assignor to Bridge-stone Tire Co., Ltd., Tokyo, Japan  
 Filed Nov. 8, 1979, Ser. No. 92,308

Claims priority, application Japan, Nov. 22, 1978, 53-143545; Nov. 24, 1978, 53-160673

Int. Cl.<sup>3</sup> E04B 1/41

U.S. Cl. 52—699

6 Claims



1. An anchor box embedded in concrete comprising: a trunk body formed of plastic and defining a fastening bolt insertion hole, an anchor nut held through a metal washer by the rear portion of said trunk body and adapted to be threadedly engaged with said fastening bolt, a cap formed of plastic and adapted to be connected with said trunk body, said cap having a hole for holding said anchor nut against rotation and detachably threaded with said trunk bolt, and said washer being provided at its front side with a tapered surface.

4,283,900

## CORNER BRACE FOR BUILDING CONSTRUCTION

Donald R. Schubert, Rte. 1, Box 124, Adkins, Tex. 78101

Filed Apr. 2, 1979, Ser. No. 26,423

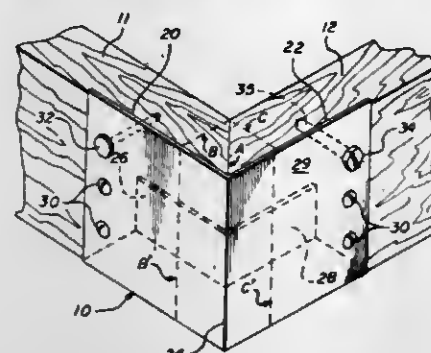
Int. Cl.<sup>3</sup> E04B 1/38

U.S. Cl. 52—712

7 Claims

1. A structural corner connection, comprising an elongated barge rafter, an elongated fascia board the longitudinal axis of which is perpendicular to the longitudinal axis of said barge rafter, one end of said fascia board abutting one end of said barge rafter, a pair of metal channels each having a base and a pair of spaced parallel ascending side plates joined perpendicu-

larly to form a right-angled corner brace having a straight rigid corner, one of said channels adapted for receiving and supporting said one end of said barge rafter in a first planar position, the other of said channels adapted for receiving and supporting said one end of said fascia board in an abutting rigid right-angular relationship to said barge rafter in a second planar position perpendicular to said first planar position, the outer side plates of said corner brace channels ascending from said channel bases for contacting and covering substantially all of the outer planar surfaces of said barge rafter and fascia board to protect the rafter and board surfaces from weathering,



said outer side plates having a plurality of spaced apertures disposed therein, the inner side plates of said corner brace channels ascending from said channel bases for contacting at least a portion of the inner planar surfaces of said barge rafter and fascia board and cooperating with said base and outer side plates to retain said barge rafter and fascia board ends in an abutting right-angular relationship, and fastening means cooperating with said apertures in said outer side plates and penetrating said ends of the barge rafter and fascia board for securely joining the corner brace channels to said ends of said barge rafter and fascia board.

4,283,901

## CONTINUOUS ROTARY MACHINE FOR UNCAPPING, FILLING AND RECAPPING FLEXIBLE BAGS HAVING SEPARABLE CAPS

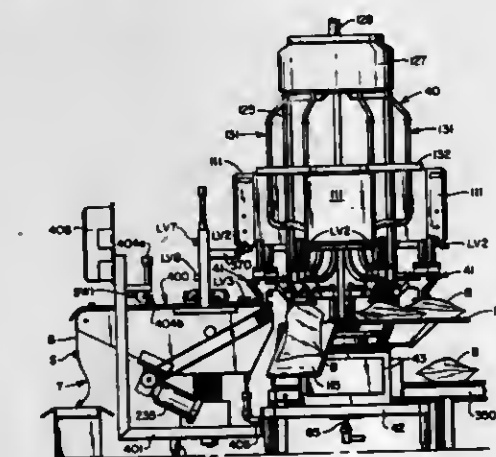
Warren J. Schieser, Dublin, and Stanley E. Vickers, Hideaway Hills, both of Ohio, assignors to Liqui-Box Corporation, Columbus, Ohio

Filed Dec. 20, 1979, Ser. No. 105,624

Int. Cl.<sup>3</sup> B65B 3/17, 3/30

U.S. Cl. 53—75

50 Claims



1. A continuous rotary filling machine for receiving flexible bags with spouts having caps thereon that are removable by relative axial movement, which comprises: a rotatable filler head support, a plurality of filler heads angularly disposed about the support and each adapted to receive a capped

spouted bag, each filler head comprising means for removing and re-applying the cap on the spout and for filling the bag with a selected substance while the cap is removed, means for actuating each filler head during the continuous movement of the rotatable filler head support, said filler head actuating means including means for supplying a predetermined volume of flowable substance into the bag while the cap is removed, said substance-supplying means comprising a digitizing volume flow meter and a cooperating signal conditioner.

4,283,902

## PROCESS AND APPARATUS FOR CONVERTING PILES OF FRESHLY PRINTED SHEETS OF BANK-NOTES INTO BUNDLES OF BANK-NOTES

Gualtiero Glori, Lonay, Switzerland, assignor to De la Rae Glori, S.A., Lausanne, Switzerland

Continuation of Ser. No. 868,747, Jan. 12, 1978, abandoned. This application Aug. 17, 1979, Ser. No. 67,549

Claims priority, application Switzerland, Jan. 19, 1977, 638/77

Int. Cl.<sup>3</sup> B65B 27/08, 13/02, 61/06

U.S. Cl. 53—399

17 Claims

1. Apparatus for converting piles of freshly printed sheets of bank-notes, each sheet bearing a plurality of rows of bank-notes with a plurality of bank-notes in each row, into bundles of individual bank-notes with each bundle surrounded by a band, comprising:

first cutting means for making a plurality of parallel cuts across a pile of sheets of bank-notes to divide said pile of sheets into a plurality of bundle strips with each strip containing a plurality of bank-notes juxtaposed end-to-end,

banding means for applying to each of said bundle strips a plurality of bands equal in number to the number of bank-notes in each strip, said banding means comprising a plurality of banding units disposed side-by-side and equal in number to the number of bank-notes in each strip, said banding units being operated simultaneously and being positioned to apply a band at the location of each bank-note in a strip, and

second cutting means for cutting each of said bundle strips into bundles of individual bank-notes, each of said bundles being banded by a band applied by said banding means prior to the cutting of said bundle strips by said second cutting means.

4,283,903

## PACKAGE WRAPPING MACHINE

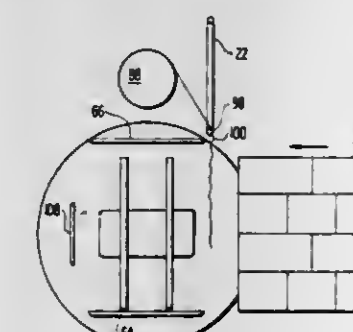
Riley H. Mayhall, 14130 Columbia Rd., Burtonsville, Md. 20730, and Andrew Zudal, 4140 Mt. Olney Ln., Olney, Md. 20832

Filed Nov. 21, 1978, Ser. No. 962,610

Int. Cl.<sup>3</sup> B65B 11/04

U.S. Cl. 53—587

14 Claims



1. A stretch film package wrapping machine for wrapping package components in a plurality of self-adhering film layers comprising in combination:

a. A frame means;

b. A power driven rotary turret plate mounted on said frame means for rotation about a horizontal axis;

c. A loading and wrapping station including cantilevered article clamping means mounted on said turret plate for clamping and holding components during wrapping, wherein said clamping means includes first fixed and second movable clamp members having horizontal axes and clamp actuating means for effecting controlled relative movement of said clamp members toward each other to clamp package components positioned between said clamp members and for moving said clamp members to a position of maximum spacing to permit the insertion of said package components;

d. A control means for actuating said clamping means, rotating said turret plate more than one revolution to thereby wrap said package components, and for controlling all other required machine functions;

e. A means controlled by said control means for positioning a first loose portion of said web of stretch film at a first position in close proximity to said movable clamp member and in the path of said package components to be wrapped when inserted into the wrapping station between said clamp means, whereby said package components carry said loose portion of said film under said movable clamp member during insertion so that upon movement of said movable clamp member, said film is clamped between said movable member and the package components;

f. A means for moving said means for positioning a loose portion of said web after said clamping means is actuated to a second position which is away from said clamping means a sufficient distance that will permit said rotary member to rotate without hitting said means for positioning of said web during the wrapping of said packages and which provides separation of the last layer of said wrapped film from the wrapped package for severing of said web on completion of the wrapping operation;

g. A stretch film web feeding, tensioning and supply means mounted on said frame means for providing a web of film extending to said clamping means and package components held by said clamping means so that a plurality of rotations of said turret plate and said clamping means about said horizontal axis effects the wrapping of said clamping means and said package components;

h. A film cut-off means for severing the web of stretch film from the multi-layer wrapped package following the wrapping of the package and said clamp means; and

i. A package ejecting means for ejecting said multi-layer wrapped package from said clamping means at the completion of a cycle of operation.

4,283,904

## GRASS FORAGE HARVESTER

Jerome Aron, Dossenheim sur Zinsel, France, assignor to Kuhn, S.A., Saverne, France

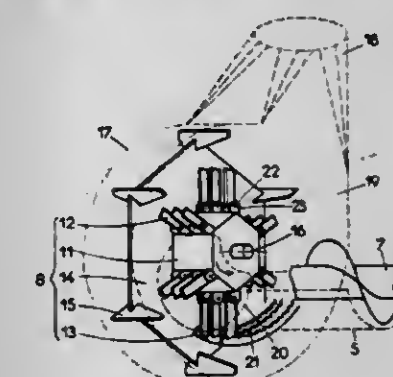
Filed Jun. 4, 1979, Ser. No. 45,326

Claims priority, application France, Jun. 7, 1978, 78 17703

Int. Cl.<sup>3</sup> A01D 55/26, 55/00

U.S. Cl. 56—13.9

12 Claims



1. A grass forage harvester comprising an element for mow-



ing or gathering grass, a cutter and projector device which comprises a rotor rotatable about a first axis with cutter blades articulated on its periphery and a disc carrying fan and projector vanes, said disc being mounted for rotation about a second axis parallel to said first axis such that said vanes move in a circular path surrounding said rotor with cutter blades, said vanes lying directly radially outwardly of said cutter blades and axially overlapping said cutter blades, and at least one counter-blade placed between the articulated cutter blades and the fan and projector vanes and retaining the grass until it is cut into small pieces.

4,283,905

## MOWING MACHINE

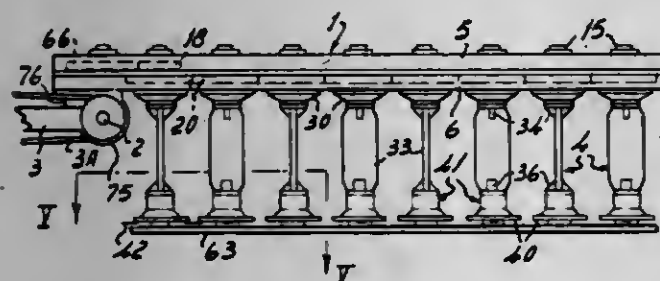
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland  
Filed Feb. 17, 1978, Ser. No. 878,913

Claims priority, application Netherlands, Feb. 17, 1977, 7701668

Int. Cl.<sup>3</sup> A01D 55/18

U.S. Cl. 56-295

13 Claims



1. A mowing machine comprising at least two cutting members, bearing housings therefor, and bearings in said housings, drive means and a supporting element, said cutting members each being mounted on a respective said bearing housing for rotation about substantially vertical axes and rotated by drive means disposed above said cutting members, a frame beam disposed above said cutting members, a frame beam disposed above said cutting members, each said cutting member being supported at its lower region by said supporting element, said frame beam and said supporting element being connected only through said cutting members, said bearing housings each accommodating at least two said bearings for supporting the respective said cutting member, said bearing housings being mounted on said supporting element, each said cutter member including an annular collar surrounding said bearings at generally the same level as one of said bearings, a cutter and a pin for supporting said cutter, in which said supporting element has an opening beneath each said cutting member in which said cutter is pivotally connected to each said cutting member by said pin provided therefor which can be passed downwardly through the corresponding said opening, a spring element locking said pin in place on said annular collar.

4,283,906

## TOP DRIVEN SHAKER UNITS FOR HARVESTING MACHINE

Roy Scudder, Marden Tonbridge, England, assignor to FMC Corporation, San Jose, Calif.

Filed Nov. 2, 1979, Ser. No. 90,815

Claims priority, application United Kingdom, Nov. 8, 1978, 43758/78

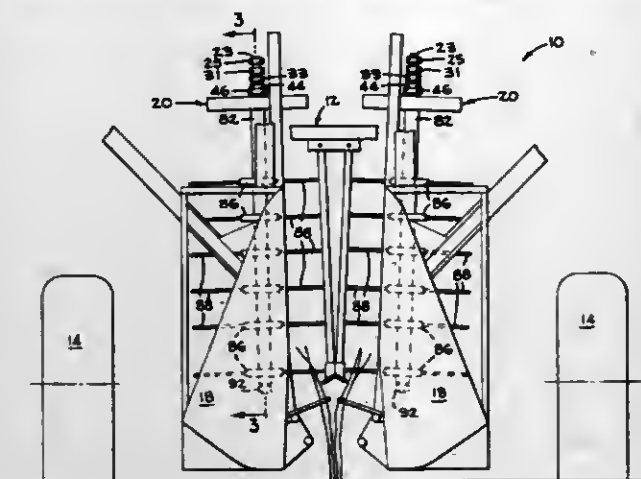
Int. Cl.<sup>3</sup> A01D 46/00

U.S. Cl. 56-330

3 Claims

1. A shaker assembly for use in a harvesting machine, said assembly comprising generally upright shaker shaft means, circumferentially spaced tines projecting radially from said shaker shaft means, means for circumferentially oscillating said shaker shaft means and said tines about the axis of the shaft means, means for unidirectionally rotating said shaker shaft means about its axis including a driven rotary member above

the upper end of said shaker shaft means and means for driving said rotary member; the improvement comprising a rotationally elastic, elongate torsion bar concentric with the axis of said



shaker shaft means, means for connecting the upper end portion of said torsion bar to said driven rotary member and means for connecting the lower end portion of said torsion bar to said shaker shaft means.

4,283,907

## DOUBLE TWIST SPINDLE INCLUDING A DRIVE WITHOUT CONTACT BETWEEN ITS PLATE AND ITS STABILIZER

Marcel Pelin, La Mulatiere, France, assignor to Verdol S.A., Caluire, France

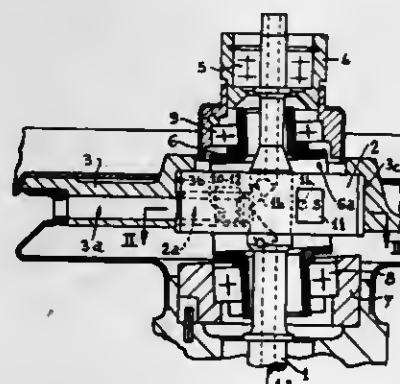
Filed Jan. 21, 1980, Ser. No. 113,872

Claims priority, application France, Jan. 26, 1979, 79 02587

Int. Cl.<sup>3</sup> D01H 7/86

U.S. Cl. 57-58.76

7 Claims



1. In a double-twist spindle of the kind including: a central rotating shaft, said shaft having a first axis; a bobbin-carrier rotatably supported by said shaft; an elongated plate carried by said shaft to rotate therewith, said plate extending transversely of said shaft; an annular disk fixed to the ends of said elongated plate, said disk having a central aperture; a fixed ring surrounding said shaft on the other side of said elongated plate with respect to said bobbin-carrier; a hollow stabilizer surrounding said shaft, said stabilizer having a second axis at an angle to said first axis, said stabilizer also having a first and a second end, and said stabilizer extending through the central aperture of said annular disk and being formed with a transverse aperture to accommodate said elongated plate; means to mount the first end of said stabilizer in said bobbin-carrier to permit said stabilizer to rotate about said second axis; means to mount the second end of said stabilizer in said ring to permit said stabilizer to rotate about its axis; and means to angularly connect said elongated plate with

said stabilizer to cause positive rotation of said stabilizer about said second axis when said shaft rotates about said first axis;

said bobbin-carrier being thus retained against rotation by said stabilizer during rotation of said shaft;

the improvement in said last-named means which consists of means developing a remote action between said elongated plate and said stabilizer without any mechanical connection between them during normal operation of said spindle.

4,283,908

## METHOD AND APPARATUS FOR PREPARING THE CHANGING OF COILS IN A RING SPINNING FRAME

Heinz Kamp, Wegberg, and Joachim Rohner, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

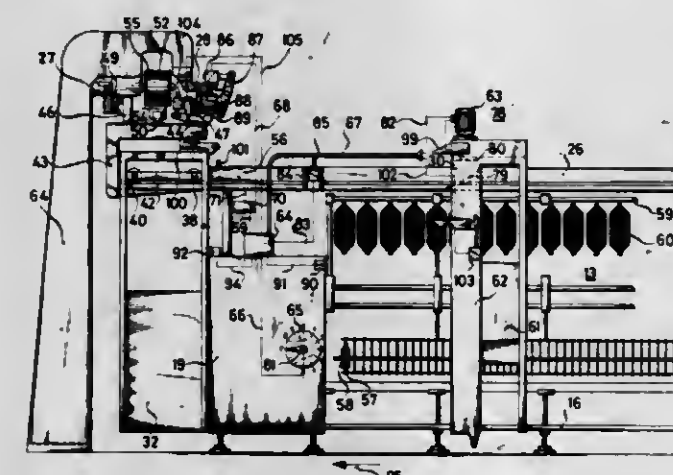
Filed Jan. 29, 1979, Ser. No. 7,021

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1978, 2803930

Int. Cl.<sup>3</sup> D01H 9/00, 9/08, 9/10

U.S. Cl. 57-276

9 Claims



1. Method for preparing a ring spinning frame for automatic coil changing, which comprises issuing a command from a central automatic spinning control before the end of the spinning operation to at least one of a movable automatic servicing device for the spinning operation and a movable automatic servicing device for changing coils which has not yet reached the machine end of the ring spinning frame to move to the machine end, moving the at least one servicing device to the machine end, and connecting the servicing devices together at the machine end no later than the arrival of the at least one servicing device at the machine end, so that both mentioned servicing devices are placed in readiness at the machine end of the ring spinning frame when the spinning process is completed.

4,283,909

## SPINDLE CLEANING APPARATUS

Alex J. Keller, Clover; Thad Flowers, Fort Mill, both of S.C.; Joseph R. Williams, Kings Mountain, N.C., and Navinchandra K. Patel, Houston, Tex., assignors to Automatic Material Handling, Inc., Bessemer City, N.C.

Continuation-in-part of Ser. No. 62,992, Aug. 2, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 168,333

Int. Cl.<sup>3</sup> D01H 11/00

U.S. Cl. 57-306

18 Claims

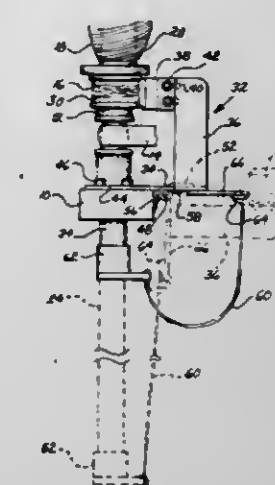
1. Apparatus for cleaning unwound yarn wraps from a spindle mounted on the spindle rail of a spinning frame having a ring rail reciprocally movable along the axis of said spindle to build a yarn package on a bobbin carried by said spindle, said apparatus including:

(a) a supporting frame;

(b) at least one cleaning element mounted on said supporting

frame to extend therefrom for selective cleaning engagement with said spindle; and

(c) mounting means associated with said supporting frame and adapted to connect said supporting frame to said



spindle rail for pivotal movement between a first position at which said cleaning element engages said spindle for cleaning thereof and a second position at which said supporting frame and said cleaning element are disposed beneath the lowest point of movement of said ring rail.

4,283,910

## FUEL CONTROL SYSTEM

Toshimi Abo, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

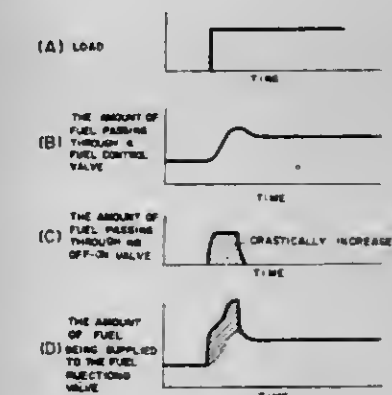
Filed Feb. 4, 1980, Ser. No. 118,077

Claims priority, application Japan, Feb. 16, 1979, 54-16975

Int. Cl.<sup>3</sup> F02C 9/32

U.S. Cl. 60-39.28 R

6 Claims



1. For a gas turbine comprising an output shaft and a fuel injection valve which is supplied with fuel from a fuel tank via a fuel supply passage, a fuel control system, comprising: a load detector, which produces a first signal representative of the load on the turbine output shaft; a rotational speed detector, which produces a second signal representative of the rotational speed of the turbine output shaft; a main fuel control valve, located in the fuel supply passage; an ON/OFF control valve, which is normally in the "OFF" state, and which bypasses the main fuel control valve and leads from the upstream to the downstream thereof; and a control means which receives said second signal and controls the degree of opening of the main fuel control valve depending upon the difference between said second signal and a set reference value; characterized in that there is provided: a holding means, which receives said first signal, and, when and only when its rate of increase is larger than a predetermined value, (a) opens the ON/OFF valve, and (b) interrupts the control of the main fuel control valve by the control means, maintaining the opening of the main con-



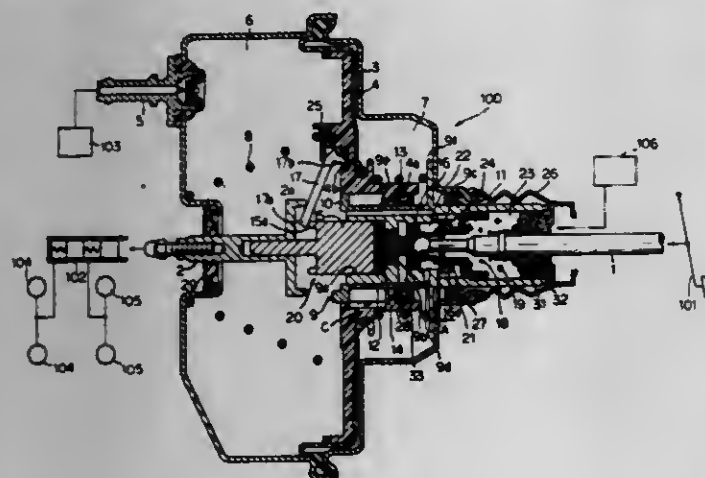
trol valve substantially at its value before said interruption.

#### 4,283,911 BOOSTER

Akira Nakamura, Shizuoka, and Masato Oguri, Susono, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 6, 1979, Ser. No. 46,046  
Claims priority, application Japan, Aug. 1, 1978, 53-106328[U]

Int. Cl.<sup>3</sup> B60T 13/00; F15B 9/10  
U.S. Cl. 60—547 R 10 Claims



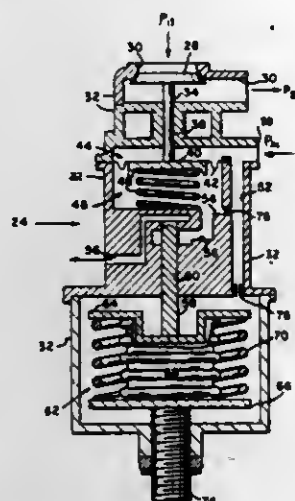
1. A booster for boosting an input force applied to an input member in order to output the same through an output member after having boosted by means of gaseous pressure comprising:

- a power piston disposed in such manner as to divide a chamber inside an air-tight casing into two chambers and operated due to the pressure difference in the two chambers situated on opposite sides of the power piston;
- a control piston slidably fitted in a through-bore axially formed in said power piston;
- spring means for biasing said power piston and said control piston to be restored to respective original positions thereof;
- said power piston being allowed to advance relatively to said control piston leaving the latter at said original position;
- limiting means for limiting the relative advancing of said power piston to a predetermined distance so as to make said power piston and said control piston advance in unison after said predetermined distance has been reduced to zero;
- a control valve disposed between said control piston and said input member, and operated by a relative movement between said control piston and said input member for controlling the pressure difference in the two chambers on opposite sides of said power piston;
- an intermediate mechanism for transmitting a force imparted from said input member; and
- a power lever, abutting at one end thereof on an output portion of said intermediate mechanism, abutting at the other end thereof on an output portion of said power piston, and abutting at the middle portion thereof on an input portion of said output member, for transmitting, while allowing relative movement between said intermediate mechanism and said power piston, the output from the former and the latter to said output member;
- whereby when said input member is shifted by a slight stroke in the initial operation stage of said booster to actuate said control valve, said power piston is advanced in relation to said control piston, independent of the stroke amplitude of said input member, instantly by said predetermined distance, and after that said power piston is advanced together with said control piston.

4,283,912  
**TURBOCHARGER CONTROL**  
Robert L. Cholvin, Santa Monica, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.  
Filed Jun. 12, 1979, Ser. No. 47,843  
Int. Cl.<sup>3</sup> F02B 37/00

U.S. Cl. 60—602

6 Claims

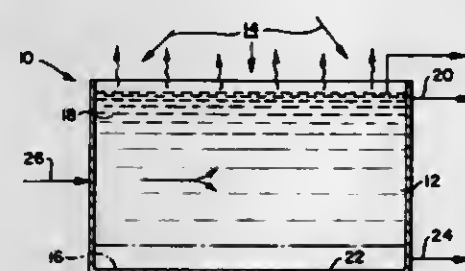


1. In a turbocharger having an exhaust gas driven turbine, a pneumatic control comprising housing means having first and second chambers formed therein; valve means positioned within means forming a turbine bypass opening for diverting, when in an open position, a portion of the exhaust gas flow away from driving communication with the turbine to limit the absolute value of turbocharger boost pressure; a flexible diaphragm coupled to said valve means and dividing said first chamber into a pair of diaphragm chambers, said housing means further including a vent port communicating one of said diaphragm chambers to atmosphere; means for biasing said valve means to a normal position closing the bypass opening to prevent diverting of the gas flow; means for coupling said diaphragm chambers on opposite sides of said diaphragm and said second chamber to boost pressure; a servo valve movable to open and close said vent port; and an evacuated spring-bellows assembly mounted within said second chamber and responsive to the absolute value of boost pressure for moving said servo valve to open said vent port when the absolute value of boost pressure exceeds a predetermined magnitude, resulting in a flow through said one of said diaphragm chambers to provide a pressure differential across said diaphragm to overcome said biasing means and to move said valve means to an open position.

4,283,913  
**UTILIZATION OF SATURATED SOLAR PONDS**  
Sidney Loeb, Omer, Israel, assignor to Intertechnology/Solar Corporation, Warrenton, Va.  
Filed Dec. 12, 1978, Ser. No. 968,792  
Int. Cl.<sup>3</sup> F03G 7/06

U.S. Cl. 60—641 A

16 Claims



3. A system to generate electric power from solar energy comprising in combination:

- (a) a saturated solar pond, containing a saturated solution of

a brine, said solution and pond arranged to receive solar radiation to unmix said saturated solution continuously varying from a higher, cooler, dilute solution to a lower, hotter, concentrated solution;

- (b) an energy conversion device having at least a first and second chamber, said first chamber connected to said dilute solution and said second chamber connected to said concentrated solution;
- (c) said first and second chambers separated by two membranes, said first membrane occupying a first portion of the space separating said chambers, said second membrane occupying the remaining portion of the space separating said chambers;
- (d) said first membrane selectively permeable to anions and said second membrane selectively permeable to cations, whereby the anions and the cations in the concentrated brine chamber permeate to the dilute brine chamber creating an electrical potential;
- (e) means responsive to said generated electrical potential to generate electric power;
- (f) Means to return said altered solutions to said saturated solar pond for unmixing.

#### 4,283,914

#### SOLAR ENERGY SYSTEM

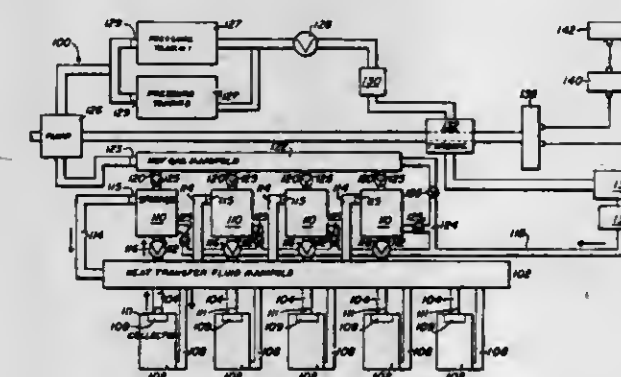
Leonard W. Allen, 1342 Vrain, Denver, Colo. 80204

Filed Apr. 17, 1979, Ser. No. 31,015

Int. Cl.<sup>3</sup> F03G 7/02

U.S. Cl. 60—641 AC

7 Claims



1. A solar electrical generating system comprising:

- (a) a collector having a solar heat gathering element;
- (b) a plurality of heat storage containers containing a storage media;
- (c) a heat transfer fluid manifold;
- (d) means for circulating a heat transfer fluid between said collector heat gathering element and said heat transfer fluid manifold;
- (e) means for circulating a heat transfer fluid between the heat transfer fluid manifold and each of said heat storage containers;
- (f) a hot gas manifold;
- (g) means for circulating an operating fluid from each heat storage container to the hot gas manifold;
- (h) means for returning operating fluid from the hot gas manifold directly to a heat storage container; and
- (i) a closed cycle electrical generating apparatus receiving operating fluid from the hot gas manifold and returning the fluid to a heat storage container.

#### 4,283,915

#### HYDRAULIC FLUID GENERATOR

David P. McConnell, P.O. Box 591, Minden, Nev. 89423, and Louis E. Tully, LaCanada, Calif., assignors to David P. McConnell, Fallon, Nev.

Filed Apr. 14, 1976, Ser. No. 677,041

Int. Cl.<sup>3</sup> F03G 7/06

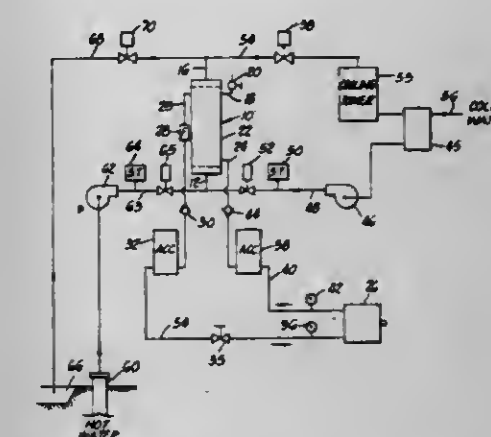
U.S. Cl. 60—650

34 Claims

1. In a hydraulic fluid generator for utilizing the heat energy

of a source of relatively warm water to produce a high pressure hydraulic output, the combination of:

- a working liquid having a relatively high coefficient of thermal expansion;
- a heat exchanger providing a heat exchange zone;
- passage means for the working liquid through the heat exchanger and through the heat exchange zone therein;
- means to circulate a relatively cold fluid through the heat exchanger to cool the working liquid in said passage means with consequent contraction of the volume of the working liquid in the passage means;



alternate means to circulate the relatively warm liquid from said source through the heat exchange zone for heating the working liquid in said passage means with consequent expansion in volume of the working liquid; and means to prevent reverse flow of the working liquid through the passage means, thereby to cause the alternate contraction and expansion of the working liquid to create a high pressure hydraulic output of the working liquid from the passage means.

#### 4,283,916

#### THERMAL EXCHANGE SYSTEM AND APPARATUS

Armando Bassotti, Caracas, Venezuela, assignor to Fabrica de Aparatos de Aire Acondicionado, Venezuela

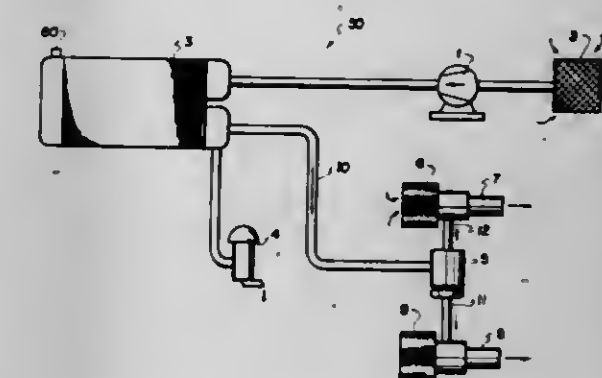
Continuation-in-part of Ser. No. 932,601, Aug. 10, 1978,

abandoned. This application Aug. 22, 1979, Ser. No. 68,669

Int. Cl.<sup>3</sup> F25B 9/02

U.S. Cl. 62—5

6 Claims



1. A heat exchanger system comprising, a compressor having an input for receiving a pressurizable medium and an output, a static turbulence generator having an input connected to said compressor output, a first output for warmed medium and a second output for cooled medium, said static turbulence generator receiving pressurized medium from said compressor and converting the pressure thereof into kinetic energy in the medium in the form of increased velocity thereof in said first output, an inductor having a first input connected to said first static turbulence generator output, a second input for receiving additional pressurizable medium and an output with a calibrated duct in said inductor for inducing additional medium into said second input and out of said inductor through said



inductor output, and a control valve connected to said second static turbulence generator output for regulating the flow of medium to said inductor, said inductor comprises a drum member, means in said drum member defining said calibrated duct between said first inductor input and said second inductor input whereby the additional medium is mixed with the medium for said first input and means downstream of said calibrated duct defining a diverging duct, said calibrated duct having an annular chamber communicating with said first static turbulence generator output and said drum mouth end in said calibrated duct upstream of said diverging duct.

4,283,917

# EVAPORATIVE CHARGE FORMING SYSTEM INCORPORATING AIR COOLING MEANS

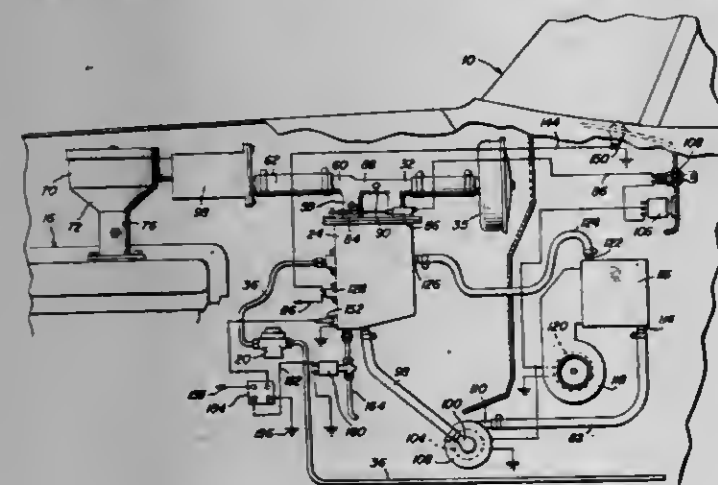
Charles L. Proffer, P.O. Box 206, Gulfport, Miss. 39501

Filed Dec. 20, 1979, Ser. No. 105,715

Int. Cl.<sup>3</sup> F25B 19/00

U.S. Cl. 62-7

9 Claims



1. A charge forming system including a closed chamber, an evaporative liquid fuel supply means for maintaining a predetermined general level of liquid fuel in said chamber, said chamber including an engine induction air inlet opening thereinto below said level and an induction air outlet opening outwardly of said chamber from a level above said liquid level, duct means including an inlet portion communicated with said outlet and an outlet end for communication with the induction passages of a combustion engine, water drain means opening outwardly from a lower portion of said chamber, electrically operated valve means operatively connected with said water drain means for controlling the flow of liquid through said water drain means, electrically actuated water sensing probe means in the lower portion of said chamber and electrically connected to said valve means for opening the latter in response to a collection of water in the lower portion of said chamber up to the level of said water sensing probe means, said electrically operated valve means being spring biased to the closed position and electrically operable to the open position.

4,283,918

# LIQUID PHASE SEPARATION IN ABSORPTION REFRIGERATION

Gurmukh D. Mehta, Warrenton, Va., assignor to Intertech-nology/Solar Corporation, Warrenton, Va.

Filed Jul. 20, 1979, Ser. No. 59,387

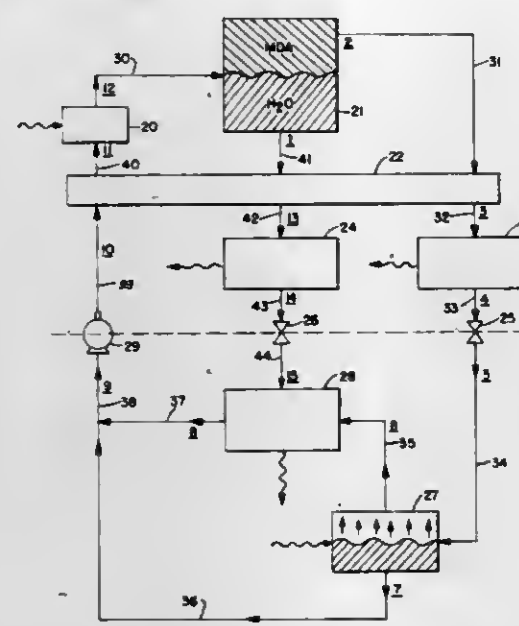
Int. Cl.<sup>3</sup> F25B 15/00

U.S. Cl. 62-112

1 Claim

1. The method of cooling which comprises,  
(a) selecting a binary solution of absorbent and refrigerant liquids which are completely miscible below a certain temperature and only partly miscible above said temperature,  
(b) increasing the pressure of said binary solution to prevent vaporization of said liquids during the heating and separating steps,

- (c) heating said binary mixture, by means of a heat source, to a temperature above that of complete miscibility,  
(d) separating the refrigerant-rich liquid solution and absorbent-rich liquid solution thus formed,  
(e) separately cooling each solution by a heat sink,  
(f) reducing the pressure of said refrigerant-rich solution, thereby reducing the temperature of the solution due to partial evaporation,



- (g) further evaporating part of the refrigerant-rich solution by absorption of heat to produce useful cooling,  
(h) reducing the pressure of the absorbent-rich solution to the pressure of the evaporator,  
(i) mixing the refrigerant vapor from the evaporator and the absorbent-rich solution to absorb the vapor,  
(j) mixing solution from step (i) with the unevaporated solution from step (g), pressurizing the mixture as in step (b), thus completing the cycle.

4,283,919

# VAPOR COMPRESSION CYCLE DEVICE WITH MULTI-COMPONENT WORKING FLUID MIXTURE AND METHOD OF MODULATING THE THERMAL TRANSFER CAPACITY THEREOF

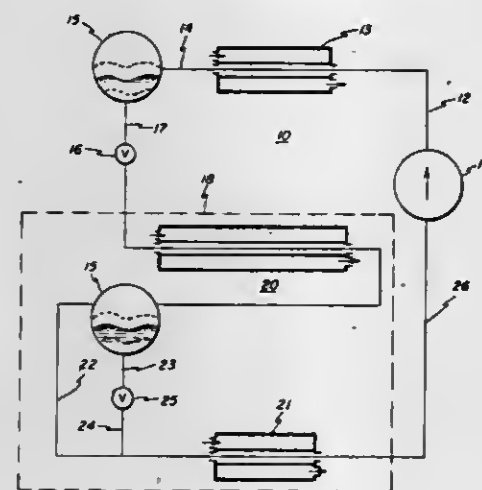
Himanshu B. Vakil, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,971

Int. Cl.<sup>3</sup> F25B 1/00

U.S. Cl. 62-114

18 Claims



1. A method of modulating the thermal transfer capacity and the evaporator superheat of a vapor compression cycle device which includes compressing a multi-component working fluid mixture, comprising at least two miscible refrigerants having different boiling points condensing a vapor portion of the

mixture, storing a liquid portion of the mixture under high pressure, controlling the flow rate of the mixture from high pressure storage, evaporating a portion of the mixture liquid flowing from storage, storing the remaining unevaporated mixture under low pressure, combining at least a portion of the evaporated mixture and a controlled amount of the stored unevaporated mixture portion, evaporating the combined mixture, and controlling the flow rate of compression by the density of the working fluid mixture entering therein.

4,283,920

# REFRIGERATING DEVICE

Hiroyuki Kainuma, Kumagaya; Yukio Okada, Fukaya, and Yoshiaki Fujisawa, Gyoda, all of Japan, assignors to Sawafuji Electric Co., Ltd., Tokyo, Japan

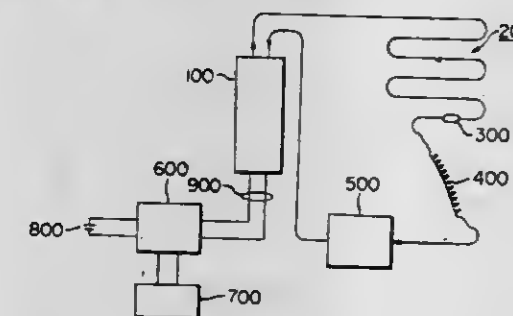
Filed Jun. 25, 1979, Ser. No. 51,829

Claims priority, application Japan, Jul. 28, 1978, 53/92209

Int. Cl.<sup>3</sup> F25B 31/02; F04B 49/10

U.S. Cl. 62-126

7 Claims



1. A refrigerating device having an inverter circuit for generating an alternating voltage, a phase control circuit for controlling the switching phase in the inverter circuit, a vibrator compressor to which the alternating voltage from the inverter circuit is supplied, a condenser to which the refrigerant is fed from the vibrating compressor, a capillary tube provided on the downstream side of the condenser, an evaporator provided on the downstream side of the capillary tube, the inverter circuit having at least one main semiconductor element with a control portion and constructed so as to change the oscillation frequency of the alternating voltage in accordance with changes in the natural oscillation frequency of a mechanical system of the compressor, the phase control circuit having at least one of an ambient temperature sensor and an evaporator temperature sensor, wherein the phase control circuit supplies a control signal for the inverter circuit for controlling the phase of the alternating voltage supplied to the vibrating compressor in accordance with at least one of the ambient temperature and the evaporator temperature so as to lower the compression level of the refrigerant by reducing the piston stroke of the vibrating compressor in accordance with changes in at least one of the ambient temperature and the evaporator temperature.

4,283,921

# CONTROL AND ALARM SYSTEM FOR FREEZER CASE TEMPERATURE

Howard S. Prosky, Englewood, Colo., assignor to Electromedics, Inc., Englewood, Colo.

Filed Apr. 25, 1980, Ser. No. 143,931

Int. Cl.<sup>3</sup> F25B 49/00; G05B 15/00, 23/00

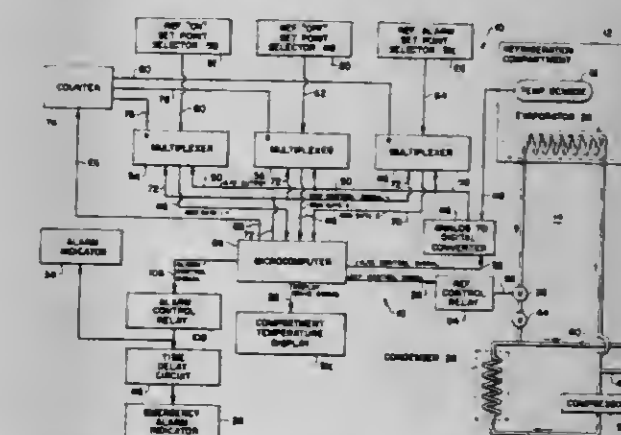
U.S. Cl. 62-126

9 Claims

1. A temperature control system for a refrigeration compartment, for use with a refrigeration system operatively controlling the temperature of said compartment, said refrigeration system including a refrigeration control means for operatively controlling the thermal effect of said refrigeration system within said compartment, said temperature control system comprising:

sensor means thermally coupled with said compartment for sensing the actual temperature within said compartment

and for creating an electrical characteristic signal related to the actual temperature sensed;  
converter means electrically connected with said sensor means, said converter means operatively converting the electrical characteristic signal of said sensor means into a compartment temperature signal;  
first temperature selector means for selectively establishing a first limit signal representative of an upper limit temperature of a range of desired temperatures within which the temperature of said compartment is normally to be regulated;  
second temperature selector means for selectively establishing a second limit signal representative of a lower limit temperature of the range of desired temperatures within which the temperature of said compartment is normally to be regulated;  
first multiplexer means operatively connected to receive the compartment temperature signal and the first limit signal



from said converter means and said first temperature selector means, respectively, and operative to supply both the compartment temperature and first limit signals when enabled;  
second multiplexer means operatively connected to receive the compartment temperature signal and the second limit signal from said converter means and said second temperature selector means, respectively, and operative to supply both the compartment temperature and second limit signals when enabled;  
enabling means operatively connected with said first and second multiplexer means for enabling said first and second multiplexer means in sequence; and  
computer means operatively connected to receive the signals from said first and second multiplexer means, said computer means operatively controlling said refrigeration control means of said refrigeration system in a manner predetermined by the relation of the compartment temperature signal to the first and second limit signals.

4,283,922

# AIR DEFROST SYSTEM USING SECONDARY AIR BAND COMPONENTS

Elmer J. Sobera, Cassopolis; Melvin W. Steelman, and Fayed Abraham, both of Niles, all of Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.

Division of Ser. No. 928,313, Jul. 26, 1978, Pat. No. 4,207,747, which is a division of Ser. No. 790,654, Apr. 25, 1977, Pat. No. 4,144,720. This application Sep. 17, 1979, Ser. No. 76,226

The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> A47F 3/04

U.S. Cl. 62-256

12 Claims

1. A refrigerated display cabinet having: an access opening for communicating a storage and display space within the cabinet with the ambient atmosphere; adjacent inner and outer outlets extending across one edge of said access opening; corresponding adjacent inner and outer inlets extending across an opposite edge of said access opening; a first conduit extending from said outer inlet around said cabinet to said outer outlet; a



second conduit extending from said inner inlet around said cabinet to said inner outlet; first air circulating means for propelling air through said first conduit in a first direction during the refrigeration cycle and in a second direction, substantially opposite said first direction, during the defrost cycle, whereby during the defrost cycle ambient air is selectively drawn into said first conduit through said outer outlet; second air circulating means for propelling air through said second conduit to



said inner outlet and across said access opening in the form of a primary air curtain to said inner inlet; wherein the second air circulating means maintains the flow of air through said second conduit continuously in the same direction during both the refrigeration and defrost cycles to maintain a substantially continuous primary air curtain during both the refrigeration and defrost cycles; and refrigeration means in one of said first and second conduits, said refrigeration means being defrosted during a defrost cycle by said ambient air passing thereover.

4,283,923

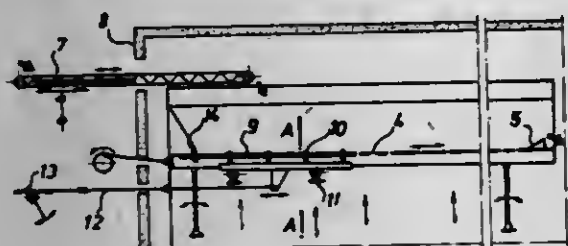
# METHOD OF CONTINUOUS FREEZING OF FOOD PRODUCTS IN BULK, ESPECIALLY OF FRUITS AND VEGETABLES, AND AN APPARATUS FOR APPLICATION OF THE METHOD

Zbigniew Grada, Al. Niepodległości 159/69, and Wiesław Kurzeba, ul. Gorlicka 11/40, both of Warszawa, Poland  
Filed Jul. 17, 1979, Ser. No. 58,343

Claims priority, application Poland, Aug. 22, 1978, 209192  
Int. Cl.<sup>3</sup> F28G 1/00

U.S. Cl. 62-303

4 Claims



1. An apparatus for continuous freezing of food products in bulk, comprising an insulated housing, a series of cooling units within said housing in side-by-side relationship, each of said cooling units including an air cooler and means for causing an upward flow of air from said air coolers, a longitudinally extending foraminous surface spaced above at least the first cooling unit such that in operation of the apparatus a fluidized bed of the food product is formed above said foraminous surface, and means for feeding the unfrozen food product to said fluidized bed, the improvement wherein said feed means comprises a belt conveyor which extends within said housing above said foraminous surface, said belt conveyor being disposed substantially parallel to said foraminous surface, said belt conveyor being slidably mounted for to-and-fro motion along the axis of said foraminous surface, and means for imparting said to-and-fro motion to said belt conveyor, and wherein at least the front part of the bottom of the foraminous surface is

in the form of a grate made of wire, and a series of cleaning combs are provided beneath said grate, the teeth of said combs being adapted to enter the spaces between the wires of the grate, and means are provided for shifting of the cleaning combs to-and-fro along the axis of the foraminous surface.

4,283,924

# CLIMATIZING OF AIRCRAFT

Horst Schütze, Weyhe, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Fed. Rep. of Germany

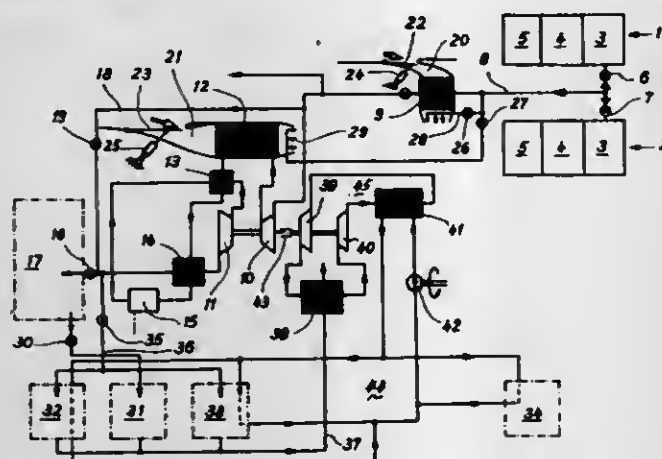
Filed Aug. 2, 1979, Ser. No. 63,075

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834256

Int. Cl.<sup>3</sup> F25D 9/00

U.S. Cl. 62-402

6 Claims



1. In a system for climatizing and air conditioning interior compartments of an aircraft, including the passenger cabin, under utilization of air tapped from a compressor of an engine of the aircraft, the system including a cooling turbine for driving a compressor for the tapped air, the turbine cooling this tapped air as compressed by the compressor prior to discharge into the passenger cabin, the improvement comprising:

- a second compressor connected to be driven by said first turbine and having an input and discharge output;
- a closed cooling loop which includes (i) said second compressor, (ii) a second turbine for cooling and compressing fluid in the closed loop, (iii) a first heat exchanger connected between the discharge output of the second compressor for compressed fluid and an input for the second turbine for passing thereto fluid cooled by the first heat exchanger, and (iv) a second heat exchanger connected between a discharge output of the second turbine after expanding work and said input of the second compressor; means for feeding air discharged from the cabin to the first heat exchanger, for precooling the fluid as it flows from the second compressor to the second turbine; and
- a second loop for cooling other compartments and being connected for being cooled by the second heat exchanger and by the fluid as it flows through the second heat exchanger from the second turbine to the second compressor.

4,283,925

# SYSTEM FOR COOLING

Robert Wildfeuer, 85 Floral Dr., W. Plainview, N.Y. 11803

Filed Nov. 15, 1979, Ser. No. 94,743

Int. Cl.<sup>3</sup> F25D 43/02

U.S. Cl. 62-434

12 Claims

1. In a system for cooling an enclosure having a cooling load comprising:

- (a) A cooling zone containing a conduit in said enclosure for cooling fluid, said conduit encountering said load, means in said conduit for propelling said cooling fluid through said conduit and cooling fluid within said conduit;

- (b) A refrigeration zone containing a closed refrigeration circuit for refrigerant, chiller means in said circuit for extracting energy from said refrigerant, means in said circuit for circulating said refrigerant and refrigerant within said circuit; and

- (c) Collection means connected to said refrigerant zone for removing energy extracted by said chiller means; said refrigeration and cooling zones being connectable by an

ected tracks; and means for activating said switching guides according to the movement of said control bars.

4,283,927

# HAND-OPERATED KNITTING MACHINE WITH LOOP TRANSFER FUNCTIONS

Nobuaki Yokoyama, Kodaira, Japan, assignor to Silver Seiko, Ltd., Kodaira, Japan

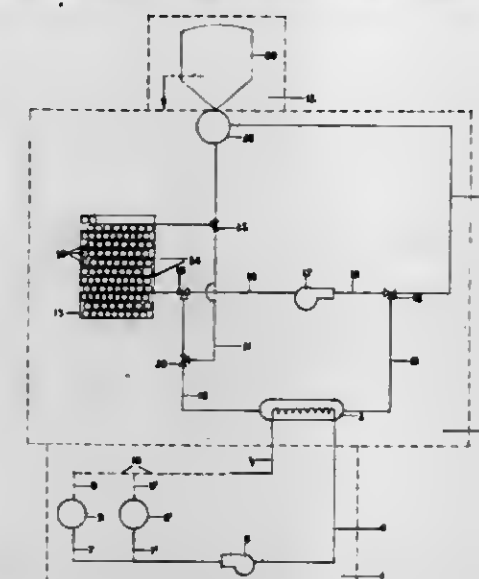
Filed Sep. 28, 1979, Ser. No. 80,149

Claims priority, application Japan, Oct. 17, 1978, 53-126854

Int. Cl.<sup>3</sup> D04B 7/00, 15/36, 35/00

U.S. Cl. 66-78

8 Claims



exchanger means for transferring energy from said cooling fluid to said refrigerant; the improvement wherein said refrigerant circuit includes a reservoir for said refrigerant, which reservoir contains capsules of an energy storage medium enveloped within an impermeable membrane, said medium having a liquid/solid phase transformation point at a temperature between the minimum and maximum operation temperatures of said refrigerant.

4,283,926

# CONTROL DEVICE FOR FLAT KNITTING MACHINES HAVING CIRCULATING KNIT CARRIAGES

Eberhard Grimmer, Günther Kessler, and Hartwig Müller, all of Karl-Marx-Stadt, German Democratic Rep., assignors to Veb Kombinat Textima, Karl-Marx-Stadt, German Democratic Rep.

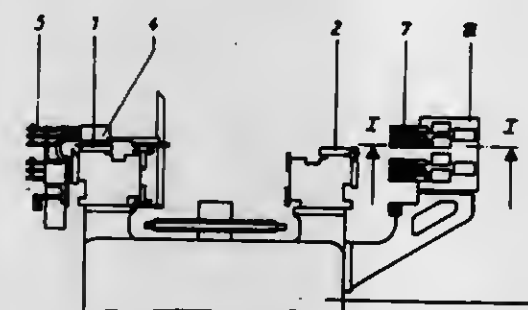
Filed Feb. 11, 1980, Ser. No. 120,855

Claims priority, application German Democratic Rep., Feb. 13, 1979, 211002

Int. Cl.<sup>3</sup> D04B 7/00, 15/66

U.S. Cl. 66-75.2

14 Claims



1. A control device for flat knitting machines of the type having at least two pairs of consecutively arranged needle beds and a plurality of knit carriages circulated in one direction above the needle beds and each supporting adjustable control bars, and stationary control plates arranged between the respective pairs of needle beds to cooperate with the assigned control bars, comprising: a plurality of parallel control tracks provided on each of said control plates to guide the assigned control bars; a plurality of movable switching guides arranged on each control plate for directing said control bars into pre-

1. In a hand-operated knitting machine of the type having a single flat needle bed including a plurality of knitting needles tricked for individual movement therein and a carriage mounted for sliding movement on the needle bed, each of the knitting needles having a butt thereon, the improvement comprising:

- a pair of loop transfer devices located on said carriage in a symmetrical relationship with each other relative to the transverse center line of said carriage and cooperable with a given set of paired needles at the forward end portions thereof to transfer a particular needle loop from one to the other of the paired needles;
- a yarn feeder mounted on said carriage and having an eye for feeding therethrough a knitting yarn onto said needles; and

- a cam arrangement mounted on said carriage for engagement with the butts of said needles to actuate said needles and having a generally symmetrical construction relative to said center line, said cam arrangement including a pair of needle selector members each located adjacent to an end portion of said carriage, a pair of cam member sets each located inwardly of an associated needle selector member in opposing relationship to an associated loop transfer device and each defining first and second loop transfer butt-paths for actuating, respectively, the needles selected by said needle selector members and the unselected remaining needles to bring the selected needles, as transferring needles and those of the unselected needles which are paired with the selected needles, as receiving needles, into operative engagement with said loop transfer devices to effect transfer of the particular needle loops from said selected transferring needle said unselected, paired, receiving needle of each needle pair, a center raising cam having a pair of cam profiles each defining part of a raising butt-path for raising both the selected and unselected needles to their clearing position, the raising butt-paths being contiguous to the respective first and second loop transfer butt-paths defined by the respective cam sets and intersecting each other at a point adjacent the forward angular end of the center raising cam, each set of said cams defining the remaining part of the corresponding raising butt-path, and a part of a lowering butt-path for lowering said needles from the clearing position to beyond the knock-over position, the lowering butt-path being contiguous to its respective raising butt-path, a knitting yarn being fed to the knitting needles while the needles are



being lowered along said lowering butt-paths so as to be knit into needle loops by said needles, and a pair of knitting cams each located rearwardly of said first and second loop transfer butt-paths defined by the associated cam member sets for intersecting, in a first direction of movement of said carriage, one of said lowering butt-paths for the other direction of movement whereas said first and second butt-paths for the other direction of movement intersect the other lowering butt-path for said first direction of movement.

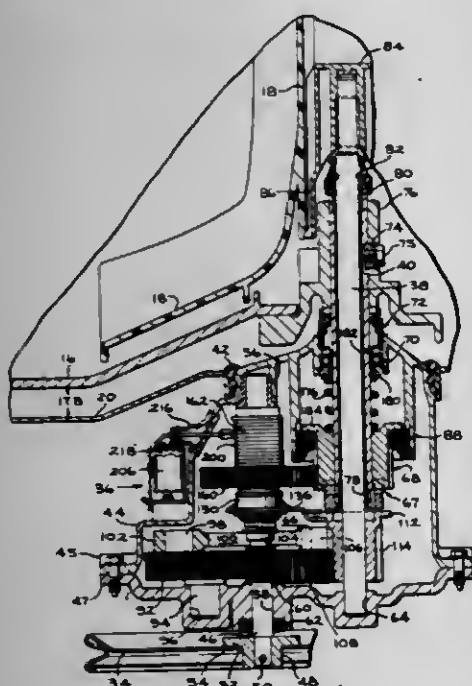
4,283,928

**TRANSMISSION FOR WASHING MACHINE**  
Aidan M. Stone, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Continuation-in-part of Ser. No. 69,487, Aug. 24, 1979, abandoned. This application Jun. 19, 1980, Ser. No. 161,103  
Int. Cl.<sup>3</sup> D06F 23/04, 37/40

U.S. Cl. 68—23.7

18 Claims



1. A washing machine transmission for selectively providing oscillatory drive to an agitator and rotary drive to a clothes receiving receptacle, said transmission comprising:

- a transmission housing;
- a spin tube rotatably mounted in said housing and extending therefrom for driving connection to a clothes receptacle;
- an agitator drive shaft rotatably mounted in said housing and extending therefrom through said spin tube for driving connection to an agitator;
- an input shaft rotatably mounted in said housing in spaced relationship to said spin tube and drive shaft, said input shaft extending from said housing for rotation selectively in either of a first and a second direction;
- oscillation mechanism operatively connected to said input shaft and including an agitator drive element caused to oscillate in response to rotation of said input shaft;
- means for drivingly connecting said agitator drive element to said agitator drive shaft for oscillating said drive shaft when said input shaft rotates in the first direction and for disconnecting said agitator drive element from said agitator drive shaft when said input shaft rotates in the second direction;
- spin drive means for drivingly connecting said input shaft with said spin tube, said spin drive means including clutch means operatively connected to said input shaft and normally effective to slip when said input shaft rotated in the first direction and to complete the driving connection from said input shaft to said spin drive means when said input shaft rotates in the second direction.

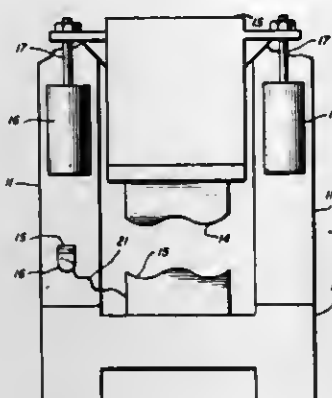
**4,283,929**  
**CODED AUTOMATIC COUNTERBALANCE CONTROL**  
Francis E. Heiberger, Elmhurst, Ill., assignor to Danly Machine Corporation, Chicago, Ill.

Filed Jul. 16, 1979, Ser. No. 57,979

Int. Cl.<sup>3</sup> B21J 9/20

U.S. Cl. 72—7

5 Claims



1. In a mechanical press having a slide, a die set including the elements of a die punch attached to the slide and a die shoe, a counterbalance cylinder pressurized to support the slide and the die punch, and means for adjusting the counterbalance cylinder pressure in response to an electrical signal, the improvement comprising:

- a plug attached to an element of the die set, the plug having a portion bearing a readable digital code indicative of the weight of the die punch in the die set, the readable digital code borne by the plug being of a selected parity, including a parity bit if necessary; and
- means for converting said readable digital code on the plug to an electrical signal dependent upon said code, said electrical signal being utilized by the adjusting means for the counterbalance cylinder.

**4,283,930**  
**ROLLER-DIES-PROCESSING METHOD AND APPARATUS**

Yoshimichi Hasegawa, Nagoya; Osamu Furuta, Tokai; Jouji Shinta, Tokai, and Hideo Nakamura, Tokai, all of Japan, assignors to Aichi Steel Works Limited, Aichi, Japan

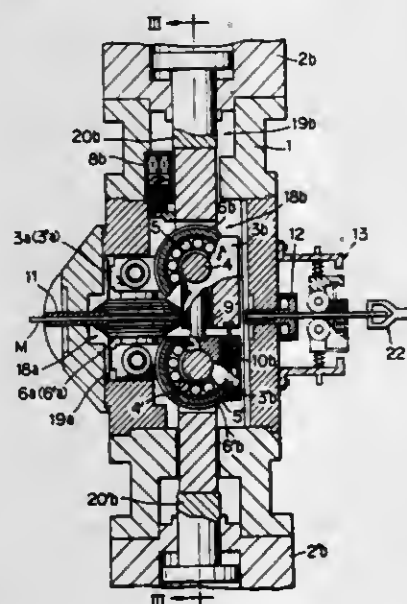
Filed Dec. 8, 1978, Ser. No. 967,695

Claims priority, application Japan, Dec. 28, 1977, 52-158482; Jan. 30, 1978, 53-9129

Int. Cl.<sup>3</sup> B21B 37/08, 37/14

U.S. Cl. 72—8

20 Claims



1. A method for manufacturing taper bars desiredly tapered at least in two directions by drawing using a multi-tandem type roller dies means comprising at least two successively arranged

sets of idler rollers in different phase angle, each of said roller sets comprising a plurality of mutually approachable and departable rollers which are provided with a respective circumferential groove having a constant sectional configuration and constant dimension throughout the whole length thereof, said method comprising the following steps:

- (a) pulling a deformable blank through the roller sets at a temperature not exceeding 800° C.;
- (b) measuring the travelling amount in the longitudinal direction of the taper bar;
- (c) generating by a controller, based on the measured travelling amount and a taper value pre-set, signals respectively representing a target distance of each of said rollers from a predetermined level line;
- (d) measuring the actual distance of each roller from the level line;
- (e) comparing the target distance and the actual distance and adjusting the position of each roller so that the actual distance is equal to the target distance and all passes formed by said at least two sets of idler rollers are gradually changed in size in an interrelated manner to each other commonly based on the measured travelling amount;
- (f) the measuring of the travelling amount, the generation of the output signals representing the target distances, the measuring of the actual distances and the adjusting of the roller positions being performed while drawing is in progress; and
- (g) the adjusting of the rollers of the plural roller sets being performed so that the passing line of the blank is maintained constant.

4,283,931

**CONTINUOUS EXTRUSION OF METALS**

Stanley W. Pigott, Haywards Heath, and Peter Gregory, Great Missenden, both of England, assignors to BICC Limited, London, England

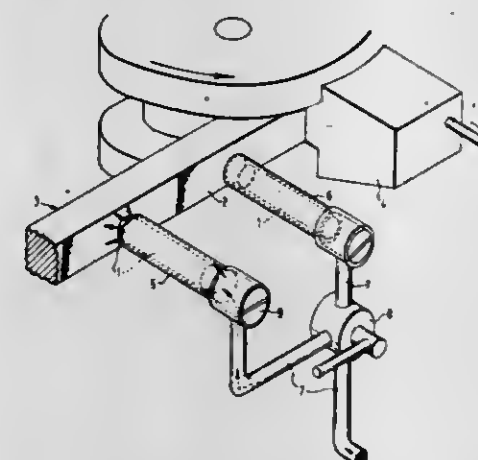
Filed Jul. 30, 1979, Ser. No. 61,995

Claims priority, application United Kingdom, Oct. 27, 1978, 42280/78; Jun. 14, 1979, 20813/79

Int. Cl.<sup>3</sup> B21C 23/32

U.S. Cl. 72—45

3 Claims



1. A process for continuous friction-effected extrusion of rod feedstock in which rod feedstock is gripped in a channel formed between one moving surface defined by the walls of a groove in a rotatable wheel and a stationary shoe closing part of the circumference of the groove and having a stop at the end towards which the moving surface travels, to advance the feedstock towards the stop and so develop a pressure in the feedstock greater than the yield strength of the material from which it is made so that it upsets against the stop and flows out through a die forming an orifice that extends through the stationary shoe at the closed end of the channel, and in which lubricant is applied selectively to a side of the feedstock that will contact the stationary shoe by supporting a stick of the lubricant in a cylinder having an open end facing the said side

of the feedstock that will contact the shoe, in which cylinder the stick is a loose fit and introducing compressed gas into the cylinder to apply a substantially constant biasing force urging the stick into engagement with the said side and at the same time to cool the stick of lubricant to inhibit melting.

4,283,932

**TOGGLE-ACTUATED PUNCH STRIPPER**

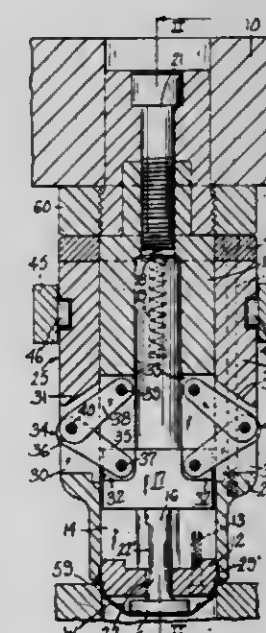
Anthony M. Putetti, Waterbury, Conn., assignor to Textron, Inc., Cheshire, Conn.

Filed May 31, 1979, Ser. No. 44,015

Int. Cl.<sup>3</sup> B21D 45/00

U.S. Cl. 72—345

8 Claims



1. A workpiece releasing mechanism in a forming press having a frame, a punch, a die and means for reciprocating the punch toward and away from the die, said mechanism comprising a punch shoe movable axially relative to the end of the punch, a stripper sleeve slidable longitudinally on the punch, a toggle linkage between the punch and the shoe, means on the sleeve for actuating the toggle linkage in the elongation mode, and means for moving the sleeve axially of the punch as a function of the changing position of the punch relative to the die.

4,283,933

**GRIPPING OR PRESSING TOOL**

Hans Wiener, Täby, Sweden, assignor to Prestmaster A.B., Stockholm, Sweden

Continuation-in-part of Ser. No. 852,724, Nov. 18, 1977, Pat. No. 4,199,972, which is a continuation-in-part of Ser. No. 647,641, Jan. 8, 1976, Pat. No. 4,078,303. This application Oct. 4, 1979, Ser. No. 81,932

Int. Cl.<sup>3</sup> B21D 37/12

U.S. Cl. 72—409

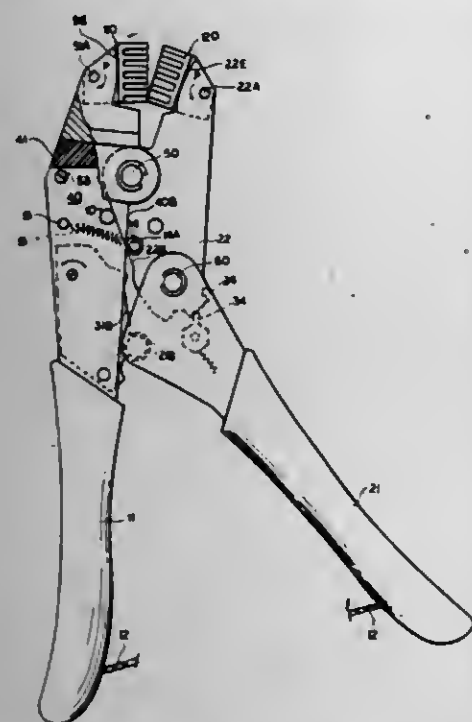
7 Claims

1. A tool for handling workpieces of generally circular cross-section, comprising:

- a first jaw and a second jaw each having a base and work-piece-gripping webs with parallel major faces rising from said base;
- operating means including a pair of pivotally interconnected shanks enabling relative swinging of said jaws in a plane transverse to the pivotal axis of said shanks between a withdrawn position allowing insertion of a workpiece between said jaws and a working position in which the webs of said jaws are mutually interlaced, said jaws being swingably mounted on said shanks with swing axes parallel to said pivotal axis and to said major faces; and
- swing-limiting means operatively coupled with said jaws in



said withdrawn position for aligning the webs of each jaw with respective gaps between the webs of the other jaw



interengagement of said jaws with their webs interleaved upon displacement into said working position.

4,283,934

**PYROMETRIC TEMPERATURE MEASUREMENTS IN FLAMELESS ATOMIC ABSORPTION SPECTROSCOPY**  
Gerhard Siess, Owingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer, Überlingen, Fed. Rep. of Germany

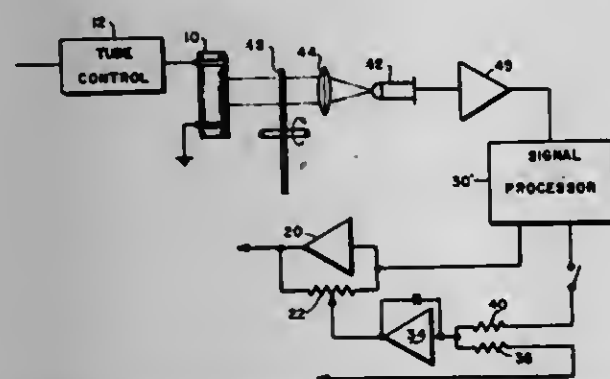
Filed Nov. 7, 1979, Ser. No. 92,247

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1979, 2903328

Int. Cl.<sup>3</sup> G01K 15/00; G01J 5/08

U.S. Cl. 73-1 F

5 Claims



1. Circuitry for automatically adjusting the calibration of a first pyrometric radiation detector for extended temperature range measurements of a heated atomic absorption spectroscopy graphite tube independently of the radiation emission factor of said tube, said first radiation detector being positioned to receive radiation from said tube and generating an output signal indicative of the temperature thereof, said circuit including:

- a variable gain amplifier coupled to said radiation detector and responsive to the signal generated therefrom;
- a second radiation detector positioned to sense the radiation emitted by said graphite tube, said second detector being accurate within a limited wavelength range and generating a second output signal that is independent of the emission factor of said graphite tube; and
- circuitry means responsive to said second output signal for adjusting the gain of said variable gain amplifier whereby the output signal of said amplifier represents the temperature

sensed by said first radiation detector corrected for emission factor;

the improvement comprising:

- said second radiation detector being sensitive to a limited radiation wavelength range, the center of which is a short-wave with respect to a radiation emitted by said graphite tube, said second detector including said first radiation detector and a short wavelength transmitting filter interposable in the radiation beam from said graphite tube.

4,283,935

**DEVICE FOR MEASURING THERMAL CONDUCTIVITY OF LIQUID**

Wataru Eguchi, Kyoto; Makoto Harada, Otsu; Masataka Tanigaki, and Yutaka Tada, both of Kyoto, all of Japan, assignors to President of Kyoto University, Tokyo, Japan

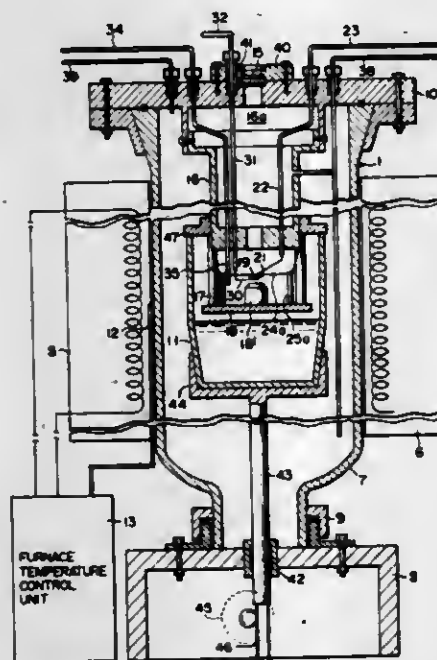
Filed Dec. 13, 1979, Ser. No. 103,228

Claims priority, application Japan, Mar. 19, 1979, 54-31911

Int. Cl.<sup>3</sup> G01N 25/18

U.S. Cl. 73-15 A

16 Claims



1. A device for measuring thermal conductivity of liquids, characterized in that said device comprises:

- a horizontally supported, thin and small metal disc to be heated by a laser flash;
- a sample holding block located beneath said metal disc;
- a thermocouple connected to said metal disc; and
- means for elevating the relative surface level of a sample liquid, filling a gap between said metal disc and said sample holding block to form a cylindrical liquid layer therein.

4,283,936

**VIBRATION DENSITOMETER ASSEMBLY**

Milton H. November, Hacienda Heights, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 131,387

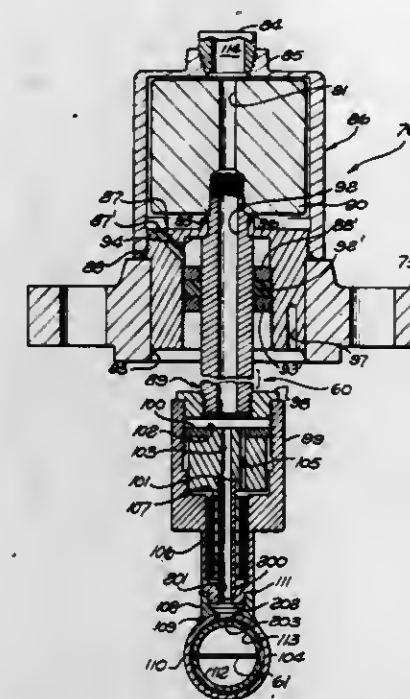
Int. Cl.<sup>3</sup> G01N 9/00

U.S. Cl. 73-32 A

2 Claims

1. A vibration densitometer assembly comprising: an annular support having a web fixed thereto partly covering a bore and defining a central hole; a vibration densitometer probe having a cylinder sealed to said web through said hole, said cylinder extending into said bore; an annular packing positioned around said cylinder axially spaced from said web, but radially compressed against said cylinder, said packing being squeezed between said bore and said cylinder to hold said cylinder in a

bracing position, said packing, said bore, said cylinder and said web defining an annular space, said annular support having a



vent hole therethrough extending from said annular space to a point exterior of said annular support.

4,283,937

**METHOD OF DETECTING BROKEN WINDOW FOIL OF APPARATUS FOR TREATING WASTE GAS WITH IRRADIATION**

Shinji Aoki, Tokyo; Keita Kawamura, Fujisawa; Tsutomu Higo, Chigasaki; Hitoshi Kimura, Fujisawa; Yasuhiro Sawada, Fuchu; Tsutomu Katayama, and Katsumi Kengaku, both of Kitakyushu, all of Japan, assignors to Ebara Corp. and Shin Nippon Seitetsu Kabushiki Kaisha, both of Tokyo, Japan

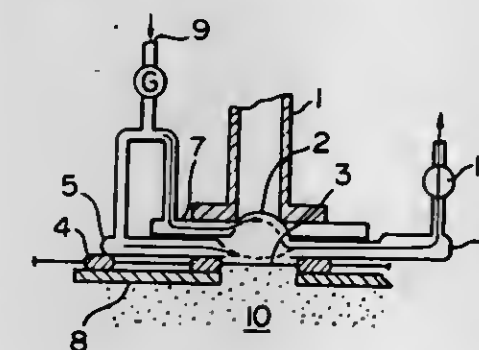
Filed Dec. 26, 1979, Ser. No. 107,419

Claims priority, application Japan, Dec. 29, 1978, 53-162154

Int. Cl.<sup>3</sup> G01M 3/32

U.S. Cl. 73-49.3

11 Claims



1. A method of detecting the breakage of a window-foil that closes the radiation inlet opening of the reactor of an apparatus for treating waste gas by irradiation, said radiation being emitted from the radiation generator of said apparatus through another window-foil that closes the radiation outlet opening of the radiation generator to provide incident radiation into said reactor through which the waste gas to be irradiated flows, characterized in that said method comprises

- forming a closed fluid flow system including the space between the two window-foils,
- flowing a cooling fluid through the closed system such that cooling fluid is caused to flow over both of the window-foils whereby to cool the window-foils,
- monitoring at least one of the physical parameters of the cooling fluid, and
- producing a response to a change in such physical parameter that is indicative of a break in the window-foil that closes the radiation inlet opening of the reactor.

4,283,938

**METHOD AND APPARATUS FOR DYNAMIC CONCENTRATION OF A SUSPENSION**

Wolfgang Epper, Bergheim-Zievenich, and Rupprecht Graf, Cologne, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

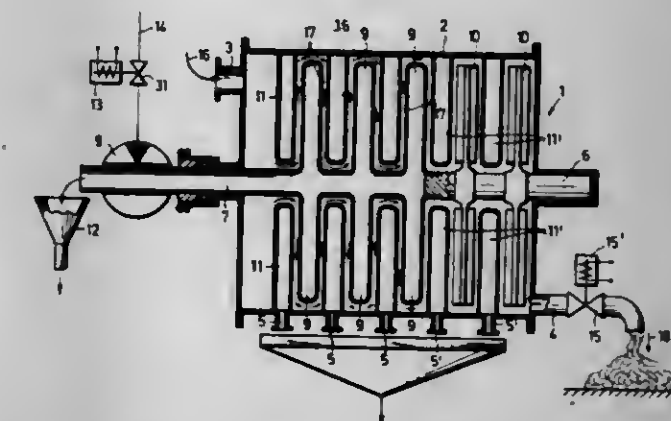
Filed Aug. 30, 1979, Ser. No. 71,112

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1978, 2844023

Int. Cl.<sup>3</sup> G01N 11/14

U.S. Cl. 73-59

14 Claims



9. An apparatus for dynamic concentration of a suspension, comprising:

- a filter including a suspension intake, a concentrate discharge and a rotatable stirring device;
- a prime mover connected to and operable to rotate said stirring device;
- first means connected to said prime mover for operating said stirring device at a predetermined speed;
- second means connected to said prime mover for measuring the power consumption and providing an actual speed signal;
- comparison means connected to said second means;
- third means connected to said comparison means and operable to feed upper and lower limit values to said comparison means, said comparison means operable in response to an actual speed signal which transgresses a limit signal to limit a speed correction signal; and
- fourth means connected between said third means and said prime mover for adjusting the operating speed in response to the speed correction signal.

4,283,939

**DIAL GAUGE MOUNTING APPARATUS**

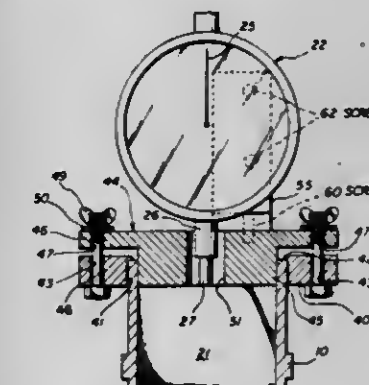
Robert M. Edward, Jr., The Woodlands, Tex., assignor to JB Development Corporation, The Woodlands, Tex.

Filed Dec. 31, 1979, Ser. No. 108,581

Int. Cl.<sup>3</sup> G01N 3/42

U.S. Cl. 73-81

2 Claims



1. Improved mounting apparatus for attaching a dial gauge to the housing of a hardness tester in which is carried a load cell, said dial gauge including a plunger extending from the



base thereof for engagement with said load cell and responsive thereto for motivating the operating mechanism and indicator of said dial gauge, said mounting apparatus including a cap member attachable to the upper end of said housing and having a central aperture through which said dial gauge plunger projects for said engagement with said load cell wherein the improvement comprises:

- a central hub portion provided on said cap member projecting downwardly into said housing for engagement with the upper end of said load cell, said dial gauge being attached to said cap member by a support member so that said dial gauge plunger is centrally and freely disposed in said aperture engaging said load cell in a predetermined axial relationship thereto; and
- a flange member attached to the upper end of said housing having at least two holes on the periphery thereof, corresponding holes in said cap member and threaded fastener members for engagement with said flange member holes and said corresponding cap member holes to hold said hub portion of said cap member against said load cell in a predetermined axial relationship.

4,283,940

# METHOD FOR DECONDITIONING AN ENGINE USED IN FUEL ECONOMY TESTS

Harold Shaub, New Providence, and Joseph M. Pecoraro, Red Bank, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 3, 1980, Ser. No. 109,230

Int. Cl.<sup>3</sup> G01M 15/00

U.S. Cl. 73-116

14 Claims

1. A method for deconditioning an engine used in fuel economy tests for a lubricating oil comprising replacing a test lubricating oil after it is tested in said engine with a deconditioning oil composition comprising a lubricating base oil containing an overbased alkali or alkaline earth metal compound selected from the group consisting of sulfonates, phenates, phosphonates and thiophosphonates in an amount sufficient to give the deconditioning oil a total base number of about 15 to about 100 or a neutral alkali or alkaline earth metal compound selected from the group consisting of sulfonates, phenates, phosphonates and thiophosphonates in an amount of at least 5% by weight.

4,283,941

# DOUBLE SHEAR BEAM STRAIN GAGE LOAD CELL

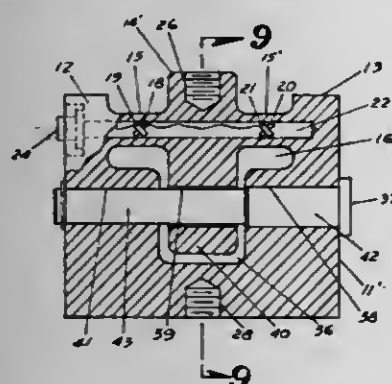
Ali U. Katsay, 3250 Lewis Rd., Newtown Square, Pa. 19073

Filed May 8, 1979, Ser. No. 37,231

Int. Cl.<sup>3</sup> G01L 1/22

U.S. Cl. 73-862.66

1 Claim



1. A strain gage load cell of unitary construction for the measurement of axial loads and capable of substantially resisting lateral loads which adversely affect the measurement of axial loads comprising a relatively thick rectangular block of material, said block having a pair of recesses in one edge thereof, each of said recesses extending from a point spaced from one edge to a point spaced from the center and forming a central element of substantial area, said block further including a pair of elongated slots extending through said block at

points spaced from the first said recesses and substantially parallel therewith and a narrow elongated slot connecting said pair of slots, the last said slots forming a discrete central element supported by substantially uniform elongated rectangular shear beams formed by said recesses and said pair of slots, said block further including an opening extending from one edge thereof and centrally through said shear beams and central element, pairs of strain gages mounted within said opening and positioned centrally of said shear beams, the gages of each pair being disposed at 90° one relative to the other and at 45° relative to the axis of the associated shear beam and means for applying an axial stress to be measured between said central element and the opposing surface of said block, said narrow elongated slot being of U-shaped configuration forming a centrally disposed recess in said block and an elongated central element extending into said recess, said block further including a second opening extending therethrough and through said elongated central element and a shear pin extending through the last said opening, said shear pin and the last said opening having clearance therebetween to limit the deflection of said central element under axial stress.

4,283,942

# LOAD MEASURING DEVICE

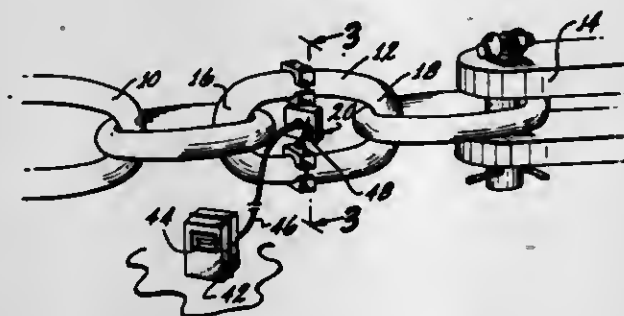
Stanley S. Fishfeder, 5868 Compass Dr., Los Angeles, Calif. 90045

Filed May 25, 1979, Ser. No. 42,515

Int. Cl.<sup>3</sup> G01L 5/00, 5/10

U.S. Cl. 73-862.65

10 Claims



1. A load measuring device for use in situ with an existing link in a load bearing line and with the link formed as an oval loop and with the link having end portions along a first long axis of the link for receiving a load on the link along the first long axis, including

a load cell for mounting across a second short axis of the link and within the loop and with the second short axis substantially perpendicular to the first long axis for providing an indirect measurement of the load on the link along the first long axis in accordance with the force on the load cell along the second short axis,

coupling means for mounting on opposite portions of the link and with the load cell mounted between the coupling means and with the coupling means transmitting the force to the load cell along the second short axis from the link and for providing a secure mounting of the load cell across the link,

the load cell including means responsive to the force on the load cell along the second short axis for producing an output signal in accordance with the force on the load cell,

the load cell including at least one cantilever portion and at least one beam portion and with the cantilever portion responsive to the force on the load cell for producing a stress in the beam portion and with the means included in the load cell responsive to the stress in the beam portion, and

indicator means responsive to the output signal from the means included in the load cell for providing an output

indication representative of the load on the link along the first long axis.

approximately the same temperature as said temperature-dependent measuring resistor.

4,283,943

# METHOD AND APPARATUS FOR INDICATING AND ADJUSTING THE ANGULAR POSITION OF A SAIL

George H. Schoneberger, Jr., 3710 N. 7th St., Phoenix, Ariz. 85014

Continuation-in-part of Ser. No. 974,077, Dec. 28, 1978, abandoned. This application May 18, 1979, Ser. No. 39,881

Int. Cl.<sup>3</sup> G01W 1/00

U.S. Cl. 73-188

2 Claims



1. Apparatus for directly indicating the horizontal angle between the tangent to the luff or effective luff of a sail and the direction of the apparent wind, comprising:

- (a) a bracket carried by the luff or effective luff of said sail;
- (b) a wind vane pivotally mounted on said bracket, which
  - (i) is continuously responsive to the direction of the apparent wind at angles between and including the optimum angle for maximum sail pulling power and the angle at which said sail stalls, and
  - (ii) directly indicates said horizontal angle.

4,283,944

# APPARATUS FOR MEASURING THE MASS OF A FLUID MEDIUM

Heiko Gruner, Gerlingen, and Dieter Handtmann, Sindelfingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

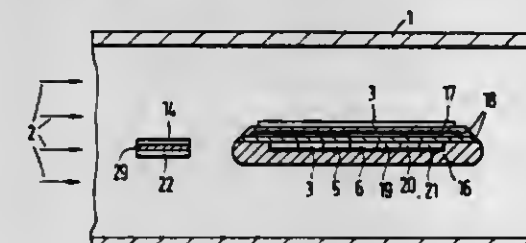
Filed Dec. 18, 1979, Ser. No. 104,937

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1979, 2904154

Int. Cl.<sup>3</sup> G01F 1/68

U.S. Cl. 73-204

6 Claims



1. An apparatus for measuring the mass of a fluid medium such as the mass of air induced in internal combustion engines comprising, in combination, a measuring bridge circuit, a carrier, at least one temperature-dependent measuring resistor connected in said measuring bridge circuit and disposed in the flow of said medium, said at least one temperature-dependent measuring resistor applied as a film to said carrier, the temperature and/or resistance of said resistor being regulated in accordance with the flowing mass to provide a manipulated variable as a measure for the mass of the fluid medium, a temperature-dependent heating resistor applied as a film to said carrier between the temperature-dependent measuring resistor and the carrier in electrically insulated relationship with said temperature-dependent measuring resistor, a heating bridge circuit including said temperature-dependent heating resistor wherein said temperature-dependent heating resistor is regulated to

4,283,945

# VOLUME MEASURING APPARATUS

Dieter B. Knoll, Kronberg, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

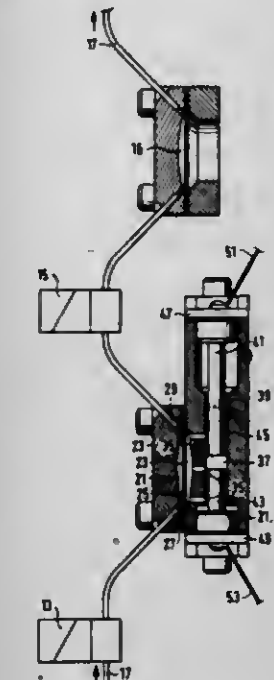
Filed Jan. 7, 1980, Ser. No. 110,272

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 7903413[U]

Int. Cl.<sup>3</sup> G01F 11/02

U.S. Cl. 73-269

1 Claim



1. A volumeter, in particular for use in liquid chromatography, comprising:

- a first metering chamber for the volume to be measured;
- a second chamber being separated from the first chamber by a resilient diaphragm and forming an electric capacitor;
- said second chamber including:
  - at least two capacitor electrodes insulated against each other; and
  - a dielectric liquid in contact with the diaphragm and filling the gap between the electrodes to a higher or lower degree in response to deviations of the diaphragm;
- wherein any deviation of the diaphragm resulting from volume variations in the first chamber will change the capacitance of the capacitor.

4,283,946

# SAMPLING PROBE FOR GRANULAR MATERIAL

Milford D. Bowser, Savage, and Wallace W. Vandre, Minneapolis, both of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Filed Dec. 15, 1977, Ser. No. 860,754

Int. Cl.<sup>3</sup> G01N 1/14

U.S. Cl. 73-864.31

19 Claims

1. A sampling probe for obtaining a sample of granular material from a bulk quantity of such material, said probe comprising, sampling tube means including an elongate sampling tube adapted to be inserted into a bulk quantity of granular material, means operatively associated with said elongate sampling tube and defining a mixing chamber extending substantially along the length of said sampling tube and adapted for insertion into said granular material with said sampling tube, said sampling tube having at least one first opening therein opening outwardly of said tube for receiving a granular sample therein, and having at least one second opening therein communicating with said mixing chamber, said sampling tube means including means operatively associated with said elon-



gate sampling tube for selective registration with said openings therein so as to facilitate sequential entry of granular sample into said elongate sampling tube through said first opening, close said first opening to isolate said sample in said elongate



sampling tube, and thereafter effect discharge of said sample into said mixing chamber, and delivery means operatively associated with said mixing chamber to facilitate removal of granular sample therefrom for transfer to an inspection site.

4,283,947

# SELF CLEANING, STEAM COOLED, GAS SAMPLE PROBE

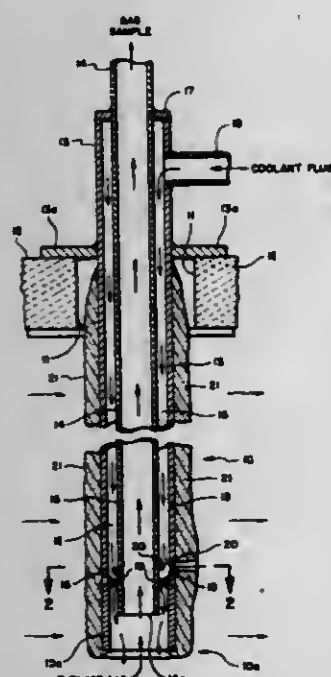
David B. George, and Leonard K. Bailey, both of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Sep. 10, 1979, Ser. No. 74,059

Int. Cl.<sup>3</sup> G01N 1/22

U.S. Cl. 73-863.11

4 Claims



1. A gas sampling probe adapted for installation in an industrial furnace for removing sample portions of the gaseous atmosphere within such furnace, comprising a shield tube having an open end for placement within the furnace; a sample tube concentrically disposed within the shield tube and spaced therefrom to provide an annular passage for a coolant fluid, said sample tube terminating within the shield tube in an open end that is protectively surrounded by said shield tube; a partition plate extending across said annular passage between the shield tube and the sample tube adjacent to the open end of the latter, said partition plate being secured to the shield tube but

terminating short of the sample tube, so as to permit free expansion and contraction of such sample tube and provide restricted passage for coolant fluid toward and past the open end of the sample tube to keep it clean; means for introducing a coolant fluid into said annular passage at or near the other end of the shield tube; port means at one side of the shield tube and at the side of the partition plate that is away from the open ends of the tubes, so as to discharge a major amount of the coolant fluid from the annular passage into a stream of furnace gas flowing past the probe; and means discharging sample gas from the sample tube at or near the other end thereof, so that the flow of that portion of the coolant fluid that passes by the partition plate in said annular passage is in substantially the opposite direction to the flow of said sample gas.

4,283,948

# CRYOGENIC AIR SAMPLER

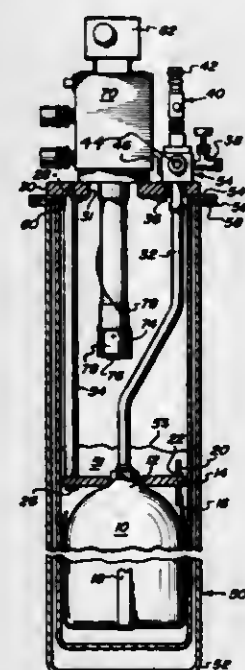
Ralph C. Longworth, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 21, 1979, Ser. No. 106,218

Int. Cl.<sup>3</sup> G01N 1/24

U.S. Cl. 73-863.11

5 Claims



1. An apparatus for collecting and storing a sample of environmental gas comprising in combination: means to removably confine a sample bottle, said bottle having a metering orifice through which environmental gas can enter, in a bath of liquid cryogen said means including an evacuable space above said sample bottle allowing for liquid cryogen to boil-off and be confined therein; means to condense said cryogen boil-off thus maintaining said sample bottle at a temperature of just below the normal boiling temperature of said liquid cryogen; and means to effect rapid cool-down of said sample bottle.

4,283,949

# DILUTE SOLUTION APPARATUS

Joseph M. Hulme, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed Dec. 5, 1979, Ser. No. 100,394

Claims priority, application Canada, Mar. 28, 1979, 324301

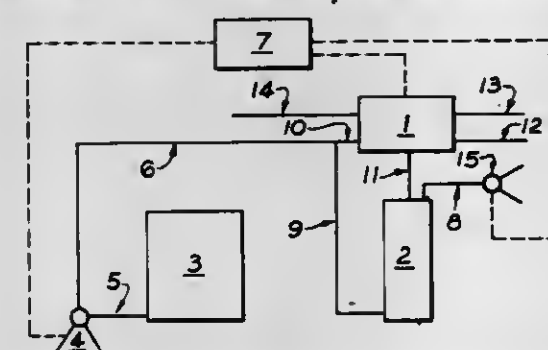
Int. Cl.<sup>3</sup> G01N 1/14

U.S. Cl. 73-864.34

4 Claims

1. An apparatus for the preparation of a dilute solution of a sample of a fluid which apparatus comprises a valve means communicating with a dilution means, a line to said dilution means to supply diluent from a reservoir to said dilution means, a line in communication with said valve means to remove

diluted sample from said dilution means through said valve means, a line in communication with said dilution means having a valve for connection to a supply of compressed gas thereto or for connection to atmospheric pressure, flow control means to control flow of diluent from said reservoir to said dilution means, and control means for controlling operation of said valve means, said valve and said flow control means, wherein said valve means comprises a two-position valve having a housing equipped with ports, the chamber of said housing containing a movable two-position valve core equipped with flow channels each of which separately communicates with two adjacent ports, a first port being in communication with inlet means for said fluid, a second port being in communication with an outlet means for said fluid, a third port being in communication with said dilution means, a fourth port being in communication with the diluted sample in said dilution means and a fifth port being for removal of said diluted sample from the apparatus, a first said flow channel communicating in its first position with said first and second ports and in its second position with said second and third ports and a second flow channel communicating in its first position with said third and fourth ports and its second position with said



fourth and fifth ports, and wherein said dilution means comprises a narrow diameter cylindrical chamber connected at its upper end to the third port of said valve means and connected at its lower end to a wide diameter closed cylindrical chamber which has at the side wall at its lower end a line in communication with the fourth port of said valve means and said reservoir and has at its upper end a line having a valve therein whereby said line may be connected to a supply of compressed gas or to the atmosphere, said narrow diameter cylindrical chamber having located concentrically therein and axially slidably movable within a close fitting plunger equipped with seals to prevent fluid leakage and having at its lower end depending into said wide diameter chamber a flange end for abutting engagement with the under surface of the wide diameter chamber at the point where the narrow diameter cylindrical chamber is attached to the wide diameter chamber, and said wide diameter closed cylindrical chamber having concentrically located therein and axially slidably movable within a close fitting, double acting barrier piston equipped with seals to prevent fluid leakage and having a stirring means located within said wide diameter chamber and below said double acting barrier piston.

4,283,950

# DEVICE FOR DETACHING AND REMOVING A DISPOSABLE TIP OF A PIPETTE

Jukka Tervamäki, Helsinki, Finland, assignor to Kommandit-tiyhtio Finnpiipette Osmo A. Suovaniemi, Finland

Filed Jul. 24, 1979, Ser. No. 60,042

Claims priority, application Finland, Aug. 4, 1978, 782401

Int. Cl.<sup>3</sup> B01L 3/02; G01N 1/14

U.S. Cl. 73-864.14

7 Claims

1. A device for removing a detachable tip of a pipette of the hand-held type having a tubular portion on which said detachable tip is press-fitted, comprising: a sleeve slidably mounted above said tubular portion, said sleeve being displaceable from a first position out of engagement with said tip to a second position in engagement

with said tip to displace and detach said tip from said tubular portion, and inertia means coupled for movement with said sleeve, said inertia means having a mass sufficient to cause said sleeve



to be displaced from said first to said second position and to remove said tip upon the motion caused by the rapid movement of a user's hand, of said pipette in a direction toward said tip.

4,283,951

# MEASURING CUP WITH LEVELER

Leonid Varpio, Keuskatu 23 A, 48100 Kotka 10, Finland

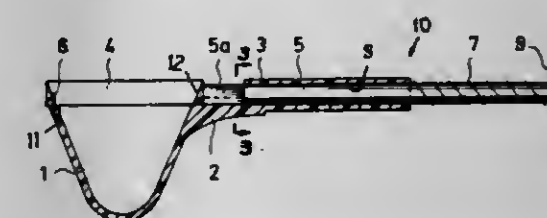
Filed Aug. 29, 1979, Ser. No. 70,861

Claims priority, application Finland, Sep. 4, 1978, 782703

Int. Cl.<sup>3</sup> G01F 19/00

U.S. Cl. 73-426

9 Claims



1. Measuring and dispensing apparatus for accurately measuring and dispensing a precise volume of granular material or the like, comprising:

- a cup portion having a peripherally extending rim defining a mouth of said cup portion, said rim having a free edge lying in a plane and wherein said cup portion includes a side wall defining with said plane a desired interior volume;
- an elongate handle portion extending from said cup portion, said handle portion having a longitudinally extending bore formed therein;
- a leveler member including a ring-shaped member having an inner surface in the shape of a truncated cone, the edge of said inner surface which defines the minor base of the truncated cone substantially conforming to the configuration of the free edge of said cup portion rim and being contiguous thereto in the normal position of said leveler member;
- an elongate rod slidably located in said handle portion bore having one end thereof connected to said ring-shaped leveler member; and
- spring means located over said elongate rod for urging said leveler member back to the normal position after the latter has been displaced therefrom during operation;



whereby when said leveler member is in normal position said inner surface thereof functions as a funnel to facilitate filling said cup portion and when said elongate rod is urged in its longitudinal direction against the force of said spring means to move said leveler member for said normal position, surplus granular material is lifted out and carried by said conical inner surface thereof so that the material which remains in the cup portion interior fills the same precisely to said plane of the free edge of the rim thereof.

4,283,952

## FLAW DETECTING DEVICE AND METHOD

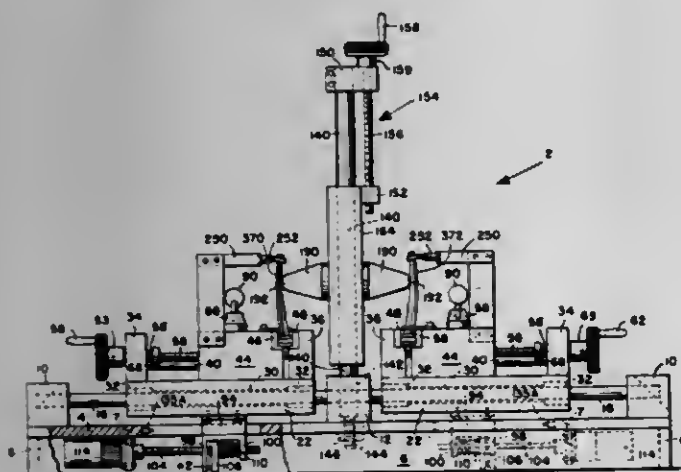
John W. Newman, Wayne, Pa., assignor to Laser Technology, Inc., Norristown, Pa.

Filed May 21, 1979, Ser. No. 40,678

Int. Cl.<sup>3</sup> G01H 13/00

U.S. Cl. 73-579

14 Claims



1. A device for detecting flaws in a test part comprising: a sweep generator, a drive amplifier supplied by the sweep generator, a pair of electrical to mechanical transducers connected to the amplifier, a first carriage associated with one transducer for a test part, a second carriage associated with the other transducer for a standard part, means for moving each carriage towards and away from its associated transducer, means on each carriage for holding a part, an accelerometer associated with each carriage for contacting a part on the carriage, and means responsive to the signals from the accelerometers for the comparison of the signals.

4,283,953

## METHOD AND APPARATUS FOR DETERMINING A GRANULARITY PROPERTY OF A SUBSURFACE FORMATION AROUND A BOREHOLE

Thomas J. Plona, Brookfield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 955,821, Oct. 30, 1978, abandoned. This application Oct. 18, 1979, Ser. No. 83,104

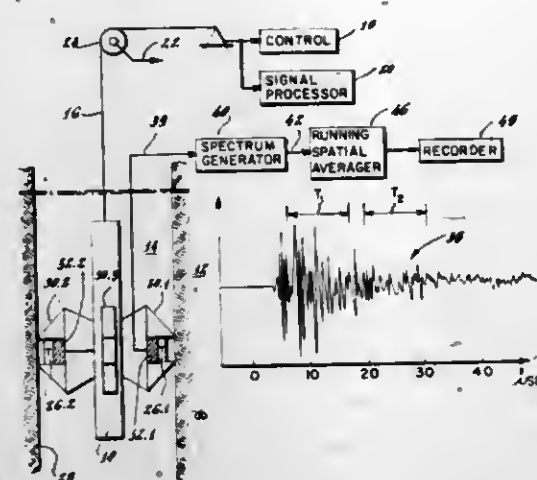
Int. Cl.<sup>3</sup> G01N 29/00

U.S. Cl. 73-589

28 Claims

1. In a method for determining a subsurface formation parameter which characterizes a granularity property of a subsurface formation around a borehole comprising the steps of directing like pulses of ultrasonic energy from inside the borehole at the subsurface formation with frequency bandwidths selected to produce acoustic backscatter from grains in the formation, the range of acoustic frequencies in said pulses being selected such that the acoustic backscatter from inside the formation includes frequencies which attenuate in a manner which is characteristic of a granularity property of the subsurface formation for a

broad range of formation grain sizes and formation porosity conditions; and



detecting said acoustic backscatter produced by said pulses of ultrasonic energy.

4,283,954

## HIGH TEMPERATURE PRESSURE GAUGE

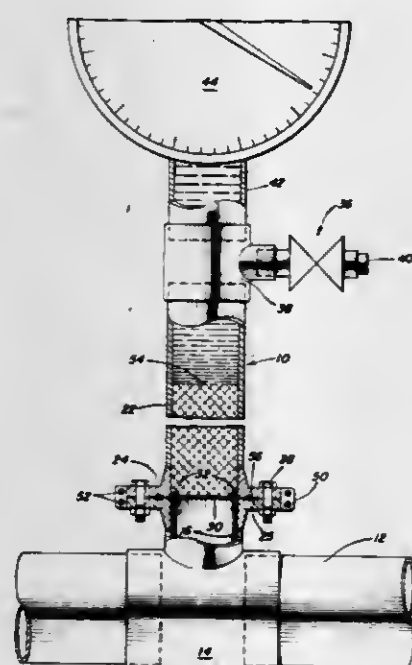
J. Paul Ehtler, Pittsburgh, and Roy O. Scandrol, Library, both of Pa., assignors to Conoco Inc., Stamford, Conn.

Filed Oct. 4, 1979, Ser. No. 81,735

Int. Cl.<sup>3</sup> G01L 7/08

U.S. Cl. 73-706

10 Claims



1. A high temperature pressure gauge apparatus, said apparatus comprising: (a) a conduit means; (b) a pressure gauge means positioned in fluid pressure sensing communication with a first end of said conduit means; (c) a diaphragm mounting means positioned near a second end of said conduit means; (d) a diaphragm means positioned in said diaphragm mounting means, said conduit means being adapted to contain a low melting metal alloy positioned in said conduit means above said diaphragm in an amount sufficient to fill said conduit means to a level between said first end of said conduit means and said second end of said conduit means, said conduit means being further adapted to contain a fluid, thermally stable at temperatures in excess of the melting point of said low melting metal alloy, said fluid substantially completely filling said conduit means above said low melting metal alloy and said pressure gauge; and (e) a connecting means for positioning said diaphragm in

pressure sensing communication with a high temperature fluid stream.

4,283,955

## METHOD OF AND MEASURING APPARATUS FOR DETERMINING THE STANDARD TENSILE YIELD POINT UNDER LOAD CONDITIONS

Ferenc Nagy, Ferenc Szabo, and Zoltan Szica, all of Szekesfehervar, Hungary, assignors to Magyar Aluminiumpari Trószrt, Budapest, Hungary

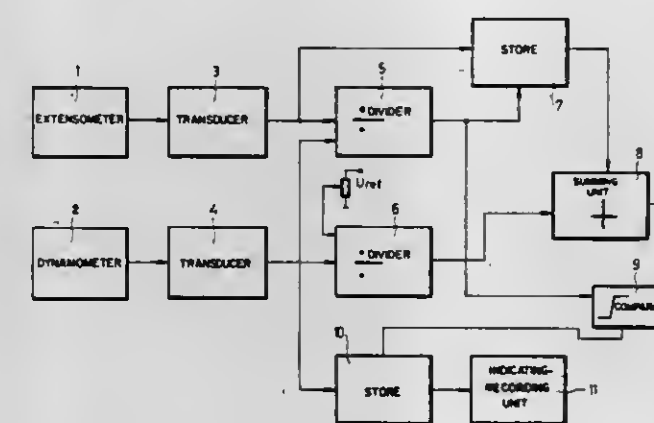
Filed Jul. 2, 1979, Ser. No. 53,751

Claims priority, application Hungary, Jul. 4, 1978, AU 405

Int. Cl.<sup>3</sup> G01N 3/08

U.S. Cl. 73-772

3 Claims



1. A method of determining the standard tensile yield point in which the extension of a test body is monitored, wherein in the course of continuous extension within the elastic limit, the ratio of the instantaneous extension and the associated load is determined and stored, and in the course of further continuous extension the ratios of a given residual extension as well as that of the instantaneous extension and the instantaneous load are determined, the stored ratio value is summed with the ratio of the given residual extension and the instantaneous load, and the thus obtained sum is compared with the ratio of the instantaneous extension and the instantaneous load whereby the instantaneous load at which the compared values become substantially equal gives the tensile yield stress at the given residual extension.

4,283,956

## METHOD OF DETECTING THE ONSET OF CRACKING IN ARTICLES DURING DYNAMIC TESTING

Karl Lechner, Gröbenzell, and Erich Bösmiller, Unterschleißheim, both of Fed. Rep. of Germany, assignors to Motoren- und Turbinen-Union, Fed. Rep. of Germany

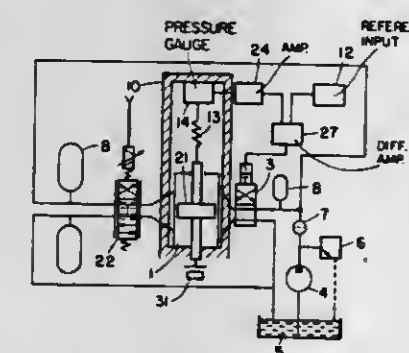
Filed May 10, 1979, Ser. No. 37,710

Claims priority, application Fed. Rep. of Germany, May 17, 1978, 2821553

Int. Cl.<sup>3</sup> G01N 3/36

U.S. Cl. 73-799

7 Claims



1. A method of detecting the onset of cracking in an article subjected to dynamic loading, including subjecting the article

to a dynamically changing load, and additionally loading and vibrating the article at its natural frequency, and determining the onset of a crack by noting a change in the natural frequency.

4,283,957

## TORSIONAL EXCITER FOR A ROTATING STRUCTURE

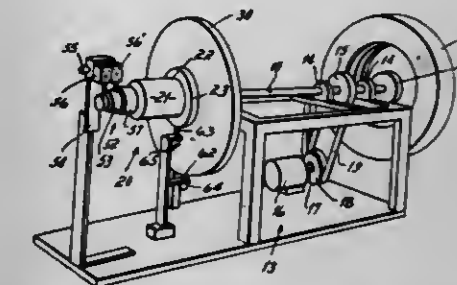
Gerald S. Zobrist; Terry A. Dunlap, both of Cincinnati, and Richard H. Russell, Milford, all of Ohio, assignors to Zonic Corporation, Cincinnati, Ohio

Filed Jun. 25, 1979, Ser. No. 51,947

Int. Cl.<sup>3</sup> G01N 3/36

U.S. Cl. 73-814

26 Claims



1. An exciter for applying torque to a rotating structure, comprising: a rotary hydraulic actuator including a first element and a second element, said second element being rotatable relative to said first element; means for securing one of said first and second elements to said rotating structure; an inertial mass mounted on the other of said first and second elements; a hydraulic power supply for supplying pressurized fluid; and electrohydraulic means for controlling said actuator, said electrohydraulic means including: (a) a torque setpoint circuit for selectively producing a torque command signal to set a desired amplitude and frequency for torque applied to said rotating structure; (b) means for producing a torque feedback signal dependent on the actual torque applied to said rotating structure; (c) a controller responsive to said command and feedback signals for producing a control signal; and (d) means interconnecting said hydraulic power supply and actuator and responsive to said control signal for controlling the supply of pressurized fluid to said actuator such that said actuator oscillates said inertial mass with respect to said rotating structure at said desired amplitude and frequency; whereby a controlled dynamic torsional force is applied to said rotating structure.

4,283,958

## MAGNETIC FLOWMETER HAVING AUTOMATIC RANGING

William R. Freund, Jr., Hatfield, and John C. Grebe, Jr., Norristown, both of Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 9, 1979, Ser. No. 82,766

Int. Cl.<sup>3</sup> G01F 1/60

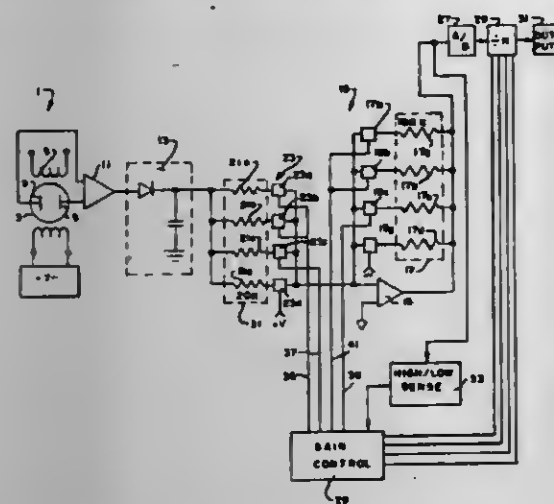
U.S. Cl. 73-861.12

10 Claims

1. In a magnetic flowmeter comprising a body adapted to be connected in a flow system for measuring the flow of a fluid therethrough, means for generating a magnetic field in said fluid flowing through said body, means for producing a flow-dependent signal dependent on the electric field generated in said fluid flowing through said magnetic field, and amplifier means for amplifying said flow-dependent signal to produce an amplified flow-dependent signal, and further signal processing



means for receiving said amplified flow-dependent signal and producing an output signal dependent thereon, the improvement comprising automatic ranging means com-



prising first means for increasing the gain of said amplifier means as said flow-dependent signal decreases and second means for producing a signal in said further signal processing means indicative of said increase in gain.

4,283,959

## EXTERNAL ROTOR GYROSCOPE

Bernhard Strittmatter, Nussdorf, and Wolfgang Syré, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Bodenseewerk Geratetechnik GmbH, Überlingen, Fed. Rep. of Germany

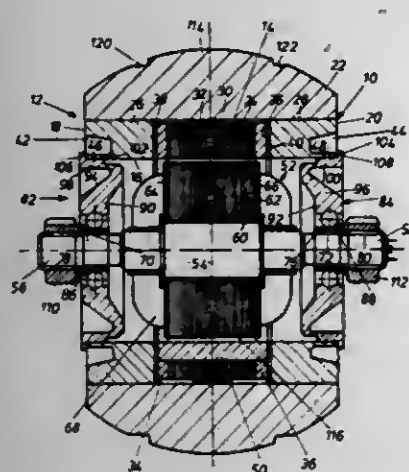
Continuation of Ser. No. 803,752, Jan. 6, 1977, abandoned. This application Jan. 25, 1979, Ser. No. 6,381

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646376

Int. Cl.<sup>3</sup> G01C 19/08

U.S. Cl. 74—5.7

3 Claims



1. In a gyroscope comprising jacket-shaped rotor means with an opening therethrough, a stator located inside the opening of the rotor means, an axle firmly attached to the stator and defining an axis of rotation with the stator having two sides in planes generally normal to said axis, and prestressed ball bearing assemblies at both sides of the stator and mounted on said axle, each bearing assembly including an inner ring and an outer ring with balls therebetween, said rotor means having two ends with end faces thereat in planes generally normal to said axis, said rotor means including an annular jacket member and an annular motor drive member centrally within and secured to the jacket member, said rotor means having, about said opening, an inner surface which at said ends forms bearing surfaces cylindrical about said axis, said outer rings of said bearing assemblies including outer faces with cylindrical circumferential surfaces received directly in said bearing surfaces respectively and flanges abutting said end faces respectively, the improvement comprising:

said rotor means between said end faces including three

parts, namely, a central part and two end parts, said three parts being all within and engaging said jacket member and all defining a straight cylindrical through bore concentric with said axis and being said opening, said motor drive member forming said central part, said rotor means including annular end members forming said end parts respectively, said annular end members having inner walls defining said bearing surfaces and end faces in said planes of said rotor means, said end faces of said end members having annular grooves extending inwardly from said planes of said rotor means, concentric to the axis of rotation and positioned at a distance from said opening such that said inner walls adjacent the end faces of the end members define resilient rim portions against which said outer rings are mounted as aforesaid.

4,283,960

## GYROSCOPE INDEXING DRIVE MECHANISM

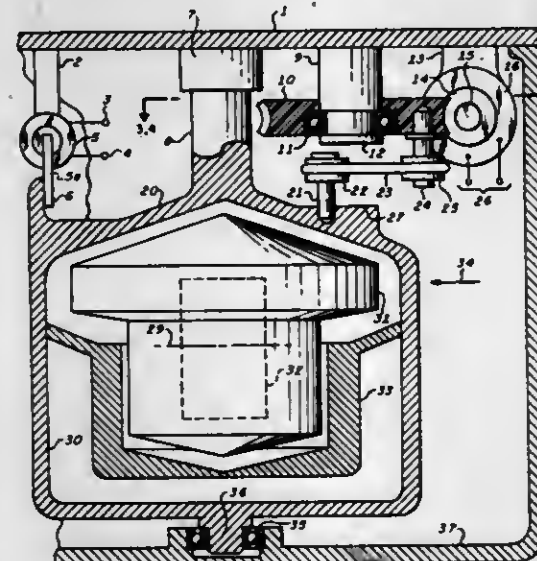
Thomas R. Quermann, Huntington Station, N.Y., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 67,842

Int. Cl.<sup>3</sup> G01C 19/38

U.S. Cl. 74—5.41

8 Claims



1. In a gyroscopic compass: rotatable internal casing means journaled about a normally vertical axis within external casing means, sensitive gyroscopic means supported within said rotatable internal casing means and having an axis normally coinciding with said normally vertical axis, motive means including non-reversing motor means within said external casing means for intermittently oscillating said rotatable internal casing means about said normally vertical axis, said motive means including flexible link means coupling said motor means to said rotatable internal casing means, mechanical stop means for precisely fixing the limits of said intermittent oscillations in cooperation with said flexible link means, and electrical contact means integral with said mechanical stop means whereby said motor means is driven for a predetermined time after each operation of said contact means whereby said flexure means is flexed to a predetermined degree.

4,283,961

## ACTUATOR OF AN ELECTRICAL STARTER

Alfred B. Mazzorana, Venissieux, France, assignor to Societe de Paris et du Rhone, Lyon, France

PCT No. PCT/FR 78/00013, 8371 Date Mar. 19, 1979, 8102(e) Date: Mar. 19, 1979, PCT Pub. No. WO 79/00061, PCT Pub. Date Feb. 22, 1979

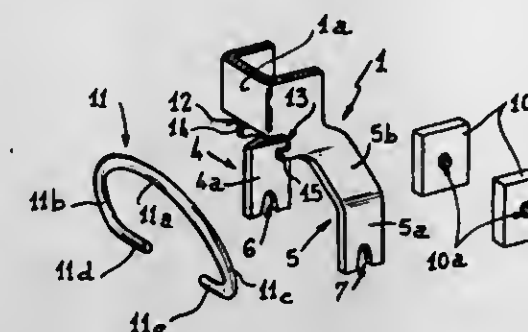
This PCT application filed Jul. 19, 1978, Ser. No. 24,211

Claims priority, application France, Jul. 25, 1977, 77 23826

Int. Cl.<sup>3</sup> F02N 11/02

U.S. Cl. 74—6

5 Claims



1. In an electrical starter for an internal combustion engine, the starter having a shaft supporting an axially slidable actuator, and having a lever forked to provide two arms straddling the actuator, and each arm carrying a friction block disposed to contact the actuator to displace it axially, an improved means for attaching the friction blocks to the arm wherein each block has a hole extending into it and oriented normal to the shaft, each block being located inside of an arm between the arm and the actuator, and a wire stirrup member having two mutually aligned pivot portions comprising the ends of the wire and joined by a curved body portion, said arms each having an opening therethrough receiving one of said end pivot portions which portions respectively pass through the arms and into the holes in the blocks, and means on the lever to retain the body portion of the stirrup.

4,283,962

## SPRING RETURN MECHANISM FOR AXIAL PISTON MACHINES

Franz H. Forster, Muhlbach, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

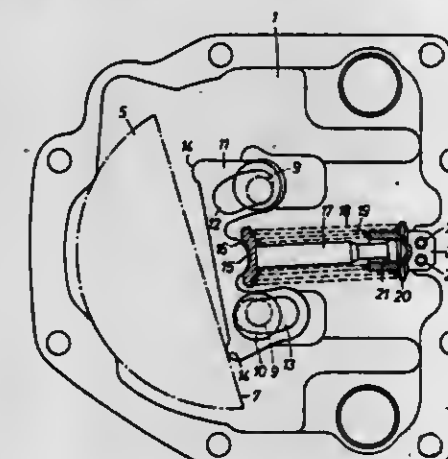
Filed Apr. 25, 1978, Ser. No. 899,814

Claims priority, application Fed. Rep. of Germany, May 7, 1977, 2720711

Int. Cl.<sup>3</sup> F16H 21/18; F01B 3/00; F04B 1/26

U.S. Cl. 74—42

10 Claims



1. A variable delivery axial piston machine having a housing, a part angularly adjustable about an axis to vary the delivery of the machine and having a zero stroke position, mechanism for restoring said part to a zero stroke position, stops arranged on opposite sides of said axis and cooperating with said mechanism to define said zero stroke position, said mechanism comprising a movable yoke lever in contact with and movable relative to said angularly adjustable part, said yoke lever con-

tacting said angularly adjustable part on opposite sides of said axis when said angularly adjustable part is in said zero stroke position and engaging said stops in said zero stroke position and being movable relative to said stops and said angularly adjustable part and lifted off one of said stops on movement of said angularly adjustable part from said zero stroke position, and spring means acting on said movable yoke lever to bias said movable yoke lever against said angularly adjustable part and at least one of said stops.

4,283,963

## BEARING CAP RETAINER FOR AUTOMOTIVE DIFFERENTIAL UNIT

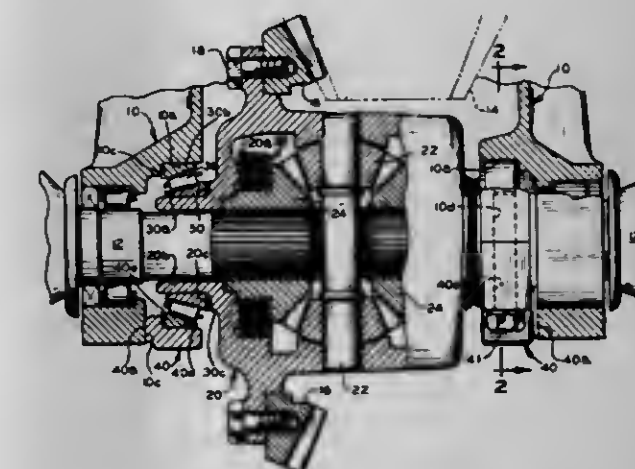
John L. Hickey, and Gerald A. Wuest, both of Fort Wayne, Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Jan. 11, 1979, Ser. No. 2,657

Int. Cl.<sup>3</sup> F16C 35/04; F16H 35/08

U.S. Cl. 74—400

4 Claims



1. A bearing mounting assembly for an automotive type differential having a stationary housing, a rotor disposed in said housing, a pair of axially spaced antifriction bearing means rotatably supporting and centering said rotor in said housing, each of said bearing means having one half of its circular periphery snugly mounted in a semi-cylindrical machined bore in said stationary housing, and the remainder of its periphery exposed, a pair of threaded bolt holes on opposite sides of each of said semi-cylindrical machined bores, a semi-circular radial surface on each said housing axially outwardly adjacent to each said exposed periphery, a bearing retaining cap of 180° peripheral configuration constructed and arranged to engage and enclose said exposed portion of each said anti-friction bearing, each said retaining cap having a radial end face constructed and arranged to abut one of said semi-circular radial surfaces on said housing in final assembly, said bearing retaining cap having a pair of axially elongated bolt receiving slots for respective reception of a pair of bolts passing through said slots into said threaded holes in said stationary housing, and axially adjustable means for eliminating end play between said rotor and said housing.

4,283,964

## CONTROL SYSTEM FOR POWER SHIFT TRANSMISSION

Giorgio Grattapaglia, Turin, Italy, assignor to Fiat-Allis Macchine Movimento Terra S.p.A., Lecce, Italy

Filed Jul. 23, 1979, Ser. No. 59,957

Claims priority, application Italy, Oct. 9, 1978, 69330 A/78

Int. Cl.<sup>3</sup> G05G 9/04

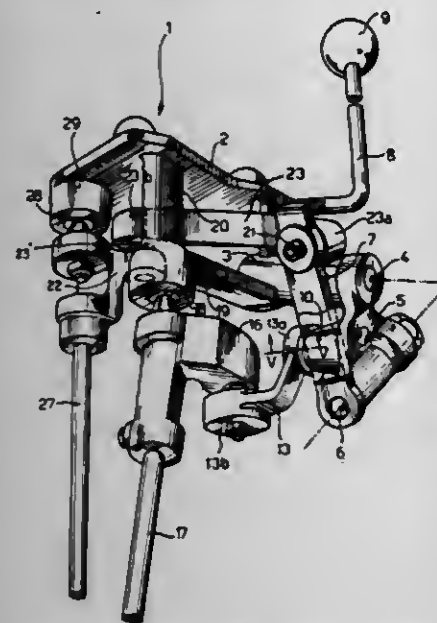
U.S. Cl. 74—471 XY

12 Claims

1. A control lever mechanism for controlling the operation of a hydraulic device comprising housing means providing a sealed enclosure, said housing means enclosing a linkage means positioned therein, a control lever extending exteriorly of said housing means



and pivotally coupled to said linkage means for pivotal movement in a plurality of planes, a pair of output shafts operatively coupled to the linkage means for rotatable movement for controlling the operation of a hydraulic device in response to the pivotal movement of said control lever, said linkage means including spherical joint means,



said pair of output shafts are respectively further coupled to said housing means, said pair of output shafts extending downward from within said housing means to a position beneath said housing means, and said pair of output shafts being respectively coupled to said housing means by spherical joint means.

4,283,965

## HAND AND FOOT THROTTLE CONTROL

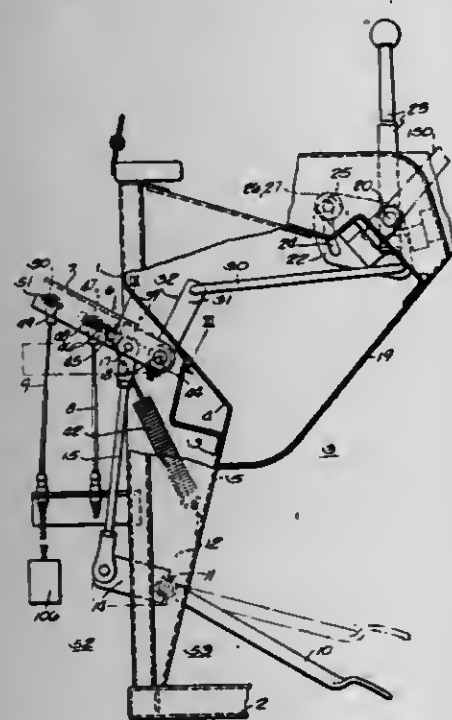
Kenneth N. Hansen, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 4, 1979, Ser. No. 72,235

Int. Cl.<sup>3</sup> G05G 1/14, 11/00

U.S. Cl. 74—482

10 Claims



1. A throttle control on a vehicle comprising means including a wall defining an operator station and separating the operator station from an engine compartment, a hand throttle shaft pivotally mounted on and extending through said wall for transmitting throttle movement through said wall, a control linkage including a hand throttle lever connected to said hand throttle shaft, an adjustable fuel metering arm pivotally

mounted on said shaft, a lift arm connected to said shaft for lifting said metering arm when said hand throttle lever is operated, an accelerator pedal, an accelerator pedal shaft connected to said accelerator pedal and pivotally mounted on and extending through said wall for transmission of accelerator pedal movement through said wall, a fuel metering control mechanism including said metering arm connected to said hand throttle shaft and said accelerator pedal shaft for selective and alternative operation by said accelerator pedal and said hand throttle lever.

4,283,966

## OMNIBUS HAVING A FLYWHEEL ENERGY ACCUMULATOR

Faust Hagin, Munich, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

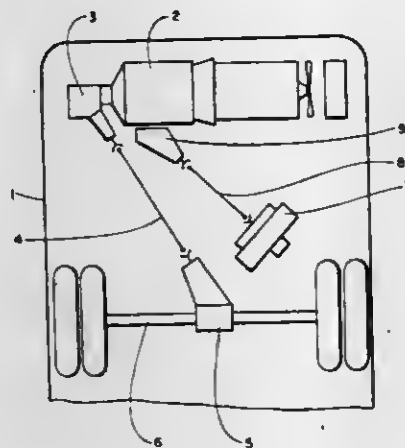
Filed Oct. 27, 1977, Ser. No. 846,168

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1976, 2649241

Int. Cl.<sup>3</sup> G05G 1/00; B60K 1/00

U.S. Cl. 74—572

2 Claims



1. In an omnibus including a drive block constituted of an engine, clutch and transmission; a flywheel energy accumulator; and a connecting shaft coupling said transmission and said flywheel energy accumulator, the improvement comprising: said drive block extending transversely rearwardly of the rear axle of said omnibus; an angle drive including a cardan shaft extending from the driving end of said drive block to a center axle drive on said rear axle, said flywheel energy accumulator being installed intermediate said drive block and said rear axle.

4,283,967

## EXTENDED RANGE VARIATOR CONVERSION MECHANISM

Bruno S. Smilgys, Hartford, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Nov. 16, 1979, Ser. No. 94,699

Int. Cl.<sup>3</sup> F16H 3/22

U.S. Cl. 74—681

5 Claims

1. A conversion mechanism for an extended range unit volume price variator mechanism settable for establishing the amount of each place of a multiple place unit volume price and comprising a variator frame with a base, a main drive shaft rotatably mounted on the variator frame with a lower input end thereof extending below the base, a primary stack of coaxial gears mounted on the main drive shaft above the variator base; a plurality of rotatable drive range arm assemblies for a plurality of places of ascending order respectively of the multiple place unit volume price having respective rotatable range arm shafts rotatably mounted on the variator frame with their axes radially offset from and generally parallel to the axis of the primary gear stack, respective range arms pivotally and axially shiftable on the respective range arm shafts for selective engagement with the primary stack of gears for rotating the

respective range arm shafts therewith, and a range arm output gear on each range arm shaft; a rotary differential gear mechanism coaxial with the primary gear stack in engagement with the range arm output gears for combining the rotatable drives through the range arms with relative drive ratios in accordance with their respective places; and a higher place price selector mechanism for establishing a next higher place price to said plurality of places of ascending order and having a rotatable drive take-off assembly with a take-off shaft rotatably mounted on the variator frame generally parallel to and radially offset from the primary gear stack, a take-off shaft input gear in engagement with and driven by one of the gears of the primary gear stack and rotatably mounted on the take-off shaft for being coupled for directly rotating the take-off shaft therewith, and take-off shaft driven gear means driven by the take-off shaft; a rotary summation differential in operative engagement with said differential gear mechanism; and a higher place price selector with a selector member shiftable between a plurality of operational positions thereof and a selector gear rotatably mounted on the shiftable selector member for operatively interconnecting the take-off shaft driven gear means and summation differential in a first operational position of the

4,283,968

## HOUSING ASSEMBLY FOR ELECTRIC VEHICLE TRANSAXLE

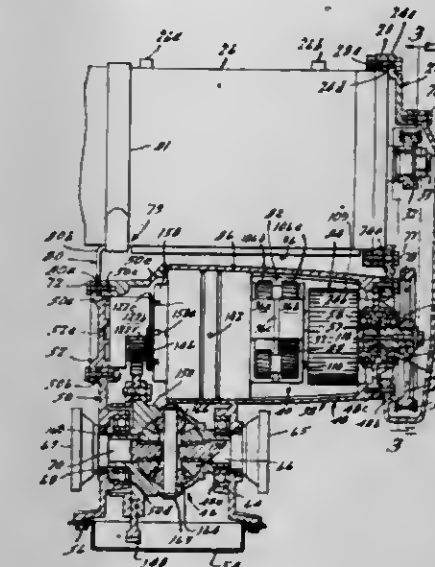
Ilmars Kalns, Northville, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 25, 1979, Ser. No. 51,577

Int. Cl.<sup>3</sup> F16H 37/08, 3/74, 3/56

U.S. Cl. 74—701

8 Claims



1. A housing assembly for a ratio change transmission having an input means rotatably driven by an output shaft of a prime mover, said assembly comprising:

a transmission housing rotatably supporting said input means and an output means and including mounting means defining a set of equally spaced and circumferentially disposed fastener means concentrically positioned about the rotational axis of said input means;

a prime mover housing rotatably supporting said output shaft and including mounting means defining a set of equally spaced and circumferentially disposed fastener means concentrically positioned about the rotational axis of said output shaft; and

an adapter member including first and second mounting means each defining a set of equally spaced and circumferentially disposed fastener means respectively engageable with said transmission and prime mover housing fastener means for rigidly securing the transmission and prime mover housings together, for positioning said axes substantially parallel to and radially spaced from each other, and for positioning said transmission and prime mover housings on said first and second mounting means in incrementally clocked positions determined by the circumferential spacing of the respectively engageable fastener means.

4,283,969

## BICYCLE TRANSMISSION

Fernand S. Lapeyre, 1224 Octavia St., New Orleans, La. 70115

Filed Jun. 27, 1977, Ser. No. 810,112

Int. Cl.<sup>3</sup> F16H 5/52

U.S. Cl. 74—810

15 Claims

1. A pedal displacement actuable multi-speed transmission for bicycles, comprising

a pedal shaft rotatably displaceable within the pedal shaft hub of a bicycle frame,

a plurality of drive gears rotatably mounted on said pedal shaft,

means for connecting each of said drive gears into selective driving engagement with said pedal shaft,

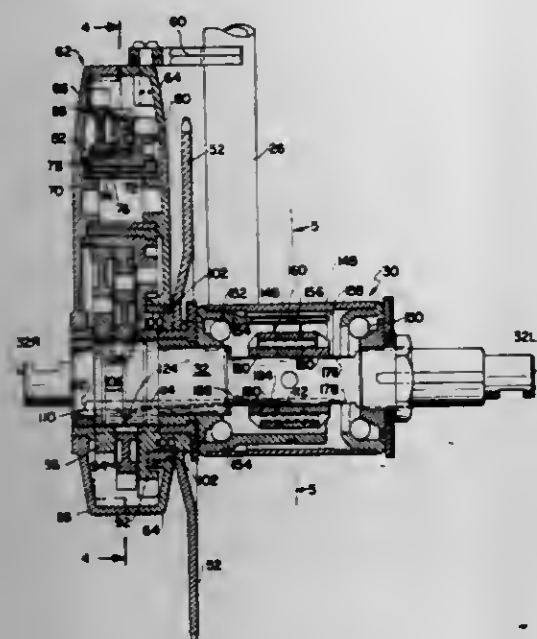
collar means mounted on said pedal shaft for rotation in conjunction therewith and permitted longitudinal displacement therealong,

means engageable with said collar means and responsive to a predetermined arc of reverse rotative displacement of said

shiftable selector member; the summation differential being operable for combining the rotatable drives through the differential gear mechanism and selector gear with relative drive ratios in accordance with the respective places of the unit volume price and whereby, with the take-off shaft input gear coupled for directly rotating the take-off shaft, the selector gear is adapted to be selectively shifted to its first position for selectively establishing a said next higher place price of  $a$ ; the conversion mechanism being operable for converting the higher place price selector mechanism for selectively establishing a said next higher place price of  $(a+1)$  and comprising a replacement take-off shaft for being rotatably mounted on the variator frame with a lower end thereof extending below the base, a first center gear, means for mounting the first center gear below the base on the lower input end of the main drive shaft to be driven therewith, a first take-off shaft drive gear mounted on the replacement take-off shaft below the base and in operative engagement with the first center gear for driving the take-off shaft, in place of said take-off shaft input gear, at a drive ratio which is greater than the drive ratio through said input gear by a factor equal to  $(a+1)/a$  for establishing a said next higher place price of  $(a+1)$  with the shiftable selector member.



pedal shaft for displacing said collar means longitudinally thereof, and



means responsive to the positional location of said collar means longitudinally of said pedal shaft for effecting the selected connection of each of said drive gears into driving engagement with said pedal shaft.

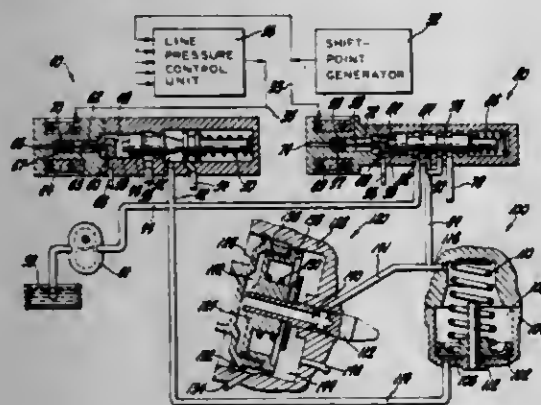
#### 4,283,970 AUTOMATIC TRANSMISSION LINE PRESSURE CONTROL

William J. Vukovich, Ypsilanti, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 2, 1979, Ser. No. 53,781  
Int. Cl.<sup>3</sup> B60K 41/06, 41/10

U.S. Cl. 74-866

9 Claims



1. A compensated line pressure regulator for a vehicular multi-gear ratio automatic shift transmission for controlling the line pressure applied to hydraulic elements of the transmission that are operative to shift the transmission between gear ratios comprising:

- means responsive to at least one vehicular operating parameter for developing a first electrical signal indicative of a desired line pressure;
- means including electrically energizable means for generating a variable line pressure the magnitude of which is a function of an electrical control signal applied thereto;
- means responsive to the shifting of said transmission between first and second gear ratios for generating a shift-time signal indicative of the time elapsed in shifting from said first gear ratio to said second gear ratio;
- means for generating a reference signal indicative of the desired shift-time for shifting from said first gear ratio to said second gear ratio;
- means responsive to said reference signal and to said shift-time signal for generating a correction signal the magni-

tude of which is a function of the difference between said reference signal and said shift-time signal;

means for modifying said first electrical signal as a function of said correction signal to form a control signal; and

means for applying said control signal to said electrically energizable means whereby said first electrical signal is compensated when said transmission is shifted from said first gear ratio to said second gear ratio to adjust the line pressure to bring the actual and desired shift-times into substantial correspondence.

#### 4,283,971 WIRE END LOCATING DEVICE FOR A WIRE-WORKING STATION

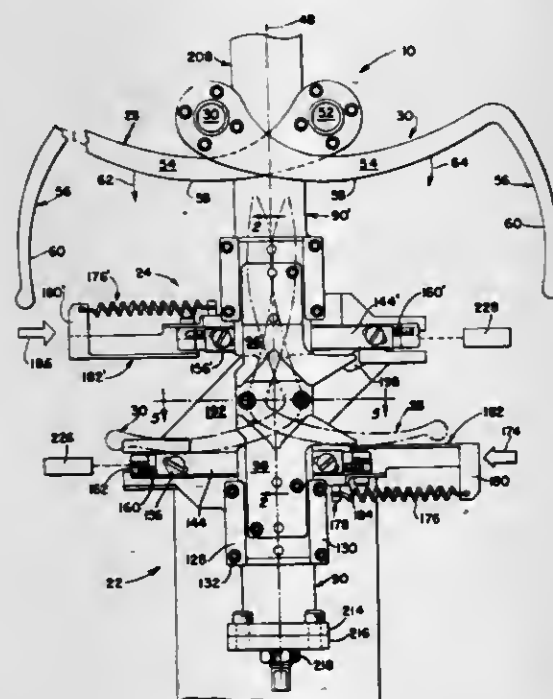
James R. Hetmanski, Perry Hall, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Jun. 25, 1979, Ser. No. 51,643

Int. Cl.<sup>3</sup> H02G 1/12

U.S. Cl. 81-9,51

7 Claims



1. A wire working machine having a wire working means that performs a wire working function on the end of a wire presented to the wire working means along a predetermined axis that is fixed relative to the wire working machine, said machine comprising:

- first and second pick-up arms, each of which has a first portion and a second portion which intersect at an angle to define an interior angle side and an exterior angle side of each pick-up arm;
- each of said pick-up arms movably supported on a support means associated with the wire working means on opposite sides of the predetermined wire-working axis in adjacent planes with their respective interior angle sides facing each other, said pick-up arms movably supported for movement from an open, spaced apart position to a closed position in which the intersection between said first and second portions of each pick-up arm define a wire working opening substantially coincident with the wire working axis; and

actuator means connected to said pick-up arms for moving said pick-up arms between said open and said closed positions.

#### 4,283,972 THREAD CHASER MECHANISM FOR A LATHE

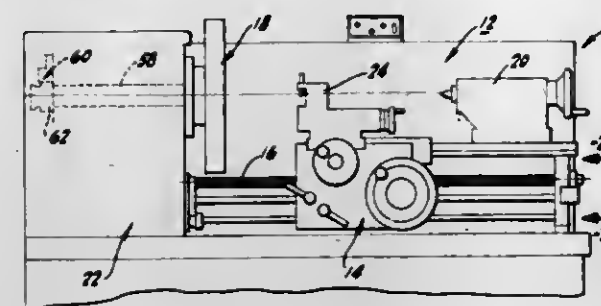
Louis C. Mergel, Jr., 1319 Chapel Ave., San Leandro, Calif. 94579

Filed Aug. 23, 1979, Ser. No. 68,905

Int. Cl.<sup>3</sup> B23B 1/00; B23G 11/00

U.S. Cl. 82-5

6 Claims



1. A thread chaser for a lathe comprising:
  - a. means for detecting and signalling a selected rotational position of the lead screw of the lathe comprising:
    - a first switch, means for activating said first switch during a selected rotational position of the lead screw, and means for signalling the activation of said first switch;
  - b. means for detecting and signalling a selected rotational position of the spindle of the lathe comprising:
    - a second switch, means for activating said second switch during a selected rotational position of the spindle, and means for signalling the activation of said second switch;
  - c. means for indicating coincidental occurrence of a selected rotational position of the lead screw and a selected rotational position of the spindle, said indicating means receiving said position signals of said detecting and signalling means for said lead screw and spindle.

#### 4,283,973 METHOD AND APPARATUS FOR HANDLING ARTICLES

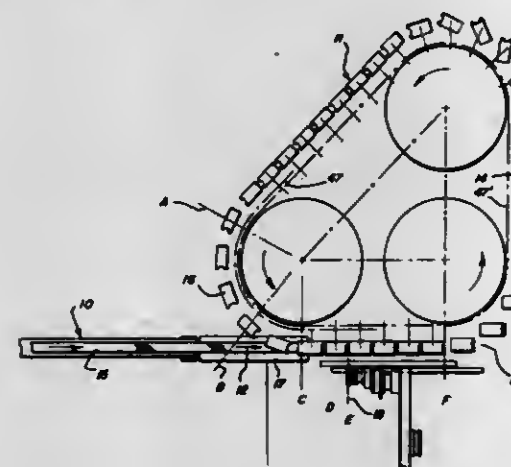
Harvey J. Spencer, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Nov. 15, 1979, Ser. No. 94,491

Int. Cl.<sup>3</sup> B65G 47/90; B26D 1/56, 7/06; B65G 17/48

U.S. Cl. 83-23

13 Claims



1. A method of handling stacks of web units comprising advancing a series of stacks along a first lineal path while the same are gripped by first gripping means also advancing in said first path, turning said first gripping means 90° while directing said first gripping means through an arcuate quadrant and into a second lineal path normal to said first path advancing said first gripping means in said second path, actuating second gripping means also being advanced in said second path to grip stacks therein and thereafter sequentially deactuating said first gripping means and laterally translating second gripping means

with said stacks to a third lineal path parallel to said second path whereby said stacks are presented for subsequent processing in spaced apart relationship with a dimension of said stack remaining parallel with the center line of said first path as it is advanced through said first, second and third paths.

#### 4,283,974 BAR END DROPPER FOR FORGING MACHINES OR THE LIKE

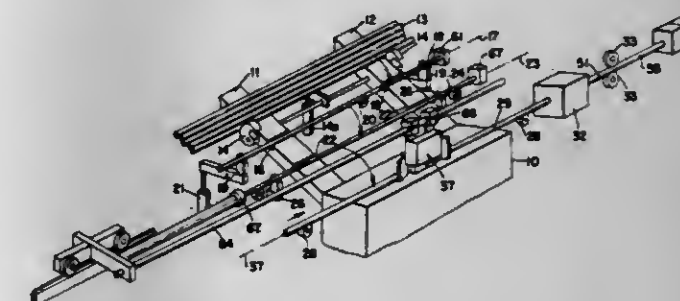
Gaylen O. Kline, Tiffin, Ohio, assignor to The National Machinery Company, Tiffin, Ohio

Filed Aug. 6, 1979, Ser. No. 63,763

Int. Cl.<sup>3</sup> B26D 5/20

U.S. Cl. 83-42

16 Claims



1. A cyclically operable machine for shearing blanks from a piece of stock, comprising a shear having a shear plane and operable to sequentially cut blanks of measured length from the forward end of a piece of stock during each cycle, a transfer operable to sequentially transfer blanks from said shear to a subsequent processing station during each cycle, a feeder intermittently operable to feed pieces of stock to said shear during each cycle, and sensing means including a sensor operable to determine the cycle when the portion of the end of a piece of stock within said shear beyond said shear plane is of insufficient length to produce a full blank and operable to cause said transfer to reject said portion after it is sheared, said sensing means being operable to establish when normal feeding would position the end of a piece of stock a predetermined distance from said shear plane which is insufficient to provide a satisfactory shearing operation and is operable to modify the distance through which said feed operates to ensure that said one end is spaced from said shear plane a sufficient distance to provide a satisfactory shearing operation, said sensor causing said transfer to reject two pieces on two cycles of operation of said shear when the operation of said feed is modified.

#### 4,283,975 SYSTEM FOR SETTING THE SHEET LENGTH ON A CROSSCUTTER FOR WEBS OF MATERIAL

Heiko Knoll, Düsseldorf, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Düsseldorf, Fed. Rep. of Germany

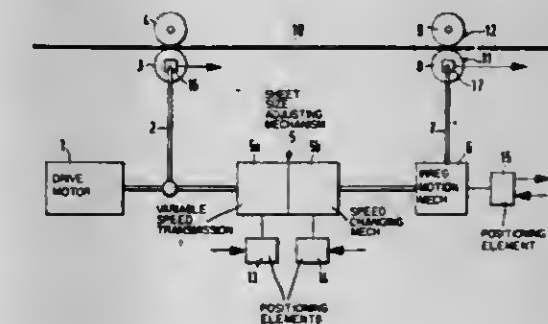
Filed Sep. 12, 1979, Ser. No. 74,705

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840377

Int. Cl.<sup>3</sup> B26D 5/20

U.S. Cl. 83-76

5 Claims



1. In a system for setting the sheet length on a cross-cutter for webs of material which comprises a feeding means includ-



ing a pair of feed rolls, cutting means including a pair of cutter rolls preceded by an irregular-motion mechanism and an positioning element associated therewith, a common drive motor, and a sheet-size adjusting mechanism disposed between the feeding means and the irregular-motion mechanism and including a speed-changing mechanism and a continuously variable speed transmission and positioning elements associated therewith, the improvement comprising: first means forming a first control loop for the positioning element of the irregular-motion mechanism; second means forming a second control loop for the positioning element of the speed transmission; means for producing a positioning signal for one speed corresponding to the desired sheet length and for applying same to the first control loop, the positioning element of the speed changing mechanism and to the second control loop, wherein the desired values correspond to the desired sheet length, and wherein the second control loop of the continuously variable speed transmission includes means receptive, as an actual value, the sheet length for specifying to the associated positioning element the positioning time on the basis of the deviation of the actual value from the desired value and of the speed selected and for making another comparison of actual value with desired value only at the completion of each positioning operation.

4,283,976

# APPARATUS FOR PRECUTTING METAL STRIP IN THE MANUFACTURE OF SPIRAL STRIP PIPES, E.G. VENTILATION DUCTS

Karl F. Weenerström, Stockholm, Sweden, assignor to Prov & Verktyg AB, Sweden

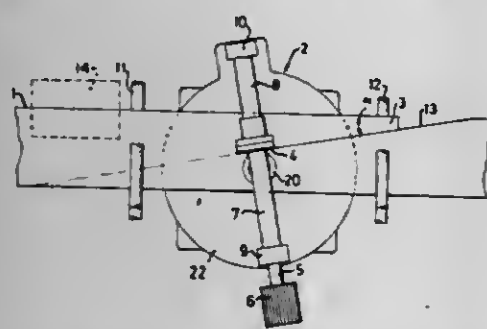
Filed Jan. 15, 1979, Ser. No. 3,719

Claims priority, application Sweden, Jan. 17, 1978, 7800535

Int. Cl.<sup>3</sup> B26D 1/56; B23D 25/02

U.S. Cl. 83—301

7 Claims



1. Apparatus for uninterruptedly manufacturing spiral strip to be used for fabricating spiral strip piping, said apparatus being positioned along a feed path for operating on continuous strip material having a longitudinal axis and opposite edges extending parallel with said axis, the apparatus comprising in combination:

strip cutting means comprising an upper driven knife wheel and means for driving the upper driven knife wheel to rotate about a rotative axis thereof; and a lower freely rotating, circular, substantially horizontal support roller with a substantially vertical rotation axis for cooperating with the upper driven knife wheel for cutting the strip fed to the cutting means;

feed means for feeding a strip into the cutting means in a continuous length thereof; the feed means feeding the strip in a feed direction past the strip cutting means;

punch means positioned upstream from the strip cutting means, with respect to the feed direction;

table means supported for swiveling in rotative orientation with respect to the direction of feeding of the strip; the cutting means being supported on the table means for swiveling therewith; means for adjusting the swivel orientation of the table means, prior to the feeding of the strip and the cutting thereof, for adjusting the location of the upper driven knife wheel around the support roller knife,

which adjusts the angle of the cut across the strip for a selected pipe diameter;

means for translating the table means across the feed direction of the strip for enabling the strip to be cut at an angle to the feed direction thereof so that said cutting means cuts the strip along a straight line extending from a first point on one edge of said strip to a second point on the opposite edge of said strip longitudinally spaced from said first point;

the punch also being placed at the side of the apparatus from which the table means commences its translation by the translating means; the punch thus being positioned at the edge of the strip to be cut before the strip is fed to the strip cutting means; the punch being shaped for making triangular stampings in the edge of the strip at the starting points for each cut, with the stamping having a side extending perpendicular to the longitudinal axis of said strip, wherein the stampings act as cutting location marks for the upper knife eliminating the free, projecting, triangular plate tip which would otherwise be formed at the beginning of the cut strip;

said cutting means being positioned so that each cut is made coextensive and parallel with another side of the triangular stamping in said strip.

4,283,977

# MOTORIZED MITER CHOP SAW WITH WORK-PIECE CLAMP

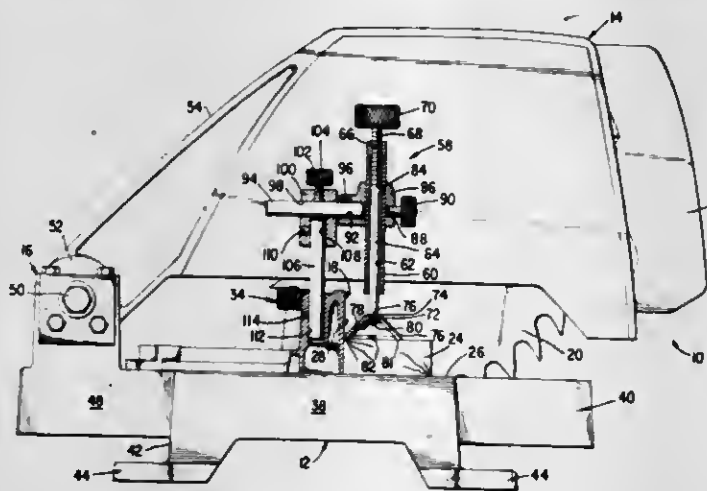
William A. Batson, Pickens, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Nov. 2, 1979, Ser. No. 90,713

Int. Cl.<sup>3</sup> B23D 47/04

U.S. Cl. 83—453

6 Claims



1. Miter saw comprising a cast base structure having a generally planar work support surface to which a motor powered circular chop saw is pivotally mounted for rotation about an axis generally parallel said work support surface and a work-piece positioning fence pivotally carried by said base support structure for rotation about an axis generally perpendicular to both said surface and said first mentioned axis, together with a single clamping means movably mountable for selectively clamping a work-piece in either a hold-in arrangement against said fence or in a hold-down arrangement against said work support surface, said fence being constructed and arranged to include means for enabling said clamping means to be mounted therewith for said hold-down arrangement and said cast base structure being constructed and arranged to include means for enabling said clamping means to be mounted therewith for said hold-in arrangement.

4,283,978

# NOTCHING MACHINE

Shigeo Kasai, Sagami-hara; Toshiaki Nishiyama, Fujisawa, and Kiju Kawada, Atsugi, all of Japan, assignors to Amada Company Ltd., Kanagawa, Japan

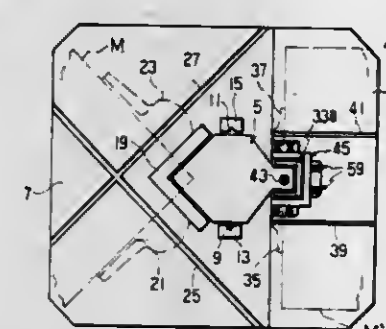
Filed May 10, 1979, Ser. No. 38,006

Claims priority, application Japan, May 10, 1978, 53-61484[U]

Int. Cl.<sup>3</sup> B26D 3/14, 7/26

U.S. Cl. 83—620

1 Claim



1. A notching machine comprising:

- a frame;
- a table being mounted on said frame;
- a means for holding shearing tools being provided with said table;
- a ram member being vertically movably mounted on said frame;
- an upper shearing tool being provided with said ram member;
- a lower shearing tool cooperating with said upper shearing tool, said lower shearing tool being divided into a plurality of pieces; and
- screw means for adjustably holding said lower shearing tool in said means for holding shearing tools in such a manner that horizontal clearance between said upper and lower shearing tools may be changed in lateral, forward, and backward directions independently.

4,283,979

# ADJUSTABLE SLICING BLADE ASSEMBLY

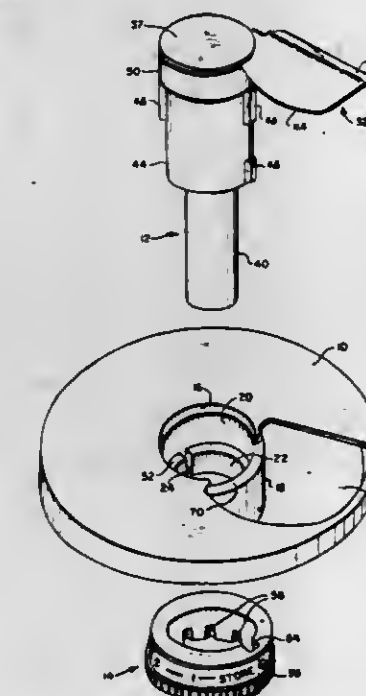
William J. Rakocy, Nutley, N.J., and Silvio Bellotti, New Hyde Park, N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Jul. 10, 1979, Ser. No. 56,169

Int. Cl.<sup>3</sup> B26D 7/26

U.S. Cl. 83—666

8 Claims



1. An adjustable slicing blade assembly, which comprises a spacer disk having a centrally disposed circular opening; a cylindrical flange extending from the under side of said spacer

disk and surrounding said circular opening; an inwardly projecting, axially extending shoulder on the inner surface of said cylindrical flange; one or more axially extending slots provided in the inner surface of said flange; a rotatable shaft axially movable within said cylindrical flange and through said circular opening, said shaft including an axially extending portion having a diameter less than the maximum diameter of said shaft such that said portion axially slidingly engages said shoulder; one or more axially extending ribs provided on said shaft for respectively engaging said one or more flange slots; a slicing blade extending radially from the upper end of said shaft; an adjustment ring having an inner diameter enabling it to be axially slid over said lesser diameter portion of the rotatable shaft; a knob protruding from said lesser diameter portion of the rotatable shaft; an axially extending slot provided on the inner surface of said adjustment ring for engaging said knob and thereby enabling said ring to be slid onto the rotatable shaft into a position above said knob; and a plurality of axially extending recesses provided on the inner surface of said adjustment ring and opening through the under side of said ring; said recesses respectively being of varying depth and arranged for engagement by said knob, whereby the separation between the slicing blade and the spacer disk may be varied.

4,283,980

# COMBINATION PORTABLE AND STATIONARY, BENCH-MOUNTED CHAIN SAW APPARATUS

Edward L. Jackson, P.O. Box 636, Pauls Valley, Okla. 73075

Continuation of Ser. No. 741,716, Nov. 15, 1976. This

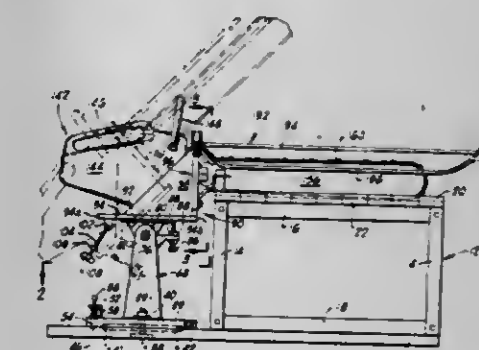
application Sep. 18, 1978, Ser. No. 942,961

The portion of the term of this patent subsequent to Nov. 28, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> B27B 17/02

U.S. Cl. 83—798

18 Claims



- 1. Chain saw apparatus comprising:
- turntable means pivotable about a vertical axis;
- a pedestal subassembly mounted on said turntable means for pivotation therewith;
- a cradle frame subassembly pivotally supported on said pedestal subassembly for pivotation about a horizontal axis and including a cradle frame having plate-receiving channels forming a part thereof;
- a portable chain saw including:
- a mounting plate slidably inserted in, and removable from, said cradle frame to facilitate rapid manual placement of the portable chain saw in, and removal thereof from, said cradle frame;
- a prime mover mounted on one side of said mounting plate above said pedestal subassembly;
- a saw blade guide plate projecting from said prime mover through said mounting plate; and
- a saw blade movably mounted on, and guided by, the edges of said guide plate, projecting through said mounting plate and drivingly connected to said prime mover; and
- a table positioned under said saw blade guide plate for supporting a workpiece to be sawn with said chain saw.



4,283,981

## INDEXING MECHANISM FOR TOOL HEAD

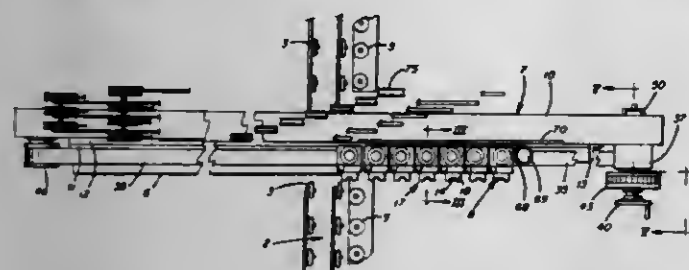
Hugh M. Trautmann, Evans City, Pa., assignor to Billeo Manufacturing, Inc., Zionsville, Pa.

Filed Dec. 3, 1979, Ser. No. 99,887

Int. Cl.<sup>3</sup> B26D 3/08

U.S. Cl. 83-884

7 Claims



1. In apparatus for treating material including a table having idler rolls to support the material, a drive roll to move the material over said idler rolls, vertical rolls at an edge of said table to guide the material as it passes over the idler rolls, an elongated beam extending across and spaced above the table and a track attached to and extending substantially throughout the length of said beam, the improvement comprising a plurality of independently adjustable carrier heads supported on said track for movement along the length of said beam, each of said carrier heads having a bracket attached thereto adapted to support apparatus for treating material as the material passes over said table below said beam, drive means independently engageable with each of said carrier heads to individually move the head with which it is engaged along said track to position said carrier head along said beam over said table, means on each of said carrier heads to engage and disengage said carrier head with said drive means, means operatively connected with said drive means to determine the linear distance each carrier head is moved along said track over said table by said drive means, a carrier head storage section on said beam extending in cantilever relationship past said edge of said table having said vertical rolls, stop means on said beam located adjacent said edge of said table to prevent carrier heads from moving onto the portion of said beam over said table, adjustable means on each of said carrier heads to contact said stop means, and means on each of said carrier heads to release said adjustable means to permit the carrier head to pass said stop means onto the portion of said beam over said table.

4,283,982

## MAGNETIC PICKUP FOR ELECTRIC GUITARS

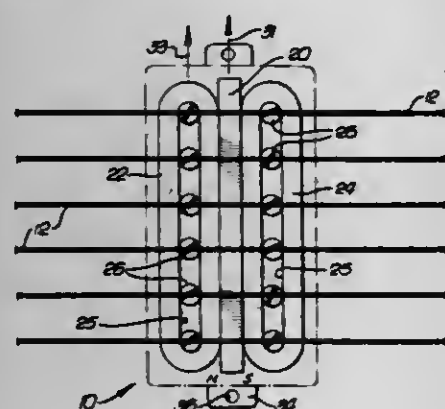
Daniel K. Armstrong, 710 Marguerita, Santa Monica, Calif. 90402

Filed Jan. 26, 1979, Ser. No. 6,929

Int. Cl.<sup>3</sup> G10H 3/18

U.S. Cl. 84-1.15

13 Claims



1. A magnetic pickup for a stringed musical instrument, comprising in combination:  
a polar bar magnet having a longitudinal axis, a vertical axis,

and a transverse polar axis extending across the thinnest cross-sectional dimension of said magnet;  
a coil having a winding axis and a hollow center;  
a magnetically permeable pole piece separate from said magnet and extending upwardly parallel to said magnet vertical axis for positioning adjacent an instrument string; and  
with said magnet positioned longitudinally parallel to said coil having said polar axis perpendicular to the winding axis of said coil so that the only magnetic field in the pickup is that provided by said magnet along said transverse polar axis, with one of said magnet and pole piece placed within said hollow center of said coil and with the other of said magnet and pole piece placed outside said coil with the field from said magnet entering said pole piece through said coil.

4,283,983

## ELECTRONIC MUSICAL INSTRUMENT

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

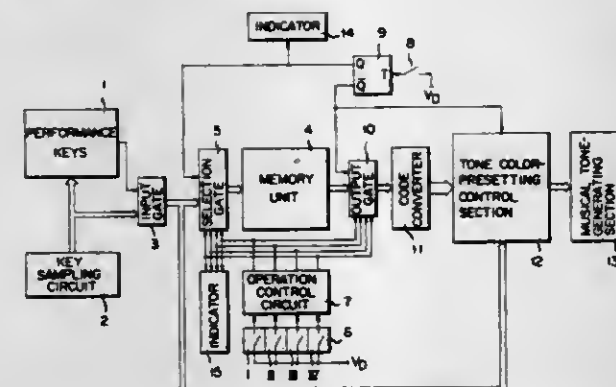
Filed Apr. 6, 1979, Ser. No. 27,907

Claims priority, application Japan, Apr. 18, 1978, 53-45650; Dec. 27, 1978, 53-164865

Int. Cl.<sup>3</sup> G10H 1/06

U.S. Cl. 84-1.19

24 Claims



1. An electronic musical instrument comprising:  
first memory means having a large plurality of tone color memories for storing tone color information in the form of binary codes, said tone color information comprising a plurality of data elements for determining various tone colors, the respective data elements being stored in the respective tone color memories;  
second memory means for reading said tone color information from at least one of said tone color memories of said first memory means and for storing said tone color information;  
selecting means coupled to said second memory means for selecting one data element for determining a desired tone color from said tone color information stored in said second memory means; and  
means coupled to said second memory means for producing a musical tone of the tone color determined by the tone color information thus selected.

4,283,984

## CAPTURE SYSTEM FOR AN ELECTRONIC MUSICAL INSTRUMENT

Alfred H. Faulkner, 1324 Portesuello Ave., Santa Barbara, Calif. 93105

Filed Mar. 26, 1980, Ser. No. 134,250

Int. Cl.<sup>3</sup> G10H 1/02

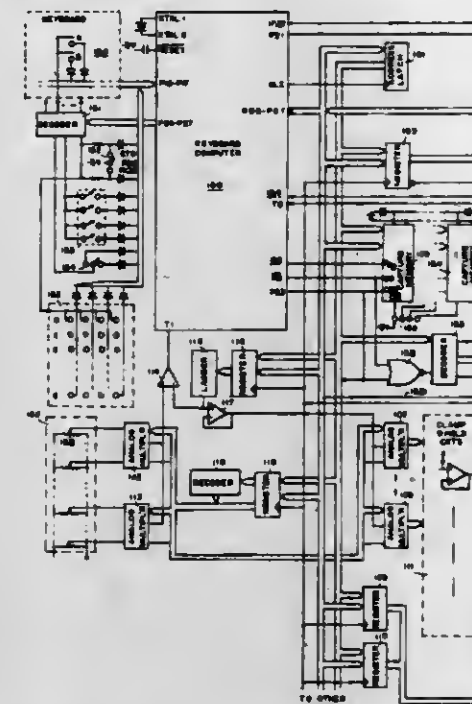
U.S. Cl. 84-1.24

6 Claims

1. In an electronic musical instrument having a plurality of potentiometer type presets for selecting desired tone parameters and corresponding voltage controlled circuits to effect the desired tonal response, an improved circuit arrangement for

supplying the control voltage to the voltage controlled circuits comprising:

an analog-to-digital converter,  
a first analog multiplexer,  
a controller operative to connect said presets in sequence to a controller input via said multiplexer and said converter,  
a digital-to-analog converter,  
a second multiplexer,



a clamp-and-hold circuit for the control input of each of said voltage controlled circuits,  
said controller being operative to connect said clamp-and-hold circuits to a controller output in like sequence via said second multiplexer and said digital-to-analog converter, and programmatic means in said controller for effecting a non-linear transfer function between certain of said presets and corresponding ones of said voltage controlled circuits.

4,283,985

## DRUMS

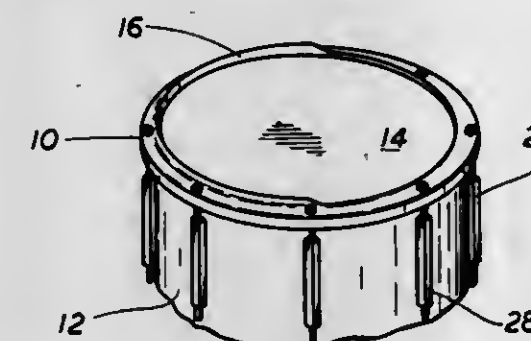
Dominick S. Famularo, 1897 Voshage St., Baldwin, N.Y. 11510

Filed Mar. 27, 1979, Ser. No. 24,418

Int. Cl.<sup>3</sup> G10D 13/02

U.S. Cl. 84-411 R

5 Claims



5. A drumhead comprising a drum sheet extending over the body of a drum, an annular rim resting upon said drum sheet, said rim having a first cross-section formed by orthogonal flanges for only a portion of its periphery, one flange extending a conventional height parallel to the body of the drum, the other flange extending a conventional width orthogonal to the body of the drum, and a second cross-section for the remaining portion of its periphery formed only by the flange extending a conventional width orthogonal to the body of the drum, and lugs extending from said body of said drum to clamp said drum sheet and rim.

4,283,986

## SELF-PENETRATING WALLBOARD ANCHOR

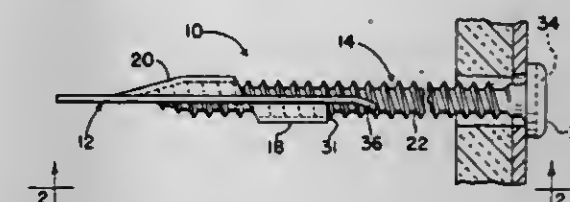
Francis C. Peterson, St. Charles; Gerald D. Barth, South Elgin, and Rodney O. Stotten, Batavia, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 26, 1979, Ser. No. 78,864

Int. Cl.<sup>3</sup> F16B 21/00

U.S. Cl. 411-340

10 Claims



1. A fastener assembly for attaching articles to wallboard said assembly comprising a self-penetrating anchor member capable of being pushed or driven through said wallboard said anchor having a first length and a headed, threaded fastener having a second greater length; said anchor member including a plate-like structure with a penetrating point on the leading end thereof, a recess extending longitudinally of said anchor member which receives said fastener and is formed by a first semi-cylindrical segment projecting in one direction from the plane of the plate-like structure and having an inner face, said semi-cylindrical segment extending generally along the axis of said anchor member at one axial position thereof, said segment having first and second edges; and by a second semi-cylindrical segment projecting in the opposite direction from the plane of the plate-like structure having an inner face and also extending generally along the axis of said anchor member at a second axial position thereof, said second segment also having first and second edges; a projection for engaging the front of the fastener for transmitting an axial drive force applied to the head of the fastener to the anchor member, said projection sloping from a position generally in the plane of one of the semi-cylindrical segments to a position generally in the plane of the plate-like structure; an aperture extending through said plate between said semi-cylindrical segments of a size and figuration to receive said fastener said aperture being formed by the first edge of said first semi-cylindrical segment and by the second edge of said second semi-cylindrical segment; means for causing a pivotal rotation of said anchor member relative to the axis of said fastener from a position in which the two inner faces of the semi-cylindrical segments engage the threaded shank to a position in which the first and second aperture-forming edges engage the threaded shank; whereby the fastener assembly can be pushed or percussively driven by means of the fastener head into the wallboard until the anchor member passes completely therethrough at which time the means for causing pivotal rotation of said anchor member relative to said fastener will cause the anchor to be reoriented to a position extending across the axis of the fastener and the fastener threadingly advanced through said aperture.

4,283,987

## EXPLOSIVE RELEASE CLAMP SYSTEM

Gerhardt C. Stichling, West Caldwell, and James McPherson, Succasunna, both of N.J., assignors to Cartridge Actuated Devices, Inc., Fairfield, N.J.

Filed Jun. 25, 1979, Ser. No. 51,470

Int. Cl.<sup>3</sup> F42B 3/00

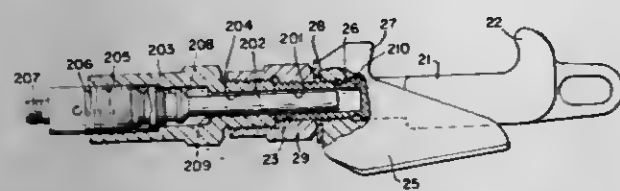
U.S. Cl. 89-1 B

7 Claims

7. An explosive release clamp comprising:  
(a) a hook bolt provided with a hook at one end and a cylindrical tail at the other, said tail having a threaded position near its free extremity and an undercut portion providing a region of weakened tensile strength adjacent the end of the threaded position nearer the hook, said tail having an axial bore extending from said free end to a point within



said undercut portion, said bore being adapted to receive the impact delivery rod of an explosive actuator device, (b) a body member having a bore for receiving said tail and an anvil portion facing said hook in clamping relationship, and



(c) a nut threaded at one end to cooperate with the threaded region of said tail for drawing said hook toward said anvil and threaded at the other end to engage a cooperatively threaded end on the body of an explosive actuator device.

4,283,988

## TAIL CARRIAGE OF STORES

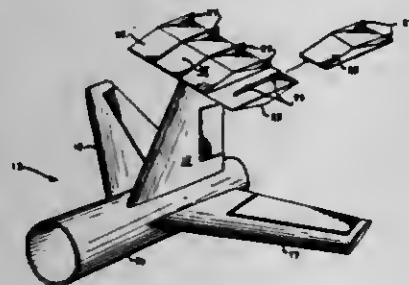
Kenneth M. Edwards, Niceville, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 14, 1979, Ser. No. 66,358

Int. Cl.<sup>3</sup> F41F 5/02

U.S. Cl. 89-1.5 R

2 Claims



1. In combination, a tail carriage of stores on a low-flying aircraft having a tail assembly with horizontal and vertical stabilizers at the aft end of the fuselage thereof and a plurality of aerodynamically configured stores disposed on the tail assembly, a platform positioned atop the vertical stabilizer for releasably carrying said stores thereon, said platform being oriented perpendicular to the longitudinal axis of the fuselage of the aircraft and parallel to the horizontal stabilizers, means for releasing said stores from said platform causing one of said stores to separate from the aircraft such that the forward momentum of the aerodynamically configured store produces a lifting force causing the store to rise in a free-flight trajectory well above the level flight of the aircraft whereupon the store loses momentum and falls to the ground after the aircraft has cleared the area.

4,283,989

## DOPPLER-TYPE PROJECTILE VELOCITY MEASUREMENT AND COMMUNICATION APPARATUS, AND METHOD

Peter P. Toullos, Oakbrook, and Kenneth D. Hartman, DeKalb, both of Ill., assignors to ARES, Inc., Port Clinton, Ohio

Filed Jul. 31, 1979, Ser. No. 62,558

Int. Cl.<sup>3</sup> F41C 17/00

U.S. Cl. 89-6.5

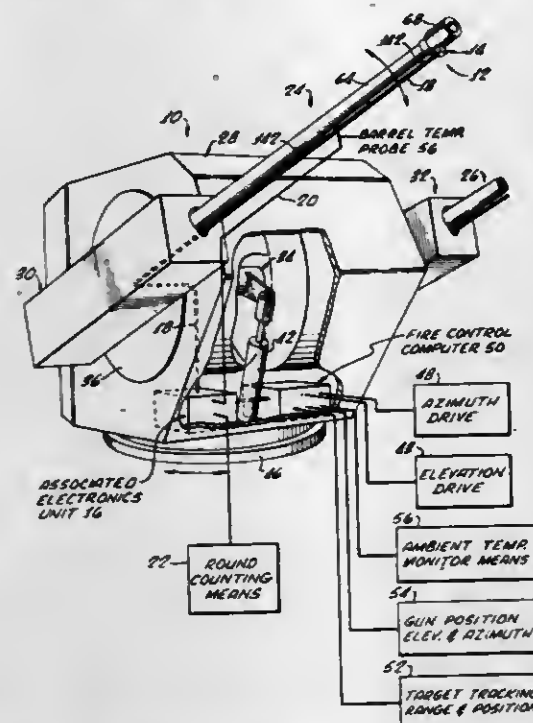
30 Claims

7. Projectile barrel velocity determining and projectile communicating apparatus which comprises:

- a microwave probe;
- means adapted for fixing the probe to a projectile barrel adjacent to a muzzle end thereof with a probe inner end adjacent to, but out of the path of projectiles traveling through the barrel;
- microwave reference oscillator means connected to the probe for providing microwave energy thereto for introduction thereby into the barrel to which the probe is fixed, frequency of said oscillator means being selected to excite a fundamental electromagnetic mode in the barrel;

(d) mixer means connected to the probe for receiving therefrom microwave energy reflected by a projectile traveling through the barrel, and for extracting therefrom a Doppler frequency signal corresponding to projectile barrel velocity;

(e) processor means connected to the mixer means for receiving the Doppler frequency signal therefrom and for obtaining from the Doppler frequency signal the corresponding projectile barrel velocities; and,



(f) means for communicating information to said projectile while the projectile is within transmitting range of the probe, said communicating means including means for selectively modulating the reference oscillator frequency to include the information to be communicated to the projectile.

4,283,990

## FLUIDIC REPEATER

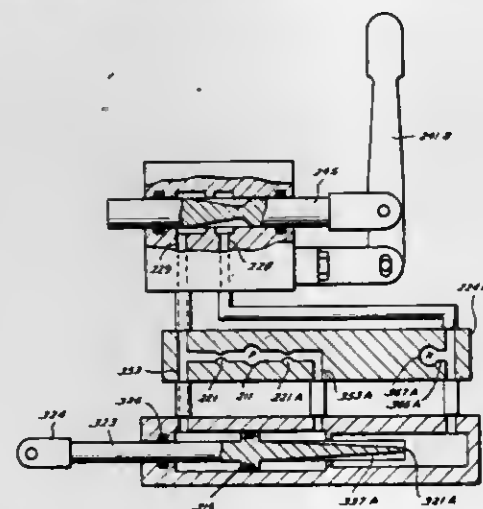
Willie B. Leonard, 5902 Royalton, Houston, Tex. 77036

Division of Ser. No. 872,826, Jan. 27, 1978, which is a division of Ser. No. 622,760, Oct. 15, 1975, Pat. No. 4,094,229, and a continuation-in-part of Ser. No. 521,036, Nov. 5, 1974, Pat. No. 4,046,059, which is a continuation-in-part of Ser. No. 489,829, Jul. 18, 1974, Pat. No. 3,988,966. This application Aug. 2, 1979, Ser. No. 62,964

Int. Cl.<sup>3</sup> F15B 15/22; F01B 13/04

U.S. Cl. 91-47

2 Claims



1. Fluidic repeater comprising:

- a transmitter, a responder, a single line for transmitting pressure signals between said transmitter and responder, and fluid supply means including a source of pressure fluid for causing a pressure fluid to flow through said line,

4,283,991

## PERCUSSION MECHANISM

Viktor A. Gaun, ulitsa Gogolya, 21a, kv. 14; Anatoly V. Belonov, prospekt K. Marxa, 55, kv. 56; Vadim D. Petukhov, ulitsa Kropotkina, 127, kv. 493; Gennady I. Surov, ulitsa Sovetskaya, 47, kv. 22; Nikolai A. Belyaev, ulitsa Petukhova, 114, kv. 11; Vitaly K. Alyabiev, ulitsa Udaraya, 29, kv. 105, and Klimenty E. Rassomakhin, ulitsa B. Bogatkova, 163/8, kv. 100, all of Novosibirsk, U.S.S.R.

Division of Ser. No. 811,836, Jun. 30, 1977, Pat. No. 4,194,435.

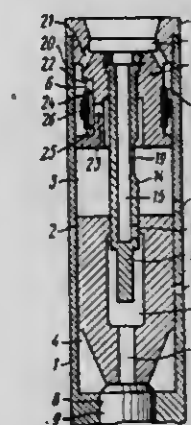
This application Jul. 2, 1979, Ser. No. 54,431

Claims priority, application U.S.S.R., Jul. 7, 1976, 2391708

Int. Cl.<sup>3</sup> F01L 21/02, 25/04

U.S. Cl. 91-299

4 Claims



said transmitter including a variable flow obstructor connected in the aforementioned pressure signal transmitting line between one end thereof and said responder to create a variable pressure difference upstream and downstream of the obstructor and thereby vary the pressure in the portion of said line between said obstructor and said responder,

said transmitter further including operator means connected to the flow obstructor for changing the position of the obstructor between a first position partly blocking said fluid flow and a second position blocking said fluid flow to a lesser extent and a continuous range of intermediate positions of differing degrees of blocking said fluid flow between the blocking in said first and second positions and maintaining the obstructor in any desired one of said first, second and all intermediate positions,

said responder including a cylinder having a piston movable axially therein, said cylinder having a peripheral surface and said piston having a periphery adapted to slide axially within said peripheral surface over a range of axial motion, said piston having two transverse portions athwart the axis of the piston adapted to receive fluid pressure, said cylinder having two transverse portions athwart the axis of the cylinder,

said transverse portions of the cylinder being farther apart than said transverse portions of the piston leaving spaces between the transverse portions at each end of said periphery of the piston and the transverse portions at the corresponding end of said peripheral surface of the cylinder when said piston is positioned between the ends of said range of axial motion,

the aforementioned pressure signal transmitting line connecting at its other end to the responder cylinder to communicate with one of said spaces,

opposition means communicating with the other of said spaces creating an opposing force thereon independent of the position of the transmitter operating means, and

feedback means including a flow passage communicating with the other of said spaces to vary the pressure therein by connecting the last said space to reservoir of fluid at lower pressure than said line without passing through said pressure signal transmitting line, a variable flow restrictor in said flow passage, and means connecting said variable flow restrictor to said responder to cause displacement of said flow restrictor in an amount dependent upon the amount of displacement of said responder piston and independent of the rate of said piston's displacement and of the length of time said piston's displacement persists, said cylinder including an aperture in one of said transverse portions thereof, said piston having a piston rod extending through said aperture adapted for connection to a load, said feedback means functioning to bring said piston to rest in different positions over a continuous range of positions corresponding to said continuous range of positions of said operator means of said transmitter to thereby place said piston rod and any load attached thereto in any desired position over a continuous range of positions, said single line extending from said one of said spaces through said obstructor to said reservoir of fluid at lower pressure than said line,

said fluid supply means comprising a branch line having a second flow restrictor therein extending from said single line between said one of said spaces and said obstructor through said second flow restrictor to said source of pressure fluid, whereby fluid from said source can flow through said second flow restrictor and branch line to said single line and thence through a portion of said single line and said variable flow obstructor of the transmitter to said reservoir, by-passing said one of said spaces.

1. A percussion mechanism of the type having a relatively long piston stroke and limited consumption of working fluid actuated by a pressurized working fluid supplied from a source of pressurized fluid, comprising a housing (52) with an internal cylindrical space and exhaust ports (59, 60) and having at least one longitudinal side passage (61) connected to an idle stroke chamber;

a fluid actuated piston (54) positioned for axial reciprocation in said internal cylindrical space of said housing and dividing said internal cylindrical space into a working stroke chamber (55) of a variable volume and said idle stroke chamber (56) of a variable volume, and each of said chambers communicating with one of said exhaust ports;

fluid distributing means (53) having radial passages (71) and cooperatively associated with pressure responsive surfaces of a resilient annular valve element (73, 74) adapted to create inlet passages (75, 76) for distributing the fluid into said working stroke chamber (55) of the mechanism; a closure (67) having inlet means for said housing (52) defining with said fluid distributing means (53) a supply space (63) for receiving said pressurized fluid from said source; at least one inlet passageway (78) formed between said fluid distributing means and said housing connecting said supply space (63) with said idle stroke chamber (56) via said at least one side passage (61);

a work performing member (58) accommodated in said housing (52) to receive impacts from said piston (54) reciprocated by the action of the fluid;

valve seats provided in a surface of said fluid distributing means, their number equalling that of the radial passages (71) in said fluid distributing means (53) connecting said working stroke chamber (55) with said inlet passages (75, 76);

said resilient annular valve element (73, 74) being stretched tight about an outer surface of said fluid distributing means (53) in opposition to said radial passages (71) in said fluid distributing means and encircling said fluid distributing means about its periphery, an internal surface of said resilient valve element (73, 74) with the valve seats defining at least one of said inlet passages (75, 76) for controlling fluid flow about said fluid distributing means (53) and for controlling fluid flow into said working stroke chamber, whereby said piston is repeatedly driven up and down in



said housing by the action of said fluid flowing into and out of said chambers and said exhaust ports via said distribution means and said inlet passages (75, 76), said radial passages 71, said at least one inlet passageway (78) and said at least one side passage; and whereby a portion of said resilient valve element located opposite said at least one longitudinal side passage (61) controls fluid flow into both said working stroke chamber (55) and said idle stroke chamber (56).

4,283,992

## SERVO BOOSTERS

Alexander J. Wilson, Sutton Coldfield, England, assignor to Girling Limited, Birmingham, England

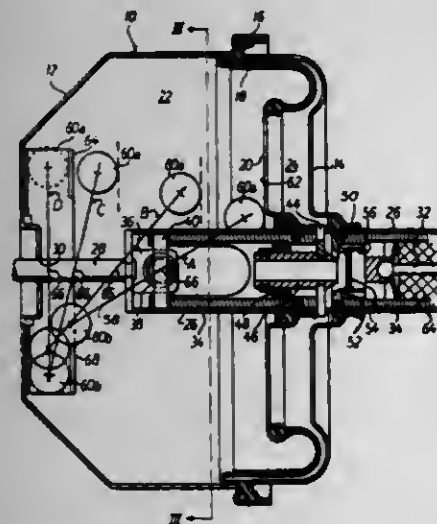
Filed Mar. 29, 1979, Ser. No. 25,064

Claims priority, application United Kingdom, Apr. 8, 1978, 13873/78

Int. Cl.<sup>3</sup> F15B 9/10, 13/10

U.S. Cl. 91—369 B

10 Claims



1. A servo booster for a vehicle brake system of the type having a housing, a movable wall located within said housing and dividing said housing into two chambers, an input member operably coupled to an actuating pedal and adapted to control the differential pressure across the movable wall, an output member operably associated with said movable wall and axially displaceable by said movable wall through a lever mechanism, said lever mechanism comprising:

- (a) at least one first lever;
- (b) one end of said first lever being in engagement with a part fixed relative to said housing;
- (c) the other end of said first lever being in abutting engagement with said movable wall;
- (d) said first lever providing a mechanical advantage between the displacement of the movable wall and the resulting displacement of the output member;
- (e) at least one second lever;
- (f) means pivotally connecting said second lever to said input member;
- (g) means defining a pivotal engagement between said second lever and said output member; and
- (h) pivotal support means on said second lever for said first lever;

said pivotal connection, engagement and support means of said second lever with said input and output members and with said first lever, respectively, being arranged that said second lever firstly transmits displacement of the first lever, in response to movement of said movable wall, to the output member and secondly transmits a reaction force to the input member.

4,283,993

## SERVO BOOSTER

Yoshihiro Hayaahida, Chigasaki; Kiyoshi Tateoka, Fujisawa, and Hiromi Ando, Tokyn, all of Japan, assignors to Tokico, Ltd., Kawasaki, Japan

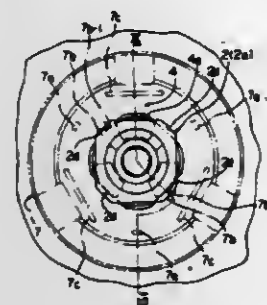
Filed Jan. 15, 1979, Ser. No. 3,774

Claims priority, application Japan, Jan. 20, 1978, 53/5122[U]

Int. Cl.<sup>3</sup> F15B 9/10; F01B 19/00; F16J 3/02

U.S. Cl. 91—376 R

1 Claim



1. A servo-booster comprising:

- a shell casing;
- a piston plate and a diaphragm cooperating therewith and extending across said shell casing for defining two chambers therein and for receiving a differential pressure produced between said two chambers, said piston plate having a non-circular opening therethrough;
- a cylindrical valve body having therein a valve mechanism for controlling the pressure across the two chambers, said valve body having a head portion with a non-circular configuration at one end thereof, said head portion having a radial shoulder at a location spaced from said one end and facing in the direction toward the other end of said valve body, the configuration of said head portion being the same as that of said non-circular opening in said piston plate and said head portion being insertable through said opening in said piston plate when said head portion is in a predetermined angular relationship with said opening, said valve body and said piston plate being connected with one another by inserting said head portion through said opening in said piston plate and rotating said valve body and piston plate relative to each other for engaging said radial shoulder with said piston plate; and
- a retaining plate non-rotatably mounted on said piston plate and having a portion bent out of the plane of said retaining plate, said head portion having a recess therein for engagement by said bent out portion in projection-and-recess engagement when said valve body is rotated relative to said piston plate for holding said piston plate and said valve body in engagement for preventing only relative rotation of said valve body and said piston plate.

4,283,994

## POWER BRAKE UNIT

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jul. 16, 1979, Ser. No. 57,763

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834018

Int. Cl.<sup>3</sup> F15B 17/02, 13/14, 13/10

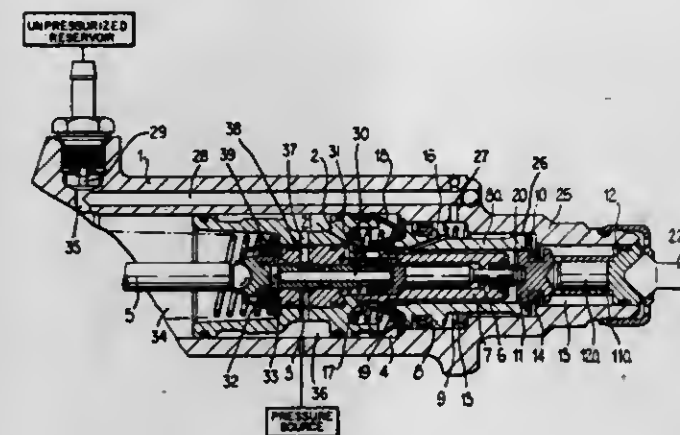
U.S. Cl. 91—391 R

20 Claims

1. A power brake unit for automotive vehicles comprising:
- a housing having a longitudinal axis and a longitudinal bore coaxial of said axis;
  - a booster piston disposed in a slidably sealed relation in said bore coaxial of said axis;
  - an annular piston disposed in a slidably sealed relation in said bore coaxial of said axis having one end thereof spaced from an adjacent end of said booster piston;
  - a brake valve disposed coaxially of said axis within said

booster piston to meter pressure-transmitting fluid from a pressure source into a booster chamber disposed between said one end of said annular piston and said adjacent end of said booster piston, said fluid in said booster chamber acting on said booster piston in an actuating direction and on said annular piston in a direction opposite said actuating direction;

an input piston connected to a brake pedal disposed in a slidably sealed relation in said bore coaxial of said axis in a spaced relation with the other end of said annular piston; and



an operating piston connected to said brake valve disposed coaxial of said axis within said other end of said annular piston;

said input piston and said operating piston providing therebetween a hydraulic transmission ratio to reduce actuating travel of said brake pedal when said pressure source is intact, said transmission ratio being ineffective in the event of failure of said pressure source, the diameter of said input piston being greater than the diameter of said operating piston and the diameter of said annular piston being no smaller than the diameter of said input piston.

4,283,995

## RECIPROCATING ENGINES

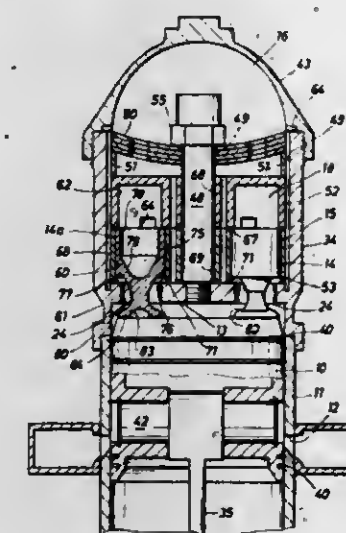
James W. Akkerman, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 31, 1977, Ser. No. 847,276

Int. Cl.<sup>3</sup> F01L 21/02, 23/00

U.S. Cl. 91—410

5 Claims



1. In a piston operating engine, a new and improved gas charging valve arrangement comprising:

a cylinder containing a piston reciprocable within said cylinder between top center and bottom center positions, said cylinder having an upper transverse head cap provided

with an inlet port including a valve seat disposed about the perimeter of said port; a high pressure plenum chamber means disposed on the side of said transverse head cap opposite the piston; means adapted to supply high pressure gas to said plenum chamber means;

fluid communication means including gas valve means movable between open and closed positions for placing high pressure gas in said plenum chamber in communication with said piston and cylinder when in the open position thereby inducing a pressure drop in said plenum chamber, said gas valve means including a valve element having an upper cylindrical stem portion, a reduced diameter portion providing an annular shoulder means for sealingly engaging said valve seat when the gas valve means is in the closed position, and a lower pedestal portion engageable by said piston when at and near its top center position whereby said valve element is lifted by said piston from the valve seat to place said gas valve means in the open position;

pneumatic gas chamber means disposed on the side of said transverse head cap which is opposite the piston, said pneumatic gas chamber means including an upper pneumatic spring body member having a blind bore opening downwardly and a juxtaposed lower valve body member having a guide bore aligned and communicating with said blind bore, said guide bore receiving said cylindrical stem portion of the valve element for sliding movement therein; a restricted flow passage for communicating high pressure gas between said plenum chamber means and said pneumatic gas chamber means whereby gas pressure in the pneumatic gas chamber means acts on the valve element in opposition to the force exerted on the valve element by said piston,

said flow passage being of sufficiently small dimension to restrict the flow of gas therefrom upon the opening of said gas valve means such that the pressure in said pneumatic gas chamber means drops at a slower rate than the pressure in said plenum chamber on opening of said gas valve means so as to temporarily exceed the plenum chamber pressure for the period when the valve element is moved to open position and at the time the valve element is moved to closed position and the pneumatic gas chamber means thereby acts as a pneumatic spring retaining said valve element in constant contact with said piston and tracking the movement of the piston throughout said period.

4,283,996

## HEADER HEIGHT VALVE

Alan D. Jackson; Frank N. Alexander, both of Hutchinson, and Homer R. Graber, Pretty Prairie, all of Kans., assignors to The Cessna Aircraft Company, Wichita, Kans.

Filed Mar. 12, 1979, Ser. No. 19,815

Int. Cl.<sup>3</sup> F15B 17/08, 13/04

U.S. Cl. 91—447

10 Claims

1. A hydraulic valve in a load responsive system supplied by a pressure flow compensated variable displacement pump having a flow compensating means, said valve raising and lowering a header height cylinder under load on a machine, the improvement comprising:

- a valve body;
- a first bore in the body;
- a valve spool means having lands and grooves to control flow to and from the header height cylinder, said spool means positioned in the first bore;
- a pump pressure cavity intersecting the first bore and connected to the pump discharge;
- first and second motor port cavities intersecting the first bore on opposite sides of the pump cavity with the first motor port cavity connecting to the header height cylinder;
- a drain cavity adjacent the first motor port cavity;

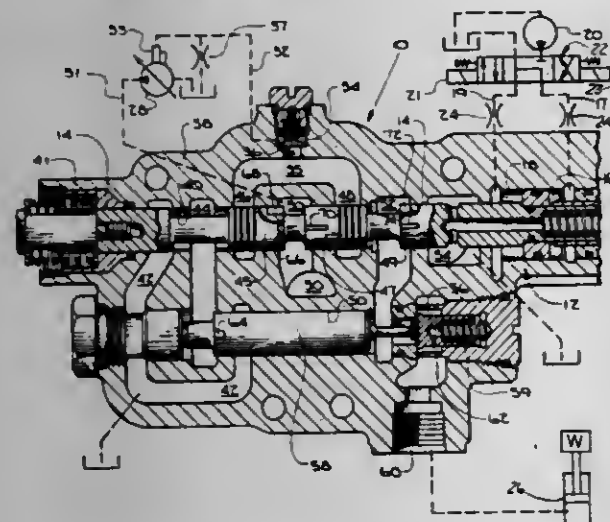


a signal passage intersecting the first bore intermediate the pump cavity and each motor port cavity, the signal passage connecting with the flow compensating means of said pump;

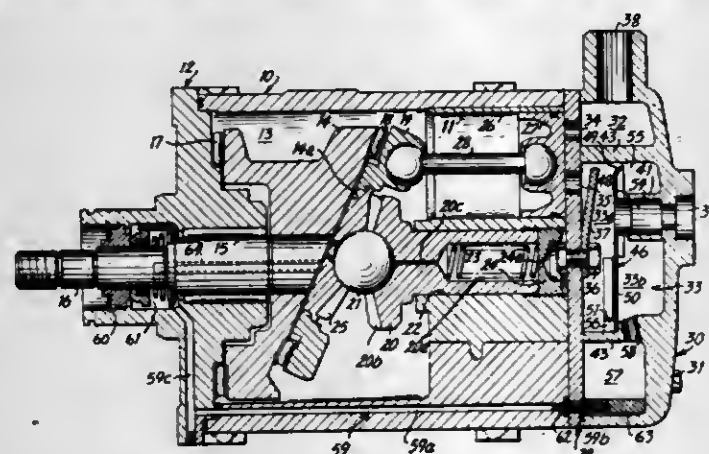
a lockout check valve positioned in the first motor port cavity blocking flow from the header height cylinder to the bore;

servo means actuated by pressure in the second motor port cavity acting against the lockout check valve, whereupon pressure in the second motor port cavity actuates the servo means and opens the lockout check allowing back-flow into the first bore due to the load on the header height cylinder;

low pressure relief valve means in the second motor port cavity connectible to drain;



communicating said second chamber with said discharge chamber, an oil passageway communicating between said first chamber and said second chamber, partitioning means fixedly disposed within said discharge chamber to separate said discharge chamber into a first and a second spaces, said first space being a front portion of said discharge chamber and communicating with said cylinders, said second space being a rear portion of said discharge chamber and communicating with said second chamber, said partitioning means being shorter than the inner wall of said discharge chamber at the upper portion thereof to define a first gap therebetween along the inner wall of said discharge chamber through which gap said first space communicates with said second space, said partitioning means including a first plate member fixed to said cylinder head and with



the valve spool means having:

- a first neutral position, blocking flow to or from the pump cavity and blocking flow to or from the motor port cavities;
- a second position of the valve spool, opening the signal passage to the second motor port, and metering the flow from the pump pressure cavity into the signal passage thereby actuating the servo means and passing flow over said relief valve means whereby the flow compensating means of the pump maintains a relatively low pump discharge pressure level; and
- a third lowering position of the valve spool metering flow from the first motor port cavity to drain while continuing to meter flow from the pump across the signal passage and over said relief valve means.

4,283,997

## REFRIGERANT COMPRESSORS

Haruo Takahashi, Takasaki, and Shougo Kimura, Gunma, both of Japan, assignors to Sankyo Electric Company Limited, Isesaki, Japan

Filed Aug. 16, 1979, Ser. No. 67,012

Claims priority, application Japan, Aug. 22, 1978, 53-101420; Aug. 22, 1978, 53-101421

Int. Cl.<sup>3</sup> F01B 31/00; F04B 1/18, 39/04

U.S. Cl. 92-79 10 Claims

1. In a refrigerant compressor unit of the type having a compressor housing, a cylinder block mounted within said compressor housing having a plurality of cylinders, a plurality of piston means slidably disposed within said plurality of cylinders, means for driving said piston means within said cylinders to compress refrigerant gas, said compressor housing having a first chamber adjacent said cylinder block for containing said driving means, a cylinder head having a suction chamber and a discharge chamber which operatively communicate with said cylinders, and a gas passageway communicating between said first chamber and said suction chamber to return blow-by gas in said first chamber to said suction chamber, the improvement comprising: said cylinder head being provided with a second chamber at a lower portion thereof, means for commu-

conduit means connecting said first space with an outlet port of said cylinder head to be connected with an external cooling circuit, a guide wall extending along the inner surface of said discharge chamber at the lower peripheral portion of said plate member and axially projecting within said first space to define a groove along the inner surface of said discharge chamber, opposite ends of said groove connecting with said first gap, whereby the oil flowing on the inner surface of said first space may be transferred to said second space directly through said first gap and/or through said first gap after flowing in and along said groove by the compressed gas flow to said conduit, and whereby the oil separated from the compressed gas within said second space may be accumulated in said second chamber and be returned to said first chamber through said oil passageway.

4,283,998

METHOD AND MACHINE FOR MAKING A FILTER ROD  
Helz Greve, Hamburg; Gerhard Tolasch, Wentorf; Uwe Heitmann, Schwarzenbek, and Günter Wahle, Reinbek, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Mar. 29, 1979, Ser. No. 25,042

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815025

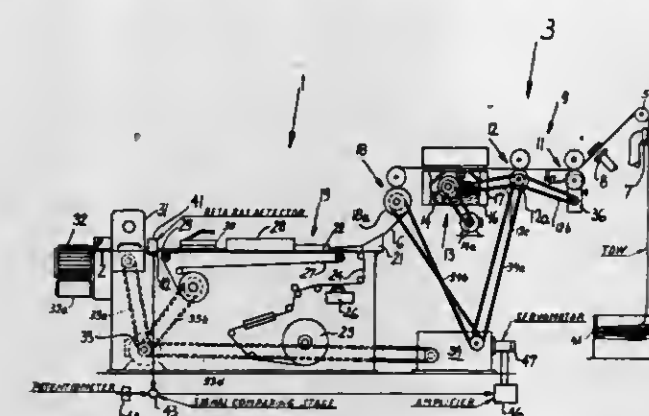
Int. Cl.<sup>3</sup> A24C 5/56; A24D 3/02

U.S. Cl. 493-4

14 Claims

1. A method of making a wrapped homogeneous rod-like filler, comprising the steps of conveying an elongated tow of crimped filamentary filter material lengthwise along an elongated path; stretching the tow in a first portion of said path; converting the stretched tow into a rod-like filler in a second portion of said path; draping the filler into a web of wrapping material in a third portion of said path; measuring the mass of successive increments of the wrapped filler and generating signals each having a characteristic denoting the measured mass of such increments; and utilizing said signals to change

the rate of transport of the tow to said second portion of said path, while maintaining the stretching action at an at least



substantially constant value, when said characteristic of said signals deviates from a predetermined value.

4,283,999

## PAINT SPRAY BOOTH WITH WATER CURTAIN

Thomas J. Kearney, Malvern Wells, England, assignor to Champion Spark Plug Company, Toledo, Ohio

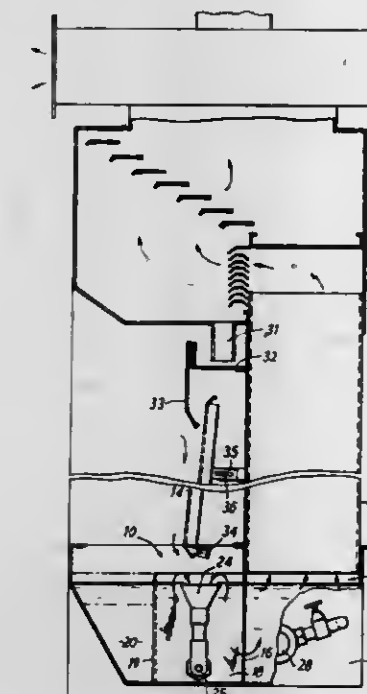
Filed Mar. 7, 1980, Ser. No. 128,249

Claims priority, application United Kingdom, Mar. 9, 1979, 08386/79

Int. Cl.<sup>3</sup> F23J 11/00

U.S. Cl. 98-115 SB

7 Claims



1. In a paint spraying booth having a back wall over which a water curtain flows to collect sprayed paint, a tank to receive the water curtain, vertical entrainment ducts disposed above the rear part of the tank, means for generating a flow of air through said ducts to lift water from the tank for the formation of the water curtain, and a surface baffle dividing the rear part of the tank from the water surface in a front part of the tank into which the curtain falls, the improvement comprising a vertically-disposed wall separating the front and rear parts of the tank and extending from the bottom of the tank to form said surface baffle, one or more transfer openings in said wall below the water level, and baffle plates in the front part of the tank extending above the water level and defining a region adjacent the back wall of the booth to receive the water curtain, said baffle plates preventing direct flow of water from said region to a transfer opening whereby the water is constrained to flow to a remote zone of the front part of the tank before returning to the transfer opening or openings.

4,284,000

## MATERIAL COMPACTING APPARATUS

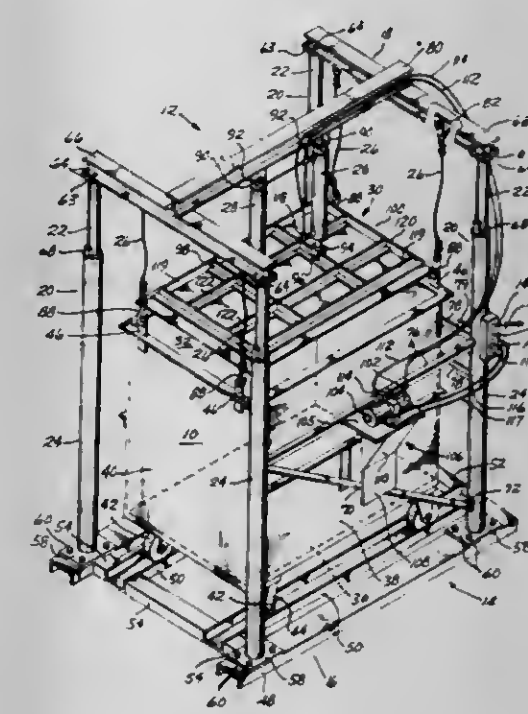
Benjamin M. Almeda, Jr., 3415 24th Ave., West, Seattle, Wash. 98199

Filed Mar. 24, 1980, Ser. No. 132,882

Int. Cl.<sup>3</sup> B30B 15/06

U.S. Cl. 100-229 A

35 Claims



1. A compacting apparatus for use with a container having a charging opening for receiving material to be compacted therein, said compacting apparatus comprising:

- a collapsible frame structure having a stationary base section, a movable section spaced away from the container, and means for interconnecting said stationary and movable sections to permit said movable section to shift toward and away from the container from an initial position collapsed relative to said frame base section;
- pressing means disposed between said frame movable section and the container, said pressing means sized to slidably pass through the container charging opening;
- extend-retract means interconnecting said frame movable section with said pressing means to power said pressing means between a compacting mode forcing said pressing means into the container to compact the material located therein, and a retracting mode retracting said pressing means to a position spaced away from the container charging opening;
- connection means mounted on the container;
- flexible lines interconnecting said frame movable section with said container connection means;
- wherein during the compacting mode said frame movable section is free to shift away from said frame base section and the container in response to the reaction force generated by said pressing means pressing against the material within the container, until said lines are taut whereupon said lines align the container with said pressing means and transmit the compaction force exerted on the container, by said pressing means, back to said frame movable sections, and during the retracting mode said lines are relaxed and said frame movable section is in collapsed position relative to said frame base section.



4,284,001

## HEAD IMAGE GENERATOR FOR A MATRIX PRINTER

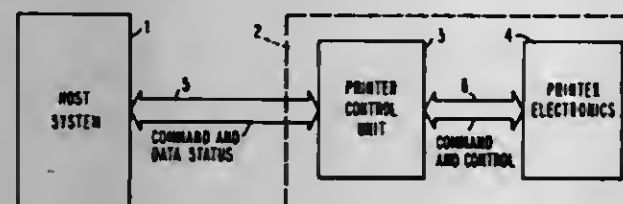
Kyriakos L. Leontiadis, Boca Raton, Fla., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,493

Int. Cl.<sup>3</sup> B41J 3/12

U.S. Cl. 101-93.05

31 Claims



1. A matrix printer for printing matrix characters on a record medium comprising:

- at least one print head which moves across said record medium, said print head including a plurality of printing elements, each of which is operable to cause a symbol to be printed, each character having a plurality of printed symbols in an arranged configuration within a character matrix, said printing elements being positioned with respect to one another along at least one path which is non-perpendicular to said print head movement;
- means for providing data defining the arrangement of said symbols in said character matrix;
- memory means into which data can be stored and from which previously stored data for an entire character can be read;
- means for storing said symbol defining data in said memory means in an order related to said printing element positioning; and
- means for reading the data stored in said memory means in one of a column or row order and for providing said read data to operate said printing elements.

4,284,002

## CHARACTER-SELECTING MECHANISM FOR A PRINTER

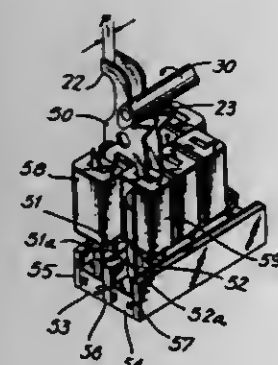
Tadayoshi Shimodaira, and Yoshihiro Mitsui, both of Shiojiri, Japan, assignors to Kabushiki Kaisha Sawa Seikosha and Shinsei Seiki Kabushiki Kaisha, both of Tokyo, Japan

Continuation-in-part of Ser. No. 819,520, Jul. 27, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,829. Claims priority, application Japan, Jul. 27, 1976, 51-89482; Jan. 28, 1977, 52-8453

Int. Cl.<sup>3</sup> B41J 1/28

U.S. Cl. 101-99

8 Claims



1. An improvement in a printer mechanism for selecting for printing a character on a moving character support, said mechanism including an electromagnet coil having a core passage therethrough, a ratchet connected with said character support for controlling the movement thereof, wherein said improvement comprises a permanent magnet having a spaced-apart north and south poles generating a magnetic field, a shaft, a core member mounted on said shaft for rotation between first and second positions, said core member having a core arm of a

ferromagnetic material and a pawl extending from said shaft in a direction substantially opposed to said core arm and including a pawl for engaging said ratchet when said core member is in said second position, said core arm, in part, lying within said core passage and adapted to reciprocate therein about said shaft and including a tip portion at the end of said core arm extending through said coil, said tip portion proximate one of said poles when said core arm is in said first position and proximate the other of said poles when said core arm is in said second position, said core arm in said first position being held to said one pole by said magnetic field in the absence of current flow through said electromagnet, and in said second position being held to said other pole by said magnetic field, said electromagnet being so connectable electrically that on activation thereof by a current pulse, said core arm becomes of the same polarity as said one pole and is repelled thereby for moving said arm toward and into engagement with the other of said poles, and for thereby engaging said pawl with said ratchet, and mechanical reset means for returning said core arm and core member to said first position and disengaging said pawl from said ratchet, and wherein said core member has a side arm of a ferromagnetic material extending from said core member at the region of said shaft in the direction of said core arm and further comprising a second permanent magnet disposed proximate the tip region of said side arm for attracting said side arm for pivoting said core member about said shaft from said first to said second position on activation of said electromagnet by a current pulse.

4,284,003

## PRINTER WITH A PLURALITY OF ELECTRICALLY CONTROLLED PRINT WHEELS

Marcel Tollet, Paris, France, assignor to Societe pour l'Affranchissement et le Timbrage Automatiques (S.A.T.A.S.), Clichy, France

Continuation of Ser. No. 906,303, May 15, 1978, abandoned.

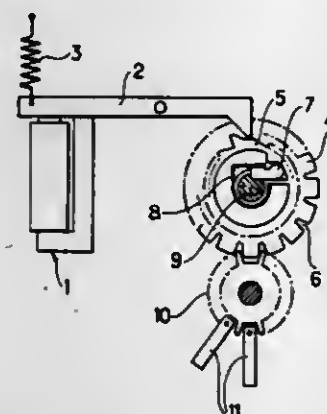
This application May 12, 1980, Ser. No. 148,073

Claims priority, application France, May 16, 1977, 77 14896

Int. Cl.<sup>3</sup> B41J 1/44

U.S. Cl. 101-99

1 Claim



1. A printer having a plurality of electrically controlled print wheels, means for driving said print wheels by a drive shaft rotating alternately in a drive direction and then in a return direction and for pausing for printing between the movements in opposite directions, each of said print wheels having typographical characters on its periphery and each being associated with a ratchet wheel having teeth on its periphery, a stop lever for each ratchet wheel and engageable with a tooth thereof, an electromagnet for each stop lever for effecting disengagement of the stop lever from the teeth of an associated ratchet wheel, means for supplying an electronic signal representative of the value displayed when the angular movement of the drive shaft corresponds to the value to be displayed to said electromagnet for causing an associated stop lever to engage the teeth of an associated ratchet wheel, a check wheel for each print wheel, means for uncoupling said shaft from said ratchet wheel to separate the drive shaft from said print wheel subsequent to

engagement of said stop lever with a tooth of said associated ratchet wheel, electronic means for counting the number of positions through which each of said print wheels rotates between a starting position and a stopping position to validate the position of a print wheel set by a stop lever by comparison of each print wheel actual position with its intended position, said electronic means for validating the position of said print wheels including: an input memory, at least one photo-electronic detector which detects the number of positions passed through by a check wheel driven by said print wheel, an electronic counter connected to said at least one photo-electronic detector for receiving signals responsive to the number of positions passed through by said check wheel, a comparator for comparing digital data corresponding to check wheel movement with data from said input memory, the identity of the two sets of data resulting in a logic signal, means for deriving an end of rotation signal from said drive shaft, and an AND gate for combining said logic signal from said comparator with said end of rotation signal to provide an output signal from said AND gate for use in validating the position of the print wheel prior to printing, a keyboard for providing a binary value input signal to said input memory corresponding to the required stop position for each print wheel, a down counter, means for supplying a cycle start pulse to said down counter, said means for sensing the position of said drive shaft comprising means for supplying signals to said down counter for decrementing said down counter at each position of said drive shaft, a bistable having its input connected to said means for providing said cycle start pulse and to the output of said down counter and its output connected to said electromagnet to de-energize said electromagnet and immobilize the print wheel, and said means for supplying a cycle start pulse being connected to said electronic counter to provide a reset to zero input to said counter which is incremented by one unit per pulse from said at least one photo-electronic detector.

4,284,004

## TYPE CHARACTER SELECTING MECHANISM FOR PRINTING HEAD

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Japan

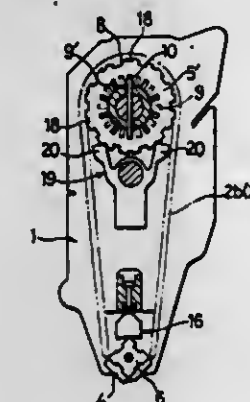
Filed Oct. 18, 1979, Ser. No. 86,056

Claims priority, application Japan, Oct. 20, 1978, 53-143339[U]

Int. Cl.<sup>3</sup> B41J 1/20

U.S. Cl. 101-111

15 Claims



1. A type character selecting mechanism for a printing head including a plurality of printing elements juxtaposed to one another and each bearing a series of type characters on its outer surface comprising: a plurality of annular selecting gears, one for each of said plurality of printing elements, substantially coaxially juxtaposed to one another and rotatable about their common axis with the printing elements of said printing head, respectively; coaxially aligned holes defining in said selecting gears; each of said selecting gear holes defining an inner side of said gear and each said inner side having a plurality of equidistantly spaced internal teeth;

a selecting shaft slidable through said coaxial holes of said selecting gears and rotatable about its axis, said shaft

having thereon a locking member which is positioned and sized to engage with and which engages the internal teeth of one of said selecting gears, whereby rotation of said selecting shaft rotates the said gear then engaged by said locking member;

a first of said selecting gears having a first rotative orientation, at which its said internal teeth are axially aligned with the said internal teeth of a second group of said selecting gears, and having a second rotative orientation, at which its said internal teeth are angularly displaced from the said internal teeth of said second group of said selecting gears; and

positioning means for locking said first selecting gear at either of said first and second rotative orientations; said selecting shaft being prevented from being erroneously moved between said second group of said selecting gears and said first selecting gear unless said first gear is at said first rotative orientation and said internal teeth of the two adjacent said selecting gears, including said first gear and the adjacent said gear of said second group, are aligned.

4,284,005

## APPARATUS FOR THE METERED FEEDING OF INK TO A DUCTOR ROLL OF AN OFFSET PRINTING DEVICE

Reinhold Weigle, Korntal; Wolfgang Pfeil, Kornwestheim, and Horst Purr, Tennenbronn, all of Fed. Rep. of Germany, assignors to Develop Dr. Eisbein GmbH &amp; Co., Gerlingen, Fed. Rep. of Germany

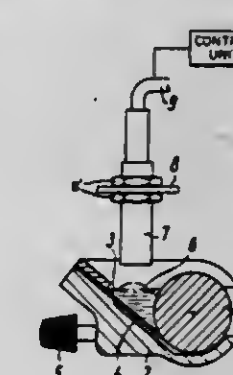
Filed Mar. 9, 1979, Ser. No. 18,918

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811276

Int. Cl.<sup>3</sup> B41F 31/08

U.S. Cl. 101-363

11 Claims



1. An apparatus for metered feeding of ink to a revolvable ductor roll adapted to be dipped in an ink pool comprising: pump means for supplying a metered amount of ink to said ink pool;

capacitive proximity sensor means for monitoring a level of ink in the ink pool and for providing a control signal to the pump means;

control means including timer means for delaying a delivery of said control signal from said capacitive proximity sensor means to said pump means until a predetermined time after the ductor roll begins a revolution;

wherein the capacitive proximity sensor means is associated with an area of said ink bath where an ink bead forms upon revolution of the ductor roll, whereby a predetermined amount of ink is metered into said ink pool upon receipt of said control signal by said pump means.



4,284,006

# LINEAR EXPLOSIVE CHARGE WITH CONSTANT DETONATION VELOCITY AND SYNCHRONOUS BOOSTER CHARGES

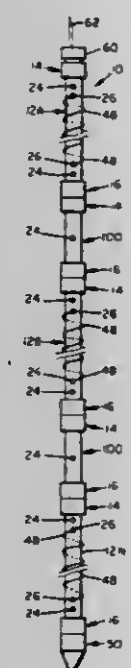
Dallas R. Davis, Tulsa, Okla., assignor to Davis Explosive Sources, Inc., Tulsa, Okla.

Filed Aug. 13, 1979, Ser. No. 65,894

Int. Cl.<sup>3</sup> C06C 11/00

U.S. Cl. 102—317

12 Claims



1. A linear explosive charge with constant detonation velocity, comprising:

- (a) a plurality of series-connected units, or sticks, and means to colinearly join said sticks together in a long linear substantially rigid assembly;
- (b) each stick comprising:
  - (1) a tubular member of selected length and diameter;
  - (2) a polarized coupling attached at each end, a female coupling at one end, and a male coupling at the other end;
  - (3) a helical winding of linear explosive cord on the outside surface of said tubular member, near each end of said stick, said explosive cord inserted through an opening in the wall of said stick, with the ends of said cord extending outwardly through said couplings for selected distances;
  - (4) at the end having the female coupling, a selected length of thick-walled elastic tube inserted over the end of said explosive cord into the end of said stick; the inner diameter of said tube less than twice the diameter of said explosive cord;

whereby when the end of said cord extending from the male end of a first stick is inserted into said elastic tube inside the female coupling of a second stick, as the joint is made up, said elastic tube will expand and press both ends of the explosive cord together in tight side-by-side contact to facilitate the process of cross-detonation from the cord on one stick to the cord on the other stick, and

(c) at least one separate booster explosive charge unit, having a female and male coupling on the first and second ends, respectively, identical to those on said sticks; whereby said booster explosive charge unit can be coupled between a selected pair of sticks; and including

(d) means to detonate said booster explosive charge by the detonation of the explosive cord extending from the male coupling of the stick coupled into its female coupling;

(e) from the detonation of said booster charge, means to detonate the explosive cord in the female coupling of the stick coupled to the male coupling of said booster charge.

4,284,007

# PROJECTILE WITH AT LEAST ONE EXPELLABLE SUBPROJECTILE

Claes G. Arnell, Torshälla, and Erik G. Olsson, Eskilstuna, both of Sweden, assignors to Förenade Fabriksverken, Eskilstuna, Sweden

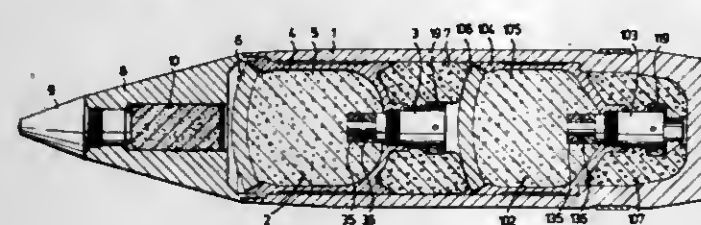
Filed Mar. 2, 1979, Ser. No. 17,074

Claims priority, application Sweden, Jan. 23, 1979, 7900596

Int. Cl.<sup>3</sup> F42B 13/50

U.S. Cl. 102—477

3 Claims



1. A projectile including a fuze for sensing a predetermined position in the trajectory of the projectile, a nose element, first expelling means for discarding the nose element in response to said sensing of said predetermined position in the trajectory of said projectile, at least one subprojectile, and second expelling means for expelling said at least one subprojectile from the projectile, said projectile further comprising deceleration-sensing means for sensing a predetermined first level of deceleration forces which affect the projectile as a consequence of said discarding of the nose element, and initiation means responsive to the sensing of said first level of the deceleration forces for actuating the second expelling means to expel the subprojectile.

4,284,008

# DOUBLE RAMP DISCARDING SABOT

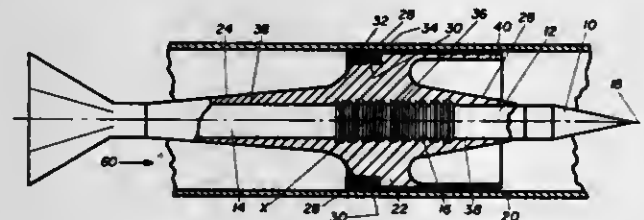
Richard D. Kirkendall, Havre de Grace; William H. Drysdale, Aberdeen; Louise D. Kokinakia, Fallston, and Bruce P. Burns, Harford County, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 12, 1979, Ser. No. 29,188

Int. Cl.<sup>3</sup> F42B 13/16

U.S. Cl. 102—521

3 Claims



1. A double ramp discarding sabot projectile which comprises:

- a sub-caliber projectile having a cylindrically shaped fore body section, a cylindrically shaped aft body section, an externally grooved central body section disposed intermediate said fore and aft body sections, and a longitudinal axis;
- a gun tube having a longitudinal axis in axial alignment with said longitudinal axis of said sabot projectile, said gun tube adapted for slidably supporting said sabot projectile therein during launch;
- sabot means operatively connected to said sub-caliber projectile for preventing premature propellant gas leakage through said sabot means and through interface surfaces between said sabot means and said sub-caliber projectile, for propelling said sabot projectile through said gun tube with increased velocity, for obtaining uniform shear traction between the interface of said sabot means and said

sub-caliber projectile, and for initial guidance of said sabot projectile through said gun tube which includes: a plurality of double ramp sabot segments, each of said segments having an aft tapered ramp section having an internal cylindrical interface surface which mates with said aft body section of said sub-caliber projectile, a forward tapered ramp section having an internal cylindrical interface surface which mates with said forward body section of said sub-caliber projectile, an internally concentric traction groove section which mates with said groove central body section of said sub-caliber projectile, and borerider means for performing initial guidance during early motion of said sub-caliber projectile through said gun tube, wherein said aft and forward tapered ramp segment includes sabot segments having taper profiles designed to give an axially uniform load transfer between said interface surfaces;

an obturating band seat disposed intermediate said aft and said forward ramp sections, said obturating band seat having an annular band locking projection thereon;

a thin cylindrically shaped skirt arcuately extending over said forward tapered ramp section;

obturator band means fixedly connected to said sabot means and slidably disposed intermediate said sabot means and said gun tube, said band means positioned over the total in-bore center of gravity of said sabot projectile, for reducing the magnitude of transverse moments applied to said sabot projectile by yawing motions, for balancing said sabot projectile during in-bore travel through said gun tube, and for preventing leakage of propellant gases between said sabot means and said gun tube, said sabot means and said band means cooperating to eject said sub-caliber projectile from said gun tube with improved lethality and range.

auxiliary undercarriages into the selected engagement and the load transmitted by the associated main undercarriages is correspondingly increased and diminished, and a control for each adjustment drive for selective actuation thereof to effectuate the engagement of the wheels under the selected pressure.

7. A method of operating a heavy self-propelled track working machine comprising a frame, track working equipment carried by the frame and subjecting the frame to a load, and an undercarriage arrangement which comprises a plurality of main carriages supporting the frame for mobility on the track, each main undercarriage being constituted by a swivel truck having two driven axles each having two wheels engaging the track rails to propel the machine, the load being transmitted from the frame to the track by the axles and wheels of the main undercarriages, and an auxiliary undercarriage associated with each main carriage and arranged adjacent thereto, each auxiliary undercarriage including a dead axle with two wheels arranged to engage the track rails under a selected pressure, which method comprises the steps of propelling the machine selectively in high-speed drive and in low-speed drive, adjusting each auxiliary undercarriage for moving the auxiliary undercarriage for engagement of the wheels of the dead axle with the track rails under the selected pressure in dependence on the drive, and controlling the adjustment movement so as to effectuate the engagement in high-speed drive to transmit portions of the load to the track by the dead axles and correspondingly to decrease the load transmitted to the track by the main undercarriages while effectuating disengagement in low-speed drive and correspondingly to transmit the entire load to the track by the main undercarriages whereby traction is increased.

4,284,009

# MOTORIZED RAILWAY VEHICLE TRACK WORKING MACHINE AND METHOD OF OPERATION

Josef Theurer, Vienna, and Karl Fölser, Linz-Urfahr, both of Austria, assignors to Franz Plasser Bahnbaumaschinen Industrie-Gesellschaft m.b.H., Vienna, Austria

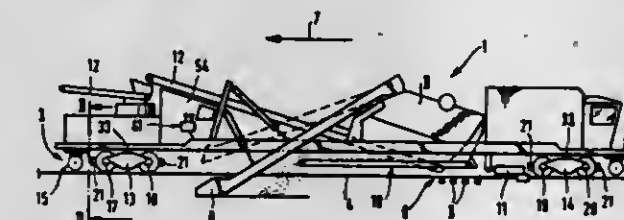
Filed May 17, 1979, Ser. No. 39,880

Claims priority, application Austria, Jul. 19, 1978, 5248/78

Int. Cl.<sup>3</sup> B61B 15/14; B61F 13/00; E01B 27/04

U.S. Cl. 104—7 R

8 Claims



1. A heavy self-propelled track working machine comprising a frame, track working equipment carried by the frame and subjecting the frame to a load, and an undercarriage arrangement which comprises a plurality of main undercarriages supporting the frame for mobility on the track, each main undercarriage being constituted by a swivel truck having two driven axles each having two wheels engaging the track rails to propel the machine, the load being transmitted from the frame to the track by the axles and wheels of the main undercarriages, an auxiliary undercarriage associated with each main undercarriage and arranged adjacent thereto, each auxiliary undercarriage including a dead axle with two wheels arranged to engage the track rails under a selected pressure, an adjustment drive connected to each auxiliary undercarriage for moving the auxiliary undercarriage for engagement of the wheels of the dead axle with the track rails under the selected pressure whereby diminishing and increasing variations of the load are transmitted to the track by the dead axles and wheels of the auxiliary undercarriages in dependence of the movement of the

4,284,010

# CONVEYANCE SYSTEM

Rolf F. Marshall, Huntington, N.Y., assignor to The Port Authority of New York and New Jersey, New York, N.Y.

Continuation-in-part of Ser. No. 814,845, Jul. 11, 1977,

abandoned. This application Apr. 12, 1979, Ser. No. 29,757

Int. Cl.<sup>3</sup> B60L 9/00

U.S. Cl. 104—292

10 Claims

1. A conveyance system comprising:

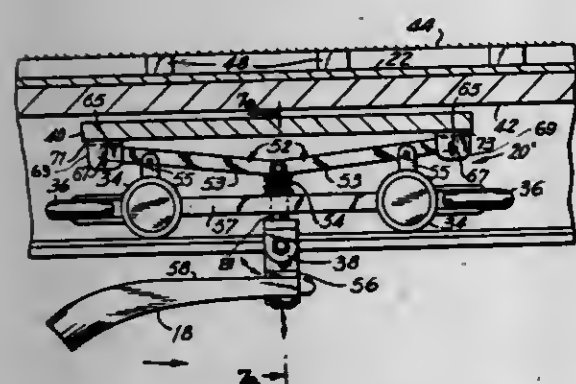
an overhead guide rail;

one or more vehicles each having a separate and independent guiding member engaging the guide rail for guiding the vehicle along a predetermined path of travel defined by the guide rail, at least a platform for carrying a load, wheel means for partially supporting the platform on an underlying surface, and a relatively rigid member interconnecting the platform and guiding member, the interconnecting member including a substantially vertical rigid section fixedly secured to the platform and a generally horizontal section connected to the guiding member for completing the support of the vehicle with the guiding member on the guide rail, the platform, interconnecting member and guiding member being dimensioned such that successive vehicles in the system first engage each other at their guiding members, the interconnecting member comprising an energy-absorbing compressible section for cushioning the load from the impact of such engagement; and

propulsion means for moving the vehicle, said propulsion means including a continuous stator of a linear induction



motor mounted on and extending along the length of the guide rail and an independent rotor of the linear induction



motor in the guiding member of each of said vehicles for independently propelling the vehicles along the guide rail.

4,284,011

#### RESTRAINT ASSEMBLY FOR THE HOPPER DOOR ACTUATOR OF A RAPID DISCHARGING RAILROAD HOPPER CAR

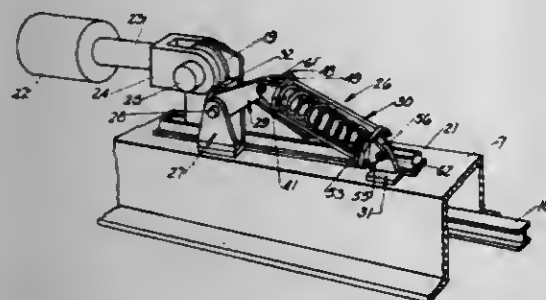
Joseph Eagle, Hebron, Ky., assignor to Ortner Freight Car Company, Cincinnati, Ohio

Filed Mar. 10, 1980, Ser. No. 128,548

Int. Cl.<sup>3</sup> B61D 7/02, 7/26, 7/28

U.S. Cl. 105—310

8 Claims



6. In a railroad hopper car of the type having a longitudinal center sill of substantially inverted U-shape, a plurality of hopper doors arranged in opposed pairs and swingable between a closed position and a downwardly depending open position, and door-means comprising a fluid operated cylinder mounted above said center sill and a door-actuating beam mounted beneath said center sill, operatively connected to said hopper doors, and having an upwardly directed extension passing through a longitudinal slot in the upper surface of said center sill, said cylinder having a piston rod connected to said door-actuating beam extension above said center sill, said piston rod and said door-actuating beam being longitudinally shiftable by said cylinder between a retracted door-closing

position and an extended door-opening position, the improvement comprising a restraint assembly for said door actuating means to prevent unintentional shifting of said piston rod and said door-actuating beam from said retracted door-closing position to said extended door-opening position due to inertia, said restraint assembly comprising a first bracket mounted on the upper surface of said center sill, a shaft rotatively mounted in said bracket and extending transversely of said center sill, a lever non-rotatively mounted on said shaft, a spring assembly having first and second ends, said lever having a free end pivotally joined to said first end of said spring assembly, a second bracket affixed to the upper surface of said center sill, said second end of said spring assembly being pivotally mounted to said second bracket, the distance between said shaft and said pivotal mounting of said second end of said spring assembly being less than the combined length of said lever and said spring assembly in extended condition, one end of said shaft extending beyond said first bracket and having a notch formed therein, said notch having first and second sides constituting first and second abutment surfaces, said door actuating beam extension having a laterally extending lug mounted thereon said pivotal attachment of said free end of said lever and said first end of said spring assembly lying in a first over-center position above an imaginary line drawn between the axial center of said shaft and the center of said pivotal mounting of said second end of said spring assembly when said restraint assembly is in its restraining condition and said piston rod and door-actuating beam are in their retracted door-closing position, said lug on said door-actuating beam extension being so positioned as to contact said first abutment surface of said notch to prevent longitudinal shifting of said door-actuating beam to open said hopper doors due to inertia, said shaft being rotatable by said abutment of said lug and said first abutment surface when said piston rod is shifted by said cylinder toward said door-opening position to rotate said lever against the action of said spring assembly until said pivotal connection between said free end of said lever and said first end of said spring assembly passes to a second over-center position below said imaginary line and said restraint assembly achieves a non-restraining condition wherein said first abutment surface of said shaft notch is no longer in position to be abutted by said door-actuating means lug and said door-actuating means is free to shift to its door-opening position, said door-actuating means lug being so positioned as to engage said second abutment surface of said shaft notch to rotate said shaft and return said restraint assembly to its restraining condition with said pivotal connection between said lever free end and said spring assembly first end being in said first over-center position when said cylinder is actuated to shift said piston rod and said door-actuating means to said door-closing position.

4,284,012

#### RAILWAY TANK CAR CRADLE SUPPORT

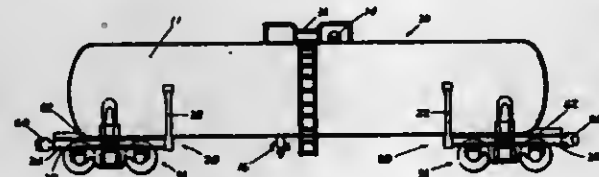
John A. Hrinia, St. Louis, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed May 31, 1979, Ser. No. 44,783

Int. Cl.<sup>3</sup> B61D 5/06; B61F 1/00, 1/14

U.S. Cl. 105—362

7 Claims



1. A tank car stub sill support structure comprising: a stub center sill located at each end of the car and extending inboard of a body bolster extending transversely of the car and engaging said stub sill; coupler means located within each stub sill; a half ring attached to each said stub center sill at its inner end, each said half ring including a curved top cover plate which

engages the lower portion of the tank, and a curved lower cover plate vertically spaced below the top cover plate; a vertical web joining the top cover plate and the bottom cover plate; said stub sill engaging said top cover plate, said bottom cover plate and said vertical web; the height of the vertical web and the distance between the top cover plate and the bottom cover plate varying in a substantially continuous decreasing manner from said stub sill to the area of intersection of said plates in accordance with the bending moment applied to the ring by the tank and lading in the car; said stub sill connected only to said body bolster and said half ring whereby coupler impact loads are transmitted into said stub sill and from said stub center sill into said body bolster and into said ring and into the upper cover plate and into the tank substantially entirely in shear.

4,284,013

#### PALLET COUPLING APPARATUS

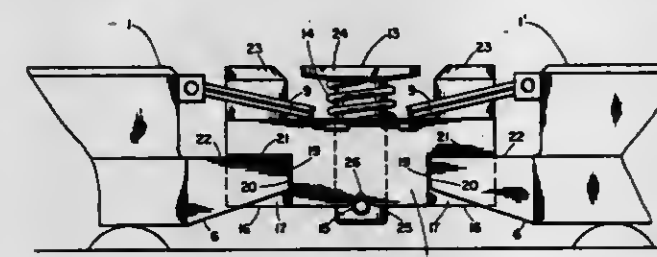
Robert W. Davidson, Virginia Beach, Va., assignor to CFE Air Cargo, Inc., Norfolk, Va.

Filed Feb. 8, 1979, Ser. No. 10,503

Int. Cl.<sup>3</sup> A47B 35/00

U.S. Cl. 108—50

8 Claims



1. In a coupling apparatus for releasably interconnecting cargo pallets to form trains thereof for movement along and transfer between conveyerized apparatus, said pallets being provided with frame members comprising a ledge portion and an upper edge portion, said ledge portion being provided with a plurality of spaced apart rectangular recesses each having a pair of vertically disposed, inwardly facing abutting surfaces formed therein, said upper edge portion being provided with hingedly mounted securing rings in coacting arrangement with said rectangular recesses, said coupling apparatus being provided with spacing means adapted to abut the facing outer edges of the ledge portions of said tandemly arranged pallets, horizontally disposed resting surfaces adapted to overlie portions of the ledge portion of said pallets and longitudinally arranged, upwardly extending lugs adapted to be engaged by the securing rings of said tandemly arranged pallets to effect the coupling thereof, the improvements comprising oppositely extending projections to coactively engage the said pairs of vertically disposed, inwardly facing abutting surfaces of the said recesses of adjacent, tandemly arranged pallets, the said engagement being operative to prevent lateral displacement of the said pallets one from the other, and locking means adapted to coact with said upwardly extending lugs, said coaction being operable to prevent disengagement of said securing rings under all conditions encountered during the said movement and transfer of the said pallet trains.

4,284,014

#### FLOOR SAFE

Charles J. Kuhn, 10520 Plainview Ave., Tujunga, Calif. 91042

Filed Mar. 30, 1979, Ser. No. 25,376

Int. Cl.<sup>3</sup> E05G 1/02

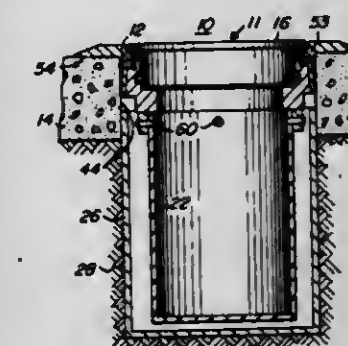
U.S. Cl. 109—50

8 Claims

1. A safe assembly adapted to be received within an opening of a specified diameter formed within a rigid wall or floor and immovably retained therein comprising:

a first sleeve having an axially extended tapered portion on its outer surface wherein one outer end of said first sleeve is of a first diameter and the other outer end is of a second

and larger diameter, said second diameter being smaller than the receiving floor or wall opening; a container for storing deposited items within the safe assembly; means connecting the container to the first sleeve; a second sleeve having an inner diameter larger than the first diameter of the first sleeve but smaller than the second diameter of the first sleeve and being at least partially deformable; and locking closure means removably secured to the first sleeve for selectively enclosing the storage container of the assembly;



and the first sleeve upon installation in the opening of a rigid wall or floor, engaging the second sleeve and radially expanding at least a portion of the second sleeve into rigid, essentially immovable engagement with the wall or floor surface bordering the opening within which the assembly is adapted to be placed and in a manner such that the application of extracting forces to any portions of the assembly exposed above such an opening will tend to increase the radially expansive forces upon the second sleeve in the opening thereby still further increasing the engagement forces between the first and second sleeves and the opening bordering surface and resisting extraction from the opening.

4,284,015

#### POLLUTION-FREE COAL COMBUSTION PROCESS

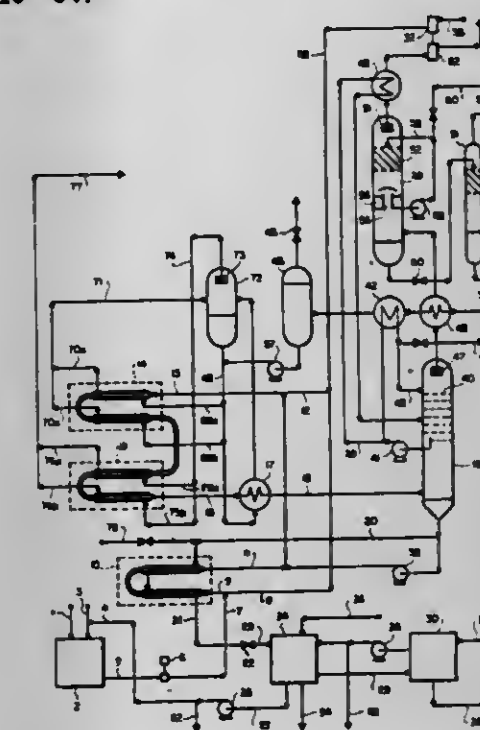
Norman L. Dickinson, 16230 Greenwood La., Monte Sereno, Calif. 95030

Filed Mar. 26, 1979, Ser. No. 23,606

Int. Cl.<sup>3</sup> F23D 1/00

U.S. Cl. 110—347

9 Claims



1. A combustion process in which a sulfur-containing fuel is







ies stitched onto said triaxial substrate, said fabric substrate comprising first, second and third sets of yarn courses with the yarn courses within each set being woven at an acute angle to the courses of each other set and with the yarn courses of each set intersecting yarn courses of each other set at a plurality of spaced points,

said second set having yarn courses outermost of said first and third sets on one side of said fabric at selected points and said third set having yarn courses outermost of said first and second sets on the other side of the fabric at said selected points,

said yarn courses defining a pattern of equilaterally triangular pores having a cross dimension at least large enough to accommodate a needlepoint yarn course, wherein said embroideries comprise

stitches embroidered on said substrate in at least one linear series, each stitch of said series encircling two parallel courses of the substrate and being disposed orthogonally thereto on one face of said canvas.

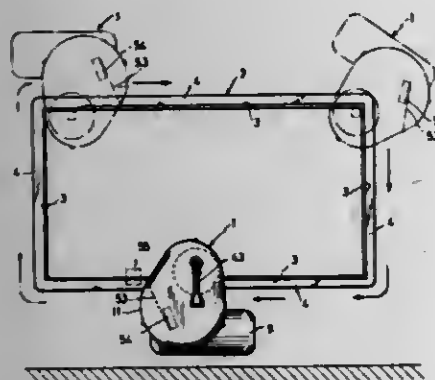
#### 4,284,022 BENDING APPARATUS

Yukio Kanazawa, 880, Sekishi-cho, Hamamatsu-shi, Shizuoka-ken, Japan

Filed May 15, 1979, Ser. No. 39,160  
Int. Cl.<sup>3</sup> B21D 19/00

U.S. Cl. 113—58

15 Claims



1. An apparatus for bending an end portion of a metal plate, said plate being reinforced with a guide member generally L-shaped in cross-section, said guide being secured to said plate adjacent said end portion comprising:

- a frame member;
- an engaging roller having a broad outer edge, said roller being rotatably mounted on said frame;
- a pressing disc rotatably mounted on said frame, said disc having an outwardly facing surface positioned opposite said outer edge;
- a plurality of rollers rotatably positioned on said outwardly facing surface of said disc;

means for adjusting the distance between said outer edge of said roller and said outwardly facing surface of said disc; and

- a drive motor mounted on said frame, said motor being connected to said engaging roller and said disc, and being capable of rotating said roller and disc, said roller and disc being arranged such that said end portion of said metal plate may be bent as said disc forceably presses said end portion against said L-shaped guide member, and said edge of said roller opposes said pressing force.

#### 4,284,023 METHOD OF PRODUCING AN EASILY OPENABLE CONTAINER CLOSURE HAVING A SHELL AND A SEALING MEMBER

Kashiwa Murayama, Fujisawa, Japan, assignor to Japan Crown Cork Co., Ltd., Tokyo, Japan

Division of Ser. No. 16,606, Mar. 1, 1979, Pat. No. 4,197,956.

This application Aug. 13, 1979, Ser. No. 66,465

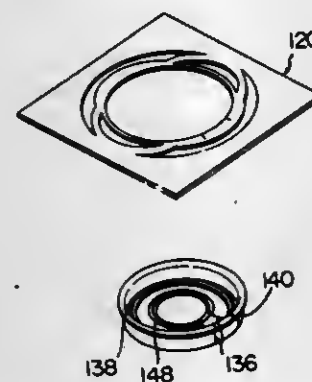
Claims priority, application Japan, Mar. 3, 1978, 53-23544;

Apr. 5, 1978, 53-39278; Aug. 11, 1978, 53-97286

Int. Cl.<sup>3</sup> B21D 51/26

U.S. Cl. 113—116 QA

5 Claims



1. A method for producing a shell of a unitary structure comprising a top and a cylindrical skirt, said top having an annular top surface portion leading to the upper end of said skirt and a linking piece leading to a part of the inner peripheral edge of the annular top surface portion, a pull ring connected to said linking piece, said annular top surface portion and skirt having a pair of weakening lines extending from both side edges of said linking piece, which method comprises:

- (a) forming at least one set of lance slits in a flat metal blank, said lance slits having at least two discontinuous portions spaced a predetermined distance from each other in the circumferential direction,
- (b) forming a pair of weakening lines spaced from each other at a predetermined distance in the circumferential direction, said weakening lines extending over a predetermined distance from near the lance slits toward the center of a circular portion of the blank located inwardly of the lance slits,
- (c) punching out an opening of a predetermined dimension in the circular portion at a position located inwardly of the lance slits,
- (d) at least after the lance slit-forming step (a) and the weakening line-forming step (b), drawing the circular portion located inwardly of the lance slits to form a shell having a circular top with said opening therein and a substantially cylindrical skirt continuous therewith,
- (e) at least after the drawing step (d), forming a slit in said circular top extending around said opening from near the inside end of one of said weakening lines to the vicinity of the inside end of the other weakening line, said slit being spaced a predetermined distance outwardly from said opening in the radial direction,
- (f) after the punching step (c) and the slit-forming step (e), bending the portion between said opening of the circular top and the slit to form a pull ring, and
- (g) after the bending step (f), separating the thus formed shell from the metal blank.

#### 4,284,024 MULTI-HULL BOAT

Jon A. Montgomery, 84 Broom Park, Teddington, Middlesex, England

Filed Jun. 11, 1979, Ser. No. 47,069

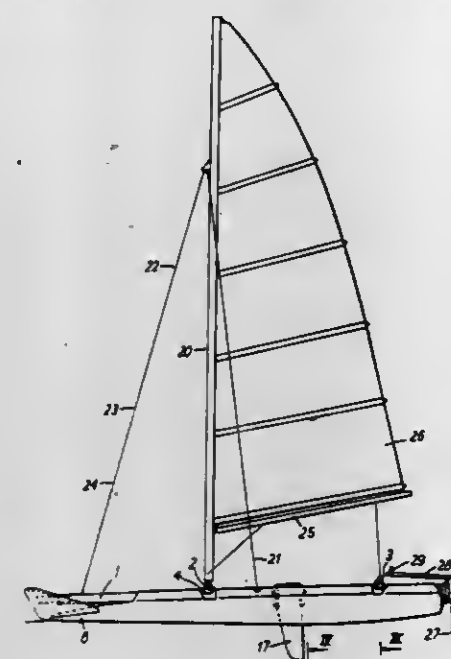
Int. Cl.<sup>3</sup> B63B 1/00

U.S. Cl. 114—61

11 Claims

1. A boat comprising a pair of inflatable hulls, a pair of torsionally stiff longitudinal beams, one for each hull, securing

means attaching each said longitudinal beam to the top of the respective hull and extending substantially the whole length of the hull when the latter is inflated, a pair of cross beams interconnecting the longitudinal beams at spaced positions along the lengths of the longitudinal beams, means securing the cross beams to the longitudinal beams at said spaced positions against torques generated in the longitudinal beams, each hull being



substantially tubular and tapering down towards a tip at the bow end of the hull, said tip being spaced below the longitudinal beam, and a bow stem structure connected to each said tapered hull bow and holding the said hull bow spaced in a fixed position below said longitudinal beam, each said bow stem structure further defining a pair of bow wings diverging from a bow forming portion rearwardly along and above said tapered hull bow.

#### 4,284,025

##### RUDDER ARRANGEMENT FOR SHIPS

Klaus Eckhard, Eckernförde, Fed. Rep. of Germany, assignor to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel, Kiel, Fed. Rep. of Germany

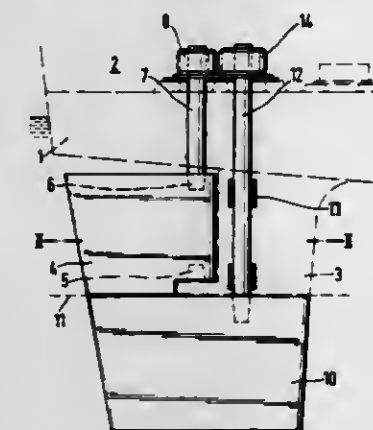
Filed Jul. 13, 1979, Ser. No. 57,488

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834015

Int. Cl.<sup>3</sup> B63H 25/38

U.S. Cl. 114—163

5 Claims



1. A ship comprising:

- (a) a hull including a stationary rudder horn extending downwardly, said horn having a substantially horizontal bottom edge, a substantially vertical rear edge and a portion extending rearwardly adjacent said bottom edge of said horn;
- (b) an upper rudder blade extending rearwardly from said

- rudder horn, the forward end thereof being positioned between said hull and said rearwardly extending portion;
- (c) first means mounting said upper rudder blade for pivotal movement about an axis extending between said hull and said rearwardly extending portion;
- (d) a lower rudder blade positioned below said rudder horn;
- (e) second means mounting said lower rudder blade for pivotal movement about an axis passing through said horn;
- (f) said axes being non-coincident; and
- (g) first and second drive means for pivoting said upper and lower rudder blades respectively independently of each other;
- (h) whereby the steering capability of said ship is maintained in the event one of said mounting means is inoperable.

#### 4,284,026 MOORING DEVICE

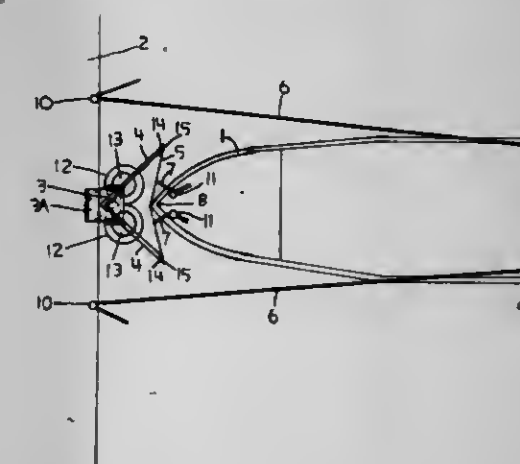
Charles M. Martinson, and David J. Martinson, both of Stanwood, Wash., assignors to Mar-Fam, Inc., Stanwood, Wash.

Filed Mar. 10, 1980, Ser. No. 128,721

Int. Cl.<sup>3</sup> B63B 21/20

U.S. Cl. 114—230

11 Claims



1. A vertically adjustable, variable buoyancy basic mooring device for boats which device secures the bow of the boat to a resilient stretch member allowing full articulation while at the same time preventing pivotal movement of the stern of the boat in response to wind and wave forces acting on the boat comprising:

- a fixed or floating base landing structure including a base unit, said base unit being rigidly affixed to said fixed or floating base landing structure,
- attached to the base unit is a vertically adjustable base which includes stationary landing arms which are rigidly affixed to said vertically adjustable base, and positioned at the end of said stationary landing arms are four rigidly affixed stationary landing arm uprights, between which is positioned a resilient stretch member.
- a flotation unit or units attached to the stationary landing arms which when positioned in the water as a result of adjusting the vertically adjustable base, offers buoyancy equal to or in excess of the weight of the total mooring device,

wherein the bow of the boat is positioned against the resilient stretch member causing deflection of said stretch member at which time lines from opposite sides of the stern of the boat are attached to two docks cleats which are mounted on the fixed or floating landing structure at such an angle as to severely restrict pivotal movement of the boat followed by tensioning of the bow lines which are attached at one end of the resilient stretch member and are thus attached at the other end to the bow of the boat.



4,284,027

## BOAT WITH CANTED WING FINS

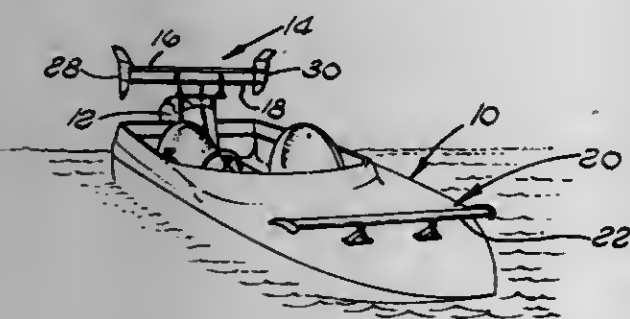
Delfino C. Montez, 24888 E. Rialto Ave., San Bernardino, Calif. 92408

Continuation-in-part of Ser. No. 890,746, Mar. 27, 1978, Pat. No. 4,237,811. This application Jan. 11, 1979, Ser. No. 2,482. The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> B63B 1/32

U.S. Cl. 114—273

19 Claims



1. In a surface boat having a hull with an open passenger compartment between front and rear portions and power means having a water reactive means located aft of said passenger compartment for driving said boat forward, the improvement comprising:

- first aerodynamic lift means;
- means for removably securing said first aerodynamic lift means to the top of, and directly over, said hull at a region forward of said passenger compartment so that said lift means is spaced above and limited to said forward region;
- second aerodynamic lift means spaced above and removably attached to the rear of said hull, said first and second aerodynamic lift means each having at least one aerodynamic lift member, said aerodynamic lift member of said first lift means being substantially closer to the hull than any aerodynamic lift member of said second lift means, said first and second lift means being arranged to exert an upward force on said hull as said power means drives said boat forward, said second lift means providing substantially more lift than said first lift means;
- a substantial portion of said passenger compartment being clear of any aerodynamic lift means; said aerodynamic lift member of said second lift means comprising a first elongated wing; and
- lateral stabilization means comprising at least one stabilization fin attached to said wing and vertically directed therefrom, said fin having a portion canted with respect to said vertical direction.

4,284,028

## ENGLISH/METRIC CONVERSION MECHANISM FOR SPEEDOMETERS

Mark G. Swanburg, 2595 S. Julian, Denver, Colo. 80219

Filed Feb. 14, 1979, Ser. No. 12,237

Int. Cl.<sup>3</sup> G01P 3/42; H01F 7/06

U.S. Cl. 116—62.2

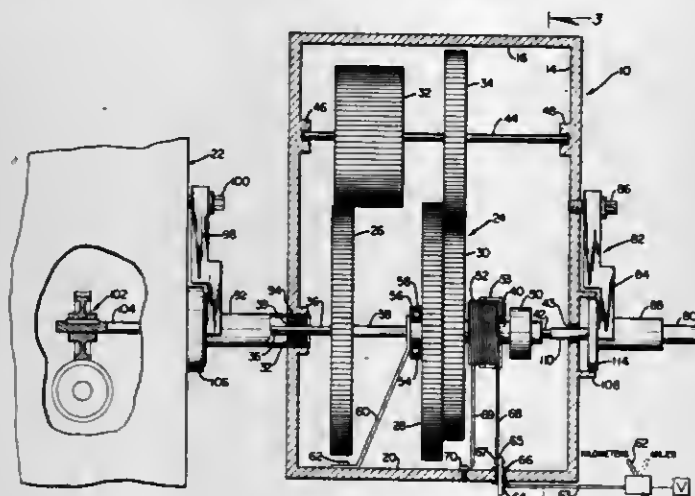
14 Claims

1. A speed conversion apparatus adapted for attachment to a speed measuring device of a motor vehicle and the like wherein said speed measuring device has a rotatable drive member which is driven by a motive drive source and a speed indicator indexed in units of a first system of measurement to indicate the speed of said motor vehicle in response to the rate of rotation of said rotatable drive member, said speed conversion apparatus comprising:

- a gear train interposed between said rotatable drive member and said speed indicator including a first set of gear members rotatable in response to rotation of said rotatable drive member to cause said speed indicator to indicate speed in units of the first system of measurement and a second set of gear members rotatable in response to rotation of said rotatable drive member

to cause said speed indicator to indicate speed in a second system of measurement; and

- shifting means operatively arranged on shaft means of said gear train and adjacent to said gear train including first means to selectively shift said first set of gear members into a position in which said first set of gear members is rotatable in response to rotation of said rotatable drive member to cause said speed indicator to indicate speed in



units of the first system of measurement and second means to selectively shift said second set of gear members to a position rotatable in response to rotation of said rotatable drive member to cause said speed indicator to indicate speed in units of the second system of measurement, and a shift activator operative to cause said shifting means to selectively shift one of said first and second sets of gear members into engagement with said rotatable drive member.

4,284,029

## TAKE-OFF SAFETY INDICATOR FOR AIRCRAFT

Graham E. Roberts, 94 Park Ave. East, Ewell, Surrey, England

Continuation of Ser. No. 850,487, Nov. 10, 1977, abandoned.

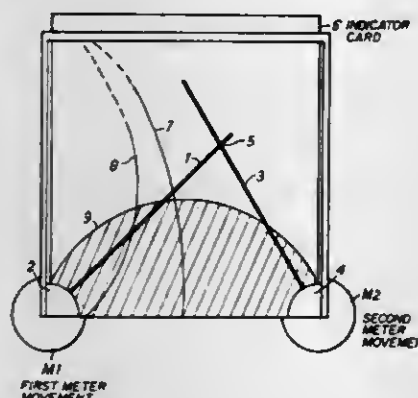
This application Oct. 2, 1979, Ser. No. 81,258

Claims priority, application United Kingdom, Nov. 22, 1976, 48672/76

Int. Cl.<sup>3</sup> G01C 23/00; G01D 7/04

U.S. Cl. 116—300

5 Claims



2. A take-off safety indicator device for an aircraft, said device comprising:

- a meter housing;
- first signal means adapted to be mounted on an aircraft for generating a signal corresponding to the distance traveled by the aircraft during take-off;
- first movement and display means connected to said meter housing and to said first signal means and movable in response to the signal generated by said first signal means for visually displaying the distance traveled by the aircraft during take-off, said first movement and display means including a first pointer movable corresponding to the signal generated by said first signal means;

second signal means adapted to be mounted on the aircraft for generating a signal corresponding to the air speed of the aircraft during take-off;

- second movement and display means connected to said meter housing and to said second signal means and movable in response to the signal generated by said second signal means for visually displaying the air speed of the aircraft during take-off, said second movement and display means including a second pointer movable corresponding to the signal generated by said second signal means across the path of said first pointer;

said first and second pointers during movement thereof overlapping at a crossover point corresponding to the relationship between air speed and distance traveled by the aircraft during take-off; and

- a removable display card inserted into said meter housing so that the movement of said first and second pointers is observable thereagainst, said card containing markings indicative of the locus of take-off correlations between air speed and distance traveled, as indicated by said crossover point, required for a safe take-off by the aircraft.

4,284,030

## ROTARY DISPENSING CHAMBERS WITH SIMULTANEOUS SIZE ADJUSTMENT

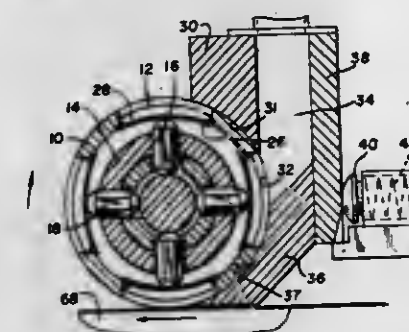
Joel A. Hamilton, 101 Hardenburgh Ave., Demarest, N.J. 07627

Filed Jun. 10, 1980, Ser. No. 158,321

Int. Cl.<sup>3</sup> B05C 5/02

U.S. Cl. 118—406

16 Claims



1. Apparatus for dispensing a measured amount of powder, granular and like material, said material delivered from a chute, this dispenser apparatus having a rotated, disk-like assembly that is revolved in a timed relationship to the advancement of a travelling web of packaging material, this dispenser including:

- (a) an outer, disk-like member which has a tubular configuration and in which is formed a plurality of like-sized and shaped pockets having an established volume in each pocket, these pockets arranged in an equally spaced array with each pocket from filling to delivery and to a refill position maintaining said established volume;
- (b) an inner tubular supporting member having means for engaging, positioning and retaining said outer disk-like member, said tubular supporting member having a plurality of radially disposed passageways formed therein and therethrough, each passageway corresponding to a pocket and disposed to be substantially at the midportion of a pocket;
- (c) a bottom spring-like closure member of a generally sheet-like configuration, said member urged toward and to a shaped pocket to provide a bottom closure for said pocket, said bottom spring-like member in engagement with the undersurface of the outer disk-like member while providing a closure thereof;
- (d) resilient side retaining portions formed on and affixed to each bottom spring-like closure member, said side retaining portion sized and adapted to engage the formed side walls of the shaped pocket to preserve the integrity of the pocket against any leakage of material being dispensed and fed from the chute;
- (e) a tubular shaft carried within the inner tubular supporting member and at larger diameter portions adapted to sup-

port said inner tubular supporting member and the supported outer disk-like member, this tubular shaft also having radially disposed passageways sized and adapted to communicate with and extend the passageways formed in the inner tubular member;

- (f) a spine shaft carried within the tubular shaft and movable therein, this spine shaft having conical cam portions provided thereon, each conical cam portion corresponding to a disk-like dispenser;
- (g) a plurality of like sized pins, a pin being carried in each radially disposed passageway and each pin at its outer end adapted to engage the inner surface of the spring-like closure member to urge said member outwardly and at its inner end to engage said conical cam portion on the spine shaft;
- (h) a chute disposed to deliver material to a rotary dispenser, each chute having an outlet adapted to feed dispensed material to a pocket when brought in way of said outlet;
- (i) a shroud portion in association with said chute, said shroud disposed to close the filled pocket to further filling from said chute and during rotational advancement of the filled pocket to maintain the integrity of the material in this filled pocket;
- (j) a travelling web of film adapted, at least in part, to retain the material being dispensed, and means to bring and support this web as it is brought in way of a position at the lowermost point of the rotating disk;
- (k) means for rotating and supporting the tubular shaft so that the peripheral speed of the rotated dispenser is at the speed of advance of the travelling web of film, and
- (l) means for moving the spine shaft and any and all conical cam portions thereon so as to move the pins carried in the radially disposed passageway in the inner tubular supporting member and associated therewith to simultaneously alter to a small extent the volume of each pocket.

4,284,031

## MAGNETIC TRANSFER SURFACE FOR CONTROLLING TONER THICKNESS

James B. Thaxter, Townsend, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 4, 1978, Ser. No. 931,215

Int. Cl.<sup>3</sup> G03G 15/09

U.S. Cl. 118—657

3 Claims

1. An electrophoretic printer for printing an image upon a recipient sheet comprising:

- a reservoir of magnetically susceptible toner;
- magnetic brush means, having an outer surface and an inner surface of repetitive and equally spaced north and south magnetic poles, associated with said reservoir for attracting the magnetically susceptible toner;
- magnetic transport surface means having an aperiodic magnetic reversal pattern thereon, said magnetic reversal pattern having a pitch selected to provide a desired thickness of magnetically susceptible toner received by the magnetic surface transport means, aligned and cooperating with said magnetic brush means; and
- a print head situated above said magnetic transport surface to receive simultaneously the recipient sheet and the layer of magnetically susceptible toner.



4,284,032

# PNEUMATIC CONVEYOR OF ADJUSTABLE CONVEYANCE CAPACITY FOR POWDERED TO GRANULAR BULK MATERIAL

Kurt Moos, Wil, and Karl Buschor, St. Gall, both of Sweden,  
assignors to Gema AG, Switzerland

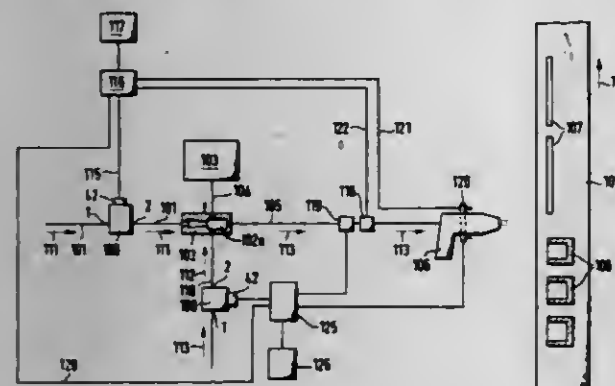
Filed Nov. 13, 1979, Ser. No. 93,637

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849295

Int. Cl.<sup>3</sup> B65G 53/66

U.S. Cl. 118—684

27 Claims



1. A pneumatic conveyor system with adjustable capacity for conveying a powdered to granular bulk material, comprising:

a pneumatic conveyor apparatus for drawing a powdered to granular bulk material from a source thereof and mixing it with a propellant gas;  
propellant gas conduit means for feeding the propellant gas to said pneumatic conveyor apparatus;  
second conduit means for delivering the mixture of the gas and the bulk material to a spray device for spray-coating an object;

a first pressure regulator cooperating pneumatically with said pneumatic conveyor apparatus to control the rate at which the mixture is delivered for spraying, by controlling the rate at which one of the components of the mixture is supplied to said pneumatic conveyor apparatus for mixing, wherein said first pressure regulator comprises:

an inlet for a propellant gas;  
an outlet for the propellant gas;  
a main valve for controlling the flow of the propellant gas from said inlet to said outlet; said main valve having a main valve body;

means defining a control pressure space for urging said main valve open by means of exerting pressure on said main valve body, said control pressure space communicating with said inlet via a pre-regulation conduit; said means defining said control pressure space including pressure comparison means having two opposite sides, one of said opposite sides being exposed to the pressure in said control pressure space and the other of said opposite sides being exposed to a second pressure for comparing the second pressure to the pressure in said control pressure space;

a control valve for controlling pressure in said control pressure space, said control pressure space communicating via said control valve with a first vent;  
pressure control means including said first control means for urging said control valve closed, to control the pressure in said control pressure space;

means defining a feedback pressure space for urging said main valve closed by means of exerting a force on said other of said two opposite sides of said pressure comparison means, the pressure in said feedback pressure space being the second pressure exerted on said pressure comparison means; said feedback pressure space communicating with said outlet and with a second vent.

4,284,033

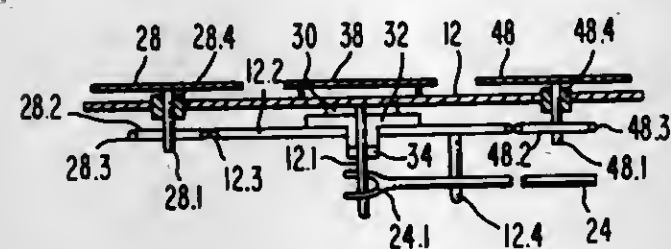
# MEANS TO ORBIT AND ROTATE TARGET WAFERS SUPPORTED ON PLANET MEMBER

Eddy H. del Rio, Jupiter, Fla., assignor to RCA Corporation,  
New York, N.Y.

Filed Oct. 31, 1979, Ser. No. 89,858

Int. Cl.<sup>3</sup> C23C 13/08

4 Claims



1. In a vacuum deposition system including a source of material positioned on the axis of the system, a plurality of circular planet members mounted for orbital movement about the system axis and for rotational movement about its own axis, a plurality of wafer targets for supporting an equal plurality of substrates on which the source material is to be deposited, a plurality of the wafer targets mounted on each of the planet members within the perimeter thereof, the improvement comprising for each planet and its associated wafer targets:

a planet shaft member one end of which is mounted on the rotational axis of the planet;

a planet wheel member mounted on, and having limited rotation with, the planet shaft member;

each wafer target having a shaft member with an end thereof extending from the rotational axis of the target;

a wafer target drive wheel fixed on the wafer target shaft member;

the perimeters of the planet and wafer target drive wheels being operatively associated with one another;

a drive arm orbiting the axis of the system and operatively associated with the planet shaft whereby to carry said planet through said orbital and rotational movement; and

a stop element extending generally parallel to the planet shaft member and outwardly from the planet drive member;

said stop element being operatively associated with the drive arm whereby during said rotational movement of the planet, the stop element contacts the orbiting drive arm to thereby stop further rotational movement of the planet wheel to thereby initiate rotational movement of the orbiting wafer target drive wheel due to said operative association of the perimeters.

4,284,034

# BIOCENTRIFUGE SYSTEM CAPABLE OF EXCHANGING SPECIMEN CAGES WHILE IN OPERATIONAL MODE

Robert R. Belew, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 30, 1980, Ser. No. 145,273

Int. Cl.<sup>3</sup> A01K 1/00

U.S. Cl. 119—17

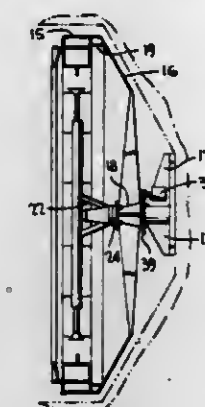
26 Claims

1. A centrifuge system comprising:

(a) a frame having a plurality of containers removably and replaceably mounted about its periphery, said frame having a stationary inoperative mode and a rotating operational mode;

(b) a rotatable device positioned adjacent to said frame;

(c) means for rotating said frame and means for rotating said device;



(d) said device including means for removing and replacing at least one of said containers from said frame while said frame is rotating in its operational mode; and

(e) means for supporting said frame and said device.

4,284,035

# AUTOMATIC LIVESTOCK FEEDER

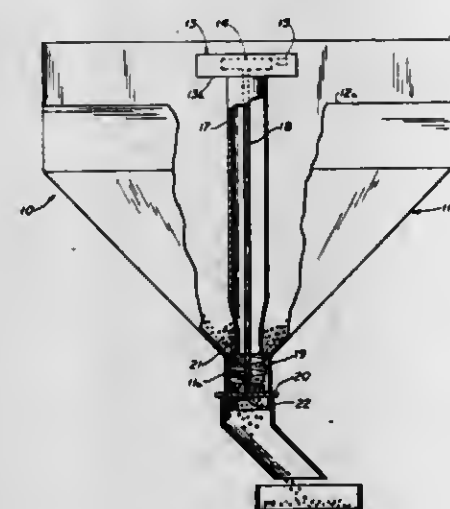
Wallace E. White, Rte. 2, Box 2414, Splendora, Tex. 77372

Filed Jan. 21, 1980, Ser. No. 113,818

Int. Cl.<sup>3</sup> A01K 5/02

U.S. Cl. 119—51.11

1 Claim



1. An automatic livestock feeder, comprising in combination, a downwardly converging feed-receiving bin, an upwardly extending back plate fixedly secured to a rear side of said feed-receiving bin, an electric motor and a timer secured inside a housing mounted to a front side of said back plate at an elevation higher than an upper edge of said bin, and a downwardly extending worm shaft secured at its upper end to said motor, and a lower end thereof extending into a tubular neck formed below a lower converging end of said bin, and an interior of said neck communicating with an interior of said bin, a worm formed on a lower portion of said shaft that extends below said bin converging end; said worm accordingly being inside said tubular neck, an axially extending, tapered screw extending downwardly from a terminal lower end of said shaft, a transversely extending, narrow bar through a longitudinally intermediate portion of said tubular neck, a bearing opening through said bar receiving a shank of said screw for rotation therein, and a sleeve fixedly secured to a bottom of said housing, extending downwardly to said converging end of said bin, said sleeve having a central opening, said sleeve being concentrically positioned around said shaft, and spaced therefrom by an interior opening of said sleeve being larger than a diameter of said shaft, said sleeve forming a shield preventing feed placed in said bin from contacting said shaft, and a circular discharge opening for said feed being formed between an outer side of said lower end of said sleeve and a wall of said bin around said converging end thereof, said

feed discharged from said opening into said tubular neck where a diameter of said worm fits said neck opening and rotation of said worm moves said feed downwardly through said tubular neck around opposite side edges of said narrow bar extending transversely through said neck.

4,284,036

# WATERING SYSTEM FOR FOWL AND SMALL ANIMALS

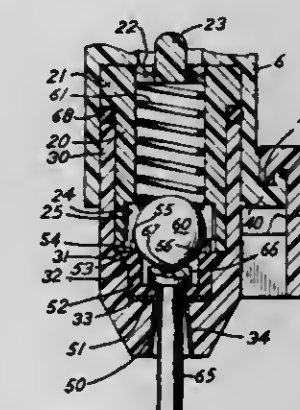
Eldon Hostetler, Middlebury, Ind., assignor to Ziggity Systems, Inc., Middlebury, Ind.

Filed Jan. 21, 1980, Ser. No. 113,607

Int. Cl.<sup>3</sup> A01K 7/00

U.S. Cl. 119—72.5

9 Claims



1. In a watering system for fowl and small animals including a water supply conduit having a downwardly extending tubular discharge outlet, comprising a tubular body having a sealed connection with said discharge outlet and defining a chamber having a restricted bottom outlet, resilient means in said chamber defining a pair of spaced concentric valve seats including an upper thin resilient circular sleeve, a valve member in said chamber normally seating on both valve seats, and a pin extending through said restricted bottom outlet with clearance and having a head within said chamber adjacent said valve member, said pin projecting below said body and shiftable vertically or laterally to unseat said valve member from said valve seats.

4,284,037

# INTERNAL COMBUSTION ENGINE COOLANT SYSTEM

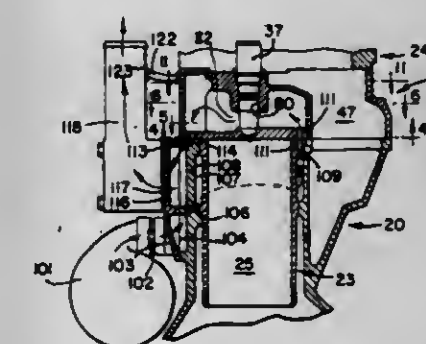
Edward W. Kasting, Seymour, and Richard E. Glasson, Columbus, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 18, 1978, Ser. No. 970,257

Int. Cl.<sup>3</sup> F01P 3/02, 3/16

U.S. Cl. 123—41.72

12 Claims



1. A head for a multiple cylinder internal combustion engine having a block and a coolant system, said block having a plurality of coolant flow passages therein, said head having one surface adapted to be attached to the upper side of said block and having coolant inlet and coolant outlet openings formed in said one surface, said inlet openings being at one side of said head.



head and said outlet openings being at the other side of said head, separated upper and lower coolant flow passages in said head and extending across said head between said inlet and outlet openings, and said inlet and outlet openings being adapted to communicate with said flow passages of said block and to conduct coolant to said flow passages of said head, both said upper and lower passages directly communicating with said outlet openings and coolant flowing to said outlet openings from said upper and lower passages.

4,284,038

## RECIPROCATING DRIVE MEANS

Frank E. West, 12 Newbury Dr., Bournemouth, Dorset, England, assignor to Baron Hire Limited and Frank Edward West, both of, England

Filed Sep. 25, 1979, Ser. No. 78,844

Claims priority, application United Kingdom, Sep. 29, 1978, 38712/78

Int. Cl.<sup>3</sup> F01B 15/06; F02B 71/00

U.S. Cl. 123—46 A

8 Claims



1. Reciprocating drive means comprising an elongate inner member with a plurality of passageways therein, two fixed plates on said inner member, an outer member slidable on said inner member, a seal at the peripheral surfaces of each of said fixed plates to seal against the inner face of the wall of said outer member, an end wall on said outer member with a seal at said end wall slidable on said inner member, a shuttle member slidable with respect to said inner member between said two fixed plates and within said outer member, a seal at the outer peripheral surface of said shuttle member to seal against said inner face of the wall of said outer member and axially spaced seals at the inner peripheral surface of said shuttle member to seal against said inner member, a first compartment formed between said axially spaced seals, and ports in said inner member communicating respective ones of said passageways in said inner member with the surface thereof, said ports co-operating in use with the relatively moving said outer member and said shuttle member to effect valving operations to interconnect said passageways with one another and with compartments formed between said inner member and said outer member and separated from one another by said fixed plates and said shuttle member.

4,284,039

## PRESSURE REGULATOR FOR INJECTION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Francesco Bellicardi, Roberto de Concini, and Rino Bolelli, all of Bologna, Italy, assignors to Edoardo Weber S.p.A., Bologna, Italy

Filed Feb. 1, 1979, Ser. No. 8,465

Claims priority, application Italy, Feb. 7, 1978, 3325 A/78

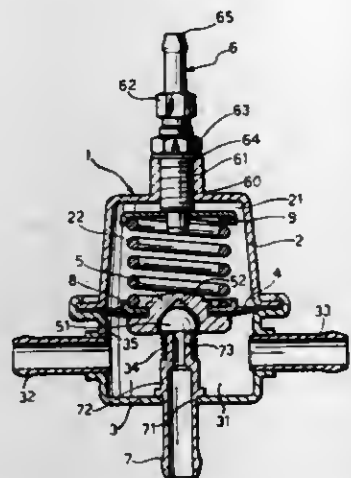
Int. Cl.<sup>3</sup> F02M 17/00

U.S. Cl. 123—463

2 Claims

1. A pressure regulator for internal combustion engine injection systems comprising a metal casing, a diaphragm secured within said casing and dividing the interior into a first chamber and a second chamber, a first duct in said casing adapted to communicate said first chamber with an intake manifold, a second duct in said casing adapted to communicate said second chamber with a pump, a third duct in said casing adapted to communicate said second chamber with fuel injectors, and a fourth duct in said casing having an inlet extending into said second chamber adapted to communicate said second chamber with a fuel tank, closure means operatively associated with said

diaphragm for opening and closing said inlet of said fourth duct, said closure means comprising a hemispherical valve member having a spherical portion and a flat surface, a support means connected to said diaphragm and having a recess therein opposed to said inlet of said fourth duct for rotatably receiving said spherical portion of said valve member with said flat



surface facing said inlet and means for biasing said spherical portion of said valve member into contact with said recess, said spherical portion having the center thereof lying in the plane of said flat surface, said means for biasing said spherical portion into contact with said recess is comprised of a coil spring surrounding said fourth duct and engaging said flat surface.

4,284,040

## FUEL PRIMER FOR AN INTERNAL COMBUSTION ENGINE

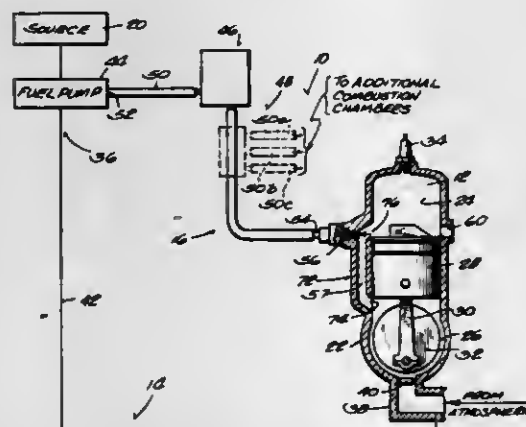
Gene F. Baltz, Lake Villa, and Chester G. DuBois, Zion, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 25, 1979, Ser. No. 60,288

Int. Cl.<sup>3</sup> F02M 1/16

U.S. Cl. 123—187.5 R

6 Claims



1. An engine comprising a combustion chamber, wall means for defining a fuel induction passage having a fuel outlet port communicating with said combustion chamber, fuel pumping means adapted for connection to a fuel source, first fuel delivery means communicating with said fuel pumping means for delivery of fuel thereto and with said fuel induction passage for introducing fuel therefrom into said combustion chamber, second fuel delivery means communicating with said fuel pumping means for delivery of fuel thereto independently of said first fuel delivery means and including nozzle means extending into said fuel induction passage adjacent to said fuel outlet port for emitting fuel directly into said combustion chamber through said fuel outlet port, said second fuel delivery means being operative for introducing fuel directly into said combustion chamber through said nozzle means in addition to the fuel introduced by said first fuel delivery means, and control means connected to said second fuel delivery means

for selectively operating said second fuel delivery means to introduce fuel into said combustion chamber through said nozzle.

4,284,041

## METHOD OF PRODUCING CYLINDER HEADS, AND CYLINDER HEAD PRODUCED THEREBY

Walter Rasch; Karl-Heinz Caspers; Klaus Wlebecke, all of Nuremberg, and Max Albert, Nürnberg-Kornburg, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

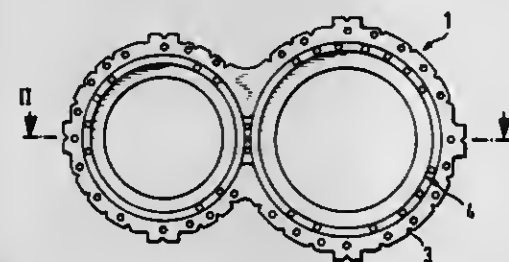
Filed Apr. 17, 1979, Ser. No. 30,898

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2816989

Int. Cl.<sup>3</sup> F02F 1/24; B22D 19/02; F02B 77/02

U.S. Cl. 123—193 H

2 Claims



1. A method of producing partially reinforced cylinder heads, particularly of internal combustion engines, comprising in combination the steps of: providing a pre-formed workpiece including a valve bridge, valve seat, valve fillet, valve web and made of a predetermined material composition; and casting on said workpiece a high-alloy fatigue-resistant material for high heat stability capable of producing a bond with said predetermined material composition in areas of maximum thermal and mechanical stresses for forming a positive connection between said workpiece and said casting of high-alloy fatigue-resistant material to reduce possibility of valve bridge cracks by increasing creep strength, said pre-formed workpiece including at least one fusible portion, said method further including the steps of: alloying said predetermined material composition of said preformed workpiece in a composition including by weight percent,

C	3.0	maximum
Si	1.7-2.2	
Mn	1.0-1.5	
Ni	18-22	
Cr	1.8-2.4	
Nb	0.1	
Mg	0.05	
Fe	Balance	

and wherein said casting material includes a cast iron composition for cylinder heads of internal combustion engines, supporting said pre-formed workpiece in a predetermined position, whereby said at least one fusible portion faces downwardly; and casting said material in such a way that said casting material rises at said at least one fusible portion.

4,284,042

## MULTICYLINDER INTERNAL COMBUSTION ENGINE WITH VALVE DISCONNECTION

Willi Springer, Göppingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

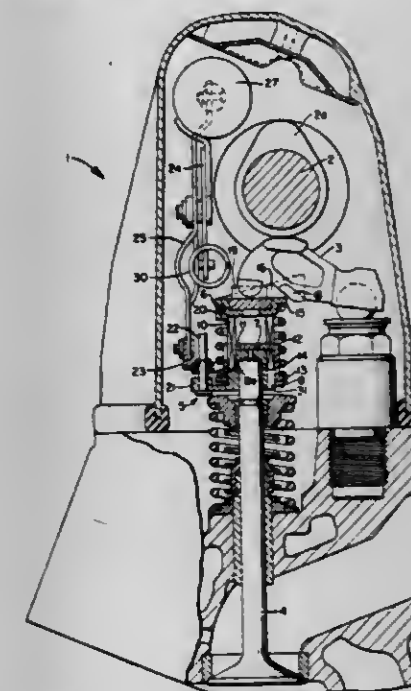
Filed Apr. 2, 1979, Ser. No. 26,190

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 2814087; Apr. 3, 1978, 2814307

Int. Cl.<sup>3</sup> F02D 13/06

U.S. Cl. 123—198 F

16 Claims



1. A multicylinder internal combustion engine which includes a valve means for the respective cylinders of the engine and means for selectively shutting off a valve means of at least one of the cylinders, the valve means including a valve stem and a valve actuating means, characterized in that an intermediate mechanical device is interposed between an end of the valve stem and the valve actuating means for selectively forming a rigid interconnection between the valve stem and valve actuating means and, in a closed setting of the valve means, for eliminating the interconnection between the end of the valve stem and the valve actuating means, a pressure member is arranged between the intermediate mechanical device and the valve actuating means, and in that a spring means is disposed below the pressure member for constantly urging the intermediate mechanical device into abutment with the end of the valve stem.

4,284,043

## METHOD FOR OPERATING AN AIR-COMPRESSING AUTO-IGNITING INTERNAL COMBUSTION ENGINE AND INJECTION VALVE SUITABLE THEREFOR

Robert Happel, Waiblingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,172

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1977, 2753953

Int. Cl.<sup>3</sup> F02M 45/08

U.S. Cl. 123—299

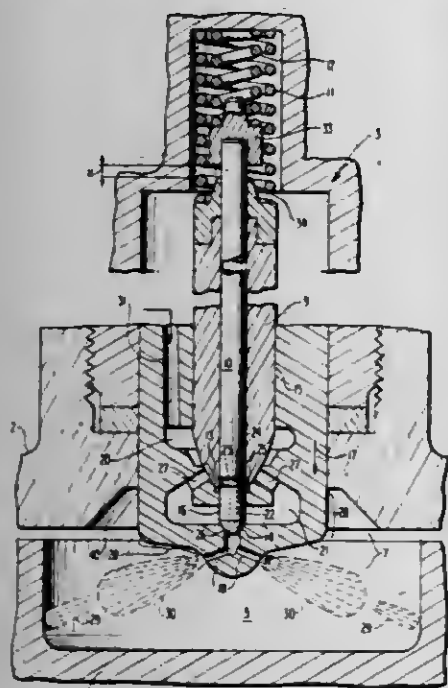
21 Claims

1. An injection valve for high pressure injection of a liquid fuel having a flow direction into a working space of an internal combustion engine comprising:

- at least two valve needle means concentrically nested within one another;
- at least two spring means each adapted to press said valve needle means adjacent an associated valve seat means;
- at least two valve seat means each associated with a respective valve needle means;
- at least two hydraulically, in-series connected pressure space



means, each of said pressure space means being located upstream of an associated valve seat means; wherein each of said valve needle means further comprises: a valve needle piston means constructed larger in diameter than an associated valve seat means and a pressure space means in operative connection with an effective side of said valve needle piston means, with said valve needle means being pressed against an associated valve seat means by the force of an associated spring means in a



closing direction and being operable to be lifted off from said associated valve seat means; whereby a downstream pressure space means, dimensioned approximately the same size as the largest fuel quantity to be injected by said injection valve per working cycle, is operable to be closed off hydraulically by the valve needle means and is arranged exposed in heat-absorbing relationship to the working space of the internal combustion engine.

4,284,044

#### COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

Kiyoshi Nakanishi, Susono; Kazuhiko Ito, Toyota; Takeshi Okumura, Susono; Isamu Iezuka, Toyota, and Masao Yasukawa, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

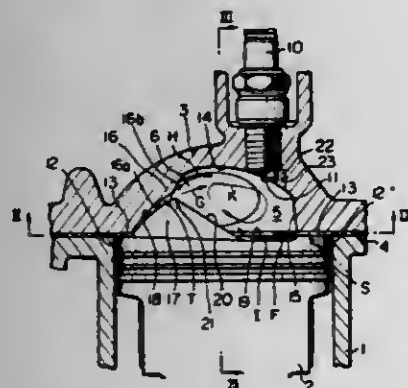
Filed May 3, 1979, Ser. No. 35,617

Claims priority, application Japan, Jul. 20, 1978, 53-87667

Int. Cl.<sup>3</sup> F02B 23/08

U.S. Cl. 123-307

9 Claims



1. An internal combustion engine comprising: a cylinder block having a cylinder bore therein;

a cylinder head mounted on said cylinder block and having an inner wall;  
a first raised portion having on its lower end a flat bottom face and being formed on the periphery of the inner wall of said cylinder head so as to project downwards;  
a piston reciprocally movable in said cylinder bore and having a top face which has a flat peripheral portion approachable to said flat bottom face, the inner wall of said cylinder head and the top face of said piston defining a combustion chamber therebetween;  
an intake valve movably mounted on said cylinder head for leading a combustible mixture into said combustion chamber;  
an exhaust valve movably mounted on said cylinder head for discharging exhaust gas into the atmosphere;  
a spark plug having a spark plug recess located in said combustion chamber on the inner wall of said cylinder head, said recess extending outwardly beyond a straight line extending between the peripheries of the intake and exhaust valves;  
a first squish area spouting out a first squish flow as said piston reaches the end of its compression stroke, said first squish area comprising an annular area between said flat peripheral portion of the top face of said piston and the flat bottom face of said cylinder head, said first squish area extending substantially along the entire periphery of said top face of said piston; a second raised portion formed on the top face of said piston at a position opposite to said first raised portion with respect to an axis of said piston and having a rear face and a front face exposed to said combustion chamber, said rear face being approachable to the inner wall of said cylinder head so as to create a second squish area therebetween at the end of the compression stroke for spouting out a second squish flow which moves forward in the upper interior of said combustion chamber in the direction opposite to the spouting direction of said first squish flow;  
said first and second squish flows cooperating with each other to create a strong swirl motion rotating about a horizontal axis in said combustion chamber, said first squish area extending inward from the periphery of said top face of said piston to a continuous sinuous periphery which extends around and is almost vertically under said intake valve, said exhaust valve, and said spark plug recess and adjacent to said second raised portion; and  
a third raised portion formed on the inner wall of said cylinder head above said second raised portion and having a bottom wall which cooperates with said rear face of said second raised portion for creating said second squish area therebetween.

4,284,045

#### SIMPLIFIED ELECTRONIC IGNITION TIMING AND A/D CONVERSION

Thomas A. Maier, Apollo, Pa., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Sep. 12, 1979, Ser. No. 74,615

Int. Cl.<sup>3</sup> F02P 5/04

U.S. Cl. 123-416

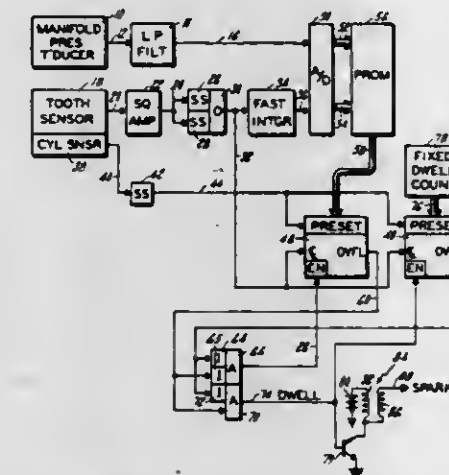
3 Claims

1. Electronic spark timing angle apparatus for a spark ignition, internal combustion engine, comprising:  
means for providing cylinder signals indicative of the occurrence of each cylinder-related sub-cycle of the engine;  
means for providing engine angle signals delineating angular rotation of the engine within each cylinder-related sub-cycle of engine rotation, said engine angle signals indicating angles of rotation which are much smaller than the angles of rotation related to each cylinder-related sub-cycle of the engine;  
means operative in response to inlet manifold pressure of the engine for providing pressure signals indicative of engine loading;  
means for providing firing angle signals indicative of the

desired spark firing angle as a function of engine speed and load in response to said pressure signals and a time function of said engine angle signals indicative of rotary speed of the engine; and

counting means responsive to said firing angle signals, said cylinder signals, and said engine angle signals for counting a particular number of said engine angle signals which occur subsequent to each of said cylinder signals, said particular number in each case being determined by said firing angle signals, and for providing an end of dwell signal indicating the time of occurrence of the desired firing angle in response to completion of counting of said particular number of angle signals;

characterized by said counting means including a pair of



presetable counters, each having preset inputs, a preset enable input connected to said cylinder signals, a clock input connected to said angle signals, a clock enable input and an overflow output; and

logic means responsive to both of said overflow outputs and connected to both of said clock enable inputs to enable a first one of said counters to be clocked by said angle signals only between presetting of both of said counters and the completion of counting in said first counter as indicated by a signal at the overflow output of said first counter, and to enable said second counter go be clocked by said angle signals only between completion of count of said first counter and completion of count of said second counter as indicated by signals at both said overflow outputs.

4,284,046

#### CONTACTLESS IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Hideyuki Hashimoto, Katsuta; Yoshito Kyogoku, Mito, and Hiroshi Katada, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

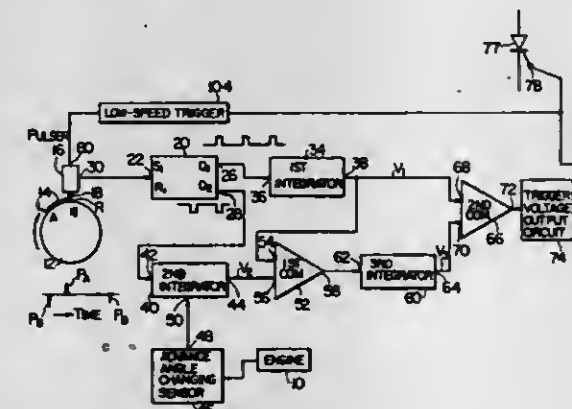
Filed Jan. 17, 1980, Ser. No. 112,746

Claims priority, application Japan, Jan. 19, 1979, 54/3851

Int. Cl.<sup>3</sup> F02P 5/08

U.S. Cl. 123-418

4 Claims



1. A contactless ignition system for an internal combustion

engine, comprising: position detector means for detecting the minimum advance angle position and the maximum advance angle position where a first advance angle position signal and a second advance angle position signal are generated respectively; first signal generator means for generating a first signal changing at a predetermined change rate in response to the first advance angle position signal of said position detector means, said first signal generator means holding said first signal at a predetermined level in response to the second advance angle position signal of said position detector means; second signal generator means for generating a second signal changing at a predetermined change rate in response to the second advance angle position signal of said position detector means; means for controlling the change rate of said second signal; first comparator means for generating an output signal when said first signal and said second signal coincide with each other; third signal generator means for generating a third signal changing at a predetermined change rate in response to an output signal of said first comparator means, said third signal having a predetermined initial value; and second comparator means for generating an ignition signal when said first signal and said third signal coincide with each other.

4,284,047

#### APPARATUS FOR CONTROLLING THE AIR-FUEL QUANTITY RATIO IN INTERNAL COMBUSTION ENGINES

Gerhard Stumpp, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

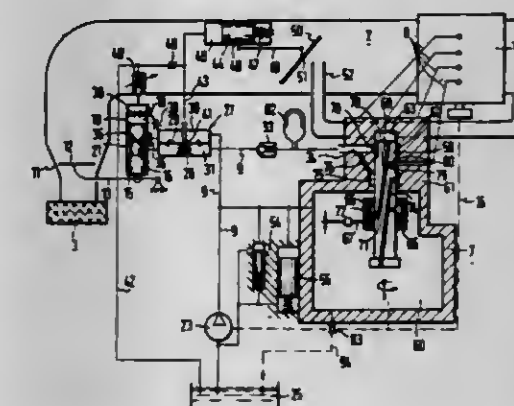
Filed Aug. 9, 1979, Ser. No. 65,237

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1978, 2841807

Int. Cl.<sup>3</sup> F02M 41/00

U.S. Cl. 123-449

10 Claims



1. An apparatus for controlling the fuel-air quantity ratio of the operational mixture to be introduced into the combustion chambers of an internal combustion engine including an air flow rate meter disposed in the intake manifold of the engine, a servo device having a working chamber, said air flow rate meter being movable under differential pressure against a substantially constant hydraulic restoring force generated in said servo device working chamber, a fuel supply line, a fuel metering throttle device in said fuel supply line having a metering cross section, and a working chamber, a fuel supply pump for supplying fuel to said fuel supply line, the displacement of said air flow rate meter being arranged to actuate said fuel metering throttle device, a fuel injection pump having at least one pump piston and one pump working chamber connected to said fuel supply line, said fuel injection pump being provided with fuel feed channels leading to injection points in said engine, and including a differential pressure valve whose pressure chambers are subjected to the pressures present at said metering cross section of said fuel metering throttle device, the differential pressure valve maintaining a constant pressure drop at the metering cross section and wherein said working chamber in said fuel metering throttle device upstream of said metering cross section communicates with the fuel supply line,



wherein said fuel supply pump is associated with said fuel injection pump, said fuel injection pump having a working chamber and a fuel-filled chamber including the drive means for the pump piston, a pressure control valve, means for communicating the supply side of said fuel supply pump with said pressure control valve for setting a variable supply pressure and with said fuel-filled chamber, means including a flushing throttle for conducting fuel out of said fuel-filled chamber in a pressure-relieved manner via said flushing throttle, a throttle for uncoupling the variable supply pressure of said fuel supply pump, a pressure maintenance valve for setting the pressure becoming effective at least in the working chamber of said fuel metering throttle device downstream of said throttle to a constant value, and means for communicating said injection pump working chamber with said fuel supply line excluding said feed channels.

4,284,048

# **PRESSURE CONTROL VALVE FOR A FUEL INJECTION SYSTEM**

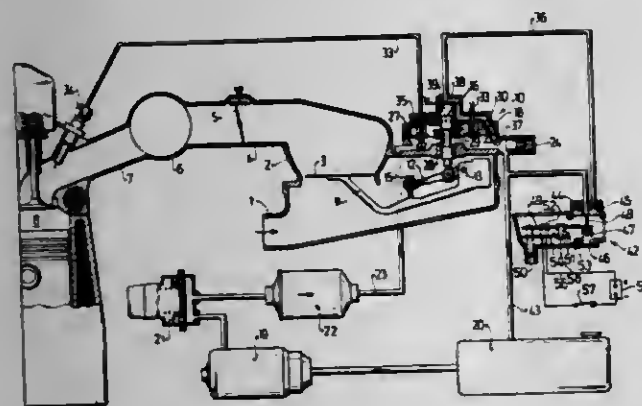
Peter Schellhas, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany  
Filed Jul. 5, 1979, Ser. No. 55,125

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835782

Int. Cl.<sup>3</sup> F02M 39/00, 1/02

U.S. Cl. 123—453

3 Claims



1. A pressure control valve for a fuel injection system of a mixture-compressing, externally ignited internal combustion engine having an intake manifold provided with an air flow rate member which is moved in accordance with the quantity of air flowing therethrough against a restoring force generated by a constant pressure fluid which is arbitrarily variable by means of said pressure control valve having a movable element, said pressure being supplied into a control pressure line against a face of said movable element, said movable element having another face acted upon by action of a compression spring, the force of said compression spring being arranged to be reduced by at least a first temperature-dependent element, said pressure control valve further including a second temperature-dependent element which may influence the force of the first temperature-dependent element on the compression spring, further wherein a rigid connecting element is disposed between said first and second temperature-dependent elements, said rigid connecting element being affixed at one end to at least one of said temperature-dependent elements, whereby said rigid connecting element provided between said first and second temperature-dependent elements engages said first temperature-dependent element and urges said first temperature-dependent element in the direction of an increase in the force of said first temperature-dependent element on said compression spring only below a predetermined temperature.

## **4,284,049 FUEL INJECTOR VALVE NEEDLE LIFT CONTROL ARRANGEMENT**

Franz Chmela, Nuremberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

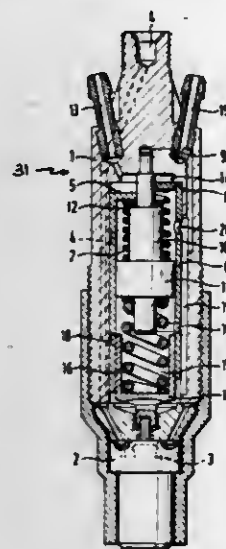
Filed Mar. 21, 1979, Ser. No. 22,485

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812519

Int. Cl.<sup>3</sup> F02M 47/00, 61/10

U.S. Cl. 123—467

10 Claims



1. An arrangement for controlling the lift of a valve needle in fuel injectors of direct injection internal combustion engines, said arrangement comprising:

a hollow housing having a discharge end and an end face remote from said discharge end, said valve needle being axially displaceably supported in the discharge end of said housing for movement between a first seated position and a second unseated position, said housing having fuel inlet means operatively connected to said valve needle for supply fuel thereto, control medium inlet means for supplying control medium to said end face, and outlet means for communicating the hollow interior of said housing with the outside;

a sleeve axially displaceably arranged within the hollow interior of said housing, said sleeve being open towards said discharge end and closed at said end remote from said discharge end for receiving control medium between said closed end of said sleeve and said end face of said housing, said sleeve having at least one opening for communicating the interior of said sleeve with said outlet means;

piston means axially displaceably arranged within the hollow interior of said housing at the open end portion of said sleeve for closing said at least one opening, said piston means being operatively connected with said valve needle;

at least one spring means operatively arranged between said sleeve and said piston for resiliently acting upon said valve needle, the control of the lift of said valve needle being substantially independent of spring characteristic;

a further spring means for resiliently retaining said sleeve in a position wherein said closed end of said sleeve contacts said housing end face;

said piston means being axially movable within said sleeve and said piston means including an aperture open away from said valve needle for receiving therein a pertaining end of said at least one spring means;

a control pin having a first end extending through said closed sleeve end, a second end extending within said sleeve towards said piston means, and a collar between said first end and said second end for the provision of first and second annular shoulders, said collar being in sealing contact within said control sleeve, said further spring means being in contact with said first annular shoulder,

and said at least one spring means being in contact with said second annular shoulder.

4,284,050

# **APPARATUS FOR CONTROLLING THE MIXTURE COMPOSITION IN AN INTERNAL COMBUSTION ENGINE**

Wadym Suchowerskyj, Schwieberdingen; Peter Werner, Wlernaheim; Hans Schnürle, Waldheim; Werner Möhrle, Stuttgart, and Ulrich Drews, Vaihingen-Pulverdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

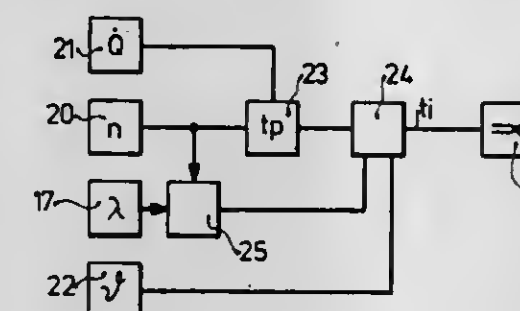
Filed Oct. 24, 1979, Ser. No. 87,899

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1978, 2846386

Int. Cl.<sup>3</sup> F02M 51/00

U.S. Cl. 123—483

27 Claims



1. In an apparatus for controlling the composition of a mixture delivered to a combustion chamber of an internal combustion engine which includes a plurality of operational parameter sensing means for controlling the quantity of fuel supplied to the engine as a function of said parameters, wherein said plurality of parameter sensing means includes an exhaust sensor, the improvement which comprises:

an electrically charged storage means for storing an electrical quantity;

charging source means, associated with said storage means and said plurality of operational parameter sensing means, for providing a charging current to charge said storage means, the initiation and duration of said charging current being controlled by said exhaust sensor, and the magnitude of said charging current being controlled by at least one of said operational parameter sensing means other than said exhaust sensor; and

discharging source means, associated with said storage means and said plurality of operational parameter sensing means, for controlling a discharge current from said storage means to discharge said storage means, the initiation and duration of said discharge current being controlled by said exhaust sensor, and the magnitude of said discharge current being controlled by at least one of said operational parameter sensing means other than said exhaust sensing means.

4,284,051

# **SWITCHING CONTROL APPARATUS FOR ELECTROMAGNETIC CONTROL UNITS**

Wolfgang Maisch, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 67,067

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840192; Feb. 22, 1979, 2906835

Int. Cl.<sup>3</sup> F02B 3/00

U.S. Cl. 123—490

26 Claims

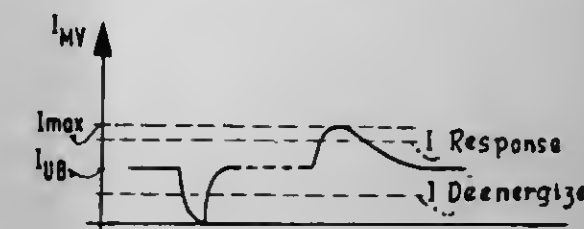
1. In a system employing an electromagnetic control unit, the control unit having an excitation winding, an apparatus for reliably switching the control unit between an open and closed condition, the improvement in the apparatus comprising:

(a) an electrical switch connected in series with the excita-

tion winding, said electrical switch having an actuating signal applied thereto;

(b) timing means connected to the electrical switch and responsive to operating parameters of the system for controlling the actuating signal applied to the electrical switch; and

(c) energy storing means for supplying, at a predetermined instant, an auxiliary signal directly to the excitation winding for switching the control unit to its open condition.



said energy storing means comprising a series circuit connected in parallel with the excitation winding, said series circuit including a capacitor and a resistor connected in series with the capacitor, and wherein a positive voltage is maintained at the junction between the capacitor and the resistor of the series circuit when the auxiliary signal is applied to the excitation winding.

4,284,052

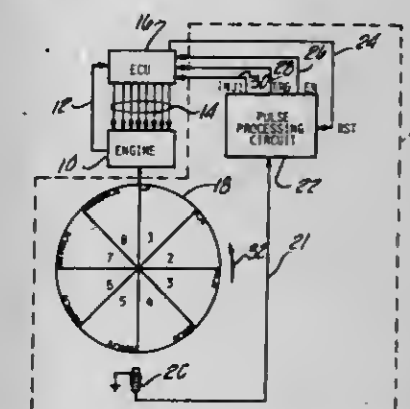
# **SEQUENTIAL INJECTOR TIMING APPARATUS** John C. P. Hanisko, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 23, 1979, Ser. No. 69,000

Int. Cl.<sup>3</sup> F02D 5/02

U.S. Cl. 123—490

17 Claims



1. An apparatus for providing control signals containing timing and steering information to an electronic control unit which actuates a plurality of sequentially operated fuel injectors of an internal combustion engine, said apparatus comprising:

means for generating groups of pulses in a sequential order synchronously with the revolution of the engine, said means includes a rotatable element divided into segments where each segment is associated with an individual injector and contains a group of sensible elements having a number of counting elements identifying the segment by their number and geometry and indicating the timing of actuation of such injector, and sensing means responsive to said elements for generating said groups of pulses; and means for generating said control signals to the electronic control unit in response to said pulse groups, said control signal generating means generating an identification signal steering the next electronic control unit actuation to the identified injector and generating a trigger signal for timing the actuation of the identified injector.



4,284,053

## ELECTRONIC ENGINE CONTROL

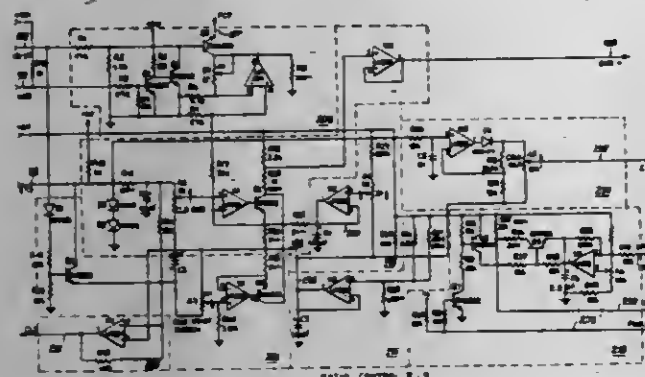
James W. Merrick, El Paso, Tex., assignor to Autotronic Controls Corp., El Paso, Tex.

Filed Apr. 24, 1978, Ser. No. 899,355

Int. Cl.<sup>3</sup> F02B 3/00; F02M 39/00

U.S. Cl. 123-497

55 Claims



1. In an electronic controller for an internal combustion engine having a throttle for controlling the flow of air into an intake manifold wherein rate of air flow into the engine is measured by producing an air flow signal systematically related to the rate of air flow, and rate of fuel flow into the engine is measured by producing a fuel flow signal systematically related to the rate of fuel flow, said electronic controller including means for producing a ratio control signal corresponding to a respective air/fuel ratio, and means responsive to said air flow signal, said fuel flow signal and said ratio control signal for controlling fuel flow as to make the ratio of air flow to fuel flow substantially equal to said respective air/fuel ratio, the improvement wherein said means for producing said ratio control signal comprises means for providing a base run ratio signal corresponding to a respective run air/fuel ratio suitable for steady state engine operation, means for providing a temperature reference signal corresponding to a reference engine temperature, means responsive to engine temperature and said temperature reference signal for modifying said run ratio signal in systematic relation to engine temperature when said engine temperature is below said reference engine temperature to produce a run ratio signal corresponding to an air/fuel ratio systematically decreasing with decrease in engine temperature below said reference engine temperature, means for providing at least one other ratio signal corresponding to a respective air/fuel ratio suitable for engine operation under certain other conditions, discriminating output means responsive to applied ratio signals for producing a ratio control signal corresponding to the lowest air/fuel ratio of any applied ratio signal, and means for applying said run ratio signal and said at least one other ratio signal to said output means.

4,284,054

## LEAN AIR-FUEL MIXTURE ATTRACTION METHOD AND ATTRACTION ELECTRODE PLUG IN ENGINE

Seiichi Kurogami, Koishikawa; Michio Abe, Kasugai Aichi, and Naoyuki Maeda, Inuyama, all of Japan, assignors to Tokai TRW &amp; Co. Ltd., Aichi, Japan

Filed Jul. 23, 1979, Ser. No. 57,384

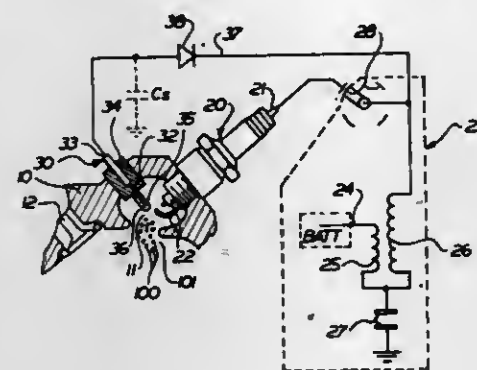
Int. Cl.<sup>3</sup> F02B 33/00

U.S. Cl. 123-536

1 Claim

1. An apparatus for igniting a lean air-fuel mixture, said apparatus comprising means for defining a combustion chamber, said means for defining a combustion chamber including a cylinder head, a spark plug mounted in said cylinder head, said spark plug including a straight longitudinally extending main electrode extending into the combustion chamber and exposed to the atmosphere in the combustion chamber and a side electrode disposed adjacent to said main electrode and electrically insulated from said main electrode, an attraction plug mounted in said cylinder head at a location offset to one side of and adjacent to said spark plug, said attraction plug including a straight longitudinally extending central electrode, a metal

body connected with said cylinder head, and insulator means at least partially encasing said central electrode for electrically insulating said central electrode from said metal body and said cylinder head and for isolating the portion of said central electrode disposed in the combustion chamber from the atmosphere in the combustion chamber, said central electrode of said attraction plug having a longitudinal central axis extending transversely to the longitudinal central axis of said main electrode of said spark plug and an end portion which is disposed adjacent to said main electrode and is encased by said insulator means, means for applying an electrical potential to



said central electrode of said attraction plug to establish an electrostatic field in the combustion chamber to attract fuel particles to the vicinity of the end portion of said central electrode of said attraction plug and to a gap between said main and side electrodes of said spark plug without establishing a corona discharge in the combustion chamber, and means for applying an electrical potential to said main electrode of said spark plug to establish a spark between said main and side electrodes to ignite fuel particles attracted to the vicinity of said spark plug by the electrostatic field from said attraction plug.

4,284,055

## RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

Anthony C. Wakeman, Birmingham, England, assignor to Lucas Industries, Limited, Birmingham, Great Britain

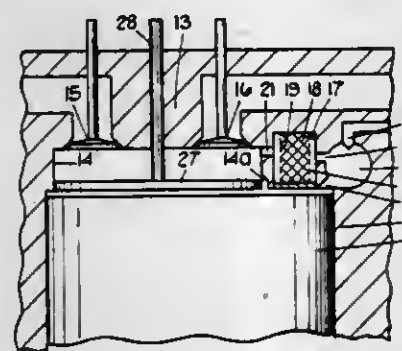
Filed Oct. 9, 1979, Ser. No. 82,545

Claims priority, application United Kingdom, Oct. 14, 1978, 40591/78

Int. Cl.<sup>3</sup> F02B 3/00

U.S. Cl. 123-556

14 Claims



1. A low compression ratio reciprocating piston internal combustion engine comprises at least one piston and cylinder arrangement including a working volume in which the compression and power stages of the engine operating cycle occur, the working volume being bounded in part by the piston crown and the cylinder head and in part by inlet valve means and exhaust valve means, said inlet valve means comprising means for permitting an inlet charge to enter the working volume, said exhaust valve means comprising means for permitting products of combustion occurring within the working

volume to leave the working volume, said engine further comprising:

a regenerative heat exchanger located within said working volume, said heat exchanger having a hot face and a cold face between which gases are caused to flow, and, means for causing the charge to flow through the heat exchanger from the cold face to the hot face so as to be heated thereby immediately prior to the combustion stage of the engine operating cycle, wherein said means for causing comprises a single valve means for preventing substantial flow through said heat exchanger prior to completion of the compression stage of the engine operating cycle, the burning and expanding fuel/air mixture is caused to act directly on the piston of the piston and cylinder arrangement without passing through the heat exchanger, and the products of combustion are subsequently caused to flow through the heat exchanger from the hot face to the cold face to heat the heat exchanger before leaving the working volume by way of the exhaust valve means.

4,284,056

## SPLIT-TYPE INTERNAL COMBUSTION ENGINE

Fukashi Sugawara, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

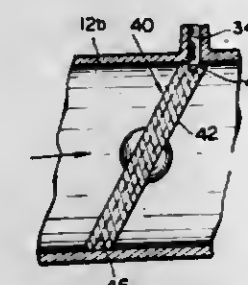
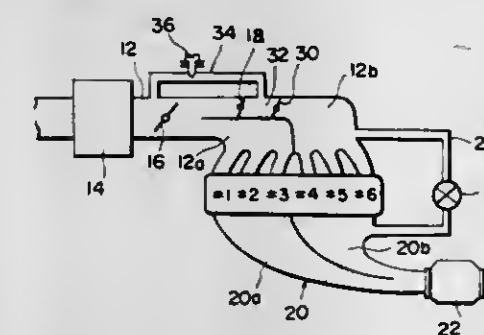
Filed Feb. 20, 1980, Ser. No. 122,989

Claims priority, application Japan, Feb. 28, 1979, 54-22962

Int. Cl.<sup>3</sup> F02M 25/06

U.S. Cl. 123-568

5 Claims



1. An internal combustion engine comprising:

- (a) an air intake passage provided therein with an air metering throttle valve and divided downstream of said throttle valve into a first branch for supplying air to certain of the engine cylinders and a second branch for supplying air to the remainder of said engine cylinders;
- (b) an exhaust passage through which exhaust gases are discharged from said engine cylinders to the atmosphere;
- (c) an EGR passage provided therein with an EGR valve for recirculation of exhaust gases from said exhaust passage into said second intake passage branch;
- (d) valve means provided in said second intake passage branch for defining a chamber therewith in the closed position of said valve means;
- (e) passage means having its one end opening into said intake passage upstream of said throttle valve and the other end opening into said chamber; and
- (f) control means responsive to low engine loads for cutting off the supply of fuel for said remainder of said engine

cylinders, opening said EGR valve, and closing said valve means.

4,284,057

## ANTIPARASITIC IGNITION DEVICE FOR CARS

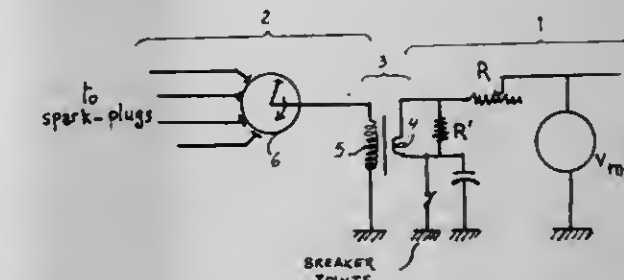
Ferdy P. Mayer, 18, rue Thiers, 38000 Grenoble, France  
Continuation of Ser. No. 870,541, Jan. 18, 1978, abandoned. This application Nov. 6, 1979, Ser. No. 95,139

Claims priority, application France, Jan. 20, 1977, 77 01500

Int. Cl.<sup>3</sup> F02P 3/06

U.S. Cl. 123-633

30 Claims



1. In an internal combustion engine ignition system of the type including: a DC power source supplying current through an ignition coil and a distributor to the engine's spark plugs; the coil having a low voltage primary winding circuit connected to the DC source, and a high voltage secondary winding circuit connected to the distributor; and means for repetitively interrupting the current flowing through the primary circuit; the improvement comprising the combination of:

frequency selective ignition wires interconnecting the distributor and the spark plugs, said wires exhibiting low resistance to direct and lower frequency currents below the radio frequency range and high resistance to higher current frequencies in the radio frequency range; and resistor means electrically connected to the ignition coil for reducing the ignition power flowing through the secondary circuit to the minimum value required for substantially zero ignition reserve, thereby minimizing both the wear on the spark plugs and also secondary parasitic radiations, both of which would otherwise occur but for the presence of said resistor means, said zero ignition reserve being a value of ignition power which is the minimum necessary for efficient spark ignition.

10. A method of improving the ignition efficiency of, and reducing the radio frequency interference radiation from, an internal combustion engine designed for operation with an ignition system including an ignition coil having a high voltage secondary circuit containing resistive components, including spark plugs and ignition wires, comprising the steps of:

replacing the resistive ignition wires with frequency selective ignition wires which have the characteristic of presenting a low resistance to direct currents and lower frequency currents while attenuating radio frequency currents; replacing the remaining resistive components with standard, non-resistive components; and connecting in circuit with the ignition coil a separate resistor having an optimum resistance value such that the ignition current flowing through said secondary circuit to the spark plugs is large enough efficiently to fire the spark plugs and low enough to minimize both the wear of the spark plugs and also secondary parasitic radiations.



4,284,058

## BACKPACKER'S STOVE APPARATUS

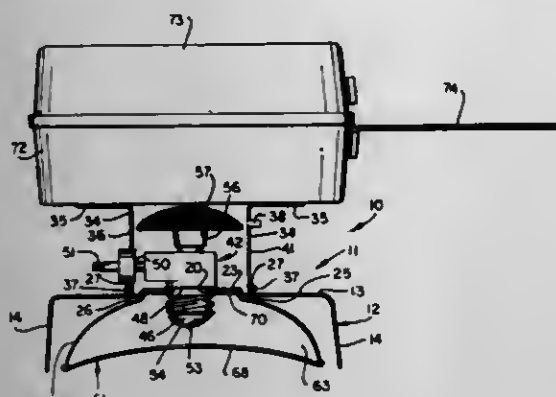
William R. Lütz, Chamblee, Ga., assignor to Conceptual Factors, Inc., Atlanta, Ga.

Filed Jan. 4, 1979, Ser. No. 45,131

Int. Cl.<sup>3</sup> F24C 1/16

U.S. Cl. 126—9 R

13 Claims



1. A backpacker's stove apparatus comprising:
  - a base including an upper surface and an opening defined in said upper surface;
  - a fuel canister removably positioned beneath said base;
  - a valve and burner means protruding above said base and extending through said opening of said base to connect to said fuel canister beneath said base for selectively releasing fuel from said fuel canister;
  - a foldable pot support mounted on top of said base, said pot support including a plurality of wing plates pivotably attached to the top surface of said base, each said wing plate including a first planar section pivotably attached at one of its edges to said upper surface of said base and being pivotable relative to said upper surface between a down position and an up position, each said wing plate further including a second pot engaging portion extending approximately perpendicular to said first planar section, whereby said wing plates in said up position form a wind-screen about said valve and burner means and a pot support to hold a pot above said valve and burner means, and said wing plates are pivotable to said down position for packaging and storage.

4,284,059

## HEAT STORAGE AND HEAT EXCHANGER

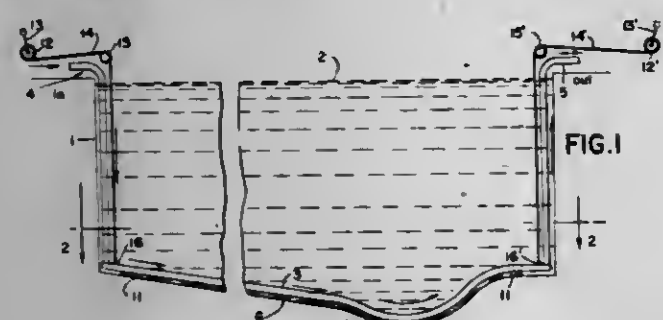
Harry E. Thomason, 6802 Walker Mill Rd., SE., Washington, D.C. 20027

Filed Sep. 3, 1976, Ser. No. 720,355

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—415

13 Claims



1. In a pool or similar container of liquid having side and a bottom, heat exchanger—heat storage and pool-safety apparatus located adjacent to the bottom of the pool or similar container, said heat exchanger and heat storage apparatus comprising substantially liquid-tight upper and lower skin members substantially sealed to each other at limited areas in a quilted-like pattern defining areas for storage of warmed or cooled fluid and forming passages for flow of fluid through those areas, an inlet connection for introduction of warm or cool

fluid to said areas for storage and circulation therethrough, an outlet connection for exit of fluid from said areas, said heat exchanger-heat storage—safety apparatus serving to reduce injuries to pool users, serving as heat storage apparatus when filled, and serving as a heat exchanger to impart heat to the liquid in the pool when the temperature of the fluid in said apparatus exceeds that in the pool, or to extract heat when the temperature of the fluid in said apparatus is lower than that in the pool.

4,284,060

## FLOATING SOLAR POOL HEATER

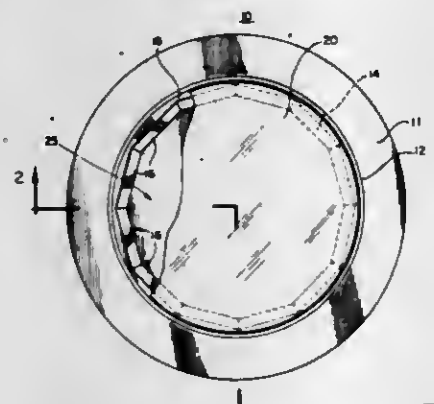
James E. McCluskey, Pipersville, Pa., assignor to Philadelphia Rivet Company, Doylestown, Pa.

Filed Jan. 18, 1980, Ser. No. 160,826

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—415

4 Claims



1. A floating solar pool heater which comprises a body having
  - an outer rim,
  - a vertical wall extending upwardly from said rim,
  - an angularly inclined inner wall attached to and extending downwardly and inwardly of said outer wall,
  - a transparent cover extending over the top of the outer wall and secured thereto,
  - said inner wall being formed of non-circular segments and having a reflective coating thereon, and
  - a heat conducting bottom plate attached to said rim and forming with said cover and said walls an enclosed space.

4,284,061

## APPARATUS FOR COLLECTING SOLAR ENERGY

Karl Wildenrotter, Munich, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 9, 1979, Ser. No. 65,150

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1978, 2835348

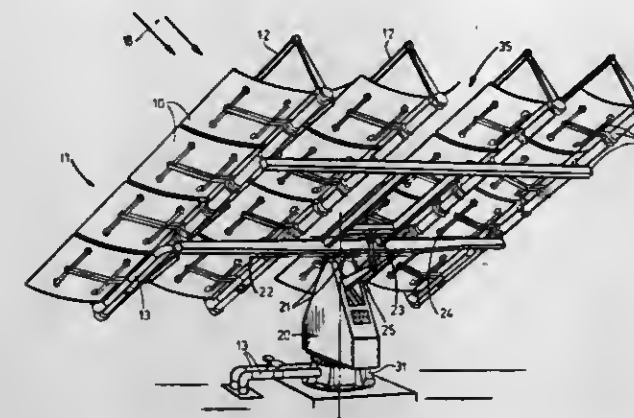
Int. Cl.<sup>3</sup> F24J 3/02; H01Q 3/00; G02B 5/08

U.S. Cl. 126—418

8 Claims

1. Apparatus for collecting solar energy, comprising:
  - a pedestal support;
  - a collector member having a solar-energy collector surface and a substantially centrally-located gap having a width substantially equal to the width of said pedestal support, said collector member being supported by said pedestal support for pivotal movement about a horizontal axis over an angle of about 180°, between an exposed position wherein said collector surface is oriented toward the sun and a substantially horizontally oriented sheltered position wherein said collector surface is oriented toward the

earth, with said pedestal being engaged by said gap during pivoting into said sheltered position; and means for pivoting said collector member between said exposed and sheltered positions about said horizontal axis, said pivoting means being accommodated at least in part within said pedestal and comprising a first double-ended lever comprised of first and second lever arms rigidly



connected together at an angle less than 180°, said first lever being pivotably mounted between its ends on said pedestal, a second double-ended lever having its first end pivotably connected to the second end of said first lever and its second end pivotably connected to said collector member, and means for actuating the first end of said first lever to pivot said collector member.

4,284,062

## SOLAR COLLECTOR SYSTEM

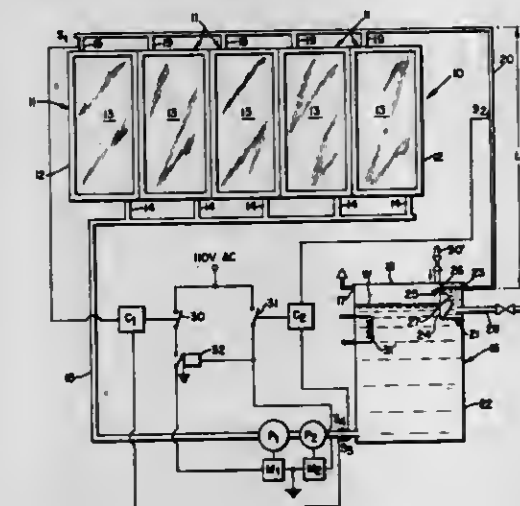
Elro M. Swindle, P.O. Box 628, Millbrook, Ala. 36054

Filed Oct. 30, 1978, Ser. No. 955,600

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—423

6 Claims



1. In a solar collector system wherein solar collector units adapted to contain water to be heated by the sun are connected to a lower level reservoir by water feed and return conduit means that are free of valves and in substantially all respects incline downwardly from the collector units to the reservoir; pump means in the feed conduit means for continuously circulating water from the reservoir through the collector units and capable of substantially unrestrictedly passing water there-through or thereby when idle, means responsive to the temperature of the water heated by the sun for controlling operation of said pump means including means whereby the pumping force of said pump means is automatically reduced a predetermined amount or stopped when there is a predetermined difference in temperature between water heated by the sun leaving said collector units and water entering said feed conduit means from said reservoir and means having no moving parts whatsoever, operable when said pump means is stopped, for venting said system to thereby permit water to drain from said collector

tor units and said water feed and return conduit means into said reservoir, said venting means comprising a relatively small volume catch basin at said reservoir open to said return conduit means and adapted to overflow into said reservoir, said catch basin being filled to a level above the entrance of said return conduit means while said pump means are maintaining the closed water circuit, and weep hole means in the wall of said catch basin whereby when the pump means stop said catch basin drains into the reservoir only slowly to delay the water level in said catch basin from dropping below the entrance of said return conduit means whereupon, when water drops below said return conduit means entrance, said return conduit means is vented and subsequent draining of said collector units into said reservoir occurs.

4,284,063

## SOLAR POWER GENERATING SYSTEM

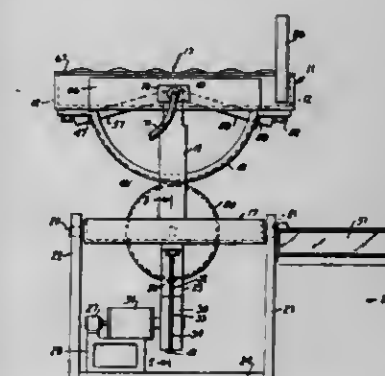
John C. Watson, 2601 E. Monroe, Orange, Calif. 92667

Filed Apr. 23, 1979, Ser. No. 32,131

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—425

11 Claims



1. Apparatus for deriving energy from the sun comprising:
  - a closed fluid circuit for a fluid,
  - said fluid being normally in liquid form and having a low boiling temperature,
  - said circuit including an expansion conduit and a fluid-operated motor arranged in series,
  - a focusing device locatable in a focusing position to focus rays of radiant energy from the sun onto said expansion conduit whereby to transform said liquid into a gaseous fluid for operating said motor,
  - means forming a base,
  - gimbal means on said base for pivotally supporting said focusing device, and
  - tracking means for pivoting said gimbal means to maintain said focusing device in said focusing position in different positions of said base relative to the sun, said tracking means comprising:
    - drive means for said gimbal means,
    - a pair of sensing devices for sensing rays of radiant energy from the sun and for emitting signals proportional to the amount of said rays falling thereon,
    - each of said sensing devices receiving a maximum amount of said rays when directly facing the sun,
    - means mounting such devices on said gimbal means to face in diverging directions, and
    - means responsive to said emitted signals from said sensing devices for actuating said drive means.



4,284,064

## SOLAR HEATING SYSTEM

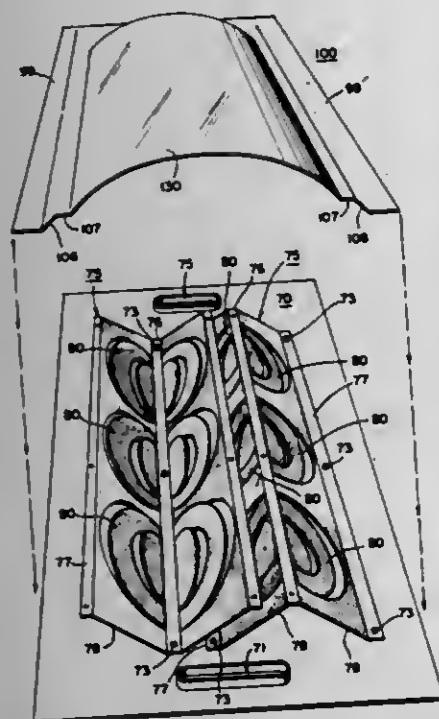
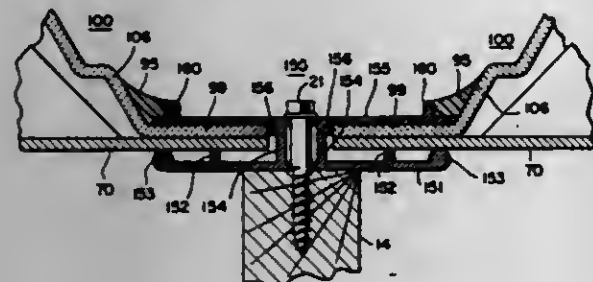
Stephen C. Midonhas, 127 W. Kimberly Ave., Brant Beach, N.J. 08008

Continuation-in-part of Ser. No. 831,473, Sep. 8, 1977, abandoned. This application Nov. 28, 1978, Ser. No. 964,157

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126-429

13 Claims



1. A solar heat collector for mounting on a portion of a building exposed to the sun comprising

a backing member of relatively rigid insulating sheet material mounted in position on the exterior portion of the building by at least one retainer means extending through said backing member and having a lower air inlet opening therethrough and an upper air outlet opening there-through,

a plurality of spaced elongated finned heat absorber members mounted to said backing member and extending longitudinally along said backing member for passage of air therethrough for heating,

cover means enclosing said backing and said heat absorber means, and

said cover means including at least one bilaterally curved transparent dome with side marginal edges, said retainer means being in strip form and engaging said side marginal edges of said cover means and retaining said backing in attached relation to the exterior portion of said building,

said retainer means including

a bottom plate having at least one upwardly extending rib in contact with said backing,

a top plate in engagement with the side edges of said dome retaining said backing between said dome and said backing plate,

at least one plate connecting said top and bottom plates, and

lag bolts engaged with said retainer and an exterior portion of said building.

4,284,065

## STATIC SOLAR HEAT COLLECTORS

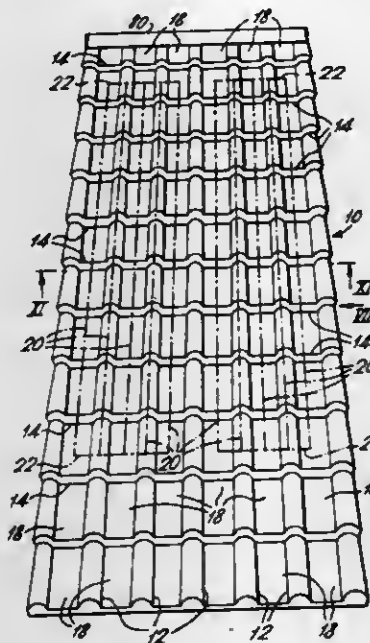
Kenneth O. P. Brill-Edwards, Swansea, Wales, assignor to Crescent Roofing Company Limited, Swansea, Wales

Filed Jun. 28, 1978, Ser. No. 919,956

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126-432

13 Claims



1. A solar heat collector for a building comprising a self-supporting laminar GRP panel including  
a substrate including longitudinal corrugations and having outer and under surfaces;  
a stiffening beam former located lengthwise of the substrate and upstanding on the under surface thereof; and  
a lamina of GRP overlying and coupled to said under surface and to said former;  
a fluid flow channel being defined between said substrate and said lamina.

4,284,066

## SOLAR LIQUID HEATER

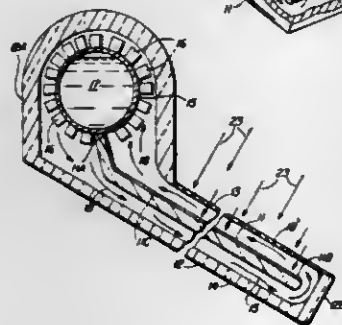
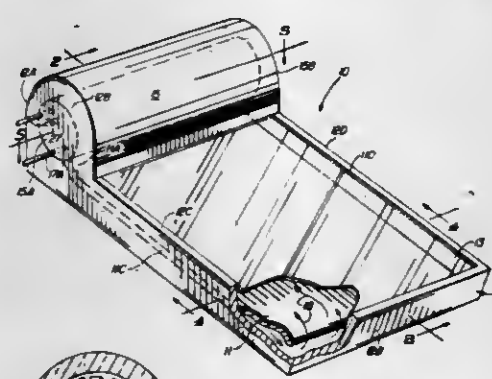
Robert J. Brow, 1843 N. Jefferson, Hobbs, N. Mex. 88240

Filed Jun. 4, 1980, Ser. No. 156,366

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126-435

10 Claims



1. A flat plate solar energy converter comprising:  
an insulating housing having a top plate formed of suitable solar transparent material for transmitting solar rays into said housing,

a solar ray absorber mounted within said housing adjacent said plate and arranged to extend longitudinally thereof for receiving the solar rays,  
a liquid storage tank arranged in said housing at one end of said absorber,  
one end of said absorber being connected along its length to the outer periphery of said tank,  
said absorber being mounted in said housing to define between said plate and the top of said absorber an air flow passageway,  
said housing being form-fitted with insulating material to closely surround said tank to define a part of said air flow passageway between said tank and the interior periphery of said housing,  
said passageway defines an air flow in said housing along the top surface of said absorber and around at least a part of the outer periphery of said tank,  
whereby solar rays absorbed by the top surface of said absorber will heat the air juxtapositioned thereto, which heated air will flow in said part of said passageways around at least a part of the outer periphery of said tank for heating the liquid therein.

4,284,067

## PORTABLE SOLAR HEATER

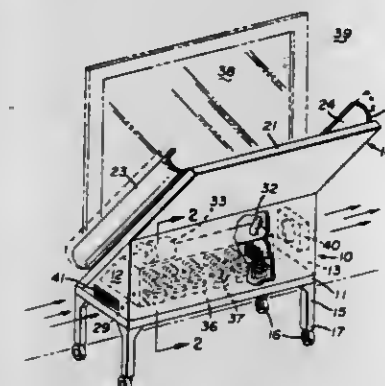
Louise J. Kilar, 192 Elm St., Masury, Ohio 44438

Filed May 15, 1980, Ser. No. 149,908

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126-436

8 Claims



1. A portable solar heater comprising a first enclosure, a collector panel mounted on said first enclosure, said collector panel comprising a pair of spaced rectangular members, a side wall between said rectangular members, a plurality of baffles between said rectangular members, one of said panels being transparent, a secondary enclosure within said first enclosure, an insulation liner within said secondary enclosure, a tubular member positioned partially within said secondary enclosure and partially within said first enclosure, means for moving air through said collector panel and through said tubular member, means for retaining heat within said second enclosure and means for circulating air through said first enclosure over said secondary enclosure and said tubular member.

4,284,068

## SOLAR HEAT COLLECTOR FOR GASSES

Charles F. Gunderson, 1622 N. Marconi Rd., Belmar, N.J. 07719

Continuation-in-part of Ser. No. 815,208, Aug. 13, 1977, Pat. No. 4,156,420, which is a continuation-in-part of Ser. No. 566,730, Apr. 10, 1975, abandoned. This application May 29, 1979, Ser. No. 42,962

The portion of the term of this patent subsequent to May 29, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126-438

11 Claims

1. A solar heat collector for gasses comprising at least one elongated, tubular, outer casing of transparent material; means for positioning said outer casing in a fixed plane substantially

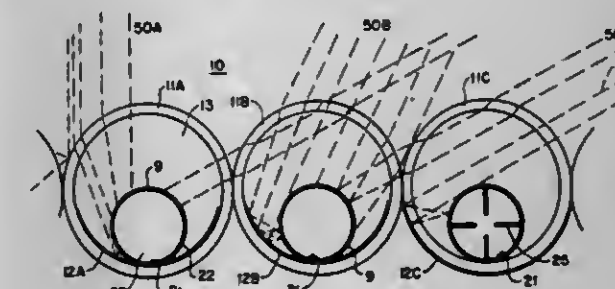
perpendicular to the winter solar orbit, with one cylindrical side of said outer casing facing said solar orbit, whereby a substantial portion of the solar heat energy impinging on said outer casing is refracted towards a given portion within said tubular outer casing, said given portion being located between the axis of said cylindrical side of said outer casing and the other side of said outer casing;

reflective means applied to said other side of said tubular outer casing;

a single, elongated tubular inner section of highly-conductive material, with a dark heat absorbing surface, positioned along said given portion within said outer tubular casing, said elongated tubular inner section having one side toward said solar orbit along the axis of said cylindrical side of said tubular outer casing, and an other side, away from said solar orbit, adjacent to said reflective means, whereby substantially all of said solar heat energy will be refracted or reflected to said tubular inner section during said solar orbit;

a gaseous medium contained within said elongated tubular section, and

means for connecting said elongated tubular section to a system for using heated gasses.



7. A solar heat collector for gasses comprising at least one elongated, tubular, outer casing of transparent material; means for positioning said outer casing in a fixed plane substantially perpendicular to the winter solar orbit, with one cylindrical side of said outer casing facing said solar orbit, whereby a substantial portion of the solar heat energy impinging on said outer casing is refracted towards a given portion within said tubular outer casing, said given portion being located between the axis of said cylindrical side of said outer casing and the other side of said outer casing;

reflective means applied to said other side of said tubular outer casing;

a single, elongated tubular inner section of highly-conductive material, with a dark heat-absorbing surface, positioned along said given portion within said outer tubular casing, said elongated tubular inner section having one side toward said solar orbit along the axis of said cylindrical side of said tubular outer casing, and an other side, away from said solar orbit, adjacent to said reflective means, whereby substantially all of said solar heat energy will be refracted or reflected to said tubular inner section during said solar orbit;

a gaseous medium contained within said elongated tubular section;



said tubular inner section having axial vanes of highly conductive material extending inwardly along the length of said tubular section to conduct heat away from said tubular inner section to provide a better contact between solar heated surfaces and said gaseous medium; and means for connecting said elongated tubular section to a system for using heated gasses.

9. A solar heat collector for gasses comprising at least one elongated, tubular, outer casing of transparent material; means for positioning said outer casing in a fixed plane substantially perpendicular to the winter solar orbit, with one cylindrical side of said outer casing facing said solar orbit, whereby a substantial portion of the solar heat energy impinging on said outer casing is refracted towards a given portion within said tubular outer casing, said given portion being located between the axis of said cylindrical side of said outer casing and the other side of said outer casing;

reflective means applied to said other side of said tubular outer casing;

a single, elongated tubular inner section of highly-conductive material, with a dark heat-absorbing surface, positioned along said given portion within said outer tubular casing, said elongated tubular inner section having one side toward said solar orbit along the axis of said cylindrical side of said tubular outer casing, and an other side, away from said solar orbit, adjacent to said reflective means, whereby substantially all of said solar heat energy will be refracted or reflected to said tubular inner section during said solar orbit;

the lower end of said tubular inner section being terminated above the lower end of said tubular outer casing, said lower end of said tubular section being open;

means for sealing said lower end of said tubular outer casing; means for coupling the upper end of said tubular inner section to a hot air return system; and means for coupling the upper end of said tubular outer casing to a cold air input system, whereby said air being heated in said tubular inner section draws colder air down through said tubular outer casing.

4,284,069

# WALL ELEMENT COMPRISING A SOLAR COLLECTOR WHICH IS DISPOSED BETWEEN TWO TRANSPARENT PANES

Horst Hörster, Wilhelm Hermann, both of Roetgen, and Klaus Klinkenberg, Aachen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

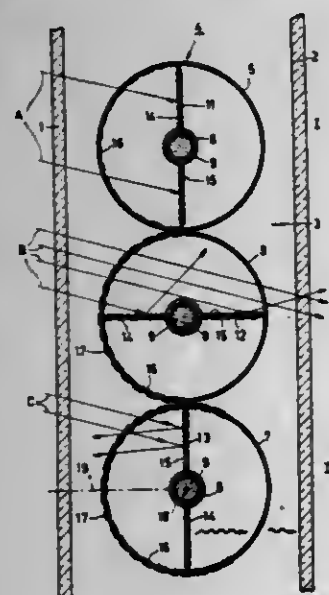
Filed Aug. 13, 1979, Ser. No. 66,217

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1978, 2836542

Int. Cl.<sup>3</sup> F24J 3/02; F28F 1/14

U.S. Cl. 126-438

5 Claims



1. A wall element comprising an outer transparent pane and

an inner transparent pane parallel to each other and providing an enclosed space therebetween; a number of sealed and evacuated transparent tubes paraxially arranged in said space, adjacent transparent tubes being in contact with each other, the inner surface of the longitudinal half of each transparent tube facing the outer transparent pane being provided with a selective heat-reflective layer; a tube for a heat energy transport liquid arranged axially in each transparent tube in sealed relationship therewith; an elongate metal absorber plate rotatably mounted on each heat energy transport liquid tube in heat-conductive contact therewith, one surface of said absorber plate being provided with a non-selective absorbing layer and the other surface of said absorber plate being provided with a non-selective reflective layer; and means to selectively position the absorber plates (a) with their non-selective absorbing layers parallel to the outer transparent pane to provide an active solar heating system, (b) with their non-selective reflective layers extending transversely of the transparent panes and facing upwardly to provide a passive solar heating system, and (c) with their non-selective reflective surfaces parallel to the outer transparent pane to provide a radiation heating system.

4,284,070

# SOLAR ENERGY AIR ROOF

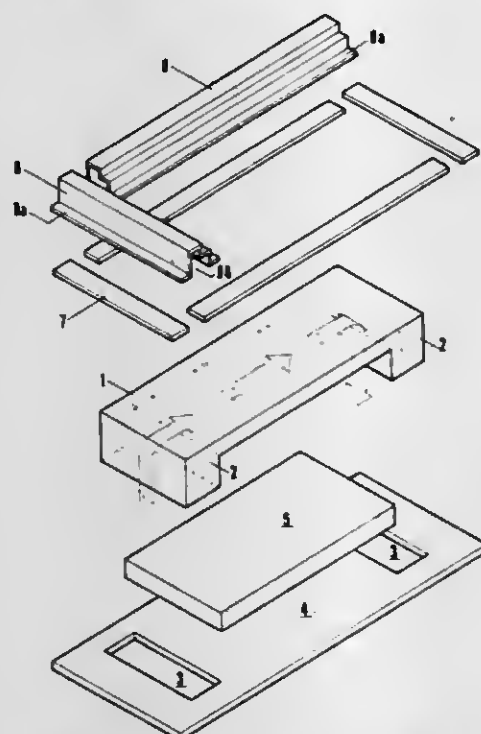
Douglas A. Wilke, 38 Roosevelt Ave., Glen Head, N.Y. 11545

Filed Feb. 6, 1980, Ser. No. 118,904

Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126-450

11 Claims



1. In an apparatus for heating air with solar energy, wherein said air is heated in a chamber disposed below a glazing, the improvement wherein said apparatus comprises a kit capable of on-site assembly upon a planar-shaped base, wherein said kit comprises:

a. a prefabricated heating chamber to be placed upon said base, said chamber being essentially closed on its roof and along two parallel sides, said chamber being substantially closed on its floor, said chamber including a protruding segment extending downwardly from said floor and being open at its extremity, said protruding segment being of sufficient length to extend through a hole in said base when said kit is assembled;

b. a plurality of guide strips to be attached to the top of said base, wherein said strips surround the perimeter of said chamber when said kit is assembled;

c. a plurality of elongated pieces of rigid insulation;

d. a plurality of elongated glazing supports to be attached to the top of said base; wherein said supports are hollow and are open along the bottom thereof; wherein said insulation

is sized to snugly fit totally within each of said supports in a position recessed from said bottom of said supports, wherein said recess defines a slot in said bottom of said supports, wherein said slot is keyed to the size and shape of said guide strips so that said supports snugly fit on top of as well as along the sides of said guide strips when attached to the top of said base; and wherein said supports provide a glazing frame when attached to the top of said base.

4,284,071

# SOLAR OVEN

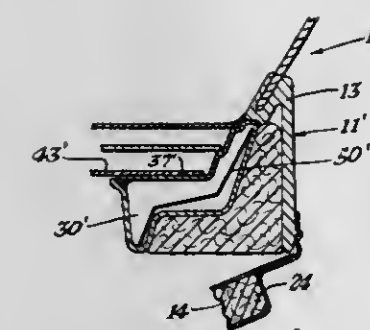
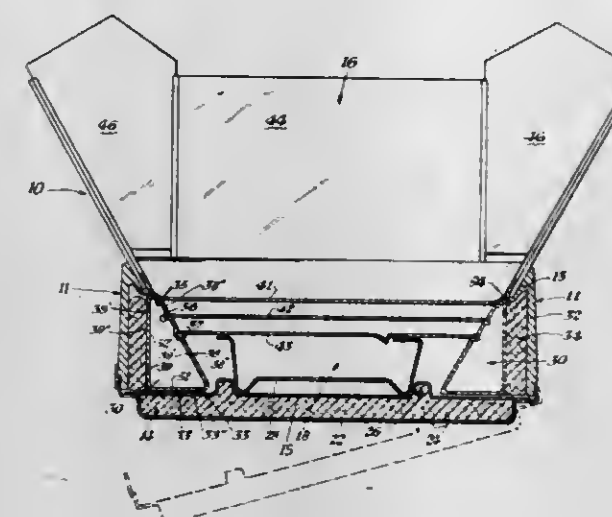
Hy Steinberg, 7200 NW. 78th St., Tamarac, Fla. 33319

Filed Jun. 11, 1979, Ser. No. 47,137

Int. Cl.<sup>3</sup> F24J 3/02; F28F 13/00

U.S. Cl. 126-451

5 Claims



1. In a solar oven including an outer casing with insulated internal walls, an opening in one end thereof and a flat collector plate within the internal walls, and means for concentrating solar energy onto said collector plate to elevate the temperature of said collector plate and the compartment within said insulated internal walls to cook food received in said compartment, the improvement comprising:

a substantially evacuated inner casing means for insulating said compartment from said outer casing, said inner casing means including a first wall portion having a first end and a second end, said first wall portion contacting said insulated internal walls, and said outer casing means including a second wall portion connecting said first end and second end of said first wall portion to provide an evacuated chamber, whereby said inner casing means supports said collector plate on said second wall portion,

said second wall portion is thermally isolated from said first end and said second end of said first wall portion by a thermal break material.

4,284,072

# SOLAR COLLECTORS WITH SOLAR PANELS HAVING A PARTICULATE FERRO-ALLOY SURFACE

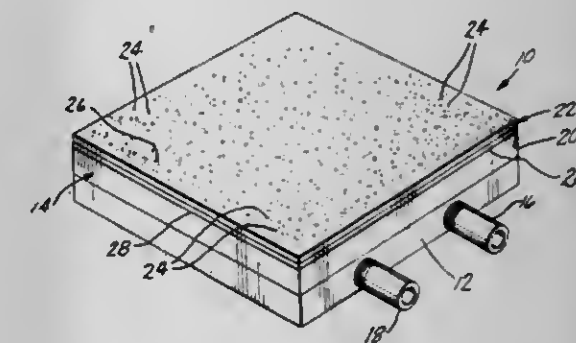
James P. McKaveney, Claremont, Calif., assignor to Occidental Research Corp., Irvine, Calif.

Filed Oct. 26, 1978, Ser. No. 954,817

Int. Cl.<sup>3</sup> F24J 3/02; F28F 13/18

U.S. Cl. 126-901

27 Claims



1. In a solar collector which includes a housing adapted to passage of a fluid therethrough and at least one solar panel for absorbing solar energy and transfer of such solar energy in the form of heat to a fluid passing through the housing, said solar panel being formed of a thermally conductive metal substrate and a solar energy receptive layer for exposure to solar energy, the improvement which comprises providing, as the solar energy receptive layer, a layer adherent to the thermally conductive metal substrate which layer contains at least one particulate, brittle ferro-alloy of high absorptivity and low infrared emissivity, the brittle ferro-alloy comprising, based on the total weight of the ferro-alloy,

(i) a first alloyed constituent of from about 5 to about 95% by weight iron and

(ii) a second alloyed constituent of at least about 5% by weight of an element selected from the group consisting of manganese, carbon, calcium, chromium, phosphorus, and silicon.

4,284,073

# METHOD AND APPARATUS FOR PUMPING BLOOD WITHIN A VESSEL

Horst E. Krause, 8720 Subarcreek Point, Dayton, Ohio 45459, and Edwin L. Stanley, 2566 S. Patterson Blvd., Dayton, Ohio 45409

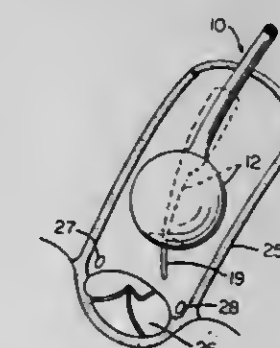
Continuation of Ser. No. 841,017, Oct. 11, 1977, Pat. No. 4,154,227. This application May 10, 1979, Ser. No. 37,766

The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> A61M 1/03

U.S. Cl. 128-1 D

13 Claims



1. A method for perfusing a body organ or tissue containing a body fluid, comprising the steps of forming a catheter having an inflatable portion and enclosing a fluid adapted to be pulsed, inserting the inflatable portion of the fluid-filled catheter into a vessel within the organ or tissue, and pulsating the fluid enclosed within the catheter at a frequency substantially



greater than the normal pulsation frequency of the heart for transmitting pulsatile energy and for producing an amplified dynamic pressure wave form in the body fluid in response to inflation and deflation of the inflatable catheter portion to increase the penetration of the body fluid into the microcirculatory resistance vessels within the body tissue or organ.

4,284,074

## IUD ARRANGEMENT

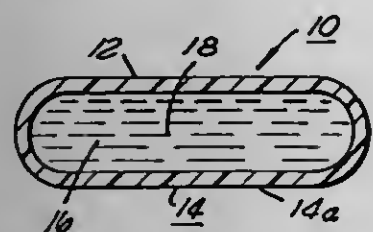
Seth T. Shaw, Jr., 30036 Via Borica, Rancho Palos Verdes, Calif. 90274

Continuation-in-part of Ser. No. 928,106, Jul. 26, 1978, Ser. No. 928,093, Jul. 26, 1978, Pat. No. 4,233,698, and Ser. No. 927,765, Jul. 25, 1978. This application Jul. 9, 1979, Ser. No. 55,902

Int. Cl.<sup>3</sup> A61F 5/46

U.S. Cl. 128—130

46 Claims



1. In an intrauterine device of the type insertable in the uterus and having a surface contacting the uterus and first walls defining a fluid-receiving cavity in at least a portion thereof, the improvement comprising, in combination:

one of a concentrated fluid solution and suspension of at least one drug in said cavity and said at least one drug of the type providing an antifibrinolytic, a reversible antifertility, and an antiproteolytic effect; and said first walls of said intrauterine device comprising a polymer having a predetermined permeability to said at least one drug; said at least one drug comprises at least a guanidine, and whereby, said predetermined permeability of said first walls controls the release rate of said drug from said cavity.

4,284,075

## DIVING HEADGEAR FOR USE IN RETURN-LINE DIVING SYSTEMS

Alan Kramberg, 24 Devanha Gardens, Aberdeen AB1 2UU, Scotland

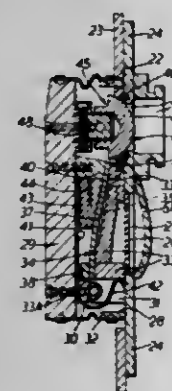
Filed Jun. 14, 1979, Ser. No. 48,700

Claims priority, application United Kingdom, Jan. 17, 1978, 27192/78

Int. Cl.<sup>3</sup> A62B 7/00, 9/02; B63C 11/14

U.S. Cl. 128—201.27

10 Claims



1. In return-line diving apparatus, exhaust valve means for regulating the flow of used gas from the diver into the return line comprising in combination:

a. a base structure having inlet and outlet openings therein and an orificed seat between the openings;

b. a flap pivotally mounted on the base structure and extend-

ing radially outwards over the openings for movement towards and from the seat;

c. a collapsible peripheral wall connecting the flap to the base structure and forming with the flap a collapsible housing containing the orificed seat and exposable to the ambient water; and

d. a flexible membrane in the housing extending radially outwards between the seat and the flap and connected at its inner and outer ends respectively to the base structure and to the flap so that when the flap pivots in response to the diver's breathing the membrane progressively engages with and disengages from the seat to close and open progressively the orificing of the seat.

4,284,076

## NASO-GASTRIC TUBE STABILIZER

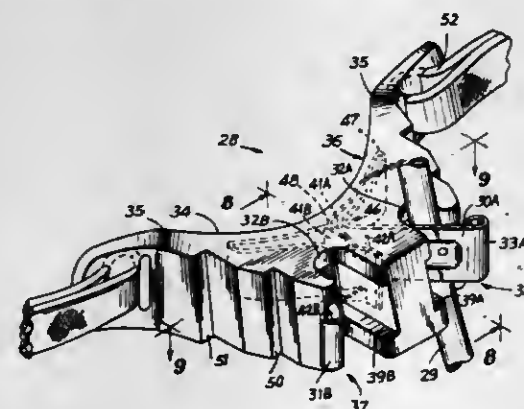
Richard Hall, New Canaan, Conn., assignor to Technalytics, Inc., Upper Saddle River, N.J.

Filed May 23, 1980, Ser. No. 152,593

Int. Cl.<sup>3</sup> A61M 25/02

U.S. Cl. 128—207.18

10 Claims



1. In a nasogastric tube stabilizer device for engaging an exposed section of a nasogastric tube extending out of a patient's nostril, the device including:

a base adapted to lie against the upper lip of a patient and having a central part with a bearing surface thereon, spring means secured on said base for releasably urging said tube section against said bearing surface, and connection means coupled to said base for releasably engaging said base to the patient's head and for holding said base such that the spring means and the bearing surface are oriented to secure said tube section in substantial alignment with the nostril of a patient, the improvement wherein said base comprises a support section which includes thereon said bearing surface; and said spring means comprises a body part secured to said base, and an arm part extending from said body part and overlying said bearing surface, said body and arm parts of the spring configured to sandwich between them said support section of the base, whereby resilient force of the arm part applied to said bearing surface or said section of the tube adjacent said bearing surface causes compression of said support section between said arm and body parts without stressing or distorting the remainder of said base.

4,284,077

## SUCTION INJECTOR HAVING AN ADJUSTABLE DOSING DEVICE

Wolfgang Wagner, Exerzierstrasse 1, 1 Berlin 65, Fed. Rep. of Germany

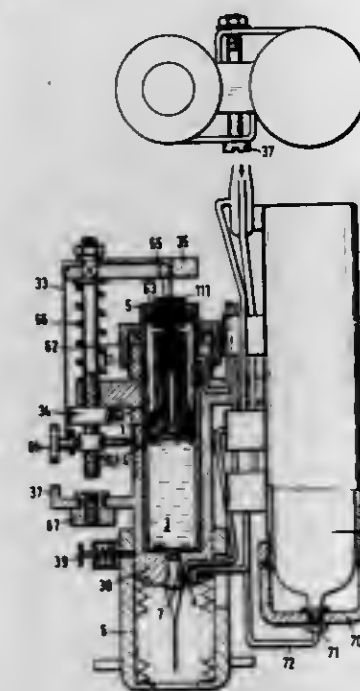
Division of Ser. No. 933,136, Aug. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 793,951, May 5, 1977, Pat. No. 4,114,619, which is a continuation-in-part of Ser. No. 634,741, Nov. 21, 1975, abandoned. This application Nov. 9, 1979, Ser. No. 93,615

Claims priority, application United Kingdom, Nov. 19, 1974, 49989/74; Nov. 19, 1974, 49990/74

Int. Cl.<sup>3</sup> A61M 5/00

U.S. Cl. 128—215

15 Claims



1. A suction injector having a dosing mechanism, comprising a tubular container for storing a multiple dose of a liquid medicine; a piston arranged for movement in said container; an exchangeable cannula connected to one end of said container; a container housing adapted for accommodating said container; a suction cup attached to one end portion of said container housing to pull up the skin of a patient against said cannula; an underpressure generator including a pressure gas container and a pump connected to said suction cup, said under-pressure generator being attached to said container housing and communicating with said suction cup; pressure controlling means having a control valve and disposed between said suction cup and said underpressure generator to control the pressure conditions in said suction cup; a non-return valve coupled between said under-pressure generator and said suction cup to maintain under-pressure in said cup when the suction from said pump is interrupted; and a dosing mechanism arranged on said container housing and coupled to said piston in said container to permit an incremental movement of the piston toward said cannula, the end of said container housing opposite said cannula being hermetically sealed by a closure cap and the space resulting between the cap and the upper surface of said piston communicating through said control valve with said pressure gas container in said under pressure generator to move said piston about a predetermined increment.

4,284,078

## FOUR IN ONE WATER HYGIENE DISPENSER

Paul D. Pace, 347 72nd St., Brooklyn, N.Y. 11209

Filed Mar. 17, 1980, Ser. No. 130,840

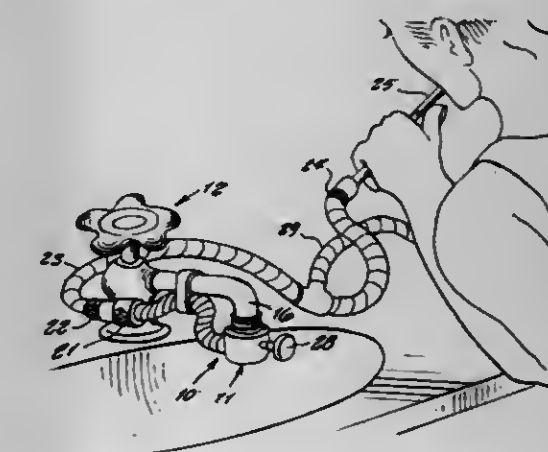
Int. Cl.<sup>3</sup> A61M 3/00

U.S. Cl. 128—229

1 Claim

1. A water hygiene dispenser comprising an adapter for fixing to a water faucet, said adapter comprising a main body portion having a threaded opening, a substantially vertical passageway in said body portion for passage therethrough of

water from the water faucet, and a substantially horizontal passageway in said body portion having a first end in fluid communication with said vertical passageway at a position approximately at the center of said vertical passageway, and a second end remote from said first end; said vertical passageway having a cross-sectional area which is less than the cross-sectional area of said threaded opening, said vertical passageway also having a first end in fluid communication with said threaded opening and a second end remote from said first end and flush with the exterior wall surface of said body portion so that water from the water faucet may exit at said second end; said adapter further having a push button control valve mounted within said main body portion and in operational connection with said vertical passageway, said control valve being mounted on a side of said vertical passageway opposite to the side which is connected to said first end of said horizontal passageway, said control valve also being positioned along said vertical passageway at a location lower than said first end of said horizontal passageway in a direction taken from said first end of said vertical passageway toward said second end of said vertical passageway, said control valve directing the flow of water from the water faucet through said first end of said horizontal passageway when said control valve is in a first extended position, and when in a second retracted position allows for the water from the water faucet to exit through said second end of said vertical passageway; said adapter further comprising a threaded collar for reception in said threaded



opening, said threaded collar having an outer cross-sectional area greater than the cross-sectional area of said vertical passageway, said collar being positionable on a water faucet to mount said main body portion thereto; a first hose having a first end mounted to said main body portion at said second end of said horizontal passageway, said first end of said first hose being in fluid communication with said second end of said horizontal passageway, and a second end remote from said first end; a second hose having a first end connected to said second end of said first hose and a second end remote from said first end; means for connecting said first end of said second hose to said second end of said first hose; clip means for attaching said first hose to a water faucet, said clip means being positioned between said first and second ends of said first hose; a special attachment mounted at said second end of said second hose for spraying and directing water to a chosen location; means for connecting said attachment to said second end of said second hose; a third hose having a first end in fluid communication with said second hose at a location between said first and second ends of said second hose, and a second end remote from said first end; a plurality of clip means for mounting said third hose to a wall; a mounting rack for winding thereon a portion of said third hose near said second end, said mounting rack having a clip for attaching said rack to a water closet; and means for connecting said first end of said third hose to said second hose for fluid communication therewith, whereby water from a water faucet may be directed to an attachment.



4,284,079

## METHOD FOR APPLYING A MALE INCONTINENCE DEVICE

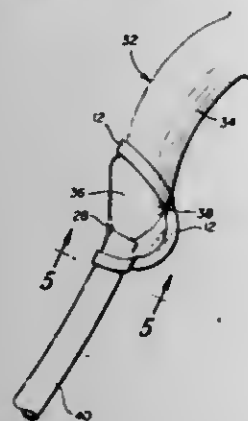
Edwin L. Adair, 191 E. Orchard, Littleton, Colo. 80123

Filed Jun. 28, 1979, Ser. No. 52,865

Int. Cl.<sup>3</sup> A61F 5/44

U.S. Cl. 128—295

2 Claims



1. A method for attaching an incontinence device to the penis of a male using a discharge tube therewith, comprising the steps of:

- providing a discharge tube and a flexible planar sheet having a closed circumferentially planar rim attached in an overlying relationship to said planar sheet with an inner periphery and an outer periphery;
- seating said inner periphery of said rim immediately adjacent the coronal sulcus of the penis while said outer periphery of said rim surrounds the shaft of the penis;
- placing an end of the discharge tube adjacent the penis head;
- folding said sheet around the penis head and the end of the drainage tube;
- forming secured portions and unsecured portions of said rim; and
- connecting the unsecured portions of said rim together along the entire width of said rim portions, the width being defined as the distance between said outer periphery and said inner periphery, to tightly secure the device and the discharge tube to the penis to greatly minimize the escape of fluid from the penis except through the discharge tube.

4,284,080

## APPARATUS FOR THE WORKING OF A BONE WHICH IS TO BE PROVIDED WITH A SHELL PROSTHESIS

Günter Rehder, Stuhl, Fed. Rep. of Germany, assignor to Orthopädische Implantate GmbH &amp; Co. KG, Bremen, Fed. Rep. of Germany

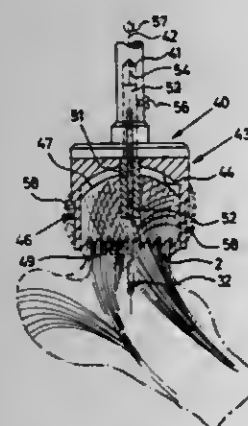
Filed May 29, 1979, Ser. No. 42,870

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834297

Int. Cl.<sup>3</sup> A61F 17/32; A61B 17/16, 17/14; A61F 5/04

U.S. Cl. 128—305

11 Claims



1. Apparatus for the working of a bone, especially the femur

head of a human hip joint, which bone is to be provided with a shell-shaped endoprosthesis, comprising:

- a drivable drive shaft having a free end;
- a pot-shaped cutting head arranged on the free end of said drive shaft, said cutting head has an inner end face which faces away from said drive shaft free end and surrounds the axis of said drive shaft, and a circular free edge on said cutting head which edge is concentric with the axis of said drive shaft;
- first cutting means arranged at the inner end face of said cutting head for defining an arcuately shaped surface on the bone which surface corresponds to the inner surface of the shell-shaped endoprosthesis which is to be applied to the bone;
- second cutting means including uniformly spaced cutting teeth arranged at said free edge of said cutting head for defining a cylindrical jacket on the bone;
- third cutting means extending from said inner end face of said cutting head away from said drive shaft for providing a cylindrical bore in the bone concentric with the axis of said drive shaft, said third cutting means having a central guiding bore extending in the axial direction of said drive shaft; and
- a guiding pin for cooperating with said guiding bore to guide said cutting head through the bone, said guiding pin to be arranged in a bone section treated such that said pin protrudes from the bone and is alignable with said guide bore.

4,284,081

## URINARY RETENTION CATHETER

Richard F. Kasper, 104 Sentry Hill Rd., Monroe, Conn. 06468, and Joseph R. Carvallo, R.D. 1 Redwood Dr., Bethel, Conn. 06801

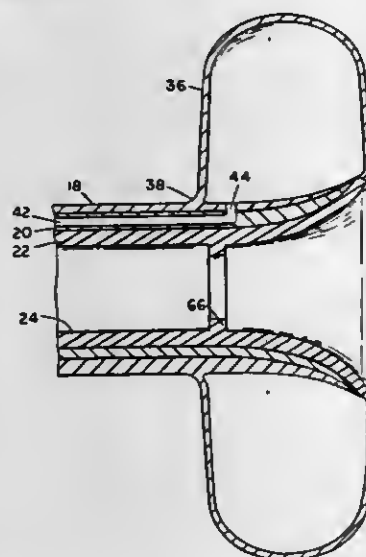
Continuation of Ser. No. 755,259, Dec. 29, 1976, Pat. No. 4,148,319. This application Mar. 1, 1979, Ser. No. 16,350

The portion of the term of this patent subsequent to Apr. 10, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> A61M 25/00

U.S. Cl. 128—349 B

3 Claims



1. A retention drainage catheter adapted to be inserted into and retained in the bladder for the continuous drainage of waste material therefrom, said catheter comprising:

- A. an elongate cannula formed of a flexible and pliant material and having both distal and proximal ends, the length of said cannula being such that said distal end is disposed within the bladder and the proximal end is disposed exteriorly of the urethra,
- B. said cannula having an inner tubular wall surface defining a drainage lumen which extends from said distal end of said cannula substantially to said proximal end thereof, said cannula being tapered adjacent said distal end thereof to form a gradually widening portion from said distal end to facilitate passage of said cannula through the urethra, said tapered portion of said cannula commencing at said

4,284,083

## INHALATION INCENTIVE DEVICE

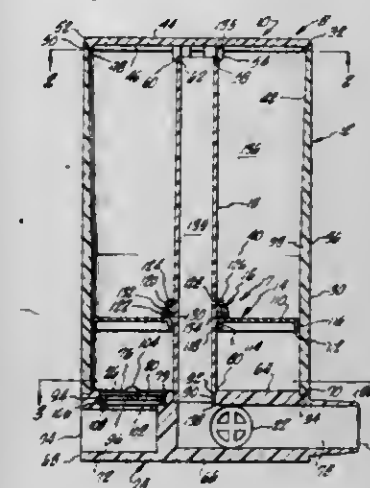
Victor E. Lester, P.O. Box 608, Sonoma, Calif. 95370

Filed May 29, 1979, Ser. No. 42,862

Int. Cl.<sup>3</sup> A61B 5/08

U.S. Cl. 128—725

23 Claims



1. An inhalation therapy device for encouraging prescribed breathing, by a patient, comprising:

- a moveable indicator responsive to patient inhalation flow rates;
- a chamber containing said indicator, said chamber including means for determining the position of said indicator within said chamber;
- first means for drawing patient inhalation gas from said chamber;
- second means to communicate to said chamber a volume of gas which is dependent upon a patient's inhalation flow rate with said indicator being adapted to float in said chamber upon and partially confine said volume of gas, said second means preventing gas flow from said chamber when patient inhalation gas flow ceases; and
- a flow passage through which said confined volume of gas flows after said patient gas flow ceases to reduce the volume of gas upon which said indicator floats thereby causing said indicator to sink in said chamber, said flow passage having varying cross-sectional flow area to cause said indicator to sink at a non-uniform rate whereby said flow passage and said confined volume of gas retards the sink of said indicator.

4,284,082

## VENTRICULAR SYNCHRONIZED ATRIAL PACEMAKER AND METHOD OF OPERATION

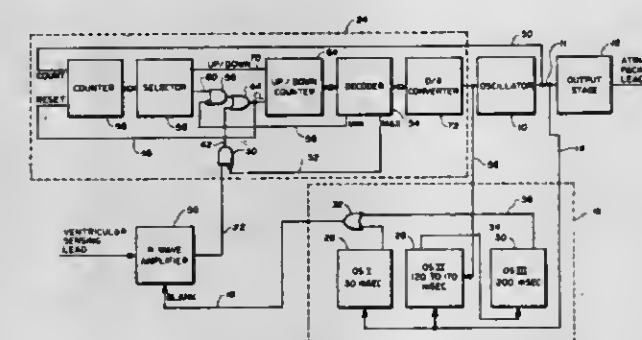
Hermann D. Funke, Bonn, Fed. Rep. of Germany, and Lodewijk-Jozef Herpers, Kerkrade-West, Netherlands, assignors to Medtronic B.V. Kerkrade, Kerkrade-West, Netherlands

Filed Dec. 12, 1979, Ser. No. 102,684

Int. Cl.<sup>3</sup> A61N 1/36

U.S. Cl. 128—419 PG

25 Claims



- 1. A synchronous heart pacemaker comprising:
  - atrial pacing pulse generator means for generating stimulating pulses adapted to be applied to the atrium at an atrial pacing rate;
  - means for sensing ventricular heart depolarizations;
  - means for timing the interval between atrial pacing pulses and ventricular depolarizations and for producing a clock signal when ventricular depolarizations occur out of synchronism with atrial pacing pulses; and
  - atrial pacing rate adjusting means responsive to the clock signal for adjusting the atrial pacing rate to restore synchrony.

4,284,084

## SYRINGE ASSEMBLY

William J. Binard; Anthony J. Clarico, both of Cary; Leonard R. Anglada, Arlington Heights, and Bhupendra C. Patel, Elgin, all of Ill., assignors to The Kendall Company, Boston, Mass. Division of Ser. No. 53,482, Jun. 29, 1979, Pat. No. 4,240,430, which is a continuation of Ser. No. 853,962, Nov. 22, 1977, abandoned, which is a division of Ser. No. 776,147, Mar. 10, 1977, Pat. No. 4,074,714, which is a division of Ser. No. 702,164, Jul. 2, 1976, Pat. No. 4,030,497, which is a division of Ser. No. 627,982, Nov. 3, 1975, which is a continuation-in-part of Ser. No. 509,757, Sep. 27, 1974, abandoned. This application Aug. 21, 1980, Ser. No. 180,071

Int. Cl.<sup>3</sup> A61B 10/00

U.S. Cl. 128—748

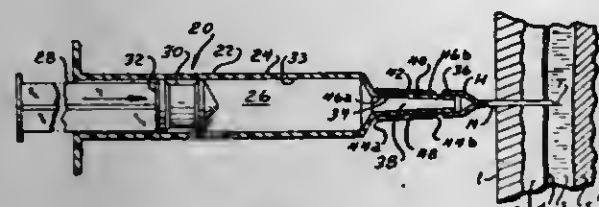
4 Claims

1. A method of locating the epidural space of a patient for performing an epidural anesthesia procedure, comprising the steps of:

- advancing the tip of a hollow needle through the body tissue toward the epidural space of the patient; and



actuating an indicator communicating with the needle when the needle tip is located in the epidural space responsive to



#### 4,284,085 ELECTRODE FOR IMPLANTATION INTO THE COCHLEA (II)

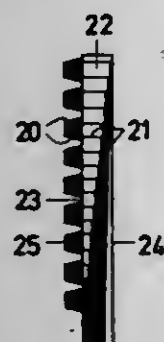
Carl C. Hansen, Sadolinsgade 114 B, DK-5000 Odense, and Ole M. Lauridsen, Kaervej 13, DK-3520 Farum, both of Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,756

Claims priority, application Denmark, Nov. 22, 1977, 5167/77  
Int. Cl.<sup>3</sup> A61N 1/04

U.S. Cl. 128—784

8 Claims



1. An implantable flexible electrode for implantation into the cochlea and disposed to establish electrical communication with the auditory nerves of the human ear, comprising: an elongate foil-like support member of a flexible electrically insulating material; a pattern of electrically conductive paths of a material inert to body fluids and tissue applied to a planar surface of said support member, said pattern extending along said planar surface and terminating each of said paths in an enlarged exposed contact area, and wherein the part of the support member to be accommodated in the cochlea has a natural curvature in the longitudinal direction of the support member which corresponds to the curvature of the cochlea wall containing the nerve endings in the particular turn of the cochlea into which it is to be inserted; means for releasably prestressing said support member to attain a temporary curvature to facilitate insertion into the middle of said turn of the cochlea; said prestressing means being capable of being released when the curved support member is secured in place in the particular cochlea turn to permit said member to return to its natural curvature condition to establish optimum engagement between the nerve endings and the exposed electrode contact areas.

4,284,086

#### THRESHING AND SEPARATING APPARATUS

Dennis W. Williams, Rte. 1, Box 51, Toston, Mont. 59643  
Filed Sep. 22, 1980, Ser. No. 189,123

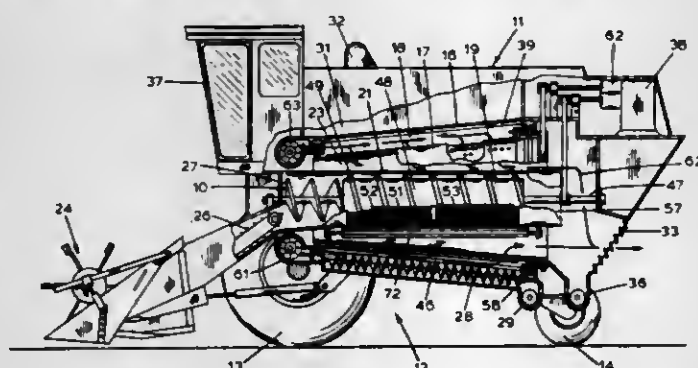
Int. Cl.<sup>3</sup> A01F 7/06, 12/18

U.S. Cl. 130—27 M

8 Claims

1. Apparatus for threshing a grain material and separating the threshed grain from the residual grain material comprising: (a) an elongated supporting frame, (b) a threshing unit including a rotatable threshing cylinder and an associated combination concave and grate member

mounted on said frame to form with the threshing cylinder a threshing zone having an inlet and an outlet, (c) means for supplying the grain material to be threshed into the inlet of said threshing zone, (d) a shroud on said frame enclosing said threshing unit and having an outlet extended axially of said threshing cylinder, (e) a rotatable grain separating cylinder having perforations in the peripheral surface thereof, (f) means for rotatably supporting said separating cylinder on said frame and about said shroud in a coaxial relation with said threshing cylinder to form with said shroud a



chamber for receiving threshed material from said axially extended outlet for rotation with said separating cylinder, with the grain rotatable with said separating cylinder being moved by centrifugal force through the perforations therein,

(g) means for agitating the threshed material rotating with said separating cylinder to maintain open the perforations therein, (h) means for removing chaff and light material from said receiving chamber, and (i) means for collecting and removing the clean grain discharged from the perforations in said separating cylinder.

4,284,087

#### METHOD AND APPARATUS FOR PRODUCING AN ELONGATED WRAPPED ROD FROM FIBERS, ESPECIALLY TOBACCO SHREDS

Joachim Renland, Neu Börnsen, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

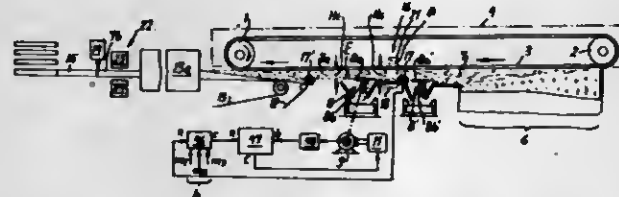
Filed Jul. 27, 1979, Ser. No. 61,351

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833124

Int. Cl.<sup>3</sup> A24C 5/14, 5/39

U.S. Cl. 131—84 C

30 Claims



1. A method of making an elongated rod-like filler from fibers, especially tobacco shreds, comprising the steps of continuously forming from the fibers an elongated stream which contains a surplus of fibers and advancing the stream lengthwise; equalizing the advancing stream including removing the surplus of fibers; densifying and wrapping the equalized stream to convert the stream into the filler; conveying a current of a gaseous fluid transversely across the advancing stream prior to said equalizing step; generating a first signal in dependence on the resistance of the stream to the flow of said fluid; generating a second signal denoting the height of the equalized stream prior to said densifying step; correcting said first signal in accordance with a function which is indicative of a desired

rigidity of the filler and represents a predetermined relationship between said first and second signals; and controlling said equalizing step in dependence on the corrected first signal to maintain the rigidity of the filler at a constant value.

4,284,088

#### METHOD OF MONITORING FILTER ROD SECTIONS IN FILTER TIPPING MACHINES

Peter Brand, Hamburg; Peter Pinck, Gross-Hansdorf, and Anton Baier, Weatorf, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 945,696, Sep. 25, 1978, Pat. No. 4,238,999.

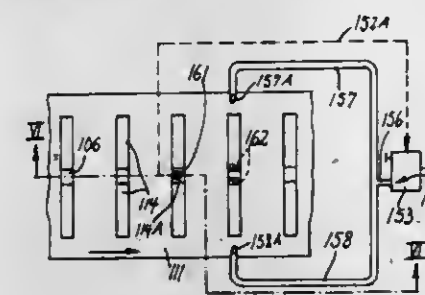
This application Jul. 10, 1980, Ser. No. 168,187

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742856

Int. Cl.<sup>3</sup> A24C 5/47, 5/52, 5/58, 5/60

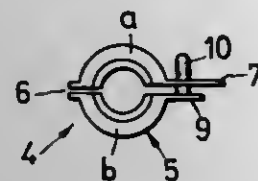
U.S. Cl. 131—280

10 Claims





and defining generally cylindrical depressions between the convolutions of the helical rib for receiving a tress of hair wound around the elongate member; a separate and generally annular clasp member adapted to be secured around the elongate member for retaining a free end of the tress of hair on one end of the elongate member, the clasp member comprising a ring composed of two semi-circular ring components, a hinge



interconnecting the two ring components at one of their ends, and a catch for connecting the two ring components at the other end of their ends; and an L-shaped hook at an end of the elongate member opposite the one end thereof for retaining the elongate member on the tress of hair, the hook defining a narrow passage with the opposite end of the elongate member for introducing a tress of hair therethrough.

4,284,092

**HAIRPIECE ATTACHING STRUCTURE AND METHOD**  
Frank Auretta, 55 Miller Rd., South Windsor, Conn. 06074

Filed Feb. 4, 1980, Ser. No. 118,187

Int. Cl.<sup>3</sup> A41G 3/00

U.S. Cl. 132—53

9 Claims



1. A hairpiece attachment device for attaching a hairpiece to the scalp of a person and comprising:  
elongated coil spring means for gripping between the coils thereof the natural hair growing on a person's head to secure said spring means to the head; and  
elongated flexible tubular means having a longitudinal slot extending from one end thereof to the other and adapted to fit over said coil spring means along the length thereof to provide a surface for securing a hairpiece.

4,284,093

**CHANGE DISPENSING MACHINE**

Takaaki Hayashi, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jan. 13, 1979, Ser. No. 48,115

Claims priority, application Japan, Jun. 13, 1978, 53-70386

Int. Cl.<sup>3</sup> G07D 1/02

U.S. Cl. 133—4 A

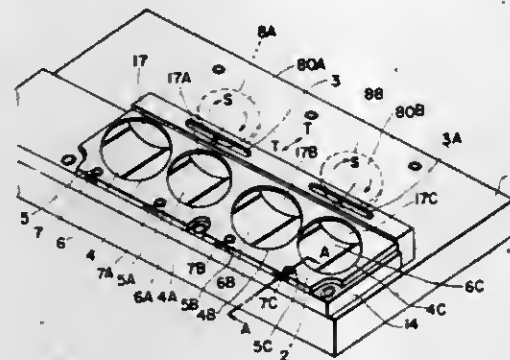
8 Claims

1. A change dispensing machine comprising:  
a change dispensing board having change receiving inlets adapted to receive coins, said change dispensing board being reciprocated to dispense said coins received by said change receiving inlets;  
a plurality of slide boards provided under said change dispensing board, said slide boards holding said coins received by said change receiving inlet on top surfaces thereof;  
connecting pin holes formed in said change dispensing board;  
connecting pins engagable with said connecting pin holes such that said slide boards are selectively reciprocated

with the reciprocation of said change dispensing board, whereby when connecting pins are disengaged from said connecting pin holes the reciprocation of said slide boards is released;

means adapted to move said connecting pins;

first elastic members for providing a restoring force to said connecting pins when said means to move are released from the reciprocation of said change dispensing board; and



second elastic members for providing a restoring force to said means to move whereby said slide boards are reciprocated with said change dispensing board, whereby said slide boards are engaged with said change dispensing board by said connecting pins when said coins are not dispensed, and said slide boards are disengaged from said change dispensing board by retraction of said connecting pins when said change coins are dispensed.

4,284,094

**TENT STRUCTURE WITH SUPPORT ARCHES**

Rudiger Behrend, Turnierstr. 2, D-7750 Konstanz, Fed. Rep. of Germany

PCT No. PCT/DE 78/00028 § 371 Date Jun. 26, 1979, § 102(e)

Date Jun. 25, 1979, PCT Pub. No. WO79/00237, PCT Pub.

Date May 3, 1979

This PCT application filed Oct. 24, 1978, Ser. No. 116,303

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747913

Int. Cl.<sup>3</sup> E04B 1/32, 1/347, 1/344, 7/10

U.S. Cl. 135—3 R

2 Claims



1. Tent structure with support arches and a roof skin, wherein the support arches are constituted by a plurality of rigid arch elements which are tensioned together by means of a plurality of bracing wires drawn together respectively to the feet of each arch by their ends, said arch elements being joined articulately together at their butt ends, the axes of articulation defined by the butt ends extending perpendicularly to the plane

of the arch, said bracing wires passing along said arch elements juxtaposed with intervals extending substantially perpendicularly to the arch plane, and the arch elements each consisting of two tubes which are connected firmly together by distance pieces extending perpendicularly to the arch plane.

4,284,095

**TOP-ERECTED UMBRELLA WITH CANTILEVERED SUPPORT**

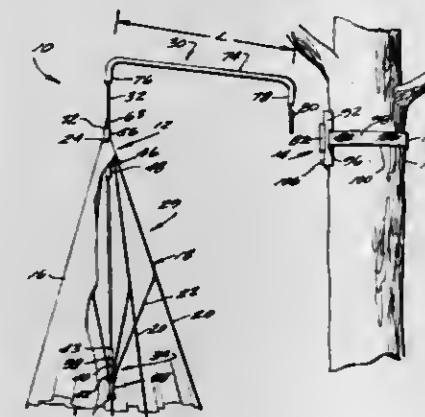
Don S. Norton, Clinton, Miss., assignor to Don Norton Manufacturing Co., Inc., Clinton, Miss.

Filed Jan. 17, 1980, Ser. No. 113,122

Int. Cl.<sup>3</sup> A45B 11/00, 23/00

U.S. Cl. 135—21

14 Claims



1. A top-erected umbrella with cantilevered support, comprising:

an umbrella canopy of flexible sheet material mounted to an umbrella frame having a plurality of ribs radiating from pivotal connection to a frame ring; the umbrella canopy having an apical opening in axial superimposed alignment with the frame ring; an anchor tube under said canopy in axial alignment with said frame ring; the umbrella frame further having a plurality of radiating stretchers, each having one end pivotally mounted to the anchor tube and another end pivotally mounted to a respective rib, so that moving the anchor tube axially towards the frame ring will cause the canopy to be raised to an erected condition from a collapsed condition;

an erector rope sub-unit comprising a rope having a first enlargement provided on a first, outer end thereof, anchor sleeve means threaded on said rope and disposed adjacent said first enlargement, said anchor sleeve means having an upper portion of reduced diameter, providing a guide finger having a shoulder at the base thereof; a tubular clamp strung on said rope above said anchor sleeve and having a lower tubular portion and an upper tubular portion, each portion having a clamping jaw, the two clamping jaws being in axially confronting relation; means for securing the two clamp portions together so that the two clamping jaws are in clamping relation; means providing a second enlargement on the second inner end of said rope, said lower tubular portion of said tubular clamp having downwardly opening throughbore means arranged to slidably telescopically receive said guide finger of said anchor sleeve; and an enlarged bead fixed on said rope at a predetermined distance therealong which is further toward said second end than is said tubular clamp;

a bracket tube having an open longitudinal bore and having a notch in the lower end thereof; and means for securely mounting said bracket tube in a generally upright, elevated condition;

a swing tube having a substantial lateral extent and two opposite, generally downwardly directed ends comprising an inner end and an outer end;

said rope being threaded through said umbrella frame and swing tube, so that said first end lies adjacent said anchor tube of said frame and said second end lies accessible

below the inner end of the swing tube; means securing the anchor tube to the anchor sleeve means; the clamp being assembled through said canopy apical opening and said frame ring so that said canopy and frame are clamped between said clamp jaws and so that an upstanding peg portion of said clamp rises from the top of said canopy; for erecting and mounting the umbrella, the outer end of the swing tube being telescoped with said upstanding peg, the inner end of the swing tube being telescoped with the bracket tube so that the inner end of the rope lies exposed below the bracket tube, and the inner end of the rope being pulled down until said bead has emerged downwards through the bracket tube, whereupon the inner end of the rope has been pulled laterally to pull the rope just above the bead into said notch in the lower end of the guide tube.

4,284,096

**AUTOMATIC TRANSMISSION GOVERNOR HAVING DECELERATION SENSITIVE PRESSURE SWITCHING FEATURE**

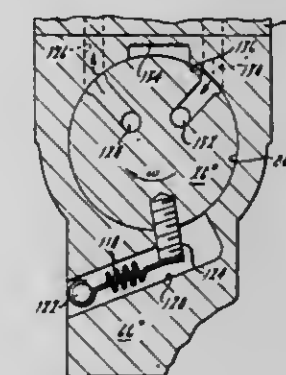
Allan S. Leonard, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 4, 1980, Ser. No. 156,237

Int. Cl.<sup>3</sup> G05D 13/66

U.S. Cl. 137—48

3 Claims



1. In a governor valve assembly for an automatic transmission in an automotive vehicle driveline having an internal combustion engine:

a driven shaft forming a torque output member for said transmission;

a governor body connected to and rotatable with said driven shaft, said body having an opening through which said shaft extends, said body being rotatable relative to said driven shaft, stop means for limiting relative angular displacement of said body and said driven shaft;

spring means for biasing said body to a first position relative to said driven shaft as determined by said stop means, said body being angularly adjustable to a second position relative to said driven shaft in response to deceleration inertia forces acting on said body as said driven shaft is decelerated;

a governor pressure port and a vent port in said body communicating with said opening at angularly spaced locations, and a governor pressure passage rotatable with said driven shaft and registering with said governor pressure port when said body and said driven shaft assumes said first relative position;

said body being angularly adjustable to a second position relative to said driven shaft whereby said governor pressure passage is brought into communication with said vent port and said governor pressure port is blocked.



4,284,097

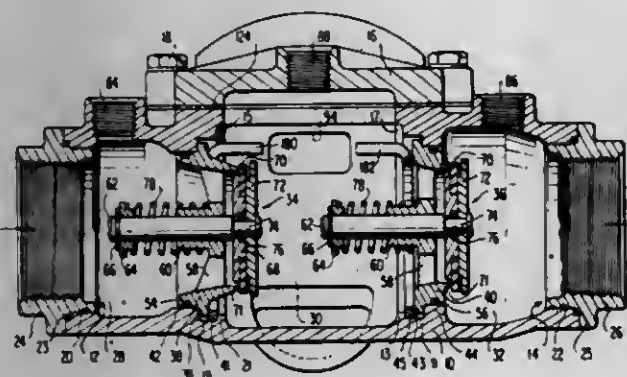
## IN LINE BACK FLOW PREVENTER

Bernard B. Becker, Belmont; John K. Bowman, Brighton, and Cyril A. Randall, Belmont, all of Mass., assignors to Amtrol Inc., West Warwick, R.I.

Continuation-in-part of Ser. No. 890,964, Mar. 28, 1978, Pat. No. 4,232,704. This application Jul. 18, 1979, Ser. No. 58,566 Int. Cl.<sup>3</sup> F16K 15/06, 45/00

U.S. Cl. 137-218

12 Claims



1. A device for preventing the back flow of water from a point of use into a water supply line comprising:

- (a) a unitary casing having a water inlet opening, a water outlet opening and a drain vent opening, said water inlet and water outlet openings being coaxially aligned, the interior of said casing defining an inlet chamber, a central chamber and an outlet chamber, said chambers being coaxially aligned with each other and with said water inlet and water outlet openings to form a straight through flow path for the water, said interior of said casing also defining a drain vent chamber communicating with said drain vent opening and said central chamber, and said drain vent chamber being offset from said coaxially aligned inlet, central and outlet chambers;
- (b) a first check valve assembly removably attached to the interior of said casing between said inlet and central chambers, said first check valve being biased in a closed position to prevent the flow of water therethrough and opening to permit the flow of water therethrough when the water pressure in the water inlet chamber exceeds a predetermined level;
- (c) a first removable retaining means for retaining said first check valve assembly in said attached position, said first removable retaining means being located in said central chamber;
- (d) a second check valve assembly removably attached to the interior of said casing between said central and outlet chambers, said second check valve being biased in a closed position to prevent flow of water therethrough and opening to permit the flow of water therethrough when the water pressure in said central chamber exceeds a predetermined level;
- (e) a second removable retaining means for retaining said second check valve assembly in said attached position, said second removable retaining means being located in said central chamber;
- (f) a relief valve located within said casing interposed between said central chamber and said drain vent chamber, said relief valve being offset from said coaxially aligned inlet, central and outlet chambers, and said relief valve being biased in an open position;
- (g) a flexible diaphragm attached to said casing and to said relief valve, one side of said diaphragm communicating with said central chamber and the other side of said diaphragm communicating with said inlet chamber, such that the normal pressure differential between said inlet and central chamber causes said relief valve to close thereby preventing water flowing from said central chamber to said drain vent chamber; and
- (h) a cover removably attached to said casing over an opening therein such that upon removal of said cover, said first

and second check valve assemblies being removable from said casing interior without removal of said flexible diaphragm.

4,284,098

## VALVES FOR CONTROLLING OR PREVENTING FLUID FLOW

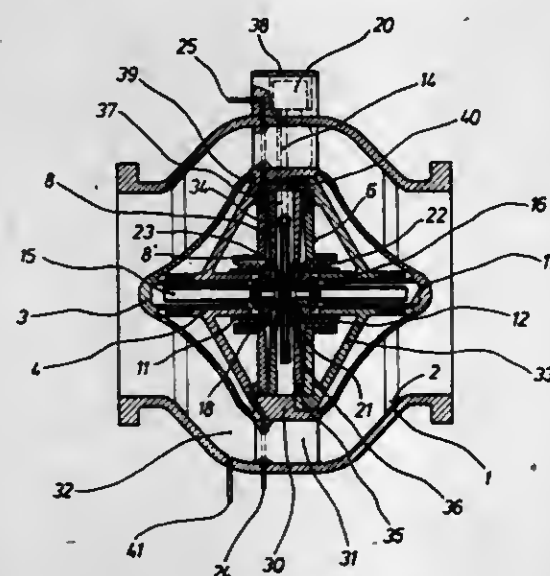
Julius Kruschik, Gumpoldskirchen, Austria, assignor to Klinger AG, Zug, Switzerland

Filed Feb. 6, 1979, Ser. No. 9,838

Int. Cl.<sup>3</sup> F16K 31/128

U.S. Cl. 137-219

16 Claims



9. In a valve for control of fluid flow having a shut-off element axially movable to close against a valve seat, drive means to cause axial movement of said shut-off element, and a diaphragm operatively connected to said shut-off element so as to apply axial force to said shut-off element in the closing direction in response to fluid pressure, the improvement comprising arranging the diaphragm to control the axial position of a connecting member forming part of said drive means, the shut-off element being axially movable relative to said connecting member by the drive means, control fluid being admissible to volumes on both sides of diaphragm.

4,284,099

## FROST-PROOF FIRE HYDRANT

Sultan A. Rifat, 159 Gelston Ave., Brooklyn, N.Y. 11209

Filed Apr. 30, 1979, Ser. No. 34,344

Int. Cl.<sup>3</sup> E03B 9/02; F16K 35/02

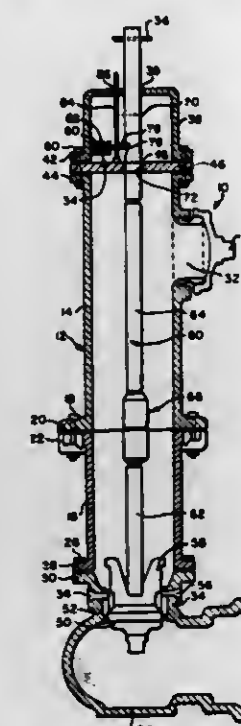
U.S. Cl. 137-296

4 Claims

1. In a fire hydrant including a vertical barrel defining a passage adapted for connection to a shoe; a bonnet having a thru aperture secured to the upper end of the barrel; a valve stem disposed in said barrel for reciprocating movement in said passage with one end of said stem extending through said aperture; valve means connected to the other end of said stem for reciprocating movement therewith between an open position wherein said shoe communicates with said passage and a closed position wherein communication between said shoe and said passage is blocked, said valve means being arranged for movement to said open position against the fluid pressure in said shoe upon downward movement of said stem; and operating means secured to said bonnet and engageable with said one end of said stem for moving said stem and attached valve means to said open position, the improvement which comprises:

- a pin moveably secured in said bonnet;
- said stem having a hole for receiving said pin, said pin being moveable between a first position wherein said pin is in

said hole when said valve is in said closed position and a second position wherein said pin is out of said hole;



a lever secured to said pin and having one end extending through an additional aperture in said bonnet for moving said pin between said first and second positions; and means for biasing said pin to said first position.

4,284,100

## PIPE MOUNT MANIFOLD ASSEMBLY

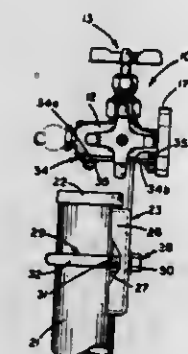
John N. Scapes, Schaumburg, and Joseph S. Soos, Hanover Park, both of Ill., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Jun. 4, 1979, Ser. No. 45,193

Int. Cl.<sup>3</sup> F16L 3/00; F16K 1/00

U.S. Cl. 137-343

3 Claims



1. A pipe mount manifold assembly (10) comprising:
  - a valved manifold (11) having means (17) for mounting a transmitter (16) for process instrumentation thereto, and means (18) for connecting a fluid flow conduit (14,15) thereto;
  - a mounting bracket (23) for supporting the manifold having a carrier portion (34) provided with securing means (35,35a,35b) for supporting the manifold in any one of a plurality of different positions thereon, a pipe mount portion having a flat plate portion (24), a first pair of turned flanges (25) formed at opposed sides of said plate portion and defining a first pair of chocks for mounting the bracket to a pipe with the carrier portion directed transversely to the spacing direction thereof, and a second pair of turned flanges (26) formed at opposed sides of said plate portion and defining a second pair of spaced chocks for mounting the bracket to a pipe with the carrier portion directed parallel to the spacing direction thereof, said pipe mount portion further having a plurality of openings in said flat plate portion within the area thereof defined by

said flanges and including a first pair of openings (33b) spaced perpendicularly to the spacing direction of said first pair of flanges (25) and a second pair of openings (33a) spaced perpendicularly to the spacing direction of said second pair of flanges (26), said flanges (25,26) each further defining a cleat portion (27) for frictionally engaging a pipe to distribute the force of mounting said pipe mount portion to a pipe along at least two separated areas of said pipe mount portion and to positively position said mounting bracket in the desired mounting position with respect to a pipe;

- a U-clamp (29) adapted to embrace a pipe and having legs (32) provided with distal ends (31) disposed to pass selectively through either of said pairs of openings; and
- securing means (30) adapted to be secured to said distal ends for cooperation with the U-clamp in clamping the bracket to the pipe with said carrier portion directed selectively parallel to or transversely to the pipe, whereby said manifold may be pipe mounted in any one of at least eight different positions.

4,284,101

## PRESSURE-RELIEF VALVE DEVICES

Walter Weirich, Dortmund, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhütte Westfalia, Lunen, Fed. Rep. of Germany

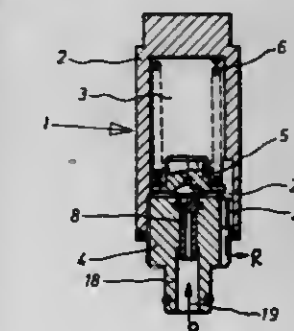
Filed Dec. 28, 1978, Ser. No. 974,092

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803283

Int. Cl.<sup>3</sup> F16K 15/06

U.S. Cl. 137-538

10 Claims



1. A valve device for pressure relief of hydraulic pressure fluid and especially for pressure relief of hydraulic props of mine equipment operated with an oil-water emulsion as pressure fluid at a pressure in the range of 200-600 bars, said device comprising:

- a main housing defining an internal chamber closed at one end;
- a guide located in the main housing, said guide having an end face at the opposite end of said chamber and a first axial bore;
- a valve member having a head with an annular stop face opposed to said end face and a stem received in said first axial bore, a second axial bore in said stem which communicates via radial borings in said stem with pressure fluid outlets in the external peripheral surface of said stem, said peripheral surface having a smoothness with a maximum peak-to-valley depth of about 1 μm and being slidable within said bore;
- a groove in the wall of said first bore, said groove having a maximum diameter which is less than the outer diameter of said stop face;
- a sealing ring located in said groove to engage with its internal diameter in sealing relationship with said peripheral stem surface, the sealing ring having its internal diameter slightly smaller than the diameter of said peripheral stem surface, the axial distance between said groove and said end face being not greater than the cord diameter of said sealing ring;
- a spring located in said chamber to apply force to said valve member to urge said stop face against said end face and to



displace said stem to a position at which communication between said pressure fluid outlets and said chamber is blocked by said sealing ring.

a main inlet for pressure fluid communicating with said first and second axial bores, a main outlet for pressure fluid leading from said chamber, whereby said valve member can be displaced by excess fluid pressure against the force of said spring to axially displace said stem to a position at which said fluid outlets are between said sealing ring and said chamber, thereby permitting pressure fluid to discharge via said second axial bore, said radial borings and said pressure fluid outlets into said chamber, and from said chamber through said main outlet.

4,284,102

## COMBINATION STOP AND PRESSURE REDUCING VALVE

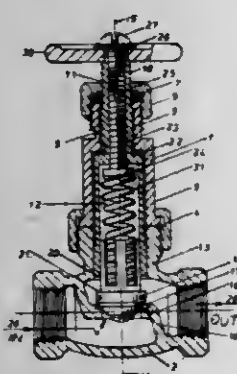
Hans Adler, New York, N.Y., assignor to H. Adler Associates, Inc., New York, N.Y.

Filed Jun. 28, 1978, Ser. No. 920,014

Int. Cl.<sup>3</sup> F16K 15/00

U.S. Cl. 137-543.21

1 Claim



1. A combination shut-off and adjustable pressure-reducing valve, comprising:

- a. a valve body, said valve body incorporating a seat between an inlet and an outlet,
- b. a valve bonnet, said valve bonnet being at least partially hollow and joined with said valve body,
- c. a valve stem, said valve stem being at least partially hollow, engaged with said valve bonnet for axial movement with respect thereto and having a piston-engaging surface,
- d. an adjusting screw, said adjusting screw being located at least partially in said valve stem for axial movement with respect thereto,
- e. a piston, said piston being located for movement axial of said valve stem, as limited by contact with the piston-engaging surface of said valve stem, and
- f. a spring, said spring being located to provide spring bias between said adjusting screw and said piston, said adjusting screw adjusting the amount of spring bias,
- g. whereby said spring biases said piston into closing engagement with said valve body seat and
- h. said piston, to the extent limited by contact with the piston-engaging surface of said valve stem, being openable by a pressure differential, between inlet and outlet pressures, greater than said spring bias.

4,284,103  
RANDOM ACCESS VALVE

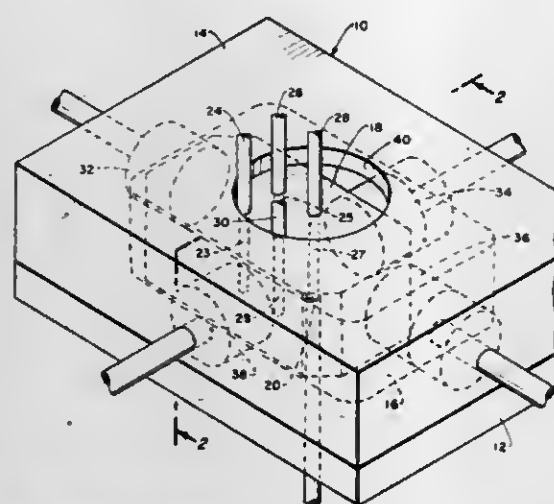
J. C. Pemberton, 10222 San Diego Mission Rd., San Diego, Calif. 92120

Continuation of Ser. No. 904,042, May 8, 1978, abandoned, which is a continuation of Ser. No. 671,522, Mar. 29, 1976, abandoned. This application May 6, 1980, Ser. No. 147,010

Int. Cl.<sup>3</sup> F16K 11/06

U.S. Cl. 137-625

18 Claims



1. A valve comprising:
- housing means having a cavity therein,
- a slideable valve member having a flat surface,
- means for mounting said valve member in said cavity for translation without rotation along a plurality of intersecting axes, fixed with respect to said valve member and lying in the plane of said surface, and comprising a first plate member having a flat surface contiguous to and across which said valve member surface slides,
- first conduit means communicating with the exterior of said housing means and including first port means in one of said surfaces,
- second conduit means communicating with the exterior of said housing means and including second port means in the other of said surfaces selectively registrable with certain of said first port means upon predetermined translation without rotation of said valve member along said axes,
- first translating means for translating without rotation said valve member in said cavity along one of said axes for effecting registration between certain of said first port means and certain of said second port means;
- second translating means for translating without rotation said valve member in said cavity along another of said axes for effecting registration between certain of said first port means and certain of said second port means.

4,284,104

## SAFETY VALVE FOR PACKAGES

Pierre-Gino Beghini, 42, rue d'Avron, Paris, France (75020)

Filed Oct. 26, 1979, Ser. No. 88,380

Claims priority, application France, Nov. 9, 1978, 78 31744

Int. Cl.<sup>3</sup> F16K 15/14

U.S. Cl. 137-859

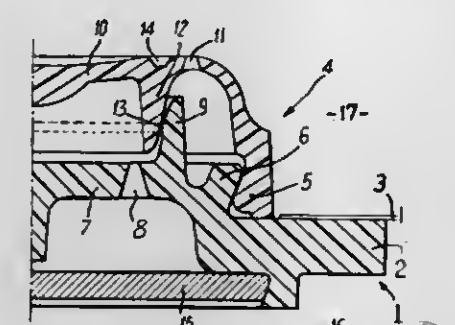
10 Claims

1. A safety valve for the wall of a container, said valve comprising:

- a first member having a main body portion adapted to be affixed to the wall of the container, said main body portion having first opening means therethrough, and said first member including an upstanding annular surface extending away from said main body portion;
- a second member for connection to said first member, said second member having a main body portion sized to overlie and enclose said upstanding annular surface and said first opening means, said main body portion of said second

member having second opening means therethrough, and said second member including an annular sleeve extending away from the surface of said main body portion of said second member;

one of said first and second opening means being positioned inside of its respective annular surface or annular sleeve, and the other of said first and second opening means being positioned outside of its respective annular surface or annular sleeve; and



said annular sleeve being sized so as to cooperate with said annular surface on said first member to seal said first opening means from said second opening means when the pressure differential across the wall of the container is below a predetermined differential limit, and said second member and said annular sleeve being sufficiently flexible so that said annular sleeve moves away from said annular surface when the pressure differential across the wall of the container exceeds said predetermined differential limit to permit said first opening means to communicate with said second opening means.

4,284,105

## DISCRETE SPIRAL FLOW IMPARTING DEVICE

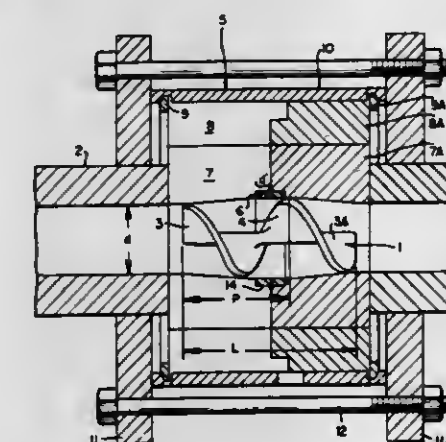
Isaac Moked, New Brunswick; Richard H. Handwerk, South Somerville, both of N.J., and Hans J. Goettler, Fargo, N. Dak., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 9, 1979, Ser. No. 93,016

Int. Cl.<sup>3</sup> F15D 1/02

U.S. Cl. 138-42

6 Claims



2. Apparatus for imparting spiral motion to material flowing in a tube comprising a relatively short spiral member anchored within a modular member capable of attachment to said tube to preserve movement relative to said tube, said spiral member having a maximum length shorter than said tube and being capable of imparting predetermined spiral motion to material flowing in said tube, said spiral member having two ends and a central portion, wherein said central portion has a diameter exceeding that of said ends, and said apparatus further comprising a hollow housing snugly fitting over said spiral member.

4,284,106

## PIPE OR VESSEL WITH INTERNAL LINING

Karl-Heinz Haas, Lauf, and Werner Lang, Calw-Stammheim, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany

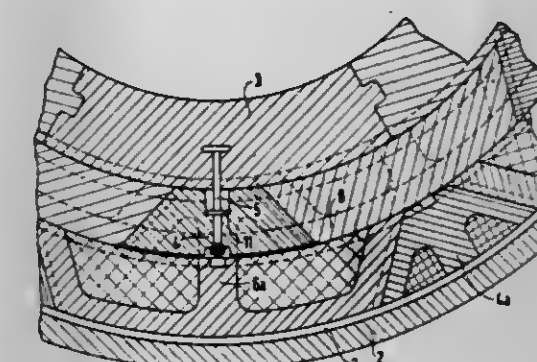
Filed May 8, 1979, Ser. No. 37,120

Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2820174

Int. Cl.<sup>3</sup> F16L 9/14; F27D 3/02

U.S. Cl. 138-147

2 Claims



1. A hollow cylindrical body such as a tube or vessel for receiving hot gas comprising an inner lining formed of an inner cylindrical wall and wedge-shaped molded blocks with radially outwardly partly narrowing and partly widening cross sections disposed at the outer circumference thereof, metallic anchoring means for fastening part of said molded blocks to said inner wall, the remainder of said molded blocks being disposed between the fastened blocks without any binding intermediate layers, and an outer cylindrical wall surrounding said molded blocks, the molded blocks fastened by said metallic anchoring means to said inner wall being keystones having a radially inwardly narrowing cross section and binding the remainder of the molded blocks against the inner cylindrical wall.

4,284,107

## FRACTURE ARRESTOR FOR A PIPELINE

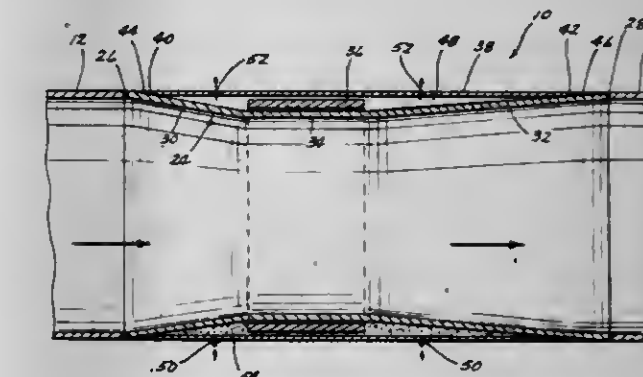
Ronald D. Grose, Omaha, Nebr., assignor to Internorth, Omaha, Nebr.

Filed Apr. 25, 1980, Ser. No. 143,646

Int. Cl.<sup>3</sup> F16L 9/14, 35/00

U.S. Cl. 138-172

12 Claims



1. A crack arrestor assembly for insertion in at least one intermediate point in a pipeline formed of a plurality of sections of pipe to prevent the propagation of pipeline fractures, said crack arrestor assembly including a body portion having opposite ends which are in open communication with sections of said pipeline at both ends of said crack arrestor, said body portion including a wall which is sloped inwardly from each end thereof to an intermediate point thereby forming a reduced diameter portion at the outer surface of said body portion, and a reinforcing means embracing said reduced diameter portion.



4,284,108

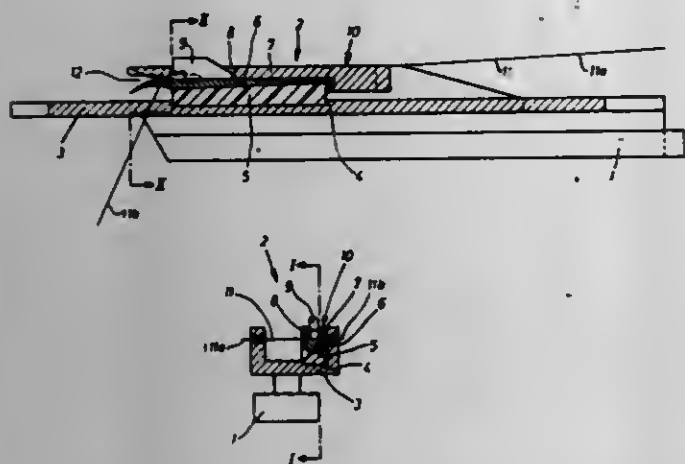
## THREAD GRIPPER

Allan W. H. Porter, Lustmühle, and Anton Lücian, Arbon, both of Switzerland, assignors to Adolph Saurer Limited, Arbon, Switzerland

Filed Nov. 13, 1979, Ser. No. 93,450  
Int. Cl.<sup>3</sup> D03D 47/22

U.S. Cl. 139-448

4 Claims



1. A thread gripper for textile threads comprising: a pair of horns (3, 7), one of said horns (7) being held rigid; a cushion (5) of soft resilient material carried by said other horn (3); said cushion being of rubber or rubber-like plastic material; a movable tongue (6) carried on said cushion (5) and being prestressed by said cushion against an inside of said rigid horn (7); whereby a thread positioned between said movable tongue (6) and said inside of said rigid horn (7) is securely held.

4,284,109

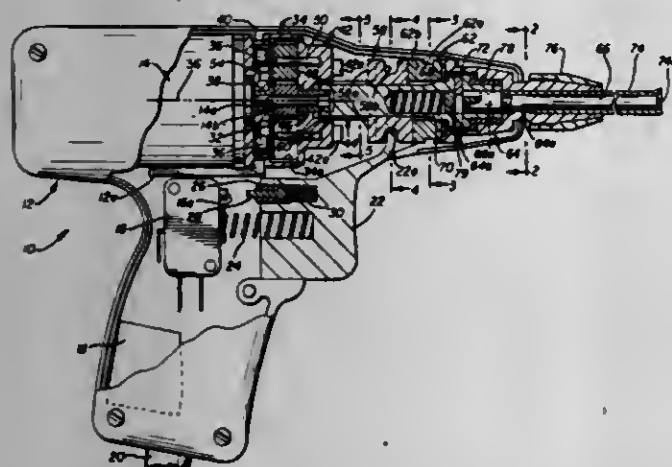
## ELECTRIC CONDUCTOR WRAPPING TOOL

Paul R. Kilmer, Leroy, and Roger M. Bula, Reed City, both of Mich., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Oct. 19, 1979, Ser. No. 86,425  
Int. Cl.<sup>3</sup> B21F 15/04

U.S. Cl. 140-122

16 Claims



1. In a conductor wrapping tool of the type having drive means selectively engageable with clutch means mounted on a drive shaft for effecting rotation of a bit connected to the drive shaft, and having index means for stopping the bit in a predetermined position after disengagement of the drive means and clutch means, the improvement which comprises: at least one separate resilient member means frictionally engaged between the drive means and drive shaft for applying controlled torque such that the index position is achieved and the drive means is gradually arrested after disengagement from the clutch means and stoppage of the drive shaft.

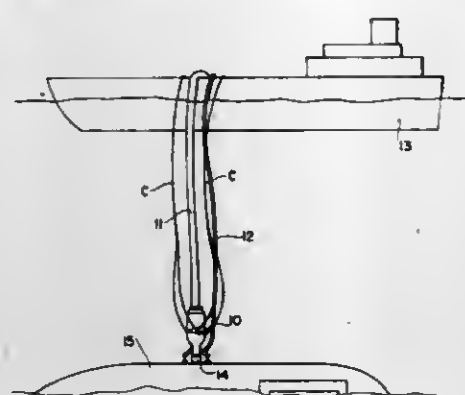
4,284,110

## APPARATUS FOR TRANSFER OF FLUENT MATERIALS FROM ONE CONTAINER TO ANOTHER

Carl D. Divilbiss, Roslyn, Wash., and Mortimer R. Dock, Arlington, Va., assignors to Frances K. Divilbiss, Roslyn, Wash.  
Continuation-in-part of Ser. No. 806,908, Jun. 15, 1977, abandoned. This application Jul. 23, 1979, Ser. No. 59,743

Int. Cl.<sup>3</sup> B65B 3/04; B63C 7/16  
U.S. Cl. 141-98

12 Claims



1. An apparatus detachably securable upon the surface of a container for the transfer of the fluid or aeriform contents thereof to a receiving vessel, said apparatus comprising a housing having upon the exterior thereof at least two projecting legs having magnetic feet for initial engagement of said apparatus with said container; and disposed within said housing a motor connected by power lines and hose means extending between said apparatus and said receiving vessel, and integrally connected to said motor a power shaft and a power ram; locking dogs hingedly connected to said power ram for the detachable securement of said apparatus to said container; a pilot drill centrally disposed within a circular saw integrally connected to said power ram, said saw projecting beyond the end of said housing most distant from said motor and being adapted to cut an orifice in the wall of said container; and sealing gasket and ring means for preventing the escape of the contents of said container; said entire apparatus being retrievable after removal of said contents from said container by release of the locking action of said dogs.

4,284,111

## WOOD LATHE TOOL

Paul S. Petersen, Minnetonka, and Robert A. Holdahl, Hopkins, both of Minn., assignors to Toolmark Co., Minneapolis, Minn.

Filed Nov. 20, 1979, Ser. No. 96,220  
Int. Cl.<sup>3</sup> B23B 29/06

U.S. Cl. 142-56

7 Claims



1. A wood cutting tool assembly comprising a blade member formed of a thin bar of material bent into a generally U shape

4,284,113

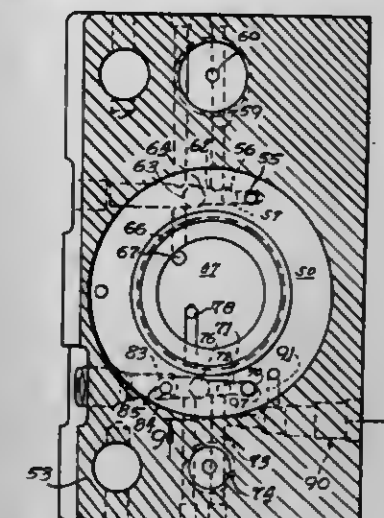
## HYDRAULIC LOG SPLITTER

William F. Nordlin, Coloma, Mich., assignor to Anto Specialties Manufacturing Company, St. Joseph, Mich.

Filed Dec. 20, 1979, Ser. No. 105,612  
Int. Cl.<sup>3</sup> B27L 7/00

U.S. Cl. 144-193 A

7 Claims



and having a rounded end wall and side legs extending from said rounded end wall to define a space between the legs, said legs and rounded end wall having upper and lower edges, the upper edge of said rounded end wall being sharpened to form an upwardly facing cutting edge, means to support said blade comprising a base engaging the lower edge of said legs, a guard plate engaging the upper edge of said legs, means to exert a clamping force on said base and guard plate to clamp and support the legs during use, said guard plate overlying said blade and having a nose portion closely overlying the rounded end wall adjacent said cutting edge to limit the amount of space between said guard plate and said cutting edge and thereby limit the depth of cut of said cutting edge, and a chip deflector including a deflector wall extending between said legs and spaced from the rounded end wall to define a chip channel, said deflector wall being inclined in direction away from the rounded end wall and in direction away from the cutting edge.

4,284,112

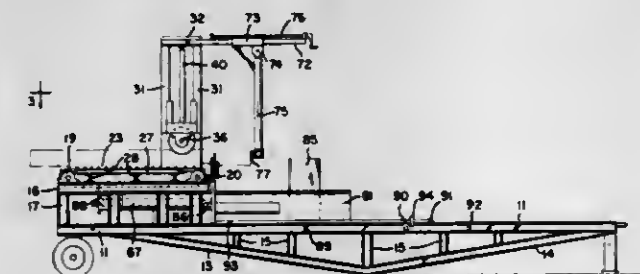
## AUTOMATIC WOOD CUTTING AND SPLITTING MACHINE

Charles E. Hoskin, 8824 20th N.E., Seattle, Wash. 98115  
Filed Dec. 14, 1977, Ser. No. 860,390

Int. Cl.<sup>3</sup> B27L 7/00

U.S. Cl. 144-3 K

10 Claims



1. An automated apparatus for cutting and splitting timber and conveying the split timber to a storage or use location comprising:

intermittent conveyor means for supporting and intermittently advancing the timber to be cut a predetermined measured length beyond the cutting station, cutting means at the cutting station for cutting the timber advanced to the cutting station, a trough beneath the cutting station for receiving the cut timber, a vertical splitting blade positioned in the path of the timber in the trough downstream from the cutting means, a reciprocating hydraulic ram which engages and forces the cut timber falling into the trough from the cutting station against the vertical splitting blade to split the timber into two pieces and advance previously split timber to the storage or use location, and control means for automatically (1) controlling advance of the timber to the cutting station to be cut, (2) activating the cutting means with the timber in the cutting station to cut the timber and (3) activating the reciprocating hydraulic ram after the timber is cut to force the cut timber resting in the trough against the vertical splitting blade to split the timber, the control means including sensing means mounted adjacent the cutting means for sensing the predetermined measured length of the timber being conveyed into and past the cutting station by the conveyor means, means responsive to the sensing means operatively connected to the conveyor means and cutting means to stop the conveyor means and activate the cutting means at the cutting station to cut the timber, means cooperating with said cutting means for sensing the completion of said cut and means responsive to said last mentioned sensing means for activating the reciprocating hydraulic ram to split the cut timber.

1. A manually operated log splitter, comprising a bi-ended main beam, a splitter wedge fixed at one end of the main beam, and manually operated hydraulic power means fixed to the other end of the main beam and having a ram reciprocally movable at least partly out of and away from a pressurizable ram chamber toward the splitter wedge for urging logs against the wedge to split them, the manually operated power means further comprising a plurality of independent manually operated reciprocating pumps for urging the ram toward the wedge, automatically operable relief valve means and fluid conduit means providing a fluid passage between one of the manually operated pumps and a reservoir but functionally independent of the other pump for relieving pressure from that pump only to the reservoir, and manually operable relief valve means separate from the automatically operable relief valve means and in fluid communication with the ram chamber and reservoir.

4,284,114

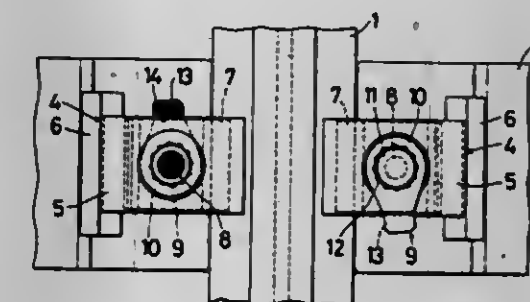
## LOCKING MEMBER FOR A CLAMPING BOLT

Toshihiko Korenoba, 15-5, Kida-cho, Neyagawa-shi, Osaka-fu, Japan

Filed Apr. 12, 1979, Ser. No. 29,485  
Claims priority, application Japan, May 15, 1978, 53/066936[U]

Int. Cl.<sup>3</sup> B600 35/02; F16B 39/10  
U.S. Cl. 411-119

5 Claims



1. A locking means for use with a clamping bolt or nut and fastener means associated therewith for preventing the clamping bolt from loosening, said locking means comprising: a generally flat body having a hole therethrough, the walls of said body defining said hole having a shape wherein said hole has a dodecagonal shape for receiving the head of the clamping nut or bolt; and an engagement leg portion extending downwardly from one of the walls of said body.



end of said body, said engagement leg portion having at least one horizontally extending groove on its inner surface.

4,284,115

## TIRE TREAD

Shumio Ohnishi, Takatsuki, Japan, assignor to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

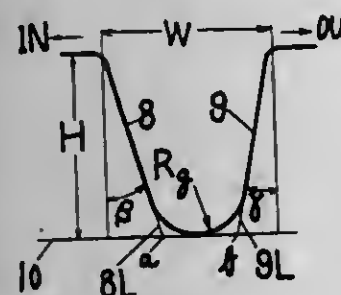
Filed Aug. 16, 1979, Ser. No. 67,235

Claims priority, application Japan, Aug. 17, 1978, 53-100539; Aug. 17, 1978, 53-100540

Int. Cl.<sup>3</sup> B60C 11/00

U.S. Cl. 152-209 R

6 Claims



2. A pneumatic bias tire for relatively high speed and heavy duty vehicles; comprising: a rib type tread pattern having a plurality of circumferentially extending grooves with a slant angle  $\beta$  of the groove wall face positioned toward the tire center line portion being within a range of  $5^\circ$  to  $45^\circ$  and being related to the slant angle  $\gamma$  of the groove wall face positioned toward the shoulder line portion of the tire according to the relationships:

$$\beta > \gamma, \\ \beta - \gamma = 1^\circ \text{ to } 16^\circ, \\ \text{and } \beta/\gamma = 1.10 \text{ to } 2.00.$$

6. A pneumatic bias tire for relatively high speed and heavy duty vehicles, comprising: a rib type tread pattern having a plurality of circumferentially extending grooves having a constant depth and width in the circumferential direction, the slant angle  $\beta$  of the groove wall face positioned toward the center line portion of the tire being within a range of  $5^\circ$  to  $45^\circ$  and being related to the slant angle  $\gamma$  of the groove wall positioned toward the shoulder line portion of the tire in the relationship  $\beta = \gamma$ , and the radius  $R_1$  of the curvature between the groove bottom and the groove wall toward the center line portion and the radius  $R_2$  of the curvature between the groove bottom and the groove wall toward the shoulder line portion is  $R_1 > R_2$  and  $R_1/R_2$  is in the range of 1.10 to 2.00.

4,284,116

## PNEUMATIC TIRE FOR MOTORCYCLES

Takeshi Sato, Akigawa, and Yoshinari Matsubara, Higashimurayama, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1980, Ser. No. 118,717

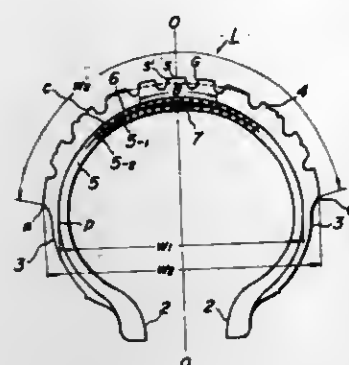
Claims priority, application Japan, Feb. 19, 1979, 54-17168

Int. Cl.<sup>3</sup> B60C 9/18

U.S. Cl. 152-360

6 Claims

1. In a pneumatic tire for motorcycles having an excellent high speed stability comprising a torodial-shaped carcass composed of a pair of plies each formed of textile cords covered with coating rubber and extending from one of a pair of annular bead portions to the other bead portion, a tread portion superimposed about a crown portion of said carcass and extending along the outer contour of said crown portion to such an extent that the tread has a width larger than a maximum width between sidewalls of the tires, and a lenticular stress relieving rubber layer interposed between said plies of said carcass symmetrically with respect to the equatorial plane of



measured along the outer contour of said tread portion, and a modulus of 16 kg/cm<sup>2</sup> to 30 kg/cm<sup>2</sup> at 100% elongation.

4,284,117

## STEEL BELTED RADIAL PLY TIRES WITH CAP PLYS EMPLOYING SINGLE YARN REINFORCING ELEMENTS

Dionysius J. Poque, Meischenfeld 17, Aachen-Kornelimuenster, and Horst Lorenz, Peitschenweg 29, 5190 Stolberg-Buesbach, both of Fed. Rep. of Germany

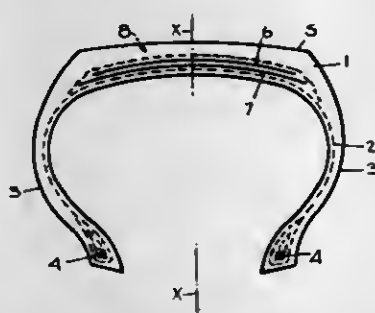
Filed Dec. 3, 1979, Ser. No. 99,398

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1978, 2853006

Int. Cl.<sup>3</sup> B60C 9/20

U.S. Cl. 152-361 R

11 Claims



1. A pneumatic tire comprising a radial ply carcass, a tread overlaying the crown region of said carcass, a belt interposed between said tread and said crown region of said carcass in circumferential surrounding relation to the latter, said belt including at least two plies of belt cords of high modulus material, the belt cords in each ply extending parallel to one another and being in crossing relation with respect to the cord of the next adjacent belt ply, a cap ply interposed between the radially outwardmost one of said belt plies and said tread, said cap ply consisting of a strip of material having non-metallic reinforcing elements parallel to one another and to the median plane of the tire, said reinforcing elements consisting of a series of single yarns only, having a twist of approximately 100 to 400 turns per meter and having a packing density of said single yarns in said cap ply between 60 to 300 yarns per decimeter and being longitudinally prestressed for exerting compressive stress on said belt plies.

4,284,118

## FOLDING-DOOR COMPRISED OF WOODEN SLATS AND HINGES

Sergio Ceron, Via Pompeo Cambiasi, 14/1 Milan, Italy

Filed Aug. 14, 1979, Ser. No. 66,762

Claims priority, application Italy, Sep. 6, 1978, 27350 A/78; Jun. 14, 1979, 21842 B/79

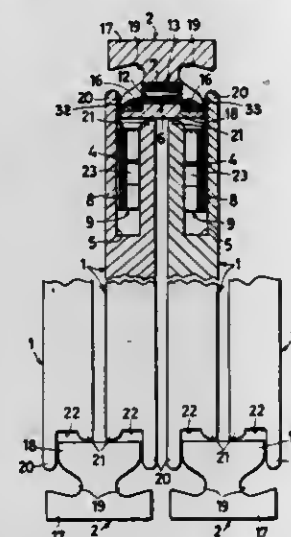
Int. Cl.<sup>3</sup> E06B 3/94, 9/00; E05D 1/06

U.S. Cl. 160-229 R

5 Claims

1. A folding door of the type wherein an array of wooden slats are hingedly connected together at adjacent vertical

edges, comprising vertical wooden hinge strips each having a horizontal cross-sectional shape substantially in the form of a double mushroom with a central stem and oppositely disposed heads of different widths separated by side recesses, at least two longitudinally spaced apertures through said stem, said adjacent vertical edges of said slats having a horizontal cross-sectional shape in the form of a U with legs of different lengths to thereby form a longitudinal slot in each said vertical edge, hinges for connecting said slats together each having a central part and oppositely disposed side parts hingedly connected to said central part, said central part being disposed and latched



within one of said apertures in said strip, and said side parts being inserted and latched in said adjacent vertical edges of said slats, said strips, slats and hinges being assembled together so that when the door is in the unfolded position, the longer legs of said slat edges are received in the adjacent side recesses of said strip and the shorter legs of said slat edges each lie closely adjacent the narrower head of said mushroom shaped strip so as to appear to be a continuation thereof, and when the door is in the folded position, said longer legs are disposed alongside the adjacent said narrower head to substantially conceal said side recesses, said slats rotating substantially about the vertical side edges of said narrower head.

4,284,119

## OVERHEAD DOOR AND OVERHEAD DOOR SECTION SYSTEM AND METHOD

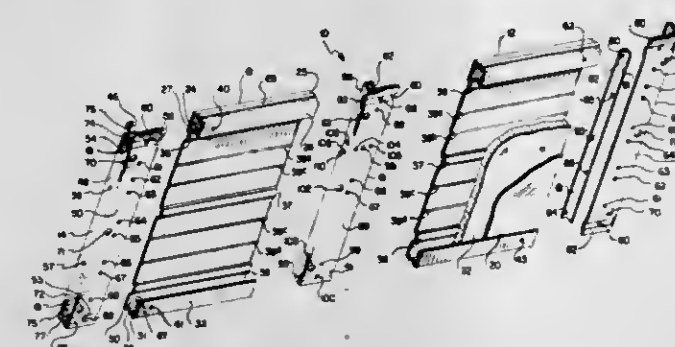
David O. Martin, Salt Lake City, and Lawrence G. Martin, Bountiful, both of Utah, assignors to Martin Overhead Door and Electronics Co., Salt Lake City, Utah

Filed Jun. 23, 1979, Ser. No. 59,880

Int. Cl.<sup>3</sup> E04C 2/08; E06B 3/12

U.S. Cl. 160-232

19 Claims



1. An overhead door section comprising: a substantially rectangular sheet of metal formed into a section facing, the section facing having the longitudinal edges shaped into stile-receiving first and second channels and with longitudinal ribs formed between the channels; and stiles for securement to the section facing in the stile-receiving channels, the end stiles being fabricated from sheet metal into a modified C configuration including a front face, a side wall, and a rear face, the front face being

placed into juxtaposition with the outside face of the section facing with the end of the section facing engaged inside the end stile; and an angle support received inside the end stile in juxtaposition with the ribs of the section facing and secured to the ribs and to the side wall of the end stile.

4,284,120

## METHOD AND DEVICE FOR TRANSFER OF FIBER MATERIALS TRANSPORTABLE BY LIQUIDS

Stig Glöersen, Edgatan, POB 4502, Karlstad, Sweden

Continuation of Ser. No. 830,206, Sep. 2, 1977, abandoned. This application Apr. 23, 1979, Ser. No. 32,459

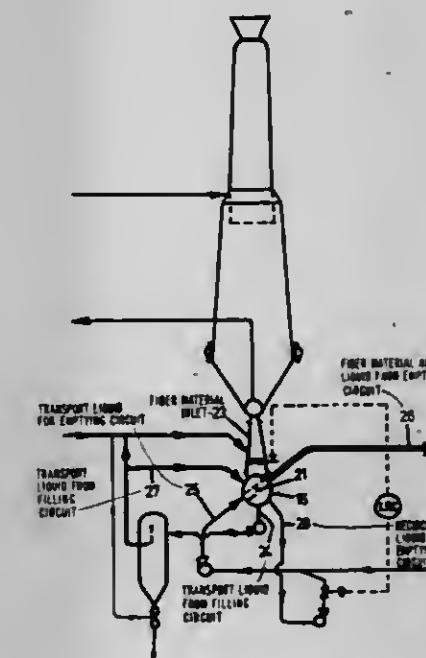
Claims priority, application Sweden, Sep. 3, 1976, 7609782

The portion of the term of this patent subsequent to Mar. 14, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> D21C 7/06, 7/14

U.S. Cl. 162-19

8 Claims



1. A continuous process for transferring a fiber material via a liquid carrier transporting liquid between different treatment steps which comprises:

- providing a valve mechanism comprising a housing and rotor having at any one time three flow-through circuits for transporting said fiber material, each circuit consisting essentially of an interconnected inlet, outlet and pocket for transporting said fiber containing carrier liquid, said pocket being a part of said rotor;
  - introducing from a first treatment step a transporting carrier liquid containing fiber material through an inlet into a pocket while displacing a portion of the carrier liquid through an outlet completing a first or filling circuit, leaving the fiber along with the remaining portion of the carrier liquid in said pocket;
  - rotating said pocket into a second position and emptying the fiber containing carrier liquid in the pocket into a following treatment step by displacing the fiber and carrier liquid through an outlet from the pocket by a transporting liquid introduced through an inlet into the pocket completing a second or emptying circuit;
  - once again rotating said pocket into a third position and displacing at least a portion of the transport liquid contents of the pocket through an outlet, said transport liquid being recirculated and reintroduced at the inlet of said second or emptying circuit by the carrier liquid displaced from said first circuit and introduced through an inlet into said pocket in said third position, to complete a third circuit; and
  - continuously repeating steps b through d such that said pocket is always filled with a transport or carrier liquid.
8. A device for continuously transferring a fiber material



containing liquid carrier between different treatment steps which comprises a combination:

- a valve mechanism comprising a housing and rotor forming at any one time three through circuits for transporting said fiber material, each circuit consisting essentially of an interconnected inlet and outlet of said housing with a pocket in said rotor,
- means for introducing from a first treatment step a transporting carrier liquid containing fiber material through a first inlet into a pocket while displacing a portion of the carrier liquid through a first outlet completing a first or filling circuit, leaving the fiber along with the remaining portion of the carrier liquid in said pocket,
- means for emptying the fiber containing carrier liquid from the pocket into a following treatment step by displacing the fiber and carrier liquid through an outlet from the pocket by a transporting liquid introduced through an inlet into the pocket thereby completing a second or emptying circuit,
- means for displacing at least a portion of the transport liquid contents of the pocket through an outlet, said transport liquid being recirculated and reintroduced at the inlet of said second or emptying circuit by the carrier liquid displaced from said first circuit and introduced through an inlet into said pocket thereby completing a third circuit, and
- means for continuously rotating the rotor component of said valve mechanism.

4,284,121

# PROCESS AND MATERIALS FOR MAKING REFRACTORY CORES

Robert A. Horton, Chesterland, Ohio, assignor to Precision Metalsmiths, Inc., Cleveland, Ohio

Filed Feb. 28, 1980, Ser. No. 125,468

Int. Cl.<sup>3</sup> B22C 1/02

U.S. Cl. 164—520

6 Claims

1. In a process of making molded refractory articles from a mixture containing comminuted refractory material and a sublimable binder that is sublimated after molding to provide a porous structure, the improvement characterized by the steps of compounding said mixture to include partially dehydrated gypsum as part of the refractory material, soaking the molded article in water after the sublimable binder has been sublimated, and allowing the water in the pores of the molded article to hydrate the gypsum and cause it to set.

4,284,122

# METHOD AND APPARATUS FOR CASTING LEAD INTO PLASTIC FOR SIDE TERMINAL BATTERIES

Terry Oxenreider, Wernersville; Donald A. Dueterhoeft, Robersonia, and Edgar M. Erb, Lancaster, all of Pa., assignors to General Battery Corporation, Reading, Pa.

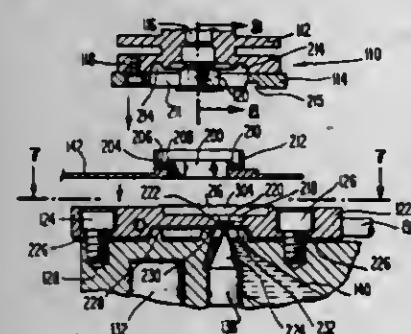
Division of Ser. No. 753,835, Dec. 23, 1976, Pat. No. 4,158,382.

This application Apr. 6, 1979, Ser. No. 27,656

Int. Cl.<sup>3</sup> B22D 19/00, 17/04

U.S. Cl. 164—98

24 Claims



1. A method for casting a lead-alloy battery terminal connector through an aperture in a plastic battery case, comprising the steps of:

- (a) providing a plastic battery case having an aperture in a wall of said case;
- (b) positioning a plurality of mold means to surround said aperture on either side of said wall to form a die mold and to define a mold cavity;
- (c) injecting molten lead under pressure into said mold cavity through an opening in one of said mold means; and
- (d) venting gases from said mold cavity to the atmosphere during the injecting through a plurality of openings provided in one of said mold means and disposed along the interface of said mold means with said wall.

4,284,123

# ARRANGEMENT FOR PRODUCING INGOTS OF UNALLOYED AND ALLOYED STEELS

Erwin Plöckinger, Gert Kühnelt, both of Kapfenberg, and Peter Machner, Leoben, all of Austria, assignors to Vereinigte Edelmetallwerke Aktiengesellschaft (VEW), Vienna, Austria

Division of Ser. No. 856,272, Dec. 1, 1977, Pat. No. 4,157,110.

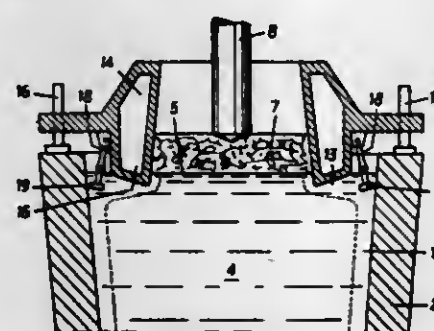
This application Feb. 21, 1979, Ser. No. 13,300

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1976, 2655602

Int. Cl.<sup>3</sup> B22D 27/02, 7/10

U.S. Cl. 164—515

7 Claims



2. An arrangement for producing ingots of unalloyed and alloyed steels having an improved primary crystallization, reduced ingot segregation and a reduced content of non-metallic inclusions, which arrangement includes an ingot mould having a rim and a cavity adapted to be filled with molten steel covered with a slag mixture, energy means for supplying heat to the slag mixture, and a thermally conductive top part secured to said mould, the improvement comprising an annular projection provided on said top part adapted to extend below the level of molten steel in said mould, said projection being adapted to cool the molten steel in contact with it over a region inward from the rim; and detachable connecting means provided for securing said top part to the rim of the mould, said connecting means including means for lowering said projection into the mould and means for detachable the top part from the mould upon the formation of an ingot skin during solidification.

4,284,124

# DIE CASTING MACHINE FOR MANUFACTURING HEAT RESISTANT IMPELLERS

Mikiya Komatsu, Syuichi Takashima, and Syunsuke Suzuki, all of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 29, 1979, Ser. No. 53,324

Claims priority, application Japan, Jul. 6, 1978, 53/81415

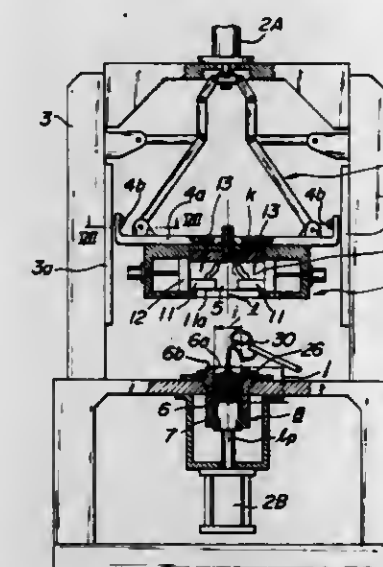
Int. Cl.<sup>3</sup> B22D 17/12

U.S. Cl. 164—314

7 Claims

1. A die casting machine for manufacturing a heat resistant impeller having substantially curved blades, comprising: a die assembly provided with a plurality of die segments displaceable substantially radially with respect to the axis thereof between an inner, closed position and an outer closed position, and means for causing such displacements of the die segments, the die segments including cavity forming portions and runner forming portions, while the

die segments are in their inner closed position the cavity forming portions defining a cavity and the runner forming portions defining a runner communicating with the cavity, the cavity forming portions of the die segments being formed with first recesses to provide rib-shaped projections extending outwardly from the periphery of the blades of the impeller; an injection assembly disposed below the die assembly and provided with an injection sleeve arranged coaxially with



- the axis of the die segments, a plunger reciprocally arranged within the sleeve, and means for driving the plunger; and means for displacing the die assembly axially between an uppermost position in which the die assembly is spaced from the injection assembly to permit molten metal to be poured into the sleeve and a lowermost position in which the runner defined by the die segments is brought into communication with the interior of the sleeve.

4,284,125

# FAIL SAFE ARRANGEMENT

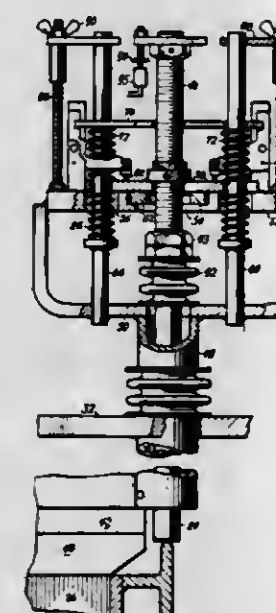
Richard F. Stockman, Friendship, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Sep. 17, 1979, Ser. No. 76,056

Int. Cl.<sup>3</sup> F28D 19/00

U.S. Cl. 165—9

6 Claims



1. Rotary regenerative heat exchange apparatus having a rotor including a central rotor post and a concentric rotor shell spaced therefrom to provide an annular space therebetween, a mass of heat absorbent material carried in the annular space between the rotor post and the rotor shell, a housing surrounding the rotor in spaced relation to include inlet and outlet ducts at opposite ends thereof for a heating fluid and for a fluid to be

heated, means for rotating the rotor about its axis, a sector plate intermediate the end of the rotor and the rotor housing adapted to maintain the heating fluid separate from the fluid to be heated, support means for a sector plate at the inboard end of the rotor, actuating means at the outboard end of the sector plate adapted to deform the sector plate to conform to the profile of the rotor, an axially disposed sensor rod reciprocally mounted on said housing and having an end face thereof abutting an axial edge of the rotor, and a snap-acting release means responsive to movement of the sensor rod adapted to move said sensor rod rapidly away from the rotor to preclude interference therebetween.

4,284,126

# ENVIRONMENTAL CONTROL SYSTEM FOR A MULTIPLE ROOM STRUCTURE

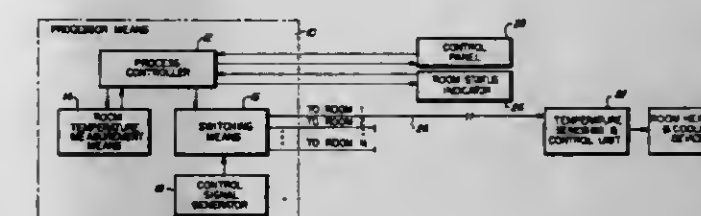
N. Rick Dawson, 220 Fentress Blvd., Daytona Beach, Fla. 32014

Filed Jul. 5, 1979, Ser. No. 55,043

Int. Cl.<sup>3</sup> F24F 3/00; G05D 23/19

U.S. Cl. 165—11 A

18 Claims



1. An environmental control system for a multiple room structure having an independently actuable heating and cooling device in each of said rooms, said system operating by monitoring the ambient air temperature in each of said rooms and controlling the operation of each of said heating and cooling devices to achieve a desired ambient air temperature in each of said rooms, said system comprising:
  - a. a room status indicator for indicating the occupied or vacant status of each of said rooms;
  - b. a control unit for permitting an operator to assign heating mode and cooling mode temperature limits to each of said rooms;
  - c. a temperature sensing and control unit positioned in each of said rooms and coupled to said heating and cooling device in each of said rooms for measuring the ambient room air temperature and determining the operating mode of said heating and cooling device, and for controlling the operating mode of said heating and cooling device in response to a control signal, said temperature sensing and control unit including first temperature measurement means for measuring the ambient air temperature in said room and second temperature measurement means for measuring the temperature of the conditioned air discharged from said heating and cooling device; and
  - d. processor means coupled to said room status indicator, to said control unit and to each of said temperature sensing and control units for determining the desired ambient room air temperature for each room and for transmitting an appropriate control signal to each of said temperature sensing and control units to continuously control each of said heating and cooling devices to achieve the desired ambient room air temperature in each of said rooms.

4,284,127

# CARPET CLEANING SYSTEMS

David S. Collier, Islington, and Allan S. Muxworthy, Mississauga, both of Canada, assignors to Syd W. Collier Company Limited, Toronto, Canada

Filed Jun. 1, 1979, Ser. No. 44,566

Int. Cl.<sup>3</sup> G05D 23/00; A47L 11/34

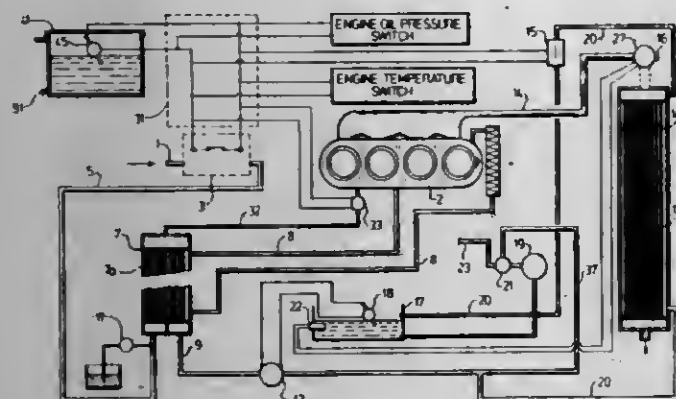
U.S. Cl. 165—35

11 Claims

1. A fluid heating system for use in an engine having heated



engine coolant and heated exhaust, said system comprising a preheater through which the heated engine coolant is conducted, a heater exchanger through which the heated exhaust is directed, fluid conduit means in both the preheater and the heat exchanger to maintain the fluid separately of the heated coolant and exhaust respectively, sensing means for sensing the



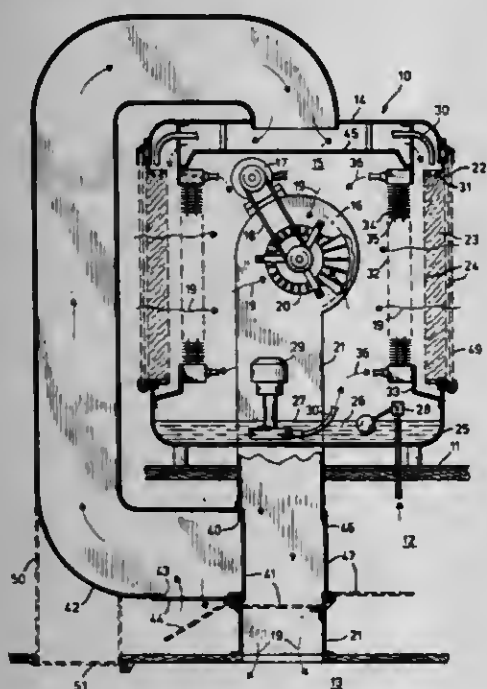
presence of fluid in the heat exchanger, a temperature sensor, for sensing the temperature of the fluid from the heat exchanger and exhaust bypass for bypassing the heated exhaust away from the heat exchanger when the fluid temperature is at an unacceptably high level as sensed by the temperature sensor and automatic shutdown controls for shutting the engine off in the event of system malfunction.

4,284,128

**AIR CONDITIONER AND HEAT DISPENSER**  
Donald A. Nelson, 5755 S. Village Way, Ogden, Utah 84403  
Filed Oct. 19, 1979, Ser. No. 86,343  
Int. Cl.<sup>3</sup> F25B 29/00

U.S. Cl. 165—48 R

15 Claims



1. In an evaporative air temperature conditioner adapted for installation to draw and impel exterior air into a building and comprising an air blower and driving means therefor, said blower having an air inlet opening and connecting with an air outlet duct generally for discharging the air into an occupant space of the building; a housing having a generally horizontal bottom member, a generally horizontal top member and upstanding side members, the side, top and bottom members being sealably connected to capture a space therewithin enclosing the blower air inlet; at least one air admitting, air permeable, water impregnable pad communicating with the exterior air and closing an opening provided therefor in at least one of the housing members; and means controllably directing water to said pad; the improvement comprising:

a heat exchanger disposed between the pad and the air inlet

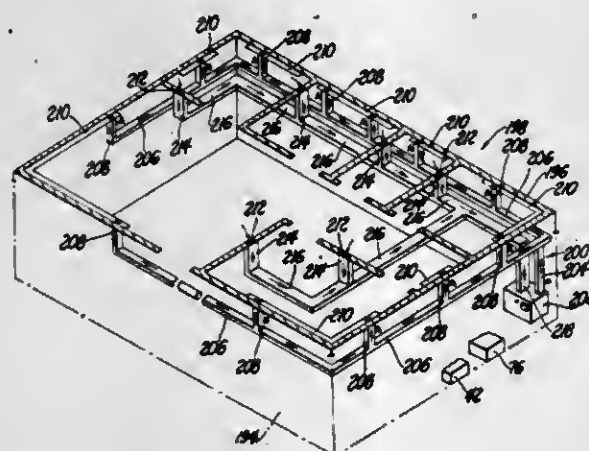
and having a fluid inlet and a fluid outlet and a passage therethrough connecting the fluid inlet and outlet, so that heat exchanger fluid may be circulated through the heat exchanger; means directing cooled air from the pad to the heat exchanger; and air valving means carried by the air outlet duct directing air selectively from the blower into the occupant space or diverting said air therefrom.

4,284,129

**BASEBOARD SPACE HEATING, AIR CONDITIONING AND HUMIDITY CONTROL SYSTEM**  
Lawrence D. Rogalski, 20210 Annott, Detroit, Mich. 48205  
Filed Dec. 4, 1978, Ser. No. 966,205  
Int. Cl.<sup>3</sup> F24F 3/00

U.S. Cl. 165—50

13 Claims



1. An integrated baseboard/humidification/air conditioning system, comprising an elongated baseboard having a heater/humidification compartment and a separate air conditioning passage, said heater/humidification compartment having at least one baseboard heater element supported horizontally therein, with a humidification pan supported adjacent said heater element and a drip pan supported below said humidification pan, said humidification pan comprising an open-top pan having a bottom wall and oppositely disposed end walls and side walls, said pan having disposed therein a porous absorbent block adapted to absorb water and allow passage of air therethrough and a walled opening in said bottom wall through which air heated by said heater element may rise to said porous block.

4,284,130

**HEATING INSTALLATION HAVING A RADIATION- AND CONVECTION FLOOR HEATER**  
Jiri Elias, Im Wingert 18, Zürich, Switzerland  
Filed Aug. 6, 1976, Ser. No. 712,410

Claims priority, application Switzerland, Aug. 21, 1975, 10935/75

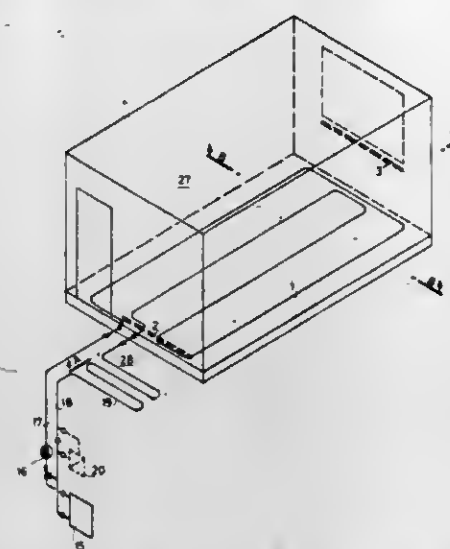
Int. Cl.<sup>3</sup> F24D 5/10

U.S. Cl. 165—53

10 Claims

1. An installation for controlling the temperature of a room, wherein the floor of the room is formed with at least one channel which is provided with at least two openings establishing communication between the room and the interior of the channel at two positions which are spaced apart along the channel so that air of the room can enter the channel by way of one opening and can pass along the channel and return to the room by way of the other opening, at least one elongate floor element is arranged in parallel to said channel and in thermally-conductive contact with the interior thereof to influence the temperature of air passing along said channel, and a

device is connected to the floor element for controlling the temperature thereof whereby the extent to which the floor



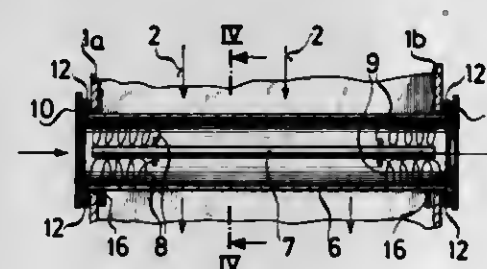
element influences the temperature of air passing along the channel may be controlled.

4,284,131

**COOLER FOR HOT SMOKE-LADEN GASES**  
Adolf Margraf, Am Schleplingsbach 46, Stadthagen Wendthagen, Fed. Rep. of Germany  
Filed Nov. 30, 1978, Ser. No. 964,826  
Int. Cl.<sup>3</sup> F28F 9/12

U.S. Cl. 165—76

2 Claims



1. A cooler for hot smoke-laden gases which are to be cleaned by a pocket or tube filter situated in a downstream location, the cooler having a housing of generally rectangular horizontal cross section through which the smoke-laden gas flows from top to bottom or from bottom to top, and which is provided with cooling elements within the housing through which cold external air is conducted perpendicularly to the direction of flow of the smoke-laden gas around the cooling elements, and wherein:

the cooling elements are loose tubes of generally oval or flattened oval shape, which project through openings in two opposing walls of the cooler housing, said tubes being arranged above one another and in parallel rows,

an annular flange associated with each end of each cooling tube outside the cooler housing, which, by means of at least one traction or compression spring, presses an annular gasket situated between itself and the outer wall of the housing into the annular gap between the cooling tube and the associated opening in the wall of the housing, and wherein the cooling tubes have in the vicinity of their ends at least one supporting abutment which bears against the inside of the walls of the housing.

4,284,132

**APPARATUS FOR CONDITIONING AIR**

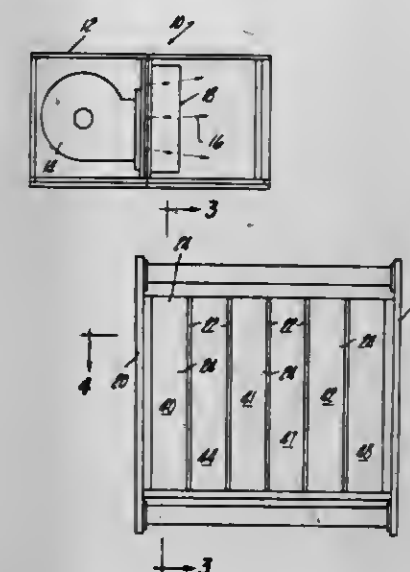
Charles A. Strand, Sr., 21800 Morley Ave., Apt. 817, Dearborn, Mich. 48124

Filed Oct. 12, 1976, Ser. No. 731,118

Int. Cl.<sup>3</sup> F28F 27/02

U.S. Cl. 165—103

15 Claims



1. Apparatus for conditioning air comprising: a housing forming a pair of parallel passages having a common wall therebetween, means for moving air through said passages, heat exchange means disposed in one of said passages to form a heat exchange passage, the other of said passages forming a bypass passage, a pair of air gates controlling the opening and closing of said pair of passages, respectively, each of said air gates being supported for movement between open and closed positions at walls of said passage spaced from said common wall; and means connecting said pair of air gates together for simultaneous movement equal distances and in opposite directions with one of said air gates movable from an open to a closed position while the other of said air gates is moved from a closed toward an open position, said air gates being shaped to maintain a uniform opening therebetween for the passage of air from said pair of passages for all positions of said air gates.

4,284,133

**CONCENTRIC TUBE HEAT EXCHANGE ASSEMBLY WITH IMPROVED INTERNAL FIN STRUCTURE**

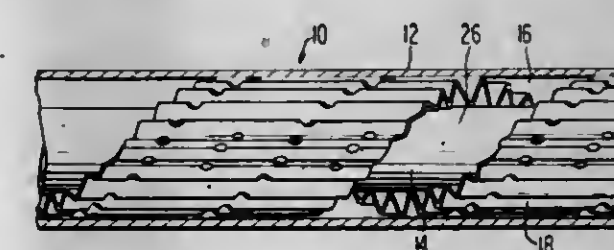
Sebastian J. Gianni, Wethersfield, Conn., and William M. Seeley, Brewster, N.Y., assignors to Dunham-Bush, Inc., West Hartford, Conn.

Filed Sep. 19, 1979, Ser. No. 77,067

Int. Cl.<sup>3</sup> F28F 13/00; F28D 7/10

U.S. Cl. 165—133

4 Claims



1. In an evaporative heat exchange unit comprising at least one tube assembly formed by a pair of concentrically positioned tubes defining a substantially annular boiling fluid heat exchange chamber therebetween and which is connected at its ends for the flow of a boiling heat exchange fluid therethrough, an internal metallic fin assembly within said annular chamber comprising a strip of corrugated sheet metal extending spirally within said annular chamber with the corrugations being substantially straight and non-distortable and extending longitudinally



nally of said annular chamber and bridging the space between said tubes to divide said annular chamber into a plurality of substantially parallel longitudinal passages each extending between the side edges of the strip of corrugated sheet metal, the adjacent turns of the spirally formed strip of corrugated sheet metal being spaced from each other to provide a spiral passage between the side edges of the adjacent turns and to thereby reduce the effective length of each of the longitudinal passages to that of a single corrugation of the strip and to permit arcuate fluid flow of the heat exchange fluid between the serially related longitudinal passages along said annular chamber and wherein the distance between the tubes is such that the inner and outer peripheries of the internal metallic fins of the corrugated sheet metal strip have radial compression forces exerted upon them such that the corrugations are placed under radial compression and are subjected to sufficient force to insure a good heat transfer relationship between each of said tubes and said internal metallic fin of corrugated sheet metal strip, the improvement wherein said corrugated sheet metal strip bears a multiplicity of small holes to cause points where localized bubbles of vapor are formed to improve the boiling heat transfer coefficient of the heat exchange unit corrugated sheet metal strip for said boiling fluid flowing between the tubes and passing over the corrugated sheet metal strip surfaces.

4,284,134

## HELICALLY COILED TUBE HEAT EXCHANGER

Arthur M. Harris, San Diego, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Sep. 5, 1978, Ser. No. 939,357  
Int. Cl.<sup>3</sup> F28D 7/10

U.S. Cl. 165—163

11 Claims

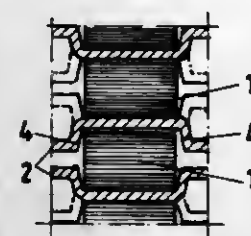


1. In a vapor generator having a housing, means for circulating a primary fluid through the housing, a plurality of helical tube bundles arranged along a flow path of primary fluid within the housing, the helically coiled bundles being interconnected in series with each other and with inlet and outlet means for circulating a secondary fluid through the tubes, the improvement comprising each of the tube bundles being arranged within the housing so that the primary fluid flows generally parallel with the axis of each tube bundle, the two tube bundles having the same number of heat exchange tubes, pitch values for the tubes in the respective tube bundles, taken transverse to the path of primary coolant flow, being selected as a ratio of two unequal integers in order to facilitate design and efficient operation of the respective tube bundles in the vapor generator.

4,284,135  
DEVICE FOR MUTUALLY FIXING PLATE ELEMENTS OF PLATE HEAT EXCHANGERS OR PLATE FILTERS  
Christer Almqvist, Täby, and Lars Lindahl, Handen, both of Sweden, assignors to ReHeat AB, Täby, Sweden  
Filed Feb. 22, 1980, Ser. No. 123,815  
Claims priority, application Sweden, Aug. 31, 1978, 7809204  
Int. Cl.<sup>3</sup> F28F 3/10

U.S. Cl. 165—166

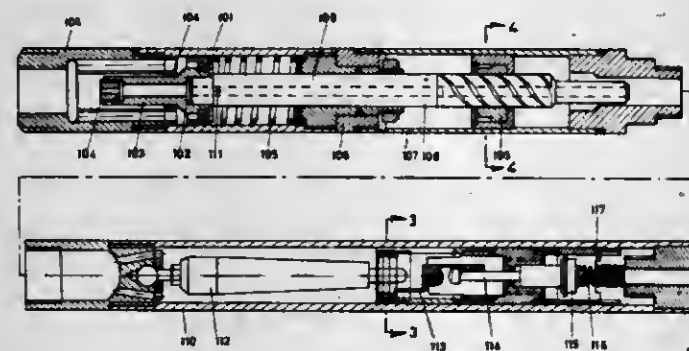
1 Claim



1. A plate element at plate heat exchanger or plate filter assembled of several such plate elements, each plate element provided with distance members embossed in the plate substantially in the form of corrugations, which distance members of two adjacent plates intersect one another, characterized in that the gasket groove known per se for receiving a gasket located between the plates and extending about the plate is embossed with its bottom extending in a plane located approximately centrally between the tops of two adjacent distance members directed to opposed sides of the plate, and that each distance member terminating in the gasket groove shows toward the same a surface, the height of which corresponds approximately to half the total thickness of the plate, which surfaces at the mounting of the plates form supporting surfaces in lateral direction for the gasket.

4,284,136  
POSITIONING DEFLECTION WEDGES  
Johan G. Grabe, Carletonville, South Africa, assignor to Boart International Limited, Johannesburg, South Africa  
Filed Sep. 27, 1979, Ser. No. 79,259  
Claims priority, application South Africa, Feb. 15, 1979, 78/0917  
Int. Cl.<sup>3</sup> E21B 7/06, 23/04, 29/06  
U.S. Cl. 166—117.5

5 Claims

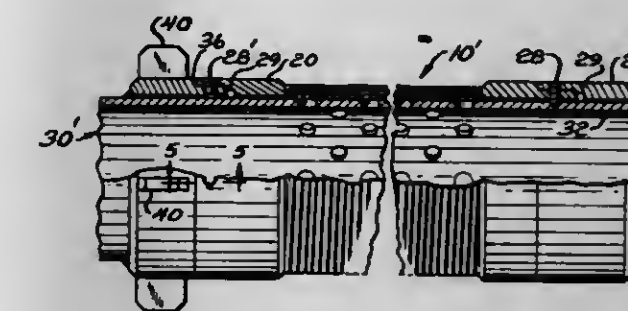


1. Means for positioning a deflection wedge in a drill hole, which has a pronounced horizontal component of direction, comprising: an extension composed of two parts, the first part being a cylinder adapted to be secured to the drill string and in communication with the axial cavity of the drill string, and the second part being free to rotate relatively to the cylinder; a deflection wedge detachably carried by the second part; a piston reciprocable in the cylinder between first and second positions and exposed to fluid flowing down the drill string to cause it to move towards the second position; a spring biasing the piston to its first position; rotation means operable by the piston to cause the second part to rotate relatively to the cylinder when the piston moves towards its second position;

a wedge orientation mechanism carried by the second part of the extension adapted to stop rotation of the second part of the extension upon a preset orientation of the deflection wedge being achieved;  
a flow path between the cylinder and the end of the second part into the hole being deflected;  
a restrictive orifice between the cylinder and the second part; a valve in the flow path; and  
a trigger holding the valve in its open position and adapted to be operated by the wedge orientation mechanism to allow closure of the valve by fluid flowing in the path.

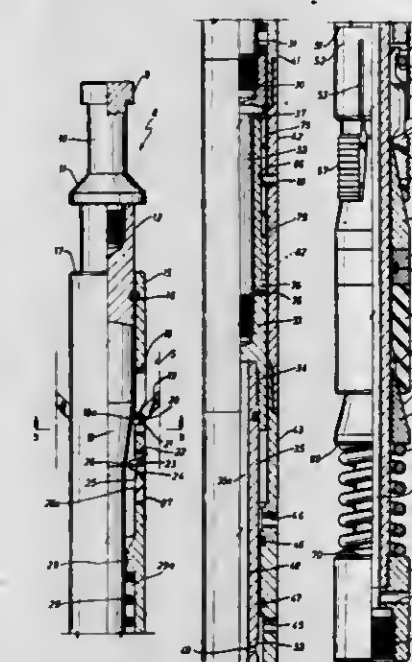
4,284,138  
COATED SCREEN JACKET AND COATED PIPE BASE ASSEMBLY AND METHOD OF MAKING SAME  
Richard E. Allred, St. Paul, Minn., assignor to UOP Inc., Des Plaines, Ill.  
Filed May 27, 1980, Ser. No. 153,808  
Int. Cl.<sup>3</sup> E03B 3/18; E21B 43/08  
U.S. Cl. 166—233

8 Claims



4,284,137  
ANTI-KICK, ANTI-FALL RUNNING TOOL AND INSTRUMENT HANGER AND TUBING PACKOFF TOOL  
William T. Taylor, P.O. Box 309, Warren, Tex. 77664  
Filed Jan. 7, 1980, Ser. No. 109,896  
Int. Cl.<sup>3</sup> E21B 33/128, 33/129  
U.S. Cl. 166—137

15 Claims



14. An apparatus for enabling isolation of a production zone of a well bore having a tubing string therein and for enabling desired tests to be run in the zone comprising:

an elongate mandrel;  
a packer means incorporating a resilient expandable element including a flaired skirt mounted with said mandrel for expansion outwardly into contact with the tubing string;  
a collar and sleeve mounted about said mandrel above said packer means, said collar including depending flexible fingers thereon;  
a second set of rigid fingers mounted with said collar about said mandrel and having a like amount of fingers on said collar fingers, one of each of said second set of fingers extending outwardly from beneath one of each of said collar fingers;  
first taper means mounted above said packer means and adjacent and beneath said rigid fingers; and  
second taper means mounted beneath said packer means adjacent said skirt wherein upward movement of the mandrel causes each of said taper means to move upwardly to force said rigid fingers and said packer element outwardly to contact the tubing string which thereby prevents unwanted movement of the mandrel and isolates the zone below the element by enabling the element to seal between the mandrel and string.

1. A pipe base well screen assembly comprising an internal metallic pipe member having an extended perforated region and non-perforated regions at each end of said perforated region, a metallic fitting welded to said pipe member in one of said unperforated regions, a layer of corrosion resistant bonded coating material completely covering all exposed portions of said pipe member and said welded metallic fitting; a metallic screen jacket member having flow openings therein which overlie the perforated region of said pipe member and a metallic, male-shaped fitting welded to one of its ends and a complementary female-shaped fitting welded to the other of its ends, a layer of corrosion resistant bonded coating material completely covering all exposed portions of said screen jacket portion and said welded metallic fittings, one of said fittings on said screen jacket member being telescopically engaged with said fitting on said pipe member and affixed thereto by a first plurality of fasteners which pass radially through overlapping portions of each of the engaged fittings, and O-ring seals in engagement with each of said fittings and with the non-perforated regions of said pipe member for preventing passage of fluid between said screen jacket and pipe member except through said flow openings.

7. A method of assembling a coated screen jacket to a coated pipe base which has perforations along a portion of its length comprising the steps of welding a male slip fitting to one end of an uncoated screen jacket and welding a complementary, female slip fitting to the other end thereof; welding a slip fitting which is complementary to one of said slip fittings on said screen jacket to said pipe base in an area thereof which is spaced from and axially adjacent to said perforated portion; applying a protective layer of coating material to said screen jacket and its slip fittings and to said pipe base and its fitting while said screen jacket and pipe base are out of assembled relationship; assembling said coated screen jacket and slip fitting to said coated pipe base so that said complementary slip fittings telescopically engage each other and an O-ring sealing member positioned on one of said fittings which engages the other of the fittings and the pipe base; placing a plurality of retaining fasteners into aligned, radially directed apertures in said telescopically engaged slip fittings to anchor said screen jacket to said pipe base; and placing an additional O-ring sealing member in contact with the pipe base and with the end of said screen jacket which is remote from said engaged slip fittings.



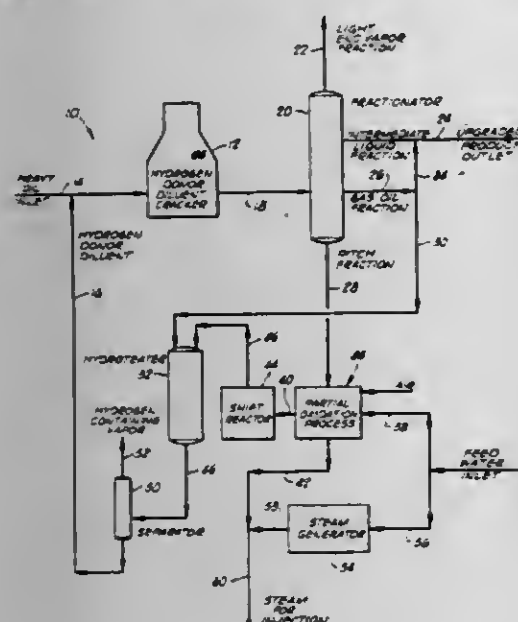
4,284,139

# **PROCESS FOR STIMULATING AND UPGRADING THE OIL PRODUCTION FROM A HEAVY OIL RESERVOIR** Glenn A. Sweany, Stamford, Conn., assignor to Cosoco, Inc., Ponca City, Okla.

Filed Feb. 28, 1980, Ser. No. 125,594  
Int. Cl.<sup>3</sup> C10G 13/00; E21B 43/24

U.S. Cl. 166—267

8 Claims



1. A process for stimulating and upgrading the oil production from a heavy oil reservoir comprising the steps of:
  - (a) combining heavy oil produced from said reservoir with a hydrogen donor diluent;
  - (b) subjecting the mixture of heavy oil and hydrogen donor diluent to thermal cracking in a hydrogen donor diluent furnace;
  - (c) fractionating the cracked products from said hydrogen donor diluent furnace into a light end vapor fraction, an intermediate liquid fraction, a gas oil fraction and a pitch fraction;
  - (d) hydrogenating at least a portion of said gas oil fraction by contacting said portion with a hydrogen-containing gas stream in a hydrotreater to produce the hydrogen donor diluent combined with said heavy oil in accordance with step (a) and an unreacted hydrogen-containing gas stream effluent;
  - (e) subjecting said pitch fraction to partial oxidation to produce the hydrogen-containing gas stream utilized in step (d) and a by-product gas stream;
  - (f) generating steam in a steam generator;
  - (g) combining said steam generated in step (f) with the by-product gas stream from step (e);
  - (h) injecting said combined steam-by-product gas stream into said heavy oil reservoir to thereby stimulate the production of heavy oil therefrom; and
  - (i) utilizing said light end vapor fraction from step (c) and said unreacted hydrogen-containing gas stream effluent from step (d) as fuel for said process.

4,284,140

# **USE OF POTASSIUM HYDROXIDE SOLUTIONS IN A WELL BORE**

Robert D. Sydanski, Littleton, Colo., and Frank S. Cordiner, Anchorage, Ak., assignors to Marathon Oil Co., Findlay, Ohio

Filed Jun. 30, 1980, Ser. No. 164,620  
Int. Cl.<sup>3</sup> E21B 33/16, 43/22, 37/00

U.S. Cl. 166—291

40 Claims

1. In a process for working over a well bore penetrating and communicating with a water-sensitive, subterranean sandstone formation wherein a fluid is injected into and maintained within the well bore while a workover operation is performed, wherein the sandstone formation contains fine particles which interact with an aqueous solution having an ionic makeup distinct from connate water to reduce permeability of the formation and fluid flow therethrough, and wherein the in-

jected fluid invades the sandstone formation and contacts at least a portion of the fine particles, the improvement comprising:

incorporating potassium hydroxide into said injected fluid in an amount sufficient to effectively render said contacted fine particles relatively insensitive to said aqueous solution having a distinct ionic makeup for a substantial period of time, said potassium hydroxide existing in said injected fluid as potassium ions and hydroxide ions, said hydroxide ions interacting with said sandstone formation in the presence of said potassium ions to effectively render said contacted fine particles relatively insensitive to said aqueous solution having a distinct ionic makeup.

4,284,141

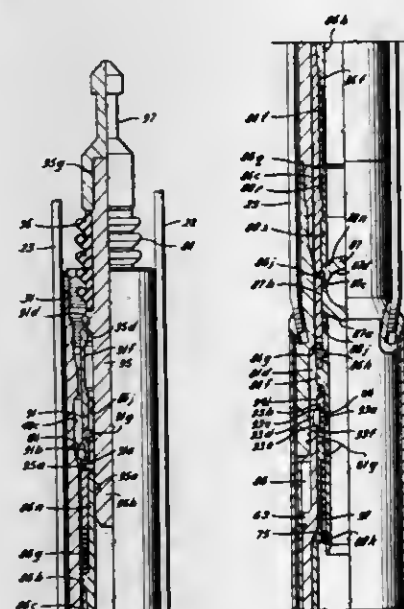
# **SUBSURFACE WELL APPARATUS AND METHOD** James D. Mott, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Division of Ser. No. 131,629, Apr. 6, 1971, Pat. No. 3,762,471.  
This application Jun. 11, 1973, Ser. No. 368,840

Int. Cl.<sup>3</sup> E21B 23/00, 43/00

U.S. Cl. 166—315

8 Claims



1. A method of operating a well producing hydrocarbons from a subsurface formation, including the steps of:
  - controlling flow in the bore of a well production tubing by a safety valve connected in the production tubing at a subsurface location in the well by controlling the control fluid pressure communicated to the safety valve from the surface;
  - placing a flow control assembly in the bore of the production tubing at the wellhead;
  - moving the flow control assembly through the bore of the production tubing to the safety valve;
  - securing the flow control assembly in the bore of the production tubing adjacent the safety valve; and
  - operating the flow control assembly with the control fluid communicated to the safety valve for controlling flow through the production tubing with the flow control assembly.

4,284,142

# **METHOD AND APPARATUS FOR REMOTE INSTALLATION AND SERVICING OF UNDERWATER WELL APPARATUS**

Kerry G. Kirkland, Houston, Tex., assignor to Armo Inc., Middletown, Ohio

Filed May 7, 1979, Ser. No. 36,658  
Int. Cl.<sup>3</sup> E21B 17/02, 23/00, 33/035

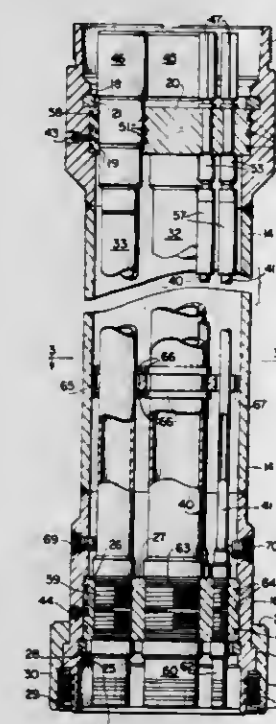
U.S. Cl. 166—344

16 Claims

1. The method for carrying out operations in an underwater well installation from an operational base at the surface of the

body of water when the well installation comprises an underwater wellhead body supporting blowout preventers, comprising

- providing a composite handling joint which presents an outer cylindrical surface longer than the effective length of the blowout preventers, the handling joint defining at least one larger diameter longitudinal passage to be placed in communication with pipe in the well,
- a plurality of small longitudinal pressure fluid passages, and
- internal space surrounding said passages;
- providing a handling tool comprising
- movable fluid pressure operated means,
- means defining pressure fluid passages for controlling flow of pressure fluid to operate the movable means, and
- passage means for communicating with pipe in the well;
- securing the handling tool to the lower end of the composite handling joint with the pressure fluid passages of the tool in communication with respective ones of the pressure fluid passages in the composite handling joint and with said passage means of the tool communicating with said at least one larger diameter passage of the composite handling joint;



- filling with liquid the internal space surrounding the passages in the composite handling joint;
- lowering the composite joint and handling tool from the operational base with the aid of guidance means to position the handling tool in the wellhead with the cylindrical outer surface of the composite handling joint then extending through the blowout preventers;
- operating the handling tool remotely by pressure fluid supplied via pressure fluid passages of the composite joint;
- maintaining communication between the operational base and pipe in the well via the at least one larger diameter passage of the composite handling joint,
- the outer surface of the composite handling joint being operatively presented to the blowout preventers throughout the step of operating the handling tool, whereby successful operation of the blowout preventers is made independent of the rotational position occupied by the composite handling joint; and
- admitting fluid under pressure to the internal space surrounding the passages within the composite handling joint when pressure external to the composite handling joint exceeds a predetermined value.

4,284,143

# **SYSTEM FOR THE REMOTE CONTROL, THE MAINTENANCE OR THE FLUID INJECTION FOR A SUBMERGED SATELLITE WELL HEAD**

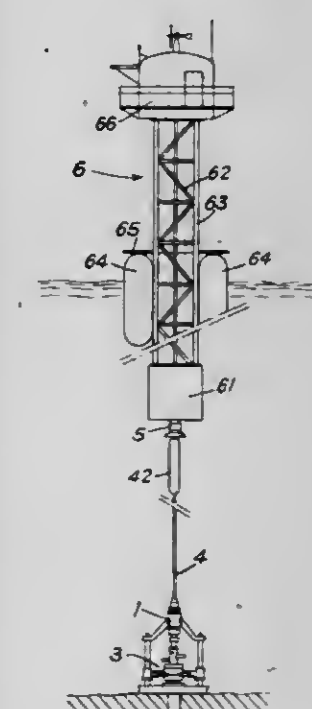
Norbert Scherrer, Saint Marcel, and Pierre Ory, Lepecq, both of France, assignors to Societe Europeenne de Propulsion, Puteaux, France

Continuation-in-part of Ser. No. 936,783, Aug. 15, 1978, abandoned. This application Jul. 19, 1979, Ser. No. 58,861  
Claims priority, application United Kingdom, Mar. 22, 1979, 10118/79

Int. Cl.<sup>3</sup> E21B 33/068, 33/072

U.S. Cl. 166—350

8 Claims



1. In an installation for extracting oil from an underwater oil field, and comprising at least one submerged wellhead mounted on a satellite well, and improved system for the remote control and maintenance of said satellite wellhead, said system comprising:

- a surface non-submerged platform located substantially vertically of said satellite wellhead, and supporting equipment usable for the remote control and maintenance of said satellite wellhead, said equipment comprising a reception circuit and a remote control unit provided with a remote control power source and responsive to signals received by said reception circuit to remotely control said satellite wellhead;
- a wellhead control device located adjacent said satellite wellhead;
- at least one remote control line connecting said remote control unit to said control device;
- at least one pipeline connecting said platform to said wellhead;
- a connection for connecting said pipeline to said platform; and
- a spherical articulation connecting said pipeline to said satellite wellhead and comprising at least one stack of alternating layers of a rigid material and elastic material which are adhered to each other and are disposed in accordance with spherical surfaces.



4,284,144

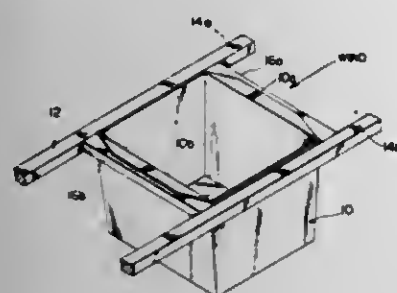
## PASSIVE EXPLOSION BARRIER FOR MINES

Israel Liebman, Library; John Corry, Elrama, and Richard Pro, Pittsburgh, all of Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 3, 1979, Ser. No. 81,505  
Int. Cl.<sup>3</sup> A62C 35/04

U.S. Cl. 169-64

3 Claims



1. A passive explosion barrier arrangement for use in mining operations in suppressing explosions in a mine, said barrier arrangement comprising a frame mounted to the roof of the mine and comprising a pair of spaced longitudinal frame members which, in use, extend longitudinally in the direction of the wind that would be created by an explosion and first and second spaced transverse frame members located between and connected to said longitudinal frame members which define an opening therein, and a flexible tub-like receptacle mounted in the frame within said opening and containing an explosion suppressing substance therein, said receptacle including first and second integral lips formed on opposite edges thereof which engage said first and second transverse frame members and constitute the sole means for supporting said receptacle on said frame, such that wind forces during an explosion will distort the lip facing the explosion and cause curving of the lip back off the transverse frame member so as to disengage the receptacle from the frame, at least one of said lips being beveled at the sides thereof adjacent the side walls of the receptacle so as to increase the sensitivity of the response of the barrier to low speed winds.

4,284,145

## SEPARATOR DEVICE

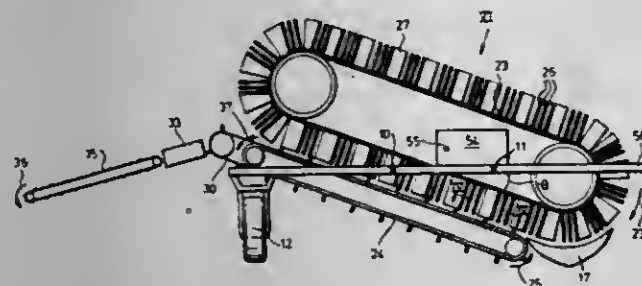
Peter S. Small, and Peter W. Small, both of Forfar, England, assignors to Tonpar Limited, Edinburgh, Scotland

Filed Sep. 5, 1978, Ser. No. 939,113  
Claims priority, application United Kingdom, Sep. 10, 1977, 37835/77

Int. Cl.<sup>3</sup> A01D 33/02

U.S. Cl. 171-18

12 Claims



1. A device for separating round root crops from soil and other unwanted material comprising:  
a first endless conveyor element having upper and lower runs extending in a longitudinal direction;  
a plurality of spaced harvesting members secured to said first conveyor element, said harvesting members being inclined transversely across the width of said first conveyor ele-

ment at an angle of less than 90° with respect to said longitudinal direction;  
a second endless conveyor element having upper and lower runs, the upper run of said second conveyor element being adjacent to the harvesting members secured to said first conveyor element, the upper run of said second endless conveyor and said harvesting members forming harvesting pockets therebetween;  
means for delivering said crop, soil and unwanted material in discrete portions into said harvesting pockets; and  
means for driving one of said first and second conveyor elements at a higher speed than the other, round objects comprising part of said crops, soil and unwanted material rolling in the direction of incline of said harvesting member out of said harvesting pockets thereby separating said round objects from the rest of said crops, soil and unwanted material.

4,284,146

## SOIL WORKING MACHINE

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

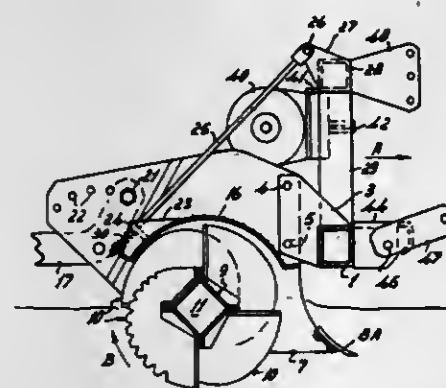
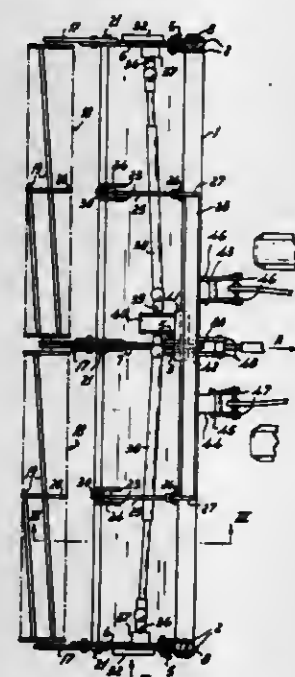
Filed Aug. 14, 1979, Ser. No. 66,761

Claims priority, application Netherlands, Aug. 21, 1978, 7808608

Int. Cl.<sup>3</sup> A01B 33/00, 33/02, 33/10, 33/14

U.S. Cl. 172-47

22 Claims



1. A soil working machine comprising a frame and a rotor pivotably supported on said frame, said rotor comprising soil working means on a carrier mounted for rotation about a non-vertical axis that extends generally transverse to the direction of machine travel and driving means connected to drive said rotor about said axis during operation, said rotor being connected to said frame by either one of two pairs of pivotal connections, the connections of each pair being spaced from

one another in a direction transverse to the direction of machine travel and comprising pivot pins having registering pivotal axes, the respective pivotal axes coinciding with the longitudinal center lines of corresponding pins which can be inserted into openings in plate means to define said pivot connections, said plate means having a plurality of openings and said pins being insertable in any of said openings to define respective pivot connections at different level settings, whereby the resistance to upward pivotal deflection by said rotor can be changed.

12. A soil working machine comprising a frame and a rotor pivotably supported on said frame, said rotor comprising soil working means on a carrier mounted for rotation about a non-vertical axis that extends generally transverse to the direction of machine travel and driving means connected to drive said rotor about said axis during operation, said soil working means comprising a plurality of flat members and each member having an outer curved serrated periphery that defines the operative surface of said rotor, the said periphery of each member being curved and extending over a circumferential angle of about 180° and said curve being substantially an involute.

18. A soil working machine comprising a frame and a rotor pivotably supported on said frame, said rotor comprising soil working means on a carrier mounted for rotation about a non-vertical axis that extends generally transverse to the direction of machine travel and driving means connected to drive said rotor about said axis during operation, said frame having a coupling for connection to the lifting device of a tractor, said coupling including adjusting means that positions said carrier obliquely to the direction of machine travel, said soil working means comprising a plurality of flat elements that lie in a plane substantially perpendicular to the rotor axis of said carrier, said coupling comprising two coupling points for the lower arms of the lifting device and said coupling points being located at different distances from the frame, said coupling points comprising two brackets of different lengths to which lower arms of said lifting device are fitted, said brackets being replaceable one by the other and releasably connected to support members on said frame, said support members having different lengths, the total length of the shorter bracket and the longest support being substantially equal to that of the longer bracket and the shorter support.

4,284,147

## CONTROL DEVICE FOR THE FORWARD MOVEMENT AND REARWARD MOVEMENT OF PNEUMATIC RAM BORING DEVICES

Gustav Jeane, Schmachtenbergstrasse 93, 4300 Essen-Kettwig, Fed. Rep. of Germany

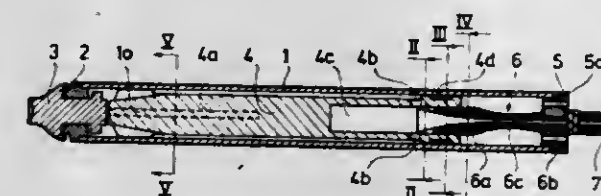
Filed Dec. 18, 1978, Ser. No. 970,142

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1977, 2756567

Int. Cl.<sup>3</sup> F01L 21/02; F01B 7/18

U.S. Cl. 173-91

8 Claims



1. In a control device for two working cycles of forward movement and rearward movement respectively of a self-propelled pneumatic ram boring device with an impact piston which is axially displaceable in a control stroke between two abutments, respectively impacting one of the abutments in each working cycle, in an altogether tubular-shaped housing, whereby the axial forward movement and rearward movement of the ram boring device is controllable by rigid control edges of an adjustable control sleeve, the latter being supported on a

bearing ring arranged in the rear part of a tubular-shaped housing, through which bearing ring a part of the control sleeve, which part is formed as a feed tube for compressed air, is led for connection to a compressed air hose, and which sleeve has a piston-shaped control head containing the control edges, the control head engaging in a cylindrical recess at a rear end of the impact piston cooperates with radial at least one control bore which are formed in the impact piston in the vicinity of the recess, the improvement wherein

the control sleeve is mounted non-displaceably in the axial direction however rotatably in the bearing ring and is formed with at least four control edges, the control edges respectively being arranged in pairs with axial spacing between said control edges of each pair, forming two different types of pairs, said axial spacing of each said pair corresponding to the control stroke respectively of the impact piston, and said control edges of respectively each said two different types of pairs being offset in the peripheral direction as well as in the longitudinal direction such that respectively in one rotated position of said control sleeve during operation of the ram boring device in one of the two working cycles, only one of said two different types of pairs of the control edges is aligned with and cooperates with the at least one control bore and the other of the two different types of pairs is not aligned with and does not cooperate with at least one control bore, the latter being arranged only on a part of the periphery of the impact piston, and said impact piston being guided non-rotatable in the housing.

4,284,148

## PORTABLE HAMMER DRILL WITH ROTATING TOOL

Karl Wanner, Echterdingen, and Manfred Bleiber, Leinfelden, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

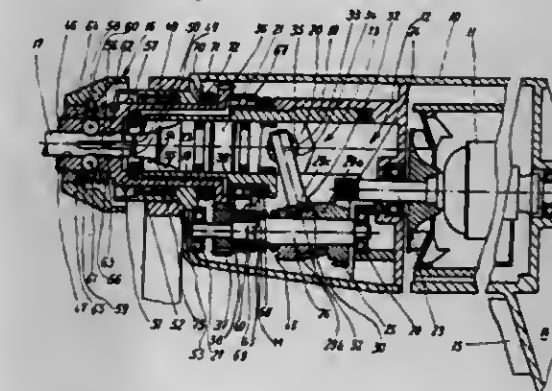
Filed May 7, 1979, Ser. No. 36,798

Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2820128

Int. Cl.<sup>3</sup> B23B 45/02; B25D 11/00, 16/00, 17/24

U.S. Cl. 173-109

18 Claims



1. A portable machine tool, such as a hammer drill, comprising housing means; a piston guided in said housing means for reciprocation in axial direction; a beater coaxial with said piston to be reciprocated by said piston during reciprocation of the latter; tool receiving means comprising a turning sleeve surrounding said beater and a holding bushing extending beyond said beater and fixedly connected to said turning sleeve for movement therewith, said holding bushing being formed with an axial bore therethrough having an open end facing said beater; a tool having a shaft extending through said bore towards said beater and having a free end for directly receiving the impact energy provided by the beater during reciprocation thereof, said tool shaft being guided in said bore for limited reciprocation in axial direction and held therein for rotation with said holding bushing; drive means in said housing means; first transmission means between said drive means and said piston for reciprocating the latter; second transmission means



between said drive means and said turning sleeve for rotating said turning sleeve; first cooperating means on said shaft and said holding bushing for rotating said shaft together with said bushing, said first cooperating means comprising a pair of diametrically opposite axially extending teeth elements respectively engaging in a pair of diametrically opposite groove elements having open ends facing said beater, one of said pair of elements being provided on said shaft and the other on said holding bushing; and second cooperating means for limiting axial movement of said shaft relative to said holding bushing.

4,284,149

## WELL DRILLING TOOL

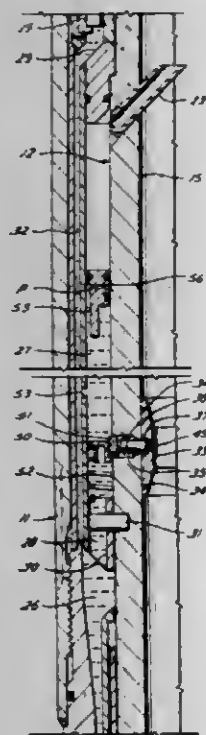
Fred K. Fox, Houston, Tex., assignor to Engineering Enterprises, Inc., Houston, Tex.

Filed Apr. 27, 1979, Ser. No. 33,554

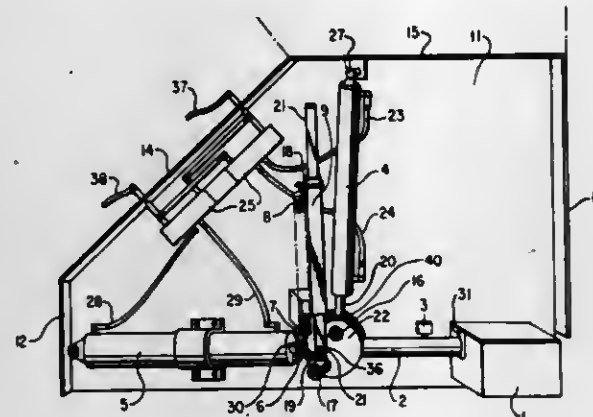
Int. Cl.<sup>3</sup> E21B 47/00

U.S. Cl. 175-40

17 Claims



bly adapted to limit further pivotal movement of said probe assembly when the longitudinal axis of the probe is vertical, a soil sample receiving means having an opening therein for receiving soil samples from said tubular probe, wherein movement of said probe assembly motive means in a first direction initially causes said probe assembly to pivot about said first location thereon until the longitudinal axis of said probe is vertical at which position said second stop means prevents further rotation; thereafter continued movement of said probe assembly motive means in said first direction causes said probe



to move downwardly in the direction of the longitudinal axis of said probe, penetrating the soil which it is sampling, and movement of said probe assembly motive means in a direction opposite to said first direction causes the probe to be withdrawn vertically upward from the soil at which point said first stop means prevents further upward movement of said second point on said probe assembly and continued movement of said motive means in said opposite direction causes said probe assembly to pivot about said second location thereon thereby moving said probe to a horizontal position.

4,284,151

## LUBRICATING DEVICE

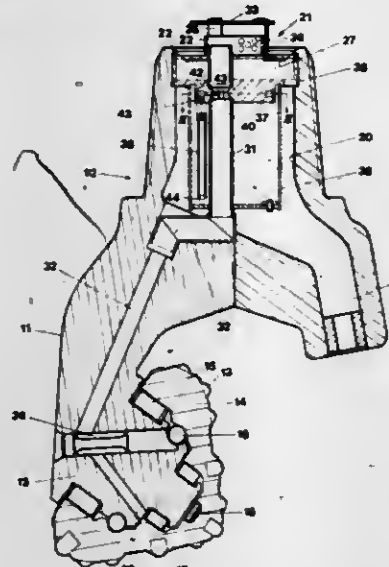
Bert G. Levefelt, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Oct. 19, 1979, Ser. No. 86,436

Int. Cl.<sup>3</sup> E21B 10/24

U.S. Cl. 175-227

9 Claims



1. A well drilling tool, comprising an elongated body connectible as part of a drill string, said body having relatively rotatable tubular members forming a passageway through which drilling fluid may be circulated and an annular space between the members, bearings within the annular space supporting one member from the other, means sealing between the members within the space to form a lubricant chamber for the bearings, means within the body providing a reservoir for supplying additional lubricant to the chamber, and means for indicating to an operator at surface level that the volume of lubricant within the reservoir has decreased a predetermined amount.

4,284,150

## SOIL SAMPLING DEVICE

D. Lynn Davis, 310-28 St. So., Lethbridge, Alberta, Canada (T1J 3S6)

Filed Jul. 6, 1979, Ser. No. 55,141

Int. Cl.<sup>3</sup> E21C 5/00

U.S. Cl. 175-84

5 Claims

1. A soil sampling device comprising a probe assembly including a tubular probe, a probe assembly motive means, said probe assembly being pivotally attached at a first location thereon to said probe assembly motive means for limited pivotal movement relative thereto; a guide means, said guide means including a member mounted for linear reciprocal motion in the vertical direction, a first stop means on said member adapted to limit the upward movement thereof, said tubular probe assembly being pivotally attached at a second location thereon to said member, means to bias said member into its uppermost position, a second stop means on said probe assembly

1. Apparatus for lubricating rotary drills of the type comprising at least one roller cutter with a drill bit carrying cutting means thereon, and bearing means for rotatably supporting said roller cutter; said lubricating apparatus comprising:

at least one first passage means for conducting compressed air to the hole being drilled;

at least one second passage means for supplying compressed air to said bearing means for cooling same;

said second passage means including an inlet at a rear end thereof remote from said roller cutter;  
said inlet disposed radially inwardly of said first passage means and communicating therewith so that compressed air from said first passage means enters said inlet;  
said inlet including blocking means for diverting air from said first passage means radially outwardly;  
a reservoir for carrying a lubricant;  
at least one third passage means extending rearwardly from said reservoir and communicating with said second passage means; and  
means for sucking lubricant from said reservoir through said third passage means and into said second passage means.

4,284,152

## PUMP IN CORE BREAKER CARRIER

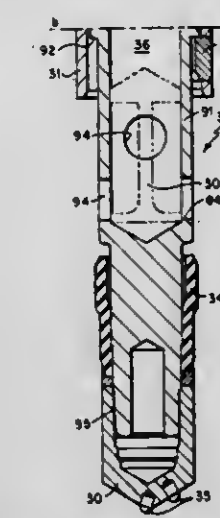
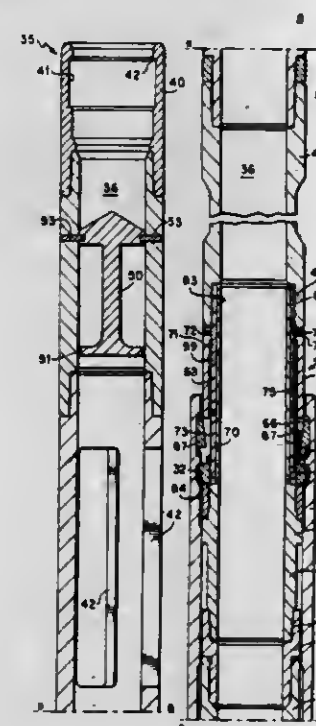
James B. Adams, Jr., Lewisville, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 1, 1979, Ser. No. 90,391

Int. Cl.<sup>3</sup> E21B 9/00

U.S. Cl. 175-257

8 Claims



1. A core breaker carrier, comprising:

a. mandrel means having a longitudinal flow passage extending therethrough;

b. means for engaging one end of the mandrel means with a fishing tool;

c. means for engaging a core breaker to the opposite end of the mandrel means;

d. a first portion of the mandrel means comprising a locking

mandrel for releasably anchoring the carrier at a preselected location within a drill bit;  
e. means for restricting fluid flow through the longitudinal flow passage until the fluid pressure therein exceeds a preselected value anchoring the carrier within the drill bit;  
f. the flow restricting means further comprising a piston having a first position releasably secured within the longitudinal flow passage near the one end of the mandrel means;  
g. the piston having a second position near the opposite end of the mandrel means; and  
h. lateral ports extending through the mandrel means to communicate fluid between the longitudinal flow passage and the exterior of the mandrel means when the piston is in its second position.

4,284,153

## HYDRAULIC DRILL STRING JAR

Luther G. Reaugh, Edmonton, Canada, assignor to OPI Ltd., Alberta, Canada

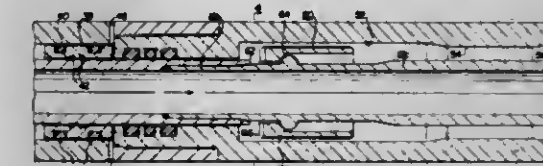
Filed Feb. 11, 1980, Ser. No. 120,354

Claims priority, application Canada, Feb. 20, 1979, 321882

Int. Cl.<sup>3</sup> E21B 31/113

U.S. Cl. 175-297

8 Claims



1. A hydraulic jar for use in a drill string including elongated telescopically-arranged mandrel and housing members relatively movable along the longitudinal axis of the jar between contracted and extended positions, said members respectively having a hammer and an anvil, said anvil being spaced from said hammer when said members are in a contracted position and arranged for contact when said members are in an extended position, hydraulic means in said jar for retarding movement of said mandrel member relative to said housing member between a contracted and extended position for a given time during a jarring stroke when the jar is tensioned, said hydraulic means including a chamber which in use is filled with fluid in said housing member with adjoining first and second bores, said first bore having a lesser diameter than said second bore, and a piston on said mandrel member receivable in said first bore, said piston having a slightly smaller diameter than said first bore to restrict the flow of fluid past said piston as it moves relative to said first bore during the jarring stroke until said piston exits from said first bore where-upon said members move rapidly to the relatively extended position so that the hammer delivers a blow to the anvil, the piston being of annular form and being positioned around the mandrel member for movement therealong between first and second axially spaced stops on said mandrel member, said piston having a first end adapted to cooperate with the first stop to permit free flow of the fluid between the piston and mandrel member as said members move toward the contracted position, and the piston having a further portion adapted to co-operate with said second stop to provide sealing engagement therewith during movement of the piston through the first bore during the jarring stroke, one of said further portion and said second stop including a smooth annular wall portion which is sloped relative to the longitudinal axis of the jar while the other includes a smooth annular surface having a convexly arcuate contour as seen in a longitudinal section, with said annular wall portion and said annular convexly arcuate surface being relatively disposed to come into said sealing engagement during the jarring stroke, and wherein said further portion is located interiorly of said piston intermediate said first end thereof and the end of the piston opposite said first end.



4,284,154

**NON-ROTATING SPRING LOADED STABILIZER**

John R. England, Ontario, Canada, assignor to Inco Limited, Toronto, Canada

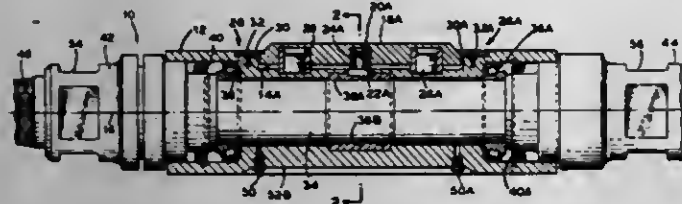
Filed Nov. 19, 1979, Ser. No. 95,318

Claims priority, application Canada, Jul. 19, 1979, 332121

Int. Cl.<sup>3</sup> E21B-17/10

U.S. Cl. 175-325

10 Claims



1. A self-centering, stabilizing apparatus comprising a fixed, non-rotating cylindrical sleeve, a mandrel rotatably disposed within the sleeve and detachably affixed therein, the sleeve having a longitudinal axis of symmetry, a plurality of bearing means disposed between the sleeve and the mandrel, a plurality of spaced, wear-resistant pads detachably affixed to the periphery of the sleeve, the pads oriented within a plurality of longitudinal channels formed along the peripheral surface of the sleeve, a plurality of alignment guides disposed within the channels and in slideable registry with the pads, a retainer projecting outwardly from each channel into a cavity formed within each pad, a spring washer disposed within each channel, the washer being oriented about the retainer, so as to allow the pads limited movement in a plane substantially perpendicular to the axis of the sleeve.

4,284,155

**DEVICE FOR SUPPORTING THE LOAD OR A LOAD CARRIER IN AN ELECTROMECHANICAL SCALE**

Arne O. Söderholm, Bromma, Sweden, assignor to S.E.G. Resistor AB, Vällingby, Sweden

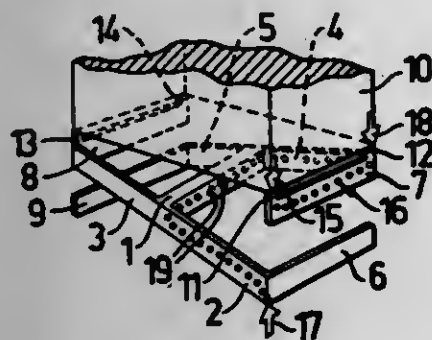
Filed Nov. 13, 1979, Ser. No. 93,496

Claims priority, application Sweden, Nov. 15, 1978, 7811771

Int. Cl.<sup>3</sup> G01G 3/10

U.S. Cl. 177-211

7 Claims



1. In an electromechanical scale of the kind in which a load to be weighed is supported on a bed by at least three load transferring points: a measuring body having a longitudinal axis and opposite ends; a pair of arms rigidly connected to the body at opposite ends of said body, each pair having first and second arms extending from opposite sides of the body and transverse to the body, the first arms of each pair extending from the same side of the body and the second arms of each pair extending from the other side of the body; means connected to the outer end of the first arm of one of said pairs for supporting said outer end on said bed; means connected to the outer end of the second arm of said one pair for partially supporting the load; means connected to the outer end of the second arm of the other pair for supporting said outer end on said bed; means connected to the outer end of the first arm of said other pair for partially supporting the load, the first and second arms of the pairs thereby functioning as levers capable of applying torque to the measuring body when a load is sup-

ported; and electric means for measuring the torsional strain or torsional deformation of said measuring body.

4,284,156

**VEHICLE WITH AT LEAST THREE AXLES**

Jes-Ernst Carstensen; and Walter Nau, both of Cologne, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

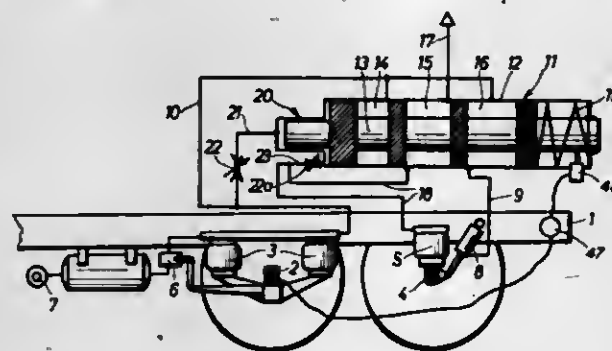
Filed Mar. 19, 1979, Ser. No. 21,820

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811874

Int. Cl.<sup>3</sup> B62D 61/12

U.S. Cl. 180-24.02

9 Claims



1. An automatic control apparatus for a lifting device of a liftable axle of a double-axle unit of multiple axle vehicles, including also a non-liftable axle and which controls the lifting dependent upon axle loading, comprising in combination: a frame having two of the axles combined in a double-axle unit yieldingly connected to said frame; a lifting device for lifting and lowering the liftable axle of the double-axle unit; a sensor for determining magnitude of load carried by the liftable axle in elevated and lowered positioning respectively separately emitting corresponding control values for the particular loading of both the liftable axle and the non-liftable axle, said sensor adding the total load of the double-axle unit collectively for purposes of emitting thereof; and a control element for actuating said lifting device only in response to and dependent upon the total load control value emitted collectively from said sensor to eliminate oscillating pendulum action in lift positioning and to assure stable traveling behavior of the multiple axle vehicles.

4,284,157

**VEHICLE FOR THE PHYSICALLY HANDICAPPED**

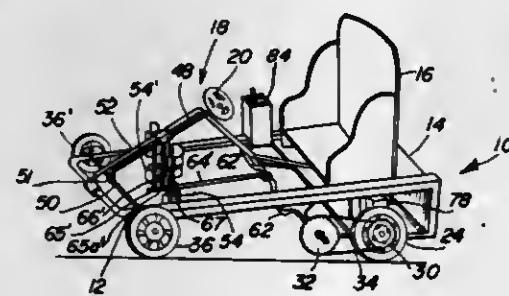
Larry D. Lay, 26078 Alger, Madison Heights, Mich. 48071

Filed Dec. 1, 1978, Ser. No. 965,573

Int. Cl.<sup>3</sup> B60K 1/00

U.S. Cl. 180-65 R

5 Claims



1. A vehicle for a physically handicapped person comprising: a frame; a plurality of ground engaging wheels mounted on said frame;

means for steerably controlling at least one of said plurality of wheels by a physically handicapped person; means for driving said vehicle, said driving means including: a source of power, a motor connected to said source of power, and means for drivingly connecting said motor to at least one of said plurality of wheels; at least one rod having one end portion pivotally mounted to said frame for reciprocal movement; a foot support mounted on the other end portion of said rod; an orthopedic brace including: a foot piece mounted on said foot support, a calf support, a vertical leg support interconnecting said foot piece and said calf support, and means for connecting said vertical leg support to said rod proximate said calf support; and means for drivingly interconnecting said drivingly connecting means and said rod whereby at least one leg of a physically handicapped person is exercised by reciprocal movement of said rod while said vehicle is being driven.

4,284,158

**DETACHABLE DIFFERENTIAL FOR VEHICLE DRIVE TRAIN**

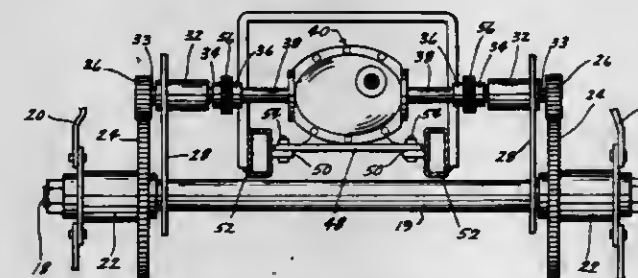
Vern L. Schield, 418 Third Ave. NE., Waverly, Iowa 50677

Filed May 7, 1979, Ser. No. 36,383

Int. Cl.<sup>3</sup> B60K 17/00

U.S. Cl. 180-70 R

2 Claims



1. A drive train for a vehicle having a frame supported on forward and rearward wheels, a power means on said frame, and a drive shaft driven rotatably by said power means, said drive train comprising:

a differential housing having an input shaft and two output shafts adapted to rotate in response to rotation of said input shaft, first coupling means on said input shaft for detachably coupling said input shaft to said drive shaft, a first and second connecting sprocket means on said output shafts of said differential housing, a third and fourth rotatable sprocket member each positioned adjacent one of said first and second connecting sprocket means, respectively, and which rotate about an axis approximately coincident with the rotational axes of said first and second sprocket means; said third and fourth sprocket members being approximately the same size as said first and second sprocket means, the outer peripheral edges of said first and second sprocket means being adjacent and in registered alignment with the outer peripheral edges of said third and fourth sprocket members, respectively,

second and third coupling means each detachably coupling said first and second sprocket means to third and fourth sprocket members, respectively; said second and third coupling means each comprising a single chain trained over said registered pairs of first and third sprockets, and second and fourth sprockets; each said chain comprising a plurality of links joined into a continuous loop, one of said links being detachable to permit removal of said loop from said sprockets, a mechanism interconnecting each of said third and fourth sprocket members to one of said rearward wheels for

causing rotation of said rearward wheels in response to rotation of said third and fourth sprocket members, said forward and rearward wheels being supported on axle means, said wheels and axle means bearing the weight of said vehicle, a securing means detachably securing said differential housing to said frame at a location above and remote from the location of said axle means for said rearward wheels.

4,284,159

**MOBILE CRANE**

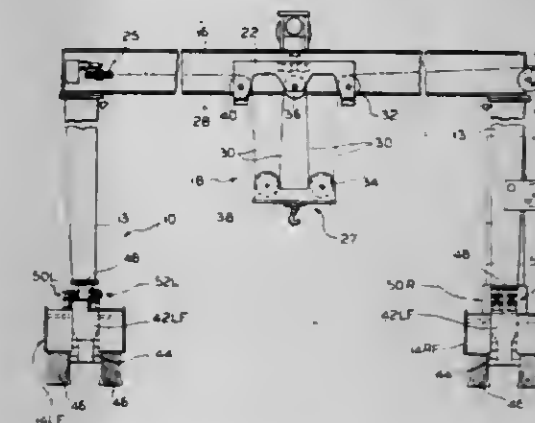
Richard F. Voeltz, Butler, Wis., assignor to Reaner Manufacturing, Milwaukee, Wis.

Filed Apr. 26, 1979, Ser. No. 33,739

Int. Cl.<sup>3</sup> D62D 5/06

U.S. Cl. 180-140

25 Claims



1. A mobile crane having spaced apart first and second front wheel means and spaced apart first and second rear wheel means which are also spaced from said front wheel means, first and second steering means, first and second coupling means for coupling said first and second steering means to said first and second front wheel means, respectively, first and second connecting means each having a first mode for connecting said first and second steering means to a power source for turning said front wheels through a turning angle, third and fourth steering means respectively associated with said first and second front wheel means and fifth and sixth steering means associated with said first and second rear wheels, respectively, third and fourth coupling means for coupling said third and fourth steering means, respectively, to said first and second front wheel means and fifth and sixth coupling means for locking and unlocking said first and second rear wheel means, respectively, in a predetermined orientation, said fifth and sixth steering means are operable to turn the said rear wheel means through a turning angle when the same are unlocked, said first and second connecting means having a second mode wherein said third, fourth, fifth and sixth steering means are coupled to said power source for simultaneously turning said front and rear wheel means through the same turning angles.

4,284,160

**VEHICLE GUIDANCE SYSTEM EMPLOYING RADIO BLOCKING**

Robert DeLiban, Menlo Park, and David G. Lieby, San Jose, both of Calif., assignors to Barrett Electronics Corporation, Northbrook, Ill.

Filed Mar. 19, 1979, Ser. No. 21,335

Int. Cl.<sup>3</sup> B62D 1/24

U.S. Cl. 180-168

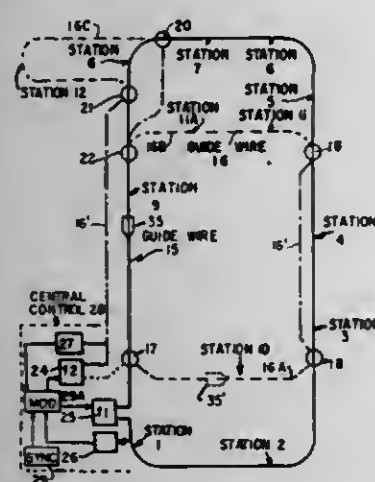
26 Claims

1. In a guidance system for guiding a plurality of vehicles along a traffic layout divided into a plurality of traffic control



blocks, the combination comprising: identification means for each of said blocks which provide a unique identifying signal for each block; vehicle control means for each vehicle including heading means for directing the vehicle along the traffic layout, input means for receiving the identifying signal for a given block as the vehicle passes adjacent to its identification means, and means responsive to identifying signals received by said input means for generating position signals indicative of the location of the vehicle along the traffic layout, each of said vehicle control means including timing means operable when enabled to generate a plurality of timing signals which define a plurality of time channels, transmitter means, and enabling circuit means responsive to said timing signals and one of said position signal to enable said transmitter means to transmit a presence signal during at least one of said time channels indicative of a state of occupancy of a given block; and synchronizing means for periodically generating a synchronizing signal which is transmitted to the vehicles for enabling the timing means of each of said vehicle control means, thereby synchronizing the operation of the timing means for all of the vehicles.

8. In a guidance system for guiding a plurality of vehicles along a traffic layout divided into a plurality of traffic control



blocks, the combination comprising: identification means for each of said blocks which provide a unique identifying signal for each block; and vehicle control means for each vehicle including heading means for directing the vehicle along the traffic layout, input means for receiving the identifying signals for each block as the vehicle passes adjacent to the identification means for the blocks, means responsive to identifying signals received by said input means for generating position signals indicative of the location to the vehicle along the traffic layout, each position signal comprising a binary coded signal identifying the block in which the vehicle is located, timing means operable when enabled to generate a plurality of binary coded timing signals which define and identify a plurality of time channels, certain ones of said time channels being associated with different ones of said blocks, enabling means including a comparator circuit for comparing one of said position signals with said timing signals and for generating an enabling signal during at least one of said time channels, identified by a coded timing signal corresponding to said one position signal, and transmitter means responsive to said enabling signal to generate a presence signal representative of the location of the vehicle along the traffic layout.

4,284,161

## SUSPENSION SYSTEM FOR SNOWMOBILES

Jaroslav Blas, Chaska, Minn., assignor to Kawasaki Motors Corp., U.S.A., Santa Ana, Calif.

Filed Nov. 24, 1978, Ser. No. 963,913

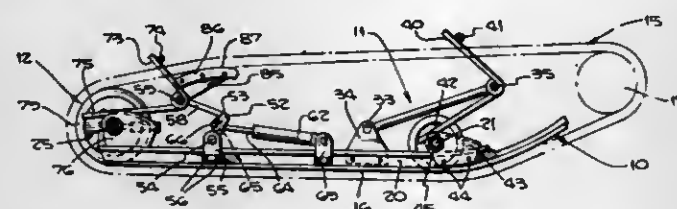
Int. Cl.<sup>3</sup> B62M 9/16

U.S. Cl. 180—184

15 Claims

1. In a suspension system for a track driven vehicle including a vehicle body, the combination of:  
a rigid chassis means;

suspension means interconnecting said vehicle body and said chassis means, said suspension means including  
a front support frame pivotally connected to said chassis means and to said body, said front support frame including a front transverse member having an axis;  
a front torsion spring having a coil about said axis carried at each end of said transverse member,



each torsion spring having a spring arm extending from said coil;  
and cam means on the chassis means in operable contact with said spring arm whereby movement of said body and front transverse member relative to said chassis means changes the operable contact of said arm with the cam means and varies the response of said torsion spring to such movement.

4,284,162

## EXHAUST SYSTEM OF AUTOMOTIVE VEHICLE

Takashi Ishida, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

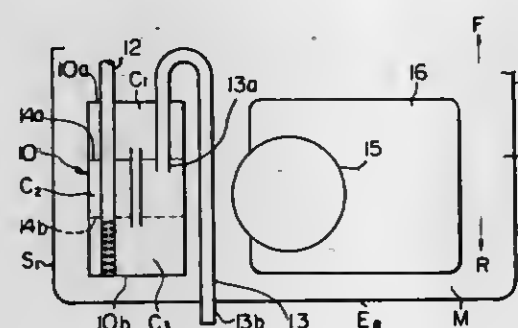
Filed Jul. 11, 1979, Ser. No. 56,617

Claims priority, application Japan, Sep. 20, 1978, 53-127933

Int. Cl.<sup>3</sup> B60K 13/04

U.S. Cl. 180—296

7 Claims



1. An automotive vehicle having a vehicle body, comprising:

- a muffler disposed beneath the vehicle body to attenuate exhaust noise, said muffler being formed with a front end face facing toward the front of the vehicle and a rear end face facing toward the rear of the vehicle, the longitudinal axis of said muffler being parallel with the longitudinal axis of the vehicle body, said muffler having therein first and second partition walls, said first partition wall being located nearer to the front end face than the second partition wall, a front resonance chamber being defined by the first partition wall, an expansion chamber being defined between the first and second partition walls, a rear expansion chamber being defined by the second partition wall said second partition wall being provided with passage means interconnecting said expansion chambers, and conduit means for connecting said front resonance chamber to said rear expansion chamber;
- an exhaust pipe for introducing therethrough exhaust gases into said muffler, inserted into said muffler through the front end face of said muffler, an end portion of said exhaust pipe opening to the rear chamber of said muffler;
- a tail pipe for discharging therethrough the exhaust gases out of said muffler, having a first end portion inserted through the front end face into said muffler and opening to the expansion chamber of said muffler, a curved portion integrally connected with the first end portion through a first

straight portion which is located within the front chamber and parallel with the longitudinal axis of said muffler, and a second end portion located rearward of the rear end face of said muffler, the second end portion being integrally connected with the curved portion through a second straight portion parallel with the first straight portion, the second end portion being formed with an exhaust gas outlet through which the exhaust gases are discharged into the atmosphere.

4,284,163

## COUPLING MEANS FOR HORIZONTAL VIBRATOR WITH TOOTH-LIKE PROJECTIONS

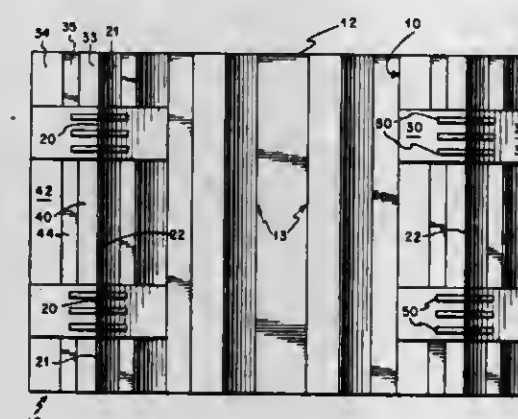
William C. Pritchett, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 28, 1979, Ser. No. 108,205

Int. Cl.<sup>3</sup> G01V 1/053

U.S. Cl. 181—113

4 Claims



1. In a transducer for inducing shear waves in an elastic medium, including a horizontally movable support means adapted to couple energy of such transducer into said medium, the improvement comprising a plurality of cleat means of differing depth on such support structure for engaging the surface of said medium, each of said cleat means consisting of a downwardly convergent, wedge-shaped structure adapted to form a horizontal bottom cleat edge extending transversely to the direction of transducer motion, and a plurality of tooth-like projections affixed respectively to at least some of said cleat means so as to extend downwardly from the deepest of said cleat edges, the total load-bearing surface of said tooth-like projections being very small relative to that of said cleat means.

4,284,164

## ACOUSTIC PULSE GENERATOR

Tom P. Airhart, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 21, 1979, Ser. No. 107,009

Int. Cl.<sup>3</sup> G01V 1/137, 1/047

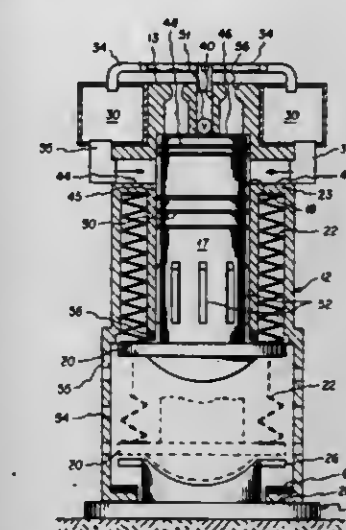
U.S. Cl. 181—117

6 Claims

1. Apparatus for generating an acoustic pulse in a medium comprising

- (a) a hollow cylindrical housing having a closed top and open bottom and adapted to be supported in an upstanding position, the sidewall of said housing being penetrated adjacent said closed top by one or more ports,
- (b) an impact piston movable within said housing
- (c) means for supporting said impact piston so as to block said ports
- (d) a source of compressed gas interconnected with said ports
- (e) means acting in opposition to said support means for effecting an initial downward displacement of said impact

piston sufficient to clear said ports, thereby releasing said compressed gas within said housing to drive said impact



piston downwardly to deliver a blow to a target positioned adjacent said housing bottom.

4,284,165

## ACOUSTIC PULSE GENERATOR

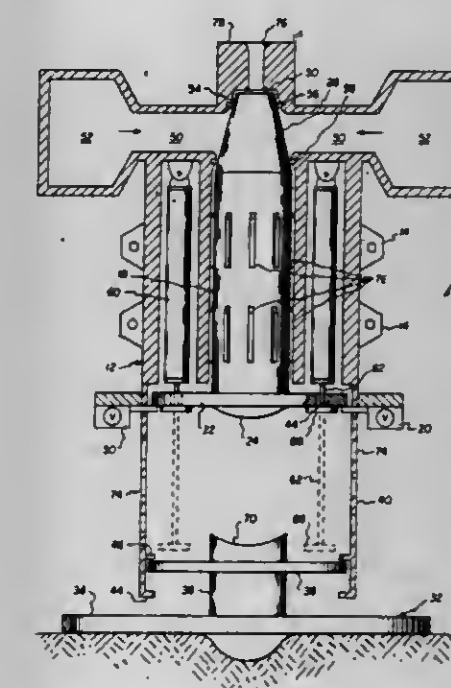
Tom P. Airhart, Plano, and Henry R. Barta, Dallas, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 28, 1979, Ser. No. 108,106

Int. Cl.<sup>3</sup> G01V 1/133, 1/147

U.S. Cl. 181—119

7 Claims



1. An acoustic pulse generator comprising:

- (a) a hollow cylindrical housing having a closed top and open bottom and adapted to be supported in an upright position, the sidewall of said housing adjacent said closed top being penetrated by a one or more ports,
- (b) means for interconnecting said ports with a source of compressed gas,
- (c) an impact piston slidably interfitted within the bore of said housing, the wall of said piston having an upwardly and inwardly tapered portion end,
- (d) means for supporting said piston in a ready position so that said ports are covered by said tapered portion of said piston,
- (e) means mounted on the wall of said bore adapted to be sealingly engaged by the tapered portion of said piston in said ready position to prevent said compressed gas from entering said bore,
- (f) means for removing said support means, whereby said



piston is driven downwardly and adapted to strike a target positioned adjacent the lower end of said housing.

4,284,166

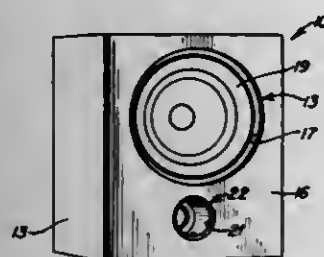
# PORT DEVICES FOR BASS-REFLEX SPEAKER ENCLOSURES

George A. Gale, 7127 S. Ellis Ave., Chicago, Ill. 60619  
Filed Apr. 13, 1979, Ser. No. 29,724

Int. Cl.<sup>3</sup> H05K 5/00

U.S. Cl. 181-156

12 Claims



1. A port device for a hollow, bass-reflex speaker enclosure, said speaker enclosure comprising a first wall portion having a speaker opening therein and a speaker mounted behind said speaker opening, a second wall portion having a port opening therein, and third wall portions which wall portions define an acoustic chamber wherein the air within that chamber transmits energy from the speaker to the port, said port device comprising: a hollow structure having a mouth opening at one end thereof and having a smaller throat opening at an opposite end thereof, said port device being mounted within said enclosure with said mouth opening at said port opening of said enclosure and with said throat opening inside said enclosure in communication with said acoustic chamber.

4,284,167

# SOUND REPRODUCING DEVICE

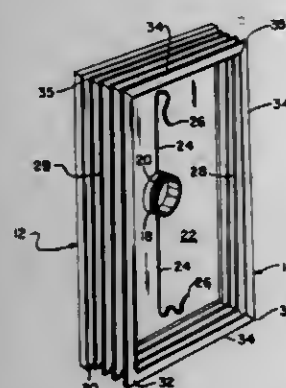
Ronald R. Kozlow, Morristown, and Donald D. Grieg, North Bergen, both of N.J., assignors to Electronic Research Assoc., Inc., Moonachie, N.J.

Filed Jan. 4, 1979, Ser. No. 44,869

Int. Cl.<sup>3</sup> H04R 7/20

U.S. Cl. 181-172

18 Claims



1. A sound reproducing device comprising:  
a housing;  
an acoustic diaphragm;  
support means for supporting said acoustic diaphragm for substantially free longitudinal movement relative to said housing while maintaining said acoustic diaphragm in a predetermined lateral position relative to said housing, said support means comprising corrugated compliant coupling means having a lateral cross-sectional shape which is noncircular; and  
drive means for providing relative longitudinal movement between said acoustic diaphragm and said housing.

4,284,168

# LOUDSPEAKER ENCLOSURE

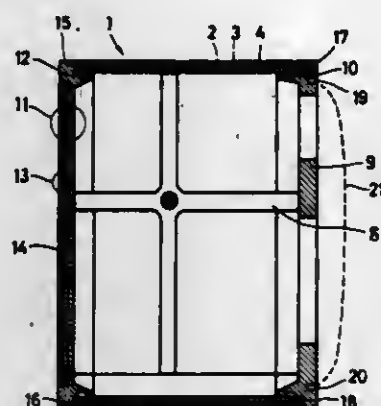
Harry Gaus, Kronberg, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany  
Filed Aug. 23, 1978, Ser. No. 936,105

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738295

Int. Cl.<sup>3</sup> H05K 5/00; E04B 1/82

U.S. Cl. 181-199

22 Claims



1. A loudspeaker enclosure comprising:  
a casement, said casement defining the internal volume of the loudspeaker enclosure, said casement having openings at oppositely disposed front and rear sides thereof, the remaining sides of said casement being of multi-layer construction and including a first, a second and a third layer, said first, second and third layers forming a multi-layer sheet, said first and second layers being comprised of sheet metal, said third layer being comprised of plastic, said third layer being disposed between said first and second layers, said multi-layer sheet having been formed into a generally rectangular cuboid shape, said multi-layer sheet further being bent inwardly toward the center of said casement and terminating in a pair of securement ends, the securement ends being aligned in face to face relation, said casement further including means for locking said securement ends;  
front panel means for sealing said casement front opening; and  
rear panel means for sealing said casement rear opening.

4,284,169

# BUBBLE NOISE REDUCTION

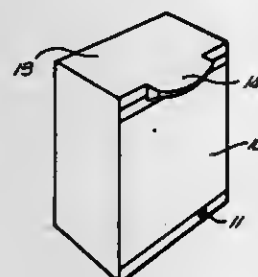
Gavin E. Tulloch, Sydney, Australia, assignor to Plessey Australia Pty. Limited, Villawood, Australia

Filed Aug. 22, 1978, Ser. No. 935,777

Int. Cl.<sup>3</sup> F01N 7/12

U.S. Cl. 181-211

27 Claims



1. A method for reducing noise generated by a gas emanating from a device submerged in a liquid having an upper gas interface, comprising the steps of:  
issuing gas from said device through an orifice disposed thereon and onto a surface disposed immediately adjacent said orifice externally of said device and facing in a direction generally away from said upper gas interface; and

forming a plurality of discrete bubbles on said surface from said issued gases.

said bridging members and fit over said pins to prevent the bridging means slots from disengagement from said pins.

4,284,170

# GAS TURBINE NOISE SUPPRESSOR

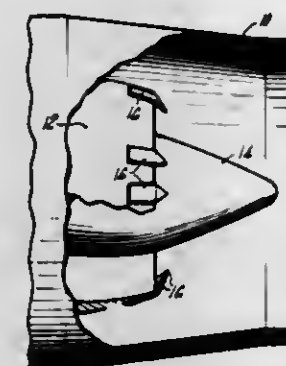
Richard S. Larson, Rocky Hill, and Allan B. Packman, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 22, 1979, Ser. No. 87,188

Int. Cl.<sup>3</sup> F02K 1/00

U.S. Cl. 181-213

3 Claims



1. Means for reducing spurious noise in a tail pipe in a turbo fan engine having concentric pipes defining coannular flow passages for the fan air and the engine core gases and where the outer pipe extends downstream of the inner pipe and where the flow egressing from the inner pipe forms a helical unsteady pressure field impacting the outer pipe at some distance downstream thereof, said means comprising a plurality of tab-like elements having a projection extending radially inwardly at the discharge end of the inner pipe for destroying the coherence of the unsteady pressure field and said tab-like elements being circumferentially and asymmetrically located about the inner pipe.

4,284,171

# CONVERTIBLE LADDER

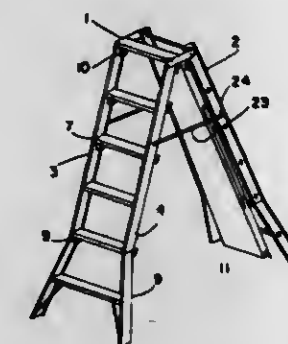
Graham Owen, 7 Owen Ave., Kyeemagh, Sydney, New South Wales, Australia

Filed Feb. 12, 1979, Ser. No. 11,424

Int. Cl.<sup>3</sup> E04G 1/30; E06C 1/32

U.S. Cl. 182-22

5 Claims



1. A convertible ladder comprising two leg assemblies each comprising a pair of sides joined by a plurality of rungs, pairs of regularly spaced hooks on each leg assembly the length thereof, a plank member including end lugs engaging in a pair of hooks on each leg assembly, said plank member further including arms provided with lugs engaging in another pair of hooks on each leg assembly, a pair of bridging members respectively pivotally mounted on the sides of one leg assembly at the upper end thereof, each bridging member having a slot at each end thereof, pins on corresponding upper end parts of each side engaging in said slots, catch members pivotally mounted on said bridging members so as to overlie the slots in

4,284,172

# ADJUSTABLE LADDER EXTENDER ASSEMBLY SAFETY ATTACHMENT

Solomon Cohen, 2435-B Tremont St., Philadelphia, Pa. 19115  
Filed Jul. 6, 1979, Ser. No. 55,492

Int. Cl.<sup>3</sup> E06C 7/44, 7/48

U.S. Cl. 182-204

1 Claim



1. An adjustable ladder extender assembly safety attachment (ALEASA), including

A. A bracket of a channel shaped member having three walls and an open side with a diverging member protruding from the wall opposite and extending away from the open side wherein the diverging member is multi-sided, but preferably an eight-sided prism shaped solid member whose sides are perpendicular to the side to which it is secured and has a hole through the member that is exposed on two sides which are opposite each other, and which are on the same plane as the walls of the channel-shaped member which are adjacent to the open side and holes in both walls adjacent to the open side are dimensioned and positioned to allow for securing the device to a ladder or the like;  
B. A hollow member having several walls, but preferably four walls with a diverging member protruding from one wall and protruding away from its opposite wall wherein the diverging member is multi-sided, but preferably an eight-sided prism-shaped hollow member whose sides and walls are perpendicular to the wall on which it is secured and dimensioned to envelope and house the diverging member as described in A above; and  
C. A bar having several sides, but preferably four sides with a series of holes emanating from one side and each hole being exposed on both the emanating side and its opposite side; and wherein each side of the diverging member as described in B above has a hole dimensioned and designed to allow a bolt or the like to be placed through any two opposite sides of the diverging member and, when so positioned, through the hole in the diverging member as described in A above; and wherein holes are dimensioned and positioned in two opposite walls of the hollow member as described in B above and emanate from the wall on which the diverging member is secured to allow a bar as described in C above to be held in place within the hollow member when said bar is passed through said hollow member and bolts or the like are put through opposing holes in opposite walls of said hollow member, and when so positioned, through designated holes in said bar and wherein the bracket, the hollow member and the bar, as described in A, B and C above, respectively, form the ALEASA, which can be attached to a ladder or the like and adjusted so that said ladder may be placed in any desired position; and wherein the ALEASA may be made of any suitable material; and wherein the ALEASA may be made in various sizes and shapes; and wherein the



ALEASA may be modified to accommodate other objects, designs, and purposes, which may become apparent to those skilled in the art from this disclosure.

4,284,173

**MOTOR VEHICLE LUBRICATING FACILITY**

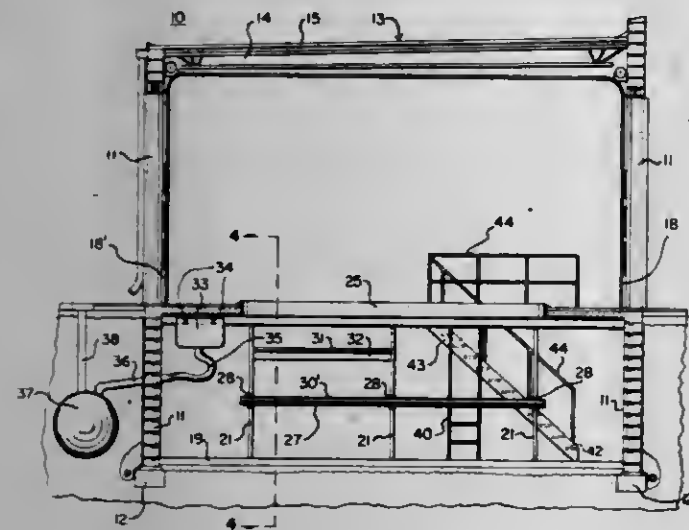
Paul C. Patterson, St. Albans, W. Va., assignor to Pennzoil Company, Pittsburgh, Pa.

Filed Nov. 13, 1979, Ser. No. 93,750

Int. Cl.<sup>3</sup> F16C 3/14

U.S. Cl. 184—1.5

7 Claims



1. A motor vehicle lubricating facility comprising a building structure having a plurality of superposed floors, one of said floors having a substantially rectangular opening therein over which an automobile may be driven in straddling relation thereto, a platform generally conforming in area to that of said rectangular opening, a plurality of supporting columns extending between said floors, a pair of horizontal channels disposed in opposed parallel spaced relation supporting opposite edges of said platform and means for attaching said channels to said columns at different levels whereby to support said platform adjustably at different levels beneath said opening on which a workman may stand to perform lubricating functions on an automobile, standing over said opening, from beneath the automobile.

4,284,174

**EMERGENCY OIL/MIST SYSTEM**

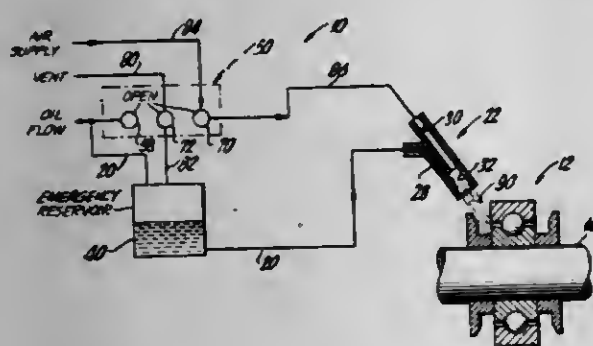
Frank Salvana, Fairfield, and Arnold Junker, Bridgeport, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Apr. 18, 1979, Ser. No. 31,045

Int. Cl.<sup>3</sup> F01M 1/18

U.S. Cl. 184—6.4

8 Claims



1. An emergency lubricant/mist system for providing a pressurized spray of lubricant to a lubricated part for a limited period of time after failure of a main lubrication system comprising:

- a source of pressurized lubricant;
- air aspirating nozzle means directed to provide either a

stream of lubricant or a spray of lubricant to the lubricated part;

conduit means interconnecting said source of pressurized lubricant to said nozzle means;

an emergency lubricant reservoir provided in said conduit means intermediate said source of pressurized lubricant and said nozzle means;

atmospheric vent means;

a source of pressurized air;

control means interconnecting: (1) said atmospheric vent means with said emergency lubricant reservoir; and (2) said source of pressurized air with said air aspirating nozzle means; said control means being operatively connected to said source of pressurized lubricant whereby when the main lubrication system is operational, said control means is operative to inhibit the flow of pressurized air from said source of pressurized air to said air aspirating nozzle means and to inhibit said emergency lubricant reservoir from being vented to the atmosphere, whereas upon failure of the main lubrication system, said control means is effective to vent the emergency lubricant reservoir and simultaneously allow pressurized air to be provided to the air aspiration nozzle means from the source of pressurized air, such that the pressurized air passing through the nozzle means is effective to aspirate lubricant from the emergency lubricant reservoir to create a pressurized spray of lubricant to said lubricated part.

4,284,175

**EMERGENCY STOP APPARATUS FOR ELECTRIC ELEVATORS**

Toshiaki Ishii, and Eiki Watanabe, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan.

Continuation of Ser. No. 808,612, Jun. 21, 1977, abandoned.

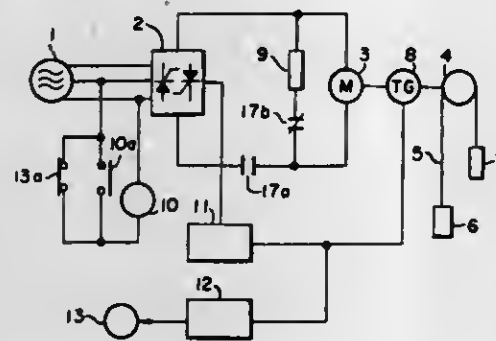
This application Jun. 27, 1979, Ser. No. 52,589

Claims priority, application Japan, Jul. 5, 1976, 51-79694

Int. Cl.<sup>3</sup> B66B 5/02

U.S. Cl. 187—29 R

2 Claims



1. An emergency stop apparatus for electric elevators comprising:

- a D.C. motor for driving a cage with passengers;
- variable D.C. power source means powered by an A.C. power source and coupled to said motor for controllably driving said motor;
- means for coupling the D.C. power source means to the motor;
- a power stoppage memorizing circuit for detecting a power stoppage of the A.C. power source and memorizing the power stoppage;
- first means for monitoring an elevator system safety function to verify a predetermined performance of said system function;
- second means coupled to said first means for stopping said motor when said first means senses a malfunction;
- first motor stopping means for stopping said motor to stop the cage when said power stoppage memorizing circuit detects a power stoppage;
- a memory erasing circuit for automatically erasing the memory of said memorizing circuit after the cage stops when

4,284,177

**SELF-ADJUSTING SHOCK ABSORBER HAVING STAGED METERING**

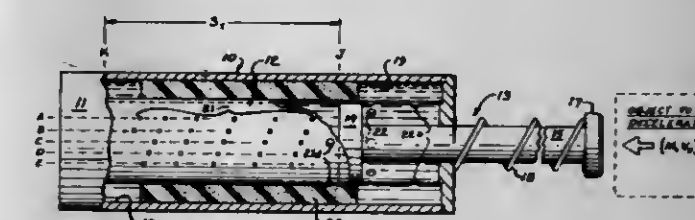
John A. Domek, Wheaton, Ill., assignor to Efdyn Corporation, Geneva, Ill.

Filed May 14, 1979, Ser. No. 38,932

Int. Cl.<sup>3</sup> F16F 9/48

U.S. Cl. 188—280

16 Claims



1. A shock absorber for decelerating impacting loads, said shock absorber being of the type comprising a closed hydraulic cylinder, a piston in said cylinder having a predetermined stroke from an initial position to a final position therein, and fluid passageway means for discharging fluid from the portion of the cylinder ahead of the piston as the piston moves away from its initial position in response to an impacting load, said passageway means having means for controlling the fluid discharge rate as a function of piston displacement from said initial position, wherein the improvement comprises:

said controlling means providing a progressively diminishing fluid discharge rate as a function of said piston displacement as said piston traverses a predefined portion of its stroke, defining a control region, to approximate a predetermined deceleration profile for one nominal design mass system, and providing a progressively diminishing fluid discharge rate as a function of said piston displacement as said piston traverses another predefined portion of its stroke, defining another control region, to approximate a predetermined deceleration profile for another nominal design mass system characterized at its point of impact, and thereafter in the case of an applied propelling force, as different from said one mass system in that its mass, velocity and propelling force defining an equivalent mass system is substantially different from that of said one mass system at its point of impact.

4,284,178

**HYDRAULIC SHOCK ABSORBER**

Takao Tomita, Niiza, and Masao Hiruma, Kawajima, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

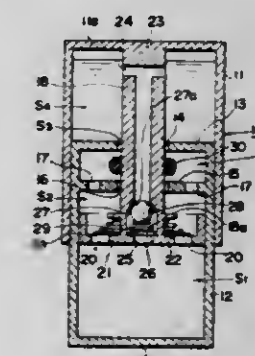
Filed Aug. 9, 1979, Ser. No. 65,344

Claims priority, application Japan, Aug. 11, 1978, 53-97860

Int. Cl.<sup>3</sup> F16F 9/34, 9/36

U.S. Cl. 188—281

16 Claims



1. A hydraulic shock absorber comprising: telescopically-connected inner and outer cylinders; a first one of said cylinders including a piston rod extending coaxially therewith from a closed end wall of said first cylinder and provided with a piston thereon;

A.C. power is restored and if no safety malfunction is sensed by said first means; and

means for issuing a start command through operation from an advance floor button in the cage by the passengers themselves or a floor button after the operation of said memory erasing circuit to release said motor stopping means to permit the cage to restart its travel.

4,284,176

**MECHANICALLY OPERATED DISC BRAKE**

Tetsuo Harakawa, Funabashi, and Koichi Tamura, Tokyo, both of Japan, assignors to Tokico Ltd., Kawasaki, Japan

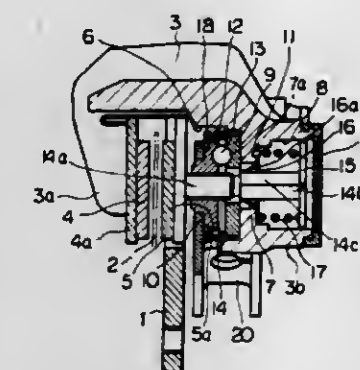
Filed Aug. 20, 1979, Ser. No. 68,106

Claims priority, application Japan, Aug. 19, 1978, 53-101130; Aug. 19, 1978, 53-101132

Int. Cl.<sup>3</sup> F16D 65/38

U.S. Cl. 188—71.7

8 Claims



1. A mechanically operated disc brake comprising:

- a supporting member;
- a caliper slidably supported on said supporting member for sliding movement parallel to the axial direction of a disc to be braked and straddling a peripheral portion of the disc and having limbs extending along opposite sides of the disc;
- a first friction pad engaged by one of said limbs for being urged against one surface of the disc by said one limb;
- a second friction pad opposed to the first friction pad on the other side of the disc;
- the other limb of said caliper having a cavity therein, said cavity having an inner cavity facing toward said friction pads and an outer cavity facing away from said friction pads and an annular wall having an aperture therethrough partitioning the outer cavity from the inner cavity;
- a nut member rotatably mounted in the inner cavity and having means for applying thereto a rotational input force;
- means in said inner cavity engaged with said nut member for converting rotational movement of the nut member into axial movement thereof;
- a rod member on which said nut member is threaded and having an inner end abutting the second friction pad for urging said second friction pad against the disc and an outer end extending through the opening in said annular wall into said outer cavity;
- a spring retainer on said outer end of said rod member;
- a spring extending between said annular wall and said spring retainer; and
- a rotation control member fixed in said outer cavity contiguous to said annular wall and non-rotatably fixed therein and having at least one leg portion engaging the outer peripheral surface of said rod member for restricting the rotation thereof.



a second one of said cylinders including a closed end wall at one end thereof and a first radial partition wall adjacent the other end of said second cylinder formed with a hole through which said piston rod extends and dividing an enclosed space defined by said inner and outer cylinders; said piston being located in said second cylinder; said second cylinder further including a second radial partition wall extending between said first partition wall and said piston and formed with a hole through which said piston rod extends; said second partition wall being further formed with a plurality of radially-spaced oil path apertures; an elastic ring member closely and slidably fitted on said piston rod between said first and second partition members so as to abut against said first partition wall to sealingly close said hole therein during extension stroke movement of said piston rod and to abut against said second partition wall to sealingly close said hole therein during compression stroke movement of said piston rod, such that said elastic ring member, when in abutting engagement with either of said partition walls, can be forced to slide along said piston rod in relation to further movement of said piston rod; said piston rod being provided therethrough with an axial oil path providing communication between a chamber defined by said first cylinder between said end wall of said first cylinder and said first partition wall and a chamber defined by said second cylinder between said end wall of said second cylinder and said piston; and a check valve provided within said axial oil path, said check valve being adapted to open said axial oil path during the extension stroke of said hydraulic shock absorber.

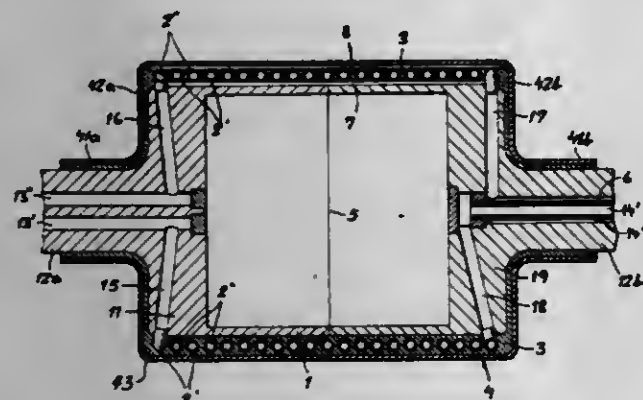
4,284,179

# ROLLER ELECTRODE AND PROCESS FOR MAKING SAME

Harald Albrecht, and Roland Schnettler, both of Schwerte, Fed. Rep. of Germany, assignors to Maschinen- und Werkzeugbau GmbH, Dortmund-Hombruch, Fed. Rep. of Germany  
Filed May 8, 1979, Ser. No. 36,995  
Int. Cl.<sup>3</sup> C25D 17/06

U.S. Cl. 191-1 A

9 Claims

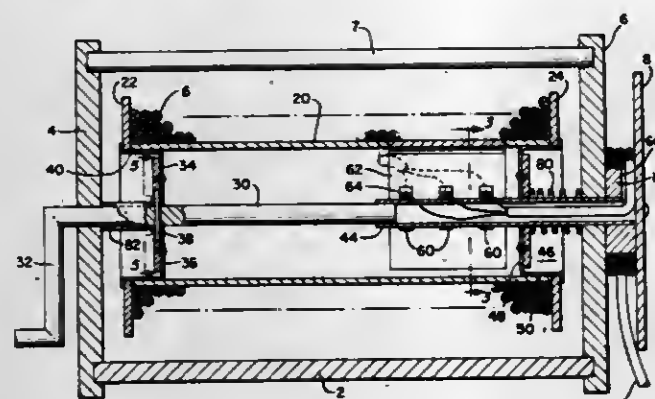


1. A roller electrode for the support of sheet-metal strips to be electrolytically treated, comprising:  
a hollow cylindrical body;  
a thin-walled cylindrical shell of hard metal coaxially surrounding said body with formation of an annular space between said shell and the periphery of said body;  
tubing lodged in said space for the circulation of a cooling fluid therethrough, said tubing being separated by spacers from said periphery and said shell; and  
a filler in said space consisting of a metallic mass of good electrical conductivity and of lower melting point than said hard metal and the material of said body, said tubing being embedded in said mass.

4,284,180  
PORTABLE REEL FOR POWER LINES  
Joseph Masters, 21124 Alexander, St. Clair Shores, Mich. 48081  
Filed Jan. 21, 1980, Ser. No. 113,675  
Int. Cl.<sup>3</sup> H02G 11/00

U.S. Cl. 191-12.2 R

1 Claim



1. A portable device for storing a short electrical cord and a longer electrical cord, which is constructed and operable to have one or the other of the cords connected to a fixed source of electrical energy and the other to be connected to a remote device requiring electrical energization, the device comprising a frame having a base, spaced end walls extending upwardly from the base, and a handle connecting the upper parts of the end walls, a fixed hollow shaft extending from a first one of the end walls of the frame toward the second end wall, a rotatable shaft extending from the second end wall toward the first end wall with its end adjacent the first end wall being rotatably journaled in the interior of the fixed hollow shaft, a crank connected to the end of the rotatable shaft externally of the second end wall, a fixed cylindrical support mounted on the external side of the first end wall, a cylindrical reel surrounding and concentric with the two shafts and overlapping both shafts, the reel being connected at its one end to the rotatable shaft and at its other end being rotatably mounted on the fixed shaft, a plurality of annular slip rings mounted in spaced axial relation on the fixed shaft, a plurality of brushes mounted on the reel internally thereof and having parts in sliding engagement with the slip rings, a short electrical cord mounted in wound relation on the fixed support, and having within it a plurality of electrical conductors each of which is connected through the hollow shaft to one of the slip rings, and a longer cord wound on the reel and also having within it a plurality of electrical conductors each of which is connected through the reel to one of the brushes.

4,284,181

# RIGID TROLLEY RAIL AND METHOD FOR LAYING THE SAME

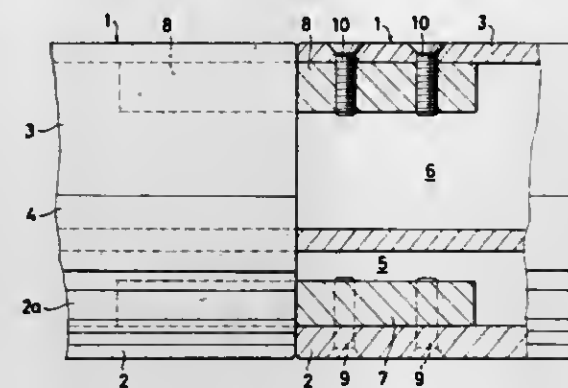
Masamoto Shuto, Tokyo, Japan, assignor to Japan Air Line Co., Ltd., Tokyo, Japan  
Filed Aug. 17, 1979, Ser. No. 67,761  
Claims priority, application Japan, Aug. 17, 1978, 53-100187  
Int. Cl.<sup>3</sup> B60M 1/00

U.S. Cl. 191-22 DM

2 Claims

1. A trolley rail structure comprising:  
a plurality of aluminum rail bodies each having a cross-sectional shape with a hollow box-like base portion having upwardly and inwardly slanting surfaces on the upper portion thereof and a protruding middle part extending upwardly from the middle of the upper side of said base portion between the upper ends of said slanting surfaces and having a hollow rectangular cross-section with substantially vertical side surfaces, and a pair of clamping strips projecting upwardly from the upper side of said base portion at the lower ends of said slanting surfaces; said aluminum rail being in end to end abutment in the direction of the rail and having connecting means in the hollows of said rail bodies connecting the bodies to each

other; and a thin strip of stainless steel extending along the upper surfaces of the protruding middle parts of successive rails and having the edge portions thereof bent downwardly against the vertical side surfaces of said middle



parts and against the slanting surfaces of said base parts, and said clamping strips being bent inwardly toward said middle parts and against the lower edges of said strip lying against said slanting surfaces for clamping said lower edges against said slanting surfaces.

4,284,182

# VEHICLE STEERING BRAKE AND CLUTCH CONTROL

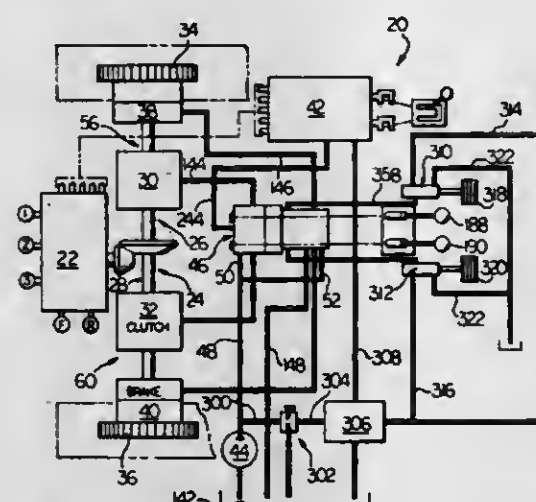
Gary A. Hake, North Brunswick, N.J.; Norma G. Shook, Morton; George W. Cackley, Hanna City, both of Ill.; Stephen D. Burdette, Edina, Minn., and Hugh C. Morris, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 876,581, Feb. 9, 1978. This application Apr. 13, 1979, Ser. No. 29,790

Int. Cl.<sup>3</sup> B60K 41/20

U.S. Cl. 192-4 A

1 Claim



1. In a vehicle in which driving force is applied to both sides thereof, including brake systems associated respectively with both sides thereof and responsive to fluid pressure from a source thereof, each brake system associated with a side of the vehicle comprising brake means actuatable to brake that side of the vehicle and releasable to release that side of the vehicle, a control apparatus for each brake apparatus comprising:  
valve means comprising a valve body and a valving spool movably disposed in a bore defined by the valve body;  
means for providing fluid communication between said source and said valve body bore;  
means for providing fluid communication between said valve body bore and said brake means;  
means for providing fluid communication from said valve body bore and through which pressure may be released from said valve body bore;  
the valving spool being movable within said bore to first and second positions relative to said valve body, the valving spool in one of said first and second positions providing communication of fluid pressure from said source through

said means for providing fluid communication between said source and said valve body bore, through said means for providing fluid communication between said valve body bore and said brake means to said brake means, the valving spool in the other of said first and second positions allowing release of fluid pressure from said brake means through said means for providing fluid communication between said valve body bore and said brake means, and said means for providing fluid communication through which pressure may be released; and  
actuator means operatively coupled with said valving spool so that movement of said actuator means in one direction provides movement of the valving spool to its first position, and movement of the actuator means in another direction provides movement of said valving spool to its second position,  
wherein the brake means are applied upon release of fluid pressure therefrom, and released upon application of fluid pressure thereto, and further comprising vehicle transmission means operable upon supply of fluid pressure thereto, and wherein said means for providing fluid communication between said source and said valve body bore comprise priority valve means for providing fluid to said valve means and said transmission means and for providing that a certain level of fluid pressure is supplied to the brake means to provide a disengagement thereof prior to fluid pressure being supplied to said transmission.

4,284,183

# AUTOMATIC CLUTCH DEVICE

Roger Brisabois, Clamart, and Gerard Brut, Le Mesnil le Roi, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

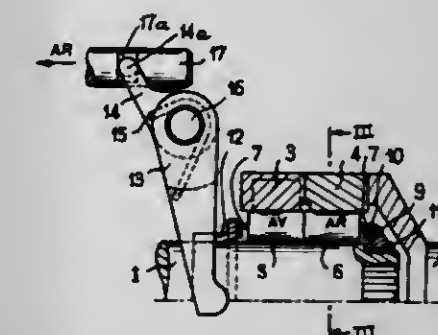
Filed Jun. 6, 1979, Ser. No. 46,086

Claims priority, application France, Jun. 7, 1978, 78 17023

Int. Cl.<sup>3</sup> F16D 41/08; B60K 17/34

U.S. Cl. 192-48.92

12 Claims



1. A coupling or torque transfer device between an input shaft and an output shaft, characterized in that the device is automatic, functioning when the speed differences, resulting from the mechanical structure, between the input shaft and the output shaft reaches a certain value, the device functioning in both directions of rotation and having selection means for determining the direction of rotation, said device comprising:  
a double ring connected to one said shaft and encircling the other said shaft and providing a pair of identical series of interior wedging slopes,  
two identical arrays of a series of rollers, said rollers mounted respectively between said double ring and the encircled said shaft,  
loading means for said arrays of rollers functioning for both directions of rotation and acting on one of the arrays of rollers in one direction of rotation and acting on the other of the arrays of rollers in the other direction of rotation, and control means connected to said selection means for actuating said loading means.



4,284,184

## COIN MECHANISM TO MERCHANDISING MACHINE INTERFACE

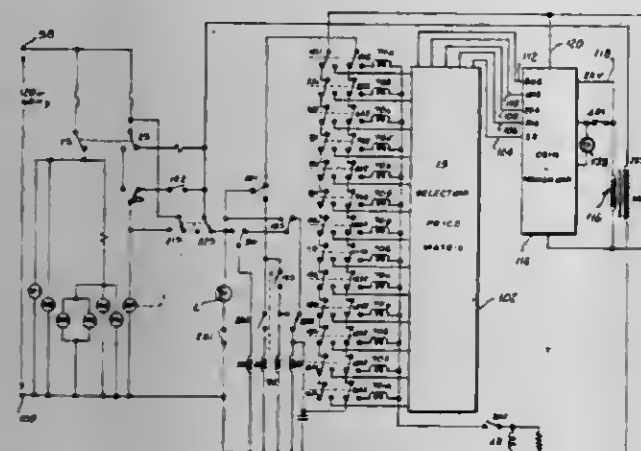
David Hoffman, Hillsdale, N.J., assignor to Rowe International, Inc., Whippany, N.J.

Filed Dec. 3, 1979, Ser. No. 98,772

Int. Cl.<sup>3</sup> G07F 11/00

U.S. Cl. 194—2

8 Claims



1. A merchandising machine control circuit for selectively connecting one of a plurality of energizable elements to a first source of voltage of a first magnitude in response to energization of a relay winding from a second voltage source of a second magnitude including in combination, a coin mechanism having an interrogating signal output and a credit accumulator and a plurality of price lines, a plurality of manually operable selection switches each having a first pole associated with a first normally open contact and with a first normally closed contact and a second pole associated with a second normally open contact and with a second normally closed contact, a selection price matrix selectively connecting said first normally open contacts to said price lines, means for applying said interrogating signal to said first poles, means connecting said second normally open contacts respectively to first terminals of said energizable members and means connecting said second poles to one terminal of said first voltage source, said coin mechanism being responsive to actuation of a selection switch the first normally open contact of which is connected to price lines corresponding to a sum at least equal to the credit stored in said accumulator for applying said second voltage to said relay winding to connect the other terminals of said elements to the other terminal of said first source, said selection switches being connected in series with each of said first normally closed contacts connected to the succeeding first pole and with each of the second normally closed contacts being connected to the succeeding second pole.

4,284,185

## APPARATUS FOR PRODUCING ELECTRICAL BATTERIES

Anders Borjesson, Alvängen, Sweden, assignor to Aktiebolaget Tudor, Sundbyberg, Sweden

Division of Ser. No. 805,584, Jun. 10, 1977, Pat. No. 4,184,582.

This application May 14, 1979, Ser. No. 38,426

The portion of the term of this patent subsequent to Jan. 22, 1997, has been disclaimed.

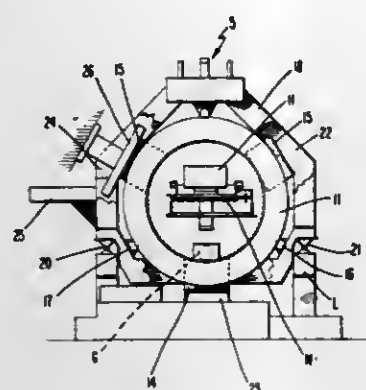
Int. Cl.<sup>3</sup> B23P 19/00; B65G 23/00

U.S. Cl. 198—339

2 Claims

1. In an apparatus for producing electrode sets for electrical accumulators having a plurality of electrode cells, by casting connector bars onto electrodes in each cell, said apparatus being of the type comprising a cylinder drum mounted for rotation about its longitudinal axis, a plurality of electrode-receiving cassettes mounted around the periphery of said cylinder drum, a plurality of work stations positioned adjacent said drum and spaced around the periphery thereof, the improvement wherein said cylinder drum axis is arranged substantially horizontally and comprises two end rings between which said

cassettes are mounted to a peripheral surface of the drum, drive means engaging one of said end rings and rotating said drum alternately and intermittently in opposite directions to sequentially displace said cassettes relative to said work sta-



tions in a vertically oriented circular path of travel, said drive means rotating said drum such that the extent of each rotary movement of the drum in one direction is the same while being different from the extent of each rotary movement in the opposite direction.

4,284,186

## UNSCRAMBLING CONVEYOR

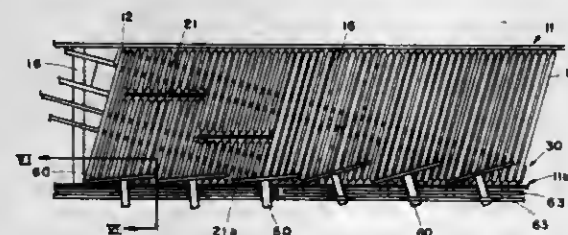
Gerald A. Brouwer, Grandville, Mich., assignor to Lear Siegler, Inc., Grand Rapids, Mich.

Filed Jun. 18, 1979, Ser. No. 49,318

Int. Cl.<sup>3</sup> B65G 47/24, 13/07

U.S. Cl. 198—415

13 Claims



1. A conveyor for unscrambling and organizing randomly received articles, said conveyor having sides and a plurality of parallel rollers mounted between said sides with their axes skewed to the axis of said sides, said rollers forming an elongated conveying surface with the rollers upstream of the direction of article movement along said surface converging toward one side of said conveyor, an article engaging rail along said one side, said rail having a smooth article engaging surface; said rail lengthwise being divided into a plurality of separate segments; means independently and adjustably supporting each of said segments for variable angular relationship to said one side; said segments being individually movable laterally of said conveyor; means for locking each segment in a selected angular and lateral position; each of said segments being inclined at an angle to said one side with the upstream end thereof converging toward said one side, and at least some of said segments being inclined at an angle different from others of said segments.

4,284,187

## AUTOMATIC PACKING LINE

Ulrich Kramer, Pully, and Alexis Chenevard, Morges, both of Switzerland, assignors to SAPAL, Societe Anonyme des Plieuses Automatiques, Ecublens, Switzerland

Filed May 22, 1979, Ser. No. 41,303

Claims priority, application Switzerland, Jun. 5, 1978, 6153/78

Int. Cl.<sup>3</sup> B65G 47/68

U.S. Cl. 198—435

7 Claims

1. For an automatic packing line which includes a feeder

4,284,188

## APPARATUS FOR PROCESSING ARTICLES COMPRISING ELEVATOR MEANS FOR CONVEYING CARPET-FORMED CARRIERS IN THE VERTICAL DIRECTION

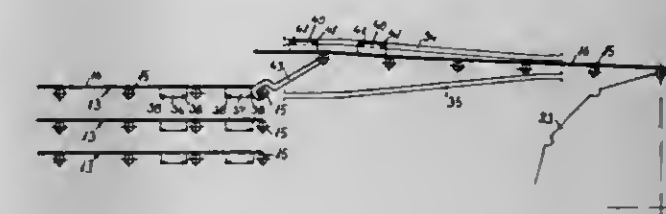
Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark

Filed Jul. 5, 1978, Ser. No. 922,214

Claims priority, application Denmark, Jul. 14, 1977, 3204/77 Int. Cl.<sup>3</sup> B65G 37/00

U.S. Cl. 198—472

1 Claim

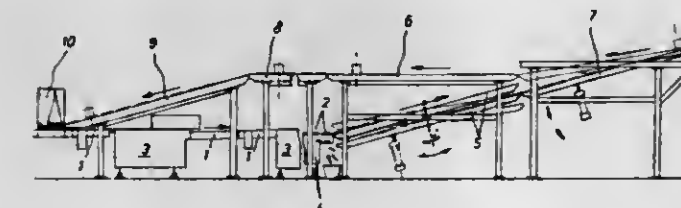


conveyor means arranged to bring a succession of articles which are to be packed, past a series of packing stations each served by a respective automatic feeder station, each of which is for removing at least some of the passing articles for packing at the respective packing station, so that downstream from the last of said automatic feeder stations in said series, the feeder conveyor means bears only such remaining ones of said articles as have not been removed by any of said automatic feeder stations; a recovery device located downstream from said last automatic feeder station for collecting said remaining articles; a storage device for temporarily storing said remaining articles collected by said recovery device; and an ejection device for evacuating said remaining articles from the feeder conveyor means should the recovery device become saturated with said remaining articles,

the improvement wherein:

said automatic packing line further includes an automatic recycling device for recycling to said feeder conveyor means, upstream of at least said last automatic feeder station but downstream of the furthest upstream one of said automatic feeder stations, said remaining articles temporarily stored by said storage device into vacant locations on said feeder conveyor means created by operation of said automatic feeder stations; there being a sufficient number of said automatic feeder stations normally to avoid saturation of the recovery device;

each of said recovery device, said storage device and said automatic recycling device including at least one endless belt for conveying said remaining articles thereon, and means for arranging in succession at least one said endless



belt of each said device; means for independently driving the endless belts of each said device when in said succession; and at least one article presence or absence-responsive sensor associated with each such driving means for controlling operation of each respective driving means; the at least one endless belt of said recovery device comprising two endless belts mounted one above the other on a frame;

means movably mounting said frame between a first position wherein the upper one of said two endless belts is in succession with said ejection device and a said at least one endless belt of said temporary storage device is in succession with the lower one of said two endless belts and a second position wherein the lower one of said two endless belts is in succession with said ejection device and said one endless belt of said temporary storage device is in succession with the upper one of said two endless belts; and said means for independently driving said two endless belts comprises means operable when said frame is in said first position for driving said upper belt intermittently forwards and for driving said lower belt continuously forwards and operable when said frame is in said second position for driving said upper belt continuously forwards and for driving said lower belt intermittently forwards, so that the one of said two endless belts which succeeds the ejection device may intermittently advance at a proper rate for accepting articles from the ejection device and the one of said two belts which is succeeded by said one endless belt of the temporary storage device may quickly unload articles onto said one endless belt of the temporary storage device.

1. A conveying apparatus for continuously conveying articles through a processing environment, said apparatus comprising elevator means having vertically spaced supports continuously movable in the vertical direction, carpet-formed article carriers which are flexible in their longitudinal direction, said carriers being supportable on said supports, insert means for successively inserting said carriers on said supports at an insert position of said elevator means, withdrawal means for successively withdrawing said carriers from said supports at a withdrawal position of said elevator means, and means for conveying said carriers in a path from said withdrawal position back to said insert position, characterized in that said insert means comprise two pairs of insert slot guides arranged on either side of the path of the carriers, said slot guides having guiding slots open in the direction towards the path of said carriers, each of said carriers having a first set of transversely projecting engagement means at its leading end for positive engagement with the guiding slots of one of the insert slot guides of said pair, and a second set of transversely projecting engagement means for positive engagement with the guiding slot of the other one of the insert slot guides of each pair, said second set of engagement means being located, in the horizontal position of a carrier, at a level different from the level of said first set of engagement means, the inlet ends of the guiding slots of each pair of insert slot guides having a level difference equal to the level difference of said first and second engagement means, the outlet ends of the guiding slots of each pair of insert slot guides having a level difference equal to the level difference of the inlet ends plus the level difference of successive supports of said elevator means, the guiding slots thereby diverging in the direction of travel of said carriers, said withdrawal means comprising two pairs of withdrawal slot guides which are constructed inversely to said insert slot guides and thus having guiding slots converging in the direction of travel of said carriers, said carriers being provided at their leading and trailing ends with intercoupling means which are disengageable from carrier to carrier in response to the level difference between the trailing end of a carrier and the leading end of the next following carrier caused by the engagement of the engagement means at said ends in the guiding slots of one and the other respectively of each pair on insert slot guides, and are engageable by the levelling of said ends similarly caused by said withdrawal slot guides, the carriers thereby being intercoupled to form a belt capable of travelling as an independent entity from said withdrawal position to said insert position.



4,284,189

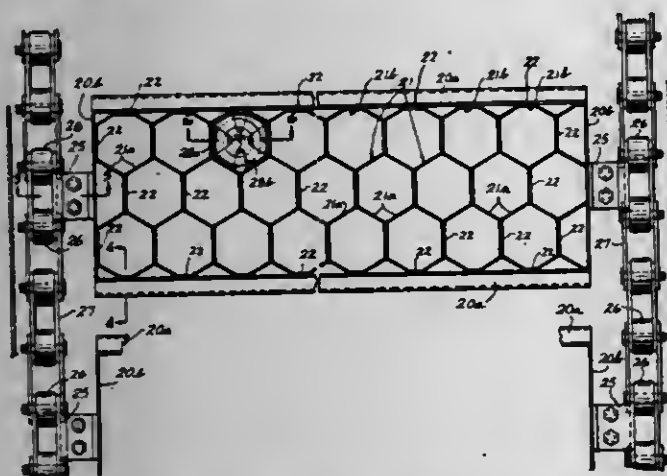
**MULTIPLE BOTTLE CARRIER STRUCTURE**

Michael Vamvakas, Rocky River, Ohio, assignor to Niagara Bottle Washer Manufacturing Co., a division of The Salang-mack Company

Filed Jul. 2, 1979, Ser. No. 54,272  
Int. Cl.<sup>3</sup> B65G 17/32

U.S. Cl. 198-647

7 Claims



1. A carrier for transportation of a plurality of bottles, comprising a substantially rectangular frame having metal sides and ends and being longer than it is wide and having a height between about 3 and 4 inches, a honey-comb type structure substantially filling said frame, said structure including a plurality of tightly assembled rows of generally six-sided forms, the contacting sides of said forms with each other and with said frame being firmly and permanently attached, and means at each end of said frame to relate said carrier to a flexible conveyor, said forms being of metal and of a height to enclose a good portion of a wider generally cylindrical part of a bottom of a bottle, and a plastic liner in each form secured to said metal form and of a length to encompass said bottle.

4,284,190

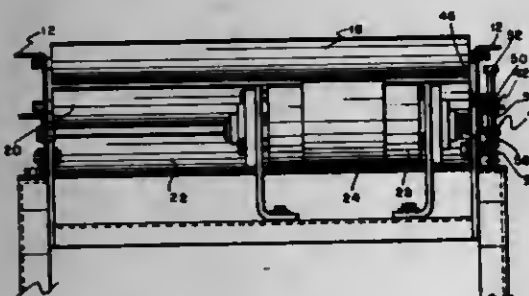
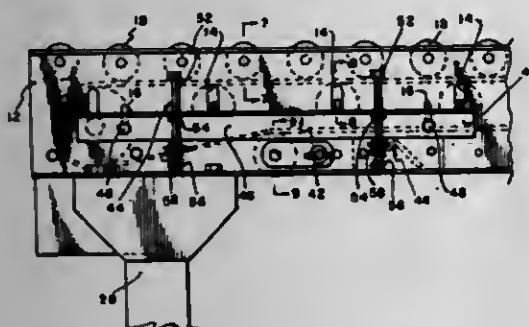
**HORIZONTAL ACCUMULATING CONVEYOR**

Fred S. Greenlee, III, 1970 S. West St., Wichita, Kans. 67213

Filed Jan. 28, 1980, Ser. No. 115,922  
Int. Cl.<sup>3</sup> B65G 13/07

U.S. Cl. 198-783

6 Claims



1. A reversible accumulating conveyor comprising a pair of support members, each of said support members including a structure defining a plurality of pressure roller-resting apertures; a plurality of carrier rollers connected to the support members and rotatable with respect thereto; a plurality of

pressure rollers vertically-slidably disposed within said pressure roller-resting apertures, said pressure roller-resting apertures being positioned lower with respect to the situs of said carrier rollers; support means attached to said support members for positioning said conveyor at a desired height from the floor; a conveyor belt reversible drive means mechanically communicating with the conveyor; an endless conveyor belt being driven by said drive means and being trained over and carried by said pressure rollers; at least one start belt integrally bound to said conveyor belt and having predetermined characteristics distinct with respect to said conveyor belt; and means for vertically urging the ends of said pressure rollers within said pressure roller-resting apertures in order to cause said endless belt to generally maintain a constant pressure against the carrier rollers, excepting when said start belt is carried by said pressure rollers, and to essentially constantly maintain a predetermined back pressure on said conveyor belt in either a forward or a reverse direction with respect thereto;

said means for urging comprises at least one pressure angle member supporting the ends of said pressure rollers, said angle member having a structure defining a plurality of angle apertures; a plurality of bolts vertically disposed within said angle aperture and including a structure having a means for resting the angle member whereupon the angle member rests; and spring-biased means surrounding said bolts to vertically urge said means for resting the angle member causing the ends of the pressure rollers to be vertically biased and float, resulting in pressurizing the endless belt against the carrier rollers;

said angle members additionally include a structure defining a plurality of second angle apertures, said support members additionally having a structure including a plurality of elongated angle retention apertures capable of registering with said second angle apertures of said angle members, a retention bolt assembly inserting through said second angle apertures and vertically-slidably lodging within said elongated angle retention apertures while slidably retaining said angle members to said support members in order to provide for said floating effect of said pressure rollers when said ends of said pressure rollers are resting on said angle members being spring-biased.

4,284,191

**ENDLESS CONVEYOR WITH LOCALLY VARYING SPEEDS**

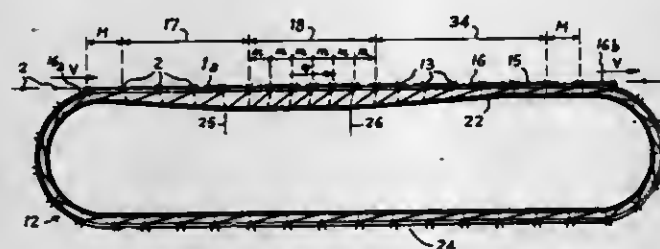
Rene C. Lavan, 22, rue de Verneuil, Paris, France (75007)

Filed Dec. 11, 1979, Ser. No. 102,307

Claims priority, application France, Dec. 13, 1978, 78 35106  
Int. Cl.<sup>3</sup> B66B 9/12; B65G 23/14

U.S. Cl. 198-792

2 Claims



1. An endless conveyor with locally varying speeds comprising: a linear endless assembly with a leading working side receiving the bodies to be transported, said assembly being composed of a succession of conveying elements, of variable spacings guided along a loop path; expanding-contracting means for varying the spacing of adjacent conveying elements over at least one controlled section of the path of the said linear assembly; and driving means for running the said linear assembly, wherein the said expanding-contracting means are distinct from the said endless linear assembly, and comprise at least a control device in a fixed position and formed by a succession of gripping elements guided over a loop path, of which a coinci-

dence section coincides with the said controlled section of the path followed by the elements of the said linear assembly, each gripping element being capable of gripping a conveying element at the upstream end of said coincidence section, and of releasing this conveying element at the downstream end of said coincidence section; each gripping element, being connected to one of the adjacent preceding gripping elements, by a connecting device controlling, in accordance with a pre-established program, the spacing between these two gripping elements as a function of the position of the said first-mentioned gripping element along said coincidence section, so that the said spacing decreases progressively in a first zone of the coincidence section and increases progressively in a second zone of the said section, situated downstream of the first zone.

4,284,192

**CHAIN CONVEYORS HAVING MEANS FOR CONTROLLING CHAIN TENSION**

David B. Taylor, Worcester, England, assignor to Dowty Meco Limited, Worcester, England

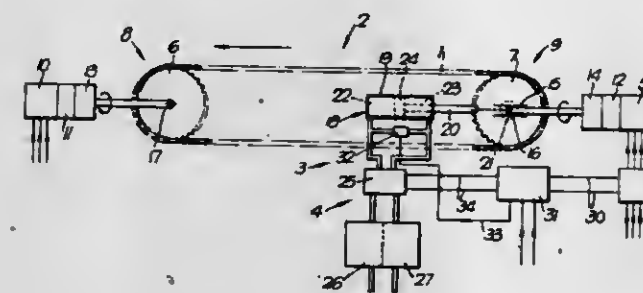
Filed Nov. 20, 1979, Ser. No. 95,938

Claims priority, application United Kingdom, Nov. 21, 1978, 45483/78

Int. Cl.<sup>3</sup> B65G 23/44

U.S. Cl. 198-813

8 Claims



1. A chain conveyor including a driving sprocket, an electric motor arranged to drive that sprocket, another sprocket spaced from said driving sprocket, an endless chain extending between and meshing with the two sprockets so as to form upper and lower chain runs, a fluid-pressure-operable device which is so connected to said driving sprocket, and the driving sprocket being so adjustably mounted, that said device is capable of altering the distance between the driving sprocket and said other sprocket to effect adjustment in the tension of the chain, and a servo-system, of which said fluid-pressure-operable device forms a part, which includes an electrically-operable servo-device for controlling said fluid-pressure-operable device, feedback means connected between said fluid-pressure-operable device and the input side of said servo-system, and means for applying to said servo-device an electrical signal which is dependent upon the torque, at any instant, of said electric motor whereby the load on the motor is, during operation of the conveyor, continuously monitored and, in response to said signal, said servo-device can cause said fluid-pressure-operable device to effect adjustments in said distance between said driving sprocket and said other sprocket sufficient for the tension in the chain, at a point where the chain is just leaving the circumference of said driving sprocket, to be maintained at a predetermined and low value.

4,284,193

**BOUTIQUE CARTON AND CARTON BLANK**

Harry L. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 31, 1979, Ser. No. 108,532

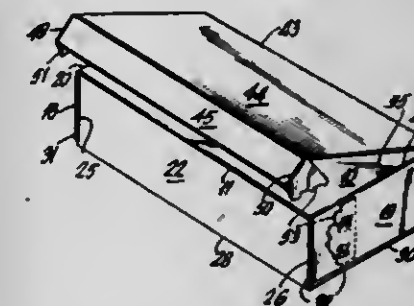
Int. Cl.<sup>3</sup> B65D 5/16, 5/54

U.S. Cl. 206-45.31

8 Claims

1. An erected carton comprising a plurality of rectangular body panels including a top panel having an opening there-through, a first end panel, a bottom panel and a second end panel all hingedly connected in the named sequence and each

folded at a right angle to its connected panel; an adhesive end panel hingedly connected at a right angle to said top panel and adhered to the interior face of the said second end panel; a plurality of pairs of side flaps connected to each of the said body panels to form a closed container, the side flaps of each pair being connected by a hinged fold line at a right angle on opposite sides of a body panel; an overlying panel hingedly connected by a tear line to the second end panel and overlying the said top panel; a lift panel hingedly connected at a right angle to said overlying panel at a fold line parallel and opposite to said tear



line; said lift panel overlying at least a portion of the exterior face of said first end panel; first and second lift panel side flaps hingedly connected at opposite ends to said lift panel; said lift panel side flaps each having a weakened line and each being fastened to a first end panel side flap beyond said weakened line, wherein upon use said top panel may be exposed by lifting said lift panel, tearing the lift panel side flap tear lines, disengaging said lift panel, continuing to lift the lift panel to thereby lift said overlying panel, and tearing away said overlying panel along its weakened line to expose the exterior face of said top panel.

4,284,194

**PACKAGE FOR A MULTIPLE OF STERILE SUTURES WITH OR WITHOUT NEEDLES ATTACHED**

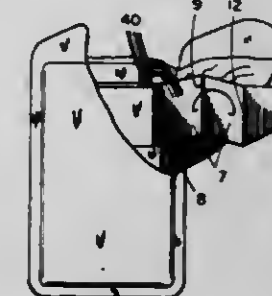
Alison Flatau, Boulder, Colo., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 12, 1979, Ser. No. 19,386

Int. Cl.<sup>3</sup> A61B 17/06

U.S. Cl. 206-63.3

11 Claims



1. A single dispensing surgical suture package containing multiple surgical suture strands which comprises an outer label having: a back panel; an upper side flap adjacent and connected to said panel by at least one score line, and containing means for retaining the ends of said surgical suture strands; a tab adjacent and connected to said upper flap by at least one score line, and opposite said panel, for exposing the ends of said strands; a lower side cover flap adjacent said panel and said upper flap, and connected to said panel by at least one score line; a bottom flap adjacent said panel and said lower flap and connected to said panel by at least one score line; and an inner label having: a back panel;



a strand cover flap adjacent and connected to one side of said inner label back panel by at least one score line; a foam layer contained on coordinating surfaces of said inner label back panel and said strand cover flap; at least two surgical suture strands contained on the foam layer in a sinusoidal configuration, with said strand cover flap folded along said score line onto said strands and with one end of said strands external to said inner label back panel and said strand cover flap; whereby said inner label back panel is laid onto said outer label back panel with one end of said strands adjacent to and retained by said outer label upper side flap, said outer label bottom flap is folded onto said inner label cover flap, said outer label lower flap is folded onto said bottom flap, said outer label upper side flap is folded onto said outer label back panel or said inner label strand cover flaps, and said outer label tab is folded onto said outer label back panel or said outer label upper flap; such that when said tab is lifted, a single suture can be grasped and directly dispensed from said package.

4,284,195

## CARRIER AND HANDLE

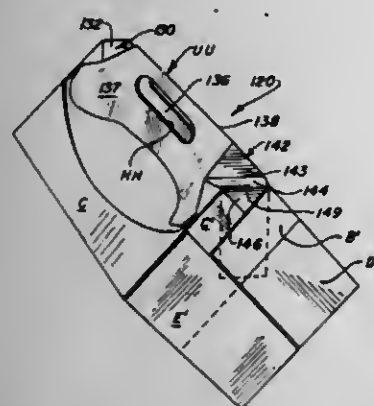
Charles L. Champlin, Rittman, Ohio, assignor to Packaging Corporation of America, Evanston, Ill.

Filed Jan. 24, 1980, Ser. No. 115,054

Int. Cl.<sup>3</sup> B65D 65/32, 75/56, 5/46

U.S. Cl. 206-427

14 Claims



1. A carrier handle formed from a blank of foldable sheet material comprising spaced depending end means; and an elongated hand-gripping unit spanning the distance between said end means and being foldably connected to corresponding upper peripheral portions of the latter and manually movable relative thereto between operative and inoperative modes; said unit including a pair of elongated panel sections arranged in face-to-face relation and having upper peripheral segments thereof interconnected by an elongated foldline, the ends of which are spaced inwardly from the end means, and gusset sections disposed intermediate the foldline ends and the adjacent end means, each gusset section having a first member foldably connected to corresponding peripheral portions of said unit panel sections, and a second member foldably connected to said first member and to the upper peripheral portion of the adjacent end means; said gusset section members assuming a folded relation and the folding connection between said second member and the peripheral portion of the adjacent end means being elevated relative to the folding connection between the first and second members of said gusset section, when said unit is in an inoperative mode; said gusset section members assuming a substantially unfolded relation, wherein the folding connection between the first and second members is elevated relative to the folding connection between the second member and the peripheral portion of said adjacent end means, when said unit is in an operative mode.

4,284,196  
TUBULAR CONTAINER FOR VISCOUS,  
VISCOUS-ELASTIC, PLASTIC PRODUCTS AS WELL AS  
FOR POWDER OR GRANULAR PRODUCTS

Conny B. Lagerkvist, Nora, Sweden, assignor to Nitro Nobel AB, Gyttrorp, Sweden

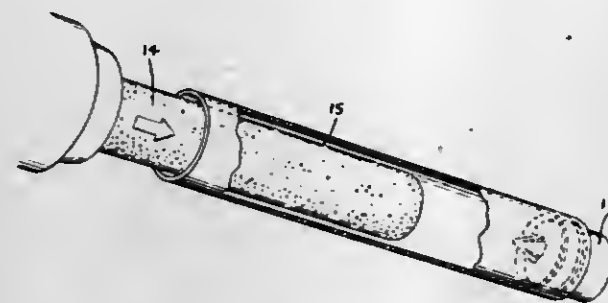
Filed Sep. 11, 1979, Ser. No. 74,305

Claims priority, application Sweden, Oct. 4, 1978, 7810386

Int. Cl.<sup>3</sup> B65D 71/08, 85/00

U.S. Cl. 206-528

12 Claims



1. A tubular container for an expandible product, said container comprising a tube having opposite ends, end closure means at said ends, and an expandible product in said tube capable of exerting pressure on said end closures in the course of expansion of said expandible product, said tube being constituted of an olefin plastic whose molecules are oriented in both axial and radial directions, said molecules being unstretched and of a form which is substantially sine shaped.

4,284,197

## RECEPTACLE HAVING FRANGIBLE MEANS

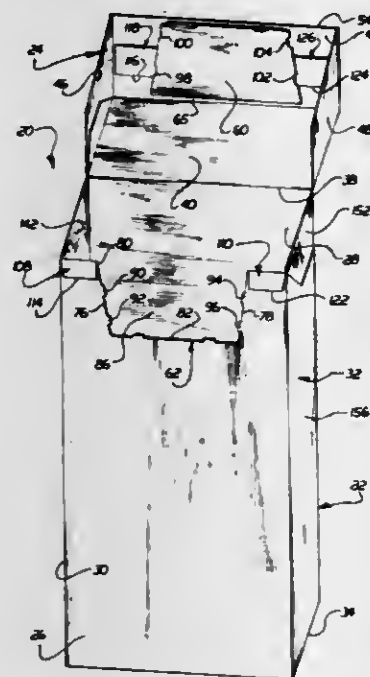
George Meyers, Ashland, Ohio, assignor to The Garber Company, Ashland, Ohio

Filed Feb. 28, 1980, Ser. No. 125,492

Int. Cl.<sup>3</sup> B65D 17/16

U.S. Cl. 206-626

9 Claims



1. A receptacle comprising spaced apart front and back panels, a pair of side panels extending between said front and back panels, a bottom panel connected with lower edges of said front, back and side panels, a cover pivotally connected with said back panel for movement between a closed position blocking access to the interior of said receptacle and an open position in which said cover is ineffective to block access to the interior of said receptacle, said cover including an upper section which extends between said front and rear panels when said cover is in the closed position and a front section which is disposed in flat juxtaposition with said front panel when said cover is in the closed position, said front panel including a rip

out section defined by a score line, said score line having first and second spaced apart sections extending downwardly from an upper edge toward a lower edge of said front panel at locations spaced inwardly from said side panels and a third section extending between said first and second sections of said score line at a location between the upper and lower edges of said front panel, and adhesive means for connecting said rip out section in flat juxtaposition with an inner side of said front section of said cover to hold said front section of said cover in flat abutting engagement with said front panel upon application to a lower edge portion of said front section of said cover of a force insufficient to tear said front panel along said score line and prior to opening of said receptacle, said adhesive means being effective to cause tearing of said front panel along said score line upon initial movement of said cover to the open position to form an opening which extends downwardly from the upper edge of the front panel toward the lower edge of the front panel to at least partially expose the contents of the receptacle, said front section of said cover having a lower edge which is disposed between a lower edge of the opening in the front panel and the lower edge of the front panel when said cover is in the closed position to enable said front section of said cover to block the opening in the front panel.

4,284,198

METHOD AND APPARATUS FOR REGULATING THE  
TIMING OF OPERATION OF MEANS FOR  
INFLUENCING CIGARETTES OR THE LIKE

Friedo Koch, Wohltorf, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

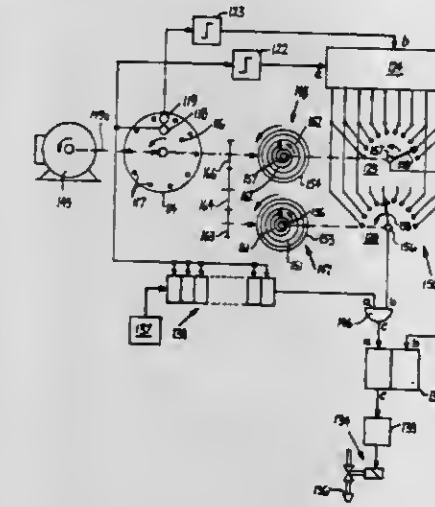
Filed Feb. 5, 1979, Ser. No. 9,519

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1978, 2806786; Mar. 28, 1978, 2813271

Int. Cl.<sup>3</sup> B07C 5/34

U.S. Cl. 209-537

19 Claims



1. A method of regulating the timing of action upon articles which form part of, constitute or contain smokers' products and are advanced serially in a making and/or processing machine along a predetermined path consisting of successive sections, each bounded by a pair of neighboring articles and each including that part of said path along which an article must move from its preceding position to occupy the position previously occupied by the adjacent article in the direction of advancement, and extending past a station at which at least some selected articles of said succession are subjected to the action of signal-responsive influencing means, comprising the steps of generating a succession of control signals, one for each of said selected articles, before the respective selected articles reach said station; generating a series of n timing pulses during the interval of advancement of a selected article along a given section of said path following the advancement of such selected article to a predetermined position immediately ahead of said given section, each selected article advancing through a distance equaling d/n, wherein d is the length of said given

section, during each interval between the generation of two successive timing pulses; and utilizing a selected one of said series of timing pulses for the application of a control signal to the influencing means when the corresponding selected article advances past said station.

4,284,199

CONTAINER WITH TEAR-OPENING ARRANGEMENT  
Federico Bigarella, Segrate, Italy, assignor to Lezard S.A.,  
Luxembourg

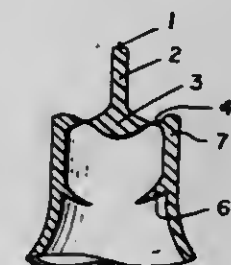
Filed Dec. 6, 1979, Ser. No. 100,999

Claims priority, application Switzerland, Mar. 15, 1979, 2446/79

Int. Cl.<sup>3</sup> B65D 1/02

U.S. Cl. 215-32

1 Claim



1. A container with a tear-opening device particularly suitable for single-dose containers, obtained by the injection of thermoplastic material into suitable molds, consisting essentially of a closure membrane having a preferential rupture section comprising a particularly thin tearing surface, wherein there is present an internal annular lip, obtained in an injection single piece, having the function of favoring the dropwise dosage of the container content.

4,284,200

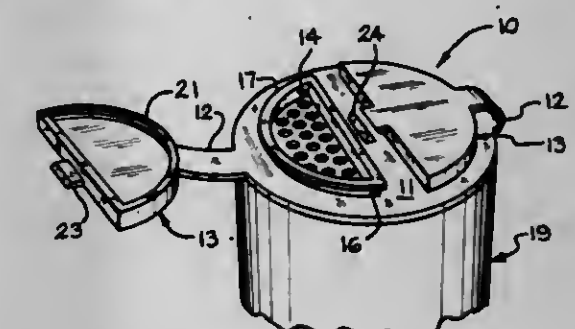
CHILD-RESISTANT DISPENSING CLOSURE  
Randall G. Bush, and Peter P. Gach, both of Evansville, Ind.,  
assignors to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Oct. 1, 1979, Ser. No. 80,512

Int. Cl.<sup>3</sup> B65D 55/02

U.S. Cl. 215-215

2 Claims



1. A one-piece, child-resistant, dispensing closure for a container having an open, circular upper end, said closure being formed of a stiffly resilient material and comprising,  
(a) a skirt adapted to telescopically mate with the open end of said container,  
(b) a disk-like top integral with said skirt and extending across the space defined by said skirt, said top having two dispensing openings therethrough,  
(c) an upwardly extending, integral top rim on said top surrounding each of the dispensing openings therein,  
(d) a lid for each of said openings,  
(e) a hinge for each of said lids that is integral with said top and with the respective one of said lids, said hinges extending outwardly from opposite sides of said top,  
(f) an integral lid rim on each of said lids that is adapted to mate with the associated one of said top rims when said lid



- is swung over into closed position overlying the respective one of said openings,
- (g) overlapping ribs on said top rims and said lid rims which are interengaged when said lids are in closed position,
- (h) means for retaining said closure in place on the end of said container, and
- (i) cooperating means consisting of a fulcrum at the center of the top and an ear on the inner side of each of the lids which extends inwardly to closely spaced adjacency to said fulcrum when said lid is in closed position thereby providing a space into which pry-means may be inserted for disengaging the ribs and moving said lid away from closed position.

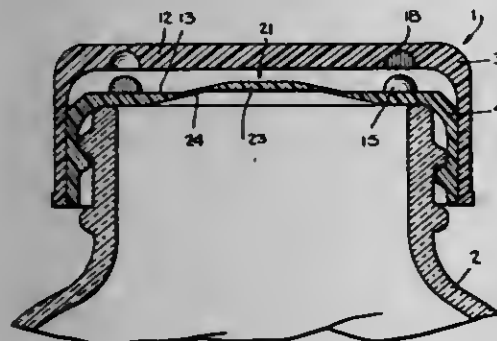
4,284,201

## CHILD PROOF CAP

Eric Nixon, Richmond Hill, Canada, assignor to Anchor Cap & Closure Corporation of Canada Ltd., Ontario, Canada  
Filed Jul. 10, 1980, Ser. No. 167,244  
Int. Cl.<sup>3</sup> B65D 55/02

U.S. Cl. 215—220

12 Claims



1. A safety closure cap for sealing a container comprising the combination of an outer shell having a top and a depending skirt, an inner shell having a top and a depending skirt, means for rotatively coupling said shells together in nesting relationship, screw-type container engaging means on said inner shell for engaging cap engaging means on the container, ratchet means on said shells for coupling said shells when said outer shell is turned in a cap applying direction and permitting relative rotation between said shells when said outer shell is turned in a cap unscrewing direction and a flexible panel extending upwardly from said cover of said inner shell a portion only of the ratchet means height for resisting ratchet engagement when the outer shell is turned in an unscrewing direction and is moved towards said inner shell.

4,284,202

## REUSABLE CONTAINER

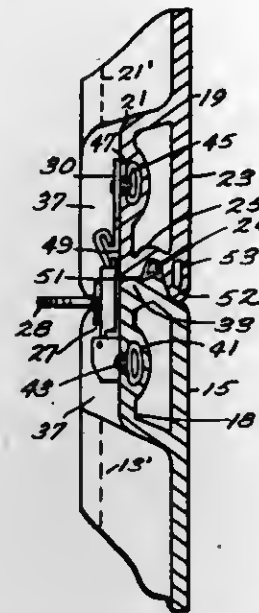
Norman C. Barstow, Jr., Hadley, Mass., assignor to Hardigg Industries, Inc., South Deerfield, Mass.  
Filed Oct. 19, 1979, Ser. No. 86,668  
Int. Cl.<sup>3</sup> B65D 6/00, 6/12, 6/16

U.S. Cl. 220—4 B

7 Claims

1. A reusable container comprising:
- a plastic base member having a bottom and sidewalls, said sidewalls being hollowed and having a plastic lid member having a top and sidewalls, said sidewalls being hollowed and having inside and outside portions, said lid and base members having mating raised tongue and recessed groove portions at the open ends of their respective sidewalls;
- a gasket positioned in said groove portion;
- means for registering and supporting said lid and base with respect to one another including one of said base and lid members having at least one raised male interlock portion at the open end of at least one of said sidewalls, and the other of said base and lid members having at least one mating female interlock portion at the open end of at least

one sidewall and being aligned with said male interlock member; and



locking means for holding said lid member against said base member.

4,284,203

## STORAGE BIN CLOSURE WITH LIQUID SEAL

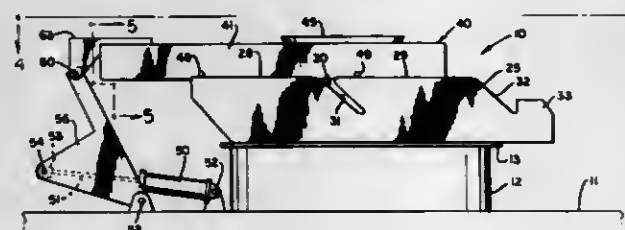
Ernie G. Mize, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Nov. 13, 1979, Ser. No. 93,748

Int. Cl.<sup>3</sup> B65D 43/20, 43/26, 53/06

U.S. Cl. 220—345

2 Claims



1. A closure for an opening in the top of a storage bin comprising:
- an annular reservoir surrounding said opening and containing a liquid;
- a pair of parallel tracks on opposite sides of said reservoir;
- a carriage mounted between said tracks over said opening for movement on rollers attached to said carriage along said tracks, said carriage including a guide means for guiding material to said opening and into said bin and a sealing means spaced apart from said guide means, said sealing means including a downwardly extending annular wall rigidly fixed to said carriage and shaped to be received within said annular reservoir;
- said tracks defining a path along which said carriage travels on said rollers between two positions of said carriage, a first position wherein said guide means is aligned over said opening, and a second position lower than said first position wherein said annular wall extends into the liquid in said annular reservoir; and
- means for selectively moving said carriage along said tracks between said first position and said second position.

4,284,204

## DIMPLED TRAY PACKAGE WITH SELF-LOCKING FEATURE

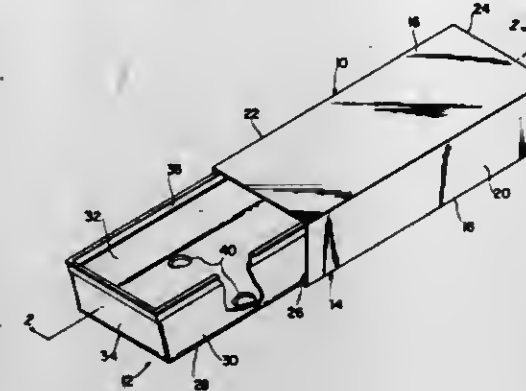
Howard M. Carey, Jr., Staunton, Va., assignor to American Safety Razor Company, Verona, Va.

Filed Nov. 7, 1979, Ser. No. 92,116

Int. Cl.<sup>3</sup> B65D 43/20

U.S. Cl. 220—346

2 Claims



1. A package comprising:
- a tray constructed from panels articulating from one another;
- a sleeve for receiving said tray;
- said tray including tapered side panels;
- detent means formed in a bottom panel of said tray;
- means formed in a bottom of said sleeve for receiving said detent means when said tray is inserted to a predetermined position within said sleeve thereby locking said tray in said sleeve;
- said sleeve having side walls cooperating with said tapered side panels of said tray so as to create voids between respective side panels and side walls when said tray is inserted in said sleeve; and
- said bottom wall of said sleeve being deformable and cooperating with said side walls of said sleeve so as to release said detent means from engagement with said receiving means upon the exertion of sufficient forces against said side walls of said sleeve thereby allowing said tray to be displaced from said sleeve.

4,284,205

## FOLDABLE CUP

Isao Hirata, Sagami, Japan, assignor to Tokai Metals Company, Limited, Yokohama, Japan

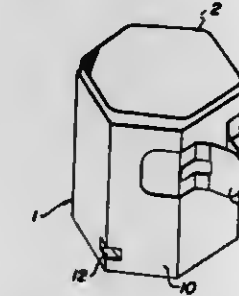
Filed Oct. 10, 1979, Ser. No. 83,317

Claims priority, application Japan, Oct. 11, 1978, 53-124173

Int. Cl.<sup>3</sup> B65D 90/04, 5/46

U.S. Cl. 220—418

6 Claims



1. A foldable cup, comprising: a hollow outer shell formed by folding a rectangular plate-like sheet upon itself and by bonding the two side edges thereof together, and a pouch inserted in said outer shell and secured thereto, said outer shell being provided with a plurality of substantially vertical folding lines parallel with two side edges of the outer shell, and further provided with at least one pair of substantially horizontal parallel cuts crossing one of said vertical folding lines and with a pair of substantially vertical lines connecting the respective

ends of these cuts for defining at least one stopper which, upon expanding the foldable cup, may be folded inwardly along said vertical folding line for enhancing the holdability of a cup shape and the self-standing ability of the outer shell.

4,284,206

## CAROUSEL DISPENSING APPARATUS

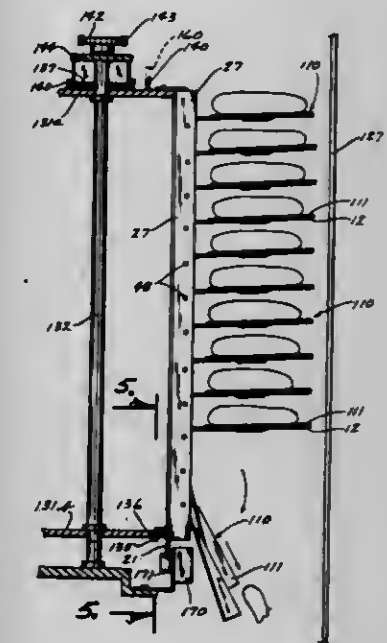
Francis A. Wittern, 1616 Casady, Des Moines, Iowa 50318

Filed Sep. 6, 1979, Ser. No. 73,002

Int. Cl.<sup>3</sup> G07F 11/06, 11/54

U.S. Cl. 221—90

2 Claims



1. Product dispensing apparatus comprising:
- a housing having a product delivery compartment attached thereto;
- frame means rotatably connected to said housing;
- a first product column assembly attached to said frame means;
- a first set of shelves pivotally attached to said first product column assembly, the shelves of said first set being oriented one above another, each of the shelves of said first set of shelves having a substantially horizontal product storing position and a non-horizontal dispensing position;
- a second product column assembly attached to said frame means;
- a second set of shelves pivotally attached to said second product column assembly, the shelves of said second set of shelves being oriented one above another, each of the shelves of said second set of shelves also having a substantially horizontal product storing position and a non-horizontal dispensing position;
- a radially extending partition wall disposed on each side of each set of shelves;
- means on each of said shelves for allowing each respective one of said shelves to fold from an extended width when in the horizontal-product storing position to a narrower width in the non-horizontal dispensing position;
- means for rotating said frame means and thereby said first and second columns of shelves about a vertical axis between a selection position and at least one other rotational position; and
- delivery means attached to said housing for selectively causing the lowermost horizontally disposed shelf at said selection position to move to said non-horizontal dispensing position thereby delivering a product on said lowermost horizontally disposed shelf to said product delivery compartment.



4,284,207

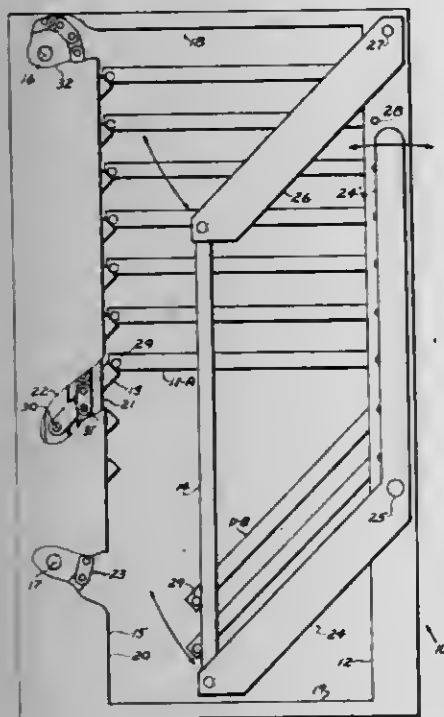
## DROP SHELF MECHANISM

Donald K. Christian, 119 Woodbine Ter., Spartanburg, S.C. 29301

Filed Aug. 13, 1979, Ser. No. 66,480  
Int. Cl.<sup>3</sup> G07F 11/06

U.S. Cl. 221—90

6 Claims



1. A novel means for supporting, releasing and resetting the shelves of a drop shelf vending machine comprising pivotally mounted pawls supporting the shelves, each pawl having a lip and a guide surface, a guide member supporting the lips in leaning contact, and moving means adjacent the guide and lip carrying an actuator pin wherein said actuator pin traversing a generally vertical predetermined path on its upward cycle wedges itself between said guide member and a pawl lip causing said pawl to rotate about its pivotal axis thus being removed from its position of support under a pivotally mounted shelf and which on its downward cycle is guided over a path created at least in part by a surface of said pawl other than that engaged on its upward path.

4,284,208

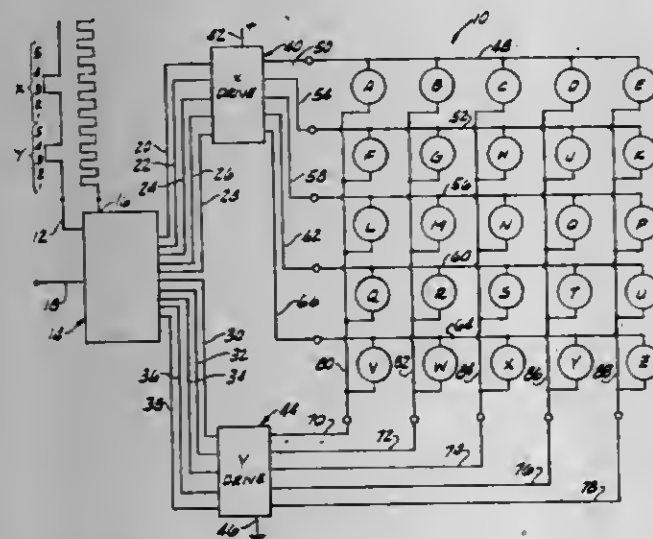
## VEND CONTROL SYSTEM

Joseph L. Levasseur, Chesterfield, Mo., assignor to H. R. Electronics Company, St. Louis, Mo.

Filed Aug. 9, 1979, Ser. No. 65,280  
Int. Cl.<sup>3</sup> G07F 11/00

U.S. Cl. 221—129

9 Claims



1. A control circuit including means for selecting for energizing one among a plurality of operator members comprising a plurality of operator members each having first and second

input connections, means connecting said operator members into a matrix circuit wherein the operator members are arranged electrically into first and second groupings wherein the first input connections of operator members in each of the respective first groupings are connected together and wherein the second input connections of operator members in each of the respective second groupings are connected together, a power source having first and second power connections and an operating voltage therebetween, means for establishing an operating voltage across a selected one of the operator members, including means for establishing a connection between the first power connections and the first input connections to a selected first grouping of operator members, means for establishing a connection between the second power connection and the second input connections to a selected second grouping of operator members, a source of input pulses encoded to control which of said operator members will be connected across the power source, said source including a plurality of selection devices each actuatable to establish a selection of one of said plurality of operator members and capable when actuated of producing a distinctively time encoded pair of pulses, a data storage device having a first input connected to said source of encoded input pulses for storing in the data storage device information representative of the pair of pulses produced when a selection device is actuated, a source of clock pulses and a second input to the data storage device connected to said source of clock pulses, said data storage device storing the time encoded signals based on comparison thereof with the clock pulses, said data storage device having first and second sets of output connections, a first driver circuit having a set of input connections connected respectively to the output connections of the first set of output connections of the data storage device, a second driver circuit having a set of input connections connected respectively to the output connections of the second set of output connections of the data storage device, means connecting the first power connection to the first driver circuit, means connecting the second power connection to the second driver circuit, said first driver circuit having a plurality of output connections each of which is connected to the first input connections of operator members of a respective first grouping, said second driver circuit having a plurality of output connections each of which is connected respectively to the second input connections of operator members of a respective second grouping, first control means for establishing a circuit connection between the first power connection and the first connections to the operator members in a selected first grouping, and second control means for establishing a circuit connection between the second power connection and the second connections to the operator members in a selected second grouping.

4,284,209

## DEVICE AND METHOD FOR COLLECTING BLOOD PLASMA

Robert E. Barbour, Jr., 1904 Bunch Dr., Fort Worth, Tex. 76112

Filed Jun. 21, 1979, Ser. No. 50,668  
Int. Cl.<sup>3</sup> B65D 35/28

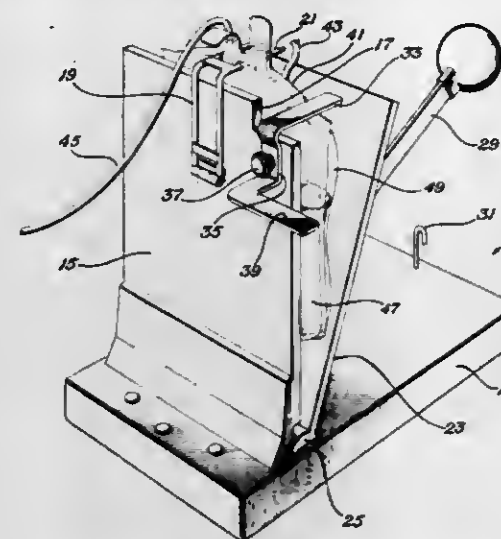
U.S. Cl. 222—1

8 Claims

1. In a device for forcing segregated plasma from a flexible collecting bag containing a layer of plasma over a layer of red blood cells, the device being of the type having a base, a fixed member secured normal to the base, a movable member connected to the base by a hinge and rotatable about the hinge to substantially close against the fixed member, spring means for urging the movable member toward the fixed member, and support means for retaining the bag between the fixed and movable members, the improvement comprising:

stop means secured to one of the members for stopping further closing movement of the movable member at a point selected to occur when a large portion of plasma has been forced from the bag;  
the stop means being releasable to allow further closing

movement of the movable member and further flow of plasma from the bag while being monitored by an opera-



tor to assure that the further closing movement is stopped prior to the flow of red blood cells from the bag.

4,284,210

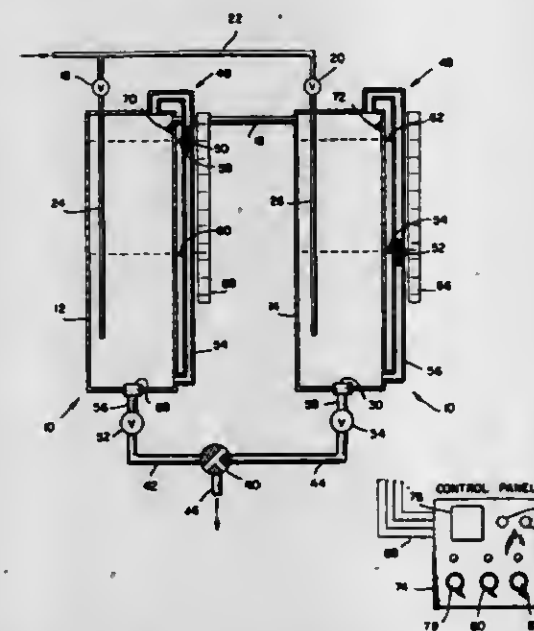
## STATIC METERING PUMP

Vladimir Horak, 353 High St., Closter, N.J. 07624

Continuation-in-part of Ser. No. 862,744, Dec. 21, 1977, abandoned. This application Jul. 9, 1979, Ser. No. 55,818  
Int. Cl.<sup>3</sup> B67D 5/08

U.S. Cl. 222—14

10 Claims



1. A static metering pump comprising a pair of tanks, tube means connecting said tanks at the upper portions thereof for equalization of pressure within said tanks, a pair of electrically-operated intake valves disposed, one each, at upper portions of said tanks, a pair of electrically-operated outlet valves disposed, one each, at lower portions of said tanks, respective outlet tubes communicating with the outlet valves of each of said tanks and communicating with a common discharge tube, upper and lower liquid sensor means disposed on each of said tanks for sensing pre-set selected full levels and empty levels in said tanks, and forming therebetween a normal pre-set liquid cavity of equal volume in each of said tanks, said cavities being sized to contain a normal pre-set volume of liquid, circuit connection means interconnecting said inlet valves, said outlet valves and said upper and lower liquid level sensor means, with said upper and lower liquid level sensor means and said circuit connection means being adapted to open and close said valves in order to permit filling said first tank from an external source of liquid while discharging liquid from said second tank and then permitting discharging liquid from said first tank while filling said second tank, electrically-operated control means for permitting a preselected number of tank filling and

discharge cycles to be performed automatically until a total selected volume of liquid is dispensed from both tanks, representing a multiple of said normal pre-set volumes, after which operation of said static metering pump is stopped, thereby permitting the dispensing of a preselected volume of liquid, and an adjustable fractional liquid level sensor disposed on one of said tanks intermediate said upper and lower liquid sensors for sensing a selected fractional filled level for said one tank at the commencement of the metering operation, said control means being adapted to commence the metering cycles by the discharge of said one tank.

4,284,211

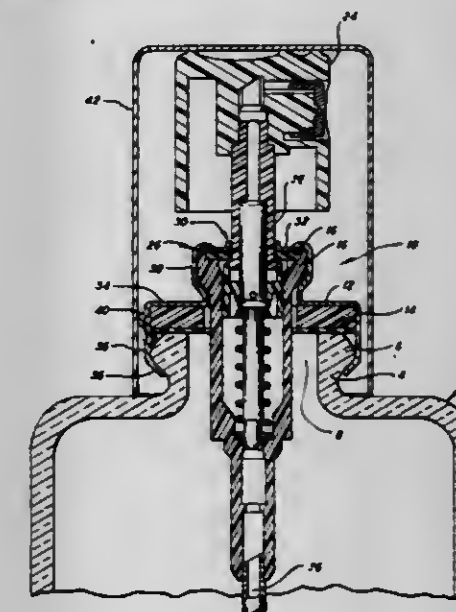
## NIBBED FERRULE FOR HOLDING CAP

Emil Mesbberg, Fairfield, Conn., assignor to Emson Research, Inc., Bridgeport, Conn.

Filed Sep. 26, 1979, Ser. No. 78,947  
Int. Cl.<sup>3</sup> B67B 3/02

U.S. Cl. 222—182

1 Claim



1. A closure for a container having a neck and a lip on the neck of generally cylindrical configuration comprising: a dispenser passing through the neck into the container, a sheet metal ferrule holding said dispenser in place, a circular gasket, through which the dispenser passes, extending between the ferrule and the lip, and a removable covering having a substantially cylindrical, elastically deformable surface for frictionally engaging the ferrule, said covering slidable on said ferrule for application and removal.

said ferrule comprising a substantially cylindrical sheet metal body portion having an end surface through which the dispenser projects, said substantially cylindrical body portion receiving the neck, and a deformable skirt portion depending from said body portion and engaging the lip, at least three oblong ribs, oriented transverse to the direction of application and removal of said covering, projecting radially from the ferrule into engagement with said elastically deformable cylindrical surface of said covering, the ribs each comprising an outward deformation of the cylindrical body portion located between the end surface and the deformable skirt portion, the ribs placed closer, axially, to the end surface than to the deformable skirt portion, and axially spaced apart from the deformable skirt portion such that there remains an axially extending portion of said cylindrical body portion which is not deformed which provides a radial contact surface for the gasket to prevent leakage past said gasket, and the gasket radially in contact with said portion of cylindrical body portion which is not deformed, adjacent to the deformable skirt portion and seated on the lip.



4,284,212

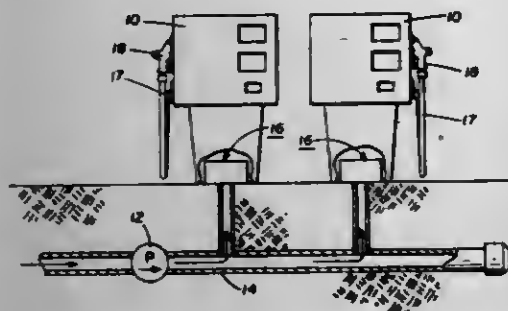
## PILOT ACTUATED DIAPHRAGM VALVE

Richard L. Carwell, Salisbury, Md., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 804,964, Jun. 9, 1977, abandoned. This application Dec. 3, 1979, Ser. No. 99,433  
Int. Cl.<sup>3</sup> G01F 11/00; F16K 31/02

U.S. Cl. 222-333

6 Claims



1. In a gasoline dispensing system including a plurality of gasoline dispensers, a storage source of gasoline, pump means operable to supply a pressurized supply of gasoline from said storage source concomitantly to all of said plurality of gasoline dispensers when at least one of said dispensers is actuated, each of said dispensers including a nozzle through which to deliver gasoline supplied from said storage source, means to actuate the dispenser for enabling said nozzle delivery and a diaphragm valve operably positioned in series flow relation with the dispenser inlet supplied by said pump means for preventing flow from the pressurized supply to the dispenser when the dispenser is not actuated and to enable flow to the dispenser when the dispenser is actuated, the improvement in which said diaphragm valve comprises in combination:

- a body forming an internal fluid passage between an inlet and an outlet for gasoline supplied from the storage source and including a seat defined surrounding said passage at an intermediate location therein;
- an impermeable flexible diaphragm supported proximate to said passage with one face exposed to fluid pressure at said inlet and adapted to cooperate with said seat to open and close said passage to fluid flow;
- a defined fluid chamber in communication with said inlet providing fluid pressure exposure to the opposite face of said diaphragm;
- restrictor means in the fluid flow path between said inlet and said chamber for restricting the fluid flow rate into said chamber; and
- pilot valve means operable by said dispenser actuating means between open and closed positions for conducting fluid flow when open from said chamber to the outlet of said body for enabling relatively greater fluid forces at said inlet to move said diaphragm toward its open position with respect to said seat.

4,284,213

## CLOSURE AND NOZZLE SYSTEM FOR CONTAINER FOR AIR-CURABLE MATERIAL

Headle O. Lee, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

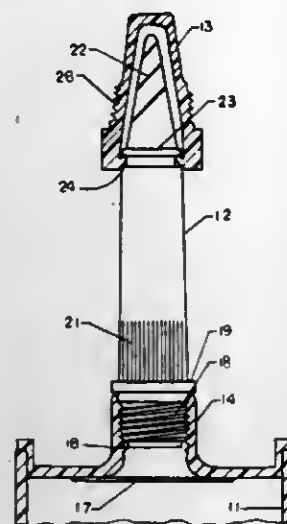
Filed Jul. 7, 1980, Ser. No. 166,006  
Int. Cl.<sup>3</sup> B65D 47/10

U.S. Cl. 222-541

2 Claims

1. In a closure system for a container for air-curable materials, said container comprising a threaded neck for attachment of a dispensing nozzle having threads adapted to mate with the threads on said neck, said nozzle further including a tapered normally closed tip portion designed to be cut off at a point along a portion of its length to provide a desired nozzle orifice size, the improvement which comprises a hollow cap having an external threaded portion also designed to mate with the threads on said neck of said container and having interconnection means formed on an interior surface thereof designed to cooperate with corresponding interconnection means formed

on the exterior surface of said nozzle at a point short of the nozzle portion which is designed to be cut off, whereby the cap can be affixed over the nozzle during short term nonuse or in



place of the nozzle can be threadably attached to the neck of said container during long term nonuse to seal the contents against exposure to air thereby extending the useful life of the remaining contents of the container.

4,284,214

## METHOD OF CONTINUOUS CASTING

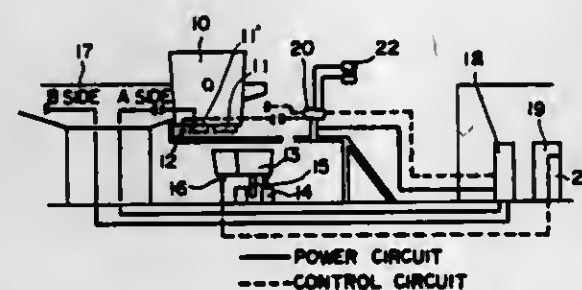
Masahisa Tate, Tetsuya Yoshiwara, and Tatsuo Kobatake, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 922,805, Jul. 7, 1978, abandoned. This application Dec. 5, 1979, Ser. No. 101,272

Claims priority, application Japan, Jul. 13, 1977, 52-82883  
Int. Cl.<sup>3</sup> B22D 41/08

U.S. Cl. 222-590

4 Claims



1. A method for automatic pouring of molten metal between a ladle and a tundish, said tundish is provided with a level detector, and employing circuit means designed for feedback of signals supplied from the level detector, said ladle including a rotary opening and closing means together with a plurality of large and small diameter nozzles, and control means for controlling said rotary opening and closing means through feedback signals from said circuit, automatically selecting a small diameter nozzle when the molten metal level in the tundish exceeds an upper level, and automatically selecting the larger diameter nozzle with full opening when said lever has lowered to below a lower level, selection of said respective nozzle diameters being responsive to signals received from said level detector; comprising the steps of: employing a plurality of pouring nozzles with at least one of a first nozzle having a pouring rate at full opening larger than the rate necessary for maintaining a reference level in a tundish and at least one of a second nozzle from the first nozzle to provide a pouring rate at full opening smaller than a rate necessary for maintaining a reference pouring rate, selectively controlling said pouring nozzles by full opening or closing in response to the level of molten metal in the tundish and selecting from a plurality of pouring nozzles of different diameters, a large nozzle having a pouring rate at wide open pouring greater than that required to

4,284,216

## SOCK DONNING ASSIST DEVICE

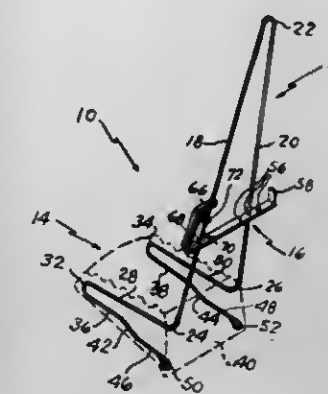
Ragnvald G. Leland, P.O. Box 4174, Palm Springs, Calif. 92263

Filed Jan. 2, 1979, Ser. No. 515

Int. Cl.<sup>3</sup> A47J 51/06; A47G 25/04

U.S. Cl. 223-111

6 Claims



1. An improved device for assisting in the donning of a foot covering, which comprises:

- handle means being a pair of laterally spaced, elongated frame members;
- insert means extending integrally from said handle means and adapted to be placed within a foot covering for spreading same; and
- means operatively coupled to said handle means for selectively maintaining said insert means in one of a plurality of spaced apart positions, said means operatively coupled to said handle means being a control bar pivotally mounted to one of said frame members, said means operatively coupled having first means for maintaining said insert means relatively close together and second means for maintaining said insert means relatively wide apart, said first and second means respectively comprise first and second notch means formed in said control bar for selectively releasably retaining the other of said frame members therein.

4,284,217

## BALL CARRIER

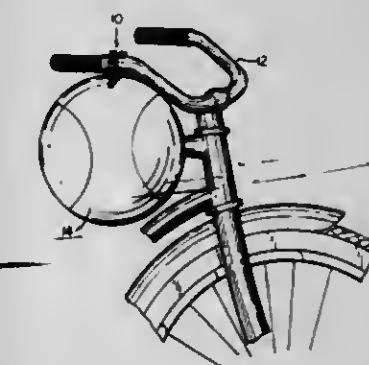
James J. Johnston, 14 Anchorage La., Old Saybrook, Conn. 06475, and Robert W. Clarke, 15 Wilcox St., Wethersfield, Conn. 06109

Filed Jan. 21, 1980, Ser. No. 114,116

Int. Cl.<sup>3</sup> B62J 11/00

U.S. Cl. 224-30 R

17 Claims



1. A carrier for an inflatable ball having a valve disposed within the interior of the ball, the valve including a blind generally cylindrical bore opening outwardly through the peripheral surface of the ball, said carrier comprising resilient clip means for snap-on connection to the handlebar of a bicycle, and ball retaining means mounted on said clip means for gripping the valve within the bore to releasably retain the ball in connected relation to said clip means.

maintain said reference level, and a small nozzle having a pouring rate at wide open pouring slightly greater than that required to maintain said reference level during an initial pouring period, said small nozzle pouring rate becoming, after said initial period smaller than that required to maintain said reference level and switching back and forth for a plurality of times, each of said respective nozzles during the pouring cycle.

4,284,215

## APPARATUS FOR PLEATING CLOTH

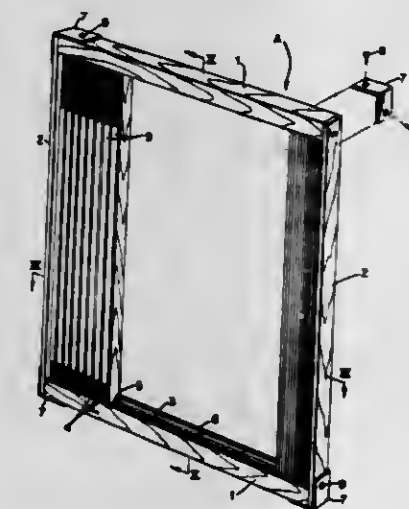
LaVonne Nye, Coal Valley, Ill., assignor to B &amp; B Miniatures The Whimsy, Coal Valley, Ill.

Continuation of Ser. No. 871,916, Jan. 24, 1978. This application May 18, 1979, Ser. No. 40,263

Int. Cl.<sup>3</sup> A41H 43/00

U.S. Cl. 223-33

6 Claims



1. An apparatus for pleating miniaturized draperies and the like fabric articles for small furniture comprising:

- a rigid frame covering an area of about less than 1 square foot, said frame having two side members and two end members, said side members fastened perpendicularly to said end members in a non-detachable manner and in fixed spaced opposite relationship to each other, thereby providing rigidity to said frame, said side members and said end members defining a central plane within the frame;
- each of said side members having a U-shaped channel, each side member comprising a rectangular shaped base member and two spaced opposing walls attached to and extending perpendicularly from said base member, each of said U-shaped channels spaced opposite and facing the other of said U-shaped channels in the opposite side member;

guide means located in each of said side members extending substantially the length of said side members, each of said guide means supported individually within a corresponding U-shaped channel in each of the respective side members; and

- a plurality of flat, parallel flexible pleating slats extending between said side members with each end of each slat permanently trapped within said side members by said guide means, each of said slats being slidable along said guide means independently of the others of said slats in a nondetachable manner from said guide means with slight play between the guide means and each end of every slat, said slats held substantially non-rotatably along the central axis within said end members with the flat sides of said slats facing each other, the flexibility of the slats and the play between said guide means and each end of every slat allowing the slats to move in a free rectilinear manner, without binding of the ends trapped by the guide means resulting from flexing of the slats between the ends thereof when said plurality of slats are manipulated by individual sliding along the guide means for threading a fabric material through said plurality of slats for pleating.



4,284,218

## ATRAS SPARE TIRE MOUNTING KIT

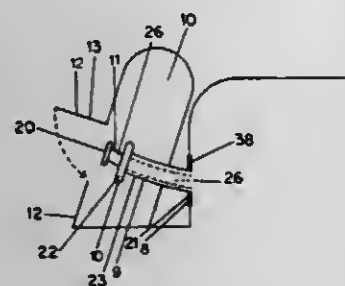
James P. Gillis, and John W. Robinson, Jr., both of 197 Scribner Ave., Norwalk, Conn. 06854

Filed May 22, 1979, Ser. No. 30,742

Int. Cl.<sup>3</sup> B62D 43/02; B60R 13/00

U.S. Cl. 224—42.06

5 Claims



1. A kit which permits the positioning of a standard size spare tire outside of and rearwardly of the trunk of an automobile, which automobile (1) is otherwise devoid of a permanent, stationary rearward assembly for so positioning a spare tire, (2) includes a fuel filler port located rearwardly and centrally of the automobile trunk and (3) includes a rear bumper, said kit comprising:

- a circular metal housing sized to encompass the spare tire;
- a rear panel sized to cooperate with said circular metal housing for enclosing the spare tire;
- said rear panel having a fuel port filler door therein;
- a metal unit including (1) a unitary mounting plate adapted to be bolted in a vertical position externally of the automobile trunk, (2) a tubular protective housing extending from said mounting plate, and (3) a wheel mounting hub attached to said protective housing for carrying the spare tire;
- a fuel conduit extension tube adapted to be inserted within said protective housing for extension between the fuel filler port of the automobile and said fuel port filler door;
- a studded metal cinch for securing together said circular metal housing and said rear panel; and
- at least one bumper extension telescoping rod for permitting rearward repositioning of the automobile bumper to provide space for accommodating said metal housing.

4,284,219

## MULTIPLE CLOTHES HANGERS CARRYING DEVICE

Richard R. Standel, Jr., 1177 Race St., (Penthouse 5), Denver, Colo. 80206

Filed Jan. 5, 1976, Ser. No. 646,676

Int. Cl.<sup>3</sup> B65D 71/00

U.S. Cl. 294—152

14 Claims



1. A hanger carrying device for simultaneously carrying multiple clothes hangers comprising:

- a flexible support member having hanger-accommodating aperture means for removably fixedly mounting at least one clothes hanger, said flexible member being tapered at its ends to a width adapted to comfortably fit between the fingers of the human hand; and
- handle means fixedly attached to each end of said flexible

member, each of said handle means being adapted to conform to a generally semi-cylindrical shape, said handle means further including a plurality of curved depressions to provide a surface for being gripped by the fingers of a hand and interlocking means for preventing relative movement when said handle means are juxtaposed together in parallel alignment.

2. A hanger carrying device both for grouping a plurality of clothes hangers on a garment conveyor device and for enabling the plurality of hangers to be carried by hand when removed from the conveyor device, comprising:

- a flexible support member having hanger-accommodating apertures formed therein for removable attachment of clothes hangers; and
- handle means fixedly attached to each end of said flexible support member, said support member having sufficient flexibility so that, when attached to one or more clothes hangers hanging from the garment conveyor device, said support member rests in a generally horizontal position and the relative positions of the hangers removably attached thereto may be varied in both longitudinal and transverse directions and said handle means rests between the outermost garments of different groups of garments, generally below said flexible support member.

4,284,220

## BELT-CARRIED NOTEBOOK AND HOLSTER

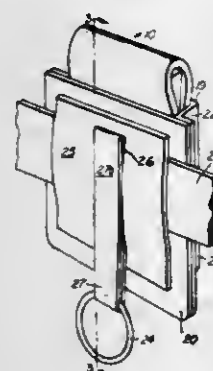
Gerald W. Nice, P.O. Box 57, Annabella, Utah 84711

Filed Nov. 6, 1978, Ser. No. 958,128

Int. Cl.<sup>3</sup> A45F 5/00

U.S. Cl. 224—242

1 Claim



1. A holstered notebook holder comprising a notebook holder adapted to receive a notebook pad, said holder having stiff cover members hinged together along one set of corresponding end edges and free along the other edges to permit opening and closing of one cover member relative to the other; cooperative, substantially continuous strips of intergripping fabric of a cocklebur type secured along and approximately coextensively with the inside margins of corresponding free end edges of said cover members that are opposite said hinged end edges, for retaining without external encumbrances said cover members closed about a received notebook pad; and a belt-carried holster open at its upper end and having stiff walls with smooth inside wall faces for receiving said notebook holder, said inside wall faces defining a said notebook-holder-receiver pocket of sufficiently less depth than the length of the notebook holder to provide for protrusion of the hinged end of the latter entirely above the holster as a readily graspable portion of said notebook holder providing immediate withdrawable accessibility for the user, wherein the holster includes a rear panel member secured to the exterior face of the holster back wall so as to provide a passage horizontally for receiving a waist belt, said panel member having a vertical slot intermediate its width dimensioned to receive a closed loop member of a ring-retaining strap, a club-holding ring, and a retaining strap for said ring, said strap having a closed loop member adapted to be received by said vertical slot and to

have said waist belt passed therethrough to hold said club-holding ring adjacent to said holster.

4,284,221

## APPARATUS FOR BREAKING WEAKENED PORTIONS OF RUNNING WEBS OR THE LIKE

Erich Nagel, Anzing; Franz Ziegler, and Ferdinand Schaner, both of Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

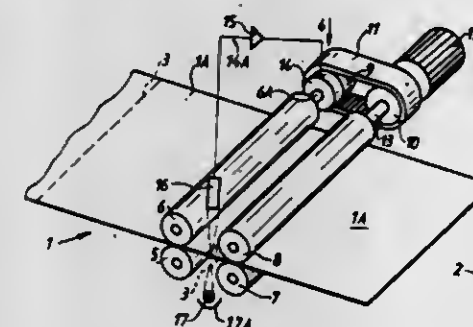
Filed Nov. 28, 1979, Ser. No. 97,965

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851894

Int. Cl.<sup>3</sup> B26F 3/02

U.S. Cl. 225—100

23 Claims



1. Apparatus for separating sections of an elongated web wherein the neighboring sections are connected to each other by spaced-apart elongated weakened web portions extending substantially transversely of the web, comprising means for transporting the web lengthwise in a predetermined direction, including a first advancing unit and a second advancing unit located behind said first unit, as considered in said direction; means for normally driving said units at the same speed; regulating means actuatable to vary the speed of at least one of said units so that the speed of said first unit exceeds the speed of said second unit while a weakened portion is located between said units; and means for monitoring the web and for actuating said regulating means whenever a weakened portion advances beyond said second unit but is still on its way toward said first unit.

4,284,222

## PRESSING ROLLER FOR USE IN SHEET-ADVANCING ARRANGEMENTS

Dietrich Hank, Leipzig, German Democratic Rep., assignor to VEB Polygraph Druckmaschinenwerke Leipzig, Leipzig, German Democratic Rep.

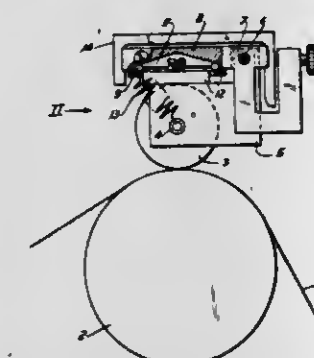
Continuation-in-part of Ser. No. 881,509, Feb. 27, 1978. This application Mar. 22, 1979, Ser. No. 23,086

Claims priority, application German Democratic Rep., Feb. 25, 1977, 1197548

Int. Cl.<sup>3</sup> B65H 17/22

U.S. Cl. 226—181

7 Claims



1. In an arrangement for advancing sheet material, a combination comprising a support; two rollers; means for mounting said rollers on said support for rotation and for movement of at least one of said rollers into and out of an operating position in

which said rollers confine the advancing sheet material between themselves; means for biasing said one roller out of said operating position; means for controlling the friction between at least the other of said rollers and the advancing sheet material, including a housing mounted on said support and bounding a chamber having an open end, a diaphragm deflectably spanning and sealingly closing said open end of said chamber; means for transforming a deflection of said diaphragm into the movement of said one roller into said operating position; and means for varying the pressure in said chamber to thereby deflect said diaphragm and urge said one roller against said biasing means and thus the advancing sheet material confined between said rollers against said other roller with a force proportionate to the pressure in said chamber.

4,284,223

## DEVICE FOR STAPLING MATERIAL ON CEILINGS

Albert R. Salcido, 1235 E. 5th Ave., Mesa, Ariz. 85204, and Renato Rabago, 826 W. Louisiana St., Tucson, Ariz. 85706

Filed Sep. 24, 1979, Ser. No. 78,444

Int. Cl.<sup>3</sup> B25C 1/04, 7/00

U.S. Cl. 227—5

3 Claims



1. A device for stapling material on a ceiling and a side wall comprising:

- a pneumatic staple gun having a high pressure air input and a contact trigger for forcing staples into a surface when said contact trigger contacts said surface;
- an elongated hollow tubular handle having a first and a second end and including a predetermined length and a longitudinal axis;
- a bracket hingedly securing said gun to said first end of said handle to maintain said axis either perpendicular or parallel to said surface as selected by an operator.
- said second end having a coupling for attachment to a high pressure pneumatic hose;
- means pneumatically and flexibly connecting said first end to said staple gun high pressure air input; and
- said tubular handle providing pneumatic communication between said high pressure pneumatic hose and said staple gun.

4,284,224

## RIVETING DEVICE USING A SHAPED CHARGE

Jean-Claude Arnaison, and Jean-Claude Lacote, both of Bourges, France, assignors to L'Etat Francais represente par le Delege General pour l'Armement, Paris, France

Filed Jul. 31, 1979, Ser. No. 62,298

Claims priority, application France, Jul. 5, 1978, 78 19952

Int. Cl.<sup>3</sup> B21J 15/18

U.S. Cl. 227—9

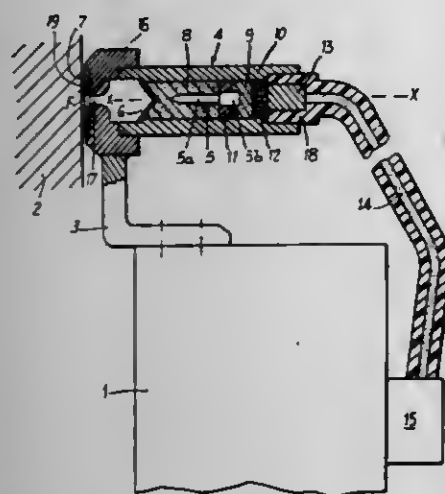
5 Claims

1. A pyrotechnic riveting device for fastening metallic elements together comprising:

- a support attached to a first element to be fastened;
- a ring element connected to said support element, said ring element having a central bore, said bore having an inwardly flared portion, the outward portion of said bore located adjacent a second element to be fastened;



a hollow body member having one end sealed with the flared portion of said bore, and a second end, said hollow body having a central axis coincident with said bore axis; a fuse member sealing said second end; an explosive charge located within said hollow body communicating with said fuse member; and a sealing member for separating said explosive charge from said bore; and



a nail member located within said charge and aligned along said axis, said nail member having a shank portion having a diameter smaller than the diameter of said bore and a head portion having a diameter larger than said bore diameter, said nail member being propelled into said bore upon ignition of said explosive charge, said nail member penetrating said second element whereby said elements are fastened together.

4,284,225

#### APPARATUS FOR SOLDERING COMPONENTS MOUNTED AT PRINTED WIRING BOARDS

Fritz Hess, Mettmensstetten, Switzerland, assignor to EMP AG, Falkenweg, Switzerland

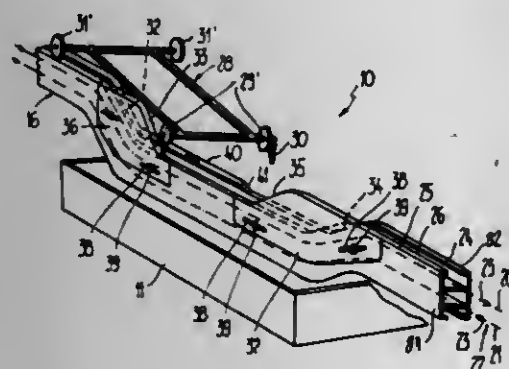
Filed Nov. 20, 1979, Ser. No. 95,992

Claims priority, application Switzerland, Dec. 8, 1978, 12543/78

Int. Cl.<sup>3</sup> B23K 31/02

U.S. Cl. 228—180 R

4 Claims



1. An apparatus for soldering printed circuit boards carrying circuit components, comprising:  
means defining a solder bath for soldering leads of the components to the printed circuit board;  
a number of transport frames having leading corners and trailing corners;  
a conveyor device for moving the transport frames through the solder bath;  
each of the transport frames serving for receiving a printed circuit board which carries circuit components;  
guide track means for guiding the leading corners and the trailing corners of the transport frames;  
said guide track means being provided with respective descending ramps followed by respective ascending ramps

at the region of the solder bath and viewed with respect to the direction of conveying of the transport frames;  
the spacing between the descending ramps, viewed in conveying direction of the transport frames, operatively associated with the leading corners and the trailing corners of the transport frames, being smaller than the length of the transport frames; and  
the spacing between the ascending ramps between the leading corners and the trailing corners of the transport frames essentially corresponding to the length of the transport frames.

4,284,226

#### TWO-PIECE PLEATED FOAM CUP

David H. Herbst, Reisterstown, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Continuation of Ser. No. 872,019, Jan. 24, 1978, abandoned, which is a division of Ser. No. 704,940, Jul. 13, 1976. This application Aug. 3, 1979, Ser. No. 63,515

Int. Cl.<sup>3</sup> B65D 3/06, 3/28

U.S. Cl. 229—1.5 B

18 Claims



1. In a container, a frustoconical sidewall structure comprising:  
an arcuate blank formed from an initially rectangular blank of foam plastic sheet material;  
said initially rectangular blank being provided with a plurality of pairs of divergent pleat lines defined in the surface and across the width dimension thereof, a corresponding line of each pair being overlapped with the other line of that pair to form a multi-layered triangular area for each said pair of pleat lines extending from a top portion to a bottom portion of said sidewall structure, thereby constraining said initially rectangular blank to assume an arcuate shape defining said arcuate blank;  
said arcuate blank having opposing ends across the width thereof; and  
said opposing ends being overlapped and heat sealed together to form said frustoconical sidewall and provide a side seam for same.  
12. A container made by the method comprising the steps of:  
providing a rectangular blank of plastic foam sheet material;  
forming a plurality of pairs of divergent pleat lines across the width dimension of said blank;  
overlapping one pleat line with the other to form triangular double layers in said blank, thereby constraining said blank to assume an arcuate shape;  
overlapping the opposite edges of said blank in a side seam configuration to form a multi-sided, substantially frustoconical cup sidewall assembly;  
placing said sidewall assembly in a conforming mold means; providing a bottom blank in said mold means at one end of said sidewall assembly; and  
applying heat thereto to fuse said overlapping areas and heat seal said side seam configuration and said bottom blank to said sidewall assembly to provide a unitary cup structure.

4,284,227

#### EXPANSION FOLDER WITH ACCORDIAN-PLEAT BACKBONE

Joseph T. Corey, Williamsville, N.Y., assignor to Permclip Products Corporation, Buffalo, N.Y.

Filed Dec. 13, 1979, Ser. No. 103,277

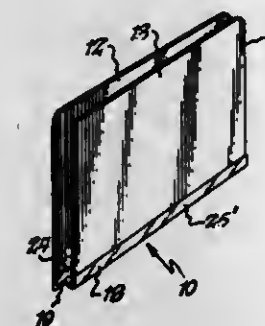
Int. Cl.<sup>3</sup> B65D 37/00; B42F 7/02

U.S. Cl. 229—1.5 R

12 Claims

1. A backbone construction for a file folder having front and

rear covers and a backbone integral with said covers comprising a backbone portion having an inner surface and an outer surface, a first groove between said front cover and said inner surface of said backbone portion, a second groove between said rear cover and said inner surface of said backbone portion, said first and second grooves defining the outer peripheral sides of the inner surface of said backbone portion, first and second ends on said backbone portion extending between said first and second grooves, first and second slots located between said first and second grooves and extending inwardly from said first and second ends, respectively, toward each other, planar



sheet material overlying said inner surface and said first and second grooves and said first and second slots and portions of said front and rear covers adjacent to said first and second slots, a perforation located at the inner end of each of said first and second slots, respectively, and extending through said backbone portion and said planar sheet material, and an elongated slit extending between said first and second perforations and through said planar material and partially through said backbone portion on said inner surface thereof to cause said backbone portion to flex inwardly in accordian-pleat fashion between said front and rear covers.

4,284,228

#### PACKING CONTAINERS OF LAMINATED MATERIAL HAVING VENTING MEANS

Renato Cetrelli, Lund, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

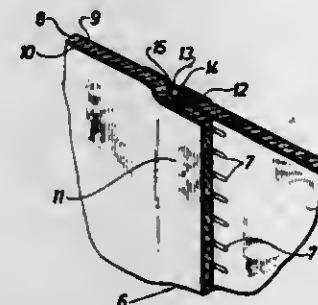
Filed Jun. 14, 1979, Ser. No. 48,634

Claims priority, application Sweden, Jun. 21, 1978, 7807085

Int. Cl.<sup>3</sup> B65D 5/42, 31/14

U.S. Cl. 229—48 R

13 Claims



1. A packing container comprising:  
a first edge area;  
a second edge area overlapped onto the first edge area forming a wall of the packing container;  
sealing means for sealing the first edge area to the second edge area disposed on a side of the wall facing the inside of the packing container; and  
duct means for venting a space, formed between the sealing means and the wall, towards the outside of the packing container.

4,284,229

#### RECLOSABLE CROSS-BOTTOM SACK

Horst Schmidt, Kattenvenne, and Hans Struck, Tecklenburg, both of Fed. Rep. of Germany, assignors to Windmüller & Hülshcher, Lengerich, Fed. Rep. of Germany

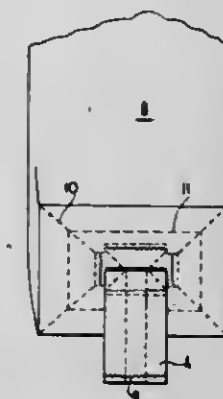
Filed Sep. 6, 1979, Ser. No. 72,998

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1978, 2840732

Int. Cl.<sup>3</sup> B65D 33/38

U.S. Cl. 229—57

8 Claims



1. A reclosable cross-bottom sack comprising:  
a tube section having a pulled-open base square closed to form a cross-bottom by folding inwardly and adhering side flaps of the base square;  
a base cover sheet applied and adhered to portions of the folded side flaps; and  
a flattened tube section having side folds and incisions along outer folded edges at one end thereof that define side flaps, the base cover sheet having an incision formed in a central region thereof with the flattened tube section extending through the incision in the base cover sheet and the side flaps of the flattened tube section being pulled away from each other and secured to the base cover sheet prior to the base cover sheet being applied to the fold side flaps of the tube section, a region of the base cover sheet including the incision and corresponding to the size of the flattened tube section when expanded not being adhered to the cross-bottom.

4,284,230

#### MAILING ASSEMBLY INCORPORATING PLURAL OFFER SEND AND RETURN MAILING PIECES

Frank L. Schultz, 100 N. Tower Rd., Alamo, Tex. 78516

Filed Jan. 22, 1980, Ser. No. 114,325

Int. Cl.<sup>3</sup> B65D 27/06

U.S. Cl. 229—73

11 Claims



1. A mailing assembly designed for initial mailing as an independent mailable unit comprising: a first send and return mailing piece including a first envelope and a first indicia-receptive portion attached to said first envelope; a second send and return mailing piece comprising a second envelope and a second indicia-receptive portion attached to said second envelope, said mailing assembly when in condition for initial mail-



ing having at least parts of each of said first and second portions forming two exterior cover portions between which said envelopes are located, and means initially joining one of said cover portions to the other of said cover portions and allowing for subsequent manual detachment of said first mailing piece from said second mailing piece preparatory to subsequent remailing of at least portions of said first and second mailing pieces as separate mail items.

4,284,231

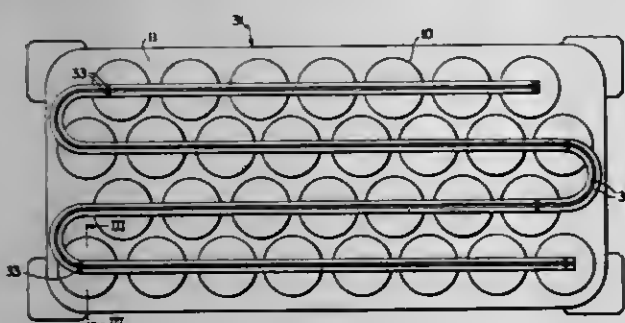
**DEVICE FOR DUCTING GAS IN A CENTRIFUGE BLOCK**  
Erwin Maier, Freising; Wilhelm Hirschmann, Friedberg, and Eberhard Willeitner, Utting a. Ammersee, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 30, 1979, Ser. No. 43,806  
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2824067

Int. Cl.<sup>3</sup> B01D 21/26

U.S. Cl. 233—1 R

6 Claims



1. A centrifuge block having upper and lower ends and including a plurality of centrifuge housings for a plurality of centrifuges, each centrifuge having a separating chamber with respect to which process gas may flow during use, the centrifuge block comprising:

a plate at said upper end for holding said centrifuge housings, said plate having a plurality of holes for sealingly accommodating said centrifuge housings;  
each housing including a cover, each cover being provided with connecting openings for carrying process gas;  
each centrifuge having tubes communicating therewith for carrying the process gas, each tube extending from the separating chamber of its associated centrifuge to a connecting opening of its associated cover;  
hood means sealingly covering the plurality of centrifuges, said hood means, together with said plate, defining an enclosed space;  
said space forming a first duct for the process gas;  
said hood means including channel sections forming remaining ducts for the process gas, said channel sections being disposed within said space;  
said first and remaining ducts being in communication with said connecting openings.

4,284,232

**LIQUID-LIQUID CENTRIFUGAL CONTACTING MACHINES AND METHODS OF CONSTRUCTING AND OPERATING THEM**

David B. Todd, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.

Filed Jul. 13, 1979, Ser. No. 57,420

Int. Cl.<sup>3</sup> B04B 15/02

U.S. Cl. 233—15

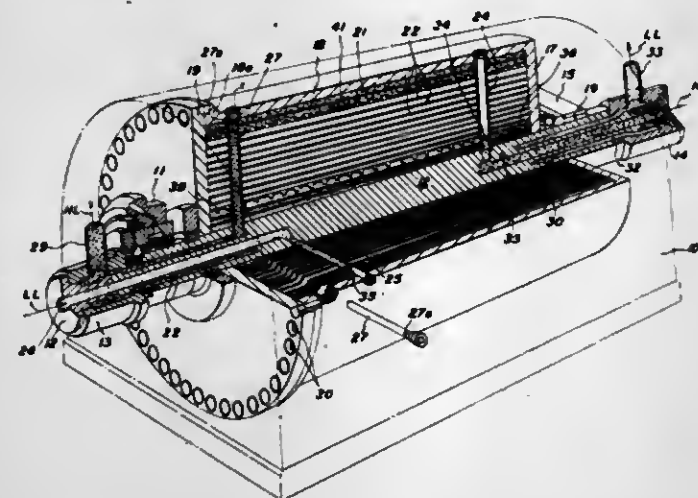
16 Claims

1. In a centrifugal device for contacting at least partially immiscible liquid phases of heavy and light densities wherein there is included a rotor mounting a coaxial hollow casing having an outer cylindrical wall to provide a radially extending rotor chamber therein, the device further including a plurality of concentric radially relatively closely spaced annular partition walls surrounding the shaft which have perforations

for the passage of the phases therethrough, and means for removing the heavier phase from the outermost portion of the rotor chamber and the lighter phase from the innermost portion of the rotor chamber, the device further including radially extending light phase inlet passageways extending to have communication with the radially outer portion of the rotor chamber and radially extending heavy phase inlet passageways having communication with the radially inner portion of the rotor chamber, and having means for continuously supplying light and heavy phase fluid to said respective inlet passageways;

the improvement comprising:

providing a pair of concentric radially spaced, annular, axially uniformly, phase distributing trays within the rotor chamber, radially spaced from the shaft and into which the inlet passageways empty, each tray consisting of an annular base wall and radially projecting walls extending therefrom radially oppositely from the other



tray in the form of open-end risers surrounding riser passages through the base wall for flow of the other phase not being dispersed via the tray, the trays, further, in the base wall having much smaller openings relative to said riser passages and perforations in the said partition walls, which in number, in cross-sectional size, and in location are such, considering their distance axially from the particular inlet passageway feeding the tray, that the phase to be dispersed, from one end of the tray to the other, flows through them under pressure of the tray head developed without countercurrent flow of the other phase through them, the riser walls being of at least such radial extent as to collect a sufficient head of the phase to be dispersed via the tray to permit this, considering the inflow rate, the radial positions of the trays, the relative specific gravities of the phases, and the speed of rotation of the rotor chamber; and the riser passages being of such size as to achieve flow of the said other phase through the risers in the continuous phase.

4,284,233

**SELF-DUMPING CENTRIFUGAL SEPARATOR DRUM**  
Otto Kölker, Delde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde Westfalen, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,880

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844917

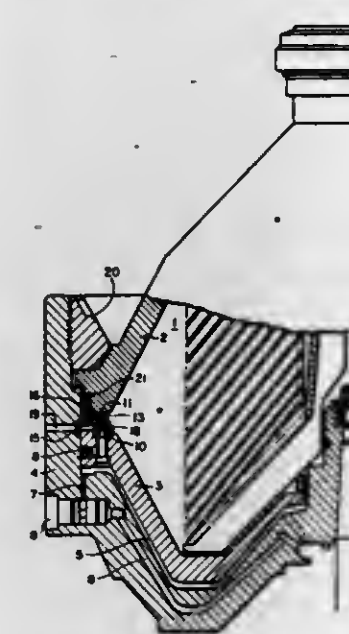
Int. Cl.<sup>3</sup> B04B 11/00

U.S. Cl. 233—20 A

6 Claims

1. In a centrifugal separator comprising a drum for the separation of a liquid mass into a heavier fraction and a lighter fraction and collection of the heavier fraction adjacent the drum periphery, ejection aperture means at the drum periphery for ejection of heavier fraction, valve means for opening the aperture means for discharge of heavier fraction from the drum by movement of a valve member from a first position to a second position, and for closing of the aperture means by

movement of the valve member from the second position to the first position, a passageway for receiving heavier fraction from the valve means, the improvement which comprises means for closing said passageway upon arrival of the valve member at said second position, whereby upon movement of the valve member from the first position to the second position,



the aperture means is opened, heavier fraction is discharged from the drum and said passageway is closed so that the discharge of heavier fraction is stopped, and upon movement from the second position to the first position the passageway is opened, heavier fraction is discharged from the drum, and said aperture means is closed so that the discharge of heavier fraction is stopped.

4,284,234

CENTRIFUGE

Uriel Rekant, 22/5 Kovlosky St., Kiryat Herzog, Bnei Brak, Israel

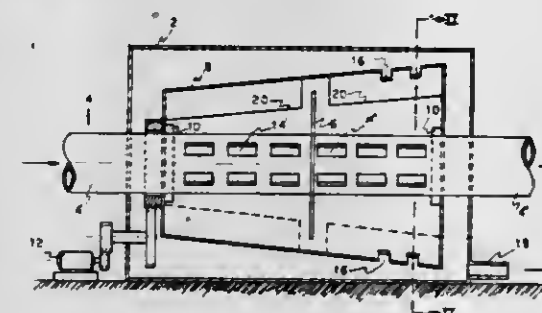
Filed Jan. 14, 1979, Ser. No. 48,329

Claims priority, application Israel, Jun. 22, 1978, 54980

Int. Cl.<sup>3</sup> B04B 1/00, 3/00

U.S. Cl. 233—27

8 Claims



1. A centrifuge for treatment of fluids, comprising a stationary vessel, a stationary pipe passing through said stationary vessel, a baffle disk fixedly mounted on said stationary pipe, a rotating drum mounted on and rotatable about said stationary pipe inside said stationary vessel and divided by said baffle disk into an inlet chamber and an outlet chamber, which outlet chamber is provided with outlet means, further comprising drive means to impart a rotary motion to said drum, wherein said stationary pipe is divided into two mutually sealed-off sections, an inlet section and an outlet section, both of which pipe sections are perforated over that part of their respective length, which is located within said rotating drum, the arrangement being such that upon the introduction of a multicomponent fluid into the inlet section of said stationary pipe, said fluid disperses into the interior of said rotating drum through said perforations in said inlet sections and, being entrained by the inside surfaces of said rotating drum, said fluid is affected by centrifugal forces, due to which forces the heavier components of said fluid are caused to migrate toward the periphery of said

drum to exit via said outlet means, while the lighter components of said fluid are displaced toward the perforations of the outlet section of said stationary pipe, through which perforations said lighter components are drawn into said outlet section to be removed therefrom.

4,284,235

**VENT CONTROL ARRANGEMENT FOR COMBUSTION APPARATUS**

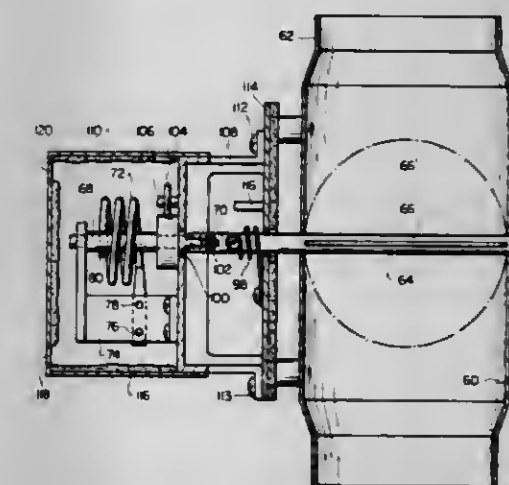
Werner Diermayer, 1275 Panorama Dr., Lafayette, Calif. 94549, and Luitpold Kutzner, Marschnerstrasse 78, D-8000 Munich, Fed. Rep. of Germany

Filed Dec. 19, 1979, Ser. No. 105,101

Int. Cl.<sup>3</sup> F23N 3/00

U.S. Cl. 236—1 G

10 Claims



1. In a heating appliance having a damper for controlling the flow of exhaust gases through a vent, the combination of a damper actuating element comprised of a material having a shape memory effect and coupled to apply an actuating force to move the damper between closed and open positions within the vent when the element deforms between first and second shapes, respectively, said element assuming its first shape when at a temperature above its deformation temperature and assuming its second shape when at a temperature below the deformation temperature, and means for heating the element above the deformation temperature for causing deformation of the element toward the first shape and thereby movement of the damper toward its closed position.

4,284,236

AIR CONDITIONING SYSTEM

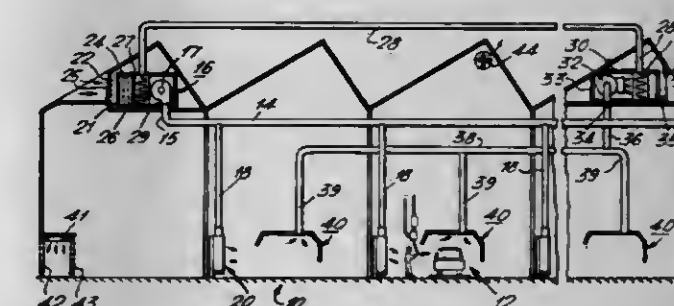
Norman F. Bradshaw, Richmond, England, assignor to Carrier Drysys Limited, London, England

Filed May 17, 1978, Ser. No. 906,749

Int. Cl.<sup>3</sup> F24F 7/00

U.S. Cl. 236—49

5 Claims



1. An air conditioning system comprising sensor means for monitoring the environment at at least one location, said sensor means being arranged to produce an electrical output signal dependent upon the environment at said location; air delivery means including adjusting means for varying the flow of the air delivered in dependence upon the output signal from the sen-



sensor means; and a control circuit for said adjusting means, said control circuit comprising a first comparator having a first input connected to the output of said sensor means, a first reference level indicator connected to a second input of the first comparator, and a driver circuit having a first input connected to an output of the first comparator, said control circuit further comprising a rate of change detector connected to the output of said sensor means, a second comparator having a first input connected to the output of said detector, a second reference level indicator connected to a second input of said second comparator, and a direction amplifier connected to an output of the second comparator and to a second input of said driver circuit, said driver circuit being arranged to operate said adjusting means in dependence upon the output signal from said first comparator and the output signal from said direction amplifier.

4,284,237

# AIR CONDITIONING CONTROL SYSTEM WITH MASTER AND TRACKING CONTROLLERS

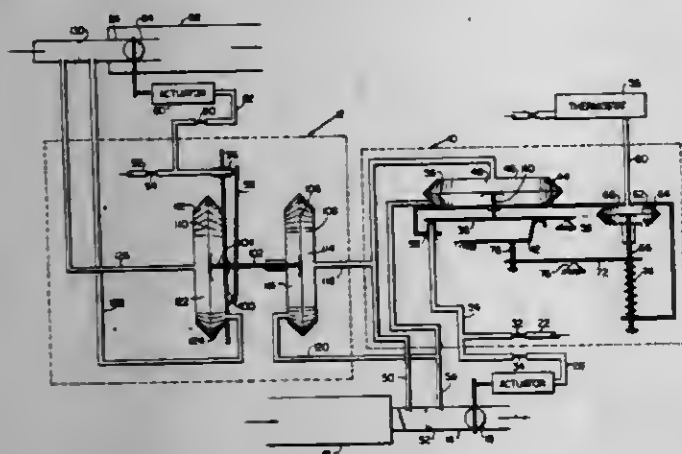
William J. Harris, Tuhannock, and William J. Waelde, Waverly, both of Pa., assignors to Anemostat Products Div., Dynamica Corporation of America, Scranton, Pa.

Filed May 12, 1980, Ser. No. 148,751

Int. Cl.<sup>3</sup> F24F 7/06

U.S. Cl. 236—49

8 Claims



1. In an air conditioning system having at least two duct sections each with an associated damper for regulating air flow therethrough; the combination comprising at least one master controller and an operatively associated first actuator for one damper and at least one tracking controller and an operatively associated second actuator for the other damper, said master controller comprising a first flow sensor producing a first flow variable signal in response to sensed flow in the duct section associated with said one damper, adjustable reference signal means, first means for comparing said flow variable and reference signals and for transmitting a first resultant signal to said first actuator for operation thereof and for corresponding movement of said one damper in response thereto, and said tracking controller comprising a second flow sensor producing a second flow variable signal in response to sensed flow in the duct section associated with the other damper, and second signal comparison and transmitting means for comparing said first and second flow variable signals and for transmitting a second resultant signal to said second actuator for operation thereof and for corresponding movement of said other damper in response thereto.

4,284,238

# RAIL FASTENERS

Hendrikus M. Veroeff, Gepp's Cross, Australia, assignor to Ralph McKay Limited, Victoria, Australia

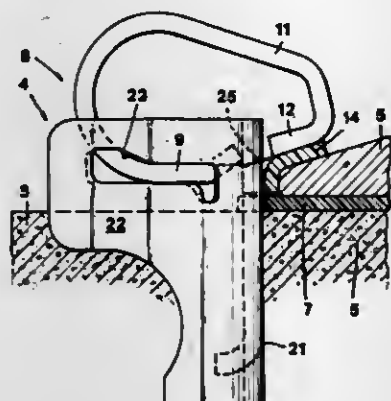
Filed Jan. 25, 1979, Ser. No. 51,979

Claims priority, application Australia, Jul. 4, 1978, PD4945

Int. Cl.<sup>3</sup> E01B 9/30

U.S. Cl. 238—349

2 Claims



1. A rail clip holder for a rail unitary clip of the kind in which one portion of the clip seats in the clipholder secured to a rail sleeper and another portion of the rail clip lies on the foot of the rail, said clipholder comprising a channel section of plate metal adapted to be disposed vertically when secured to the rail sleeper, said channel section comprising a base having a longitudinal axis and oppositely-directed surfaces and a pair of spaced-apart side portions extending from one of said base surfaces and each terminating in an outer edge spaced from said base surface, said side portions and said base surface defining therebetween a region which is completely empty except for the clip, when said clip is in operative engagement with a rail, the base of said channel section being adapted for location adjacent the foot of the rail with the other base surface disposed toward the rail and a pair of elongated slots, one in each of said side portions of said channel section, each of said slots extending in a direction from the outer edge of the corresponding side portion toward said one base surface and generally perpendicular to said longitudinal axis of said base whereby said slots are disposed substantially horizontally when said channel section is secured to said sleeper and said slots are adapted to receive said one portion of the rail clip and are the sole means of retaining said clip in operative engagement with said rail.

4,284,239

# ATOMIZING UNIT OF TWO-PHASE TYPE

Hiroshi Ikeuchi, 2-8-703, Hirata-cho, Ashiya-shi, Hyogo-ken, Japan

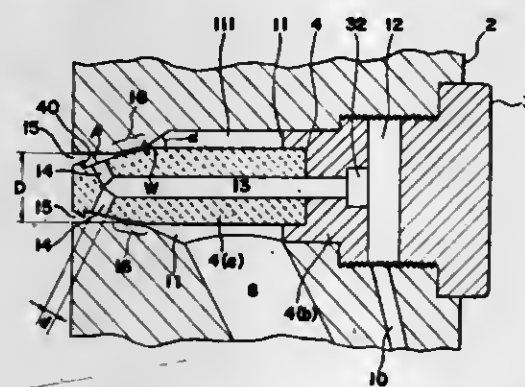
Filed Oct. 3, 1979, Ser. No. 81,618

Claims priority, application Japan, Oct. 3, 1978, 53-122155

Int. Cl.<sup>3</sup> B05B 7/08

U.S. Cl. 239—8

5 Claims



1. A process for generating a mist of at least one incompressible fluid in an atmosphere of a compressible fluid, comprising:

forming at least two annular flows of the compressible fluid flowing substantially parallel to the longitudinal axis of the annular flow;

forming a low pressure zone in each of said annular flows and drawing the incompressible fluid into said low pressure zones and breaking the incompressible fluid into small fluid particles and entraining the particles in the annular flows;

directing said two annular flows with the fluid particles entrained therein to cause them to collide with each other for further breaking up the particles of the incompressible fluid and for producing a stream of mist flowing away from the collision point and in which said further broken up particles are entrained.

4,284,240

# WATER PROPELLED PRIME MOVER IN AGRICULTURAL IRRIGATION SYSTEMS

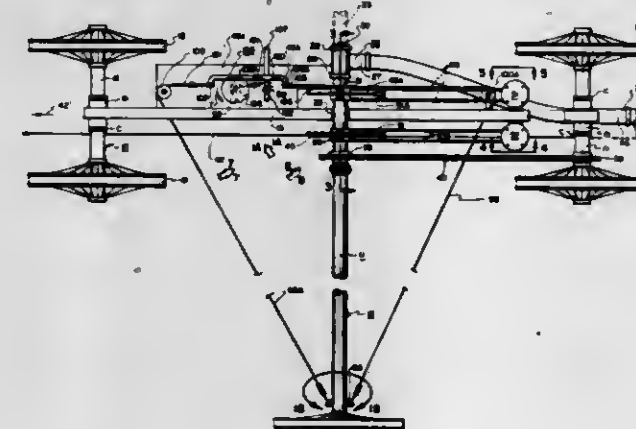
Burr Courtright, Rte. 1, Box 1685, La Grande, Ore. 97850; Dale E. Olson, 2143 E. Tenth St., Fremont, Nebr. 68025, and Alvin H. Smolkowski, Rte. 3, Box 3190, La Grande, Ore. 97850

Filed Oct. 6, 1976, Ser. No. 729,994

Int. Cl.<sup>3</sup> B05B 3/18

U.S. Cl. 239—184

43 Claims



1. In an irrigation system for irrigating an area of a field which irrigation system includes a liquid conduit supported by wheels extending over a portion of said area to be irrigated, a drive unit for supplying liquid to said conduit and for rotating said conduit and wheels, said drive unit comprising means allowing movement of said drive unit along a path, means rotatably mounting said conduit to said drive unit for rotation about a generally horizontal axis generally normal to the path of the drive unit, means for rotating said conduit, means for driving said drive unit along the path, and control means for controlling the relative speed of the drive means for said drive unit and said conduit in response to fore and aft relative displacements of said drive unit and said conduit.

4,284,241

# SPRAY NOZZLE FOR DISTRIBUTION OF LIQUID WHICH IS INTENDED TO BE AFFIXED TRANSVERSELY TO THE WALL OF A CONDUIT

Pierre Azalbert, Paulhac, 31380 Montastruc la Concelliere, France

Filed Oct. 17, 1979, Ser. No. 85,703

Claims priority, application France, Oct. 18, 1978, 78 30132

Int. Cl.<sup>3</sup> B05B 1/14

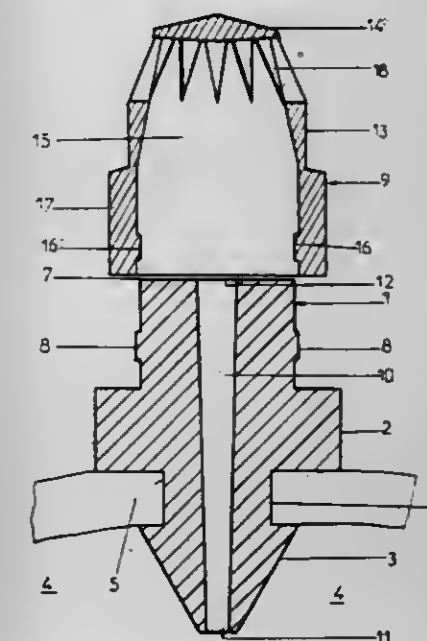
U.S. Cl. 239—272

10 Claims

1. A spray nozzle for distributing a liquid, said nozzle adapted to be attached to a wall of a liquid delivery conduit of a liquid delivery station or pumping station through an orifice in said wall, said nozzle adapted to expand and deflect said liquid and comprising:

(a) a body having a bottom and a head, a liquid inlet orifice adjacent to said bottom, said orifice adapted to penetrate said conduit, a jet adjacent to said head and a generally conical axial passage gradually flared outwardly in a

direction from said orifice to said jet, said passage having the shape of an inverted truncated cone having said orifice at its peak, said orifice having a diameter adapted to prevent undesirable objects from entering said passage; and (b) a deflector comprising a generally hollow and cylindrical hood adapted to be detachably and securely connected to said body to form a chamber and thereby permit expansion



sion of said liquid therein, said hood blocked at one end thereof and comprising at least one aperture, said hood adapted to deflect liquid radially outwardly from said chamber through said aperture, said hood further including an inner surface with threads and said body having a cylindrical outer surface with complimentary threads so that said hood can be screwed onto said body.

4,284,242

# SPRAY HEAD

Arthur A. Randell, Tewkesbury, England, assignor to Coal Industry (Patents) Limited, London, England

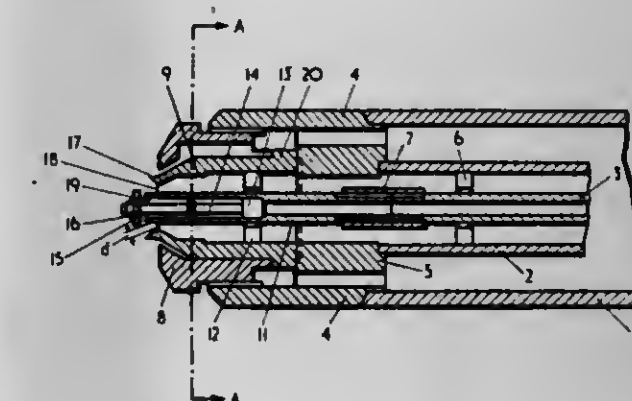
Continuation of Ser. No. 839,295, Oct. 4, 1977, abandoned. This application Jun. 4, 1979, Ser. No. 45,407

Claims priority, application United Kingdom, Oct. 8, 1976, 41871/76

Int. Cl.<sup>3</sup> B05B 7/06

U.S. Cl. 239—422

6 Claims



1. A spray head for forming a spray of flowable slurry material with a surrounding gas curtain comprising:

a. three concentric apertures comprising a first innermost aperture for discharge of a gas, a second intermediate aperture for discharge of flowable slurry and a third outermost aperture for discharge of gas in a curtain surrounding said slurry discharge;

b. the second intermediate aperture being shaped to direct the slurry discharging therefrom generally downstream;

c. the first innermost aperture having a baffle downstream



thereof, the baffle being so positioned in relation to said first innermost aperture as to direct the gas discharging therefrom radially outwardly toward and to mix with the flow of slurry material;

- d. the third outermost aperture being located radially outward of the first and second apertures and shaped to direct gas discharging therefrom outwardly at an acute angle relative to the downstream axial direction so as to form a curtain around the slurry spray to prevent deposition thereof on the spray head.

4,284,243

## LIQUID FERTILIZER DISTRIBUTOR

Jim Shaner, 5B, 925 - 30 St. NE., Calgary, Alberta, Canada (T2A 5L4)

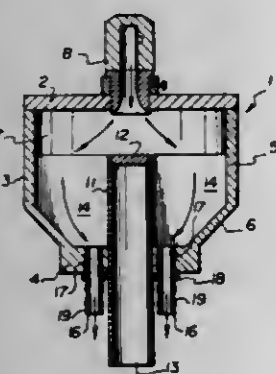
Filed Jan. 11, 1980, Ser. No. 111,475

Claims priority, application Canada, Sep. 28, 1979, 336607

Int. Cl.<sup>3</sup> B05B 1/14, 1/34

U.S. Cl. 239-469

2 Claims



1. A distributor for a viscous liquid comprising a hollow casing including a side wall defined by a cylindrical upper portion and a frusto-conical lower portion, a top wall and a bottom wall; a plurality of partitions dividing the bottom of the interior of the casing into a plurality of compartments, said partitions extending radially between the longitudinal centre of said casing and said side wall to a level beneath said top wall; a hollow cone spray nozzle in the centre of said top wall for spraying liquid uniformly in a conical pattern, whereby substantially equal quantities of the liquid enter said compartments; an inlet duct for introducing liquid into said nozzle tangentially to promote a spiral action and even distribution of the liquid; a hollow centre post with a closed, planar top end extending through the bottom end of said casing for mounting the distributor on an agricultural machine, said partitions extending radially between said post and said side walls; and an outlet duct in said bottom wall at the bottom of each compartment for discharging the contents of the compartment from the distributor.

4,284,244

## PROCESS FOR PRODUCING HIGH GRADE MOLYBDENUM DISULFIDE POWDER

Maurice R. Hoover, Florham Park, N.J.; Deepak Malhotra, Lakewood; Fredrick N. Bender, and Richard A. Ronzio, both of Golden, all of Colo., assignors to Amax, Inc., Greenwich, Conn.

Filed Sep. 19, 1979, Ser. No. 76,866

Int. Cl.<sup>3</sup> B02C 23/08

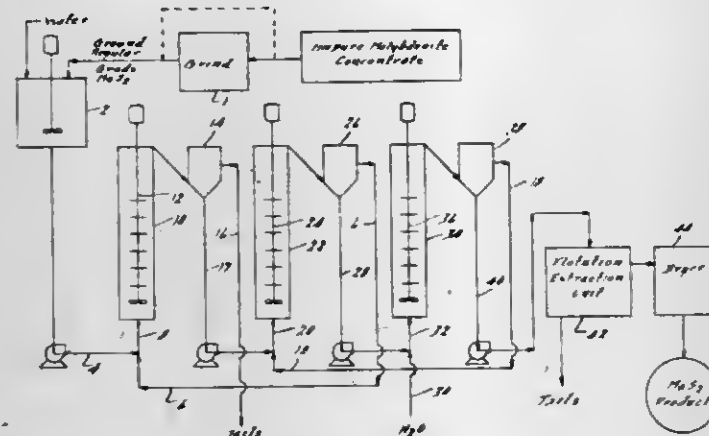
U.S. Cl. 241-24

11 Claims

1. A process for producing a high purity molybdenum disulfide powder which comprises the steps of providing an impure particulated molybdenite concentrate, comminuting said concentrate, if necessary, to reduce its average particle size to a point where plus 99% liberation between gangue and molybdenite particles is obtained adjusting said concentrate if necessary to contain an oily substance in an amount of about 1-10% by weight; subjecting said concentrate comprising oily ag-

glomerates of finely divided smaller molybdenite particles to a plurality of purification treatments each comprising:

- (a) forming a mixture of said concentrate with an aqueous solution to provide a solids concentration of about 1% to about 40%;
- (b) subjecting said mixture to a high shear agitation to break up the molybdenite particle agglomerates and to release at least a portion of the hydrophilic particulate contaminants mechanically entrapped therein and to effect a suspension of said particulate contaminants in the liquid phase;
- (c) introducing the said mixture into a quiescent zone to enable reagglomeration of the molybdenite particles while retaining a substantial portion of the released said particulate contaminants in the liquid phase;



- (d) separating the reagglomerated said molybdenite particles in the form of a slurry from a predominant portion of the liquid phase;
- (e) transferring the liquid phase to a next preceding purification treatment and transferring the separated slurry of reagglomerated said molybdenite particles to a next succeeding purification treatment in countercurrent fashion; and discarding the liquid phase as separated from the first of the plurality of said purification treatments and recovering the purified agglomerated molybdenum disulfide particles from the slurry separated from the last of the plurality of purification treatments.

4,284,245

## MACHINE LUBRICATION SYSTEM

Semyon I. Fishgal, 1908-35 High Park Ave., Toronto, Ontario, Canada (M6P 2R6)

Filed May 1, 1979, Ser. No. 34,906

Int. Cl.<sup>3</sup> B02C 19/06

U.S. Cl. 241-40

3 Claims



1. A system for treating a lubricating material comprising a lubricating material reservoir, a lubricating material pressure line, and a means maintaining the working properties of the lubricating material having its inlet connected to said pressure line and its outlets connected to said reservoir, said maintaining means being a comminuting device used for breaking down solid contaminants existing within the lubricating material to a

predetermined size, and said comminuting device consisting of a nozzle creating a high speed cavitating jet.

4,284,246

## HONEY PIT FERTILIZATION SYSTEM

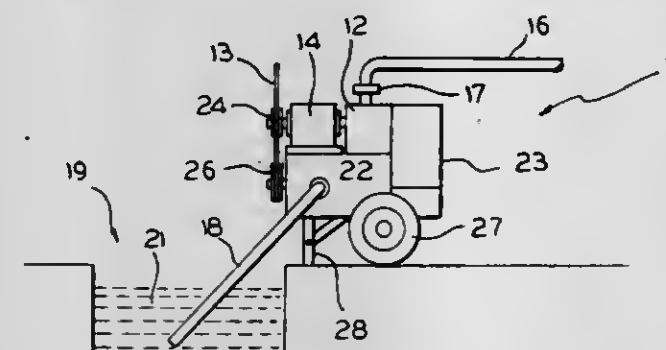
Carl E. Eagle, Fremont, and Don Moldenhauer, Clintonville, both of Wis., assignors to Hydro Ag-Tech Inc., St. Paul, Minn.

Filed Jan. 2, 1979, Ser. No. 3

Int. Cl.<sup>3</sup> B02C 18/40

U.S. Cl. 241-222

4 Claims



1. An improved system for pumping a mixture including solid animal waste and resilient herbaceous material from a honey pit, said mixture to be used for fertilizer, said mixture including a liquid portion,

said system comprising:  
pump means having an inlet and an outlet;  
means to motivate said pump means to provide pump pressure required to move said mixture from said pit;  
a conduit insertable into said pit to direct said mixture towards said pump means inlet;  
a pulverizer assembly,  
said assembly having a cylindrical housing,  
said housing of a substantially uniform internal diameter,  
said assembly having an inlet and an outlet,  
said assembly positioned outside said pit, in the path of flow of said mixture, with said conduit communicating with said assembly inlet, and said assembly outlet communicating with said pump means inlet,

said assembly including a plurality of circular comminuting elements mounted axially within said housing on an axle, said elements parallel to and spaced apart from each other and from said housing to enable the liquid portion of said contents to flow between said elements to said pump means inlet;

bar means positioned within said housing to impact said solids as said solids are moved by said elements,  
said bar means positioned parallel to the axis of rotation of said elements and spaced apart from the outer periphery of said elements by a distance less than that of the size of solids pumpable by said pump,

said assembly inlet and said assembly outlet positioned to direct the flow of said mixture transversely to said elements and said bar means,

said elements contacting said animal waste and herbaceous solids to strike said bar means to reduce said solids to a size selected to allow for passage thereof through said pump means; and

means communicating with said pump means outlet for distributing said contents onto fields for fertilization purposes.

4,284,247

## APPARATUS FOR DEFIBRATING AND CONDITIONING NONFLOWABLE CELLULOSIC MATERIAL

Erik F. Eriksson, Ymseavagen 9, 1 tr., 121 42 Johanneshov, Sweden

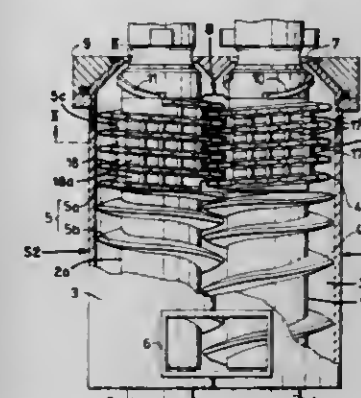
Continuation-in-part of Ser. No. 965,813, Dec. 4, 1978, abandoned. This application Jan. 15, 1979, Ser. No. 3,187

Claims priority, application Sweden, Dec. 6, 1977, 7713845

Int. Cl.<sup>3</sup> B02C 18/30

U.S. Cl. 241-260.1

20 Claims



1. Apparatus for the defibration and conditioning of non-flowable cellulosic material comprising a housing having an inlet and an outlet and a flow chamber for cellulose material therebetween; two screws disposed in the chamber and extending from the inlet to the outlet, the screws having interdigitating helical blades with opposed pitches, and helical grooves therebetween interdigitatingly receiving the helical blades of the opposite screws; the screws being arranged for interdigitating rotational movement in opposite directions, so as to defibrate and condition cellulosic material in the bite therebetween while carrying the material through the flow chamber from the inlet towards the outlet; at least a portion of the outer periphery of each helical blade being undulating in a plurality of successive recesses and projections, intermeshing short of contact with a like plurality of projections and recesses defining a land area in the groove of the opposite blade of the other screw, so that within the land areas in the bite of the screws the intermeshing projections of one groove occupy at least part of the recesses in the blade of the other screw, to extend the filled-in area of the blade surface along each screw, for improved screw efficiency in defibration and conditioning of the cellulosic material, and transport of the material through the flow chamber.

4,284,248

## PACKING PULVERIZER

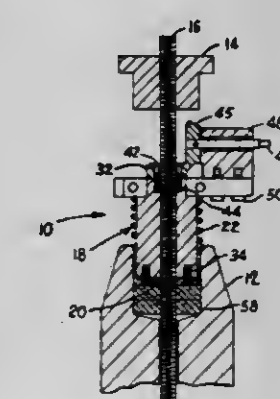
Harold R. Adams, Rte. 1, St. Francisville, Ill. 62460

Filed Mar. 26, 1979, Ser. No. 23,847

Int. Cl.<sup>3</sup> B02C 19/00

U.S. Cl. 241-278 R

6 Claims



1. A packing pulverizer device for removing packing from cup-shaped packing glands having an axial valve stem, said



device comprising a cylindrical housing having a central opening for fitting around said valve stem, said housing having a bottom provided with packing comminuting means, flight means on side walls of said housing for carrying comminuting packing from said packing gland and means for rotating said housing, said housing being comprised of a plurality of members adapted to be removably fitted around said valve stem.

4,284,249

**DEVICE TO UNROLL AND TO ROLL UP ELONGATED FLEXIBLE ARTICLES SUCH AS CONDUITS OR CABLES**  
Lacien Legallasi, Orgeval; Guy Planquette, Palaiseau, and Remi Reynard, Neuilly-sur-Seine, all of France, assignors to Co-flexip, Rueil Malmaison, France

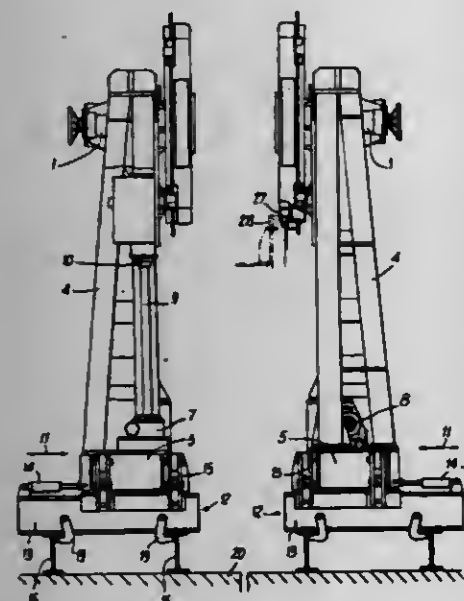
Filed Mar. 31, 1980, Ser. No. 135,313

Claims priority, application France, Apr. 6, 1979, 79 08774

Int. Cl.<sup>3</sup> B65H 75/00; B21C 47/24

U.S. Cl. 242—54 R

13 Claims



1. A system for winding or unwinding lengths of an elongated flexible article one after the other from a plurality of spools each having an axis and on which a length of the article can be wound or unwound by rotation of a spool about its axis, at least two of such spools being supported with their axes perpendicular to the direction of the article during unwinding, at least two opposed spindles forming a winch having an axis generally perpendicular to the direction of the article during unwinding, means for displacing said spindles in a first direction generally horizontally and perpendicular to an axis of a supported spool; means for displacing said spindles in a second direction generally horizontally and perpendicular to said first direction; and means for displacing said spindles vertically.

4,284,250

**TAPE DRIVE HAVING AN IMPROVED REEL LATCH**  
Ivo T. Plachy, San Mateo, Calif.; Jack W. Clymer, and Richard W. Pembroke, both of Tulsa, Okla., assignors to Telex Computer Products, Inc., Tulsa, Okla.

Filed Mar. 13, 1980, Ser. No. 129,832

Int. Cl.<sup>3</sup> B65H 17/02

U.S. Cl. 242—68.3

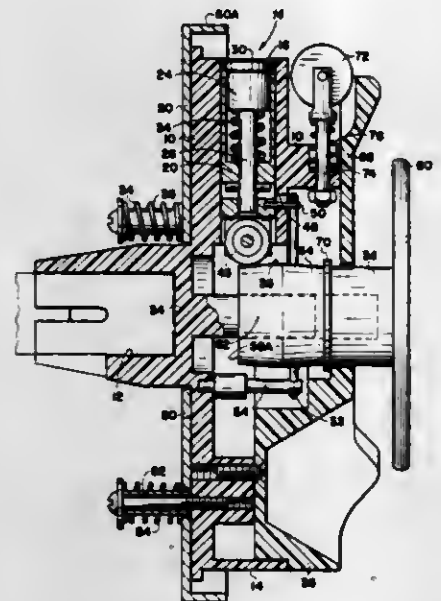
5 Claims

1. A tape drive hub having an improved reel latch for a reel having an axial opening therein defined by an internal cylindrical surface, the tape drive hub being rotatable about its axis for driving the reel, comprising:  
(a) a hub body supported for rotation about its axis and having a cylindrical surface of dimension to slidably receive a reel thereon, the body having a plurality of spaced apart, radial

openings therein communicating with the hub cylindrical surface;

(b) an actuator received in each said hub body radial opening, each actuator comprising:

- (1) cylindrical body slidably received in a hub body radial opening, the cylindrical body having an outer end and an inner end, the outer end having an axial recess therein;
- (2) a piston slidably received in said recess in said cylindrical body having a forward end and rearward end, a portion of the piston forward end extending beyond said outer end of said body;



- (3) a spring received in said recess in said body urging said piston in the direction towards the cylindrical body outer end; and
- (4) means retaining said piston in said recess in said cylindrical body while providing limited axial movement of the piston; and
- (c) a locking member carried by and axially displaceable to said hub body engaging the inner end of each of said actuators, the locking member having a locking position in which each of said actuators is displaced outwardly.

4,284,251

**BEARING FOR SUPPORTING ROLLS OF PAPER**  
Carmen Salvador Castillo, C/Miramar, 18-8°-31a, Gandia (Valencia), Spain

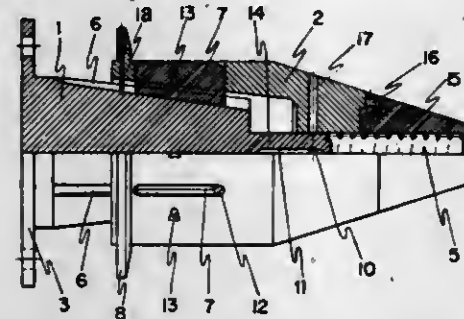
Filed May 8, 1979, Ser. No. 37,148

Claims priority, application Spain, May 17, 1978, 236.056

Int. Cl.<sup>3</sup> B65H 75/24; B23B 31/40

U.S. Cl. 242—68.4

3 Claims



1. A bearing apparatus for supporting rolls of paper, said rolls of paper being wound on tubular cores, said bearing apparatus comprising:

- first and second mounting means spaced opposite each other for mounting a tubular core therebetween, each said first and second mounting means comprising;
- a first cone-like shaped member, said first cone-like shaped member being hollow and having an opening at one end and having a plurality of holes spaced along the periphery of the side wall thereof;

a second cone-like shaped member having a shape for being telescopically slidably received in said opening in said first cone-like shaped member for moving between a first fully extended position to a second non-extending position relative to said first cone-like shaped member, said second cone-like shaped member having a flange, extending outwardly therefrom at one end away from another end which is received in said first cone-like shaped member, for being engaged by a means for causing said bearing apparatus to both move reciprocatingly in a horizontal direction and rotate, said second cone-like shaped member having a plurality of channels along the periphery of the outer side wall, each channel located for being in alignment with each hole of said plurality of holes in said first cone-like shaped member;

spring means positioned between said first and second cone-like shaped members for urging said cone-like shaped members apart into said first fully extended position; and a plurality of plates, each plate of said plurality of plates received and slidable in individual ones of said plurality of channels and extending into a corresponding hole of said plurality of holes, each one of said channels having a tapering depth for causing said plurality of plates to project beyond the outer edge of said plurality of holes when said second cone-like shaped member is in said second non-extending position.

4,284,252

**CARTRIDGE FOR STRIP CHART RECORDERS AND METHOD OF USING SAME**

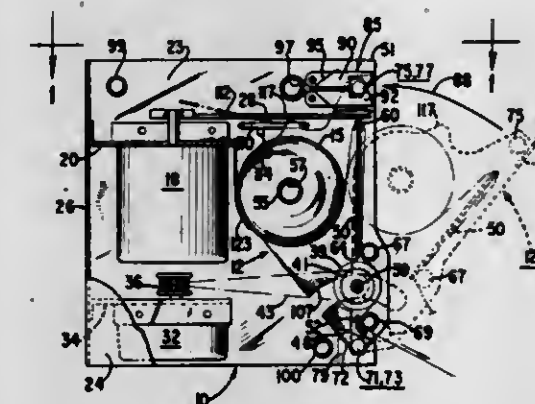
Phillip W. King, Cheshire, Conn., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 30, 1979, Ser. No. 99,169

Int. Cl.<sup>3</sup> G03B 1/04; G11B 15/32

U.S. Cl. 242—198

12 Claims



6. A strip chart recorder, comprising:  
recording means for producing a record on a record medium;  
advancing means for moving the record medium past the recording means; and  
cartridge securing means for releasably securing a cartridge carrying the record medium;  
the cartridge securing means comprising:  
support means for supporting a pivoting member of the cartridge such that the cartridge is pivotable into an operative position in the strip chart recorder; and  
latch means for engaging a hold member on the cartridge upon pivoting of the cartridge into operative position such that the pivoting member of the cartridge is releasably secured against disengagement with the socket.

4,284,253

**PNEUMATIC BRAKE ACTUATING SYSTEM**

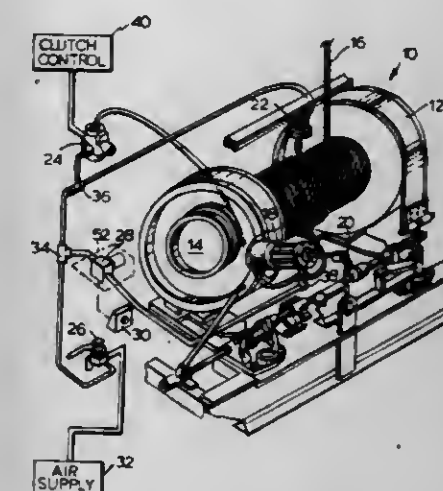
Jorge R. Uribe, Caracas, Venezuela

Filed Oct. 1, 1979, Ser. No. 80,190

Int. Cl.<sup>3</sup> B66D 1/48

U.S. Cl. 254—271

2 Claims



1. An emergency, manually-initiated override system for pneumatic brake on the hoisting drum in a drilling drawworks, said drawworks having an automatic braking system that includes an air supply, an electrical power supply, a toggle actuated valve in conjunction with the cable and hoisting drum of the drawworks responsive to an extra wrap of cable on the hoisting drum, the system comprising:

- a solenoid actuated valve disposed between the air supply of said system and the pneumatic brake of the hoisting drum, said valve normally being in a closed position;
- a first electrical switch connected between the electrical power supply and the solenoid of said emergency override valve, said electrical switch being closed to complete the circuit to provide power to the solenoid for opening the pneumatic line; and
- a second electrical switching means connected to said first electrical switching means and to said drawworks electrical power supply for disengaging the drawworks power supply from the drawworks.

4,284,254

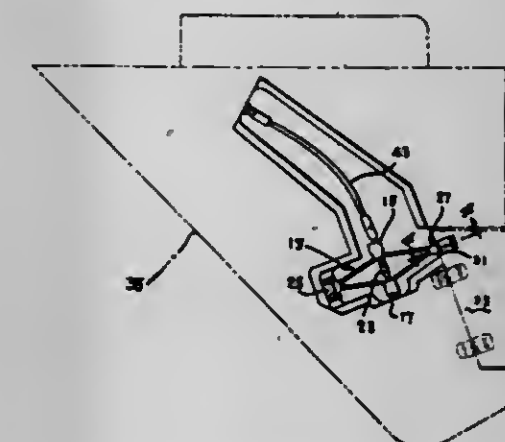
**LOW PROFILE PRECISION ACTUATOR**  
Ralph E. Rieben, Altamont, Tenn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 13, 1980, Ser. No. 121,076

Int. Cl.<sup>3</sup> B64C 13/24, 13/28

U.S. Cl. 244—75 R

4 Claims



1. A low profile precision actuator for use in a wind tunnel test of a high performance model aircraft, said actuator comprising a one-piece metallic rhombus positioned within the wing of the model aircraft, said rhombus having two side



apexes and two end apexes, one of the end apexes of said rhombus being attached to a fixed portion of the model wing, a rotatable drive assembly threadably attached to said rhombus for increasing and decreasing the distance between the side apexes of said rhombus, the other end apex of said rhombus being attached to a moveable aileron on the wing of the model to produce a movement corresponding to the rotation of said drive assembly, whereby the model aircraft can be flown through realistically simulated maneuvers to produce accurate design data for use at critical points in the maneuvering flight envelope.

4,284,255

# SHOCK ABSORBERS AND SHOCK ABSORBER STRUTS, NOTABLY FOR AERODYNE LANDING GEAR

Jean Masclet, Paris, and Jacques Veaux, Chatillon, both of France, assignors to Messier-Hispano-Bugatti (SA), Montrouge, France

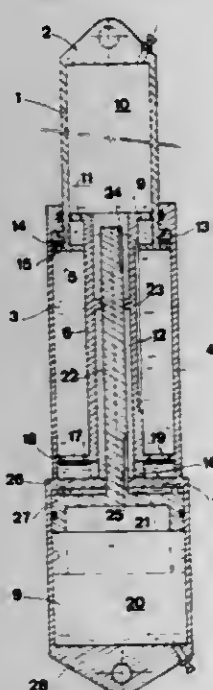
Filed Feb. 1, 1980, Ser. No. 117,657

Claims priority, application France, Feb. 6, 1979, 79 02965

Int. Cl.<sup>3</sup> B64C 25/22

U.S. Cl. 244—102 R

12 Claims



1. A suspension shock absorber for the landing gear of an aerodyne, comprising

- a cylinder including a first chamber filled with hydraulic fluid and a second chamber containing a gas under pressure and forming a high-pressure elastic return chamber; said cylinder including a transverse wall separating said first and said second chambers and a sleeve extending along the axial length of said cylinder spaced from an inner wall thereof to form a free space therebetween and connected with said transverse wall;
- a separator piston mounted to slide in a leak-proof fashion in said second chamber;
- a shock absorber shaft containing a low pressure elastic return chamber and including means mounting said shaft to slide in a leak-proof fashion in the interior of said first chamber;
- said shock absorber shaft including a shaft piston at the end thereof sliding in said free space in the interior of said first chamber between said inner wall and said sleeve and guided on said sleeve;
- at least one permanent compression-throttling orifice formed in said cylinder;
- a grooved shaft connected with said separator piston passing through said transverse wall;
- means guiding said grooved shaft in the interior of said sleeve, the base of said sleeve adjacent to said transverse wall having a radial passage larger in section than that of

said at least one permanent compression-throttling orifice; and

groove means on said grooved shaft displaceable with said separator piston so that in the event of penetration of said shock absorber shaft into said cylinder at a rate very much higher than that for which said at least one permanent compression-throttling orifice is calibrated, said separator piston is displaced in said second chamber against said gas under pressure forming said high pressure elastic return chamber by uncovering said radial passage for the passage therethrough of the hydraulic fluid in said first chamber through said groove means and conditioned for the rate of penetration of said shaft into said cylinder.

4,284,256

# SEQUENTIAL CHECKING OF RAILWAY CONTROL SIGNALS

David J. Norton, London, England, assignor to Westinghouse Brake and Signal Company Limited, London, England

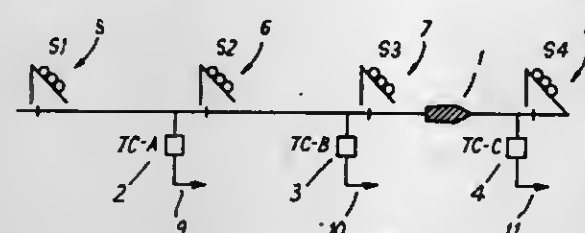
Filed May 23, 1979, Ser. No. 41,595

Claims priority, application United Kingdom, May 30, 1978, 24015/78

U.S. Cl. 246—5

Int. Cl.<sup>3</sup> B61L 27/00

10 Claims



1. Railway control apparatus for generating control signals for controlling a plurality of signalling lamps and change points in a railway system, said apparatus including input means for receiving status signals from a plurality of devices which monitor the railway system, said status signals indicating the operative conditions of the devices, a control set responsive to the indicating signals for generating control commands for governing the movement of a train in the railway system, and control command sequence checking means for checking that control commands are generated in a correct sequence with regard to the indicated movement of the train.

4,284,257

# PRECISION SURFACE GAGE

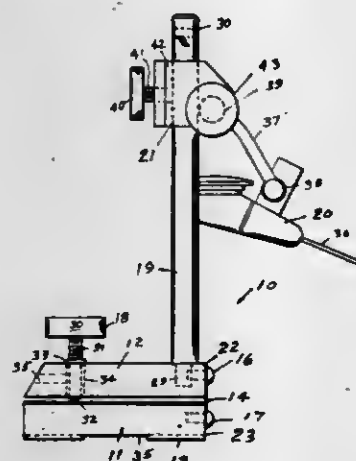
David W. Murkens, 724 Park Ave., Meadville, Pa. 16335

Filed Sep. 5, 1979, Ser. No. 72,364

Int. Cl.<sup>3</sup> A47G 29/00

U.S. Cl. 248—125

11 Claims



1. An indicator support comprising, a bottom base member (11) adapted to be supported on a supporting surface,

a top base member (12), said top base member being disposed above said bottom base member, said bottom base member having means adjacent an edge for attaching the lower edge of a leaf spring thereto, said top base member having means for attaching the upper edge of said leaf spring thereto whereby said top base member is swingably supported on said bottom base member, a vertical rod fixed to said top base member and extending upwardly therefrom, an indicator supported on said rod and slidable vertically thereon, a threaded screw extending through said top base member and engaging said bottom base member whereby said top base member is swung relative to said bottom base member and said spring is deflected whereby said indicator is swung relative to a vertical line thereby adjusting said position of said dial indicator.

4,284,258

# FESTOON SUPPORT DEVICE

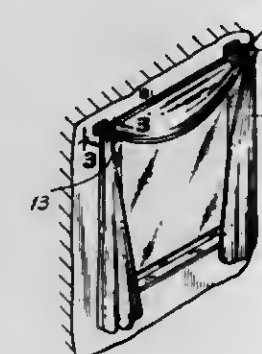
Stanley Kleiman, 15 Parson Pl., Colonia, N.J. 07067

Filed Apr. 25, 1979, Ser. No. 24,585

Int. Cl.<sup>3</sup> A47H 1/14

U.S. Cl. 248—251

6 Claims



1. A festoon support device comprising a mounting bracket, a forwardly projecting festoon support arm separately coupled at its rear to said mounting bracket, coupling rod coupling means affixed to the rear portion of said support arm and including a forwardly open socket means defined by a lateral U-shaped loop depending from and integrally formed with the rear portion of said festoon support arm for separately receiving a rearwardly directed leg of a curtain rod and an ornament mounted on the front end of said support arm.

4,284,259

# REINFORCED PULL SHEET

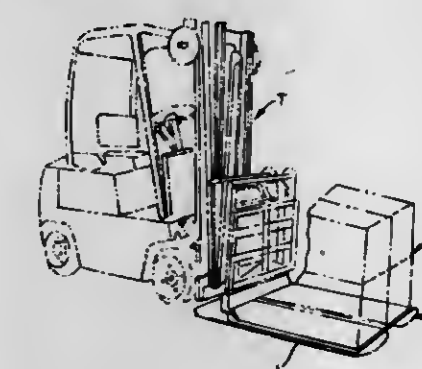
Matt L. McCaskill, Orlando, Fla., assignor to Alton Box Board Company, Alton, Ill.

Filed Mar. 5, 1979, Ser. No. 17,167

Int. Cl.<sup>3</sup> B32B 3/28; A47B 91/00

U.S. Cl. 248—346

2 Claims



1. A pull sheet for use in aiding in the application or removal

of a load on a forklift truck, and for transferring said load laden pull sheet in a multitude of directions after it has been loaded, comprising, said sheet being formed of at least as a double faced corrugated paperboard, said paperboard having a web of medium being interposed between a pair of liners, a reinforcement means for the sheet, said reinforcement means comprising a paper tape of load sustaining material and being located between the medium web and one of the liners in the said paperboard construction, said sheet including three such parallel and spacedly arranged paper tapes as reinforcement, each paper tape being approximately four to eight inches in width and extending the length of said pull sheet, one of said paper tape being aligned approximately with each side edge of the pull sheet, and the third tape extending approximately centrally along the length of said pull sheet, a first fold line formed on the pull sheet and arranged parallel to and a short distance from one edge of the said sheet to facilitate its gripping by the said truck, a second fold line provided upon the pull sheet and arranged parallel to and a short distance from another edge of the said sheet, wherein said first and second fold lines are approximately perpendicularly arranged with respect to each longitudinal other and intersect within their arrangement within the pull sheet structure, a slot formed aligned along one fold line from an edge of the pull sheet and up to the location of intersection with the other fold line to facilitate the independent bending of each fold line without interference from the other said fold line, at least one of said fold lines being provided along the length of a tape, and the other of said fold lines extending across said reinforcing tapes, and said pull sheet having dimensions to provide for its accommodation onto the fork lift of a truck, with the width and length dimensions of said pull sheet approximating respectively three to five feet.

4,284,260

# AUTOMATIC DISCHARGE VALVE FOR LIQUIDS

Nicolas Baranoff, Arenales St. 2636, 1602 Florida (Province of Buenos Aires), Argentina

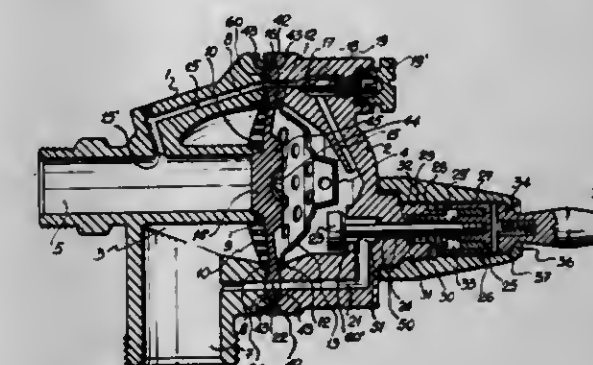
Filed Sep. 12, 1978, Ser. No. 941,844

Claims priority, application Argentina, Sep. 15, 1977, 269209; Sep. 15, 1977, 269210

Int. Cl.<sup>3</sup> F16K 31/145

U.S. Cl. 251—45

7 Claims



1. In an automatically discharged valve for liquids, comprising a first housing portion, a second housing portion, and a circular diaphragm, having a central sealing portion, therebetween, said first and second housing portions being made of rigid materials and said diaphragm being made of elastomeric material, wherein said first housing portion includes concentric intake and discharge pipes, said intake pipe being sealable by said central portion of said diaphragm and said intake and discharge pipes communicating with a first hollow space when said diaphragm does not seal said intake pipe, and wherein said second housing portion includes a second hollow space therein on the side of said diaphragm opposite said first hollow space, the valve further including first channel means, crossing a peripheral zone of said diaphragm, for intercommunicating said second hollow space and said intake pipe; a flow restrictor within said first channel means; second channel means, crossing a peripheral zone of said diaphragm, for intercommunicat-



ing said second hollow space and said discharge pipe; and sealing means for releasably sealing said second channel means from said second hollow space, said sealing means including a sealing plug at least the sealing surface of which being made of elastomeric material, a piston connected to said sealing plug, a guide channel in said second housing portion in which said piston is guided, and externally actuatable release means connected to said piston for causing said plug to move between sealing and non-sealing positions, wherein said guide channel has a first portion having a first cross-sectional area, intercommunicating said second hollow space and said second channel means when said plug is not in the sealing position, and a second portion, of cross-sectional area smaller than said first cross-sectional area, surrounding the remainder of said piston, the improvements wherein:

- (a) said first channel means has a first span, in communication with said intake pipe, forming an angle of greater than 90° with the direction of liquid flow in said intake pipe, when the valve is open in use, thereby directing the liquid upstream, and a second portion intercommunicating said first span and said second hollow space, whereby the probability of any particles in the liquid flow entering said first channel means is substantially diminished;
- (b) the end of said first portion of said guide channel of said sealing means, opposite the end opening into said second hollow space, has the shape of a truncated cone, the smaller basis of which is closer to said end opening into said second hollow space, whereby any leakage through said second portion of said guide means is substantially eliminated;
- (c) said diaphragm has a peripheral flat circumferential edge which is sealed between said first and second housing portions and having passages therein for said first and second channel means, the zones of said circumferential edge surrounding said passages having slight thickenings, and a portion, between said central sealing portion and said peripheral edge, in the shape of the shell of a truncated cone, and wherein said central sealing portion comprises a central thickening having the shape of a truncated cone on the side facing said intake pipe and a concavity surrounded by a reinforcement ring on the opposite side, whereby improved sealing and seating of the diaphragm is obtained; and
- (d) all zones surrounding holes provided in flat surfaces of rigid material in contact with flat surfaces of elastomeric material are provided with annular projections concentric with, but having a diameter larger than, the holes, said projections emerging from either the surface of rigid material or the surface of elastomeric material, whereby improved sealing at said zones is obtained.

4,284,261

## STROKE ADJUSTMENT FOR VACUUM MOTOR

Benjamin C. Benjamin, Flint, and Charles A. Detweiler, Durand, both of Mich., assignors to Schmelzer Corporation, Flint, Mich.

Filed Jul. 23, 1979, Ser. No. 59,997

Int. Cl.<sup>3</sup> F16K 31/126; F15B 15/24

U.S. Cl. 251—60

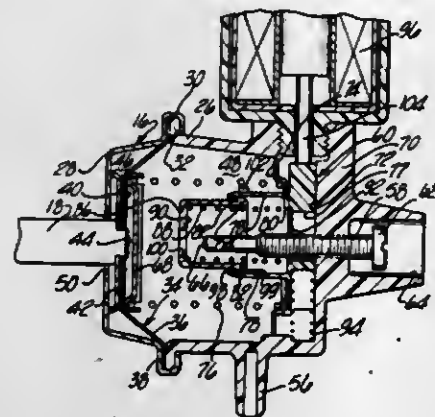
9 Claims

1. A vacuum motor for controlling a carburetor choke valve comprising:

- a housing, a movable wall forming a control chamber in said housing at one side of said movable wall, an output member connected to the other side of said movable wall and to a carburetor choke valve, said wall being movable in response to vacuum pressure in said control chamber to move said output member and choke valve toward an open position,
- stop means formed in said housing and being engageable with said wall to limit movement of said wall and determine the length of stroke of said output member,
- stroke modifying means movable to a first position between

said stop means and said wall to limit movement of said wall to a first predetermined position,

said stroke modifying means being movable transversely of the direction of movement of said movable wall between said first position and a second position in which said stroke modifying means is disposed to one side of said stop means,



means biasing said stroke modifying means toward said second position, and

control means operable to maintain said stroke modifying means in said second position to permit movement of said movable wall to a second predetermined position to move said choke valve to a more fully open position.

4,284,262

## MAGNETICALLY ACTUATED STOPPER VALVE

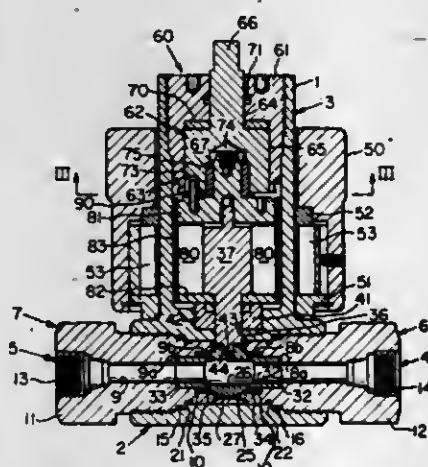
Robert F. Ruyak, Erie, Pa., assignor to Autoclave Engineers, Inc., Erie, Pa.

Filed May 17, 1979, Ser. No. 39,900

Int. Cl.<sup>3</sup> F16K 31/08

U.S. Cl. 251—65

16 Claims



1. A valve comprising
- a pressurizable valve body having two fluid passages and a central space between said passages,
- a rotatable stopper positioned within said central space having an opening therethrough which may be brought into registry or out of registry with the fluid passages,
- a nonmagnetic tubular pressurizable bonnet having an extended axis passing through the central space and rotatable stopper, said bonnet having a closed end away from the central space,
- said valve body and bonnet defining a central opening connecting the interior of the bonnet and the central space,
- a cylindrical drive magnet holder coaxial with and surrounding said tubular bonnet, said holder mounted rotatably thereto, said holder carrying rare earth cobalt magnets defining an even number of north and south magnetic poles,
- a rotatable control shaft projecting through said central opening, said shaft engaging said stopper such that turning

the shaft turns the stopper, said shaft having mounted thereto driven magnet assembly comprising rare earth cobalt magnets defining an equal number of north and south magnetic poles such that when the cylindrical holder is turned, the driven magnet assembly and control shaft will follow,

the control shaft and mounted driven magnet assembly being rotationally supported in the bonnet substantially coaxial therewith by thrust bearings to resist the axial movement of the shaft,

valve seats associated with each fluid passage in said valve body and being hollow cylindrical shapes coaxial with said fluid passages, said seats having axial ends shaped to sealably engage said stopper, means for securing each valve seat against the said stopper, and

an independent means for direct mechanical actuation of said control shaft and driven magnet assembly such that the control shaft and driven magnet assembly freely turn through about 90° by magnetic actuation without interference by said independent means.

4,284,263

## TEMPERATURE-COMPENSATED CONTROL VALVE

Clive V. Newcomb, Horley, England, assignor to U.S. Philips Corporation, New York, N.Y.

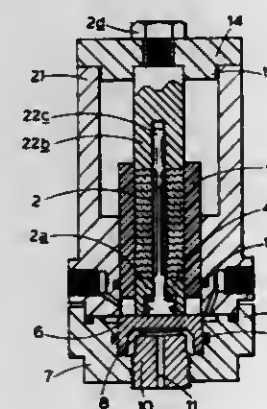
Filed May 7, 1979, Ser. No. 36,617

Claims priority, application United Kingdom, May 8, 1978, 18209/78

Int. Cl.<sup>3</sup> F16K 31/02

U.S. Cl. 251—129

3 Claims



1. A temperature-compensated control valve comprising an actuating member having a fixed end and a free end, including an elongate piezoelectric element arranged in a longitudinal direction; a housing surrounding the actuating member and having a closed end connected to said fixed end, and a seat end; an inlet duct and an outlet duct; a movable body arranged to control communication between said ducts responsive to reciprocation of the body longitudinally with respect to said seat end; and means for reciprocating the movable body responsive to movement of the free end of the actuating member,

wherein between said closed end and said seat end the housing has a coefficient of thermal expansion greater than the coefficient of thermal expansion of said piezoelectric element, and said member comprises a spacer arranged longitudinally at one end of the element, and formed of a non-piezoelectric material having a coefficient of thermal expansion greater than the coefficients of thermal expansion of the housing and piezoelectric element, the length of composition of the spacer being selected such that the actuating member has a coefficient of expansion equal to that of the housing.

4,284,264

## BUTTERFLY VALVES

Folke H. Hubertson, Sjöfö, Sweden, assignor to Aktiebolaget Somas Ventiler, Sjöfö, Sweden

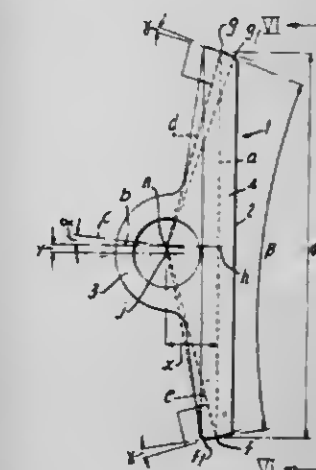
Filed Jun. 17, 1980, Ser. No. 160,148

Claims priority, application Sweden, Jan. 17, 1980, 8000318  
The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> F16K 1/22

U.S. Cl. 251—305

8 Claims



1. Butterfly valve comprising a valve housing including a valve seat and a throttle arranged to be turned around a stem going through the valve housing between an open position and a shut-off position in which a seal face on the throttle is pressed against the seat in the valve housing, the seal face having two opposite, essentially spherical shaped sections intersected by a symmetry plane through the throttle coinciding with the torsional axis of the throttle, and two essentially conically shaped sections on each side of said symmetry plane between the two essentially spherical shaped sections, the essentially spherical and the essentially conical sections successively merging into each other, a curve around the circumference of the throttle having essentially the shape of a circle, and being the sealing line of the throttle said sealing line defining approximately a plane which is offset from said torsional axis, and a seat which is displaceable in the plane thereof so that the seat when the throttle is pressed against same essentially without sliding can adopt itself to the shape of said essentially circular curve extending around the circumference of the sealing face, and said seat can also adopt a proper orientation in the plane of said curve.

4,284,265

## DUAL DRIVE SYSTEM FOR DRAGLINE WITH POWER INTERLOCK

James G. Morrow, Sr., Manitowoc, Wis., assignor to The Manitowoc Company, Inc., Manitowoc, Wis.

Continuation-in-part of Ser. No. 18,106, Mar. 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 835,871, Ser. No. 99,916

Int. Cl.<sup>3</sup> B66D 1/26

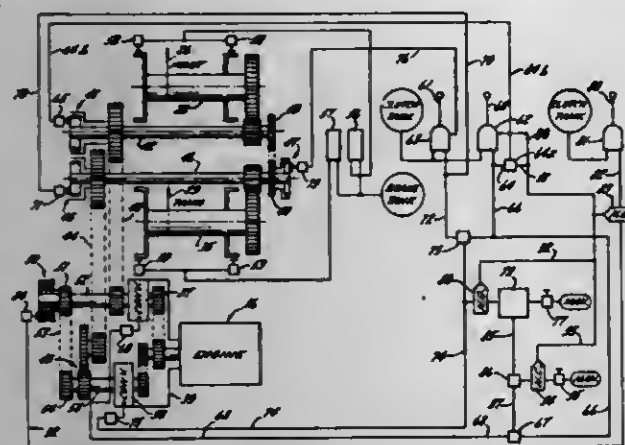
U.S. Cl. 254—317

12 Claims

1. A split drive system for a dragline having a hoist drum and a drag drum comprising, in combination, a power source, means including a first torque converter having an output shaft and a first selectively engageable clutch for interconnecting said power source and said hoist drum, means including a second torque converter having an output shaft and a second selectively engageable clutch for interconnecting said power source and said drag drum, power interlock control means for selectively coupling said output shafts together, hoist control means movable in one direction for engaging said first clutch and for modulating said first and second torque converters, drag control means movable in one direction for engaging said



second clutch and for modulating said second torque converter, control means for automatically rendering said drag control means operative when moved in said one direction for



progressively modulating said second torque converter up to a predetermined output level and then progressively modulating said first torque converter up to another predetermined output level.

4,284,266

# METALLURGICAL VESSEL CAPABLE OF RECEIVING FLUIDS IN SEPARATE FLOW PATHS WHILE PIVOTING

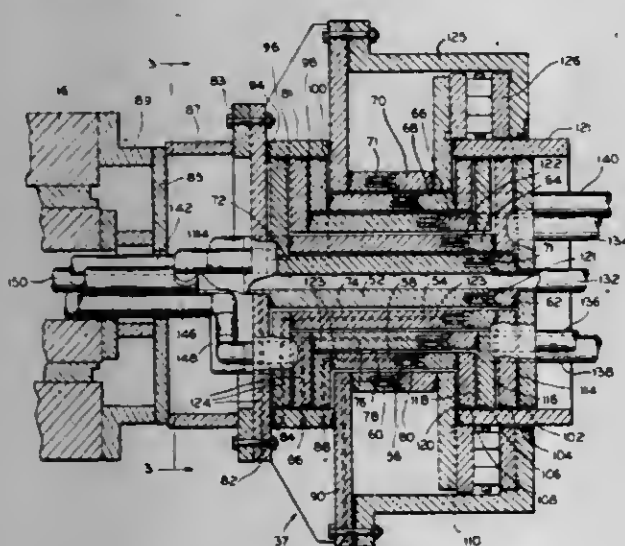
Rashed N. Nagati, Mars, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Mar. 17, 1980, Ser. No. 131,255

Int. Cl.<sup>3</sup> C21C 5/50

U.S. Cl. 266—246

12 Claims



1. A metallurgical vessel having a plurality of tuyeres extending therethrough,

a trunnion support coupled to said vessel and a plurality of trunnion pin means extending from said support for being rotated to tilt the vessel about a generally horizontal axis, one of said trunnion pin means having an axial opening formed therein,

rotary joint means including first and second portions, the first portion of said rotary joint means including a plurality of concentric, annular members spaced apart radially from each other and affixed to said one trunnion pin means for rotation therewith,

the gaps between said plurality of members defining a plurality of axially extending and radially spaced apart flow passages,

the second portion of said rotary joint means including means for closing said plurality of flow passages and being in a relative rotary sealed relation to said first portion,

a first plurality of passageway means formed in said first rotary portion means and extending at an angle relative to said tilt axis,

each of said first plurality of passageway means being connected to a different one of the passages of flow passages, a first plurality of pipe means, each pipe means of said first plurality being connected to a different one of said first plurality of passageway means and extending toward said trunnion pin means, said pipe means converging toward said tilt axis for passing individually through the axial opening in said trunnion pin means, at least some of said first plurality of pipe means being connected to said tuyere means,

a second plurality of passageway means formed in said second rotary joint portion and each being in communication with a different one of said first plurality of flow passages, a second plurality of pipe means, each pipe means of said second plurality being connected to a different one of said passageway means,

whereby each of said second plurality of passageways may be connected to a different source of process fluid for said vessel.

4,284,267

# VARIABLE CONTOUR VICE JAW

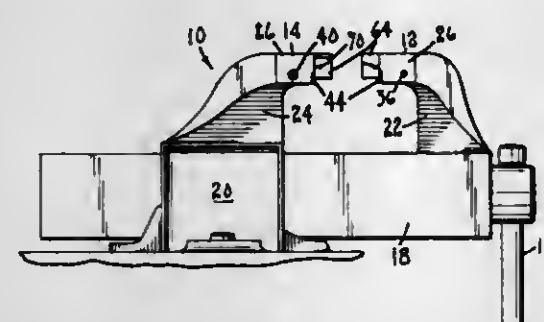
Ronald D. Marben, 1101 E. 132nd St., Burnsville, Minn. 55337, assignor to Dennis M. Thayer; Ronald D. Marben; Ralph DeJarlais and Edward DeJarlais, all of Minneapolis, Minn.

Filed Mar. 26, 1980, Ser. No. 134,077

Int. Cl.<sup>3</sup> B25B 1/24

U.S. Cl. 269—266

18 Claims



1. A variable contour vice jaw, comprising:

(a) a housing having a front face and a plurality of bores extending through said front face;

(b) a plurality of piston members each having first and second ends, sized to be received within said bores with said first end extending through said front face, a portion of each piston member being truncated, between said first and second ends;

(c) stop means removably affixed to said housing for engaging said end point of said truncated portion whereby said piston members are prevented from sliding out of said bores; and

(d) means for interconnecting said bores to provide a closed hydraulic system in operative relationship with said piston members; and

(e) means for injecting fluid into said hydraulic system.

4,284,268

# PATIENT SUPPORT TABLE WITH ADJUSTABLE STIRRUPS

Robert O. Gauthier, Two Rivers, Wis., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Aug. 17, 1979, Ser. No. 67,597

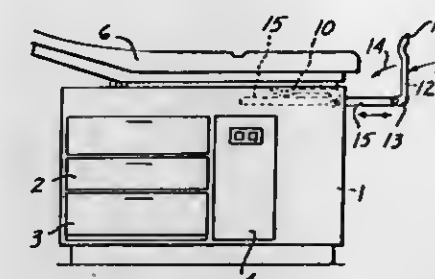
Int. Cl.<sup>3</sup> A61G 13/00

U.S. Cl. 269—328

16 Claims

1. A patient support table wherein the improvement comprises: a pair of swivel supports that can independently swivel in a generally horizontal direction; a limb support bar connected to each swivel support at a longitudinally sliding joint; a limb receiver secured at a fixed location to each limb support bar; and wedge means on each swivel support for longitudi-

nally adjusting the effective length of the limb support bar; and a swivel lock on the table slidably receiving each bar with sufficient clearance to permit a wedging action between the



bar and swivel support, whereby the bar is locked against both longitudinal and swivel motion when a patient's limb is placed on the limb receiver.

4,284,269

# DOCUMENT FEEDER FOR DOCUMENT-HANDLING MACHINE

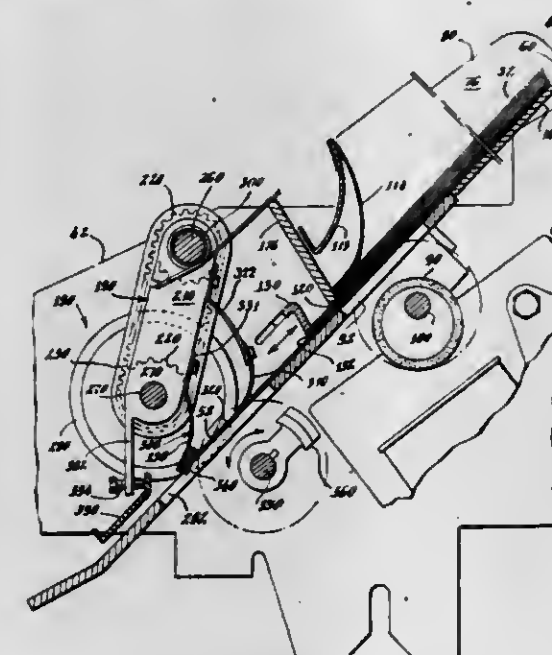
Vladimir Ignatjev, Norwalk, Conn., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 27, 1979, Ser. No. 52,501

Int. Cl.<sup>3</sup> B65H 3/52

U.S. Cl. 271—122

10 Claims



1. Document-feeding apparatus comprising

a tray for supporting a stack of documents for processing, said tray having a top surface and a bottom surface and a long axis,

a first roller disposed adjacent to the top surface of said tray, and a second roller disposed adjacent to the bottom surface of said tray, said rollers being mounted for rotation in a plane parallel to said long axis,

said rollers being mounted in operative relation with each other and positioned so that, over at least a portion of their paths of rotation, they contact each other through an opening in said tray, the surface of said second roller having a greater coefficient of friction than the surface of said first roller whereby, when said rollers contact each other, said second roller causes the document at the bottom of the stack to feed between the rollers to an operating station,

said first roller being part of an assembly which includes support means freely rotatable on a first shaft disposed transverse to said tray, said first roller being coupled to and rotated by said shaft,

a generally U-shaped bracket mounted adjacent to said first roller assembly, and

a shock absorber comprising a rubber strip securely seated in said U-shaped bracket and having an end secured to said

assembly whereby any mechanical shocks suffered by said assembly are absorbed by said rubber strip.

4,284,270

# STACK FOR BOTTOM SHEET FEEDER

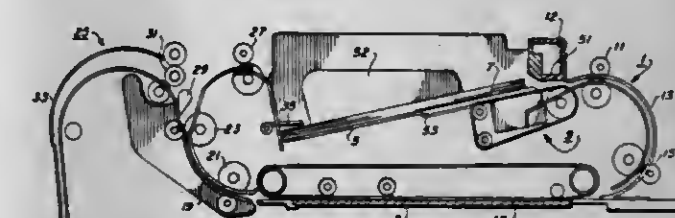
Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 3, 1979, Ser. No. 81,596

Int. Cl.<sup>3</sup> B65H 1/24, 3/12

U.S. Cl. 271—166

4 Claims



1. A bottom sheet separator-feeder for separating and forwarding sheets seriatim comprising;

a stack tray adapted for supporting a stack of sheets to be fed, said tray having a depressed pocket formed therein such that the major portion of the stack weight is supported by the edge portions of said pocket to provide a seal between the sheets and the edge portions of said pocket;

vacuum feed means disposed beneath said tray adapted to pull the bottom sheet in the stack into said pocket and feed the sheet from beneath the sheet stack; and,

air injection means disposed adjacent the front of said tray to inject air between the bottom sheet in the stack on said tray and between adjacent sheets in the stack, movement of the bottom sheet in the stack into said pocket by said vacuum feed means causing a pocket shaped depression in the bottom sheet, thereby providing a space between the bottom sheet and the remainder of the stack for receiving air from said air injection means to provide improved air flow over the top of the bottom sheet to support the remainder of the stack spaced from the bottom sheet.

4,284,271

# HEXAGONAL JOGGING PLATFORM

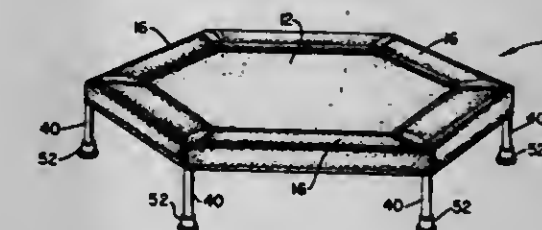
John E. Pettit, 18219 - 46th Pl. South, Seattle, Wash. 98188, and Thomas L. Pettit, 12112 52nd Ave. East, Tacoma, Wash. 98446

Filed Mar. 15, 1979, Ser. No. 20,739

Int. Cl.<sup>3</sup> A63B 23/04, 5/18

U.S. Cl. 272—70

1 Claim



1. A hexagonal jogging platform comprising: a generally hexagonally shaped, horizontally disposed frame; a flat, hexagonally shaped bed of flexible material disposed concentrically within said frame and having margins thereabout spaced from said frame; a series of spring means under tension interconnecting said bed margins and frame along the six sides thereof, respectively; leg support means depending from said frame at the six angles thereof; and hexagonally shaped pad means overlying and covering said spring means between said frame and bed margins; said frame being shaped to have external, rounded corners thereon at each of the six angles thereof and being of integral, one-piece construction; said series of spring



means comprising six sets of six equispaced coil springs, each of said coil springs having integral hooked attaching ends thereon, each hooked end being bent from said coil spring at a point coincident with a central axis defined centrally through the coil of said coil spring whereby load is applied to said coil spring evenly and centrally therealong to prolong spring life; each of said support leg means comprising a tubular leg, means threadably detachably interconnecting said frame and leg, means defining a lateral bore through said leg for matingly receiving a hand held tool for rotating said leg, a protective tip fitted onto and over a lower end of said leg, and a flat circular insert within said tip having an external diameter the same as that of said leg and retained against said leg lower end solely by said tip, said insert preventing damage to said tip due to a force applied by said leg lower end therewithin.

4,284,272

## EXERCISE MACHINES

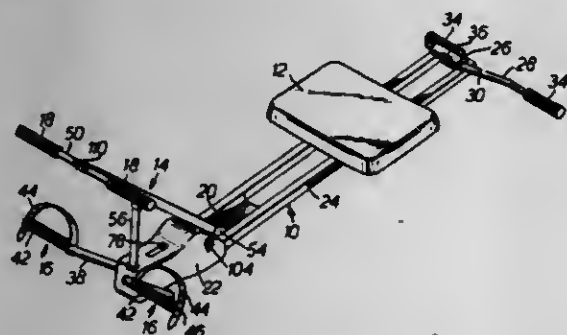
Harold R. Evans, and Ian J. Cunningham, both of Jersey, Channel Islands, assignors to Tekron Licensing B.V., De Leersum, Netherlands

Filed Feb. 9, 1979, Ser. No. 10,615

Claims priority, application United Kingdom, Feb. 10, 1978, 5499/78; Aug. 7, 1978, 32501/78; Aug. 7, 1978, 32506/78  
Int. Cl.<sup>3</sup> A63B 69/06

U.S. Cl. 272-72

4 Claims



1. In an exercise machine comprising a frame, a foot rest and a seat, both mounted on the said frame in such a way that the said seat is movable generally horizontally longitudinally towards and away from said foot rest, a stem bar, a handle mounted in the vicinity of the upper end of said stem bar, means for connecting said stem bar at its lower end to said frame for moving said handle along an arcuate path in an upright longitudinally extending plane, wherein at a position intermediate the ends of the arcuate path said handle lies at a level substantially higher than the level of said foot rest and said seat, and resisting means for opposing movement of said handle away from said foot rest, the improvement comprising: flexible elongate tension-bearing means for interconnecting said resisting means and said stem bar and for transmitting the resisting force from said resisting means to said stem bar, wherein said resisting means is longitudinally spaced from said lower end and mounted to said frame substantially at the level of said foot rest, and wherein said tension bearing element is connected to said stem bar between said upper and lower ends at a distance spaced from said lower end so that said tension-bearing means acts in a generally horizontal direction parallel to said stem bar as said handle approaches the end of said arcuate path upon movement away from said foot rest so as to reduce the force exerted by said resistance means in opposition to movement of said handle; wherein said resisting means comprises a flexible elongate friction element connected to said elongate flexible tension-bearing means for movement with said handle; biasing means acting on said flexible friction element for urging said handle toward said foot rest, and means for guiding said flexible friction element for producing substantial frictional resistance to movement of said flexible friction element and thereby said handle when said handle is pulled away from said foot rest in opposition to said biasing means, thereby creating increased tension in said

flexible tension element, and for producing relatively little frictional resistance to movement of said friction element when said handle moves toward said foot rest and said tension is reduced, wherein the guiding means comprises a series of fixed guide elements arranged to constrain said friction element to follow an undulating path.

4,284,273

## APPARATUS FOR RAKING AND LEVELLING SAND IN A PIT

Otto H. J. Gansewig, Tegelkuhl 10, 2053 Schwarzenbek, Fed. Rep. of Germany  
Continuation of Ser. No. 846,130, Oct. 27, 1979, abandoned, which is a continuation of Ser. No. 619,252, Oct. 3, 1975, abandoned. This application Jan. 3, 1980, Ser. No. 109,453  
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1974, 2448830

Int. Cl.<sup>3</sup> A63B 5/00

U.S. Cl. 272-101

4 Claims



1. Apparatus for horizontally aligning the surface of sand contained in a rectangularly shaped pit, particularly of a jumping pit, comprising guide means composed of two parallel elements aligned horizontally with respect to each other, said elements positioned on opposite longitudinal sides of said pit, a frame horizontally mounted on rollers extending between said guide means and reciprocally movable on said guide means, a perforated skimming device mounted longitudinally on said frame constituted by a plurality of sections wherein at least one section is aligned at right angles to the direction of movement of the frame and at least two sections are arranged at an angle to the alignment of said one section, said sections having a horizontal edge section converging into a ridge to contact sand in the pit and a rake mounted longitudinally on said frame constituted by two rows of transversely staggered blades with a wide side of each blade at an angle to the direction of movement of the rake, said blades of the two rows being aligned with mutually opposite angles mounted on said frame, said blades in each row being positioned at spaced intervals.

4,284,274  
EXERCISE DEVICE

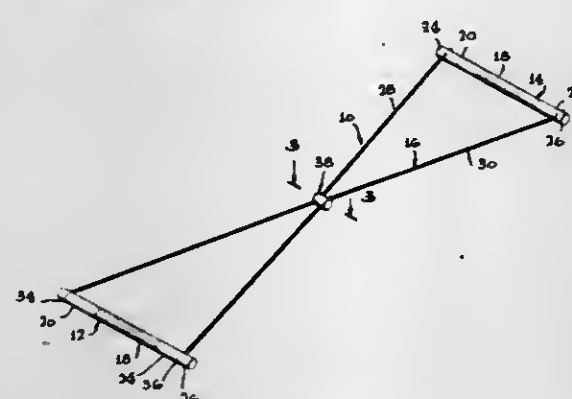
Nathaniel L. Boothe, 7004 Batavia Way, Riverside, Calif. 92503

Filed Dec. 7, 1979, Ser. No. 101,260

Int. Cl.<sup>3</sup> A63B 21/28

U.S. Cl. 272-116

7 Claims



1. An exercise device comprising: first and second bars, each of said bars having a grip area dimensioned to be grasped by two human hands adjacent each other;

a tension member comprising first and second cords each having a respective pair of cord ends, said cords being secured at their said ends to said bars; and lock means for locking said cords together intermediate their ends for preventing relative longitudinal motion of said cords.

4,284,275

## POLYURETHANE GRIPPING MATERIAL

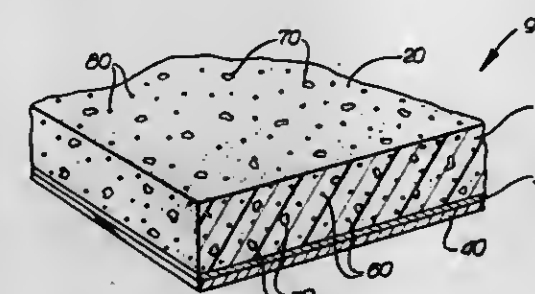
Herbert E. Fletcher, 34807 Calle Del Sol, Capistrano Beach, Calif. 92624

Filed Oct. 11, 1979, Ser. No. 83,572

Int. Cl.<sup>3</sup> B29D 27/04

U.S. Cl. 273-75

7 Claims



1. A method of producing a sheet of flexible resin gripping material having a plurality of pores in the surface thereof comprising the steps of:  
a. forming a sheet of hardenable resin material;  
b. sprinkling said sheet while it is in a softened state with a granular substance of the general size and configuration of ordinary table salt;  
c. allowing said sheet to harden;  
d. removing a portion of the upper surface of said sheet, thereby exposing some of said granules and forming a smooth upper surface;  
e. removing said exposed granules, thereby forming a plurality of pores in the surface of said sheet, wherein said pores are of the general size and configuration of ordinary table salt so as to act as suction devices when in contact with skin.  
7. A handle covered with the material formed by the method of claim 1.

4,284,276

## GROOVED GOLF BALL

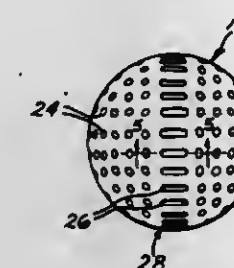
Joseph C. Worst, 3606 Nandina Dr., Louisville, Ky. 40222

Filed Feb. 13, 1980, Ser. No. 121,030

Int. Cl.<sup>3</sup> A63b 37/14

U.S. Cl. 273-232

14 Claims



1. A golf ball in the shape of a sphere having in its outer surface a plurality of spaced dimples which substantially cover the outer surface, the invention comprising:  
a. at least one elongated groove on the outer surface of the ball which encompasses at least two of the said dimples for use in interlocking with the striking face of a golf club;  
b. the groove having a transverse width dimension substantially the same as the width of a dimple;  
c. the groove having a generally uniform transverse cross

section substantially the same as the transverse cross section of a dimple;  
d. the groove having reduced ends.

4,284,277

## KICK BALL GAME AND APPARATUS KIT THEREFOR

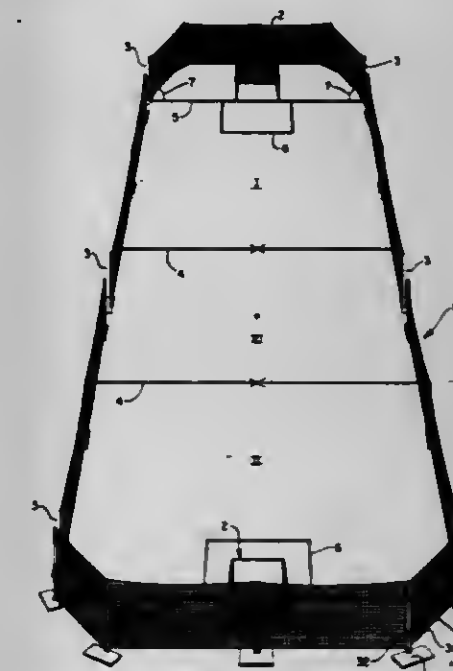
David J. Leonard, and Lanita Leonard, both of 5520 S. Sheridan Rd., Muskegon, Mich. 49444

Filed Sep. 11, 1978, Ser. No. 941,306

Int. Cl.<sup>3</sup> G09B 71/02

U.S. Cl. 273-411

3 Claims



1. A kickball game, to be played by opposing teams, including a substantially closed playing surface bounded on all sides by a fence like barrier, the improvement comprising, said fence like barrier being portable and including a plurality of vertical poles any adjacent two of which define a barrier section, and a net member comprising a flexible fabric like material in sheet form, attachment means on said poles for detachably securing said net member thereto at spaced intervals along the length of each of said poles, base portions for said poles, each of said poles being detachably secured to a respective base portion and while secured thereto being in fixed vertical position, each of said base portions being substantially flat on at least the ground surface thereof and being of sufficient square surface area and weight to support a respective one of said poles, said poles being attached to said respective base portions at an edge thereof whereby the base portion is outside the said playing surface entirely.  
said net member being a one quarter inch synthetic polymer fabric of open mesh construction and the mesh size being approximately two inches square such that the net member weight and degree of resiliency is sufficient to keep a ball in play following impact therewith at any angle, said net member being approximately four feet high and extending upwardly the full height thereof along each of said poles beginning approximately at the juncture of each of said poles and a respective base portion.



4,284,278

## FLYING TOY

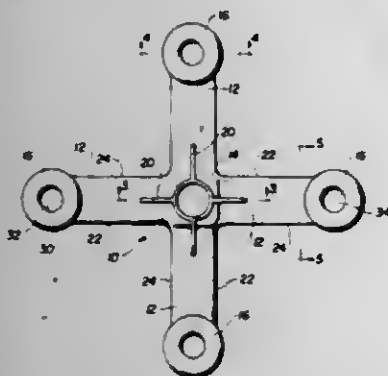
Joseph Bradford, 11145 Cyprus Glenn Ave., Baton Rouge, La. 70807

Filed Mar. 18, 1980, Ser. No. 131,319

Int. Cl.<sup>3</sup> A63B 65/08

U.S. Cl. 273-426

5 Claims



1. In a flying device of the boomerang type having a central vertical axis, a center portion symmetrically disposed about the central axis, and at least three substantially identical wing portions equiangularly spaced about the central axis and extending radially outward from the center portion in a horizontal plane, the improvement wherein each wing portion carries at its outer end an annular-shaped stabilizer having: concentrically arranged, horizontally disposed, inner and outer edges, an annular bottom surface extending between the inner and outer edges; and a convex annular top surface extending between the inner and outer edges; wherein the inner edge defines a center opening extending through the stabilizer between the top and bottom surfaces, and the bottom surface of the stabilizer deviates less than the top surface from the horizontal plane of outer edge in a vertical direction, whereby, during flight of the device, the stabilizer acts as an airfoil to provide additional lift, and air flowing upward through the center opening acts to stabilize the adjoining wing portion.

4,284,279

## PHONOGRAPH RECORD PLAYER

Yoshihisa Mori, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

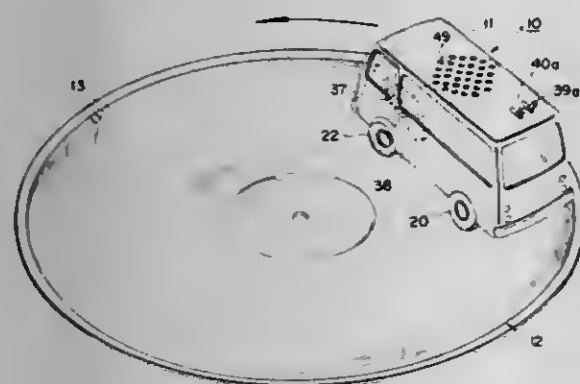
Filed Feb. 14, 1980, Ser. No. 121,508

Claims priority, application Japan, Feb. 21, 1979, 54/20186[U]

Int. Cl.<sup>3</sup> G11B 3/02, 25/04

U.S. Cl. 369-63

8 Claims



1. A record player for use on a stationary phonograph record disc having a surface on which signals are recorded in a spiral sound groove comprising: a freely movable body adapted to be steerably supported on said surface of the record disc for random movement in respect to the latter; drive means operatively associated with said randomly movable

able body for propelling the same relative to said surface of the record disc; sound pickup means associated with said freely movable body for reproducing the signals recorded in said groove as said freely movable body is propelled; and a guide assembly mounted on said freely movable body for guiding the same in a generally circular path along said sound groove, including: a support member pivotally mounted on said freely movable body for pivotal motion relative to the latter about a pivot axis on said body, a guide member mounted on said support member to engage said sound groove and to control the direction of propulsion of said freely movable body, and a guide wheel mounted on said support member for rotation about an axis so as to roll on the record disc and at least partially to support said freely movable body thereon at the forward end portion of said body considered in respect to the direction of said propelling thereof, the improvement wherein said axis of rotation of said guide wheel is displaced from said pivot axis of the support member as to be disposed ahead of said pivot axis in respect to said direction in which the freely movable body is propelled, and said guide member is also disposed ahead of said pivot axis so that said guide wheel is made to urge the freely movable body toward the center of said record disc as said body is propelled along said groove and a reaction on said guide wheel urges said guide member toward said center to compensate for centrifugal forces tending to disengage said guide member from said groove.

4,284,280

## SEALING FOR MACHINE ELEMENTS WHICH MOVE BACK AND FORTH

Claus Bertram, Waltrop, and Georg M. Lorenz, Königstein, both of Fed. Rep. of Germany, assignors to O &amp; K Orenstein &amp; Koppel Aktiengesellschaft and Lorenz GmbH, Berlin, Fed. Rep. of Germany

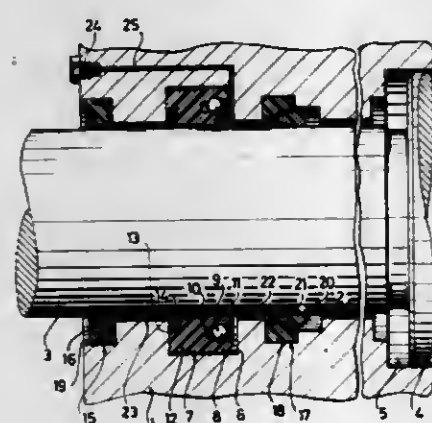
Filed Oct. 19, 1979, Ser. No. 86,481

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845920

Int. Cl.<sup>3</sup> F16J 15/32

U.S. Cl. 277-27

6 Claims



1. In a sealing for back and forth moving machine elements, particularly for the sealing of axially back and forth moving piston rods for hydraulic cylinders, with a seal which seals against a housing as well as against the axially back and forth moving piston rod, an additional sealing protection element arranged between the seal and the oil pressure chamber of the cylinder, and a stripper turned toward the atmosphere, the improvement wherein

the additional sealing protection element comprises a preceding protection element formed with a lip, said lip being directed toward said oil pressure chamber, the seal constitutes a lip seal, the latter in cooperation with and between the piston rod, the housing and said preceding protection element define another oil chamber,

said back and forth moving piston rod and said housing constitute relatively moveable elements, said lip of said preceding protection element contacts one of said relatively moveable elements and is formed with openings, said openings form a connection between said pressure oil chamber and said another oil chamber between said preceding protection element and said lip seal.

4,284,281

## JOINT SEALING STRUCTURE

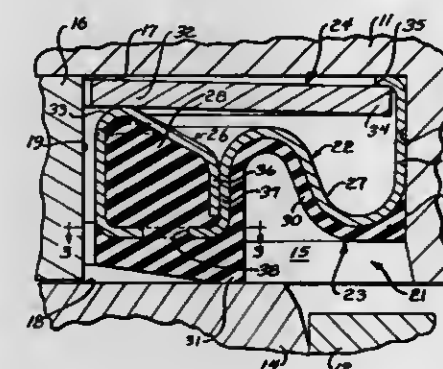
Harold L. Reinsma, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 19, 1980, Ser. No. 174,391

Int. Cl.<sup>3</sup> F16J 15/32, 15/36

U.S. Cl. 277-84

10 Claims



1. In a joint (10) including a first member (11) defining a cylindrical axially outwardly opening recess (15) having an axially outer surface (17) and a radially inner, circumferential surface (20), a second member (14) adjacent said first member and defining a sealing surface (18) confronting said recess, said members being associated to have relative rotational movement about the axis of the recess and relative movement toward and from each other along said axis, an improved sealing structure (21) in said recess movably sealing said members, comprising:

an annular seal (23) having a radially outer base portion (29) received coaxially in said recess (15), an annular sealing portion (28) defining a lip (31) sealingly engaging said confronting sealing surface (18), and a flexible connecting portion (30) extending between said base portion (29) and sealing portion (28) for movably supporting said sealing portion;

a flexible annular diaphragm (22) having a radially outer base portion (25) received coaxially in said recess (15) axially outwardly of said seal base portion and in sealing engagement with said circumferential surface (20) of said recess, a stiffener portion (26) operatively connected to said seal sealing portion (28) and defining an axially outer portion (33) exposed axially outwardly of said seal sealing portion (28), and said axially flexible connecting portion (27) extending between said diaphragm base (25) and sealing portion (28) axially outwardly of said seal connecting portion (30); and

spring means (24) coaxially in said recess and acting between said first member and said stiffener portion to urge said lip into maintained movable sealed engagement with said confronting surface.

4,284,282

## SEALING GASKET

Klaus Lönne, Burscheid, Fed. Rep. of Germany, assignor to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,512

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906127

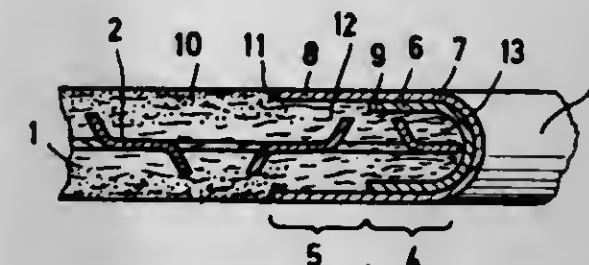
Int. Cl.<sup>3</sup> F16J 15/06

U.S. Cl. 277-235 B

4 Claims

1. In a sealing gasket having a soft-material plate provided with a throughgoing opening; a sheet metal frame surrounding

the opening and formed of an inner and at least one outer superposed sheet metal border flange having a U-shaped cross section; each border flange having legs arranged at opposite faces of the plate along edge zones of said opening; the im-



4,284,283

## EXPANSIBLE CHUCK

Vid Stermann, St. Georgen, Fed. Rep. of Germany, assignor to Tobler S.A. Mecanique de Precision Franco-Suisse, Louvrea, France

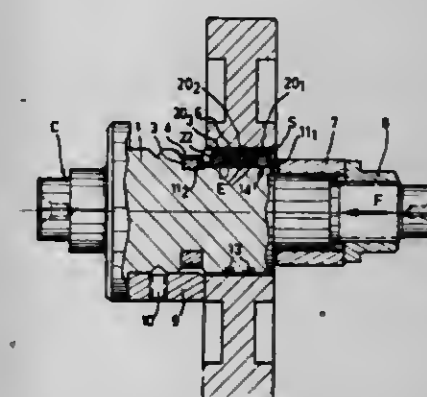
Filed Jul. 3, 1979, Ser. No. 54,629

Claims priority, application France, Jul. 5, 1978, 78 19953

Int. Cl.<sup>3</sup> B23B 31/02, 31/40

U.S. Cl. 279-2 R

10 Claims



1. A chuck for gripping and positioning a cylindrical work-piece, comprising:

a chuck body having a cylindrical surface complementary to that of a work-piece to be gripped by said chuck and which provides a clearance with a juxtaposed face of said work-piece, said chuck body having multiple grooves extending longitudinally of said cylindrical surface and which are equally spaced circumferentially thereof;

a radial abutment provided on said chuck body at one axial end of each of said longitudinal grooves;

an annular member slidably supported on said chuck body for movement axially thereof;

a radial abutment on said annular member co-extensive with said multiple grooves and positioned adjacent to the other axial end of each of said grooves;

means for exerting an axial force on said annular member in a direction towards said other end of each of said grooves; and

an elongate axially-compressible expansion member positioned within each of said grooves, each expansion member comprising an elongate transversely crenelated strip of a spring-steel like material having a radially-extending abutment portion at its respective longitudinal ends, resilient incompressible elastomeric material filling the crenelations on one side of said strip, and resilient incompressible elastomeric material partially filling the crenelations on the side of said strip opposite said one side, said radially extending abutment portions being respectively engaged



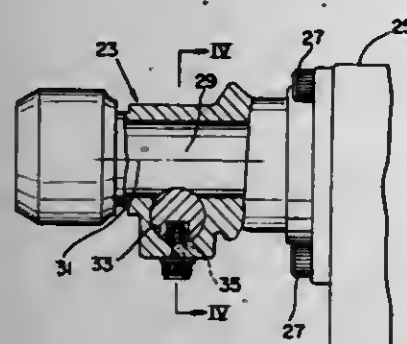
by said radial abutment of the chuck body and said radial abutment of said slidable annular member, said expansion member expanding in thickness upon the application of an axially directed compressive force thereto by said slidable annular member.

**4,284,284**  
**RETAINER ARRANGEMENT FOR TOOLS**  
Daniel H. Sides, New Freedom, Pa., assignor to Black & Decker Inc., Newark, Del.

Filed Jan. 31, 1979, Ser. No. 8,229  
Int. Cl.<sup>3</sup> B23B 31/08

U.S. Cl. 279-19.5

4 Claims



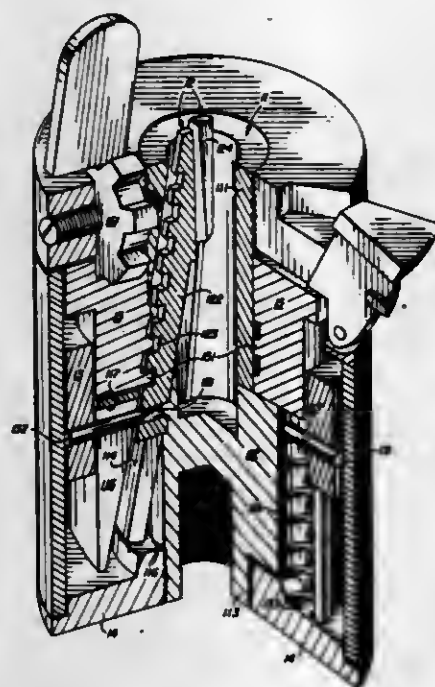
1. A tool bit retaining mechanism for a hammering power tool having a housing comprising:
  - (a) a tool bit having a shank with an annular undercut portion formed thereon,
  - (b) a bit receiving member carried on the housing and having a bore therein for receiving the tool bit along a tool bit axis,
  - (c) the bit receiving member having a transverse portion,
  - (d) the transverse portion of the bit receiving member having a first opening to define a retaining axis, said portion traversing the bore,
  - (e) the retaining axis lying outside of the bore,
  - (f) the first opening at its perimeter being in communication with the bore,
  - (g) a retaining member being slidably disposed in the transverse portion in a first or second position and having a body portion therein intersecting the bore when the retaining member is in its first position,
  - (h) the body portion having an upper surface extending about a part of the body portion periphery,
  - (i) means connected to the retaining member for yieldably urging the retaining member into its first position,
  - (j) means mounted in the transverse portion for biasing the urging means while preventing rotation of the retaining member about the retaining axis,
  - (k) a cutout formed only in the upper surface of the body portion and being positioned across the bore to permit the bore to make its full opening when the retaining member is depressed against the biasing means into its second position,
  - (l) the tool bit shank being slidably received within the bore of the bit receiving member when the retaining member is in its second position, and
  - (m) the annular undercut portion of the tool bit having a predetermined axial length and terminating at each end in an interior shoulder, at least one shoulder being engageable by the retaining member when the retaining member is in its first position, the tool bit thereby being retained in the tool and partaking of the tool's hammering motion.

**4,284,285**  
**SELF-ADJUSTING ROTARY CHUCK**  
Friedrich P. Fütter, 5115 N. 40th St. (E 204), Phoenix, Ariz. 85018

Filed May 7, 1979, Ser. No. 36,501  
Int. Cl.<sup>3</sup> B23B 31/08, 31/19

U.S. Cl. 279-62

1 Claim



1. In a chuck for releasably holding an object such as a tool or workpiece, including circumferentially spaced jaws for grasping said object which are movable radially outwardly to an open position to permit insertion of said object therebetween, and adapted to move radially inwardly to an object-grasping position, and means for adjusting the radial position of said jaws to grasp objects of varying size, the improvements comprising:
  - (a) inclined key threads on said jaws,
  - (b) a rotatable jaw-positioning collar around said jaws, including inclined, inwardly extending, circumferentially spaced key threads adapted to cooperatively engage and disengage the key threads on said jaws, which collar
    - (i) urges said jaws axially outwardly and radially inwardly to said object-grasping position when said collar is rotated to engage said key threads, and
    - (ii) permits free axial and radial movement of said jaws to said open position when said collar is rotated to disengage said key threads;
  - (c) means for rotating said collar to engage and disengage said key threads; and
  - (d) means for normally yieldably urging said jaws axially outwardly and radially inwardly when said key threads are disengaged.

**4,284,286**  
**COMBINATION HANDTRUCK AND PORTABLE WORK TABLE**

Charles D. Lewallen, Rte. 2, Box 1075, Corbett, Oreg. 97109  
Filed Aug. 2, 1979, Ser. No. 63,080  
Int. Cl.<sup>3</sup> B62B 1/12

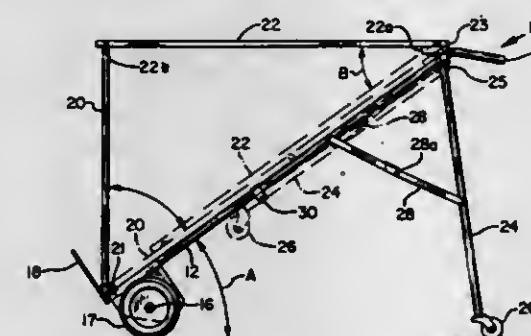
U.S. Cl. 280-30

5 Claims

1. In a handtruck having an elongate main frame with a handle at a first longitudinal end thereof and a toe blade and pair of wheels at the opposite longitudinal end thereof, the improvement comprising:
  - (a) a rigid, generally planar surface attached by a first pivotal connection to said main frame so as to pivot about an axis generally perpendicular to the longitudinal dimension of said main frame, said surface extending from said first

pivotal connection toward said opposite end of said main frame;

- (b) a toe blade extender comprising a rigid elongate frame attached by a second pivotal connection to said main frame adjacent said opposite end thereof so as to pivot about an axis generally perpendicular to the longitudinal dimension of said main frame;
- (c) means for limiting the pivotal movement of said toe blade extender about said second pivotal connection so as to permit movement thereof only between a first pivotal position, wherein said extender is substantially parallel to said main frame and extends from said second pivotal connection toward said first longitudinal end of said main frame, and a second pivotal position wherein said extender is substantially perpendicular to said main frame and ex-



tends therefrom substantially parallel to and in abutment with said toe blade;

- (d) cooperative means on said planar surface and toe blade extender respectively for permitting said toe blade extender to be selectively engaged with said planar surface such that said toe blade extender supports said planar surface at a first acute angle relative to said main frame while holding said toe blade extender in an intermediate pivotal position between said first and second pivotal positions respectively; and
- (e) ground-engaging support means on said main frame for supporting said main frame, in cooperation with said pair of wheels, at an acute angle relative to the ground substantially equal to said first acute angle such that said planar surface is thereby supported substantially parallel to the ground.

**4,284,287**  
**TELESCOPING HANDLE FOR A SMALL HEAVY DUTY HAND TRUCK**

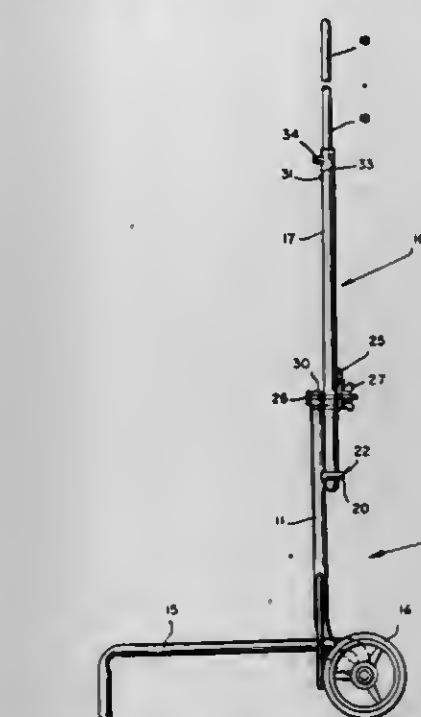
Patsy Esposito, 350 Clarkson Ave., Brooklyn, N.Y. 11226  
Filed Oct. 9, 1979, Ser. No. 83,213  
Int. Cl.<sup>3</sup> B62B 1/12

U.S. Cl. 280-47.37 R

8 Claims

1. A telescoping handle for a small strong collapsible hand truck, said hand truck including at least an upright support means, said handle including a first U-shaped portion and a second U-shaped portion, said U-shaped portions slidably interengaged, two pairs of openings in said first U-shaped portion, each said pair horizontally aligned, one pair near the upper portion of said first U-shaped portion and the other pair near the lower portion of said first U-shaped portion, a pair of openings in said second U-shaped portion, said pair of openings horizontally aligned, said pair of openings near the lower part of said second U-shaped portion, detent means extending through said pair of openings in said second U-shaped portion, spring means within said second U-shaped portion biasing said detent means to extend through said openings, said detent means engagable in either of said two pairs of openings in said first U-shaped portion, guide means on said upright support means, said guide means adapted to guide said handle adjacent to said upright support means, a first stop means, said first stop means adjacent to said upright support means adapted to stop the upward movement of said handle in said guide means, a second stop means adjacent said upright support means adapted to stop the downward movement of said handle in said guide means, and means to fix said handle in selected position

with relation to said upright means, said means to fix including means to depress said detents extending through said first

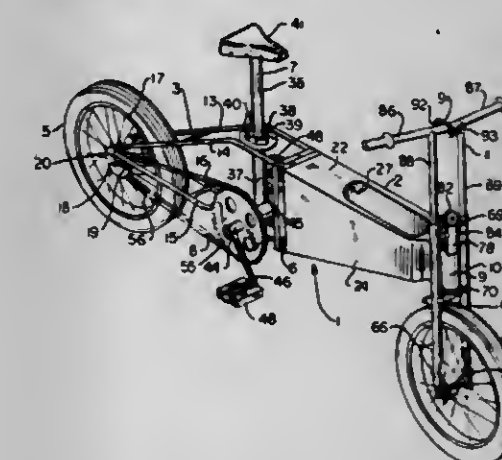


U-shaped portion's openings and release said first and second U-shaped parts from engagement.

**4,284,288**  
**FOLDING BICYCLE STRUCTURE**  
Roger G. Fulton, 3731 Garner, Kansas City, Mo. 64123  
Filed Sep. 24, 1979, Ser. No. 78,433  
Int. Cl.<sup>3</sup> B62K 15/00

U.S. Cl. 280-278

10 Claims



1. A portable, folding bicycle comprising:
  - (a) a main frame having front and rear frame sections respectively supporting front and rear wheels and having hinge means interconnecting said frame sections for folding relative to each other into a compact, side-by-side relationship;
  - (b) a removable seat structure and means for detachably connecting said seat structure to said main frame;
  - (c) rear fork members extending from said rear frame section and rotatably supporting said rear wheel;
  - (d) power transmission means extending between said main frame and said rear wheel for effecting rotation thereof;
  - (e) said front frame section having a frame member defining a receptacle for receipt of said front wheel, said front frame section having a steering assembly affixed thereto and including upper and lower end portions;
  - (f) a front fork assembly foldably mounted to said steering assembly and having spaced, tubular, front fork, members rotatably supporting said front wheel therebetween and connecting hinge means attaching said front fork members to said lower end portion of said steering assembly for



rearward and upward folding of said front fork members and said front wheel into said receptacle for compact storage thereof when the bicycle is folded; and  
(g) a handlebar assembly including mutually engageable and separable handlebar portions and posts respectively depending therefrom, said posts being respectively received in said fork members for collapsing of said handlebar assembly partially into said front fork members.

4,284,289

# DEVICE FOR SUPPORTING BICYCLE SECURITY CHAINS AND CABLES

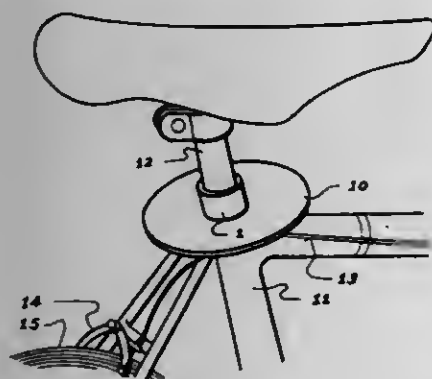
Edwin E. Loux, 2841 Adams St., Alameda, Calif. 94501

Filed Jul. 16, 1979, Ser. No. 58,078

Int. Cl.<sup>3</sup> B62H 5/00; B62J 11/00

U.S. Cl. 280—289 L

2 Claims



1. A device for storing security chains and cables on a bicycle having a seat post, comprising:  
a tubular cylinder having a circumferential groove on the outside wall and a longitudinal compression space;  
a circular disc coupled in said groove at right angles to the longitudinal axis of said cylinder to create a small platform; and  
said cylinder and said disc being made of a resilient material, and as a unit are adapted to fit around the existing bicycle seat post.

4,284,290

# BICYCLE LOCK

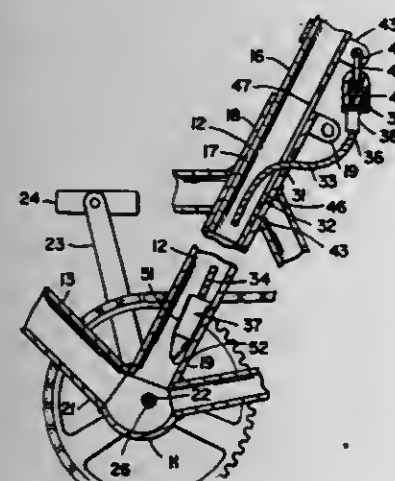
Fred L. Ragdale, Rte. 1, Box 424F, Weed, Calif. 96094

Filed Sep. 14, 1979, Ser. No. 75,610

Int. Cl.<sup>3</sup> B62H 5/10

U.S. Cl. 280—289 L

10 Claims



1. In a bicycle having an upwardly extending frame tube, the improvement comprising:  
means forming an opening at the upper end of said frame tube from the interior thereof to the exterior thereof,  
an elongated flexible cable extending through said opening and having a first end disposed within said frame tube and

a second end disposed outside of said frame tube, said cable having a predetermined amount of weight,  
means comprising first stop means on said cable within said tube for limiting the amount of said cable that can be pulled out from within said frame tube, and further comprising bias means for pulling said first end of said cable through said frame tube in a direction to pull said cable into said frame tube and with a force greater than the weight of said cable outside of said frame tube when said cable has been pulled out from said frame tube to the extent permitted by said first stop means,  
second stop means on said cable outside of said frame tube for limiting the amount of said cable that can be pulled into said frame tube,  
attachment means at said second end of said cable for attachment of a lock thereto.

4,284,291

# VEHICLE, PARTICULARLY MOTOR DRIVEN UTILITY VEHICLE

Albrecht Morlok, Nordstetten; Fritz Hacker, Ludwigsburg-Ossweil, and Peter Kölling, Frielzheim, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

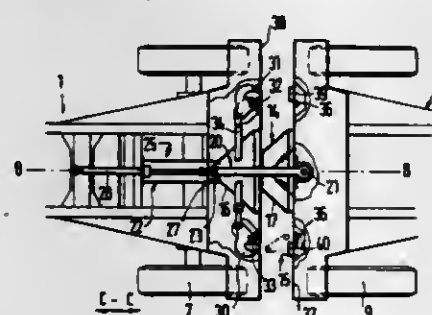
Filed Oct. 4, 1979, Ser. No. 82,218

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843225

Int. Cl.<sup>3</sup> B60D 1/00; B62D 53/02

U.S. Cl. 280—479 R

14 Claims



1. A vehicle of the type having a motor driven vehicle unit and a wheeled auxiliary hook-up unit coupled thereto, comprising:

- towing coupling means pivotally connected at a first end to said auxiliary unit for enabling towing of said auxiliary unit.
- hook-up coupling means for securing a second, opposite, end of said towing coupling means to said vehicle unit and forming a pivotal interconnection therebetween.
- tightening fixture means mounted to said vehicle unit for displacing the towing coupling means, when it is secured to said hook-up coupling means, between a first position wherein said hook-up unit is towable behind said vehicle unit in an articulated manner and a second position wherein said hook-up unit is drawn adjacent said vehicle unit and is towable rigidly coupled to said vehicle unit.
- centering means for centering said vehicle unit relative to said auxiliary hook-up unit and including a centering member mounted in association with each of said units in surrounding relationship to said towing coupling means, said centering means being operable to guide said towing coupling means into a position within said tightening fixture means wherein it is securable to said hook-up coupling means, and
- locking means for fixedly securing said auxiliary unit to said vehicle unit, when said hook-up unit is drawn adjacent said vehicle.

4,284,292

# SKI FASTENER STRUCTURE

Antonio Faulin, Via G. da Procida, 4-Milano, Italy

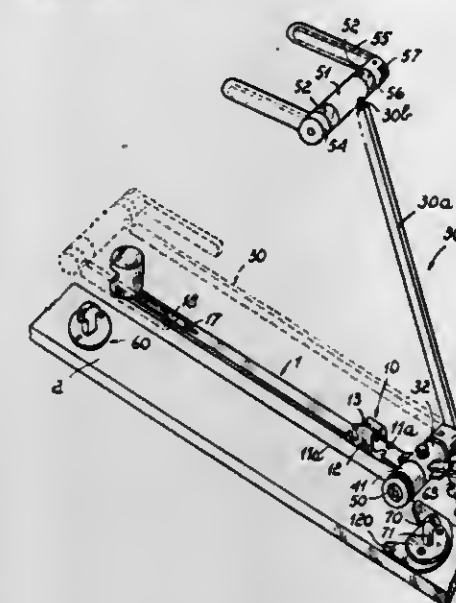
Filed May 21, 1979, Ser. No. 41,443

Claims priority, application Italy, May 24, 1978, 23763 A/78

Int. Cl.<sup>3</sup> A63C 9/08

U.S. Cl. 280—618

21 Claims



1. A ski fastener structure comprising a substantially rigid bar element having a front end and a rear end, front latching means at said front end and rear latching means at said rear end for removably connecting said bar element to a ski, a rod-like element having one end pivotally connected to said bar element about an axis transverse thereto at said rear end and another end having means for engaging a skier's leg from the rear, resilient means between said bar element and said rod-like element for holding said rod-like element in engagement with said skier's leg in a number of inclined positions of said skier's leg during skiing, means at a front sole portion and at a rear sole portion of a skier's footwear and at a front portion and at a rear portion of said bar element for removably connecting said footwear to said bar element such as to allow lengthwise movement of said footwear on said bar element between a disengaged position and an engaged position of said footwear with said bar element, and means for holding said footwear on said bar element in said engaged position.

4,284,293

# ADJUSTABLE STAND

Izydor Rygajlo, Prior Lake, Minn., assignor to Delmer M. Stanness, New Prague, Minn.

Filed Apr. 25, 1980, Ser. No. 143,740

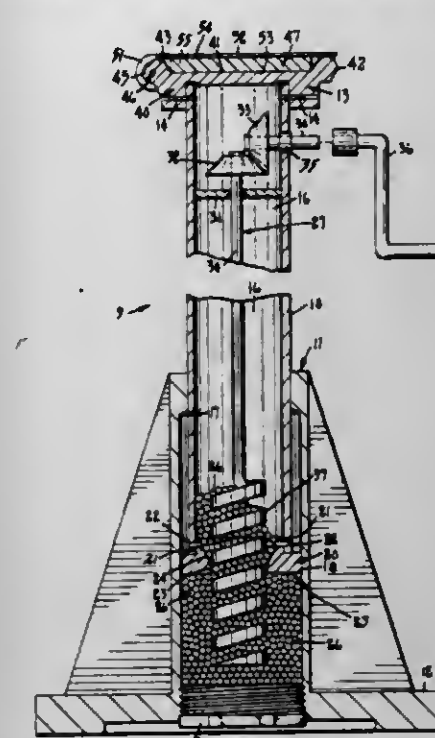
Int. Cl.<sup>3</sup> B66F 3/08

U.S. Cl. 280—766

9 Claims

1. Adjustable stand apparatus in combination:  
a hollow cylindrical reservoir having an axis extending between a first, closed end and a second, open end thereof;  
a hollow cylindrical piston having a first end received in said reservoir and a second end extending axially therefrom, said piston being slidable axially in said reservoir so that said piston and said reservoir jointly define a chamber of variable volume;  
closure means for said first end of said piston, having an aperture therein to divide said chamber into first and second portions and to provide a passage between said portions;  
a charge in said chamber of particulate load supporting material capable of granular flow through said passage, said closure means being configured to facilitate the gravity-responsive flow of said material in a first direction, from said piston to said reservoir, but to inhibit load-responsive flow of said material in a second direction, from said reservoir to said piston;

agitator means carried in said piston and extending through said aperture and operable to enable load responsive flow



of said material through said passage in said second direction; and  
means for manually causing actuation of said agitator means.

4,284,294

# PASSIVE VEHICLE PASSENGER RESTRAINT BELT SYSTEM

Juichiro Takada, 3-12-1, Shinmachi Setagayaku, Tokyo, Japan

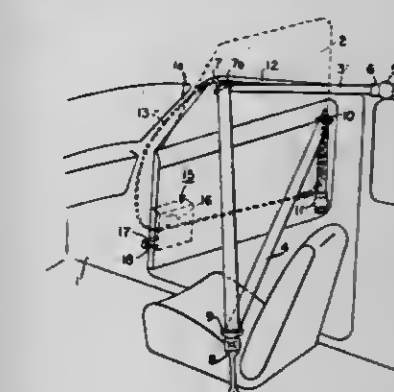
Filed Mar. 26, 1979, Ser. No. 23,720

Claims priority, application Japan, Mar. 31, 1978, 53-40981[U]

Int. Cl.<sup>3</sup> B60R 21/10

U.S. Cl. 280—803

5 Claims

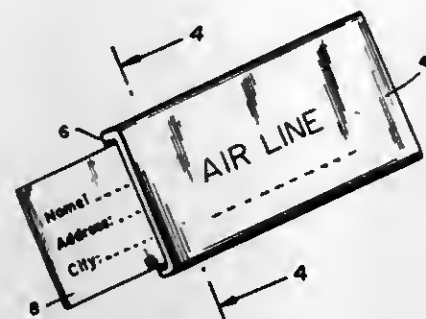


1. A passive vehicle passenger restraint belt system comprising a mechanical motion amplifier mounted in the door of the vehicle; an input device connected between the vehicle body adjacent the front hinged end of the door and the motion amplifier to transmit the opening and closing motions of the door relative to the vehicle body to the motion amplifier; a shoulder belt guide rail affixed to the vehicle roof generally above the door and extending between a point generally above and behind the adjacent vehicle seat and a point generally above and forward of the seat; a shoulder belt transfer ring received in the shoulder belt guide rail for sliding movement between a rearward and a forward position therein; a shoulder belt having a portion received by the shoulder belt transfer ring for movement therewith; a lap belt guide rail affixed to the vehicle door and extending between a lower position near the lower rear corner of the door and an upper position near the window ledge; a lap belt transfer ring received in the lap belt guide rail for sliding movement between a lower position and an upper position.



an upper position therein; a lap belt having a portion received by the lap belt transfer ring for movement therewith; and a single continuous drive wire coupled adjacent one end to the shoulder belt transfer ring, coupled at an intermediate driven portion to an output of the motion amplifier to be driven thereby and coupled at the other end to the lap belt transfer ring such that upon opening motion of the door the motion amplifier moves the drive wire in a direction to pull the shoulder belt transfer ring forwardly and push the lap belt transfer ring upwardly in the respective guide rails.

2. A fire-resistant body carried identification device, comprising in combination, a card of fire resistant substance bear-



4,284,295

## WEBBING HANGING DEVICE

Nobuhiro Takeda; Masaichi Hattori, and Shigeo Mizuno, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Kabushiki Kaisha Tokai-Rika-Denki Seisakusho, Nishikasugai, both of, Japan

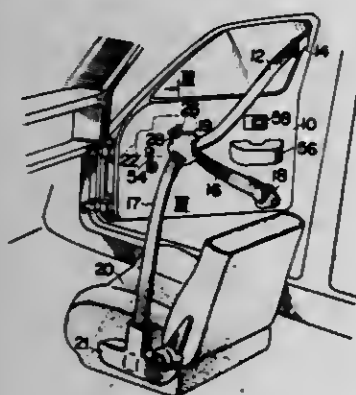
Filed Oct. 19, 1979, Ser. No. 86,423

Claims priority, application Japan, Nov. 9, 1978, 53/154867[U]

Int. Cl.<sup>3</sup> B60R 21/10

U.S. Cl. 280—803

10 Claims



1. A webbing hanging device on which webbing for restraining an occupant is hung in a seatbelt system for a vehicle, comprising:

- (a) a holder having projected therefrom a hanging hook and rotatable within the range from a webbing hanging position for webbing for restraining an occupant to a webbing dropping position for releasing the hanging of said webbing;
- (b) a resilient member for biasing said holder in the direction of said hanging position; and
- (c) a driving source coupled to said holder for rotating the holder in the direction of said dropping position and fastening the webbing to the occupant, the driving source being transmitted to said holder whereby after the occupant has entered the vehicle, a driving force of said driving source causes the holder to turn to a dropping position, said webbing is released from said holder to restrain the occupant and said holder is biased by said resilient member to be set at a hanging position.

4,284,296

## FIRE RESISTANT IDENTIFICATION DEVICE

Sara M. Evans, 1595 Odell St., Bronx, N.Y. 10462

Filed Jun. 21, 1979, Ser. No. 50,819

Int. Cl.<sup>3</sup> B42D 15/00

U.S. Cl. 283—7

5 Claims

1. The method of making a fire resistant identification device comprising providing a card of asbestos, embossing identification information thereon, providing a case of fire resistant substance for the card and enclosing the card in the case.

ing identification indicia, said card being enclosed in a case of fire-resistant material, said card being formed of asbestos.

4,284,297

## METER RISER

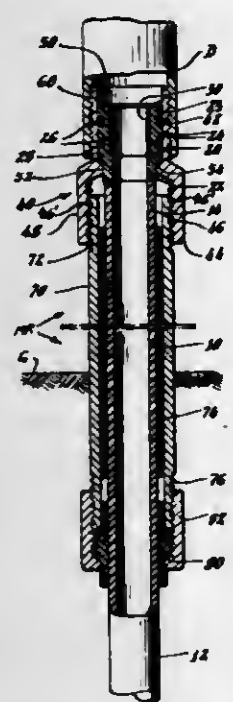
Louis A. Godkin, Bethel, Conn., assignor to Textron Inc., Providence, R.I.

Filed Nov. 6, 1978, Ser. No. 958,263

Int. Cl.<sup>3</sup> F16L 55/00

U.S. Cl. 285—47

11 Claims



1. A meter riser unit for use in a system for conducting pressurized fluid, such as gas, from a source, such as a gas main, below ground level to a point of delivery member, such as a gas meter or the like, disposed above ground level comprising: an elongated continuous plastic tube having one of its ends adapted to be disposed below ground level to communicate with the source, as by being connected to an underground gas service line, and the other of its ends adapted to be disposed above ground level adjacent to and in communication with the point of delivery member, whereby said plastic tube constitutes an essentially completely non-metallic gas conducting conduit part of the riser;

an elongated rigid metal pipe casing of a larger diameter than said plastic tube concentrically spaced about a portion of said plastic tube; said casing being adapted to be disposed partially above and partially below ground level and having one end disposed adjacent to said other end of said plastic tube, and means including a separable unitary metal fitting and a plastic adapter connecting said adjacent ends to each other in fluid tight relationship whereby said casing supports and protects said plastic tube; said fitting comprising a portion arranged to be secured to said one casing end, and an inner cylindrical surface arranged to receive said plastic

adapter; said plastic adapter secured to and communicating with said plastic tube; said plastic adapter being disposed within and engaging said inner cylindrical surface of said fitting; said fitting and said adapter having interengaging shoulders to prevent said plastic tube and said adapter from being pulled through said fitting into said casing, the shoulder on said adapter being formed at one end of said adapter; said fitting having an inwardly extending annular rib formed intermediate its ends; the shoulder on said fitting being formed at said rib; the portion of said adapter secured to said plastic tube being tubular and of an outside diameter to have a sliding fit within said rib; means for sealing the connection between said fitting and said adapter comprising an O-ring carried by said adapter in compressive sealing engagement with said fitting; and means for retaining said adapter in said fitting comprising a spring locking member disposed within said fitting and engaging the other end of said adapter.

4,284,298

## PIPE COUPLING

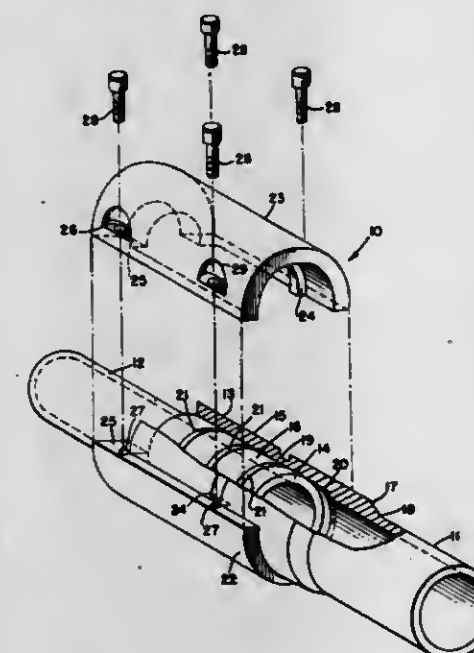
John Kaufmann, Jr., 3716 Woodrow Ave., Pittsburgh, Pa. 15227, assignor to John Kaufmann, Jr., Pittsburgh, Pa.

Filed Jan. 8, 1980, Ser. No. 110,551

Int. Cl.<sup>3</sup> F16L 27/12

U.S. Cl. 285—302

1 Claim



1. A coupling for maintaining pipe ends in end-to-end axial alignment, said pipe ends being thickened with one disposed with the other, stop means being provided on the interior of the outer thickened portion to limit the extent of insertion of the other thickened portion, an annularly disposed recess disposed on the thickened portion of the outer pipe, and a plurality of spaced O-rings disposed on the inner thickened portion in engagement with the interior of the outer thickened portion, said coupling comprising a pair of substantially identical sections, each section defining a body of substantial length and having an interior annular locating flange extending inwardly from one end of the body and an annular inwardly extending flange formed at the other end, said flanges being peripherally disposed whereby when the sections are mated, the flanges will be disposed in a common plane, with the interior annular flange being disposed in said annular recess and the flange formed at the other end engaging the thickened portions of the outer and inner pipe ends, and fastening means releasably securing the sections together, said fastening means comprising aligned openings in the sections receiving removable fastener means.

4,284,299

## INTEGRAL HANDLE STOP AND LATCH MEMBER FOR SLIDING SCREEN CLOSURES

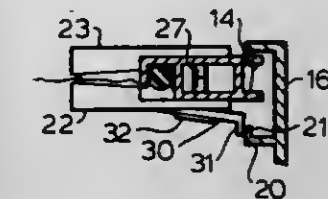
Donald V. Kelly, 15903 Condor Ridge Rd., Canyon Country, Calif. 91351

Filed Jan. 22, 1979, Ser. No. 5,475

Int. Cl.<sup>3</sup> E05C 19/06

U.S. Cl. 292—87

8 Claims



1. A handle for a movable screen door having an edge frame and central screen cloth, said screen door movable into a slot-like recess including a reentrant hook portion in the structure against which the door is closed; said handle comprising an elongated body portion; means securing said handle to said frame member with said elongated body portion extending in the direction of the length of the screen door frame; said handle including a spring finger formed integrally therewith and extending above the plane of the screen door frame member in position to engage in an abutting relationship said reentrant hook portion; said spring finger being deflectable generally into the plane of the screen door to allow it to pass into a slot in the structure against which the screen door is closed and to allow locking engagement with said reentrant hook portion.

4,284,300

## SECURITY LOCKING ASSEMBLY

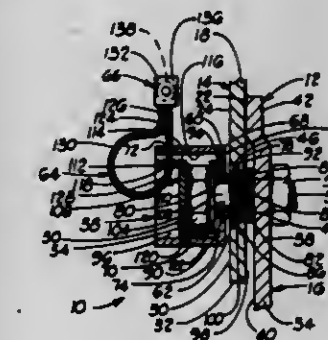
Michael D. Campbell, Newalla, Okla., assignor to Metalfab Industries, Inc., Oklahoma City, Okla.

Filed Aug. 13, 1979, Ser. No. 66,079

Int. Cl.<sup>3</sup> E05C 13/02

U.S. Cl. 292—251

11 Claims



1. An improved security locking assembly for substantially preventing unauthorized removal of a bolt having a bolt head, the bolt operably engaging a securing member for joining a first housing to a second housing when one of the housings telescopically receives a portion of the other of the housings, each of the housings having an aperture therein such that in a connected position the apertures of the housings are aligned for receiving the bolt, the locking assembly comprising:

- a locking assembly housing comprising:
  - a base plate having a first side, an opposed second side, and an aperture; and
  - wall means having at least one aperture therein, the wall means extending outwardly from the first side of the base plate such that the aperture of the base plate is alignable with the apertures of the first and second housings for receiving the bolt;
- a bushing assembly disposed within the aperture of the base plate for rotatably mounting the locking assembly housing



to the first and second housings by the bolt, the bushing assembly comprising:

a body member having a bore extending therethrough, the body member further defined as having a first end portion and an opposed second end portion; and a flange extending radially from the first end portion of the body, the flange having a first surface for cooperating with the body member to form a shoulder for supporting one of the locking assembly housing and the first housing, the second surface abutting a portion of one of the first or second housings;

a cover assembly comprising:

a cover plate having a first side and an opposed second side, the cover plate being shaped such that the cover plate is positionable within an interior portion of the locking assembly housing defined by the wall means and the base plate such that the cover plate substantially covers the bolt head; and

a first tab member having an aperture therein, the first tab member extending from the first side of the cover plate and disposed near a first interior portion of the wall means of the locking assembly housing such that in a connected position the aperture of the first tab member is aligned with the aperture of the wall means;

a pin having a first end portion and a second end portion, one of the first and second end portions of the pin extending through the aligned apertures of the wall means and the first tab member for connecting the cover plate to the wall means of the locking assembly housing, the pin being shaped such that the first end portion of the pin is disposed near the second end portion of the pin, so that in an assembled position the pin, the locking assembly housing, and the cover assembly cooperate to secure the cover plate of the cover assembly in a bolthead covering position; and means for securing the first end portion of the pin to the second end portion of the pin to substantially prevent removal of the pin from the locking assembly housing and the cover plate of the cover assembly without destruction of a portion of one of the pin and the locking assembly housing.

4,284,301

## BAG TRANSFER DEVICE

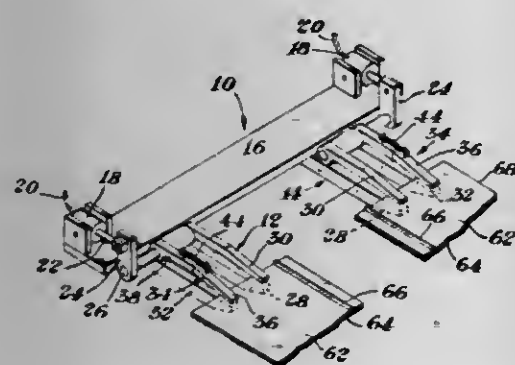
Herbert B. Gelger, Bay City, and David A. Smith, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 9, 1979, Ser. No. 28,633

Int. Cl.<sup>3</sup> B66C 1/42

U.S. Cl. 294-104

7 Claims



1. A device for clamping and transferring products of varying wall thicknesses comprising a pair of clamping jaw assemblies, one of said assemblies comprising a first jaw and a second jaw, means for driving said first jaw a given distance towards but fixedly spaced from the second jaw to clamp one thickness of said products, the other one of said assemblies comprising a first jaw and a second jaw, means for automatically biasing adjusting the second jaw of said other one of said assemblies towards the first jaw thereof and approaching a closed position therewith to clamp a thickness of said products different than said one thickness, said second adjustable jaw being flexible

from said position so as to accommodate said different wall thicknesses of said products located between the jaws of said other one of said assemblies.

4,284,302

## DRIVEN CRAFT HAVING SURFACE MEANS FOR INCREASING PROPULSION EFFICIENCIES

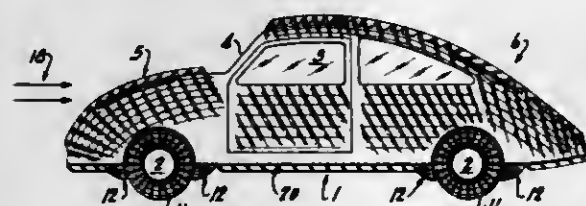
Hilbert F. P. Drews, 5640 S. 76th St., Greendale, Wis. 53129

Filed Jun. 11, 1979, Ser. No. 47,302

Int. Cl.<sup>3</sup> B64C 1/38; B62D 35/00

U.S. Cl. 296-1 S

14 Claims



1. A driven craft adapted to be moved through a fluid and having an exterior wall means, said wall means of the craft defining fluid engaging surfaces, said wall means creating frictional engagement with the medium, said wall means including a substantial plurality of adjacent parallel wave-shaped flutes, each of said flutes extending rearwardly along said surface at a selected inclusive angle substantially less than ninety degrees to the forward direction of craft movement, the cross-section of each of said flutes having a trough portion extending upwardly and rearwardly to a crest portion developing an outwardly flowing air stream, and having a plurality of channelling walls extending through said flutes, said channelling walls extending substantially parallel to the forward direction of craft movement.

4,284,303

## PICKUP TRUCK COVER AND HINGE CONSTRUCTION

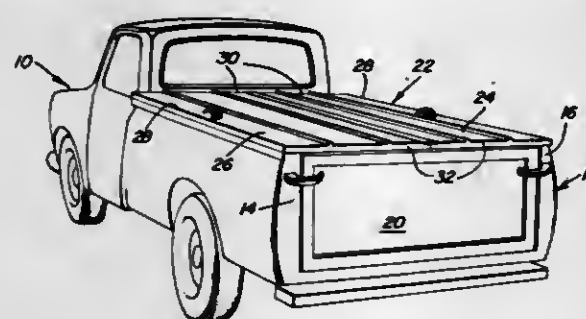
Robert K. Hather, Morro Bay, Calif., assignor to Mark Woolpert, San Luis Obispo, Calif.

Filed Aug. 1, 1979, Ser. No. 63,112

Int. Cl.<sup>3</sup> B60P 7/02

U.S. Cl. 296-100

10 Claims



1. In combination with a load receptacle of the type including first and second upstanding opposite side walls and at least one end wall extending between one pair of corresponding ends of said side walls, a cover assembly including a pair of opposite side cover sections disposed in side-by-side relation and having remote marginal edges thereof overlying the upper marginal portions of said side walls, corresponding end marginal edges overlying the upper marginal portions of said end wall and adjacent marginal edges extending longitudinally of and generally transversely centered over said receptacle, first and second separable hinge means pivotally securing said remote marginal edges to said marginal portions of said first and second side walls, respectively, third separable hinge means pivotally securing said adjacent marginal edges together, said first, second and third hinge means each including a plurality of barrel hinge structures spaced along the corresponding cover section edges and with each hinge structure including first and second relatively angularly displaceable

hinge barrels and an axially shiftable hinge pin extending through said hinge barrels, one of said first and second hinge barrels being radially slotted and said hinge pins including transversely narrowed portions shiftable into and out of registry with said slotted barrels upon longitudinal shifting of said pins, and said transversely narrowed portions being receivable through said slots.

4,284,304

## MOUNTING STRUCTURE FOR THE FRONT SIDE EDGE OF A ROOF FINISHER OF A VEHICLE

Yoshiharu Nakamura, Koganei, Japan, assignor to Nissan Motor Company Limited, Japan

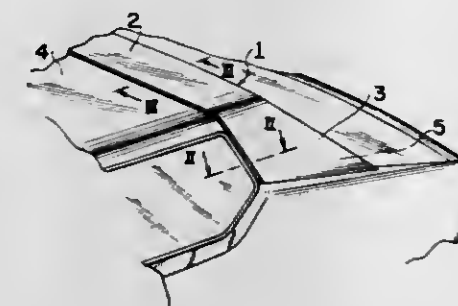
Filed Jul. 19, 1979, Ser. No. 58,773

Claims priority, application Japan, Sep. 12, 1978, 53-125859[U]

Int. Cl.<sup>3</sup> B62D 27/00

U.S. Cl. 296-201

5 Claims



1. In a vehicle comprising a roof panel (4), a side pillar (5), a side window glass (7) supported by the side pillar (5), and a roof finisher (1) mounted over part of the roof panel (4) and at least part of the side pillar (5),

a mounting structure for securing the front edge of the side portion (3) of the roof finisher (1) which is mounted over the side pillar (5) to the side pillar (5), comprising:

a first fitting member (9), fixed on the front of the side pillar (5), adjacent to the window glass (7), and having one end angling forwards therefrom and away from the center line of the vehicle;

a second fitting member (11), fixed on the front edge of the said side portion (3) of the roof finisher (1), and having one end angling backward therefrom and towards the center line of the vehicle; said one end of the first fitting member (9) interconnecting said one end of the second fitting member (11) such that a hooking effect is provided to prevent the front edge of the finisher side portion (3) from moving away from the first fitting member (9) and means (12) for fixing the first and the second fitting members (9, 11) together.

4,284,305

## APPARATUS FOR UPHOLSTERING A VEHICLE CHAIR

Charles A. Porter, and James M. Kozak, both of Colleyville, Tex., assignors to Nautical Interiors Corporation, Fort Worth, Tex.

Filed Feb. 1, 1979, Ser. No. 8,440

Int. Cl.<sup>3</sup> A47C 27/00, 7/02

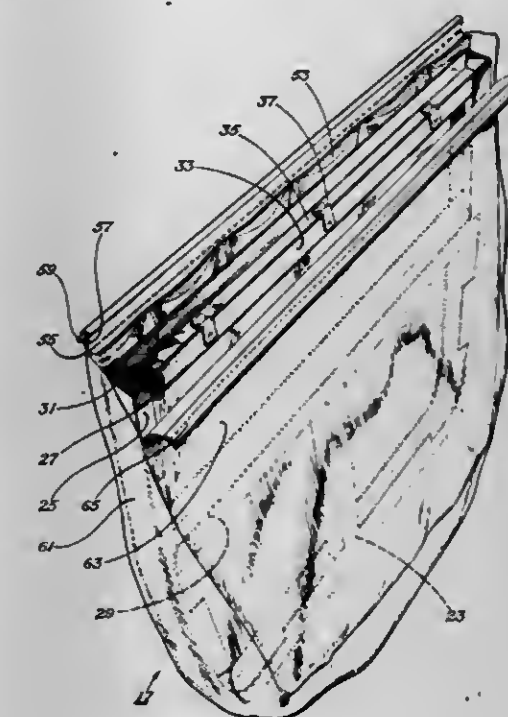
U.S. Cl. 297-452

7 Claims

1. In a vehicle chair of the type having a back connected to a seat, the back having a metal frame over which an enclosure of upholstery material with a front portion and a back portion is embraced, an improved closure means for securing the lower end of the front portion to the lower end of the back portion, comprising:

a frame member extending across the bottom of the frame, the member having front and back walls and a slot extending the length of the member between the walls; the lower end of the front portion of the upholstery material and the lower end of the back portion of the upholstery

material being drawn tightly together and inserted in the slot; and



clip means mounted inside the slot of the frame member to one of the walls for retaining the ends of the material in contact with each other inside the slot.

4,284,306

## APPARATUS AND METHOD OF MINING SUBTERRANEAN RUBBLE PILES

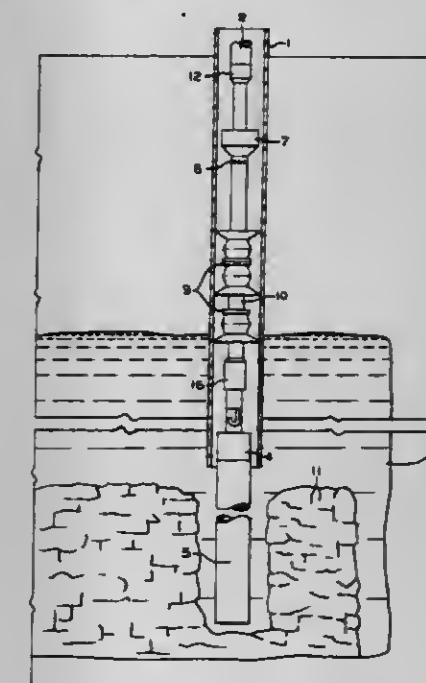
Byron P. Edmonds, Denver, Colo., and Selby W. Porter, Calgary, Canada, assignors to PPG Industries Canada Ltd., Regina, Canada

Filed Jul. 16, 1979, Ser. No. 57,861

Int. Cl.<sup>3</sup> E21B 43/28

U.S. Cl. 299-5

11 Claims



1. A method of solution mining the mineral content of a subterranean cavity containing a rubble pile positioned on the floor thereof, the subterranean cavity communicating with the surface by one or more boreholes, comprising introducing into a cased borehole communicating with the cavity a drill string having a liner positioned on the lower end of the string and a drill bit positioned on the lower end of the liner, the drill string and liner being joined by quick release connecting means, drilling into the rubble pile to a predetermined depth, the upper portion of the liner being within competent casing.



disconnecting the drill string from the liner by the quick release connecting means, withdrawing the drill string, establishing communication between the liner and the cavity, introducing sealing means into the borehole to seal off the annular space between the liner and the casing, connecting said sealing means to the liner, introducing solvent into the cavity and withdrawing from the cavity a solution enriched in the mineral contained in the cavity.

4,284,307

# **HYDRAULIC PRESSURE CONTROL VALVE ASSEMBLY FOR AUTOMOTIVE HYDRAULIC BRAKE SYSTEM** Hitoichi Kubota, and Kazuaki Shimizu, both of Fujisawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

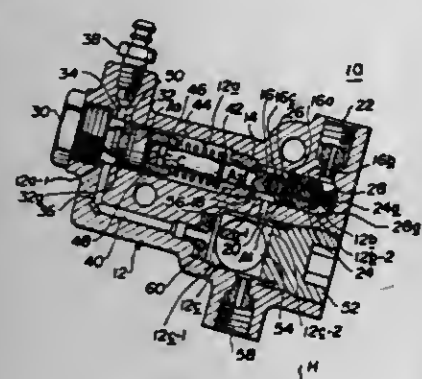
Filed May 7, 1979, Ser. No. 36,724

Claims priority, application Japan, May 9, 1978, 53-54026

Int. Cl.<sup>3</sup> B60T 8/14

U.S. Cl. 303—6 C

6 Claims



1. A hydraulic pressure control valve assembly for a hydraulic brake system for a wheeled vehicle, comprising:

a housing having therein a fluid inlet port, and first and second interconnecting coaxial blind chambers, each said blind chamber having a blind end opposite the other said blind chamber;

a plunger slidably mounted in said second blind chamber, a portion of said plunger extending into said first blind chamber, said plunger dividing said second blind chamber into a first section opposite said blind end thereof, and a second section adjacent said blind end thereof, said first section being in communication with said inlet port, and said second section being in communication with said outlet port, said plunger having an axial blind hole therein, said blind hole being in communication with both said first and said second sections of said second blind chamber, said plunger being movable toward said blind end of said second blind chamber in response to hydraulic pressure in said first section of said second blind chamber, and movable away from said blind end of said second blind chamber in response to hydraulic pressure in said second section of said second blind chamber;

a poppet valve and seat in said blind hole between said first and second sections of said second blind chamber to control the transfer of hydraulic pressure therebetween, said poppet valve having a stem extending through said seat and beyond said plunger toward said blind end of said second blind chamber to contact said blind end of said second blind chamber and open said poppet valve when said plunger moves toward said blind end of said second blind chamber, said poppet valve being coupled with a biasing means to bias said poppet valve into a closed position against its seat to, in turn, interrupt the transfer of hydraulic pressure from said inlet port to said outlet port when said plunger moves away from said blind end of said second blind chamber;

a single spring axially disposed in said valve body to urge said plunger toward said blind end of said second blind chamber, the combination of said spring, said plunger, and said poppet valve constituting a proportionally limiting valve to proportionally limit an increase in hydraulic

pressure at said outlet port resulting from an increase of hydraulic pressure at said inlet port;

a piston slidably disposed in said first blind chamber, said single spring being interposed between said piston and said plunger to urge said piston and said plunger in opposite directions, said piston defining a sealed expandable chamber between said piston and said blind end of said first blind chamber, said expandable chamber being communicable with said inlet port;

a deceleration valve interposed between said inlet port and said expandable chamber, said deceleration valve including means for controlling the transfer of hydraulic pressure to said expandable chamber in accordance with the deceleration of said vehicle, said piston being movable into an override position in response to a predetermined hydraulic pressure in said expandable chamber to suppress the axial movement of said plunger by moving into mating engagement with said plunger, urging said plunger toward said blind end of said second blind chamber, and causing said stem of said poppet valve to contact said blind end of said second blind chamber, thereby opening said poppet valve, thereby overriding the proportional pressure limiting function of said proportionally limiting valve.

4,284,308

## **BRAKE PRESSURE CONTROL VALVE**

Yoshihiro Hayashida, Chigasaki, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Continuation of Ser. No. 865,326, Dec. 28, 1977, abandoned.

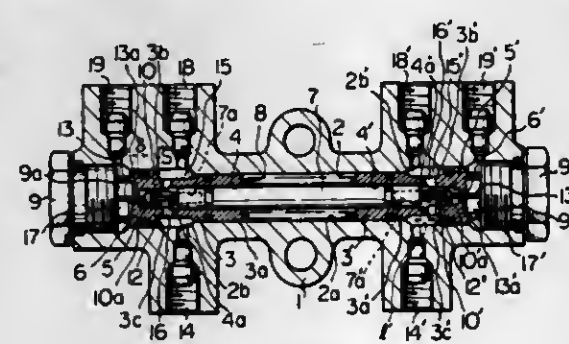
This application Jun. 11, 1979, Ser. No. 47,802

Claims priority, application Japan, Jan. 12, 1977, 52/2010

Int. Cl.<sup>3</sup> B60T 8/26

U.S. Cl. 303—6 C

4 Claims



1. A brake pressure control valve comprising:

a housing;

first and second separate fluid passages extending through said housing, said fluid passages having separate first ends connected to a source of hydraulic pressure and separate second ends connected to respective separate brake wheel cylinders of a vehicle;

first and second valve bodies slidably disposed within said housing, said first and second valve bodies each having first and second opposite ends, said first ends being positioned to face each other, said second ends of said first and second bodies being exposed to said first and second fluid passages, respectively;

first spring means acting on said first ends for urging said valve bodies away from each other;

a free piston assembly having opposite first and second end portions slidably received within said first and second valve bodies, respectively, each said end portion having therein a bore;

means for exposing the end faces of said first and second end portions of said free piston assembly to hydraulic pressure in said first and second fluid passages, respectively;

first and second valve members mounted on and carried by said first and second end portions, respectively, of said free piston assembly for relative sliding movement in-

wardly and outwardly thereof in opposite directions therefrom, each said valve member comprising an elongated shank extending into the respective said bore of the respective said end portion of said free piston assembly, a first end of said shank having a large diameter portion slidably received in said respective bore, a second end of said shank having a valve head positioned outwardly of said respective bore;

first and second valve seats on said first and second valve bodies, respectively, for engagement with valve heads of said first and second fluid passages, respectively, to close said first and second fluid passages, respectively;

first and second first stop means positioned to abut said first and second valve members, respectively, for defining a first predetermined spacing between each said valve head and respective said valve seat when the control valve is in the unactuated condition;

first and second second stop means provided in said first and second end portions, respectively, of said free piston assembly for abutting said large diameter portion of each said valve member and for thereby limiting the outward movement of each said valve member from the respective said end portion of said free piston assembly, each said second stop means and said large diameter portion of the respective said valve member being spaced by a second predetermined spacing when the control valve is in the unactuated condition;

each said shank of each said valve member having therearound second spring means acting on the respective said valve head for urging said valve member away from the respective said free end portion of said free piston assembly;

first and second third stop means formed in said first and second valve bodies, respectively, for cooperation with said first and second end faces, respectively, of said free piston assembly and for defining a third predetermined spacing between each said end face and respective said third stop means when the control valve is in the unactuated condition, said third predetermined spacing being greater than said second predetermined spacing;

whereby during normal application of braking pressure, equal hydraulic pressure is supplied through both said first and second fluid passages, thereby operating equally on both said first and second valve bodies and on both said first and second end portions of said free piston assembly; and

whereby when failure occurs in said first fluid passage, said hydraulic pressure in said second fluid passage acts against said second end portion of said free piston assembly and causes said free piston assembly to move toward said first valve body until said first end portion of said free piston assembly abuts said first third stop means, and thereby increasing said first predetermined spacing between said second first stop means and said valve head of said second valve member.

4,284,309

## **BRAKE CONTROL VALVE HAVING OPERATOR FEEDBACK**

Wayne A. Hoefer, Blue Springs, Mo., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US 79/00595 8 371 Date Aug. 13, 1979, 8 102(e) Date Aug. 13, 1979, PCT Pub. No. WO81/00386, PCT Pub. Date Feb. 19, 1981

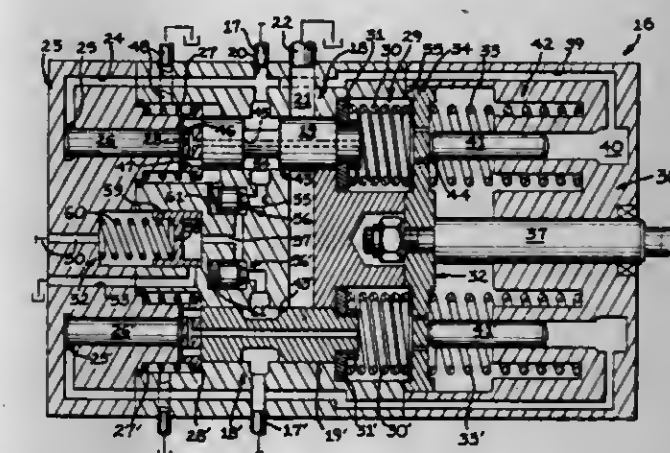
This PCT application filed Aug. 13, 1979, Ser. No. 93,078 Int. Cl.<sup>3</sup> B60T 15/06, 13/18

U.S. Cl. 303—50

17 Claims

10. In a control valve (18) having an inlet (20), an outlet (21), a valve member (19) movable between a closed position blocking communication between said inlet (20) and said outlet (21) and an open position communicating said inlet (20) with said outlet (21), first biasing means (30) for urging said valve member (19) towards its closed position under a predetermined closing force, input means (36) for applying a variable input

force to said valve member (19) to reduce the closing force of said first biasing means (30), and second biasing means (33) for applying a progressively increased opposing force to said input force in response to actuation of said input means (36), said input means (36) including a common plate (32) mounted axially between said first (30) and second (33) biasing means, the improvement comprising



first (24) and second (39) passage means for communicating pressurized fluid from said inlet (20) to apply forces to opposite ends of said valve member (19) to urge it towards its open and closed positions, respectively.

4,284,310

## **ROTARY DRILL BIT**

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eusehelheim; Lothar Walter, Heinrich Kunkel, both of Schweinfurt, and Horst M. Ernst, Eltingshausen, all of Fed. Rep. of Germany, assignors to Sandvik AB, Sandviken and Aktiebolaget SKF, Gothenburg, both of, Sweden

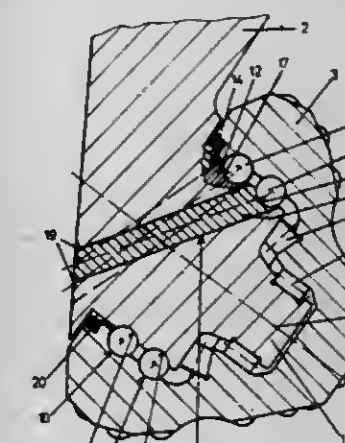
Filed Aug. 3, 1979, Ser. No. 63,542

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1978, 7826323[U]

Int. Cl.<sup>3</sup> F16C 19/18

U.S. Cl. 308—8.2

9 Claims



1. A rotary drill bit assembly comprising a drill bit body, at least one trunnion formed integrally with the drill bit body, a rotary cutter rotatably supported on the trunnion by at least two rows of balls, said trunnion being a one-piece member, means defining a raceway groove formed integrally in the trunnion for each of the ball bearings, means defining a raceway groove in the interior peripheral surface of said rotary cutter for each of the ball bearings, both said ball bearing assemblies securing the rotary cutter against axial withdrawal from the trunnion, means defining filling ports in the drill bit body for each of the rows of ball bearings, each filling port terminating at its inner end in the corresponding raceway for one of the rows of balls, each filling port being separate and disposed in said trunnion at different angles, and a filler pin for



closing each filling port having a terminal end which complements the cross section of the raceway groove, said arrangement providing a trunnion construction which resists bending fracture during mounting and dismounting of the rotary drill bit so it is able to withstand heavy axial impact loads.

#### 4,284,311 MECHANICAL CENTRAL BUFFER COUPLING FOR RAIL VEHICLES

Hilmar Forster, and Klaus Ksienzyk, both of Wolfenbüttel, Fed. Rep. of Germany, assignors to Scharfenbergkupplung GmbH, Fed. Rep. of Germany

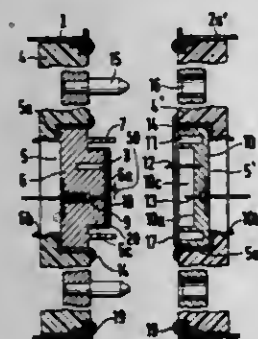
Filed Dec. 19, 1979, Ser. No. 105,017

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2854962

Int. Cl.<sup>3</sup> B60D 7/04

U.S. Cl. 339—10

6 Claims



1. An electrical cable coupling, in particular for a mechanical buffer coupling of a rail vehicle, comprising, first and second coupling heads each including a contact carrier having a recess therein, at least one centering pin connected to one of said first and second coupling heads and at least one bushing connected to the other of said coupling heads engageable with said centering pin when said coupling heads are coupled to each other, a photoconductor insert detachably secured in each of said recesses, an elastic lining in each of said recesses for resiliently supporting each of said inserts, one of said inserts having a protruding portion, the other of said inserts having a recessed portion for receiving said protruding portion, a spring-loaded photoconductor member in said protruding portion, a lug connected to and extending from said one of said inserts on one side of said protruding portion, the other of said inserts having a fixed photoconductor member extending from said recessed portion and alignable with said spring-loaded photoconductor member, and a slotted guide plate over said recessed portion movable by said lug when said coupling heads are coupled to expose said recessed portion to permit engagement of said protruding portion into said recessed portion and engagement of said fixed photoconductor member with said spring-loaded photoconductor member.

#### 4,284,312 SEALING TYPE ELECTRICAL CONNECTOR

David R. Patchett, Milford; Warren J. Phipps, Drayton Plains, and Harry Zaverzence, Sterling Heights, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Continuation of Ser. No. 972,132, Dec. 21, 1978, abandoned.

This application Oct. 15, 1979, Ser. No. 84,935

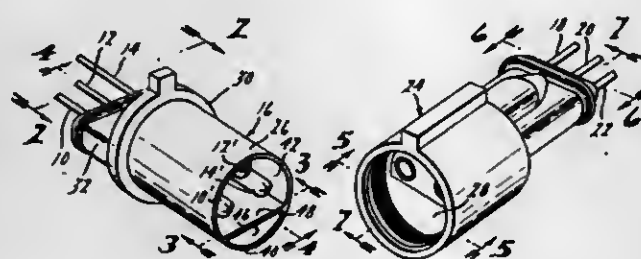
Int. Cl.<sup>3</sup> H01R 13/52, 13/64

U.S. Cl. 339—60 R

7 Claims

1. A sealing type electrical connector comprising: a soft shell connector housing formed of a molded flexible elastomeric material; a hard shell connector housing formed of a molded rigid plastic material, the housings being configured to allow telescoping interaction together when assembled; each housing including an elongated, tubular walled outer portion closed at one end and open at the other and encircling an interior space,

an inner plug portion of integral formation with the tubular walled outer portion radially spaced therefrom and extending axially forwardly from the closed end a distance less than the length of said tubular portion; an electrical contact member molded in the inner plug portion of the first connector housing for engagement with an electrical contact member molded in the inner plug portion of the other connector housing; an electrical conductor for each contact member molded in and extending rearwardly from the closed end of each connector housing; at least one housing being configured with dimensions of the tubular walled portions adapted to facilitate initial ease of insertion of a housing member within the other followed by



a progressively greater press fit therebetween as the housings further telescope together toward a fully assembled position with the ends of the plug portions abutting whereby increased insertion causes portions of the soft shell housing to distort; at least one radially extending sealing rib mold formed on the tubular walled portion of the soft shell housing adapted to engage the tubular walled portion of the hard shell housing and be compressed therebetween thereby acting as a barrier to seepage of water into the housing interiors.

#### 4,284,313 QUICK DETACHABLE ELECTRICAL CONNECTOR

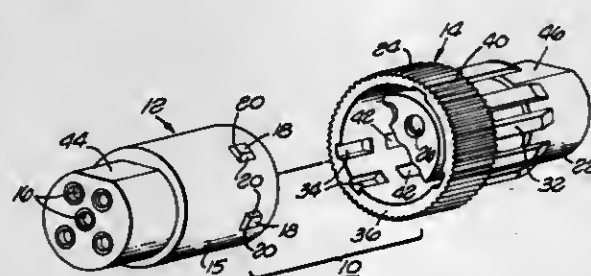
John W. Anbalt, Orange, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 17, 1979, Ser. No. 85,534

Int. Cl.<sup>3</sup> H01R 13/62, 13/635

U.S. Cl. 339—61 M

16 Claims



1. A quick detachable electrical connector comprising: first and second axially mating connector members; said first connector member comprising a body having forwardly extending resilient hood means thereon, said hood means having a forward end surrounding said second connector member when said members are mated and a rear end fixed against rotation on said body; said second connector member and said hood means embodying cooperating latch and recess means for releasably locking said members together; said hood means being capable of torsional displacement relative to said body, and thus said second connector member; said latch and recess means becoming disengaged upon said torsional displacement of said hood means whereby said connector members may be axially disengaged; and said latch and recess means automatically locking said members together upon axial mating of said members and without torsional displacement of said hood means.

#### 4,284,314 TEST HEADS HAVING CONTACT PAIRS

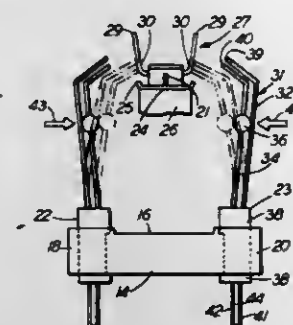
Joseph N. Lesyk, Allentown, Pa., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,428

Int. Cl.<sup>3</sup> H01R 13/62

U.S. Cl. 339—75 M

12 Claims



1. A unitary test head having a plurality of uniformly flexible conductors ending in probe-contact pairs such that the contact spacing in one pair is maintained substantially the same as the contact spacing in each of the other pairs, comprising:

- a plurality of spaced first conductors formed in one or more groups and aligned in a first row;
- a plurality of spaced second conductors formed in one or more groups and aligned in a second row, each of said first and second conductors having a contact end and a circuit end and said second row being spaced from the first row such that each first conductor registers with a mating second conductor, thereby forming a plurality of contact pairs at the contact ends of the conductors;
- a common base insulator formed transversely of and bonded to each of the first and second conductors at the circuit ends thereof such that said conductors and said rows are maintained in the aforementioned spaced relationships in an electrically insulated manner; and
- a common bar insulator formed transversely of and bonded to each of the second conductors along a corresponding portion of each of said second conductors, said portion being located between the base insulator and the contact ends of the second conductors, such that the said bar insulator is separate from but bears upon the first conductors and maintains the contact spacing within the contact pairs and between each pair substantially uniform when the conductors are flexed toward a device to be tested.

#### 4,284,315 CHAFF-FLARE TEST ADAPTER CONNECTING AND DISCONNECTING APPARATUS

Robert A. Williams, 2721 White Settlement Rd., Fort Worth, Tex. 76107

Filed Apr. 16, 1979, Ser. No. 30,454

Int. Cl.<sup>3</sup> H01R 13/621

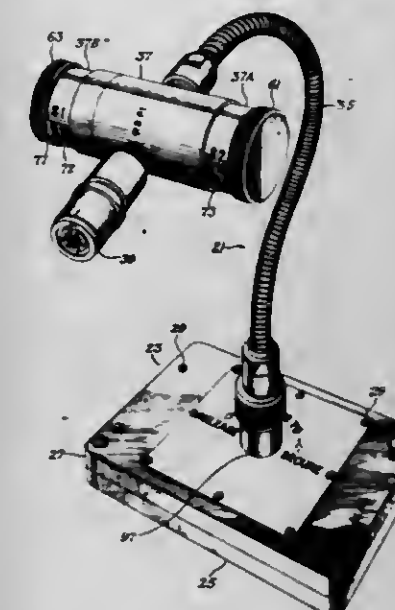
U.S. Cl. 339—89 M

8 Claims

1. An adapter for use for testing the operation of an electrically actuated means having a plurality of electrical contacts and at least two threaded means comprising:

- a base means,
- a plurality of electrical contacts carried by said base means for engaging said plurality of electrical contacts of said electrically actuated means,
- at least two threaded members rotatably carried by said base means adapted to be threaded to said two threaded means respectively of said electrically actuated means,
- a single rotatable control means carried by said base means and located to be rotated in first and second opposite directions,
- first and second drive means coupled between said rotatable control means and said two threaded members respectively for rotating said two threaded members in a given direction when said control means is rotated in said first direction for threading said two threaded members to said two threaded means of said electrically actuated means

and for rotating said two threaded members in a direction opposite said given direction when said control means is rotated in said second direction for unthreading said two threaded members from said two threaded means of said electrically actuated means, said first and second drive means being characterized such



that if one of said threaded members is threaded to a tightened position before the other, said drive means associated with said one threaded member will allow said control means to continue to be rotated in said first direction for causing the other of said drive means to continue rotating its threaded member in said given direction to a tightened position.

#### 4,284,316 TERMINAL BLOCK

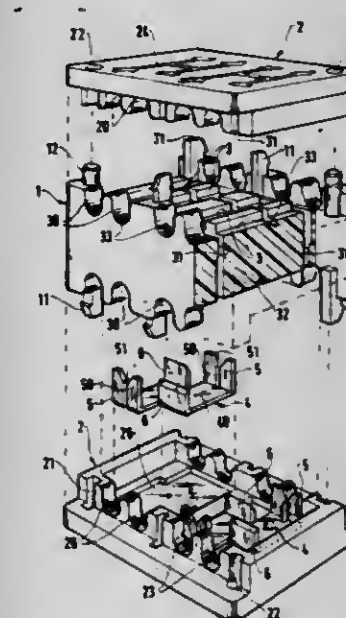
Jean Debaigt, Maisons Laffitt, France, assignor to CGEE Alsthom, Levallois-Perret, France

Filed Oct. 11, 1979, Ser. No. 83,704

Int. Cl.<sup>3</sup> H01R 4/24

U.S. Cl. 339—98

3 Claims



1. An automatic connection terminal block for connecting multiple wires end to end, said terminal block comprising: an insulating box, two independent and identical insulating covers for mounting to upper and lower surfaces of said insulating box, said insulating box having pairs of adjacent, longitudinal channels on said upper and lower surfaces, each cover having cut-outs aligned with channels, said cut-outs bearing connecting parts corresponding to said pairs







is bent back over said outermost insulating layer, a narrow strip of conductive sheet material is interposed between said bent back portion of said exposed core and said outermost insulating layer, said sheet material, and said bent back portion of said exposed core to form a permanent electrical connection between said core and said ferrule, said sheet material being adapted to prevent plastic deformation of said cable due to elevated ambient temperature from affecting said electrical connection.

4,284,323

## TRICHOIC MIRROR

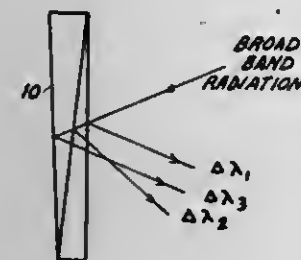
Gerald Jankowitz, Hillsdale, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 28, 1979, Ser. No. 24,912

Int. Cl.<sup>3</sup> G02B 5/22

U.S. Cl. 350—1.6

12 Claims



1. A trichroic mirror comprising: an optical wedge having a first multilayer dielectric interference filter disposed on a front surface of said wedge and a second multilayer dielectric interference filter disposed on a back surface of said wedge, said back surface being tilted in a given direction and at a given wedge angle with respect to said front surface; and a reflecting element spaced from said back surface and tilted in a direction opposite said given direction and at an angle equal to said given wedge angle with respect to said front surface.

4,284,324

## ACOUSTO-OPTICAL IMAGERY SYSTEM BASED ON COHERENT HOLOGRAPHIC DETECTION IN REAL TIME

Jean-Pierre Huignard, and Jean-Pierre Herriau, both of Paris, France, assignors to Thomson-CSF, Paris, France

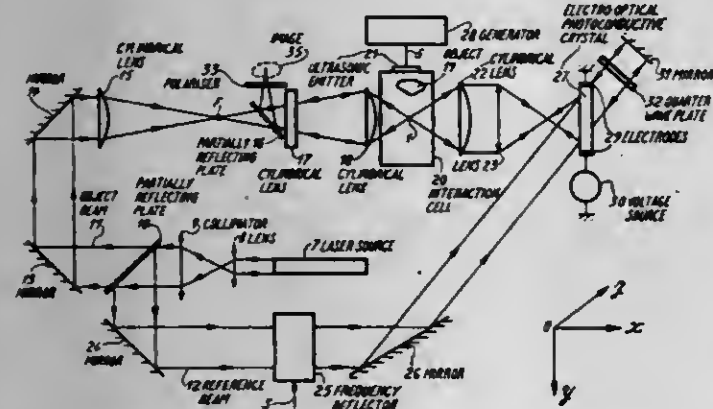
Filed Jun. 20, 1978, Ser. No. 917,334

Claims priority, application France, Jun. 24, 1977, 77 19492

Int. Cl.<sup>3</sup> G03H 1/02

U.S. Cl. 350—3.64

5 Claims



1. An acousto-optical imagery system based on coherent holographic detection comprising an optical source of pulsation  $\omega_0$ , an electro-optical and photoconductive holographic recording crystal, a device forming a convergent cylindrical optical wave of pulsation  $\omega_0$  from the wave emitted by the source, an ultrasonic cell containing a refractive fluid in which an object to be analyzed is placed, an ultrasonic wave emitter

emitting an ultrasonic wave of pulsation  $\omega_s$ , said ultrasonic wave passing through the object to be analysed, said ultrasonic wave and said cylindrical optical wave interacting in the cell to form, by BRAGG diffraction of the optical wave, diffracted orders containing the optical images of said object to be analysed, an additional optical device intended to supply a plane optical reference wave of pulsation  $\omega_0 + k\omega_s$ ,  $k$  being equal to +1 or -1, according to whether the diffracted order to be imaged is the order +1 or -1, said diffracted order and said plane optical reference wave being directed towards said crystal to form interference fringes in said crystal; said electro-optical and photoconductive holographic recording crystal having electrodes connected to a voltage source, a unit for reconstructing from the interference fringes stored in said crystal an image of said object in real time; said unit comprising means for supplying from said source a plane optical reading wave having the same pulsation and direction as the reference wave, but being propagated in the opposite direction thereto, and an optical device forming said image of the object in a viewing plane from the read out beam reconstructed from said crystal, the object thus being viewed in real time.

4,284,325

## EYE SPAN ADJUSTMENT MECHANISM FOR BINOCULARS

Isao Ishibai, Machida, and Kunimitsu Kobayashi, Higashimurayama, both of Japan, assignors to Hoya Corporation, Tokyo, Japan

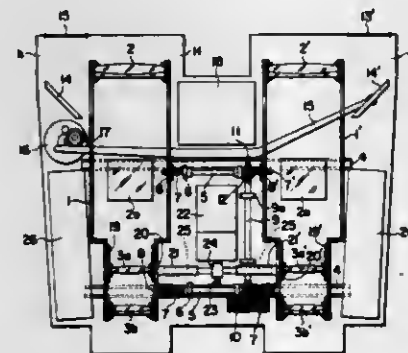
Filed Dec. 28, 1979, Ser. No. 108,097

Claims priority, application Japan, Jun. 4, 1979, 54/68796

Int. Cl.<sup>3</sup> G02B 7/06, 7/11, 7/12

U.S. Cl. 350—36

4 Claims



1. Binoculars including an eye span adjustment mechanism comprising a housing, a pair of lens barrels positioned within said housing, a pair of guide rails disposed laterally in said housing, at least one of said lens barrels being movable along said guide rails, and a pair of drive rods (5) in parallel with said guide rails and threadedly engaged with said lens barrels wherein said at least one said lens barrels is moved along the guide rails (4) in response to the rotation of the drive rods to vary the distance between said lens barrels.

4,284,326

## APPARATUS FOR ELIMINATING EXTERNAL WEATHER EFFECTS FROM THE OBJECTIVE LENS SYSTEM OF AN AIMING PERISCOPE INSTALLED AT AN ARMED VEHICLE

Jörg Durrer, Oberengstringen, and Cornelius Mayer, Fällanden, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Mar. 13, 1980, Ser. No. 130,035

Claims priority, application Switzerland, Mar. 29, 1979, 2900/79

Int. Cl.<sup>3</sup> G02B 23/08, 23/16

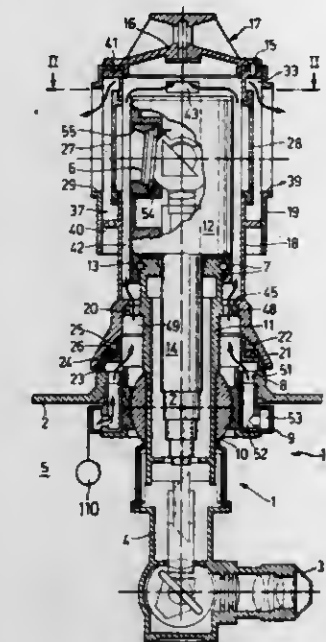
U.S. Cl. 350—63

5 Claims

1. An apparatus for repelling external weather effects from an objective lens system of an aiming periscope mounted in an

armed combat vehicle having a combat compartment, comprising:

- an aiming periscope having a part protruding out of the combat compartment of the combat vehicle;
- a protective hood surrounding said protruding part of said aiming periscope;



means providing air channels between said protective hood and said protruding part through which there can be conveyed an air current which flows past the objective lens system of the aiming periscope towards the outside; means for generating an excess pressure in the combat compartment; and said air channels being flow connected with the combat compartment which is at excess pressure.

4,284,327

## MICROSCOPE WITH ATTACHABLE ILLUMINATING DEVICES

Winfried Kraft, Asslar-Werdorf; Robert Lisfeld, Greifenstein-Ulm; Willi Hagner, Solms-Oberbiel; Karl Wieber, Asslar, and Horst Frimmel, Wetzlar-Hermannstein, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

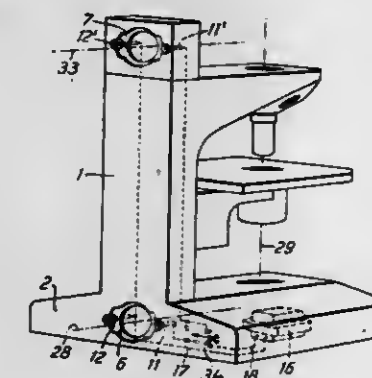
Filed Jan. 25, 1980, Ser. No. 115,149

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2902961

Int. Cl.<sup>3</sup> G02B 21/06, 21/24

U.S. Cl. 350—87

7 Claims



1. A microscope adapted for accepting one or more attachment illuminating devices, which have different dimensions and are designed to be supplied with electric power either from a source within the microscope or external to the microscope, said microscope comprising:

a microscope stand comprising a base and a vertical support member extending from said base; at least one internal supply of electrical energy located inside of said stand for powering an illuminating device; first means, associated with said stand, for connecting any

one of a variety of attachment illuminating devices which have different dimensions and are designed to be supplied with electric power either from said internal supply of electrical energy or from an electrical energy supply external to the microscope, said connecting means including means, adapted to cooperate with complementary coupling means on each attachment illuminating device, for mechanically coupling an attachment illuminating device, and means, adapted to cooperate with complementary electrical coupling means on each attachment illuminating device which is designed to be supplied with electrical energy from said internal supply of electrical energy, for electrically coupling said internal supply of electrical energy with an attachment illuminating device which is designed to be supplied with electrical energy from said internal supply of electrical energy, whereby said attachment means provide for direct standardized attachment of attachment illuminating devices having different dimensions without the use of any size adapting means; and

an intermediate mirror housing connected to said microscope stand by means of said first connecting means, said mirror housing comprising means for mechanically and electrically coupling said mirror housing to said first connecting means; second and third means, identical with said first connecting means, for connecting any of a variety of attachment illuminating devices which have different dimensions and are designed to be supplied with electric power either from said internal supply of electrical energy or from an electrical energy supply external to said microscope, and a mirror displaceably mounted in said mirror housing so as to selectively produce an optical connection between said microscope and either of the attachment illuminating devices connected to said second and third connecting means.

4,284,328

## VEHICLE SAFETY FENDER TRIM

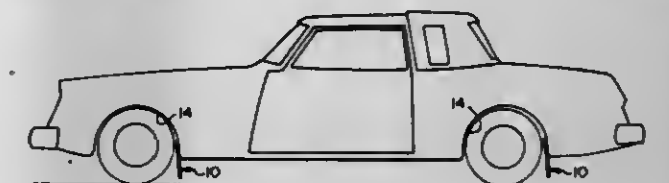
John W. Drews, 2172 Eastview Dr., Des Plaines, Ill. 60018

Filed Jan. 15, 1980, Ser. No. 112,345

Int. Cl.<sup>3</sup> G02B 5/12

U.S. Cl. 350—97

10 Claims



1. A traffic signal fender trim member for motor vehicles comprising a substantially flat, flexible body member having a bottom edge, an outermost edge intended to extend vertically away from said bottom edge when said signal trim member is secured to a motor vehicle, said outermost edge having spaced tab members extending laterally therefrom, the space between adjacent ones of said tab members exceeding the vertical dimension of said tab members, and light reflective targets provided on said spaced tab members.

4,284,329

## LASER GYROSCOPE SYSTEM

Irl W. Smith, and Terry A. Dorschner, both of Newton, Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 868,096, Jan. 3, 1978, abandoned. This application Jun. 25, 1979, Ser. No. 51,557

Int. Cl.<sup>3</sup> G02F 1/09; G01B 9/02

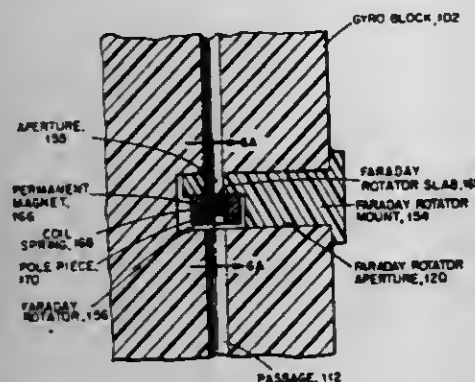
U.S. Cl. 350—375

6 Claims

1. A Faraday rotator element for a laser gyroscope comprising in combination: a base support member having an aperture therein;



a permanent magnet having an aperture therein, said aperture in said permanent magnet being aligned with said aperture in said base support member;  
a slab of rare earth-doped glass, said slab being positioned within said aperture in said permanent magnet, said slab and said permanent magnet being supported by said base member;



a spring, said spring holding said slab against said base member; and  
a retaining member for said spring, said retaining member having an aperture therein aligned with said apertures in said base support member and said permanent magnet.

4,284,330

## ADVANCE MECHANISM FOR CLOSE-UP LENS

Shinsuke Komoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

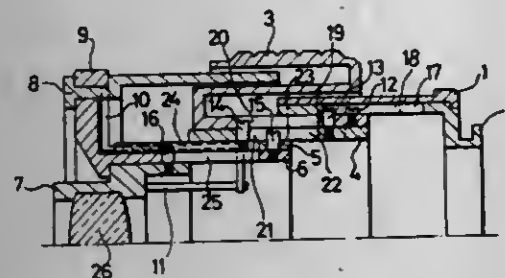
Filed Apr. 4, 1979, Ser. No. 26,968

Claims priority, application Japan, Apr. 11, 1978, 53-42358

Int. Cl.<sup>3</sup> G02B 7/02

U.S. Cl. 350-255

5 Claims



1. In a close-up lens cylinder having at least an attaching cylinder (2) for attachment to a camera body, an operating ring (3) for operating an advance for focussing, an advancing cylinder (4) for a straight advance and a lens frame (7) for supporting a lens, the improvement comprising: an advancing groove (17) divided into a circumferentially extending groove (17A) and a second groove (17B), said advancing cylinder (4) provided with an advancing groove (21) divided into a circumferentially extending groove (21A) and a cam groove (21B), said advancing cylinder (4) further provided with an elongated straight guide channel (22), and a rotating cylinder (5) mounted for rotation around the inner surface of said advancing cylinder (4), said rotating cylinder (5) having a circumferentially extending groove (23) and an advancing groove (24), and a cam member (14) engaging the advancing groove (21) of said advancing cylinder (4) wherein by rotating said operating ring, initially only said lens frame is advanced with respect to said attaching cylinder without advancing of said operating ring and said advancing cylinder and after said advance is substantially completed, said operating ring and said advancing cylinder are advanced together with said lens frame.

4,284,331  
PHOTOGRAPHIC OBJECTIVE HAVING A FOCUSING CONTROL WITH PREVENTION OF CHANGE IN ANGULAR FIELD OF VIEW

Kazuo Tanaka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

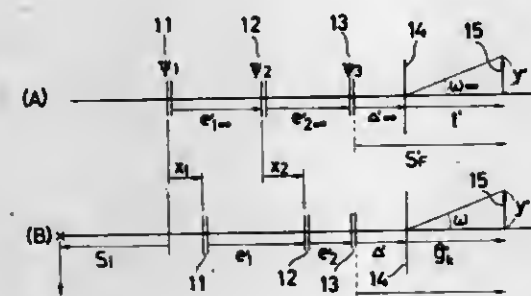
Filed Mar. 19, 1979, Ser. No. 21,684

Claims priority, application Japan, Mar. 23, 1978, 53-33475

Int. Cl.<sup>3</sup> G02B 15/14

U.S. Cl. 350-427

1 Claim



1. A photographic objective having focusing means with prevention of change in angular field of view comprising:  
a first lens group arranged in a frontmost object space and movable for focusing;  
a second lens group arranged on the image side of said first lens group and movable for focusing, wherein the amount of the movement  $x_2$  of said second lens group for focusing being in accompaniment with the amount of the movement  $x_1$  of said first lens group, the amount of movement  $x_2$  being almost equal to:

$$x_2 = x_1 - e'1x + \frac{1}{\psi_1} + \frac{B^* - D^* \Delta' \infty}{A^* - C^* \Delta' \infty} - \frac{1}{\psi_1(A^* - C^* \Delta' \infty)}$$

where

$$A^* = -\psi_2 e'2 + 1$$

$$B^* = -e'2$$

$$C^* = -\psi_2 \psi_3 e'2 + \psi_2 + \psi_3$$

$$D^* = -\psi_3 e'2 + 1$$

$$e'2 = e'2x - x_2$$

$e'1\infty$ : the interval between the principal points of the first and second lens groups in a state where the optical system is focused at infinity;

$e'2\infty$ : the interval between the principal points of the second and third lens groups in a state where the optical system is focused at infinity;

$\psi_i$ : the power of the  $i$ -th lens group;

$\Delta' \infty$ : the distance from the rear principal point of the third lens group to the rear principal point of the entire optical system in a state where the system is focused at infinity; and

a third lens group arranged on the image side of said second group and stationary during focusing.

4,284,332

## SHUTTER MECHANISM FOR MOTION PICTURE CAMERAS

Jiro Sekine, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 609,074, Aug. 29, 1975, abandoned.

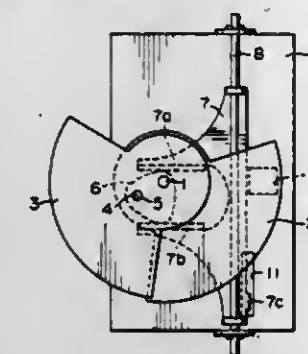
This application Apr. 5, 1977, Ser. No. 784,821

Claims priority, application Japan, Sep. 3, 1974, 49/101677

Int. Cl.<sup>3</sup> G03B 9/10

U.S. Cl. 352-208

7 Claims



1. A rotary shutter mechanism for a motion picture camera comprising a first sector blade having an open angle rotatable about an axis to open and close an exposure aperture of the camera, a second sector blade having an open angle rotatable about said axis to open and close the aperture, an end plate extending in parallel with and in front of said sector blades, pin-and-hole engaging mechanical means for connecting the second sector blade with the first sector blade to form an open angle thereby which is smaller than the open angle of the first sector blade so that both blades rotate together to effect a shorter exposure time, and pin-and-hole engaging mechanical means for separating the second sector blade from the first sector blade and connecting the second sector blade with the end plate to hold it stationary at a position where the second sector blade fully opens said aperture so that only the first sector blade opens and closes the aperture to effect a longer exposure time.

4,284,333

## EXPOSURE CONTROL DEVICE FOR CAMERA

Masaharu Kawamura, Kawasaki; Yoshihiro Shigeta, Tokyo; Masanori Uchidoi, Yokohama; Yoji Sugiura, Yokohama, and Hiroshi Yamamoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 913,544, Jun. 8, 1978, abandoned. This application Apr. 11, 1980, Ser. No. 139,347

Claims priority, application Japan, Jun. 15, 1977, 52-70748

Int. Cl.<sup>3</sup> G03B 7/093

U.S. Cl. 354-23 D

4 Claims

1. An exposure control device for a camera comprising: photographing information signal producing means, said means producing an analog signal in accordance with photographing information;

constant voltage producing means for producing a constant voltage;

standard voltage producing means for producing a standard voltage;

an operational amplifier to whose inverting input terminal the analog signal and the constant voltage are applied and to whose non-inverting input terminal the standard voltage is applied;

a condenser connected between the inverting input terminal and the output terminal of the operational amplifier, said condenser being charged when the analog signal is applied to the operational amplifier and discharged when constant voltage is applied;

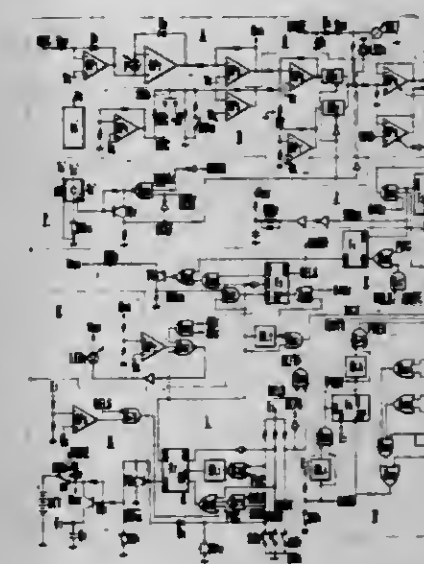
a comparator to whose first input terminal the output of the operational amplifier is applied and to whose second input terminal the standard voltage is applied, said comparator

being inverted when the output of the operational amplifier reaches the standard voltage;

first switching means, provided between the photographing information signal producing means and the inverting terminal of the operational amplifier, for forming a charging path for the condenser when said first switching means is actuated;

second switching means, provided between the constant voltage producing means and the inverting input terminal of the operational amplifier, for forming a charging path for the condenser when said second switching means is actuated;

pulse producing means for producing pulses;



a counter for counting the number of pulses from the pulse producing means and for stopping the counting, when the inverted signal from the comparator is applied, so as to produce a signal for controlling the exposure;  
said counter producing alternatively a signal for actuating the first switching means and a signal for actuating the second switching means;  
reset-enable-signal producing means for producing a signal enabling the resetting of the counter for a certain determined time from the release operation start; and  
gate means for resetting the counter, being applied with the inverted signal from the comparator when the reset-enable-signal is being applied, the condenser being discharged down to the standard voltage when the counter has been reset by means of said gate means.

4,284,334

## CIRCUIT ARRANGEMENT FOR THE COMPENSATION OF THE TEMPERATURE COEFFICIENT OF SEMICONDUCTOR JUNCTIONS

Rolf Magel, Ferawald, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 38,939

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822035

Int. Cl.<sup>3</sup> G03B 7/083, 7/22; G05F 3/16

U.S. Cl. 354-24

6 Claims

1. An arrangement for compensating a temperature coefficient of a semiconductor junction connected in a circuit comprising:

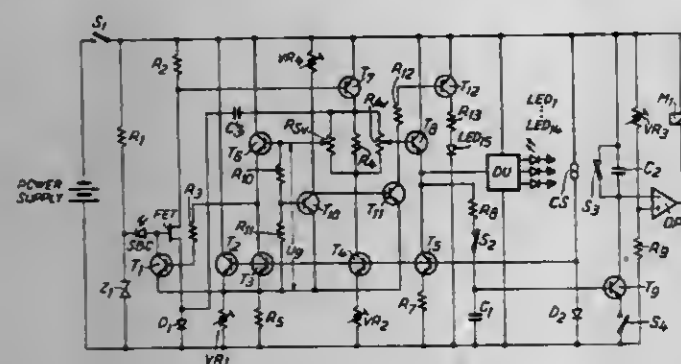
first, second, and third transistors of the same predetermined type, each having a base-emitter junction; means operatively connected to said transistors for providing a respective collector current; and

a resistive voltage divider having two ends and a center tap, wherein said transistors and said divider are operatively connected such that the voltages of the base-emitter junctions of the first and second transistors are summed and applied across the ends of said voltage divider, the voltage from one said end to said center tap connected across the



base-emitter junction of said third transistor, whereby the collector current of said third transistor corresponds to a geometric mean of the respective collector currents of said first and second transistors and is substantially less temperature-dependent than the collector current of said first transistor.

5. The arrangement of claims 1, 2, 3, or 4, wherein the base of said first transistor is coupled to the emitter of said second transistor, the base of said second transistor is coupled to one end of said voltage divider, the base of said third transistor is coupled to the center tap of said voltage divider, and the other



end of said voltage divider is coupled to the emitters of said first and third transistors.

6. The arrangement of claim 5, wherein said circuit comprises an exposure measuring and control circuit for a photographic device, further comprising:

- a photoelectric element connected for providing the collector current of said first transistor; and
- circuit means coupled to the base of said second transistor for controlling a shutter of said photographic device, said circuit means having manually-adjustable means for input of aperture and film sensitivity information.

4,284,335

## FOCUS DETECTING APPARATUS

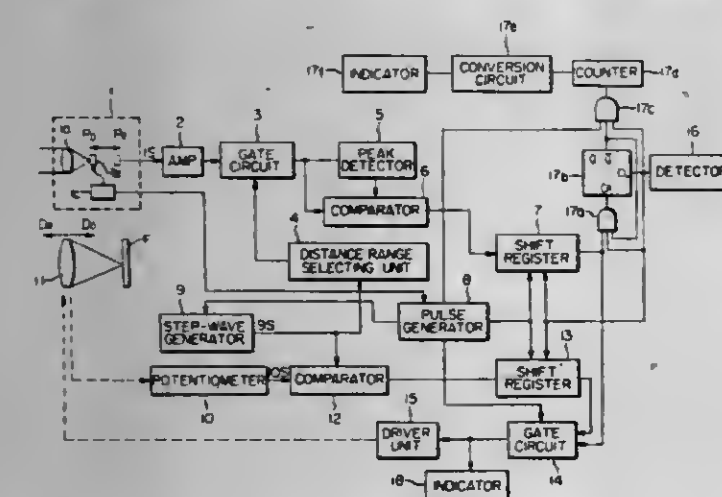
Mikio Takemae, Yokohama, and Hiroaki Tanaka, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan  
Filed Feb. 23, 1979, Ser. No. 16,164

Claims priority, application Japan, Feb. 24, 1978, 53-19624

Int. Cl.<sup>3</sup> G03B 3/10

U.S. Cl. 354—25

8 Claims



8. An automatic focusing apparatus comprising:

- (1) an image forming lens system for forming the image of an object on a predetermined surface;
- (2) distance selecting means extraneously operable to select a desired distance range within the focusable distance range of said image forming lens system;
- (3) range finding means for measuring the distance between an object within the selected distance range and the automatic focusing apparatus in accordance with the output of said distance selecting means; and
- (4) means connected to said range finding means for focusing

said image forming lens system to an object within the selected distance range in accordance with the output of said range finding means.

4,284,336

## AUTOMATIC FOCUSING CAMERA

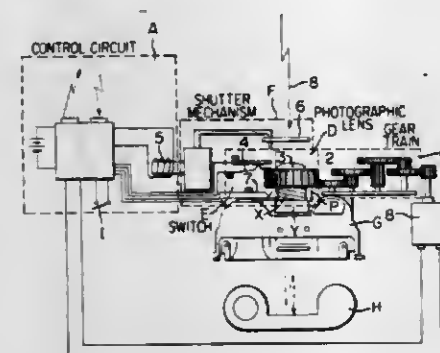
Hiroshi Iwata, Nara, and Wataru Hasegawa, Sakai, both of Japan, assignors to West Electric Co., Ltd., Osaka, Japan  
Filed Oct. 18, 1979, Ser. No. 86,073

Claims priority, application Japan, Oct. 26, 1978, 53/132169

Int. Cl.<sup>3</sup> G03B 3/10, 17/38

U.S. Cl. 354—25

3 Claims



1. An automatic focusing camera capable of automatically measuring the distance to an object and focusing the image of said object, characterized by the provision of

- (a) a power supply control means for controlling the power supply from a power source,
- (b) a distance measuring means for measuring the distance to said object,
- (c) a lens shift means for continuously shifting a lens between the minimum focusing distance position and the infinity position,
- (d) a lens position sensing means for sensing the position of said lens, and
- (e) a shutter control means responsive to both the signals from said distance measuring means and said lens position sensing means for controlling the release of a shutter, whereby said shutter may be released while said lens is being shifted.

4,284,337

## PHOTOGRAPHIC APPARATUS

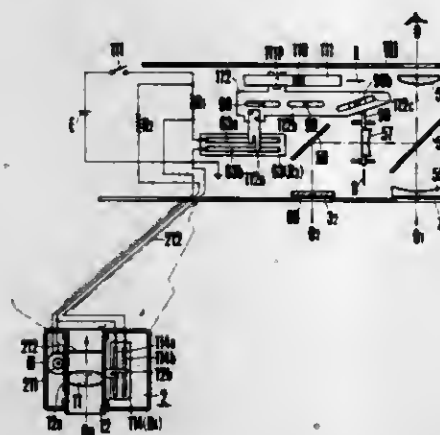
Fumio Ito, and Mutsunobu Yazaki, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan  
Continuation of Ser. No. 819,571, Jul. 27, 1977, Pat. No. 4,184,759. This application Mar. 23, 1979, Ser. No. 23,274

Claims priority, application Japan, Jul. 30, 1976, 51-91093

Int. Cl.<sup>3</sup> G03B 3/10, 7/08, 17/04, 17/50

U.S. Cl. 354—25

5 Claims



1. A photographic apparatus and system comprising:

- (a) a rear housing having a photosensitive material receiving chamber into which a photosensitive material is loaded;
- (b) a front housing have:
  - a photographic lens optical system; and
  - a photographic lens optical system position adjusting means for moving manually at least a part of said photographic lens optical system along an optical axis of said optical system to adjust the position at which said photographic lens optical system forms an image on said optical axis;
- (c) lens optical system position information output means for producing an electrical output corresponding to the movement of said movable lens optical system in said photographic lens optical system when said movable lens optical system is moved;
- (d) optical distance measuring means including a movable optical means for measuring the distance from said distance to an object to be photographed;
- (e) a motor for actuating said movable optical means;
- (f) distance information output means for producing an electrical output corresponding to the movement of said movable optical means; and
- (g) electrical circuit means connected to said lens optical system position information producing means and distance information producing means for driving said motor until the output of said lens optical system position information output means and the output of said distance information output means becomes a predetermined relationship.

4,284,338

PHOTOGRAPHING APPARATUS FOR AN ENDOSCOPE  
Yuji Ikuno, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

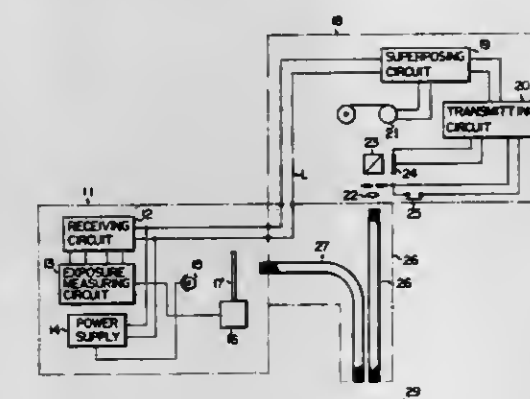
Filed Feb. 6, 1980, Ser. No. 119,008

Claims priority, application Japan, Feb. 14, 1979, 54/15628

Int. Cl.<sup>3</sup> G03B 7/083; A61B 1/04

U.S. Cl. 354—32

7 Claims



1. A photographing apparatus for an endoscope for making an automatic exposure photograph through the combination of a light source unit, an endoscope and a camera for endoscope photograph, wherein the camera for endoscope photograph includes a photosensing element for producing a photocurrent signal, a transmitting circuit for transmitting a release signal produced in response to the operation of a release switch and a modulated signal modulated by the photocurrent signal derived from said photosensing element, and a superposing circuit for superposing the modulated signal onto a motor drive line connected to a film wind motor, and the light source unit includes a demodulating circuit for demodulating the modulated signal transmitted from said transmitting circuit and an exposure measuring circuit for measuring an optimum exposure by using a demodulated signal from said demodulating circuit.

4,284,339  
PROGRAMMABLE FULLY AUTOMATIC SHUTTER  
SYSTEM FOR PHOTOGRAPHIC CAMERAS

Kurt Borowski, Aschheim, and Josef Ganser, Munich, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

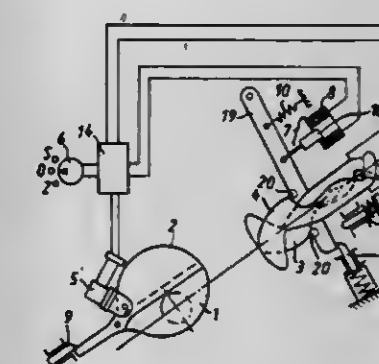
Filed Dec. 4, 1978, Ser. No. 965,920

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1977, 2754122

Int. Cl.<sup>3</sup> G03B 7/00, 9/06

U.S. Cl. 354—38

8 Claims



1. A shutter diaphragm mechanism, comprising:

- a plurality of movable blades which can be moved towards and away from each other and can thereby decrease and increase a thickness of a beam of light passed between the blades in accordance with their movement;
- a movable escapement mechanism cooperating with the blades to move them towards and away from each other;
- a spring attached to the escapement mechanism and urging it to allow the blades to move away from each other; and
- an adjustable damper attached to the escapement mechanism and opposing movement thereof, the adjustable damper including a fixed coil, a permanent magnet located within the coil and linked to the escapement mechanism in a manner that the magnet moves axially within the coil in response to movement of the escapement mechanism, and a variable resistance connected across the coil.

4,284,340

TEMPERATURE-COMPENSATED SIGNAL  
TRANSMITTING DEVICE

Yoshiaki Ohtsuno, Kawasaki, and Sakuji Watanabe, Warabi, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

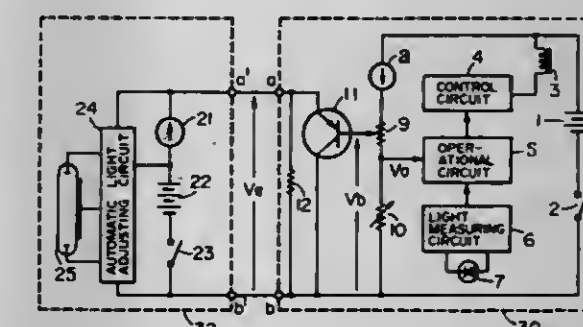
Filed Apr. 10, 1980, Ser. No. 138,980

Claims priority, application Japan, May 1, 1979, 54/52473

Int. Cl.<sup>3</sup> G03B 7/02, 15/03

U.S. Cl. 354—50

7 Claims



1. A camera having means for arbitrarily selecting the exposure condition of a film thereby to generate a signal based on said selection, said signal representing exposure information and having a temperature coefficient, and exposure time determining means for determining the opening time of the shutter of the camera on the basis of said signal, said exposure informa-



tion being produced for a speed light during photography using said speed light, the improvement comprising:

signal transmitting means for receiving the signal of said exposure information as input and transmitting said exposure information to said speed light, said signal transmitting means having a transfer function including a temperature coefficient opposite in polarity to said temperature coefficient of said signal representing exposure information.

4,284,341

# EXPOSURE CONTROL SYSTEM FOR SINGLE LENS REFLEX CAMERAS

Selji Yamada, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

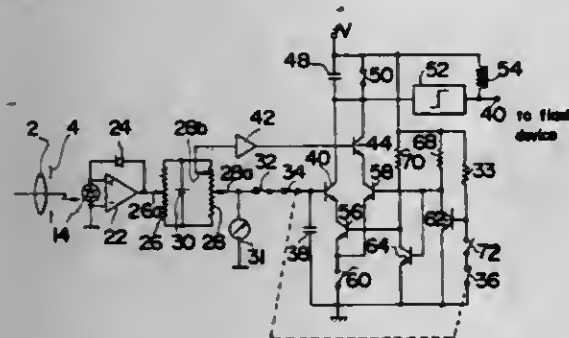
Filed Jul. 31, 1979, Ser. No. 62,507

Claims priority, application Japan, Aug. 9, 1978, 53-96847

Int. Cl.<sup>3</sup> G03B 7/083, 7/089, 7/099

U.S. Cl. 354—51

13 Claims



1. An automatic exposure control system for a single lens reflex camera having a reflex mirror and a focal plane shutter member, comprising:

first light measuring means for generating an output in response to the measurement of light from an object through the camera objective with the reflex mirror at a viewing position thereof;

storage means for storing said output;

release means for storing said output in response to a shutter release operation;

manually operable means for storing said output;

second light measuring means for measuring the light from the object passing through the camera objective and reflected by the surface of a film;

shutter control means for controlling the closure of said focal plane shutter member;

switch means for selectively connecting said shutter control means with said storage means and said second light measuring means, said switch means switching the connection from said storage means to said second light measuring means when said focal plane shutter member moves a given distance; and

prevention means for preventing the switching from said storage means to said second light measuring means when said manually operable means is operated.

5. An automatic exposure control system for a single lens reflex camera including an objective lens, a focal plane shutter member, and a reflex mirror movable between a viewing and a photographic position and having a semi-transparent portion, said system comprising:

photoelectric means receiving light from an object to be photographed through said objective lens and said semi-transparent portion of said reflex mirror with the latter at said viewing position, and receiving the light from the object passing through the objective lens and reflected from the film at the focal plane of said objective lens with said mirror at said photographic position;

light measuring means including said photoelectric means for generating a light signal as a function of the light received by said photoelectric means;

storage means for storing said light signal;

first interruption means for preventing said storage means

from storing said light signal in conjunction with a camera shutter release operation;

delay means for delaying the closure of said shutter member; and

switch means for connecting said delay means with said storage means at the first stage of a camera exposure operation, and subsequently switching the connection of said delay means to said light measuring means when a given time has passed.

4,284,342

# PHOTOGRAPHIC CAMERA WITH MULTI-PURPOSE EXPOSURE-PARAMETER ADJUSTER

Rolf Schröder, Baldham; Dieter Engelsmann, Unterhaching; Peter Lermann, P. Feldkirchen/Westerham, and Rainer Spinler, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

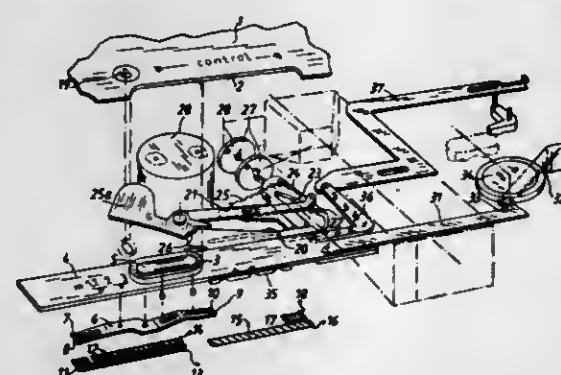
Filed Mar. 14, 1979, Ser. No. 20,330

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 2841650

Int. Cl.<sup>3</sup> G03B 7/00, 9/02, 17/00, 17/38

U.S. Cl. 354—60 E

9 Claims



1. A user-operable mechanism for varying an exposure parameter of a camera with a housing in order to adjust such parameter to correspond with ambient light conditions as determined by an electronic exposure computer in a manner that power to the computer can be turned on and off by operation of the mechanism and the camera will be disabled from exposing a frame when power to the exposure computer is turned off, the mechanism further operating in a manner that a user is informed when the power to the exposure computer is turned off and on by appearance and disappearance of an indicator located on the camera, comprising:

a control horizontally displaceable and vertically depressable by a user, the control sliding in an elongated slot in the housing between a first position and a second position;

a shutter button located on the camera housing;

an elongated slide connected to the control and movable therewith, the slide having a projection which is so located that when the control is located in the first position the projection interferes with motion of the shutter button so as to prevent a user from operating the shutter button while allowing the shutter button to be operated by a user when the control is displaced from the first position;

a first switch connected to the slide and the exposure computer and operating in a manner that when the control is in the first position the first switch is opened, and when the control is displaced from the first position the first switch is closed, whereby power to the exposure computer is turned on and off in response to displacement of the control;

a light-transmitting window located on the housing;

a plaque upon which a visual indication is located, the plaque being located so that the indication is viewable through the window; and

a flag connected to the control and movable with displacement thereof, the flag being interposed between the window and the plaque when the control is in the first position.

tion and being uninterposed therebetween when the control is displaced from the first position.

4,284,343

# APPARATUS FOR THE ELECTRIC LEVEL CONTROL OF A DEVELOPING SOLUTION IN A STORAGE TANK

Martin Junghanns, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

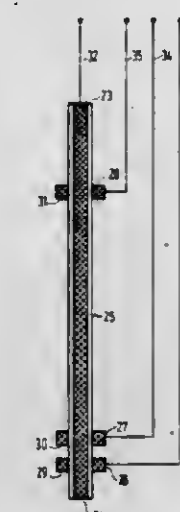
Filed Aug. 9, 1979, Ser. No. 65,198

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835413

Int. Cl.<sup>3</sup> G03D 5/06

U.S. Cl. 354—318

6 Claims



1. An apparatus for monitoring the level of a developing solution contained in a storage tank and used for developing in a development device comprising:

electrodes positioned inside said storage tank,

said electrodes having active surfaces positioned at different levels in said tank and exposed to the developing solution for the conduction of electrical current,

at least one of said electrodes having its active surface positioned at a level height of the developing solution at which a signalling action is started, and another one of said electrodes having an active surface substantially always positioned, when operative, within said developing solution thus serving as a reference electrode,

an elongated body member having an insulating circumferential material thereon, at least said non-reference electrodes being annular and spacedly disposed around said elongated body member, and

an electric switching circuit connected to said electrodes for triggering the signalling action as a function of the electric resistance between the electrodes.

4,284,344

# ELECTROPHOTOGRAPHIC DENSITY CONTROL

Hiroshi Okamoto, Toyokawa; Tetsuya Yamada, Aichi; Fumitoshiki Atsumi, Shizuoka, and Isao Iizaka, Shinshiro, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 20, 1979, Ser. No. 59,177

Claims priority, application Japan, Jul. 27, 1978, 53/92300

Int. Cl.<sup>3</sup> G03G 15/00

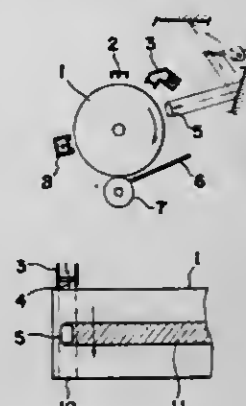
U.S. Cl. 355—14 E

6 Claims

1. In an electrophotographic copying apparatus which at least comprises a photosensitive member having a photoreceptor surface thereon while being rotatable in one direction; a corona charging means for charging said photoreceptor surface therewith; a light radiation means for illuminating a surface of an original to be copied therewith; an optical arrangement for introducing an imagewise light to an exposing station positioned at a predetermined position along and apart from a circumferential path of said photoreceptive member; and an erasing means for erasing the residual electrical charge on said

photoreceptor surface therewith while being positioned relatively prior to the position of said corona charging means with respect to the direction of rotation of said photoreceptive member so that said residual electrical charge is electrostatically erased before the successive electrical charge is to be imparted with said electrically charging means, a photoreceptor charge control arrangement to be employed for said electrophotographic copying apparatus which comprises:

(a) a supplementary exposing means for projecting a predetermined amount of light onto a predetermined circumferential portion of said photoreceptor surface having been already electrically charged with said corona charging means, said supplementary exposing means being positioned between said position of said corona charging means and said position of said exposing station while being along and apart from said circumferential surface of said photoreceptive member, said predetermined amount



of light being equivalent to a specific amount of light radiated from said light radiation means for substantially reproducing the original portion having the image density of the minimum reproducible level for a respective copying process to be concerned;

(b) a surface potential detecting means for detecting the surface potential of said predetermined circumferential portion of said photoreceptor having been already exposed with said supplementary exposing means, said surface potential detecting means being placed at said exposing station and being disposed immediately before said position of said exposing station with respect to said direction of rotation; and

(c) a control circuitry means capable of controlling said amount of light to be given by said light radiation means in response to the variation of surface potential detected by said surface potential detecting means.

4,284,345

# BLADE-TYPE CLEANING DEVICE FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Takashi Sugiyama; Masaya Ogawa, both of Osaka, and Hiroshi Murasaki, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 31, 1979, Ser. No. 71,794

Claims priority, application Japan, Sep. 19, 1978, 53-115256; Sep. 19, 1978, 53-115257; Apr. 13, 1979, 54-50010[U]

Int. Cl.<sup>3</sup> G03G 21/00

U.S. Cl. 355—15

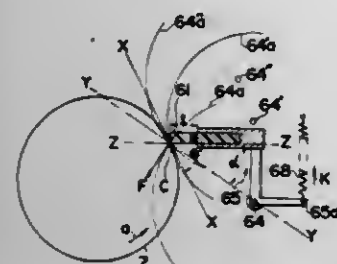
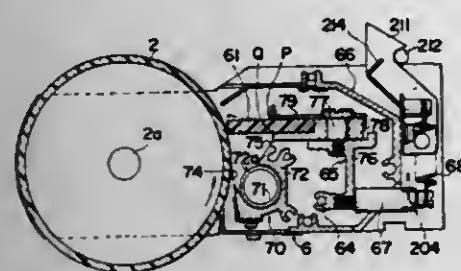
13 Claims

1. In an electrophotographic copying apparatus, an improved blade-type cleaning device comprising: an elastic blade member which is held in pressing contact with the surface of an electrophotographic photoconductive member for removing residual toner from the surface during movement of the photoconductive member;

holder means for holding the blade member, said holder means being turnable about a support point for bringing the blade member into or out of contact with the surface and holding said blade member when it is in contact with the surface positioned at an angle  $\theta$  defined by  $65^\circ \leq \theta \leq 85^\circ$  relative to the portion of a tangent to the



surface through the point of contact between the blade member and the surface and which portion extends on the side of the blade toward which the uncleaned portion of said surface is moving, said support point lying on a line through said point of contact and on the same side of said



blade as said tangent portion and which is at an angle  $\alpha$  relative to said blade defined by  $0^\circ \leq \alpha \leq 90^\circ$ ; and biasing means connected to said holder means for biasing said holder means to urge said blade member into contact with said surface.

4,284,346

## ELECTROPHOTOGRAPHIC COPYING MACHINE

Hiroshi Ikeda, Alchi, and Seichi Sakurai, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

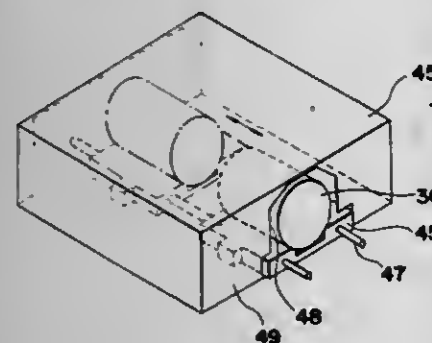
Filed Apr. 9, 1979, Ser. No. 28,326

Claims priority, application Japan, Apr. 15, 1978, 53/44706

Int. Cl.<sup>3</sup> G03B 27/54; G03G 15/00; G03B 27/34

U.S. Cl. 355-67

22 Claims



20. An electrophotographic copying machine of a mirror scan type selectively operable in a plurality of magnification, which comprises, in combination:

an original support for supporting thereon an original to be copied;

a photo-receptor movable past an exposure station;

an optical projecting means positioned between the original support and the photo-receptor for forming an optical path for projecting an image of the original onto the photo-receptor at the exposure station, said optical projecting means including a movably supported projecting lens means, an exposure slit defining means and a scanning mirror assembly;

means connected to said projecting lens means for moving the projecting lens means for varying the magnification of the image of the original projected onto the photo-receptor by said optical projecting means between a first magnification and a second magnification by varying said optical path, said second magnification being smaller than said

first magnification; and

1. A light shielding member fixedly positioned along said optical path in a non-interfering position relative to said optical path when said optical projecting means is projecting the image at said first magnification and in a position relative to said optical path for blocking part of the image light in a direction lengthwise of the exposure slit when said projecting means is projecting the image of said second magnification for controlling the pattern of distribution of light carrying the original image.

4,284,347

## APERTURE-CONTROLLING DEVICE IN A VARIABLE-SCALE PHOTOCOPYING MACHINE

Shozo Shimomura, Yokohama, and Tadaaki Kanno, Yokosuka, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

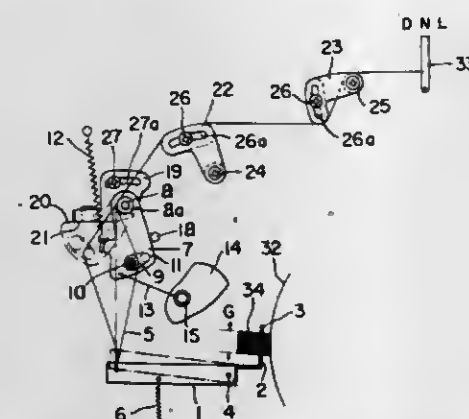
Filed Jan. 3, 1980, Ser. No. 109,316

Claims priority, application Japan, Jan. 30, 1979, 54/9547

Int. Cl.<sup>3</sup> G03B 27/72

U.S. Cl. 355-71

5 Claims



1. In a variable-scale photocopying machine having a photo-sensitive medium, a light source, and an optical system including a scale-varying mechanism for varying the photocopying scale and operating to project light from the light source as an exposure light beam onto the photosensitive medium, the combination therewith of an aperture-controlling device comprising:

an aperture-adjusting mechanism for adjusting the width of the exposure light beam;

a flexible filament structure in tensioned state connected at one end to the aperture-adjusting mechanism for adjusting actuation thereof and passed at an intermediate part thereof around a guide, whereby a span of the filament structure is formed between the aperture-adjusting mechanism and the guide;

an aperture-adjusting member engaging the filament member and being movable in opposite first and second directions to adjustably deflect the filament structure at a point of the span thereby to adjustably actuate the aperture-adjusting mechanism;

first biasing means for biasing the aperture-adjusting member in the first direction;

a stationary stop against which the aperture-adjusting member is biased by the first biasing means in response to the operation of the scale-varying mechanism, the aperture-adjusting mechanism then being normally in an equal-scale position;

second biasing means for biasing the aperture-adjusting member in the second direction; and

an adjustable stop member which is positionally adjustable according to a photocopying scale other than equal scale, and against which the aperture-adjusting member is biased by the second biasing means in response to operation of the scale-varying mechanism, the aperture-adjusting mechanism then being in adjusted position for said photocopying scale.

4,284,348

## ORIGINAL TRANSPORT SYSTEM FOR COPYING APPARATUS

Julius V. C. Graswinckel, Arcen, Netherlands, assignor to Océ Nederland B.V., Venlo, Netherlands

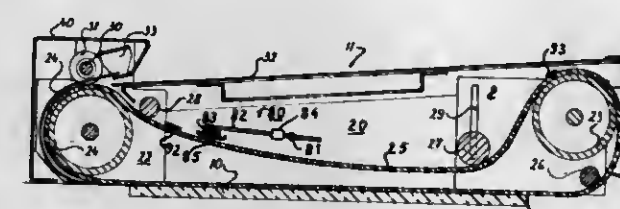
Filed Sep. 18, 1979, Ser. No. 76,782

Claims priority, application Netherlands, Sep. 18, 1978, 7809451

Int. Cl.<sup>3</sup> G03B 27/62

U.S. Cl. 355-75

20 Claims



1. In an apparatus for transporting sheetlike originals past an exposure plate of a copying apparatus that includes at least two rotatably supported rollers, at least one endless transport belt extending about and positioned by said rollers, said belt having a lower flight that extends over said plate with one surface thereof coming into contact with said plate, and means for driving said belt, the improvement which comprises means for applying solid adherent means to said one surface of said belt which comes into contact with said exposure plate.

4,284,349

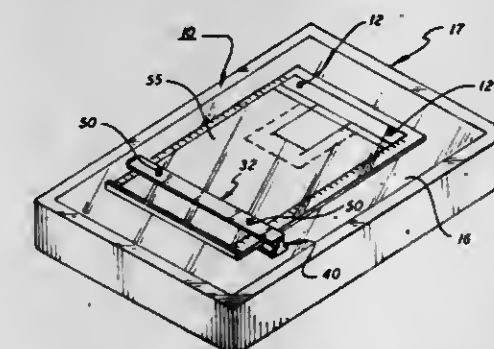
MEANS FOR IMAGING A LITHOGRAPHIC PLATE  
Thomas T. Beasley, 300 Maple St., Rome, N.Y. 13440, and Brian G. Hanley, Box 22, Prospect, N.Y. 13435

Filed Jan. 7, 1979, Ser. No. 46,214

Int. Cl.<sup>3</sup> G03B 27/02

U.S. Cl. 355-79

6 Claims



1. A layout board for use in carrying out a lithographic step and repeat process wherein one original containing information to be reproduced is mounted upon a strip sheet so that the sheet can be further used to provide two independent images upon a single lithographic plate having mounting holes along the top and bottom margins that are spaced apart at one-half inch intervals, the board including

a base section having a work surface that is light transmitting and two parallel guide rails extending along the length of the work surface,

a central reference line inscribed on the work surface that is parallel with the guide rails and which extends vertically along the length of the work surface,

a first pair of stationary registration pins that are coaxially aligned in the top of the work surface upon a common center line that is perpendicular to said central reference line, said stationary registration pins being equally spaced to either side of the central reference line and having a center distance that is some fixed multiple of the half-inch hole spacing contained in the plate,

a straight edge that is slidably mounted upon the work surface of the base section having a pair of slide members that ride in sliding contact against the side edges of the base section whereby the straight edge moves vertically along the work surface,

a second pair of raised registration pins mounted in the

straight edge for movement therewith, said pins being equally spaced on either side of said central reference line and having a center distance equal to that of said first pair of registration pins whereby said first and second pair of pins are moved towards or away from each other as the straight edge is slidably repositioned on the work surface, a horizontal reference line inscribed upon the base section that is aligned along the common center line of said first pair of stationary registration pins, and a vertical scale inscribed along one of the side edges of the board containing a number of equally spaced graduations for permitting accurate positioning of the straight edge in regard to the horizontal reference line.

4,284,350

## LASER GEOPHONE

Julian B. Coon; Bobby J. Thomas; William L. Chapman, all of Ponca City, Okla., and James C. Fowler, Burke, Va., assignors to Conoco, Inc., Ponca City, Okla.

Filed Nov. 14, 1979, Ser. No. 94,141

Int. Cl.<sup>3</sup> G01P 3/36; G01B 11/02, 9/02

U.S. Cl. 356-28.5

9 Claims



1. A method for measuring the velocity of earth surface motion, comprising steps of: generating and directing a coherent light beam toward a selected earth surface position; reflecting said directed coherent light beam as a reference beam from a reflector at said position; reflecting said directed coherent light beam as a signal beam from a second resiliently mounted reflector moving with vertical motion of said earth surface at said position; and detecting said reflected beam, which includes both the reference and the signal beam reflection path components, to derive an instantaneous difference frequency that is proportional to velocity of the earth surface motion.

4,284,351

## PROCESSING OF DIGITAL SIGNALS

Michael Alldritt, Worcester; Robla Jones, Malvern; Christopher J. Oliver, Malvern, and John M. Vaughan, Malvern, all of England, assignors to National Research Development Corporation, London, England

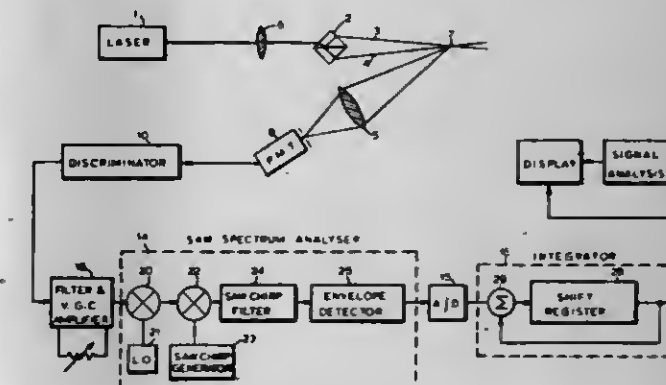
Continuation of Ser. No. 914,812, Jun. 12, 1978, abandoned.

This application May 21, 1980, Ser. No. 152,216

Int. Cl.<sup>3</sup> G01P 3/36; G01R 23/16; H03K 5/00

U.S. Cl. 356-28.5

5 Claims



1. A method of processing a digital electrical signal from a photon-counting detector composed of a train of discrete



pulses each representing the detection of an individual photon, to recover spectral information contained in the spacings between the pulses, the method comprising the steps of applying the said digital signal to a surface acoustic wave (SAW) spectrum analyzer arranged to produce output signals which represent the power spectrum of constituent sample lengths of the digital signal over a selected frequency range, and integrating a plurality of said output signals to produce an integrated output signal representing the overall power spectrum, over at least a part of said selected frequency range, of a plurality of constituent sample lengths of the digital signal.

4,284,352

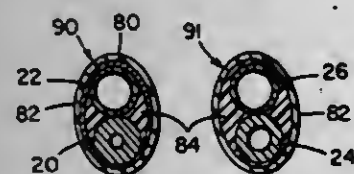
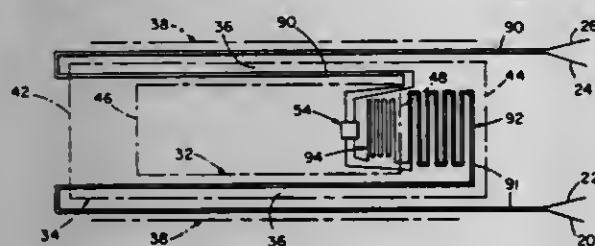
## HEAT EXCHANGER FOR REFRACTOMETER

William W. Carson, Mendon, and John S. Roe, Millis, both of Mass., assignors to Waters Associates, Inc., Milford, Mass.  
Filed Jan. 20, 1979, Ser. No. 50,326

Int. Cl.<sup>3</sup> G01N 21/41

U.S. Cl. 356—134

26 Claims



1. Apparatus for measuring changes in a physical property of a flowing fluid, comprising a cell through which said fluid flows, said cell having an inlet and an outlet, an inlet tube connected to the inlet of said cell, for delivering said flowing fluid to said cell, and an outlet tube connected to the outlet of said cell, for transporting said flowing fluid away from said cell, said inlet and outlet tubes being mounted in heat-exchanging relationship with each other, so as to transfer heat between the incoming and outgoing fluid and thereby reduce any temperature difference between the incoming fluid and the cell.

4,284,353

## FLAW DETECTING APPARATUS

Hajime Yoshida, Chofu; Takashi Aoki, Sakai, and Kei Nishida, Tokyo, all of Japan, assignors to Hajime Industries Ltd., Tokyo and Nihon Pillow Block Mfg. Co., Osaka, both of Japan

Filed Jul. 13, 1979, Ser. No. 57,419

Claims priority, application Japan, Jul. 17, 1978, 53/88799

Int. Cl.<sup>3</sup> G01N 21/32

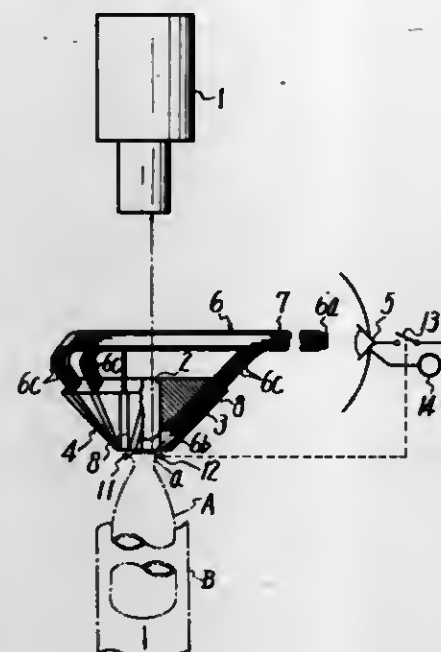
U.S. Cl. 356—240

5 Claims

1. Apparatus for detecting flaws in a bottle or the like, comprising:

- a light source,
- a light projecting body adapted to be located in opposition to the mouth of the bottle, the flaws of which are to be detected, said body having
  - a center bore the diameter of which is at least substantially equal to the outer diameter of the mouth of the bottle and,
  - a plurality of elongated passages extending through said body in communication with said center bore, the

longitudinal directions of each of said passages being substantially coincident with a line tangent to a respective one of a number of uniformly spaced points lying on said center bore in a circle corresponding substantially to the peripheral edge of the mouth of said bottle, (c) a plurality of optical fiber bundles, each of said bundles having one end facing said light source for transmitting light simultaneously through said bundles, and an other end extending through a respective one of said passages



to illuminate the corresponding portion of the peripheral edge of the mouth of said bottle with light incident thereon in a direction predetermined by the direction of said passage,

the number of said passages and associated fiber bundles being such that the entire peripheral edge of the mouth of said bottle is simultaneously illuminated and, (d) means arranged along the axis of said central bore for sensing the image of the illuminated mouth of the bottle through said center bore.

4,284,354

## SENSITIVE NONLINEAR OPTICAL SPECTROSCOPY

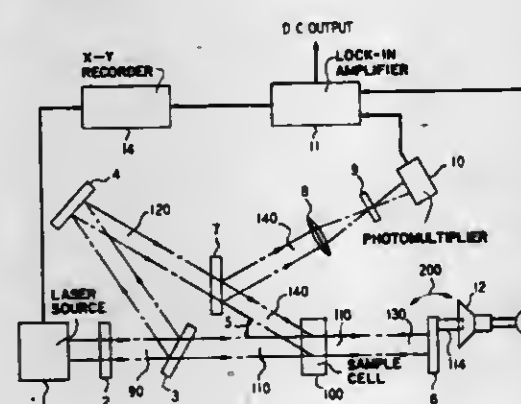
Paul F. Liao, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 24, 1979, Ser. No. 87,877

Int. Cl.<sup>3</sup> G01J 3/44

U.S. Cl. 356—301

8 Claims



1. Apparatus for sensitive nonlinear optical spectroscopic analysis of a sample which comprises: means (1, 3) for generating at least two beams of radiation; means (4, 6) for guiding said at least two beams of radiation to impinge upon said sample along a plurality of predetermined directions; detector means (7, 8, 9, 10) for detecting radiation obtained

from said sample after irradiation by said at least two beams of radiation; characterized in that said apparatus further includes means (12, 13, 14) for modulating at least one of said predetermined directions at a predetermined modulating frequency, and wherein said detector means is sensitive to said modulating frequency.

4,284,355

## AUTOMATED METHOD FOR CELL VOLUME DETERMINATION

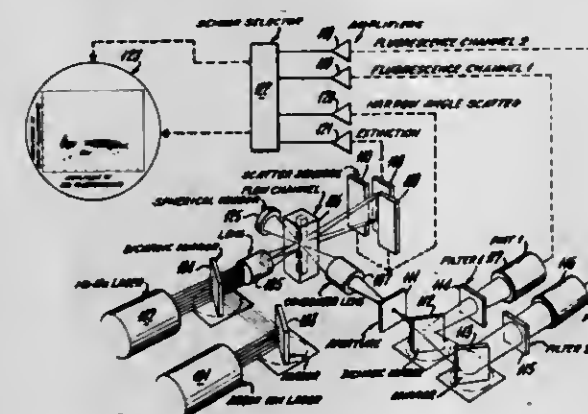
W. Peter Hansen, Middleboro; Robert A. Hoffman, Mansfield, and Peter J. Natale, Canton, all of Mass., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Oct. 29, 1979, Ser. No. 89,654

Int. Cl.<sup>3</sup> G01N 21/17

U.S. Cl. 356—335

6 Claims



1. A method of evaluating cell volume in a sample of cells comprising the steps of:

- suspending the cells of said sample in a medium including a dye which exhibits fluorescence response to select stimulation, and which is non-penetrating and substantially non-adherent to said cells;
- passing said medium through an optical flow cytometry sensing zone illuminated by said select stimulation;
- detecting reductions of fluorescent emissions from said sensing zone occasioned by passage of cells through said zone; and
- evaluating cell volume based on the amplitude of said detected reductions of fluorescent emissions.

4,284,356

## METHOD OF AND APPARATUS FOR COMPARING SURFACE REFLECTIVITY

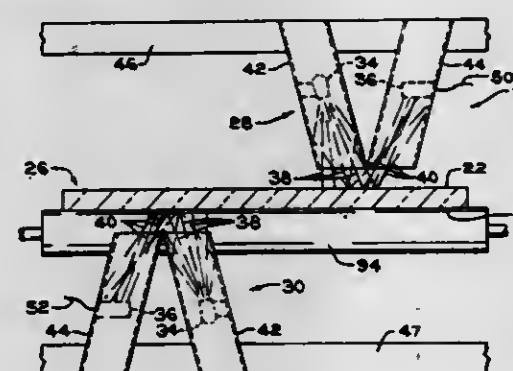
Richard A. Heilman, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 26, 1979, Ser. No. 78,875

Int. Cl.<sup>3</sup> G01N 21/86

U.S. Cl. 356—429

3 Claims



1. A method determining if selected major surface of a glass sheet is properly oriented in a sheet movement path, wherein the glass sheet has a pair of opposed major surfaces having

different reflectivity coefficients due to coating on at least one of the sheet surfaces, comprising the steps of:

- advancing the sheet along the movement path with a major surface designated as a first sheet surface facing one side of the path and the other major surface designated as a second sheet surface facing the other side of the path;
- impinging the first sheet surface and the second sheet surface with diffuse light beams of approximately equal intensity to reflect light beams designated as first reflected light beams from the first sheet surface and light beams designated as second reflected light beams from the second sheet surface;
- impinging a portion of the first reflected light beams and of the second reflected light beams onto intensity sensing means after the portion of the first and second reflected light beams have traveled approximately equal distances; comparing the intensity of the portion of the first reflected light beams to the portion of the second reflected light beams to determine the position in the path of the more reflective sheet surface; and
- comparing the position in the path of the more reflective sheet surface to a desired position in the path for the more reflective sheet surface to determine if the sheet is properly oriented in the sheet movement path.

4,284,357

## DEVICE FOR CONTINUOUSLY INSPECTING A SURFACE

Hisashi Kudo, Fujinomiya, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

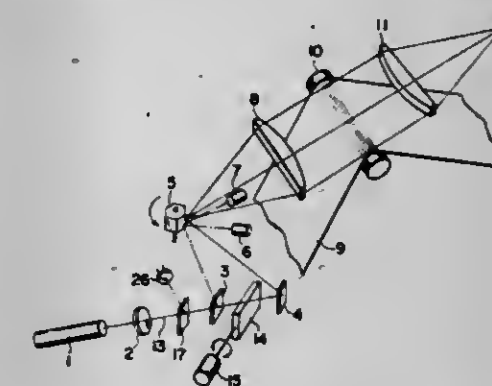
Filed Dec. 18, 1979, Ser. No. 104,950

Claims priority, application Japan, Dec. 27, 1978, 53/159963

Int. Cl.<sup>3</sup> G01N 21/86

U.S. Cl. 356—431

9 Claims



1. A device for continuously inspecting a surface comprising: a cylindrical roll for bending and conveying an object to be inspected, means for emitting a light beam in a direction substantially tangential to an outer surface of said object on said cylindrical roll, means for scanning said light beam in the widthwise direction of said object, means for receiving said light beam for producing an output signal in response thereto, means for comparing said output signal with a reference signal, a plane-parallel, transparent plate disposed in the path of said light beam prior to said surface, and means for varying an angle of inclination of said plate disposed in said light beam so that said light beam path is caused to follow variations in position of said surface of said object.



4,284,358

## MIXING AND KNEADING MACHINE

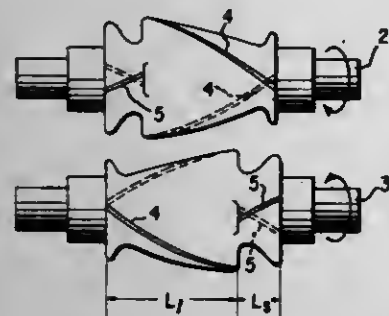
Norimoto Sato, Kodaira; Minoru Miyaoka, Hachioji; Shin Yamasaki, Tokorozawa; Kimio Inoue; Akimasa Kuriyama, both of Kobe; Tsugushi Fukui, Miki; Toshihiro Asai; Kazuhiko Nakagawa, both of Kobe, and Tatuo Masaki, Aka-shi, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo and Kobe Steel, Ltd., Kobe, both of Japan  
Filed Jan. 22, 1979, Ser. No. 51,001

Claims priority, application Japan, Jun. 23, 1978, 53/76687; May 18, 1979, 54/61917

Int. Cl.<sup>3</sup> B29B 1/06; B01F 7/00

U.S. Cl. 366—97

5 Claims



1. A mixing and kneading machine including a mixing chamber defined by a casing comprising:

a pair of parallel rotors disposed within said casing, each of said rotors having at least one long vane and at least one short vane, both of which extend spirally about the center lines of the rotors such that material to be mixed flows from the edges of the rotors into the central portion thereof and in that a ratio of the length of the at least one short vane along the axis of each of the rotors to that of the at least one long vane is selected within the range of 0.48 to 0.1; and

means connected to said rotors for rotating said rotors in opposite directions.

4,284,359

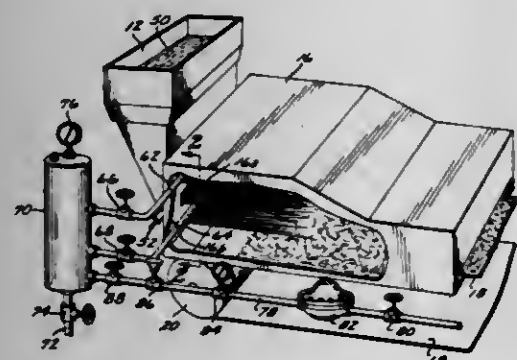
## AGGLOMERATION SYSTEM FOR INTERMIXING EDIBLE INGREDIENTS

Theodore Rapolla, 7630 N. Gleed Oaks, Burbank, Calif. 91504  
Filed Feb. 19, 1980, Ser. No. 122,507

Int. Cl.<sup>3</sup> B01F 3/06; A23L 1/00

U.S. Cl. 366—107

9 Claims



1. An agglomeration system for intermixing edible ingredients comprising in combination:

means forming an agglomeration chamber having a movable bottom wall and provided with an end wall formed with an opening;

a hopper for dry edible ingredients at said end wall of said chamber including a manifold for dispensing through said opening said ingredients into said chamber under pressure; and

a steam system comprising a pair of steam discharge pipes on opposite sides of said opening and connected to a source

of steam whereby said ingredients are intermixed within said agglomeration chamber with said steam.

4,284,360

## HOMOGENIZER/SUBSAMPLER FOR TAR SAND PROCESS STREAMS

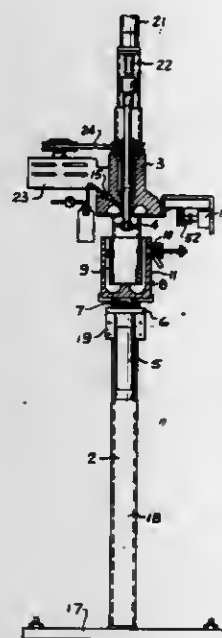
Lubomyr M. O. Cymbalista, and Robert C. Shaw, both of Edmonton, Canada, assignors to Petro-Canada Exploration Inc., Calgary; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity, Edmonton; PanCanadian Petroleum Limited, Calgary; Esso Resources Canada Ltd., Calgary; Canada-Cities Service, Ltd., Calgary and Gulf Canada Resources Inc., Calgary, all of Canada

Filed Nov. 5, 1979, Ser. No. 90,923

Int. Cl.<sup>3</sup> B01F 7/22, 13/06

U.S. Cl. 366—140

4 Claims



1. A homogenizer/subsampler comprising:

a discrete open-topped vessel for collecting a bulk sample from which it is required to take one or more representative analysis-size subsamples, said vessel having mounted therein a substantially coaxial draft tube spaced from the vessel side and base walls, thereby forming an annular passage;

support means comprising means for supporting the vessel; a head element carried by the support means and operative to seal the top opening of the vessel;

means for bringing the vessel and head element together in sealing and closing engagement;

said draft tube, head element and vessel combining to form a substantially elliptical flow path extending through the draft tube bore and annular passage;

an impellor having a propellor and shaft, said shaft extending through the head element, whereby the propellor is positioned for operation in the draft tube, said shaft being in sealing engagement with the head element;

means for driving the impellor to circulate the bulk sample along the flow path;

a subsampling port extending through the side wall of the vessel and communicating with the flow path;

mechanical means for opening and closing the port for withdrawal of a subsample; and

means for pressurizing the bulk sample to cause the subsample to be expelled through the port when said port is in the open position.

4,284,361

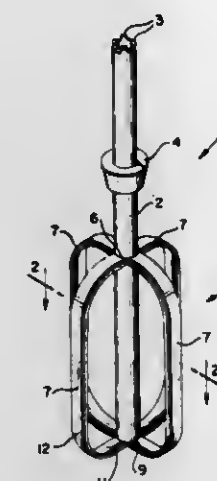
## EGG FLUFFER

William M. Botts, P.O. Box 663, Bellevue, Wash. 98009  
Filed May 9, 1980, Ser. No. 148,262

Int. Cl.<sup>3</sup> B01F 13/00

U.S. Cl. 366—343

5 Claims



1. In combination with an egg albumen mixer for moving through a body of egg albumen, means forming an exposed copper surface on said egg albumen mixer, said exposed copper surface being positioned to contact the egg albumen as said egg albumen mixer moves therethrough.

4,284,362

## PRINTER CONTROL LOGIC

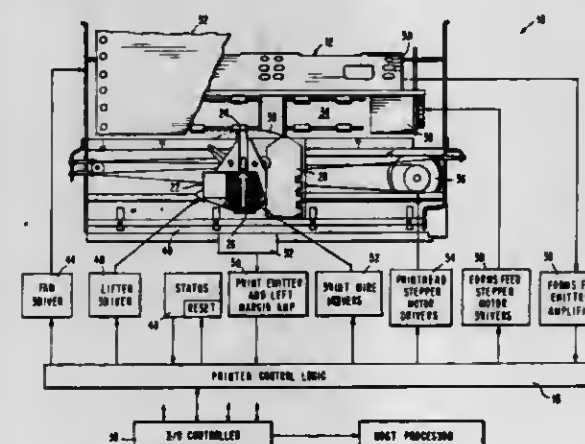
Timothy Jackson, Coral Springs; Charles D. Malkemes, and William L. Zipoy, both of Boca Raton, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 30, 1979, Ser. No. 62,254

Int. Cl.<sup>3</sup> B41J 3/12

U.S. Cl. 400—124

28 Claims



1. Control means for a printer having a matrix print head which bidirectionally moves across a record medium, said print head printing information on said medium by selective operation of the print elements of said print head, said control means comprising:

means for providing position signal sequences at periodic interim positions as said print head moves across said medium, the sequence of said position signals manifesting the direction said print head moves;

interruptable processor means responsive to an interrupt signal for being interrupted to provide a first control signal to selectively operate said print elements after being interrupted and to further provide a second control signal in response to said position signal sequence; and

decoding means responsive to said position signals and said second control signal for providing said interrupt signal each time said position signal indicates said print head has reached a different interim position.

4,284,363

## DATA MATRIX PRINT HEAD

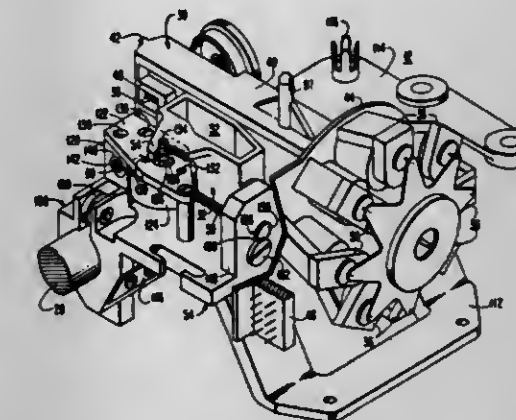
John M. Choberka, Pompano Beach, and Donald K. Rex, Highland Beach, both of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 30, 1979, Ser. No. 62,259

Int. Cl.<sup>3</sup> B41J 3/12

U.S. Cl. 400—124

20 Claims



1. In a dot matrix printer having a print head with a plurality of print wires, said print wires being actuated to cause dots to be printed on a record medium while said print head is laterally moved across said medium, the centers of said dots being separated by a given distance, the improvement for controllably rotating said print head to move the print wires an amount related to said given distance comprising:

frame means for rotatably holding said print head;

pin means extending from said print head having a given machined length of a precise amount parallel to the path of rotation; and

a bushing, including a machined opening of a precise distance having a top and a bottom, said bushing being affixed to said frame such that said pin means is positioned within said opening, said opening having a height along the path of rotation equal to said given length plus an amount to allow the ends of said wires to move said given distance as said pin means moves from one of said top or bottom of said opening to the other of said top or bottom of said opening.

4,284,364

## RIBBON TENSIONING FOR A CARTRIDGE WITH FLEXIBLE GUIDES

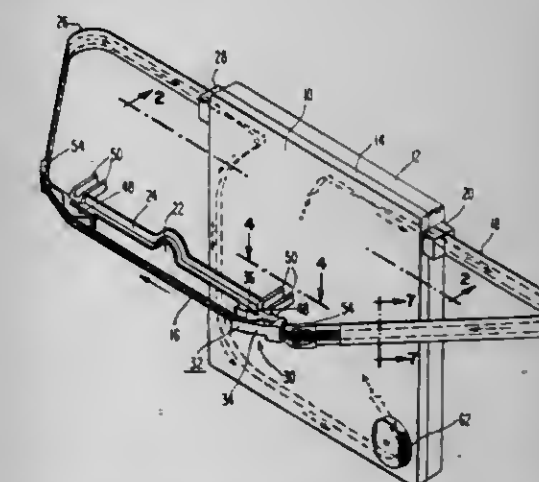
Michael J. Rello, Willow Grove, Pa., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 21, 1979, Ser. No. 13,283

Int. Cl.<sup>3</sup> B41J 32/02, 35/08

U.S. Cl. 400—234

12 Claims



1. A ribbon cartridge for a printer comprising a ribbon storage area, flexible ribbon guide means for guiding said ribbon to and from a print point movable with respect to said



storage area and bridge means coupled to said guide means and movable with said print point relative to said storage area for supporting said ribbon at said print point, the improvement comprising tensioning means located on said bridge means.

4,284,365

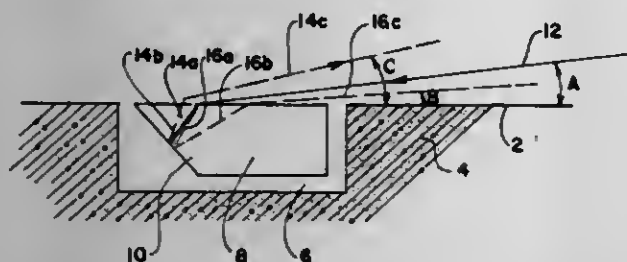
**REFLECTIVE LANE MARKER FOR ROADWAYS**  
Jacob Rabinow, Bethesda, Md., assignor to Hall & Myers, Washington, D.C., a part interest

Filed Feb. 22, 1977, Ser. No. 770,486

Int. Cl.<sup>3</sup> E01F 9/00

U.S. Cl. 404—9

5 Claims



5. A roadway marker comprising light refracting means having a light refracting portion including an upper surface, mounting means adapted to be secured to the roadway, for carrying said light refracting means and positioning said upper surface to be a part of the surface of the roadway, and reflecting means below said upper surface for receiving the light from an automobile headlight that impinged upon said surface and was refracted by said light-refracting means and for reflecting such light back toward said upper surface, said reflecting means comprising means for reflecting light rays, passing from said upper surface to said reflecting means, back to said upper surface in the opposite direction that the rays passed on their way to the reflecting means, said reflecting means having two reflectors for respectively reflecting essentially all of the light rays that passed from said upper surface and which came from the headlights of automobiles approaching in first and second opposite directions that impinges upon said upper surface, characterized by: said light refracting means comprising a prism, said upper surface comprising one side of said prism, said reflecting means comprising at least one corner reflector outside of said prism and adjacent another side of said prism.

4,284,366

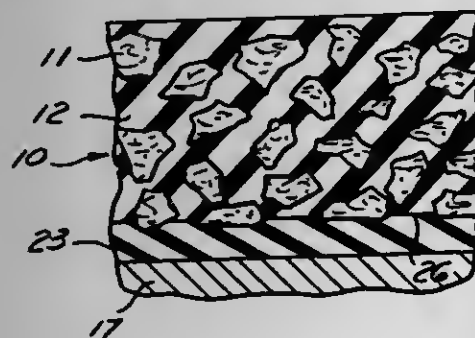
**ELASTOMERIC COMPOSITE PAVEMENT**  
Dennis M. Lucik, Middlefield, Ohio, assignor to The Johnson Rubber Company, Burton Township, Geauga County, Ohio

Filed Jun. 11, 1979, Ser. No. 47,500

Int. Cl.<sup>3</sup> E01C 5/22

U.S. Cl. 404—44

10 Claims



5. A molded paving block comprising an elastomeric com-

posite body of predetermined thickness, said body comprising an elastomeric base and aggregate material dispersed in the base, the distribution of the aggregate being substantially uniform throughout the thickness of the block, said block having a molded wear surface at its upper face, the wear surface having a substantial fraction of its area formed by aggregate surface areas substantially free of any covering of the elastomeric base material, the individual aggregate particles providing said free surface areas being retained in said base material by embedment therein, the wear surface having its area remaining from that formed by said free surface areas being formed by the elastomeric base as a result of molding against a compliant cavity wall, the elastomeric base being excluded from said free surface areas of the aggregate by the interaction of the compliant cavity wall, elastomeric material and aggregate during the molding process, said free surface areas of aggregate being slightly raised above the surface of the elastomeric material as a result of the impression of such free surface areas into the compliant wall during the molding process.

4,284,367

**MOVABLE-JOINT DEVICE FOR CONNECTING A SEA-BED EXPLOITATION COLUMN TO ITS BASE, CONNECTING AND DISCONNECTING PROCESSES USING THE SAID DEVICE, AND JOINT ELEMENT USED IN THE SAID DEVICE**

Samuel Tuson, Mesnil-le-Roi, and Rene Loire, Paris, both of France, assignors to Enterprise d'Equipements Mecaniques et Hydrauliques, France

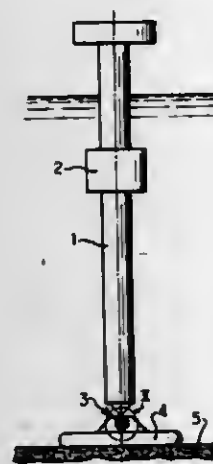
Filed Oct. 24, 1978, Ser. No. 954,209

Claims priority, application France, Nov. 4, 1977, 77 33233

Int. Cl.<sup>3</sup> B63B 35/44

U.S. Cl. 405—202

16 Claims



1. A universal movable-joint device for removably connecting a sea-bed exploitation column to its base arranged on the sea floor, said column comprising a shaft with a top end preferably emerging from the sea and a bottom end or foot located near the sea-bottom defining thereby an emerged upper part and a submerged lower part, said column being provided with a buoyant float means for biasing the shaft towards a substantially vertically extending position when the same is connected to said base, characterized in that said movable-joint device is essentially constituted by a joint element of resiliently deformable material interposed between the foot of the column and the base and connected to the said foot and base, respectively to removably joint said column to said base and to permit the free oscillation of the column with respect to its base under the action of sea heave or of the wind.

4,284,368

**VEHICLE WITH DUAL DRILL BOOMS AND TEMPORARY ROOF SUPPORT**

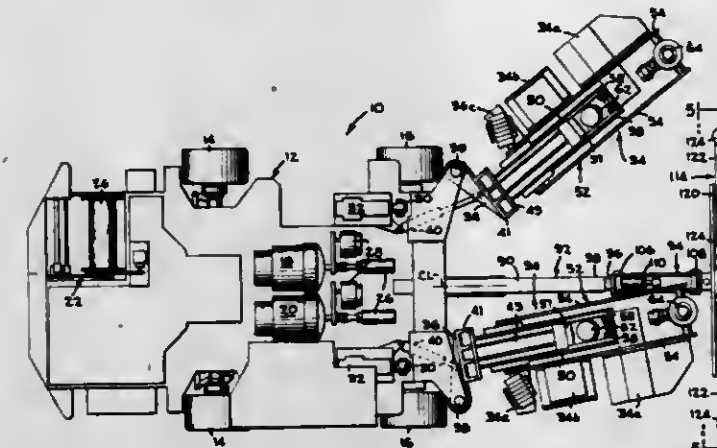
Charles D. Albright, Fairmont, W. Va., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 18, 1979, Ser. No. 4,429

Int. Cl.<sup>3</sup> E21D 20/00

U.S. Cl. 405—291

7 Claims



1. In a support for a mine roof having a base, a telescopic column mounted on the base, and a crossbeam connected to the column, the improvement comprising an expandable member on each side of the column having one end connected to the base and the other end connected to the beam at a point spaced from the column, and means to expand said members and raise the beam toward the roof.

4,284,369

**TAKE-UP HEAD FOR BULK MATERIAL CONVEYOR INSTALLATION**

Arnold Gsponer, Brunswick, Fed. Rep. of Germany, and Hans Schnitzer, Winterthur, Switzerland, assignors to Gebrueder Buehler AG, Uzwil, Switzerland

Continuation of Ser. No. 699,992, Jun. 25, 1976, abandoned.

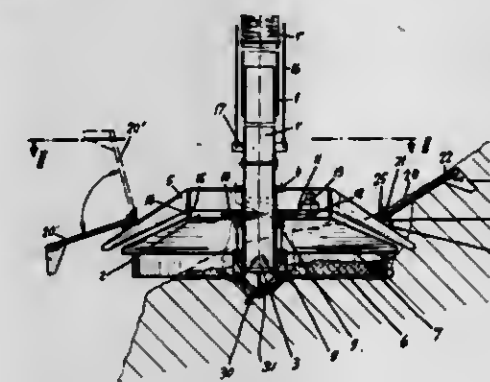
This application Aug. 9, 1978, Ser. No. 932,361

Claims priority, application Switzerland, Jan. 26, 1975, 8249/75

Int. Cl.<sup>3</sup> B65G 65/28

U.S. Cl. 406—52

17 Claims



1. A bulk material take-up head comprising:

- (a) frame means including a substantially vertically disposed conveyor pipe adapted for connection to a source of suction and having a lower end terminating in a take-up aperture through which bulk material may be drawn;
- (b) rotary feeder means mounted on the frame means for rotation relative to the take-up aperture, the rotary feeder means being constructed and arranged to engage and feed bulk material inward to the take-up aperture;
- (c) drive means carried by the frame means for rotating the rotary feeder means;
- (d) at least one anchoring member carried by the frame means, at least part of which extends outwardly relative to the take-up aperture and which can be raised and lowered

to engage the bulk material remote from the rotary feeder means to resist rotation of the frame means;

- (e) and centering tip means carried by the rotary feeder means and rotatable therewith, the centering tip means projecting axially downward below the rotary feeder means and in coaxial relation with the take-up aperture for engaging the underlying bulk material to resist lateral movement of the take-up head, the centering tip means defining a free space below the take-up aperture through which bulk material may be communicated to the take-up aperture.

4,284,370

**AIR CONVEYOR FOR BOTTLES AND BOTTLE PREFORMS**

Richard W. Danler, 1235 Buchanan Dr., Santa Clara, Calif. 95051, and William L. Bilo-bran, 763 Lakebird Dr., Sunnyvale, Calif. 94086

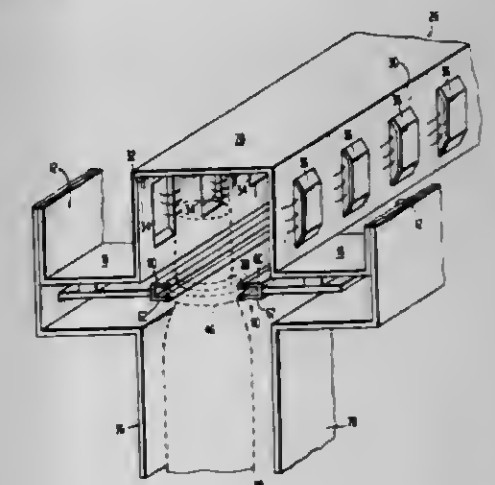
Continuation of Ser. No. 961,380, Nov. 16, 1978, abandoned.

This application Nov. 8, 1979, Ser. No. 92,316

Int. Cl.<sup>3</sup> B65G 51/02

U.S. Cl. 406—86

5 Claims



1. An air conveyor for bottle members having a neck portion and a depending body portion comprising an elongated plenum chamber having an elongated bottom wall member joined to contiguous wall means for defining a plenum chamber for receiving pressurized air, means for supplying pressurized air to the plenum chamber, said bottom wall having an elongated slot therein, an elongated U-shaped channel member overlying said slot and defining a conveying path, a plurality of air slots in said channel member for admitting pressurized air jets into said channel from said plenum chamber, means for engaging and supporting each bottle member at its neck portion so that the neck of each bottle member is within said channel for receiving the propelling force of said jets whereby the bottles are conveyed along said path, a pair of confronting side curtains depending from opposite sides of the conveyor in close proximity to the body portion of said bottle members, and an opening defined by the bottom edge portions of the side curtains to exhaust air from said air conveyor.

4,284,371

**MATERIAL HANDLING SYSTEM**

Jerome T. Paulson, Long Lake, and Lawrence C. Zylka, Dayton, both of Minn., assignors to Veda, Inc., Long Lake, Minn.

Filed Aug. 15, 1979, Ser. No. 66,574

Int. Cl.<sup>3</sup> B65G 53/42

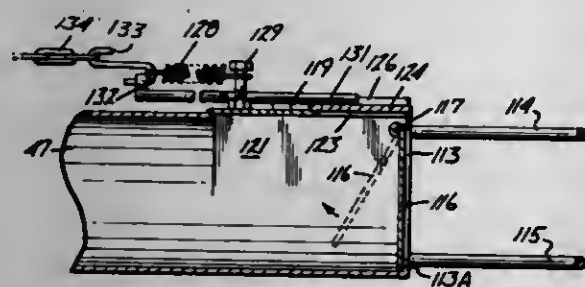
U.S. Cl. 406—99

31 Claims

1. An apparatus for moving material comprising: pump means having a housing, said housing having a pump chamber, material inlet means open to the chamber, material outlet means open to the chamber, means within said chamber for moving material from the inlet means to the outlet means, suction hose means connected to the inlet means, said suction hose means having a passage and an inlet end, said inlet end



having an inlet opening and an exit opening, said exit opening located at the inlet end of the suction hose means whereby substantially all of the material in the passage of the suction hose means can drain out of said passage externally of the suction hose means, when the means within said chamber for moving material is inoperative, first means movably mounted on the inlet end for closing the inlet opening to restrict movement of material out of the passage of the suction hose means through the inlet opening, means movably mounting said first means on said inlet end for movement to an open position on



operation of the means within said chamber to allow material to flow into the passage of the suction hose means, second means movably mounted on said inlet end locatable in a first position closing the exit opening and movable from the first position to a second position opening the exit opening whereby substantially all of the material in the passage of the suction hose means can drain out of the passage of the suction hose means when the means within said chamber for moving material is inoperative, and discharge means connected to the outlet means, said discharge means having a passage for carrying material from the outlet means to a selected location.

4,284,372

# EFFICIENT HANDLING AND CHARGING SYSTEM FOR EXPANDED, LOW-DENSITY, LOOSE-FILL PACKAGING MATERIAL(S)

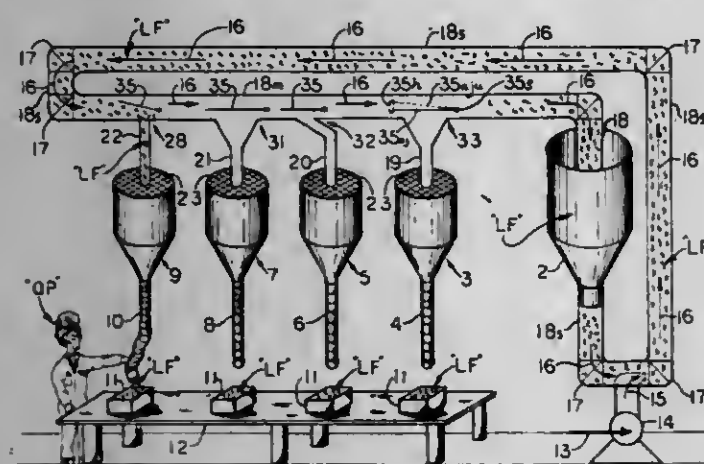
Layle V. Smith, Pataskala, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 19, 1979, Ser. No. 95,697

Int. Cl.<sup>3</sup> B65G 53/60

U.S. Cl. 406—106

20 Claims



1. In a handling and dispensing system for filling containers and the like with expanded, low-density, loose-fill packaging material which is comprised of and wherein there are included:
  - (a) a main supply storage hopper for said loose-fill material; which is integrally in the circuit of
  - (b) a circulating system having at least a main header run for air-entrained conveyance of said loose-fill material out of and back into said main hopper (a); and
  - (c) air blowing means for entraining and carrying said loose-fill material through said circulating system (b); with
  - (d) a main header run in said circulating system (b) from which said loose-fill material is supplied and diverted; to
  - (e) at least a single packaging station in said system whereat

said loose-fill material is dispensed for package filling and/or cushioning purposes; with

(f) each packaging station (e) having a separate holding and dispersing hopper for individual station supply of said loose-fill material; and

(g) each packaging station (e) having a distributing tube from its said holding hopper (f) to let out and dispense said loose-fill material for said packaging and cushioning purposes from each of said station holding hoppers (f); and also

(h) control valve means in each of said distributing tubes (g) for regulating the package filling flow of said loose-fill material from out of said distributing tube; with

(i) at least one diversion fitting(s) in said main header run (d) with (j) outlet(s) therein for feeding said loose-fill material to each separate holding hopper (f) at each single packaging station (e);

the improvement comprising:

(k) baffle means in each diversion fitting (i) which are within the confines of the said main header run (d) and situate over and above the entry of each outlet (j) into said main header run (d) within each of said fittings (i) with the further limitation that the baffle means extends upstream and downstream beyond lateral edges of the discharge outlet, whereby and whereupon

air-entrained loose-fill material is so deflected and diverted into each of said holding hoppers (f) as to at least substantially avoid if not entirely prevent plugging of said loose-fill material in said main header run (d).

4,284,373

# WORKING STAND FOR NECKLESS ELECTRICAL HOME WORKER MACHINES

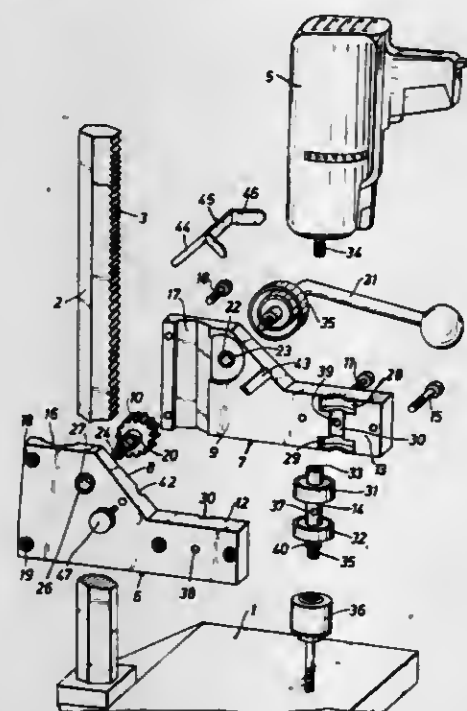
Robert Wolff, im Kiesacker, 5446 Engeln, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,277

Int. Cl.<sup>3</sup> B23B 39/00, 47/00

U.S. Cl. 408—87

7 Claims



1. A working stand for collarless electrical home worker machines, which machines have at the end of their drive shaft a threaded section for screwing on a drill chuck, comprising
  - a vertical guide column having a polygonal cross-section and a toothing,
  - a machine holder disposed moveably up and down said vertical guide column and fixable in position at any height on the guide column,
  - a gear mounted in said holder and engaging said toothing, said gear constituting means actuatable by a hand crank,
  - said machine holder comprises a pair of adjustable clamping jaws embracing said guide column,

a vertical shaft is rotatably mounted in said machine holder, said shaft on an upper end has an axially interior threaded section means for reception of the drive shaft of the machines and said shaft on its lower end has another threaded section means for screwing-on the drill chuck, said lower end of said shaft projects from the machine holder;

said machine holder comprises a housing formed of two housing shells, the housing being divided in a center plane of the gear or in a plane which is parallel to said center plane, both said shells of the housing are clamped rigidly to one another,

a rearward area of said two housing shells is formed as said clamping jaws, said clamping jaws embrace said guide column, and

a front area of said two shells is formed as another pair of clamping jaws, the latter being formed with annular grooves, said shaft is rotatably clamped in said another pair of clamping jaws,

two axially non-displaceable roller bearings are disposed on said shaft and in said annular grooves.

4,284,374

# ROTARY TOOL HOLDER

Chikara Senzaki, Nara, Japan, assignor to Manyo Tool, Nara, Japan

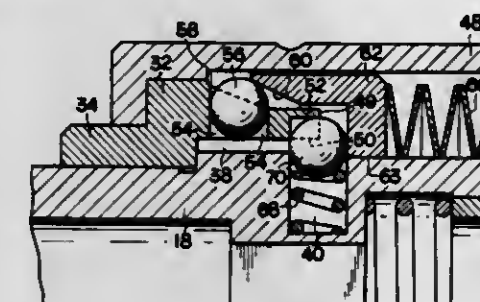
Filed Apr. 9, 1979, Ser. No. 28,392

Claims priority, application Japan, Jun. 8, 1978, 53-68291

Int. Cl.<sup>3</sup> B23B 47/24

U.S. Cl. 408—139

10 Claims



1. A rotary tool holder comprising:
  - a rotary sleeve member;
  - a cylindrical driven member received within said sleeve member and having a bore adapted to receive therein a rotary tool, a plurality of peripheral dents, and a plurality of recesses adjacent to said peripheral dents;
  - means for transmitting a torque from said sleeve member to said driven member, said means for transmitting a torque including rolling members engageable with said dents and two or more slots in said sleeve member, said respective rolling members being loosely fitted in said slots, said slots serving to displace said rolling members axially and circumferentially of said holder when rotation of said sleeve member is reversed;
  - a cup-shaped member disposed around said driven member, and having a wall surface convergent toward the axis thereof and engageable with said rolling members;
  - resilient means for urging said cup-shaped member against said rolling members; and
  - means disposed in the recesses in said driven member and adapted to releasably restrain the sliding movement of said cup-shaped member toward said rolling members.

4,284,375

# ONE-LIP TOOL FOR DEEP DRILLING

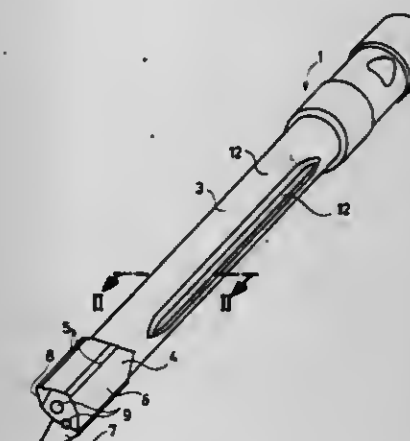
Bruno Mühleisen, Wissgoldingen, Fed. Rep. of Germany, assignor to TBT Tiefbohrtechnik GmbH & Co., Dettingen, Fed. Rep. of Germany

Filed Nov. 2, 1979, Ser. No. 90,644

Int. Cl.<sup>3</sup> B23B 31/44, 27/10, 51/00

U.S. Cl. 408—226

8 Claims



1. A one-lip tool for deep drilling, comprising
  - a clamping sleeve;
  - a drill head having a drilling blade; and
  - a drill shaft having an axis and two axial ends at one of which ends said clamping sleeve is arranged and at the other of which ends said drill head is arranged, said drill shaft having a peripheral surface including two diametrically opposite surface portions, said drill shaft having an axially extending chip groove in one of said surface portions and at least one projection in the region of the other of said surface portions, said projection forming a radially inwardly extending rib and terminating at an axial distance from said clamping sleeve and said drill head.

4,284,376

# SPUR GEAR HOBBING MACHINE

Heinz Papistok, Karl-Marx-Stadt; Herbert Reuter, Weissbach, and Lothar Bachmann, Karl-Marx-Stadt, all of German Democratic Rep., assignors to Veb Werkzeugmaschinenkombinat "7. Oktober" Berlin, Berlin, German Democratic Rep.

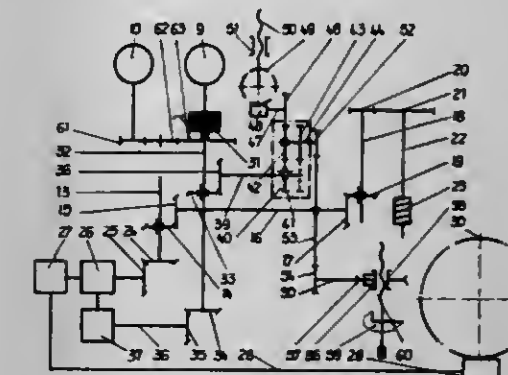
Filed Mar. 14, 1979, Ser. No. 20,332

Claims priority, application German Democratic Rep., Mar. 10, 1978, 204090

Int. Cl.<sup>3</sup> B23F 5/22

U.S. Cl. 409—24

2 Claims



1. A hobbing machine for manufacturing gears, comprising
  - a tool support;
  - a blank support arranged for rotation about an axis so as to rotate a blank to be machined;
  - a support carriage arranged for movement on the tool support in the direction of the axis of the blank support;
  - a milling head arranged for movement on the support carriage and having means to rotatably support a hob;
  - a drive for rotating the hob;
  - a gear train for the hob and connected with the hob drive;
  - a separate feed



drive for the milling head; an axial feed gear train and a tangential feed gear train for the milling head for feeding the milling head in axial and tangential direction relative to the blank support axis; a branch gearing cooperating with the separate milling head drive and operable selectively to actuate the axial and tangential feed gear trains, said branch gearing being supported and arranged solely in the support carriage; and differential gears connected with the hob drive and the separate milling head feed drive.

4,284,377

## PORTABLE KEY SEAT CUTTER

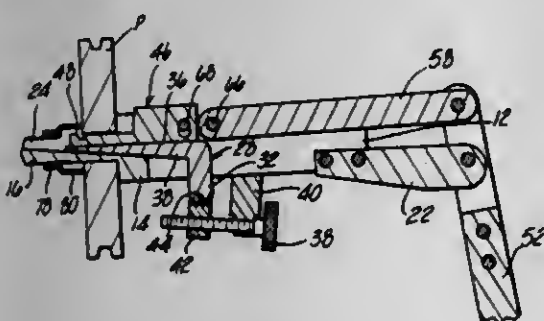
Bert W. Piper, 36051 Goddard Rd., Romulus, Mich. 48174, assignor to Bert William Piper, Belleville, Mich.

Filed Sep. 24, 1979, Ser. No. 78,641

Int. Cl.<sup>3</sup> B23D 37/04

U.S. Cl. 409—259

5 Claims



1. A key seat cutter for pulleys and the like comprising an elongated shank comprising a pair of flat plates spaced apart in parallel relation so that the opposed spaced apart faces form a guideway therebetween and a nose piece integrally connected to the forward ends of said plates, said nose piece comprising an enlarged boss having a flat front face and a threaded shaft projecting forwardly therefrom, said shaft being adapted to receive the bore of a pulley in which the key slot is to be cut, said nose piece having an axially extending slot therein which forms an axial extension of said guideway, said slot extending through said boss and said shaft in radial alignment with said guideway and having a straight, axially extending, bottom wall inclined at a small angle to the axis of the shaft, a feed bar in the form of an elongated wedge slideably arranged in said guideway and having a forward end portion seated on said inclined bottom face of said slot, said feed bar having an arm at its rear end extending laterally outwardly from the guideway, the top face of said feed bar extending parallel to the axis of said shaft, a thumb screw rotatably supported on said shank and in threaded engagement with the end of said arm for shifting said feed bar axially in said guideway, a broaching blade slideably arranged in said guideway and seated on the top face of said feed bar, a handle pivotally supported on said shank adjacent the rear end thereof, a link in said guideway having its rear end pivotally connected with said handle and having its forward end connected with said broaching blade so as to reciprocate the broaching blade when the handle is pivotally actuated, said broaching blade having a rearwardly facing cutting edge thereon adjacent the forward end thereof adapted to be reciprocated in said slot through the bore of a pulley supported on said shaft to cut a key slot therein when the handle is pivotally actuated, a nut threaded on the forward end of said shaft and a bushing on said shaft interposed between said nut and said boss, said bushing being adapted to bear against the front face of a pulley on said shaft to clamp the pulley against the front face of said boss when the nut is tightened, said bushing having a recess therein for accommodating the forward end of said broaching blade when the handle is actuated to shift the blade forwardly in said slot to a position wherein said cutting edge is disposed forwardly of said pulley.

4,284,378

## FASTENER FOR PANELS

Akira Mizusawa, Fujisawa, Japan, assignor to Nifco Inc., Yokohama, Japan

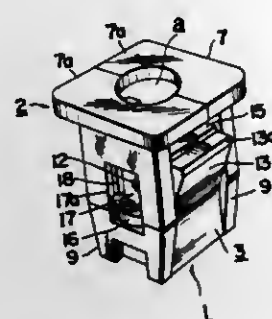
Filed Jul. 13, 1979, Ser. No. 57,534

Claims priority, application Japan, Jul. 18, 1978, 53/86784

Int. Cl.<sup>3</sup> F16B 13/04

U.S. Cl. 411—21

4 Claims



1. A fastener for panels, which fastener comprises a basal body provided with a flange portion having a circular perforation bored in the central portion thereof for permitting insertion therethrough of a screw and with a pair of legs extended downwardly from the lower surface of the flange portion so as to be opposed to each other across the line drawn perpendicularly through the center of said circular perforation, and a screw receiving body disposed between said opposed legs, provided in the upper portion thereof with a pair of receiving pieces protruding sideways out of the openings formed between said opposed legs and further provided with a screw receiving hole in the axial portion coinciding with said perpendicular line drawn through the center of said perforation, said screw receiving body being provided with engaging protuberances one each on the lateral surfaces thereof opposite said legs and said legs being provided with oblong guide holes adapted to receive said engaging protuberances into sliding contact, whereby the work of tightening a screw inserted past the perforation of said flange portion into the screw receiving hole of said screw receiving body causes the receiving pieces of the screw receiving body to be slid in the direction of the flange portion of the basal body and enables a panel interposed between the flange portion and the receiving pieces to be held in position therebetween, said flange portion of the basal body being divided into two halves and with the two halves of the flange portion being molded integrally one each with one of said pair of legs, the ends of the legs opposite said flange portion are each connected to the screw receiving body through the medium of frangible thin-walled hinges, whereby said basal body and said screw receiving body are integrally molded.

4,284,379

## EARTH STRUCTURE STABILIZER

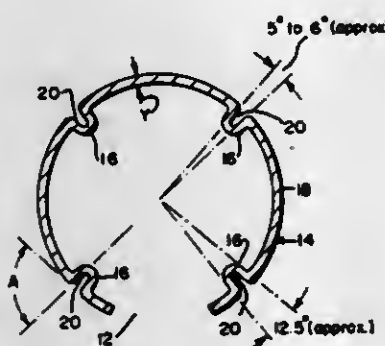
Walter M. Chaiko, Titusville, N.J., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jul. 25, 1979, Ser. No. 60,583

Int. Cl.<sup>3</sup> F16B 13/06; E21D 21/00

U.S. Cl. 411—61

9 Claims



1. An improved earth structure stabilizer, for insertion into a

bore formed in an earth structure such as a roof or side wall of a mine shaft, or tunnel, or a like subterranean opening, for frictionally stabilizing such earth structure, said stabilizer comprising an elongate element having a length taken from, and comprised by, a range of lengths of from two and a half feet to six or more feet, and having a generally annular cross-section of a given, free, and single outside diameter, and formed of material of one uniform thickness, responsive to circumferential compression to facilitate a diminution of said given diameter to another, compressed, outside diameter, whereby said stabilizer can be inserted into and received by an earth structure bore having a diameter generally approximating said another diameter, to cause said stabilizer to engage the surface of such bore and frictionally anchor therewith, to stabilize the earth structure in which such stabilizer-receiving bore is formed, wherein the improvement comprises:

stiffener means, of substantially uniform dimension and conformation, extending lengthwise of said element, and projecting radially inwardly thereof only, for stiffening said stabilizer elongatedly; wherein

said stiffener means comprises means for diminishing compression resistance of said element circumferentially thereof;

said resistance-diminishing means comprises a plurality of circumferentially and substantially uniformly spaced-apart channels formed in the outside surface of said element and extending lengthwise thereof; and

each of said channels includes side wall which are spaced apart to define an open cove or recess, in said outside surface, the radially outermost area of which occupies approximately between five and six degrees of arc, said coves or recesses defining means for permitting said stabilizer to be circumferentially compressed in order that it may fit into a smaller earth bore.

4,284,380

## MULTI-CAR TRAIN LOADING STATION

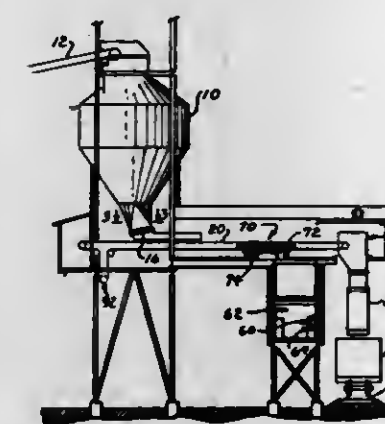
Owen E. Brumbaugh, Jr., Chicago; Paul Levin, and Alston L. Reed, both of Northbrook, Ill., assignors to Allen & Garcia Company, Chicago, Ill.

Filed Aug. 27, 1979, Ser. No. 69,834

Int. Cl.<sup>3</sup> B65G 67/22

U.S. Cl. 414—21

14 Claims



1. Method of loading cars of a multi-car train with fluent solid material such as coal in which the cars pass beneath a loading chute without halting, comprising the steps of measuring the weight of each car of the train as it approaches the chute;

feeding the material into the chute from a supply during the interval of time the car takes to pass beneath the chute; weighing the material as it is fed to the chute; interrupting said feed when the weight of the material equals the predetermined gross weight of the car less its measured weight; and

controlling the rate of feeding said material to the chute such that each car is fully and evenly filled from the chute in the interval the car is passing beneath the chute.

4,284,381

## METHOD AND APPARATUS FOR STACKING BLOCKS TO FORM A PALLET HAVING PREDETERMINED SPACES THEREIN

Andre H. Minato, Fouquierolles Bresles, France, assignor to Societe d'Exploitation des Etablissements Minato S.O.D.-E.E.M., Fouquierolles Bresles, France

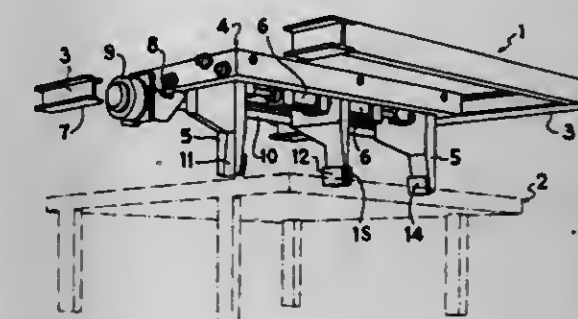
Filed Feb. 1, 1979, Ser. No. 8,802

Claims priority, application France, Jul. 28, 1978, 78 22505

Int. Cl.<sup>3</sup> B65G 57/26

U.S. Cl. 414—61

8 Claims



1. Apparatus for automatic packaging of products such as concrete blocks in pallets formed by stacking layers of said products comprising a fixed receiving table (2), a support structure on respective sides of the table (2), said structure being provided with guide rails (3) in its upper part, a moveable carriage (4) having a slideable translatable movement along the guide rails (3) and carrying gripping members (5) for gripping the products which are disposed successively and in respective layers on the table (2), and detection means co-operating with a control device for causing gripping and release by the gripping members (5) of the products to be packaged, in order to define reserved spaces (18, 19) in a given layer of products, whereby said carriage (4) advances continuously though a single operating cycle forming a given number of reserved spaces (18, 19) in a given layer of products.

4,284,382

## OFF-LOADER

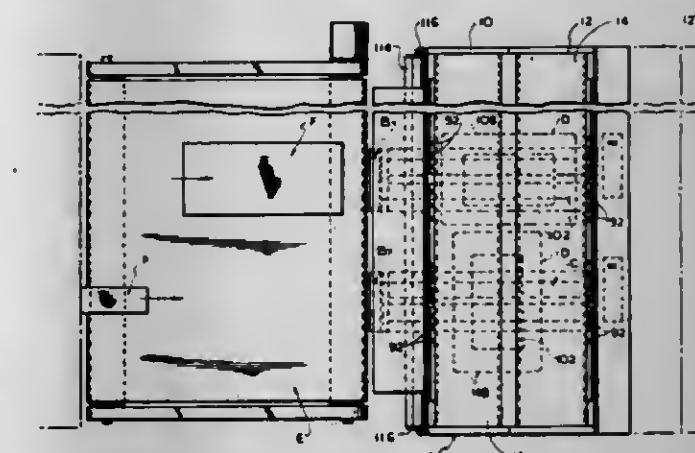
Seymour Silverman, New York, N.Y., assignor to Silverman Machines, New York, N.Y.

Filed May 29, 1979, Ser. No. 42,978

Int. Cl.<sup>3</sup> B65H 29/10

U.S. Cl. 414—76

13 Claims



1. Apparatus for off-loading a part from a conveyor or the like comprising: a support; part grabbing means; means for moving said grabbing means relative to said support, from a first position, wherein said grabbing means grabs the part, through a second position, defined by means for causing said grabbing means to release the part, to a third position, defined by means for causing said moving means to reverse direction; means for mounting said release causing means in a fixed position relative to said reversal causing means, said mounting



means being adjustably movably mounted on said support to permit adjustment of the distance between said first and second positions.

4,284,383

## CASSETTE FILTER EJECTOR

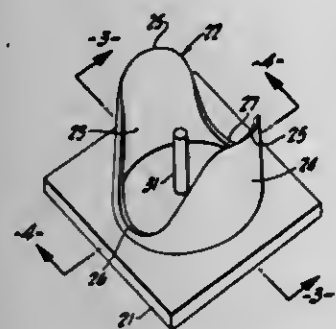
William J. Popendorf, Berkeley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jan. 24, 1980, Ser. No. 114,755

Int. Cl.<sup>3</sup> B01D 35/00

U.S. Cl. 414-417

5 Claims



1. A cassette filter ejector for a cassette having a central aperture and having a rim and adapted to carry a filter disc within said rim and overlying said aperture comprising a base, a central post upstanding from said base to a predetermined height and adapted slidably to be received in said aperture, and a guide wall upstanding from said base concentric with said post and adapted slidably to receive said cassette, said wall including a guide portion higher than said height and another portion lower than said height for receiving a user's finger against a cassette on said post.

4,284,384

## APPARATUS FOR AUTOMATICALLY DEPOSITING A LOAD IN A PREDETERMINED POSITION

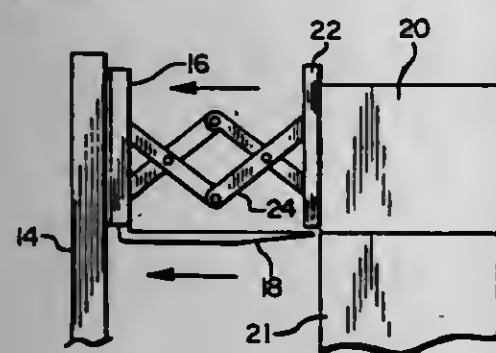
John E. Olson, Portland, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Mar. 3, 1980, Ser. No. 126,440

Int. Cl.<sup>3</sup> B66F 9/22, 9/24

U.S. Cl. 414-434

14 Claims



4. In a lift truck having a prime mover for selectively driving said lift truck rearwardly, a load-carrying member extending forwardly from said lift truck, a selectively extendible and retractable push frame mounted on said lift truck for pushing a load from said load-carrying member in a direction forwardly of said lift truck by extension of said push frame with respect to said lift truck and selectively actuated hydraulic power means connected to said push frame for extending said push frame in response to the supply of hydraulic fluid under pressure thereto through a conduit, the improvement which comprises hydraulic synchronizing means responsive to the pressure of said hydraulic fluid supplied to said hydraulic power means and connected to said prime mover for actuating said prime mover to drive said lift truck rearwardly in response to actuation of said hydraulic power means to extend said push frame.

# 4,284,385 METHOD AND EQUIPMENT FOR HANDLING PIPE MOUNTED CARRIAGE

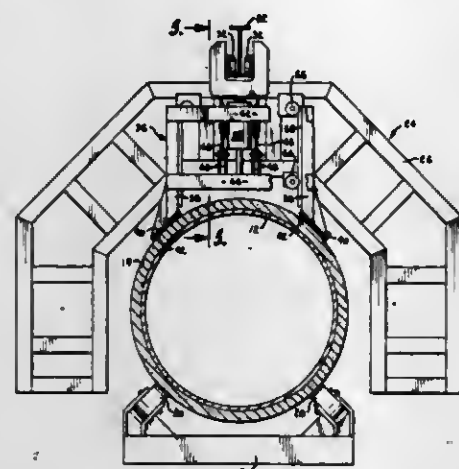
Steven A. Lively, Dewey, and Stephen K. Madden, Bartlesville, both of Okla., assignors to H. C. Price Co., Bartlesville, Okla.

Filed Aug. 15, 1979, Ser. No. 66,516

Int. Cl.<sup>3</sup> B23Q 5/22

U.S. Cl. 414-747

6 Claims



1. Apparatus for supporting a carriage in working relationship to a work surface, said apparatus being coupled with an overhead support and comprising:

an extendable support leg movable relative to said carriage over a rectilinear path between extended and retracted positions;  
cable means coupling said leg and said carriage with said overhead support;  
means for moving said leg between extended and retracted positions, said moving means being coupled with said leg and with said carriage, the cable being of sufficient length relative to the distance between said extended and retracted positions of the leg, whereby the cable is slack and the entire weight of the carriage is supported by the leg on the work surface when the leg is in its extended position and the cable is taut and the leg is clear of said surface when the leg is in its retracted position.

4,284,386

## HIGH PRESSURE PUMP

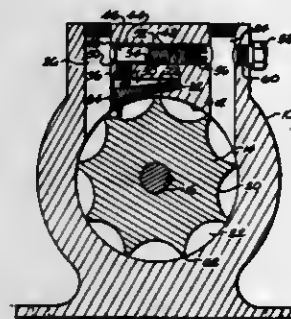
James L. Hudson, 2601 S. Forest Dr., Melbourne, Fla. 32901

Filed Apr. 27, 1979, Ser. No. 33,566

Int. Cl.<sup>3</sup> F04D 29/54

U.S. Cl. 415-209

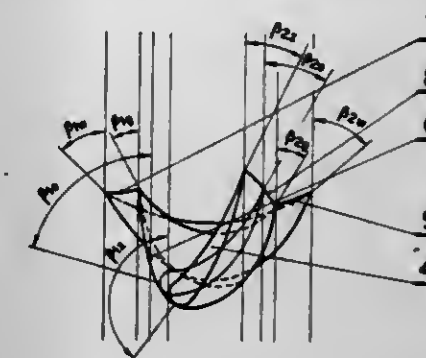
5 Claims



1. A pump comprising:  
a casing having a cylindrical cavity provided therein;  
a cylindrical rotor carried in said cylindrical cavity;  
an inlet port extending through said casing into said cavity positioned on one side of a longitudinal axis of said rotor;  
an outlet port extending through said casing into said cavity positioned on an opposite side of said longitudinal axis of said rotor;  
means for rotating said rotor;  
a plurality of circumferentially spaced concave curving

walls provided on the periphery of said cylindrical rotor defining circumferentially spaced chambers;  
a source of fluid being supplied through said inlet port into said chambers of said rotor as said rotor is rotated;  
a pivotal member carried between said inlet port and said outlet port; and  
an inwardly extending arm means carried by said pivotal member riding on said curving walls of said chambers as said chambers are rotated past said outlet port directing said fluid from said chambers out said outlet port.

portions of different vortex-flow patterns, and then said angles increase again down to the root section, and having the exit



angle changing continuously from tip to the root in one direction.

4,284,387

## BLADE FOLD RESTRAINT SYSTEM

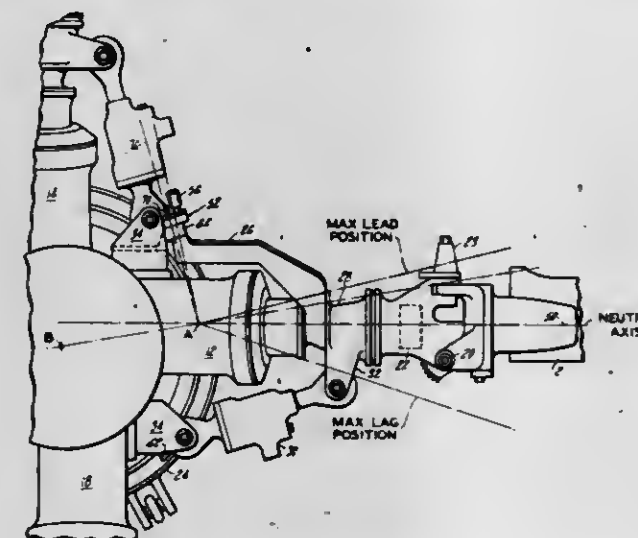
Donald L. Ferris, Newtown, Conn., assignor to United Technologies Corp., Hartford, Conn.

Filed May 2, 1979, Ser. No. 35,364

Int. Cl.<sup>3</sup> B64C 11/28, 27/38, 27/50

U.S. Cl. 416-134 A

7 Claims



1. In a helicopter rotor wherein each blade is independently supported from a hub arm for full articulated flight motions by an elastomeric bearing establishing blade pitch, flapping, and lead/lag axes all intersecting at the focal point of the bearing, and having flight control linkage including a blade mounted pitch control horn, and further having a blade fold system including a substantially vertical blade fold hinge for each blade, located outboard of and independently of the elastomeric bearing; an improved three axis blade restraint mechanism for said fold system characterized by a lock assembly mounted on the hub arm and including a retractable pin adapted to engage the radial extremity of the pitch control horn, wherein the pin axis is offset from the blade pitch, flapping, and lead/lag axes and also intersects the focal point of the elastomeric bearing.

4,284,388

## MOVING BLADE FOR THERMIC AXIAL TURBOMACHINES

Robert Szewalski, Gdansk-Wrzeszcz, Poland, assignor to Polska Akademia Nauk, Instytut Maszyn Przeplywowych, Gdansk, Poland

Continuation of Ser. No. 738,175, Nov. 2, 1976. This application Feb. 1, 1979, Ser. No. 8,397

Claims priority, application Poland, Nov. 3, 1975, 184450

Int. Cl.<sup>3</sup> F01D 5/14

U.S. Cl. 416-223 A

1 Claim

1. An axial flow turbomachine rotor blade twisted from root to the tip in order to match fluid angles at entry and exit at different radii, according to a predetermined vortex flow pattern, said blade being tapered simultaneously in order to continuously reduce the cross-section from root to the tip, wherein: entry flow angles first diminish continuously from a large value at blade tip down to a minimum value at a predetermined radius of division of the whole blade length into two

# 4,284,389 INPUT TORQUE CONTROL SYSTEM FOR A VARIABLE DISPLACEMENT PUMP

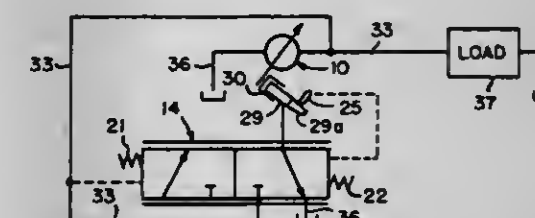
John E. G. Young, Watertown, and Donald R. Schneckenburger, Chaumont, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Aug. 24, 1979, Ser. No. 69,478

Int. Cl.<sup>3</sup> F04B 49/00

U.S. Cl. 417-218

4 Claims



1. An input torque control system for a variable displacement pump including a displacement control cam operably connected to displacement control cylinder means within a pump housing, and pressure and flow sensitive compensating valve means connected to the pump housing for regulating output of the pump, wherein improved compensating valve means comprises:

(a) valve housing means secured to a surface of the pump housing through spacer means;  
(b) the valve housing means having a valve sleeve operable axially in a bore of the housing and a spool valve operable axially within the sleeve;  
(c) spring biasing means for axially biasing the sleeve and the spool valve in opposite directions;  
(d) lever means for axially operating the sleeve disposed in part in the valve housing means and in part in the spacer means having a central pivot from which:  
(1) a first arm extends to engage the sleeve;  
(2) a second arm extends to engage feedback means positioned by said displacement control cam, and  
(3) a third arm extends to at times contact an adjustable stop means for limiting output pressure of the pump; and  
(e) means including the spool valve for selectively delivering output of the pump to the control cylinder means or output of the control cylinder means to a tank in accordance with pump output pressure sensed by the spool valve.



# 4,284,390 COLLAR

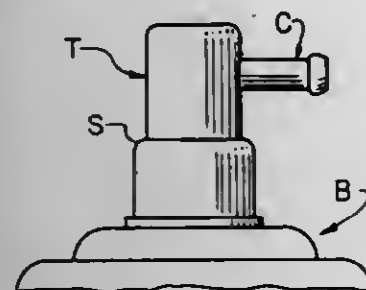
Walter E. Basch, St. Louis, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,263

Int. Cl.<sup>3</sup> F04B 39/12, 39/60

U.S. Cl. 417—313

3 Claims



1. In a fuel pump for use in an automotive fuel system, the fuel pump including a body having a fuel intake cavity and a fuel discharge cavity, one of the respective cavities being defined by a tower formed in the body and the tower having a fuel conduit formed integrally with the tower at the outer end thereof, the conduit projecting outwardly from the tower and the tower being subject to tearing when the conduit is subjected to abnormal forces such as occur during a crash, the improvement comprising a metal collar sized to fit over the tower at its outer end, the collar having an opening therein sized to accommodate the conduit whereby the collar is fitted about the conduit and the collar being attachable to the tower to reinforce the tower whereby the tower does not tear when the conduit is subjected to abnormal forces.

# 4,284,391

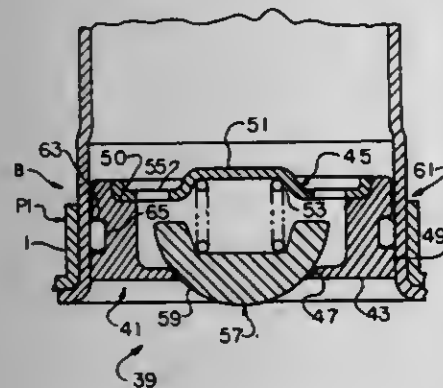
CRASHWORTHY FUEL PUMP IMPROVEMENT  
Raymond E. Williamson, Granite City, Ill., assignor to ACF Industries, Inc., New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,264

Int. Cl.<sup>3</sup> F04B 39/10

U.S. Cl. 417—569

2 Claims



1. In a fuel pump for use in an automotive fuel system, the fuel pump including a body having a first portion in which is formed a fuel intake cavity and a fuel discharge cavity and a second portion in which is formed a fuel pumping chamber, one end of each cavity being in fluid communication with the pumping chamber, a flexible diaphragm closing the pumping chamber, the diaphragm being insertable into the open end of the second portion of the body, means for flexing the diaphragm to pump fuel into and out of the pumping chamber through the respective intake and discharge cavities and a housing in which the flexing means is housed, the housing having one end formed for abutment with the open end portion of the body, the improvement comprising a control valve having a valve seat pressed into the portion of the body forming the fuel discharge cavity, the valve seat having a central, circular opening with a curved peripheral surface, means for sealing the valve seat and the body, a valve member movable

relative to the opening, the valve member being spherical in form with the outer curved contact surface of the valve member seatingly contacting the curved peripheral surface of the opening, a spring acting against the valve member to urge the valve member in a valve closing direction, and a seat for the spring.

# 4,284,392

## ROLLER PUMP WITH RADIAL MEMBERS

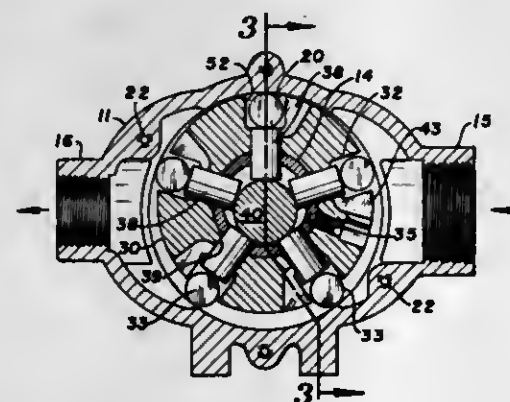
Ramon Pareja, Minneapolis, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Jan. 3, 1977, Ser. No. 756,051

Int. Cl.<sup>3</sup> F04C 2/00

U.S. Cl. 418—225

4 Claims



1. A roller pump comprising:

- (a) a housing having longitudinally spaced end walls and an intermediate circumferential wall forming a generally cylindrical pumping chamber;
- (b) a rotor rotatably mounted within said pumping chamber with its axis offset from that of the cylindrical pumping chamber;
- (c) said rotor having a plurality of roller receiving slots formed into and across the circumferential surface thereof and uniformly angularly spaced therearound, a central concentric bore extending inwardly from a first lateral surface thereof, and a plurality of radially extending bores beginning at said central concentric bore and terminating at the bottom of said roller receiving slots;
- (d) a cylindrical cam shaft secured to one of said end walls and extending into said central concentric bore in said rotor;
- (e) a cylindrical roller disposed in each roller receiving slot and having a length corresponding to the length of said roller receiving slot;
- (f) a push rod disposed in each of said radially extending bores and having a length such that the sum of the radius of said cam shaft, the length of said push rod and the diameter of said cylindrical roller is substantially equal to the radius of said generally cylindrical pumping chamber, said push rods engaging said cylindrical rollers along a line of contact; and
- (g) fluid inlet and outlet ports formed in said housing and communicating with said cylindrical pumping chamber and effectively separated from one another at a point determined by the offset between said rotor and said cylindrical pumping chamber, the arrangement being such that as the rotor is turned, the axes of said cylindrical rollers are held parallel to the axis of said cylindrical pumping chamber, the surface of said cylindrical rollers being held in positive engagement with the walls of said cylindrical pumping chamber such that viscous fluids may be handled by said pump.

# 4,284,393

## POWDER MANUFACTURING APPARATUS

Gunnar Brunosson; Hans-Gunnar Larsson, and Erik Westman, all of Vesteras, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

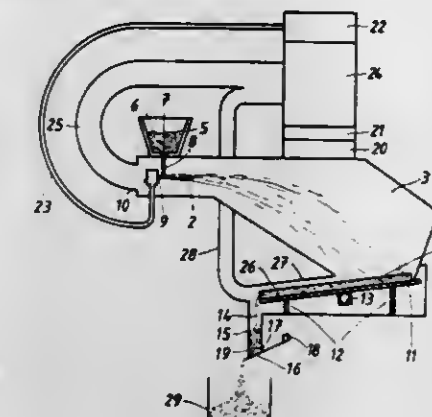
Filed May 19, 1980, Ser. No. 150,931

Claims priority, application Sweden, May 31, 1979, 7904750

Int. Cl.<sup>3</sup> B22F 9/00

U.S. Cl. 425—7

7 Claims



1. Apparatus for manufacturing powder by a melt atomization process, said apparatus comprising  
a container,  
means for forming a stream of the melt in said container,  
means for directing a jet of gas transversely into the melt stream in order to atomize the melt stream into droplets which solidify in said container to form powder which falls onto a powder-receiving and transporting means in a lower part of said container for transporting the powder to an outlet for powder from the container,  
means for withdrawing gas from said container,  
means for cooling at least a part of the withdrawn gas,  
means for re-introducing at least part of the cooled gas into said lower part of the container, and  
guide means for forcing said re-introduced gas to flow in contact with the powder on said powder-receiving and transporting means in a direction substantially opposite to the direction of flow of the powder as it is transported to said outlet by said powder-receiving and transporting means.

# 4,284,394

## GAS MANIFOLD FOR PARTICLE QUENCHING

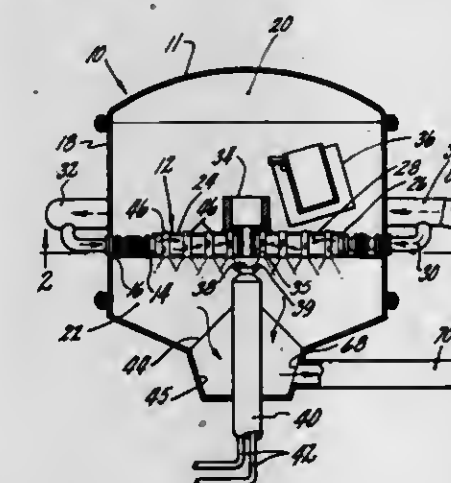
Charles C. Thompson, Jupiter, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 19, 1980, Ser. No. 188,447

Int. Cl.<sup>3</sup> B22F 9/00

U.S. Cl. 425—8

9 Claims



1. Apparatus for producing metal powder comprising:  
a housing;

disk means within said housing mounted for rotation about an axis;  
nozzle plate means disposed within said housing;  
means defining a cooling fluid manifold volume on one side of said plate means;  
means defining a quenching chamber on the other side of said plate means;  
a plurality of cylindrical vortex tubes each having wall means defining an inner cylindrical wall surface, at least a first portion of each of said tubes being disposed within said manifold, each of said tubes including means for admitting cooling fluid from said manifold volume into said tube and for creating a vortex flow of said fluid within said tube, each of said tubes having cooling fluid outlet means opening into said quenching chamber, said tubes being constructed, sized, and arranged to create a desired pattern of cooling fluid flow from said outlets into said quenching chamber around said disk means.

# 4,284,395

## APPARATUS FOR FORMING FILAMENTS

John L. Kane, Newark, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Dec. 12, 1979, Ser. No. 99,060

Int. Cl.<sup>3</sup> B29D 7/02

U.S. Cl. 425—66

9 Claims



1. Apparatus for forming filaments comprising:  
means for supplying a plurality of streams of molten material;  
attenuation means for supplying a moving fluid to attenuate said streams into said filaments, said filaments being entrained in said fluid moving from said attenuation means; and  
means for separating a portion of said entraining fluid from said filaments comprising a foraminous surface having:  
(a) an intercept region oriented to form an acute angle between a path defined by the entrained filaments approaching said foraminous surface and said intercept region; and  
(b) a concave region contiguous with said intercept region oriented such that at least a portion of said concave region is positioned substantially transverse to said path such that a portion of said fluid passes through said foraminous surface and a portion of said fluid moves along said foraminous surface to move said filaments along said surface.

# 4,284,396

## APPARATUS FOR VACUUM THERMOFORMING POLYMERIC SHEET MATERIAL

Christopher P. Thissen; Jerry J. Ferwerda; Milford J. Tweet, and Ronald D. Hatfield, all of Austin, Minn., assignors to Walker Process Corporation, Aurora, Ill.

Filed Jul. 14, 1980, Ser. No. 168,731

Int. Cl.<sup>3</sup> B29C 17/04

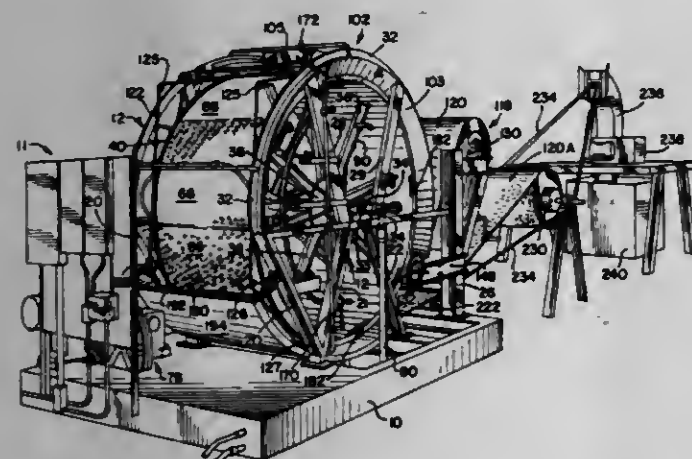
U.S. Cl. 425—342.1

10 Claims

1. Apparatus for continuously vacuum molding a plurality of three dimensional geometrical shapes in a roll of thermoplastic polymeric sheet material comprising:



a cylindrical shell rotatably mounted on an axle and means to rotate the cylindrical shell;  
 said cylindrical shell including a plurality of single curved molding plates, the outer molding faces of which have a plurality of three dimensional geometrical shapes;  
 at least one air flow orifice extending through each molding plate so that air can be removed from the molding face of each molding plate;  
 means to continuously feed a length of polymeric sheet material into position adjoining the outer molding faces of the cylindrical shell while it rotates;  
 means to continuously heat moving polymeric sheet material to a thermoforming condition as the cylindrical shell rotates to thereby provide a heated sheet portion adjoining each consecutive molding plate;



means to releasably seal the heated polymeric sheet to and all around the border of each consecutive molding plate including bar means to press heated polymeric material against at least the trailing edge of each molding plate in a line axial to the cylindrical shell to thereby seal that portion of the molding plate border against air intake;  
 means to consecutively remove air, from between the heated polymeric sheet and the molding faces of consecutive molding plates, through the at least one air flow orifice whereby atmospheric pressure can force the heated sheet into the shape of the molding face surface; and  
 means for continuously removing the molded sheet, after it cools to a non-plastic condition, from contact with the moving molding plate molding face.

4,284,397

# DEVICE FOR DRAWING THERMOPLASTIC PREFORMS DURING THE BLOW MOLDING THEREOF

Edmond Michel, Brussels, Belgium, assignor to Solvay & Cie. (Societe Anonyme), Brussels, Belgium

Filed Aug. 23, 1979, Ser. No. 68,955

Claims priority, application France, Aug. 24, 1978, 78 24756

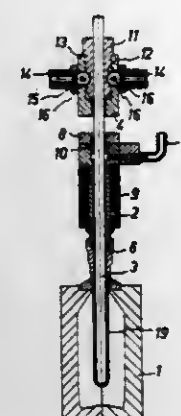
Int. Cl.<sup>3</sup> B29C 17/02, 17/07

U.S. Cl. 425—392

6 Claims

1. Device for the longitudinal drawing of thermoplastic preforms each possessing a closed base and an open neck comprising: means for holding a preform by its open neck; a rod provided with slots and mounted to be actuated mechanically for longitudinal drawing positioned with respect to said holding means so that when said rod is driven, said rod extends through the open neck and exerts an axial thrust on the base of the preform; a driving sleeve which actuates said rod and in which said rod can slide; mechanical means connected to said driving sleeve for driving said driving sleeve; retractable

wedges which are housed in said slots and which normally secure said sleeve relative to said rod; and means which permit



said wedges to retract from said slots when the axial thrust exceeds a predetermined value, so that said rod is not driven.

4,284,398

# APPARATUS FOR THE MANUFACTURE OF A FOAM MATERIAL BALL WITH AN EMBOSSED SURFACE

Horst Bokelmann, Bad Wildungen, Fed. Rep. of Germany, assignor to Metzeler Schaum GmbH, Memmingen, Fed. Rep. of Germany

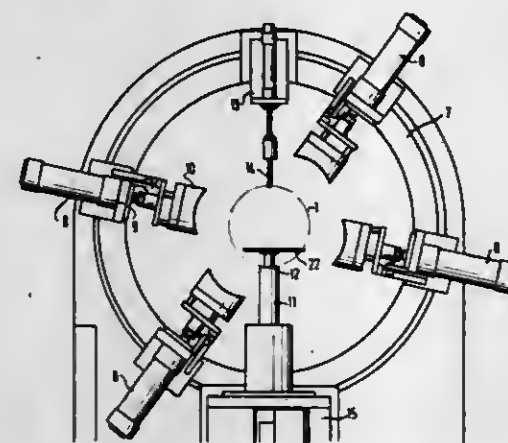
Filed Jan. 30, 1980, Ser. No. 116,791

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2904026

Int. Cl.<sup>3</sup> B29D 27/00; B29C 3/00

U.S. Cl. 425—394

6 Claims



1. Apparatus for burning depressions into the surface of a spherical foam material body, comprising in a ring-shaped tool holder, a plurality of electrically heatable burn-in tools having suitably formed depressions and being disposed about said ring-shaped tool holder at angles relative to each other, said embossing tools being movable toward the center of said ring-shaped tool holder, a nest being disposed in said ring-shaped tool holder, movable in radial direction of said ring-shaped tool holder and having a spherically-cupped end surface, and a pin being disposed diametrically opposite said nest for fixing the spherical foam material body in a work position, said nest being rotatable about its longitudinal axis.

4,284,399

# CONTACT LENS MOLD

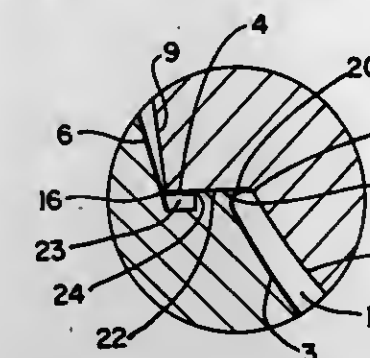
Paul D. Newcomb, Franklin; Paul A. Davignon, Uxbridge, and Harold M. Miller, Whitinsville, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Jun. 23, 1980, Ser. No. 161,832

Int. Cl.<sup>3</sup> B29C 5/00; B29D 11/00

U.S. Cl. 425—410

2 Claims



1. A disposable contact lens mold for casting a finished, water swellable, soft contact lens, the lens having a chosen diameter, a posterior surface, a finished edge and an anterior surface which comprises,

a hollow, frustoconical male member having a convex molding surface at the narrow end, said convex molding surface having a first chosen radius for shaping the posterior surface, a first longitudinal axis extending through said member, a solid, continuous, ring-shaped, rigid mold mating portion extending from the narrow end of said male member radially inwardly toward said convex molding surface, said mating portion having first and second edges defining a first mating surface, and a first concave junction surface extending from said convex molding surface to said first mating surface at a line of tangency, said first junction surface having a second chosen radius for shaping a portion of the finished edge,

a hollow, inverted frustoconical female member having a cavity at the narrow end for receiving said male member, said cavity having a centrally located concave molding surface, said concave molding surface having a third chosen radius for shaping the anterior surface of said lens, a second longitudinal axis extending through said female member, a second concave junction surface extending from the periphery of said concave molding surface, said second concave junction surface having a fourth chosen radius, a second mating surface extending radially outwardly from a tangent to said second junction surface, said second mating surface having an inner edge and an outer edge, an annular groove in said female mold member connected to said outer edge, and an outwardly tapering wall extending from said annular groove to the narrow end of said female member, said first edge of said male member and said inner edge of said female member having an identical diameter, said second edge having a diameter chosen to provide an interference fit with said outwardly tapering wall when said male and female member are united thereby providing coincidence of said first and second longitudinal axes and a parting line tangent to said finished edge of the lens.

4,284,400

# POSITIVE EXTRACTOR FOR CUP MOLDING MACHINE

Peter D. Kaspar, and Carroll D. Satterfield, both of Dover, Del., assignors to International Playtex, Inc., Stamford, Conn.

Filed Jul. 18, 1980, Ser. No. 170,274

Int. Cl.<sup>3</sup> B29C 17/00, 7/00

U.S. Cl. 425—444

16 Claims

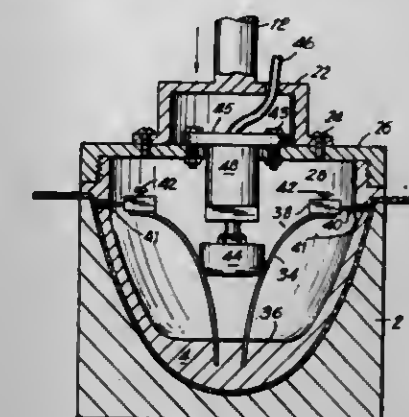
1. An extractor mechanism for disengaging a molded fabric article from a mold member comprising:

(a) an extractor body member adapted to be moved into

mating relationship with a mold member after a fabric molding operation;

(b) pin means positioned in said extractor body member to move through openings extending through the outer perimeter of the extractor body member.

(c) means for causing said pin means to move through said openings into engagement with the molded article;



(d) means to move said body extractor member away from said mold member with molded article engaged by said pin means; and

(e) means for retracting said pin means from engagement with the molded article after the extractor mechanism has been moved out of mating relationship with said mold.

4,284,401

# METHOD AND MEANS FOR FEEDING FUEL INTO FLUIDIZED-BED COMBUSTION APPARATUS

June Tatebayashi, Toyonaka, and Kazuaki Yano, Amagasaki, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

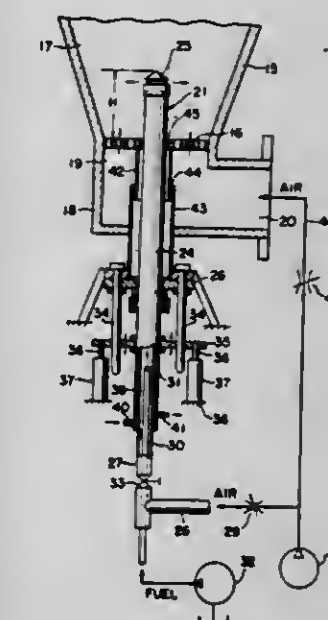
Filed Jul. 31, 1979, Ser. No. 62,532

Claims priority, application Japan, Aug. 3, 1978, 53-95087; Apr. 26, 1979, 54-51831

Int. Cl.<sup>3</sup> F23D 19/02

U.S. Cl. 431—7

6 Claims



2. A fluidized-bed combustion apparatus comprising an enclosure having an air distributor, a bed of solid particles overlying the distributor, means for feeding fluidizing air into the bed through the distributor to fluidize the bed, means for controlling the feed rate of the fluidizing air, means including a burner for feeding a mixture of a fuel and fuel-carrying air into the bed, and means for controlling the feed rate of the fuel-carrying air, said burner comprising a hollow stem extending upwardly through the distributor for the transfer of the fuel-air mixture and having one end located in the bed, and a bead on said one end of the stem for introducing the fuel-air mixture into the bed, the improvement comprising the head of



the burner including a hollow base placed in communication with the burner stem, a top cover, and a plurality of baffle plates of generally annular arrangement extending between the base and the top cover to define lateral outlet openings for ejection of the fuel-air mixture, each baffle plate being oriented at a specific angle relative to the radial direction of the burner head, whereby the fuel-air mixture is introduced into the bed in the form of swirling jets.

4,284,402

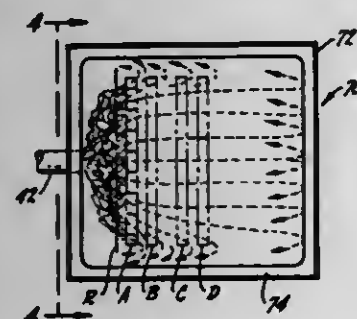
FLAME MODIFIER TO REDUCE NO<sub>x</sub> EMISSIONS

Jesse E. Sheets, Griffith, Ind.; Bernard C. Vitcbus, Palos Hills, Ill.; Tai S. Chao, Homewood, Ill., and Martin F. Zygowicz, Lansing, Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed May 2, 1979, Ser. No. 35,200  
Int. Cl.<sup>3</sup> F23M 3/12; F23C 9/02

U.S. Cl. 431—9

10 Claims



1. A method for reducing NO<sub>x</sub> emissions in a turbulent flame having a temperature in the range of about 1700° F. to about 3500° F., said method comprising causing at least a portion of said flame; down stream of a smoke plane, wherein said smoke plane is defined by a location which the leading edge of an array of vanes which are stable both chemically and physically to high temperature and oxidizing environment of said flame and which have a thicknesses in the range of about 1/16 of an inch to about 1/4 of an inch, widths in the range of about 1/4 of an inch to about 3 inches, and the spaces therebetween in the range of about 3/16 of an inch to about 4 inches would have when the flame would just begin to become smoky due to insertion of said array in said flame, to flow in a non-turbulent pattern; whereby the amount of turbulence in the flow pattern of substantially only post ignition combustion products is reduced.

4,284,403

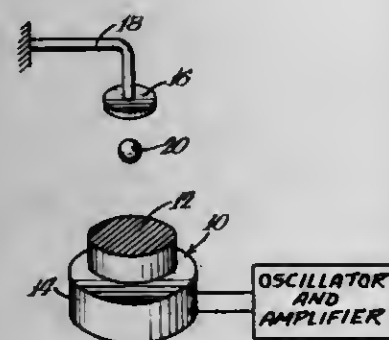
## ACOUSTIC LEVITATION AND METHODS FOR MANIPULATING LEVITATED OBJECTS

Charles A. Rey, Naperville, Ill., assignor to Intersonics Incorporated, Northbrook, Ill.

Filed Oct. 6, 1978, Ser. No. 949,070  
Int. Cl.<sup>3</sup> F24J 3/00

U.S. Cl. 432—1

14 Claims



1. An acoustic levitation system comprising source means for producing a field of sound having a wavelength, and reflector means spaced from said source means for producing localized reflection of a portion of sound, said reflector means having an effective reflecting surface of a size less than four wavelengths of the sound such that said system is substantially

free of resonance and such that a localized energy well is created adjacent said reflector means capable of levitating an object.

4,284,404

## CONTINUOUS RING BAKING FURNACES OF THE HOFFMANN TYPE

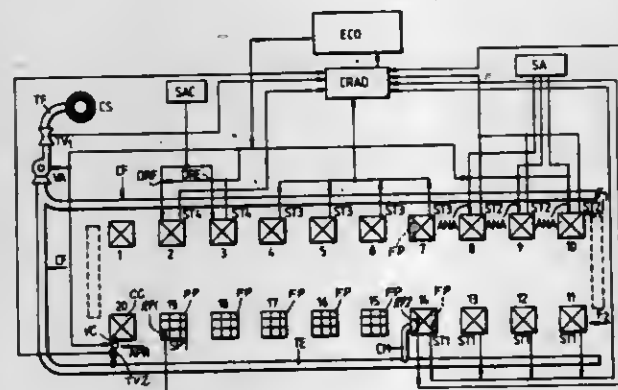
Jean L. Genevois, Corso Sempione, 3, Milano; Roberto Falohi, Via Abruzzi 11, Terni; Giovanni Costantini, Viale Treviri, 147, Ascoli Piceno, and Paolo Presti, Via della Balduina 133, Roma, all of Italy

Filed Feb. 5, 1980, Ser. No. 118,683

Claims priority, application Italy, Feb. 5, 1979, 47898 A/79  
Int. Cl.<sup>3</sup> F27B 9/40

U.S. Cl. 432—37

7 Claims



1. In combination with a continuous ring furnace for baking and rebaking of carbon bodies, said furnace comprising a plurality of chambers arranged in a continuous ring, each chamber including a capacity for receiving bodies to be heated and a separate fire-pit adjacent said capacity, the furnace comprising further a flue duct operatively connected to each chamber and provided with a suction fan and an outlet stack connected to the flue duct,

the operation of the furnace as a whole being characterized by the simultaneous operation of phased adjacent pairs of chambers wherein

- (a) at least one pair of chambers is in pre-heat phase,
- (b) at least one pair of chambers is in distillation phase,
- (c) at least one pair of chambers is in preparation,
- (d) at least one pair of chambers is provided with fuel burners,
- (e) at least one pair of chambers is in cooling phase, and
- (f) at least one pair of chambers is uncovered and provided with equipment for recycling of fumes by means of a pressure fan,

the improvement which includes a coordinated computerized data collection and processing system for measurement, control, and regulation of the temperature and the gas flow in groups of chambers and single chambers in a group, which system comprises

- a thermal sensor in each chamber of groups (a), (b), (c), and (d);
- a first pressure sensor in the last chamber of group (a) which is connected to said flue duct;
- another pressure sensor in the first chamber of group (f) adjacent to the last chamber of group (e), which chamber is also provided with said recycling equipment;
- a first means placed in the flue duct between said suction fan and the stack for measuring the gas flow;
- a second means for measuring the gas flow placed in the recycling equipment;
- a first means for regulating the speed of an electric motor operatively connected to the suction fan motor;
- a second means for regulating the speed of an electric motor operatively connected to the motor of the recycling pressure fan;

means in each chamber of group (b) for lowering the temperature; and valves adapted to regulate the flow of fuel to the burners.

4,284,405

## ORTHODONTIC APPLIANCE METHOD OF TREATMENT AND MANUFACTURE

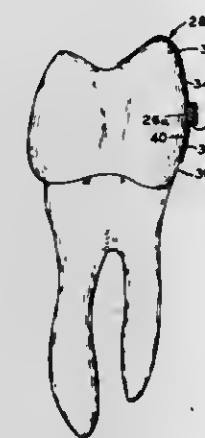
Eugene L. Dellinger, 1326 Old Lantern Trail, Fort Wayne, Ind. 46825

Filed Nov. 30, 1979, Ser. No. 98,908

Int. Cl.<sup>3</sup> A61C 3/00

U.S. Cl. 433—24

34 Claims



1. The method of fabricating an orthodontic appliance for use in repositioning one or more teeth in a patient's mouth, comprising the steps of:

- (a) forming a model of the patient's teeth in the shape of a dental arch with the replicas of the teeth in idealized locations,
- (b) establishing on the labial or buccal surfaces of selected ones of said replicas locations for the mounting of brackets,
- (c) providing on each selected surface at the established location an orienting embossment,
- (d) and forming onto the incisal edge and surface, including such embossment, in intimate conforming engagement, of each selected replica a plate-like fixture which has an exterior provided with a locating boss corresponding to the shape of said embossment and a mounting surface surrounding said boss which corresponds to the replica surface.

4,284,406

## DENTAL TOOTH BUR

Thomas E. Hughes, 6024 Fallbrook, Suite 103, Woodland Hills, Calif. 91367

Filed Aug. 19, 1980, Ser. No. 179,298

Int. Cl.<sup>3</sup> A61C 3/00

U.S. Cl. 433—165

27 Claims



1. A dental tooth bur for preparing a tooth cavity for filling comprising:

- cutting means for producing a wall for said tooth cavity having a nonridged surface a first region and having a continuously crossridged surface in a second region vertically beneath said first region, whereby said nonridged

surface provides maximum shear strength for said wall and said crossridged surface assists in the retaining of the material with which said cavity is filled.

4,284,407

## RELIEF SCULPTURE GUIDANCE METHOD

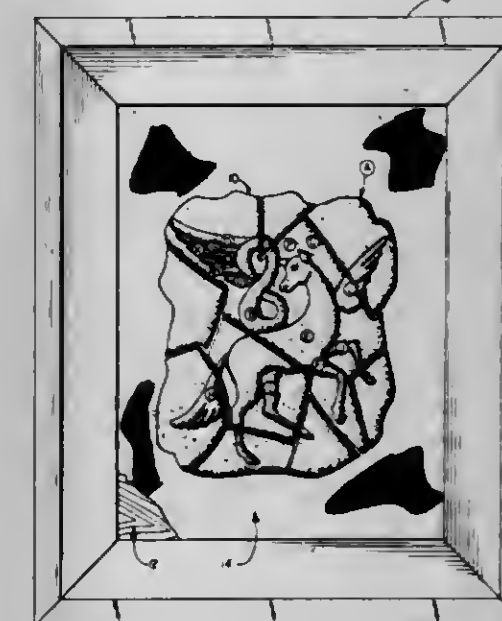
Ben H. Hofstetter, 1917 Texas, Norman, Okla. 73071

Filed Mar. 9, 1979, Ser. No. 19,319

Int. Cl.<sup>3</sup> G09B 19/10

U.S. Cl. 434—82

12 Claims



1. A method for producing a relief sculpture artwork from clay material, the method comprising the steps of:

- (a) disposing the clay material, in an amount sufficient to form a first design blank, on a working surface between two substantially parallel first and second elevating tracks, each of the elevating tracks having a height equal to the desired thickness of the first design blank;
- (b) locating a rigid cylindrical member, having a first end and a second end, so that the first end rests on the first elevating track and so that the second end rests on the second elevating track;
- (c) rolling the cylindrical member along the length of the elevating tracks so that the clay material disposed between the elevating tracks is molded into the first design blank having a flat display surface and a substantially parallel flat mounting surface, the first design blank being molded to a height above the working surface equal to the height of the elevating tracks;
- (d) contacting the display surface of the first design blank with a first design element template;
- (e) removing clay material from around the borders of the design template to define a first design element having a flat, planar display surface substantially concurrent with the first design element template outline;
- (f) removing the first design element template from the display surface of the first design element;
- (g) securing the mounting surface of the first design element to a substantially flat base member;
- (h) forming a second design element by repeating steps (a) through (f), using a second design element template, the second design element having a flat display surface and a substantially parallel flat mounting surface, the second design element an altered height from the first design element which is accomplished by altering the height of the elevating tracks used to form the first design element so that the second design element has a different thickness than the first design element; and
- (i) securing the mounting surface of the second design element to the substantially flat base member.



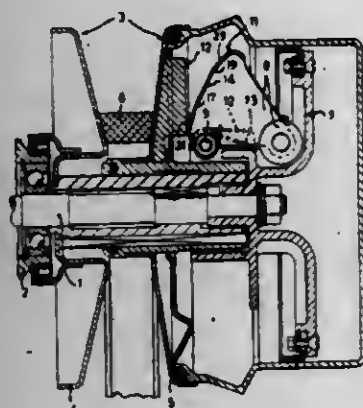
4,284,408

**AUTOMATIC VARIABLE POWER TRANSMISSION**  
Edo Boer, Eersel, and Sybrand W. Vogt, Mierlo, both of Netherlands, assignors to Volvo Car B.V., Mc Helmond, Netherlands  
Filed Sep. 10, 1979, Ser. No. 73,674  
Claims priority, application Netherlands, Sep. 8, 1978, 7809168

Int. Cl.<sup>3</sup> F16H 11/06

U.S. Cl. 474-14

2 Claims



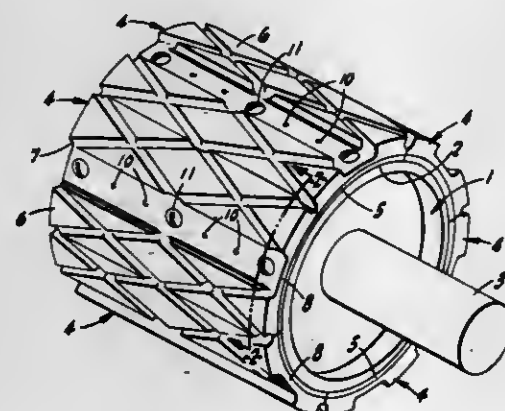
1. An automatic variable power transmission of the type having a V-belt and adapted for driving a vehicle, said transmission comprising:  
a drive shaft;  
an axially adjustable pulley means for receiving a V-belt, said pulley means including a fixed pulley half secured to said drive shaft and a movable pulley half slidably secured to said drive shaft for movement towards and away from said fixed pulley half to thereby vary the gear ratio of the transmission; and  
automatic adjustment means operatively engaging said movable pulley half for shifting said movable pulley half towards said fixed half as the angular velocity of the drive shaft increases and for maintaining the gear ratio of the transmission relatively constant within a predetermined range of drive shaft angular velocities, said adjustment means comprising:  
at least one centrifugal weight member; and  
means for pivotally securing said weight member to said shaft for radial displacement upon rotation of said drive shaft, said weight member defining a cam surface in contact with a straight cam follower surface carried by said movable pulley half, said cam surface including an elongated, generally straight portion whereby when said

straight portion engages said cam follower surface at a first angular velocity, the weight member will not pivot and the gear ratio will remain essentially constant until a second higher angular velocity of said drive shaft is reached.

4,284,409

**REPLACEABLE PULLEY LAGGING**  
David A. Van Teslaar, Stockton, Calif., assignor to Randtron, Menlo Park, Calif.  
Filed Aug. 27, 1979, Ser. No. 69,804  
Int. Cl.<sup>3</sup> F16H 55/38  
U.S. Cl. 474-185

3 Claims



1. In replaceable pulley lagging which includes a multiplicity of elongated traction pads extending, in circumferential array, across and detachably secured to the face of a pulley; the improvement characterized by each traction pad comprising a back plate, an elastomeric pad vulcanized on the back plate, the elastomeric pad being of materially reduced thickness intermediate its sides to form a lengthwise groove of substantial depth, there being spaced holes in the portion of the back plate beneath the groove, and fasteners passing from the groove through the holes in the back plate and detachably securing the same to the face of the pulley; each traction pad being preformed to mate with the arcuate pulley face, and the lengthwise groove is disposed centrally of the sides of the elastomeric pad, is continuous, and extends from end to end of said pad; there being a membrane, integral with the elastomeric pad, and which membrane bottoms the groove and is vulcanized to said portion of the back plate.

## CHEMICAL

4,284,410

**PROCESS FOR THE PRETREATMENT OF CELLULOSE FIBERS TO BE PRINTED ACCORDING TO THE THERMOTRANSFER PRINTING METHOD**

Ehrenfried Nischwitz, Schmittau, and Walter Dürsch, Königstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany  
Filed Sep. 18, 1979, Ser. No. 76,591

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841239

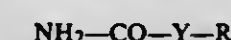
Int. Cl.<sup>3</sup> D06P 1/16

U.S. Cl. 8-471

2 Claims

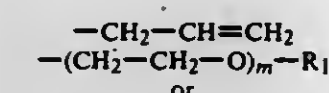
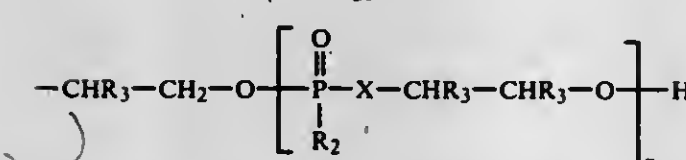
1. A process for the pretreatment of textile material consisting entirely or partially of cellulose fibers and which is to be printed with disperse dyes according to the thermotransfer process, which comprises impregnating the textile material with a solution or dispersion containing

(a) a compound of the formula I



(I)

wherein R stands for a group of the formulae  $R_a$ ,  $R_b$  or  $R_c$

(R<sub>a</sub>)(R<sub>b</sub>)(R<sub>c</sub>)

in said formulae  $R_1$  is hydrogen or  $C_{1-4}$ alkyl,  $R_2$  is  $C_{1-4}$ alkyl,  $R_3$  is hydrogen or methyl,  $n$  is an integer of from 1 to 6,  $m$  is an integer of from 1 to 10,  $X$  is  $\text{CH}_2$  or  $\text{O}$  and  $Y$ , in case that  $R$  stands for  $R_a$  or  $R_b$  is an oxygen atom and in case that  $R$  stands for  $R_c$  is an oxygen atom or an imino group (NH),

(b) a glyoxal or malamine formaldehyde resin and

(c) an acid catalyst for the condensation of these resins, and subsequently drying the textile material and subjecting it to the action of heat.

4,284,411

**ANTHRAQUINONE DERIVATIVES FOR PIGMENTING ORGANIC MACROMOLECULAR SUBSTANCES**

Rütger Neeff, Meinhard Rolf, and Walter Müller, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed Jul. 19, 1979, Ser. No. 59,004

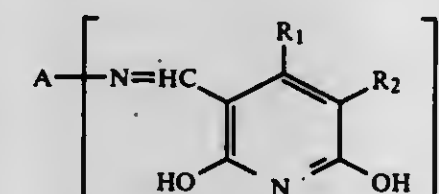
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1978, 2835067

Int. Cl.<sup>3</sup> D06P 3/52; C09B 1/16

U.S. Cl. 8-506

11 Claims

1. Anthraquinone derivatives which in one of their tautomeric structures correspond to the formula



(I)

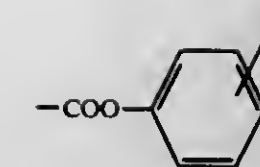
in which

A denotes an anthraquinone radical which is free from sulfonic acid groups, is optionally further substituted and preferably consists of at most 5 fused rings,  
 $m$  is a number from 1-4,  
 $R_1$  is hydrogen or  $C_{1-4}$ alkyl group and  
 $R_2$  is a cyano group or a radical of the formula

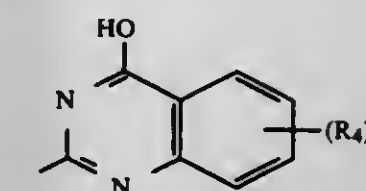


(II)

(III)



or a radical of the formula



(IV)

in which formulae

$R_3$  is hydrogen, a straight-chain or branched alkyl group or a cycloalkyl radical,

$R_4$  is halogen,  $C_{1-4}$ alkyl,  $C_{1-4}$ alkoxy, nitro, trifluoromethyl, cyano, unsubstituted carbamoyl, unsubstituted sulfamoyl, substituted carbamoyl or substituted sulfamoyl where the substituents are  $C_1$  to  $C_4$ alkyl, phenyl, benzyl which in turn can be optionally substituted by  $C_1$  to  $C_4$ alkyl,  $C_1$  to  $C_4$ alkoxy, fluorine, chlorine, bromine, or nitro or

$R_4$  can be acylamino wherein the acyl group is ( $C_1$  to  $C_4$ alkyl)-carbonyl or benzoyl which in turn can be optionally substituted in the benzene nucleus by  $C_1$  to  $C_4$ alkyl, chloro;  $C_1$  to  $C_4$ alkoxy or nitro or

$R_4$  can be arylamino which in turn can be optionally substituted by  $C_1$  to  $C_4$ alkyl,  $C_1$  to  $C_4$ alkoxy fluorine, chlorine, bromine or nitro,

$n$  is 0, 1, 2, 3 or 4 and

$p$  is 0, 1, 2, 3, 4 or 5.

4,284,412

**METHOD AND APPARATUS FOR AUTOMATED IDENTIFICATION AND ENUMERATION OF SPECIFIED BLOOD CELL SUBCLASSES**

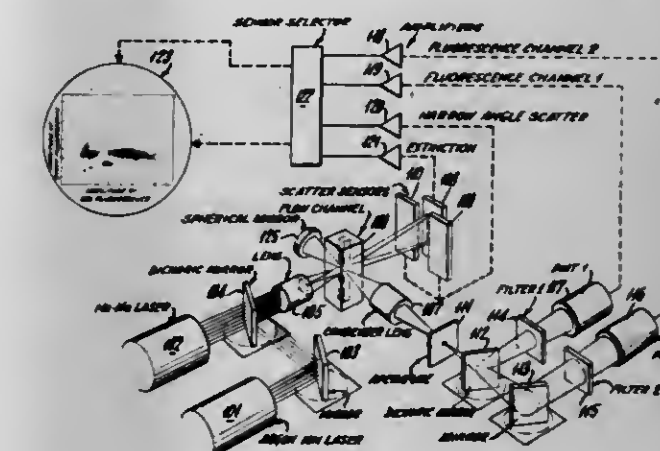
W. Peter Hansen, Middleboro, and Robert A. Hoffman, Mansfield, both of Mass., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Jul. 13, 1979, Ser. No. 57,482

Int. Cl.<sup>3</sup> G01N 33/48, 21/64

U.S. Cl. 23-230 B

14 Claims



1. An automated method of identifying and enumerating cells of a select subclass of lymphocytes in blood comprising the steps of:

(a) providing an aliquot from the blood to be studied;  
(b) selectively tagging cells of said subclass by incubating said aliquot with an antibody which is selectively reactive with distinct antigenic determinants on the surface of cells of said subclass, said antibody having a predetermined fluorescence response to a given optical stimulation;



- (c) lysing red cells from said aliquot;  
 (d) passing said aliquot, substantially a cell at a time, through an area of focused optical stimulation of said given type, while detecting light scattered by and emitted from said cells; and  
 (e) differentiating cells of said subclass based at least in part on occurrence of said predetermined fluorescence response in said detected light.

4,284,413

# IN-LINE METHOD FOR THE BENEFICIATION OF COAL AND THE FORMATION OF A COAL-IN-OIL COMBUSTIBLE FUEL THEREFROM

C. Edward Capes; William L. Thayer, both of Ottawa; Richard D. Coleman, Orleans, all of Canada, and Leonard Messer, Coraopolis, Pa., assignors to Canadian Patents & Development Ltd., Ottawa, Canada and Leonard Messer, Coraopolis, Pa.

Filed Dec. 26, 1979, Ser. No. 105,602  
 Int. Cl.<sup>3</sup> C10L 1/32

U.S. Cl. 44—51

5 Claims

1. An in-line method for the beneficiation of coal and the formation of a coal-in-oil combustible fuel therefrom, comprising:

- comminuting coal in water to produce a coal-in-water slurry comprising impurity liberated coal particles at least as fine as 40 microns weight mean particle size, then
- mixing the coal-in-water slurry with light oil as agglomerating liquid having a specific gravity of less than of the order of 1 g/cm<sup>3</sup> to micro-agglomerate the impurity liberated coal particles and primarily dissociate inorganic impurities and some water therefrom, the light oil agglomerating liquid being added at not more than of the order of 20 wt % of the total weight of the solids of the coal-in-water slurry, then
- separating the micro-agglomerated, impurity liberated coal from the dissociated inorganic impurities and water, then
- mixing the separated, micro-agglomerated, impurity liberated coal with heavy fuel oil, having a specific gravity greater than of the order of 0.9 g/cm<sup>3</sup>, as agglomerating liquid to produce relatively larger agglomerates comprising an average size no greater than of the order of 3 mm and primarily dissociate water with some inorganic impurities which were present in the micro-agglomerated, impurity liberated coal and leave a residual amount of at least of the order of 5 wt % water in the relatively larger agglomerates, then
- separating the relatively larger agglomerates from the dissociated water and inorganic impurities, and then
- mixing the separated, relatively larger agglomerates with make-up heavy oil additive to form a coal-in-oil combustible fuel.

4,284,414

# MIXED ALKYL ESTERS OF INTERPOLYMERS FOR USE IN CRUDE OILS

Charles P. Bryant, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Oct. 14, 1980, Ser. No. 196,975  
 Int. Cl.<sup>3</sup> C10G 73/38

U.S. Cl. 44—62

9 Claims

1. A crude oil composition having a minor amount of at least one mixed alkyl ester made by reacting:

- interpolymers having a RSV in a range from about 0.1 to about 2.0 which contain units derived from (i) at least one  $\alpha,\beta$ -unsaturated dicarboxylic acid, or derivative thereof and (ii) one or more vinyl aromatic monomers having up to about 12 carbon atoms, the molar ratio of (i) to (ii) being from about 1:1 to about 1:3, with
- a mixture of two or more monohydric alkanols contain-

ing from 18 to 40 carbon atoms, at least one of the alkanols containing 18 carbon atoms.

4,284,415

# ADDITIVES FOR HYDROCARBON OILS

Gary W. Y. Kwong, Palatino, Ill., and Joseph Levy, Deerfield Beach, Fla., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 8, 1979, Ser. No. 92,383  
 Int. Cl.<sup>3</sup> C10L 1/22

U.S. Cl. 44—72

13 Claims

1. A composition comprising a major amount of a hydrocarbon oil containing from about 0.0001% to about 1% of the reaction product of 1 molar proportion of an alkoxyalkylamine, wherein said amine is a primary amine, said alkoxy group contains from about 1 to about 25 carbon atoms, and said alkyl group is an alkylene containing 2 to about 10 carbon atoms, with about 0.5 to about 2.0 molar proportions of an epihalohydrin selected from the group consisting of epihalohydrin, 1-halo-3,4-epoxybutane, 1-halo-2,3-epoxybutane, 1-halo-4,5-epoxypentane, and 1-halo-3,4-epoxypentane, at a temperature from about 40° C. to about 150° C. in the presence of an inorganic base.

4,284,416

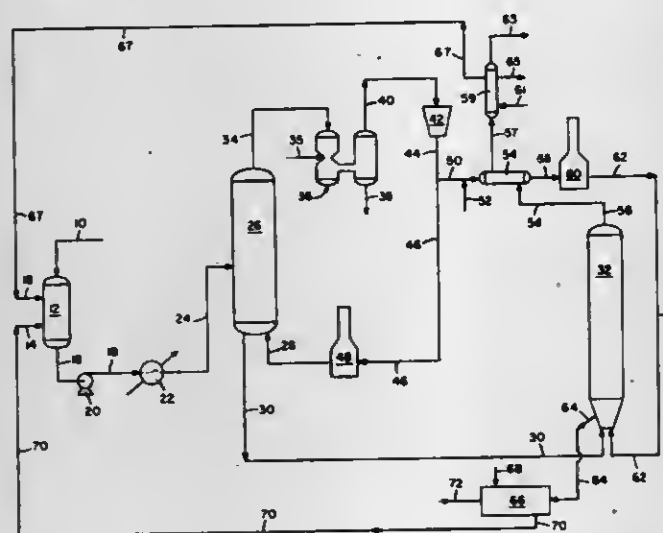
# INTEGRATED COAL DRYING AND STEAM GASIFICATION PROCESS

Nicholas C. Nahas, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 14, 1979, Ser. No. 103,648  
 Int. Cl.<sup>3</sup> C10J 3/00, 3/54

U.S. Cl. 48—197 R

26 Claims



1. A process for drying an aqueous slurry of carbonaceous solids containing water-soluble gasification catalyst constituents and subsequently gasifying the dried solids which comprises:

- contacting said aqueous slurry of carbonaceous solids containing said water-soluble gasification catalyst constituents with superheated steam in a fluidized bed drying zone, said superheated steam having a temperature sufficiently higher than the temperature in said drying zone to convert more than about 80 weight percent of the water in said slurry into steam and to deposit said water-soluble gasification catalyst constituents onto said carbonaceous solids;
- withdrawing carbonaceous solids of reduced water content and impregnated with said gasification catalyst constituents from said drying zone and passing said solids to a gasification zone maintained at gasification conditions;
- withdrawing steam from said drying zone and passing at least a portion of said steam to said gasification zone; and
- gasifying said catalyst impregnated carbonaceous solids in said gasification zone with said steam passed to said gasification zone.

4,284,417

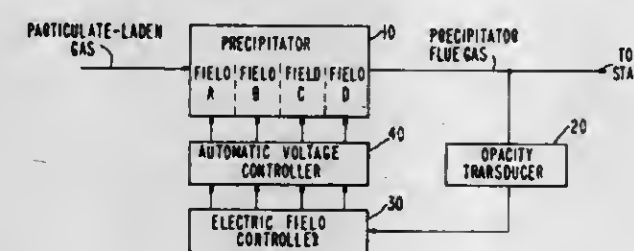
# METHOD FOR CONTROLLING ELECTRIC POWER SUPPLIED TO CORONA GENERATING ELECTRODES IN AN ELECTROSTATIC PRECIPITATOR

Robert O. Reese, Lancaster; Karl R. Wieber, Middletown, and James A. Sholly, Lebanon, all of Pa., assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Mar. 17, 1980, Ser. No. 130,642  
 Int. Cl.<sup>3</sup> B03C 3/68

U.S. Cl. 55—2

6 Claims



1. A method for controlling electric power supplied to corona generating electrodes in an electrostatic precipitator, said method comprising the steps of:

- generating a signal indicative of the opacity level of flue gas exiting from said precipitator;
- comparing said opacity level signal with selectable upper and lower limits, said limits defining a permissible opacity range for said flue gas; and
- activating control circuitry for causing the electric power supplied to said corona generating electrodes to increase when said opacity level signal exceeds said upper limit and to decrease when said opacity level signal falls below said lower limit.

4,284,418

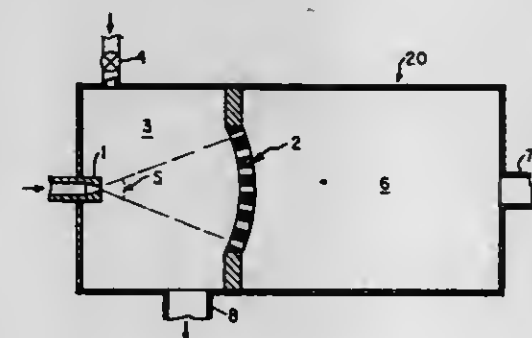
# PARTICLE SEPARATION METHOD AND APPARATUS

Ronald P. Andres, Princeton, N.J., assignor to Research Corporation, New York, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,906  
 Int. Cl.<sup>3</sup> B01D 53/22, 59/12

U.S. Cl. 55—16

35 Claims



1. A process for separating a gas or aerosol mixture into its constituents of different mass comprising the steps of: (a) accelerating the mixture in a carrier gas to a high velocity gas flow, (b) differentially decelerating the constituents of the flow through a background gas at a controlled pressure, (c) directing the decelerating flow onto a membrane, (d) withdrawing an output enriched in a high particle mass species which preferentially passes through the membrane, and (e) withdrawing another output enriched in a low particle mass species which is preferentially blocked by the membrane.

7. A particle separator comprising means for introducing a gas flow containing heavier and lighter species of particles, means for maintaining a background gas in a region of the gas flow for differentially decelerating the particle species, and means including a membrane downstream of said region for separating heavier from lighter particle species.

4,284,419

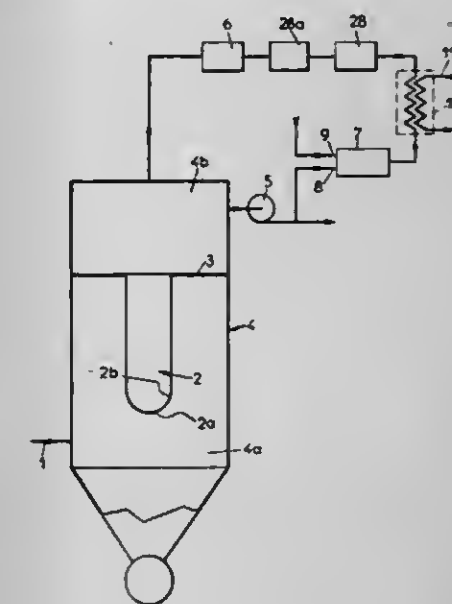
# DECLOGGING PROCESS FOR FILTRATION INSTALLATION AND IMPROVED FILTRATION INSTALLATION

Jean Remillieux, Meudon-la-Forêt, France, assignor to Air Industrie, Courbevoie, France

Filed Mar. 4, 1980, Ser. No. 127,068  
 Claims priority, application France, Mar. 5, 1979, 79 05609  
 Int. Cl.<sup>3</sup> B01D 46/04; C21B 7/22, 9/14, 9/16

U.S. Cl. 55—96

10 Claims



1. In a method of pneumatically declogging a filtering element of a filtration installation in which dust-laden gas having reducing properties is passed through the filtering element whereby dust is deposited on the filtering element and dust-free gas issues therefrom and in which a flow of inert gas is periodically used to dislodge and deposited dust, the improvement wherein said inert gas is obtained by oxidizing a portion of the dust-free gas issuing from the filtering element.

6. In filtration apparatus comprising filtering element means for filtering dust-laden gas having reducing properties, means for passing said gas through said filtering element means and dust-free gas issues therefrom, and means for periodically introducing a flow of inert gas through said filtering element means in a direction opposite to the direction of flow of said dust-laden gas to dislodge said deposited dust, the improvement which comprises means for oxidizing a portion of the dust-free gas issuing from the filtering element means to obtain said inert gas, and means for supplying the oxidized, inert, gas, to said inert gas flow introducing means.

4,284,420

# ELECTROSTATIC AIR CLEANER WITH SCRAPER CLEANING OF COLLECTOR PLATES

Ralph A. Borysiak, 2101 Oak Park Dr., South Bend, Ind. 46617

Filed Aug. 27, 1979, Ser. No. 70,014

Int. Cl.<sup>3</sup> B03C 3/12, 3/74

U.S. Cl. 55—114

14 Claims

1. An electrostatic precipitator comprising: a member defining an air passage, two sets of oppositely electrically charged spaced substantially parallel collector plates, each set having a portion positioned in said member, a base plate mounting the collector plates of each set, plate scraping means cooperating with each set of collector plates, means connecting the base plate of each set with the scraping means cooperating with the other set in selected spaced relation, and means guiding movement of one plate set and its connected







each other and with said bushing and in the lower position, said segments are biased out of engagement with said bushing; further means biasing said bushing and segments toward the upper of said positions; and hydraulic means for moving said bushing and segments downwardly against the force of said further biasing means and against the frictional forces between said first and second cam surfaces.

4,284,425

# METHOD OF INCREASING THE RECOVERABLE SUGAR FROM SUGAR BEETS

George F. Luteri, Mt. Prospect, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

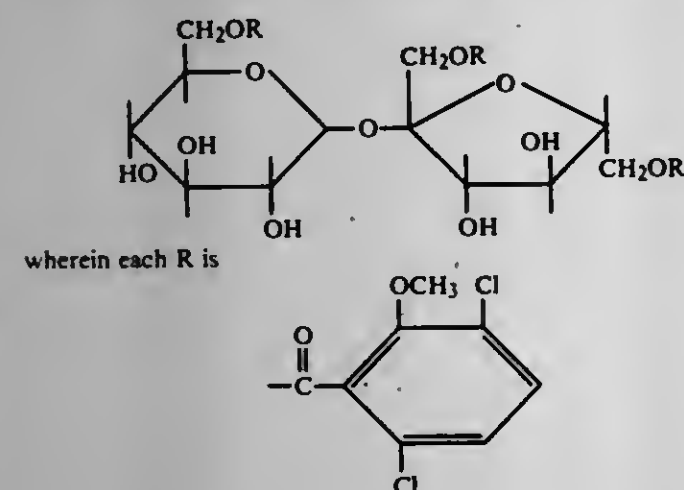
Filed Jun. 13, 1980, Ser. No. 159,405

Int. Cl.<sup>3</sup> A01N 37/00

U.S. Cl. 71-27

3 Claims

1. A method for increasing the recoverable sugar from sugar beets which comprises contacting the sugar beet plants with from about 0.1 ounce to about 4 lbs. per acre of sucrose tri(2-methoxy-3,6-dichlorobenzoate) having the formula



4,284,426

# 2-CHLORO-4,5-DISUBSTITUTED-THIAZOLES USEFUL AS HERBICIDAL SAFENERS

Robert K. Howe, Bridgeton, and Len F. Lee, Maryland Heights, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

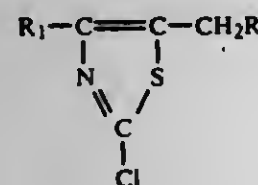
Filed Oct. 1, 1979, Ser. No. 80,751

Int. Cl.<sup>3</sup> A01N 43/78; C07D 277/20

U.S. Cl. 71-90

21 Claims

1. A method of reducing herbicidal injury to sorghum plants due to application thereto of acetanilide herbicides which comprises applying to the plant locus a non-phytotoxic safener effective amount of a compound having the formula



where R is equal to halogen, hydroxy, lower alkoxy or benzyloxy R<sub>1</sub> is lower alkyl, halo (lower) alkyl, phenyl, or phenyl substituted by one to three groups, which may be the same or different, selected from the group consisting of halogen, lower alkyl, trifluoromethyl and cyano.

4,284,427

# HERBICIDAL COMPOSITION FOR PADDY FIELDS

Rokaro Akahira, Higashikurume, and Shinzo Someya, Tokorozawa, both of Japan, assignors to Kanesho Company Limited, Tokyo, Japan

Filed Nov. 23, 1979, Ser. No. 96,976

Int. Cl.<sup>3</sup> A01N 43/70, 37/46

U.S. Cl. 71-93

16 Claims

1. A herbicidal composition, consisting essentially of an effective amount of a mixture of, as active ingredients, N-chloroacetyl-N-(2,6-diethylphenyl)-glycineethylester and 2,4-bis(ethylamino)-6-methylthio-1,3,5-triazine in a weight ratio of 1:1-3:1, respectively.

4,284,428

# SEPARATION OF CONTAMINANT MATERIAL FROM COPPER WIRE AND CABLE

Everett J. Canning, Jr., Plainsboro, N.J., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Oct. 29, 1980, Ser. No. 201,891

Int. Cl.<sup>3</sup> C22B 25/06

U.S. Cl. 75-64

6 Claims

1. A process of removing contaminants from copper wire and cable scrap comprising the steps of:

- adding the scrap to a molten fused salt bath consisting essentially of a mixture of sodium nitrate and potassium nitrate at a temperature of from 350° C.-450° C.;
- maintaining the scrap in the molten nitrate bath for a time sufficient to burn away essentially all non-metallic contaminants;
- separating all molten material from the remaining copper scrap;
- treating the copper scrap in a bath containing molten cuprous chloride for a time sufficient to remove any tin impurities on the copper scrap; and
- separating the decontaminated copper scrap from the molten cuprous chloride.

4,284,429

# ALUMINUM BASE CASTING ALLOY

John Savas, 9710 Brecksville Rd., Brecksville, Ohio 44141

Filed Jan. 21, 1980, Ser. No. 113,824

Int. Cl.<sup>3</sup> C22C 21/02

U.S. Cl. 75-141

7 Claims

1. An aluminum casting alloy consisting essentially of 5.0% to 22.0% silicon, 0.5 to 7.0% copper, 1.5 to 5.5% magnesium, 2.0 to 8.0% zinc, iron not over 1.35%, manganese not over 0.65%, nickel not over 0.50%, titanium not over 0.20%, and chromium and other residual elements not over 0.15%, balance aluminum.

4,284,430

# CYCLIC OXIDATION RESISTANT TRANSVERSE DUCTILE FIBER REINFORCED EUTECTIC NICKEL-BASE SUPERALLOYS

Michael F. Henry, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 27, 1979, Ser. No. 34,154

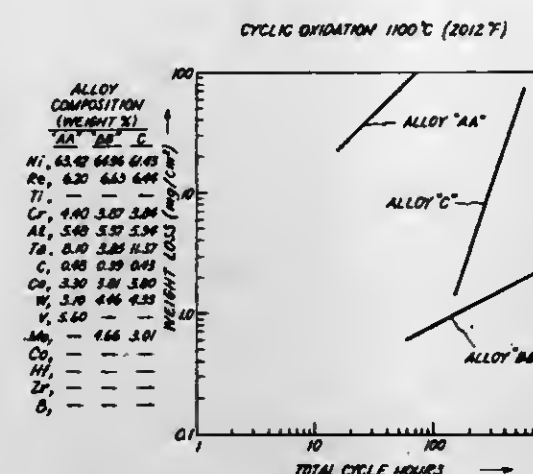
Int. Cl.<sup>3</sup> C22C 19/03

U.S. Cl. 75-170

10 Claims

6. An alloy capable of developing in a unidirectionally solidified anisotropic article having transverse ductility, cyclic oxidation resistance, hot corrosion resistance, and high temperature strength properties, the alloy consisting essentially of

about, on a weight basis, 2-9% Re, less than 0.8% Ti, 0-10% Cr, 0-10% Al, 3-15% Ta, 0.1-1% C, 0-10% Co, 0-10% W,



0-1.0% V, 3.01-10% Mo, 0-3% Cb, the balance being essentially Ni and incidental impurities.

4,284,431

# METHOD FOR THE PRODUCTION OF SINTERED POWDER FERROUS METAL PREFORM

Elji Ohno, Tokyo, and Kazuo Chikugo, Hiratsuka, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Division of Ser. No. 931,320, Aug. 7, 1978, Pat. No. 4,202,689.

This application Sep. 7, 1979, Ser. No. 73,377

Claims priority, application Japan, Aug. 5, 1977, 52-93375

Int. Cl.<sup>3</sup> B22F 3/00

U.S. Cl. 75-212

5 Claims

1. A method for the production of sintered powder ferrous metal preforms comprising the steps of; heating said ferrous metal particles to a temperature of about 130° C. to 150° C.; coating finely divided ferrous metal particles with thermoplastic phenol resins having an effective carbon content of 10 to 40 percent by adding said phenol resins to said ferrous metal particles, wherein said phenol resins are present from about 1.0 to 7.0 percent of the total mixture; cooling said resin coated ferrous metal particles by blowing cooling air thereto; packing a mold with said resin coated ferrous metal particles; compacting said resin coated ferrous metal particles in the mold by applying pressure of 3 to 5 tons/cm<sup>2</sup> thereon to produce a compacted green preform sufficient to ensure adequate strength for handling after pressing; and heating said green preform in an oxidation free atmosphere current to a temperature within the range of about 1100° C. to 1250° C. for a time sufficient to achieve reduction and sintering of said green preform.

4,284,432

# CERAMIC POWDER MATERIAL AND METHOD FOR MANUFACTURING THE SAME

Katsutoshi Nishida; Michiyasu Komatsu, both of Yokohama, and Tadashi Miyano, Sagami, all of Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Kawasaki, Japan

Continuation of Ser. No. 867,299, Jan. 5, 1978, abandoned. This application Sep. 21, 1979, Ser. No. 78,584

Claims priority, application Japan, Jan. 13, 1977, 52-1949; Sep. 22, 1977, 52-113235

Int. Cl.<sup>3</sup> C04B 35/58, 35/50

U.S. Cl. 106-73.2

2 Claims

1. A method of reducing the oxygen content of a ceramic powder material prior to molding including the step of heating raw ceramic powder consisting essentially of silicon nitride to a temperature ranging from 1,400° C. and 1,900° C. in the presence of a nonsintered or a sintered molding of ceramic material, said molding formed of a compound selected from the group consisting of aluminum nitride, boron nitride, tita-

nium nitride, silicon nitride and aluminum oxide and having a porosity of at least 10%, thereby reducing the amount of oxygen combined with impurities unavoidably included in said raw ceramic powder material to an amount less than 2.0% by weight as measured by activation analysis, the thus treated powder when molded exhibiting high temperature mechanical strength.

4,284,433

# ADDITIVES FOR WATER-HARDENING BINDING AGENTS

Alois Aignesberger, Trostberg; Jean-Pierre Deppen, Tacherting, and Hans-Günter Rosenbauer, Trostberg, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 29,816

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817080

Int. Cl.<sup>3</sup> C04B 31/30; C08H 5/04; C08K 3/06; C08J 3/20

U.S. Cl. 106-90

13 Claims

1. Solid additive for modifying water-hardening binding agents, which additive comprises aggregates consisting of mechanically compressed fine particles with a grain size of from 0.1 to 10 mm and being composed of an agent consisting of a naphthalenesulphonic acid derivative-formaldehyde condensate, a resin based on an amino-s-triazine with at least two NH<sub>2</sub> groups and modified with sulphite or sulphonic acid, a sulphite- or sulfonic acid-modified melamine-formaldehyde polycondensate, a copolymer based on styrene and acrylonitrile, a lignin sulfonate, or a phenol-sulphonic acid-formaldehyde polycondensation product.

4,284,434

# PROCESS FOR SPRAY CLEANING OF METAL SURFACES

Herbert Lingmann, Hilden; Hermann Drosdzio, Düsseldorf, and Rudolf Peifer, Düsseldorf-Mörsenbroich, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 888,306, Mar. 20, 1978, abandoned.

This application Nov. 20, 1979, Ser. No. 96,027

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1977, 2712900

Int. Cl.<sup>3</sup> C23G 1/14

U.S. Cl. 134-2

8 Claims

1. A method of cleaning metal surfaces comprising spraying a metal surface at a pressure of 10 atmospheres gauge or higher with an aqueous solution consisting essentially of water containing a mixture of active substances of

- at least one water-soluble alkanolamine salt of alkanolamines having 2 to 9 carbon atoms, of monocarboxylic acids selected from the group consisting of benzoic acid, tertiary butylbenzoic acid, phenylacetic acid, cinnamic acid, caprylic acid, capric acid, isooctanoic acid, isononanoic acid, isodecanoic acid and mixtures thereof,
- at least one nonionic surface-active compound having an HLB value of between 14 and 20, and
- at least one quaternary ammonium surface-active compound, wherein the concentration of the mixture of active substances (a), (b) and (c) in the aqueous solution is from 0.1% to 4% by weight, the weight ratio of (b) to (c) is from 20:1 to 1:1, the weight ratio of (a) to (b) + (c) is from 20:1 to 1:20, and sufficient alkanolamine having 2 to 9 carbon atoms is present whereby the pH of the aqueous solution is from 7.5 to 11, wherein the aqueous solution is maintained at a preselected temperature between 20° C. and 80° C. and the components (a), (b) and (c) are so selected that the turbidity point of said aqueous solution lies from 5° C. to 25° C. below said preselected temperature.



4,284,435

# METHOD FOR SPRAY CLEANING PAINTED SURFACES

Derek J. Fox, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Nov. 28, 1979, Ser. No. 98,156  
Int. Cl.<sup>3</sup> B08B 3/08

U.S. Cl. 134—2

7 Claims

1. A method of cleaning large painted surfaces without damaging the paint comprising spraying the surface at a pressure of 400 to 1000 psi with an aqueous composition comprising 0.02 to 3% by weight of a chelating agent, from about 0.01 to 1.2% of a bis(ethoxylated) quaternary ammonium compound having a degree of ethoxylation of from 10 to 60 moles of ethylene oxide, from 0.005 to 0.5% of an ethoxylated alcohol, nonionic surfactant, from 0 to 0.5% by weight sodium metasilicate and the balance comprising water.

4,284,436

# PROCESS FOR THE PRODUCTION OF BANDS OR SHEETS OF ISOTROPIC MECHANICAL PROPERTIES FROM COPPER OR COPPER ALLOYS

Mihaly Stefan, 6, Mak u., Budapest 1022; Lajos Almashegyi, 6, Regiposta u., Budapest 1052; Csaba Horvath, 73a, Nemetvölgyi u., Budapest 1124; Agnes Madarasz nee Helesfai, 9, Venusz u., Budapest 1214; Peter Arato, 1, Zrinyi u., Budapest 1051, and Jozsef Geiger, 119a, Hollandi u., Budapest 1213, all of Hungary

Continuation-in-part of Ser. No. 735,049, Oct. 22, 1976, abandoned. This application Jan. 15, 1979, Ser. No. 3,758  
Claims priority, application Hungary, Oct. 24, 1975, CE 1060  
Int. Cl.<sup>3</sup> C22B 15/14

U.S. Cl. 148—2

2 Claims

1. Process for the production of bands or sheets of isotropic mechanical properties from a melted bath of copper or copper alloys containing from 0% to a small amount of lead, said bands or sheets being subjectable to an intensive cold shaping, comprising adding to the melted bath ZrB<sub>2</sub> in an amount of between 0.01% and 0.075% by weight, and replacing not more than 50% by weight of the zirconium content of the added ZrB<sub>2</sub> by at least one of the groups of metals consisting of Ti, V, Nb, Ca, Mg, and Co, then solidifying the metal bath containing the additives in the form of a band.

4,284,437

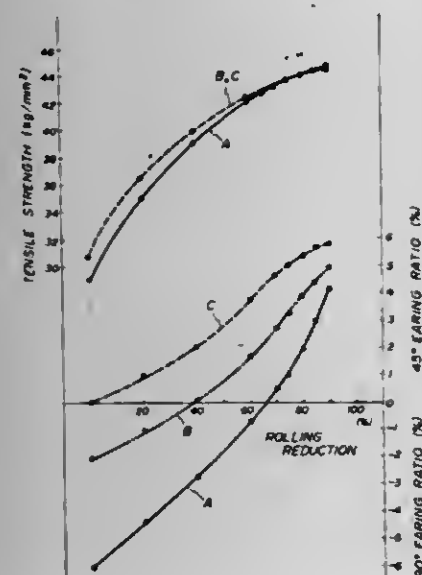
# PROCESS FOR PREPARING HARD TEMPERED ALUMINUM ALLOY SHEET

Yoshio Baba, Nagoya; Shin Tsuchida, Toyoake, and Masaaki Tobinaga, Nagoya, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Dec. 18, 1979, Ser. No. 105,008  
Int. Cl.<sup>3</sup> C22F 1/04; C22C 21/06

U.S. Cl. 148—11.5 A

14 Claims



1. A process for preparing a hard tempered aluminum alloy

sheet from an aluminum base alloy consisting essentially of from about 4 to about 6 wt. % magnesium, at least one component selected from the group consisting of from about 0.1 to about 0.7 wt. % of manganese, from about 0.01 to about 0.05 wt. % of zirconium, from about 0.005 to 0.12 wt. % of vanadium and up to about 0.05 wt. % of titanium, and the balance aluminum, comprising the steps of:

hot rolling an ingot of said aluminum base alloy to produce a sheet having a thickness of not more than 2.5 mm; then, without subjecting said sheet to a cold rolling step, effecting intermediate annealing of said sheet to recrystallize said alloy; and then effecting final cold rolling of said sheet at a rolling reduction of less than 85% to obtain a hard tempered aluminum alloy sheet having a 90° earing ratio of more than 2% and a 45° earing ratio of not more than 3.5% when the sheet is deep drawn.

7. A process for preparing a hard tempered aluminum alloy sheet from an aluminum base alloy consisting essentially of from about 4 to about 6 wt. % magnesium, at least one component selected from the group consisting of from about 0.1 to about 0.7 wt. % of manganese, from about 0.01 to about 0.05 wt. % of zirconium, from about 0.005 to 0.12 wt. % of vanadium and up to about 0.05 wt. % of titanium, and the balance aluminum, comprising the steps of:

hot rolling an ingot of said aluminum base alloy to produce a sheet having a thickness of not more than 2.5 mm, said hot rolling step being performed so that the finishing temperature is from about 300 to about 350° effective to recrystallize said alloy; and then effecting final cold rolling of said sheet at a rolling reduction of less than 85% to obtain a hard tempered aluminum alloy sheet having a 90° earing ratio of more than 2% and a 45° earing ratio of not more than 3.5% when the sheet is deep drawn.

4,284,438

# MANUFACTURE OF STEEL PRODUCTS

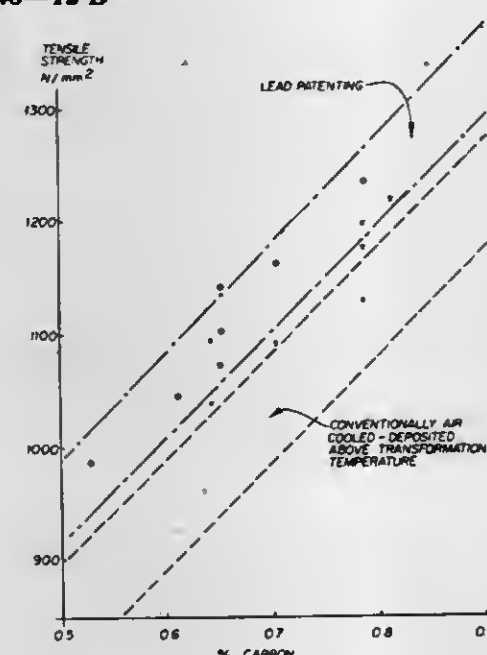
Donald Barwick, Ormesby, and Malcolm Brownlee, Middlesbrough, England, assignors to British Steel Corporation, England

Continuation-in-part of Ser. No. 917,272, Jun. 20, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,227  
Claims priority, application United Kingdom, Jun. 20, 1977, 25695/77

Int. Cl.<sup>3</sup> C21D 1/25, 8/08

U.S. Cl. 148—12 B

8 Claims



1. A process for producing hot rolled semi-killed or killed carbon-manganese steel rod having a manganese content of not more than about 0.8% including the steps of hot rolling the steel in a continuous rolling mill, the rod exiting from the last stand of the mill having a temperature in excess of 1000° C.,

superficially cooling the rod in water from a temperature of above 1000° C. to an equalisation temperature of between 300° C. and 700° C., to produce a martensitic surface layer.

laying the rod on a moving conveyor so that the rod forms flat overlapping non-concentric rings, allowing the rod to be cooled in air as it passes along the conveyor and then collecting the non-concentric rings to form coils.

4,284,439

# PROCESS FOR THE PRODUCTION OF SHEET AND STRIP FROM FERRITIC, STABILIZED, STAINLESS CHROMIUM-MOLYBDENUM-NICKEL STEELS

Göran Gemmel, and Christer Aslund, both of Torshälla, Sweden, assignors to Granges Myby AB, Nybybruk, Sweden

PCT No. PCT/EP 78/00011, 8371 Date Apr. 17, 1979, 8102(e) Date April 17, 1979, PCT Pub. No. WO79/00100, PCT Pub. Date Mar. 8, 1979

This PCT application filed Aug. 16, 1978, Ser. No. 114,087  
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1977, 2737116

Int. Cl.<sup>3</sup> C21D 8/02; C22C 38/44

U.S. Cl. 148—12 EA

16 Claims

1. A process for the production of sheet and strip from ferritic, stabilised, stainless chromium-molybdenum-nickel steels which are hot-rolled in the form of cast blocks to form heavy plate or crude strip and subsequently cold-rolled to the required thickness, characterised in that the blocks are hot-rolled at temperatures above about 850° C. to form heavy plate or crude strip and immediately afterwards the heavy plate or crude strip thus formed is suddenly quenched with water to a temperature slightly below 450° C. and is then subsequently annealed to a temperature above 850° C., the annealing step being followed by rapid cooling from temperatures above about 850° C. to temperatures below 500° C.

4,284,440

# RARE EARTH METAL-COBALT PERMANENT MAGNET ALLOY

Masaaki Tokunaga; Chitoshi Hagi, and Hirokazu Murayama, all of Kumagaya, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

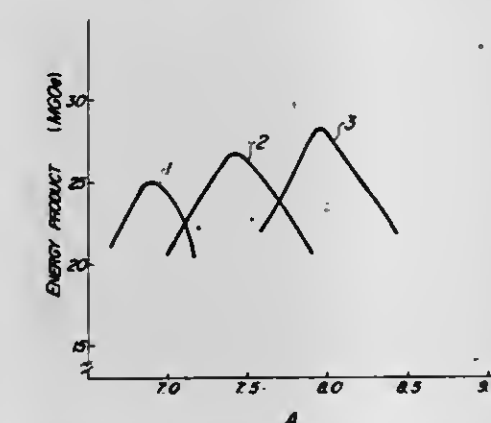
Filed Jun. 20, 1977, Ser. No. 808,365

Claims priority, application Japan, Jun. 18, 1976, 51-71140

Int. Cl.<sup>3</sup> H01F 1/04, 1/14

U.S. Cl. 148—31.57

10 Claims



1. A permanent magnet alloy consisting essentially of a composition expressed by a formula:



wherein

R is one of the rare earth metal elements, M is at least Si or combination of Si with Ti and Mo, and  
 $0.1 \leq x \leq 0.4$ ,  $0.02 \leq y \leq 0.25$ ,  $0.001 \leq z \leq 0.15$  and  $6.5 \leq A \leq 8.3$ .

8. A permanent magnetic alloy consisting essentially of a composition expressed by a formula:



wherein R is at least one of the rare earth metal elements,  $0.1 \leq x \leq 0.4$ ,  $0.02 \leq y \leq 0.25$ ,  $0.001 \leq z \leq 0.15$  and  $6.5 \leq A \leq 8.3$ .

10. A permanent magnetic alloy consisting essentially of a composition expressed by a formula:



wherein R is Sm,  $0.1 \leq x \leq 0.4$ ,  $0.02 \leq y \leq 0.25$ ,  $0.001 \leq z \leq 0.15$  and  $6.5 \leq A \leq 8.3$ .

4,284,441

# METHOD FOR IMPROVEMENT OF MAGNETIC PROPERTY OF THIN STRIP OF AMORPHOUS ALLOY

Takehiko Satoh, Musashino; Sooko Tsukahara, and Tachiro Tsushima, both of Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

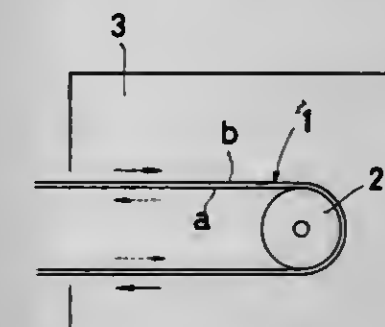
Filed Feb. 28, 1980, Ser. No. 125,693

Claims priority, application Japan, Mar. 1, 1979, 54-22523

Int. Cl.<sup>3</sup> H01F 1/00

U.S. Cl. 148—120

6 Claims



1. A method for improving the magnetic properties of a thin strip of amorphous alloy, comprising bending the thin strip of amorphous alloy by means of a roller having a fixed radius of curvature in such a manner that the surface opposite to the surface which came into contact with the cooling roller for producing amorphous alloy to impart tensile force and compressive force to the surfaces at a temperature lower than the crystallization transition point of the alloy, thereby promoting the alleviation of the internal stress present in the thin strip and improving the magnetic properties of the alloy.

4,284,442

# CASTABLE TNT COMPOSITIONS CONTAINING A BROAD SPECTRUM PREFORMED THERMOPLASTIC POLYURETHANE ELASTOMER ADDITIVE

H. William Voigt, Jr., Stanhope, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 885,716, Mar. 13, 1978, abandoned.

This application Aug. 14, 1979, Ser. No. 66,598

Int. Cl.<sup>3</sup> C06B 45/10

U.S. Cl. 149—19.4

9 Claims

1. A castable explosive composition consisting essentially of 2,4,6-trinitrotoluene (TNT) and about from 0.05 to 10% by weight, based on the TNT content of the explosive composition, of a thermoplastic polyurethane elastomer, which is dissolved in the TNT and is the reaction product of an organic diisocyanate and a hydroxy terminated polyester or a hydroxy terminated polyether containing essentially no free isocyanate groups prior to incorporation thereof in the explosive composition.



4,284,443

# SINGLE STAGE HOT BONDING METHOD FOR PRODUCING COMPOSITE HONEYCOMB CORE STRUCTURES

R. John Hilton, Auburn, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 9,369, Feb. 5, 1979, abandoned, which is a division of Ser. No. 857,264, Dec. 5, 1977. This application Apr. 17, 1979, Ser. No. 30,749

Int. Cl.<sup>3</sup> B32B 3/12

U.S. Cl. 156—60

14 Claims



1. A single stage hot bonding process for forming composite honeycomb core structures comprising the steps of: bonding a primary load carrying honeycomb core to an edge of a shape defining honeycomb core to form a combined honeycomb core;

forming opposed undercut regions in said combined honeycomb core in the region of said primary load carrying honeycomb core by reducing the thickness of said primary load carrying honeycomb core to less than the thickness of said shape defining honeycomb core;

placing a first skin on a working surface;

applying adhesive to the exposed side of said first skin;

attaching a first spar cap to said first skin;

applying adhesive to the exposed side of said first spar cap;

attaching said combined honeycomb core to said first spar cap and said first skin such that one of said opposed undercut regions of said combined honeycomb core overlies and is attached to said first skin;

applying adhesive to the exposed side of said combined honeycomb core;

attaching a second spar cap to the other one of said opposed undercut regions of said combined honeycomb core;

applying adhesive to the exposed side of said second spar cap;

attaching a second skin to said second spar cap and said exposed side of said combined honeycomb core; and,

simultaneously heating said attached combined honeycomb core, said first and second spar caps and said first and second skins to cure said adhesives and simultaneously form bonds between said combined honeycomb core, said first and second spar caps and said first and second skins where they join.

4,284,444

# ACTIVATED POLYMER MATERIALS AND PROCESS FOR MAKING SAME

Bruce S. Bernstein, Somerville, N.J.; Seymour Hyman, New York, N.Y., and Ramesh C. Kapoor, Seaford, Del., assignors to Hercules Protective Fabrics Corporation, New York, N.Y.

Continuation of Ser. No. 821,045, Aug. 1, 1977, abandoned, which is a continuation of Ser. No. 255,282, May 19, 1972, abandoned, which is a division of Ser. No. 112,053, Feb. 2, 1971, Pat. No. 3,705,938, which is a continuation-in-part of Ser. No. 593,267, Nov. 10, 1966, abandoned. This application Apr. 23, 1979, Ser. No. 32,593

Int. Cl.<sup>3</sup> B32B 31/04, 31/12, 31/30

U.S. Cl. 156—60

37 Claims

1. A method for producing a polymeric article having active properties comprising antibacterial, antifungal and combinations thereof comprising

adherently applying to at least one surface of a preformed, solid, non-porous polymeric substrate an adherent, solid, non-porous layer of a polymeric composition, said composition comprising at least one non-volatile active agent selected from the group consisting of antibacterial, antifungal and combinations of antibacterial and antifungal active agents distributed within said polymeric composition and capable of migrating from said layer into and throughout said substrate, and

maintaining said layer adhered to said surface of said substrate to permit a sufficient amount of said active agent to migrate from said layer into said substrate to impart an effective level of activity throughout said substrate, including a surface of said substrate which is not directly contacted by said layer.

4,284,445

# PRODUCTION QUANTITY ADJUSTING APPARATUS FOR CORRUGATORS

Tadayuki Shimizu, Kanagawa, Japan, assignor to Nihon Electronic Industry Co., Ltd., Odawara, Japan

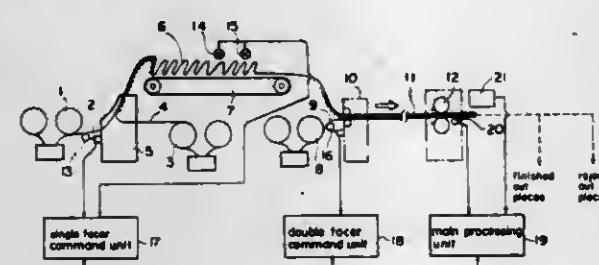
Filed May 11, 1979, Ser. No. 38,134

Claims priority, application Japan, May 17, 1978, 53-57515

Int. Cl.<sup>3</sup> G05G 15/00; B31F 5/04

U.S. Cl. 156—64

9 Claims



1. A production quantity adjusting apparatus for corrugators comprising:

at least one set of a light emitter and a light receiver disposed to cross at right angles a conveyor which is disposed on a bridge to retain and feed a single-faced corrugated board so as to detect each of the tops of corrugations in said single-faced corrugated board;

a main processing unit supplied with a specified number of cut pieces Cr, a specified cut length Lr, a preset residual quantity Lrst representing a quantity of said single-faced corrugated board residual between a mill roll and said set of light emitter and receiver, a distance L'rst between said set of light emitter and receiver and a rotary cutter, a count value Ca of pieces cut by said rotary cutter and a count value Cano of rejected pieces to compute the following

$$Cr \times Lr = Ll \text{ (tot length)}$$

(1)

said main processing unit being adapted to make computations

according to the following equations each time an output of said set of light emitter and receiver is applied thereto

$$(Ca - Cano) \times Lr = Lla \text{ (finished extent)} \quad (2)$$

$$Lr - Lla - Lrst - L'rst = Lrl \text{ (first residual lot length)} \quad (3);$$

a pulse generator disposed near said mill roll for feeding the liner of said single-faced corrugated board to count the amount of said liner fed; and

a single-facer command unit for receiving said lot length Ll and said first residual lot length Lrl computed by said main processing unit to count down a newly received value of said Lrl in response to an output of said pulse generator and thereby to control the amount of said liner fed.

4,284,446

# CULTURE SAMPLING DEVICE

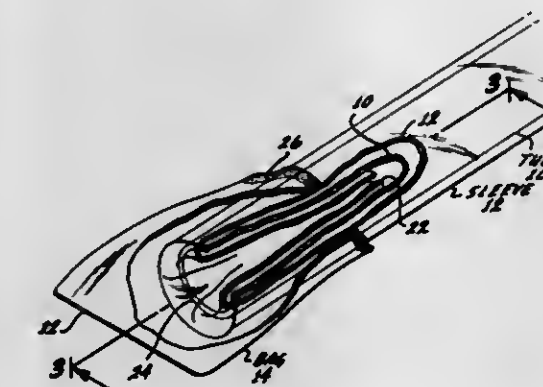
Robert F. Bader, 1269 N. Clark St., Los Angeles, Calif. 90069

Division of Ser. No. 23,790, Mar. 26, 1979. This application Feb. 11, 1980, Ser. No. 120,503

Int. Cl.<sup>3</sup> B29C 27/14; A61B 10/00; B32B 1/08

U.S. Cl. 156—69

10 Claims



1. A method of forming a culture sampling device of the type including a relatively flexible tube, a sleeve of pliant waterproof material surrounding the tube, the sleeve having a proximal end and having a distal end tucked into the distal end of the tube, and including a bag of pliant waterproof material enclosing the distal end of the tube and bonded to the outside surface of the sleeve, said method comprising the steps of:

- (1) bonding flaps to the outside surface of the sleeve along a line located a specified distance from the distal end of the sleeve, said line extending all around the sleeve;
- (2) positioning the tube within the sleeve with the distal end of the tube nearer the distal end of the sleeve;
- (3) tucking a portion of the sleeve adjacent the distal end of the sleeve into the distal end of the tube; and
- (4) bonding the flaps together so that together the flaps form a waterproof bag enclosing the distal end of the tube.

4,284,447

# METHOD OF MANUFACTURING A COMPOSITE PANEL

Luther I. Dickens, 310 3rd St., Radford, Va. 24141, and William C. Nanny, 550 Battery St., San Francisco, Calif. 94111

Division of Ser. No. 659,758, Feb. 20, 1976, abandoned. This application May 18, 1979, Ser. No. 40,192

Int. Cl.<sup>3</sup> B29D 27/00

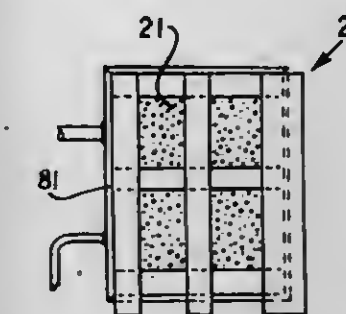
U.S. Cl. 156—78

9 Claims

1. A method of manufacturing a composite panel comprising the steps of

heating a heat expandable plastic material in particular form in a separable closed mold to expand the material into a panel core having the shape of the mold cavity, and

adhering thin reinforcing strips in spaced apart relation to the front and back surfaces of the expanded core while the



core is heated with the ends of predetermined strips extending from edges of the core.

4,284,448

# METHOD AND AN ARRANGEMENT FOR THE MANUFACTURE OF CASINGS

Herwig Pupp; Otto B. Andersson, both of Lund, and Jan-Erik Nilsson, Staffanstorps, all of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

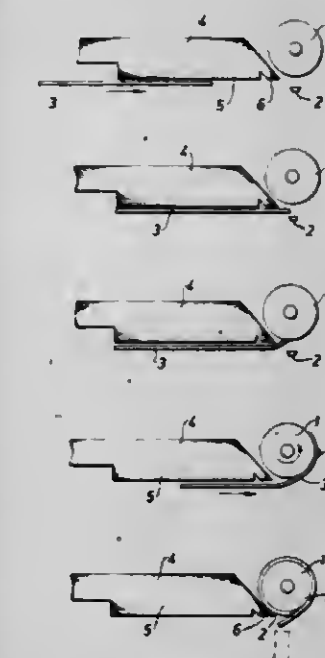
Filed Dec. 26, 1978, Ser. No. 972,802

Claims priority, application Sweden, Dec. 23, 1977, 7714734

Int. Cl.<sup>3</sup> B29C 27/00, 17/04; B29D 23/00; B29C 29/00

U.S. Cl. 156—86

10 Claims



1. In a method for the manufacture of casings of thermoplastic, heat-shrinkable material including the steps of winding a sheet of thermoplastic, heat-shrinkable material around a forming tool and joining the ends of the sheet together, the improvement comprising the steps of:

preheating substantially the whole length of at least the side of the sheet facing the forming tool to a temperature which is substantially equal to the softening temperature of the sheet;

heating, while keeping the sheet at rest, only said side of the sheet adjacent the front end of the sheet to a temperature which exceeds that at which shrinkage is initiated so that said front end of said sheet shrinks and assumes a curved shape; and

advancing said sheet into engagement with said forming tool with said side supported on the surface of said tool.



4,284,449

## METHOD FOR PRODUCING AN OPTICAL POWER SAMPLING DEVICE

Samuel M. Stoe, Lynnfield, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 26, 1979, Ser. No. 107,998

Int. Cl.<sup>3</sup> B32B 1/08; G02B 5/14; B29D 11/00

U.S. Cl. 156—86

22 Claims



1. A method for providing a device for sampling optical power carried along a transmission medium comprising:
  - a. cutting capillary tubing to a convenient length, consistent with obtaining good alignment in a V-block;
  - b. machining the outside diameter of the cut capillary tubing to a uniform diameter over its length, then machining the ends of said tubing to a smaller diameter to accommodate end caps, maintaining the axis of the generated cylinders essentially coaxial with the axis of the bore;
  - c. polishing a portion of said cylinder;
  - d. inserting a length of optical fiber into said cut capillary tubing;
  - e. cementing said fiber into said cut tubing;
  - f. cementing end caps, each having an orifice for the passage of said optical fiber therethrough, to ends of said cut tubing;
  - g. slipping protective sleeving over said optical fiber so that said sleeving is inserted within said orifices of said end caps;
  - h. cementing said protective sleeving to said end caps;
  - i. applying shrink tubing over said end caps and protective sleeving;
  - k. heating said shrink tubing;
  - l. cutting said capillary tubing with said fiber into two sections at an acute angle with respect to the principal axis of said capillary tubing;
  - m. grinding and polishing both faces resulting from said cutting of said capillary tube with said fiber;
  - n. providing for a discontinuity in the index of refraction at the cut faces of said fiber;
  - o. aligning said sections and cementing said sections in alignment with each other; and
  - p. positioning a photodetector to receive optical power reflected from one of said cut faces.

4,284,450

## METHOD AND DEVICE FOR REPAIRING TUBELESS TUBULAR TIRES FOR BICYCLES

Jean Duttlinger, Soissons, France, assignor to Wolber, Soissons, France

Division of Ser. No. 897,774, Apr. 19, 1978, Pat. No. 4,200,009.

This application Dec. 11, 1979, Ser. No. 102,526

Claims priority, application France, May 13, 1977, 77 14680

Int. Cl.<sup>3</sup> B60C 21/00

U.S. Cl. 156—97

6 Claims

1. A method for repairing a puncture hole in a tubeless tubular tire and a tubeless cover, said method comprising:
  - providing an elongate hollow injection needle having a first end connectable to a source of cement and a second end adapted to be inserted through said puncture hole in said tire, said needle having extending therethrough, throughout the entire length thereof from said first end thereof to said second end thereof, an internal hollow passageway through which cement from the source may be supplied, said needle having at a position intermediate said first and second ends thereof at least one lateral orifice extending through said needle from said internal passageway thereof to the outer surface thereof, and said needle having an end

orifice extending through said needle from said internal passageway thereof to the extremity of said second end thereof;

connecting a source of cement to said first end of said needle; inserting said needle through said puncture hole in said tire to a position such that said lateral orifice is inwardly spaced from the inner surface of said tire;

inclining said needle with respect to a radial line through said puncture hole, thereby bringing said lateral orifice to a position adjacent said inner surface of said tire;

manipulating said source of cement and thereby forcing said cement through said internal passageway and outwardly through said lateral orifice onto said inner surface of said tire, while rotating said needle about the axis of said puncture hole, and thereby depositing on said inner surface of said tire a first quantity of cement in the form of an annular patch surrounding said puncture hole;



partially withdrawing said needle from said puncture hole to a position whereat said lateral orifice is within said puncture hole and is blocked and sealed by the puncture edges of said tire;

manipulating said source of cement and thereby forcing said cement through said internal passageway and outwardly through said end orifice, thereby forming on said second end of said needle a second quantity of cement in the form of a drop at a position aligned substantially centrally of said puncture hole; and

completely withdrawing said needle from said puncture hole, and thereby depositing said drop of cement centrally of said puncture hole and causing said drop to join with the center of said annular patch of cement, to thus form on said inner surface of said tire a relatively wide deposit of cement centered on and sealing said puncture hole.

4,284,451

## TIRE REPAIR METHOD AND APPARATUS

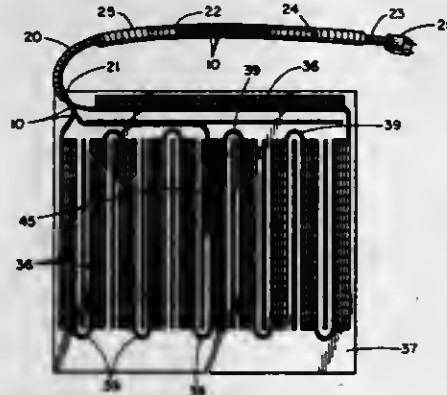
Glenn R. Conley, 250 E. Wood St., New Lenox, Ill. 60451

Filed Feb. 4, 1980, Ser. No. 118,177

Int. Cl.<sup>3</sup> B29H 5/17

U.S. Cl. 156—97

3 Claims



1. Tire repair apparatus, comprising a first flexible heating pad for placement against a patch on the concave inner surface of a section of tire casing to be repaired, a first flexible inflatable member for insertion into said tire casing to hold said first flexible heating pad against said patch when said first flexible

inflatable member is inflated, a second flexible heating pad for placement against the outer surface of said section of tire casing to be repaired, a second flexible inflatable member for placement against said second flexible heating pad to hold said second flexible heating pad against said outer surface of said section of tire casing when said second flexible inflatable member is inflated, and securing means to retain said second flexible inflatable member in place against said second flexible heating pad to expand thereagainst as said second inflatable member is inflated, wherein said first flexible heating pad includes a holder of flexible sheet material, a plurality of elongated pockets in said holder in closely spaced apart relationship, a strip of electrical heating tape in each of said elongated pockets, connecting conductors to loosely connect said strips of elongated heating tape having width and length dimensions corresponding to those of said elongated pockets but being sufficiently smaller to permit free floating lateral and longitudinal movement of said strips within said pockets relative to each other and relative to said pockets when said first flexible heating pad is being forced against said concave inner surface of said tire casing by inflation of said first flexible inflatable member thereby avoiding buckling and creasing of said flexible heating pad as it is pressed against said concave inner surface.

4,284,452

## METHOD OF EMBEDDING THIN WIRES IN LAMINATED GLASS

Walther Bethge, and Dietrich Bethge, both of Riehen, Switzerland, assignors to Therglas GmbH für Flächenheizung, Riehen, Switzerland

Filed Jan. 31, 1980, Ser. No. 117,280

Claims priority, application Switzerland, Feb. 12, 1979, 1316/79.

Int. Cl.<sup>3</sup> B32B 17/12, 31/00; H05B 3/06

U.S. Cl. 156—99

5 Claims

1. Method of embedding thin wires in the intermediate film of transparent laminated glass, preferably for heated panes, characterized in that plastic filaments consisting of the same base material as the intermediate film and having wire wound around them in stretched helical coil configuration are pressed into the film contained a larger amount of plasticizer than the filaments, and made to disappear during the pressing procedure to form the laminate by diffusion of the plasticizer in the intermediate film into the filaments.

4,284,453

## METHOD OF IMPARTING COLOR HIGHLIGHTS OR SHADOWS TO A TEXTURED DECORATIVE LAMINATE

Gilbert D. Endrizzi, Wisconsin Rapids, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Continuation-in-part of Ser. No. 868,718, Jan. 11, 1978,

abandoned. This application Sep. 17, 1979, Ser. No. 76,402

Int. Cl.<sup>3</sup> B32B 31/00

U.S. Cl. 156—154

8 Claims

7. Method of imparting highlights or shadows to a decorative laminate comprising the steps of preparing a textured decorative laminate by compression molding utilizing a pigmented release sheet to cause transfer of pigment to said laminate, and then rubbing the surface of the pigmented textured laminate to the extent necessary to remove some of the applied pigment, with more pigment being removed from the raised areas of the textured laminate than the depressed areas thereof.
8. In conjunction with the production of a decorative laminate having a textured outer surface wherein the laminate is formed by making an assembly comprising resin impregnated sheets, applying a release sheet over an outer surface of said assembly, and forming a laminate by heating and compressing said assembly between a pair of molding cauls, wherein one of said cauls has a textured surface facing said release sheet and serving to impart a textured finish to said outer surface, a method of imparting color highlights to the outer textured surface of said laminate, said method comprising the steps of providing said release sheet with a pigment coating facing said

outer surface such that pigment is transferred from said release sheet to said outer surface during said heating and compressing step and while texture is being imparted to said outer surface, and upon formation of said laminate, removing the release sheet to expose the outer pigmented, textured surface, and rubbing said textured surface such that pigment is removed more from the raised areas than the depressed areas thereof.

4,284,454

## METHOD AND APPARATUS FOR APPLYING ELASTIC BANDS TRANSVERSELY TO A DIAPER LINE

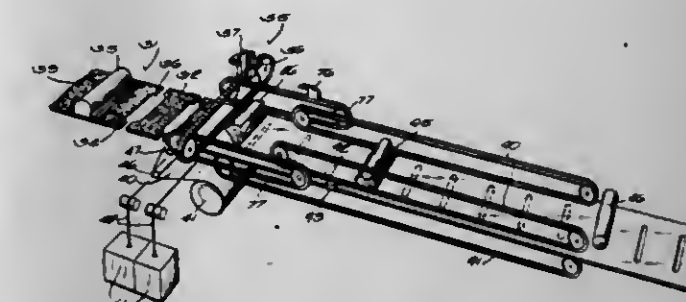
Curt G. Joa, P.O. Box 1121, Boynton Beach, Fla. 33435

Filed May 12, 1980, Ser. No. 147,996

Int. Cl.<sup>3</sup> B32B 31/10

U.S. Cl. 156—163

12 Claims



1. A method of attaching elastic bands to flexible absorbent articles such as diapers comprising the steps of forming the articles in a continuous web comprising the articles which web extends longitudinally and is travelling longitudinally along a fabrication line and the length of the individual articles in the line is transverse to the longitudinally extending web, stretching elastic bands in a direction such that the longitudinal axes of the bands are transverse to the longitudinal travel direction of the web, attaching said bands to the web in their stretched condition and maintaining said bands in stretched condition transversely to the web until fabrication of the article in the web is completed and then allowing the bands to contract and pleat the article.
2. The method of claim 1 in which said elastic bands are cut to predetermined lengths after they are stretched and before applying them to the web.

4,284,455

## APPARATUS AND METHOD FOR GENERATING A CONTINUOUSLY-FORMED MANDREL AS A SUPPORTIVE BASE

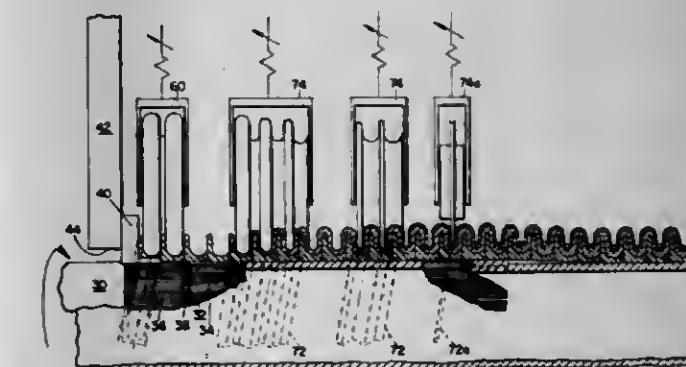
Thomas J. Morin, 19 Nonotuck Rd., West Springfield, Mass. 01089

Filed Oct. 15, 1979, Ser. No. 85,010

Int. Cl.<sup>3</sup> B65H 81/00

U.S. Cl. 156—190

34 Claims



1. A method for generating a continuously-formed mandrel as a supportive base in the building of a tubing therearound comprising the steps of:
  - feeding a profiled workpiece in ribbon form to and through a stationary force generating helix,



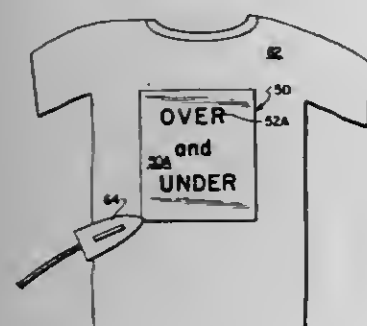
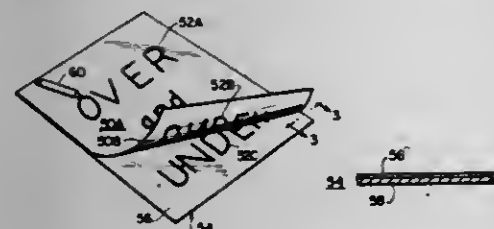
deflecting the workpiece passed from the helix by an initial pressure means into a spiralled configuration around a rotative serrated forming mandrel, impinging the workpiece into the serrations of the forming mandrel for the formation of teeth in the workpiece as the workpiece develops as a formed mandrel, maintaining intimate mating contact between the teeth of the workpiece and the serrations of the forming mandrel only at the point of pressure of the initial pressure means, progressing the formed mandrel longitudinally of the forming mandrel under the force generated by the helix in the exploitation of the clearance between formed mandrel and forming mandrel for facilitating the longitudinal translation, enwrapping a tape in a layer configuration exteriorly of and around the formed mandrel in the buildup of a tubing, and removing the formed mandrel from interiorly of a finally self-sustaining tubing.

4,284,456

# METHOD FOR TRANSFERRING CREATIVE ARTWORK ONTO FABRIC

Donald S. Hare, 4 Lexington Ave., New York, N.Y. 10010  
Continuation-in-part of Ser. No. 954,228, Oct. 24, 1979, Pat. No. 4,224,358. This application Oct. 24, 1979, Ser. No. 87,767  
The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.

Int. Cl.<sup>1</sup> B44C 31/00; B41C 3/12; B21C 1/00  
U.S. Cl. 156—234 2 Claims



1. A method of transferring a hand-formed design and a pre-printed background pattern from a transfer sheet to a fabric, comprising the steps of:

generating said design on the obverse surface of a transfer

sheet by the application of energy thereto, while juxtaposing the rear surface of said transfer sheet with a layer of energy transferable material to provide a transferable mirror image of said design on the said rear surface, said transfer sheet including a pre-printed background pattern and said design being generated by creating said design by hand to apply said energy to said obverse surface, said pre-printed background pattern being formed of energy transferable material on the rear surface of said transfer sheet and being used as a guide with respect to which said design is created;

placing said rear surface containing said background pattern and said transferable mirror image of said design contiguous with a desired position on a surface of said fabric by visually aligning said design on said obverse surface with said desired position; and

applying energy throughout the obverse surface of said transfer sheet to transfer both said mirror image of said design and said background pattern from said rear surface to said desired area on said fabric to thereby reproduce said design superimposed on said background pattern on said fabric.

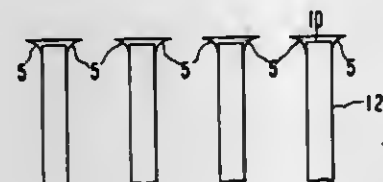
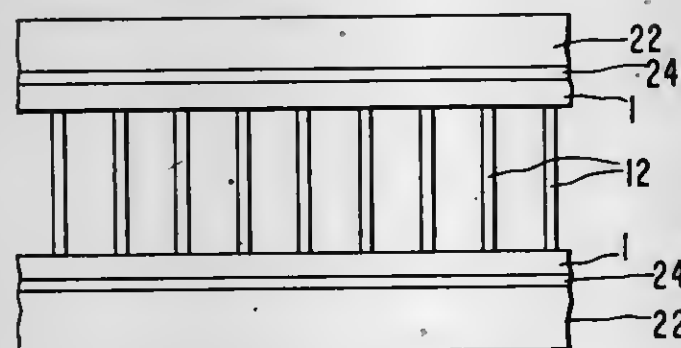
4,284,457

# METHOD FOR BONDING A SKIN MEMBER TO HONEYCOMB CORE

Roger A. Stonier, San Jose, and Richard A. Hayes, Foster City, both of Calif., assignors to Ford Aerospace & Communications Corp., Detroit, Mich.

Filed Jul. 30, 1979, Ser. No. 61,962

Int. Cl.<sup>1</sup> B05D 5/10; B29C 31/00; B65C 9/25; B32B 31/00  
U.S. Cl. 156—237 9 Claims



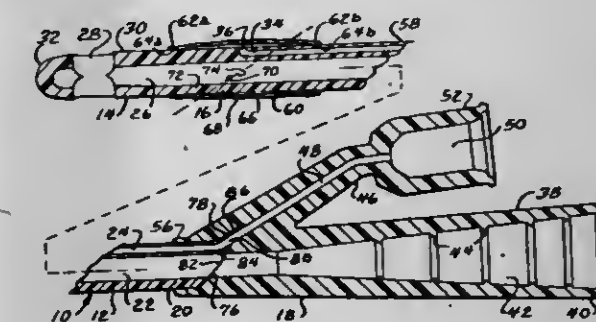
1. Method for bonding a skin member to a honeycomb having a faying surface delineating a piecewise demarcated open space, comprising:

applying an adhesive-coated fabric against the faying surface of the honeycomb;  
heating the fabric covered honeycomb so that some of said adhesive flows out of said fabric and into said honeycomb at a region near said surface in such a way that only part of the open space along the faying surface is covered with adhesive;  
cooling said heated honeycomb so that the adhesive on said fabric becomes brittle;  
peeling said fabric away from said honeycomb so that the only substance remaining adhered to said honeycomb is said flowed adhesive;  
placing said skin member against said surface; and  
imparting a final cure to said adhesive.

4,284,459

# METHOD FOR MAKING A MOLDED CATHETER

Bhupendra C. Patel, Elgin; Russell J. Schweizer, Crystal Lake, both of Ill., and Jesse C. Smith, St. Petersburg Beach, Fla., assignors to The Kendall Company, Boston, Mass.  
Division of Ser. No. 921,696, Jul. 3, 1978, Pat. No. 4,207,900.  
This application Jan. 28, 1980, Ser. No. 115,842  
Int. Cl.<sup>1</sup> B29C 27/00; B29D 23/02; B29G 3/08  
U.S. Cl. 156—245 17 Claims



1. In a method of making a catheter, comprising the steps of: severing a proximal end of a catheter shaft and forming a taper in the proximal end of the catheter shaft; inserting a distal end of a main pin into a proximal end of a main lumen in the catheter shaft and closing the proximal end of the main lumen with the main pin; inserting said distal end of an auxiliary pin into a proximal end of an inflation lumen in a wall of the shaft and closing the proximal end of the inflation lumen with the auxiliary pin; placing the proximal end of the catheter shaft and said main and auxiliary pins into a mold cavity with a core portion of the main pin and an elongated proximal portion of the auxiliary pin being spaced from walls of the mold, and with a proximal end portion of the catheter shaft containing the proximal end of the drainage lumen being outwardly flared in the mold; injecting a molten material into the cavity to mold a connector directly onto the proximal end of the shaft; removing the main pin through an opening formed by the main pin at the proximal end of the connector with said core portion forming a lumen in the connector communicating with the main lumen of the shaft; and removing the auxiliary pin through an opening formed by the auxiliary pin at a proximal portion of the connector, with the auxiliary pin forming an inflation lumen in the connector, and with said proximal end portion of the shaft defining a curved portion of the shaft inflation lumen communicating between the shaft and connector inflation lumens.

4,284,460

# HEAT SEALING UNTREATED SULFONAMIDE-TYPE CATION EXCHANGE MEMBRANES

Sanders H. Moore, Cleveland, and John O. Adams, Madisonville, both of Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 30, 1979, Ser. No. 34,317

Int. Cl.<sup>1</sup> C09J 5/00

U.S. Cl. 156—306.6 9 Claims

1. A method of joining two sheets of a cation exchange material, which material has not been treated with either a tertiary amine or a quaternary ammonium base or the salt of either said amine or said base, each of said sheets having a first side, which first side has an external layer of a sulfonated perfluorovinyl ether polymer having pendant sulfonamide cation exchange groups, which consists essentially of the steps of:

(a) placing said sheets in a position with said first sides facing each other;  
(b) placing a layer of a sulfonated perfluorovinyl ether polymer having terminal sulfonyl groups in the form  $-\text{SO}_3\text{H}$

4,284,458

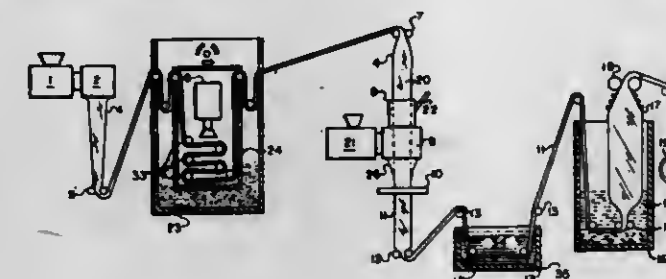
# METHOD FOR PRODUCING LAMINATED FILM

Henry G. Schlrmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 818,772, Jul. 25, 1977, abandoned, which is a continuation of Ser. No. 514,691, Oct. 15, 1974, abandoned, which is a continuation of Ser. No. 136,613, Apr. 22, 1971, abandoned, which is a division of Ser. No. 659,940, Aug. 11, 1967, Pat. No. 3,607,505. This application Jun. 25, 1979, Ser. No. 51,782

Int. Cl.<sup>1</sup> B29D 23/04

U.S. Cl. 156—244.12 1 Claim



1. In the process for the manufacture of a tubular, laminated film consisting of extruded thermoplastic materials, the improvement which comprises:

(a) providing an unoriented, tubular, collapsible, thermoplastic substrate which has been extruded and cooled below its melt temperature;  
(b) inflating the substrate into an approximately circular cross-section subsequent to said extrusion and cooling thereof, the inflation alone of the tubular substrate providing said circular cross-section and, after inflation, said tubular substrate having no internal, mechanical supporting means and said tubular substrate not being substantially expanded by said inflation;  
(c) providing a circular laminating die;  
(d) passing said inflated tubular substrate through said die;  
(e) trapping the portion of said inflated, tubular substrate that passes through said die between two spaced apart pairs of pinch rollers; and  
(f) extruding a molten coating layer of thermoplastic material onto and uniformly around said inflated, tubular substrate thereby producing a laminated tubular film product which is substantially unstretched and is flexible and collapsible.



on both sides thereof between said first sides of said sheets, wherein said sides have not been treated with either a tertiary amine or a quaternary ammonium base or the salt of either said amine or said base; and

(c) heat sealing said layer to each of said first sides at a pressure within the range of from about 1 to about 5 kg/cm<sup>2</sup> and a temperature within the range of from about 260° C. to about 350° C. for a time within the range of from about 3.5 to about 7.5 seconds to thereby join said first sides.

4,284,461

## ALUMINUM ION-CONTAINING POLYIMIDE ADHESIVES

Robert A. Frosch, Administrator of The National Aeronautics and Space Administration, with respect to an invention of Anne K. St. Clair, Poquoson; Larry T. Taylor, Blacksburg; Terry L. St. Clair, Poquoson, all of Va.

Filed Nov. 7, 1979, Ser. No. 92,142  
Int. Cl.<sup>3</sup> C08G 69/28

U.S. Cl. 156—331.5

6 Claims

1. A method for preparing an aluminum ion-containing polyimide adhesive solution which comprises:

reacting an aromatic dianhydride with an equimolar quantity of a meta-oriented aromatic diamine followed by the addition of 2-3 percent by weight of an aluminum ion-containing metal complex;

the dianhydride and diamine reactants being previously dissolved in a solvent or mixture of solvents, at least one of which is selected from the group consisting of,

1,2-dimethoxyethane,  
bis(2-methoxyethyl)-ether,  
1,2-bis(2-methoxyethoxy)ethane, and  
bis-[2-(2-methoxyethoxy)-ethyl]ether.

4,284,462

## AUTOMATIC STACKING APPARATUS FOR VARIABLE LENGTH TEXTILE FABRICS

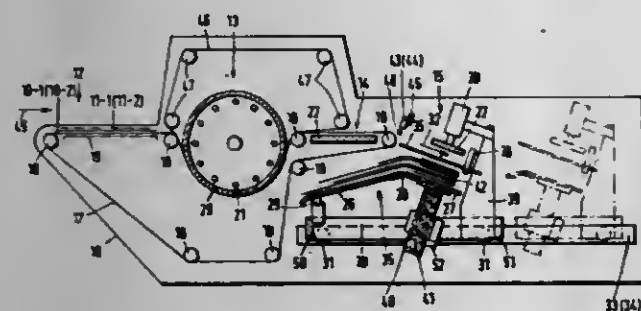
Rolf Heine, Rinteln, Fed. Rep. of Germany, assignor to Herbert Kannegiesser GmbH & Co., Vlotho, Fed. Rep. of Germany  
Filed Nov. 30, 1979, Ser. No. 99,178

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856237

Int. Cl.<sup>3</sup> B32B 31/00

U.S. Cl. 156—350

9 Claims



1. An apparatus for gluing and stacking textile fabric pieces, comprising:

a feeding station, a hot pressing station, a cooling station and an automatic stacking device for stacking together the glued textile fabrics, said stacking device including a stacking table having a stacking plate and being reciprocally movable and adjustable in height, a height adjustable clamping plate disposed above said stacking table and being reciprocally movable with said table, said clamping plate being raised to allow a textile fabric piece to be delivered to said stacking table, and being lowered to clamp a leading edge of said textile fabric piece on a front portion of said table, whereby a plurality of textile fabric pieces may be stacked, each of the leading edges of said

pieces being clamped, one on top of the other, by said clamping plate.

4,284,463

## WEB PREPARATION APPARATUS

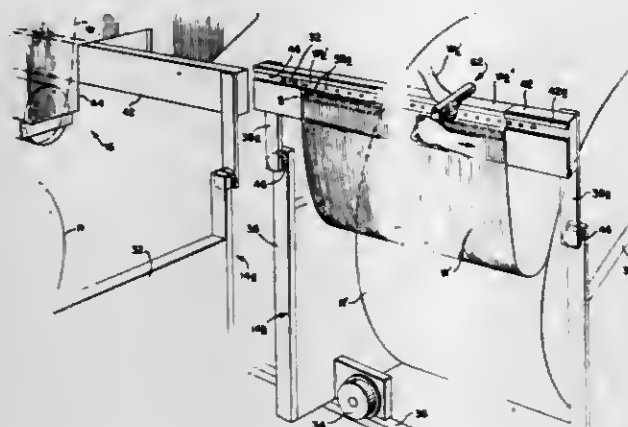
Albert L. H. Wright, Sberborn, Mass., assignor to Butler Greenwich Inc., Greenwich, Conn.

Filed Mar. 16, 1979, Ser. No. 21,211

Int. Cl.<sup>3</sup> B31F 5/00; B65H 69/06

U.S. Cl. 156—502

15 Claims



1. In a splicer of the type having a splicing station, a web preparation station and a web positioning bar movable between the two stations, web preparation apparatus comprising

A. a series of projections spaced along the length of the positioning bar at one face thereof, and

B. a tool engageable against the positioning bar after the leading end segment of a ready web is draped over the bar, said tool having means for pressing the draped web segment against said face of the bar so that said web segment becomes impaled on said projections thereby removably securing said web segment to said bar.

15. Web preparation apparatus for use in a splicer having a splicing station and elongated web positioning means located at the splicing station which positioning means has a series of projections, said apparatus comprising

A. a bracket,

B. retaining means secured to the bracket,

C. a roller having a circumferential groove,

D. a circular knife blade mounted coaxially to the roller, and  
E. means for rotatively securing the roller and knife blade bracket so that the peripheries of the roller and blade are spaced from the retaining means a distance whereby, when the bracket is placed against the positioning means with the roller, and blade and the retaining means engaging opposite surfaces of the positioning means and the bracket is drawn lengthwise along the positioning means, said roller presses a web end segment located at the positioning means onto said projections, said projections being received in the groove in said roller, while said knife blade trims off the leading edge of said web.

4,284,464

## APPARATUS FOR MAKING CORNER JOINTS OF SEALING PROFILES FOR WINDOWS, DOORS OR THE LIKE

Arthur Förster, Munich, Fed. Rep. of Germany, assignor to Devereuter GmbH & Co., Munich, Fed. Rep. of Germany  
Filed Sep. 5, 1980, Ser. No. 184,247

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1980, 8000905[U]

Int. Cl.<sup>3</sup> B32B 31/00

U.S. Cl. 156—510

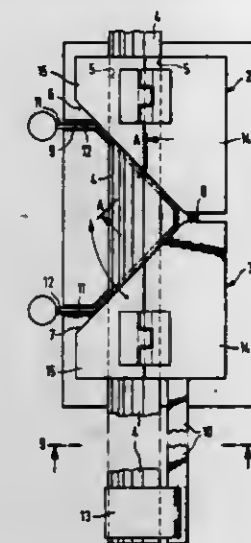
18 Claims

1. Apparatus for making corner joints from lengths of profiles of plastic material comprising:

a base,

a pair of profile holding means on said base, one of said profile holding means being pivotally mounted relative to

said base, said pair of profile holding means when aligned holding a continuous length of the profile which extends into both said holding means, each of said profile means having an oppositely angled side across which the profile extends such that when the two profile holding means are aligned a section is formed which has an included angle between said sides which opens towards the front faces of said pair of profile holding means, and



heat welding means including a blade which fits within the angled sides between the two profile holding means to cut the profile extending into said section and to heat the edges of the pieces of profile remaining in each of said holding means,

the pivoting of said one profile holding means bringing the heated edges of said profile pieces into contact to weld said pieces and hold the same together.

4,284,465

## APPARATUS FOR THE MANUFACTURE OF FIBROUS SHEET STRUCTURE

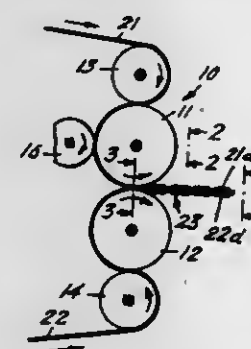
Lawrence A. Walbrun, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 950,076, Oct. 10, 1978, abandoned. This application Dec. 7, 1979, Ser. No. 101,994

Int. Cl.<sup>3</sup> B30B 3/00; B31F 1/10

U.S. Cl. 156—513

3 Claims



1. An apparatus for the fabrication of a multi-ply fibrous sheet structure, comprising: a first pair of embossing rolls of substantially rigid material including matched patterns having recessed sections and continuous linear, radially outwardly presented land regions disposed thereabout; a plurality of radially outwardly presented, sharp protuberances in said recessed sections; means mounting said first pair of embossing rolls for rotation about parallel axes and in tangential, nip forming engagement with one another; a second pair of embossing rolls of substantially flexible and resilient material mounted for rotation about axes parallel with the recited axes of said first pair of embossing rolls, and disposed in forcible, tangential, nip-forming engagement therewith; means for feeding a pair of fibrous webs through said nips between said first and second pair of embossing rolls so that said webs are resili-

ently urged by said second pair of rolls into engagement with the pattern on said first pair of rolls, engagement with said land regions being effective to form flat continuous linear sections, and engagement with said protuberances and recessed regions being effective to form pocket portions and perforations therein surrounded by fibers presented inwardly of said pocket portions; means for applying adhesive to the linear section of at least one of said webs; and said first pair of rolls being operable upon rotation thereof to convey said webs through the recited nip thereof for adherence of said flat regions of the webs in formation of the recited multi-ply sheet, and for removal of the latter from said nip.

4,284,466

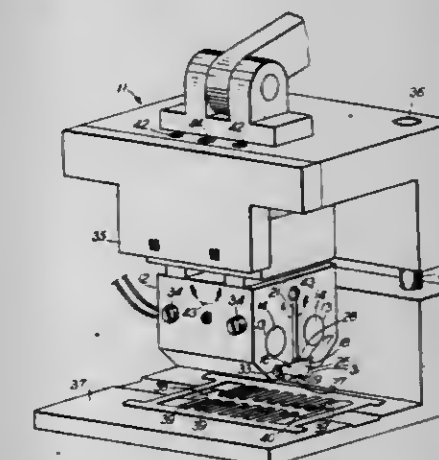
## BONDING HEAD

George A. Chayka, and Fred J. Schneider, both of Northampton, Pa., assignors to Western Electric Co., Inc., New York, N.Y.  
Filed Dec. 17, 1979, Ser. No. 104,242

Int. Cl.<sup>3</sup> B30B 15/02, 15/34

U.S. Cl. 156—583.1

3 Claims



1. A thermocompression bonding head for bonding electrical component parts, which comprises:

a thermode including a body having at least one cavity for mounting a heating element, a dovetailed groove extending in the body adjacent to said cavity, said dovetailed groove being formed by two opposite, inwardly diverging sidewalls intersecting a flat reference surface, said reference surface being parted by a slot extending into said body to a depth sufficient for resiliently hinging the portion of said body on one side of said slot with respect to the portion of said body on the other side of said slot; and a bonding element having a base reference surface, inwardly sloping sidewalls adjoining said base reference surface at two parallel edges thereof and a bonding end having at least one bonding rail extending parallel to said parallel edges, said bonding element being insertable into said groove upon a resilient expansion of said sidewalls of said groove with respect to each other, such that, upon said bonding element being inserted within said groove, said base reference surface is adjacent to said reference surface of said groove, said bonding end protrudes from said groove, the sidewalls of the groove resiliently bear on the sidewalls of the bonding element, and the reference surface on the thermode and the base reference surface of the bonding element are located in mutual, intimate, heat conducting contact.



4,284,467

## METHOD FOR MAKING SEMICONDUCTOR MATERIAL

Egon E. Loebner, Palo Alto, and Paul E. Greene, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 226,351, Feb. 14, 1972, abandoned, which is a continuation of Ser. No. 832,276, Jun. 11, 1969, abandoned. This application Nov. 13, 1975, Ser. No. 631,576

Int. Cl.<sup>3</sup> B01J 17/26

U.S. Cl. 156—613

7 Claims

1. A method of producing a semiconductor material, said method being characterized by the step of: epitaxially growing a semiconductor compound alloy having at least three components on a substrate by initially growing a composition of said semiconductor alloy having a lattice constant substantially equal to the lattice constant of the substrate, and subsequently varying the relative proportions of said at least three components to substantially follow an isolattice compositional locus of the semiconductor compound alloy to a desired final composition.

4,284,468

## PATTERNED CHEMICAL ETCHING OF HIGH TEMPERATURE RESISTANT METALS

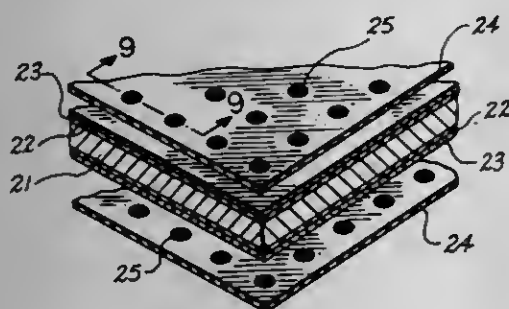
Llewellyn Stearns, 142 Nevada St., El Segundo, Calif. 90245

Continuation of Ser. No. 861,165, Dec. 16, 1977, abandoned. This application Jul. 27, 1979, Ser. No. 61,496

Int. Cl.<sup>3</sup> C23F 1/02

U.S. Cl. 156—661.1

8 Claims



1. A process for the chemical milling, to a predetermined pattern, of high temperature resistant metal including those selected from the group consisting of high temperature resistant alloys including combination alloys of two or more of chromium, nickel, molybdenum, cobalt, iron, Niobium, Titanium and Tungsten, and refractory elements which comprises: coating the exposed surfaces of said metal material with a polymerizable resin composition; curing said polymerizable resin composition to form a coated metal material that is coated with a layer of cured resin material; applying a coating of light sensitive photoresist composition upon said coated metal material; exposing said light-sensitive photoresist composition to a light source in said predetermined pattern; chemically removing only said photoresist composition in accordance with said predetermined pattern to thereby expose cured resin material in those same areas where said photoresist material has been removed; chemically removing only said exposed cured resin material without removal of metal or photoresist material to thereby expose metal material in those same areas where said photoresist and resin materials have been previously removed; chemically etching said exposed metal material in the said predetermined pattern with an etchant selected from the group consisting predominately of aqua regia and aqua regia plus hydrofluoric acid at temperatures of between

about 140° F. to 180° F. but without removal of cured resin material by said etchant; and stripping said photoresist composition and cured resin material to completely expose said metal material etched in said predetermined pattern.

4,284,469

## METHOD AND APPARATUS FOR CONCENTRATING A LIQUID

Michio Ikura, Toronto; Frederick W. S. Jones, Campbellville; Harley C. Prime, St. Lambert, and Ian Rodger, Willowdale, all of Canada, assignors to Chemetics International, Vancouver, Canada

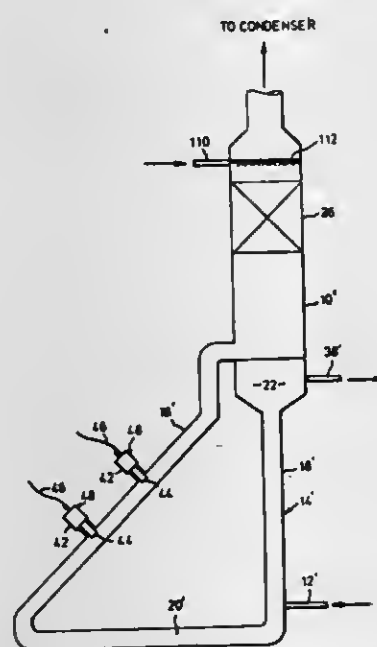
Filed Feb. 11, 1980, Ser. No. 120,556

Claims priority, application Canada, Jan. 15, 1980, 343695

Int. Cl.<sup>3</sup> B01D 1/00

U.S. Cl. 159—28 R

4 Claims



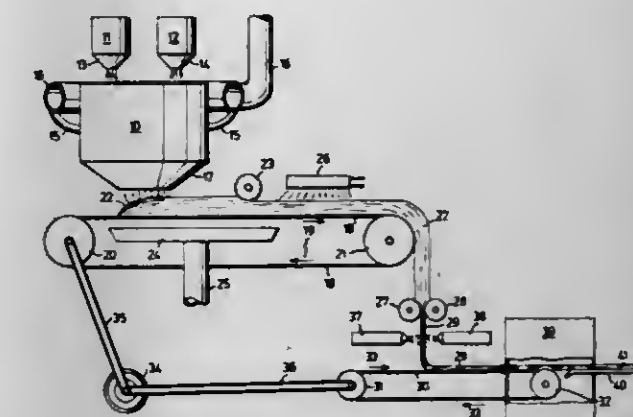
1. Apparatus for concentrating an aqueous, corrosive, electrically conductive acid, comprising:

- (a) an evaporator vessel adapted to contain said acid at a selected level,
- (b) a thermosyphon loop connected to said evaporator vessel, said loop having first and second legs each having a top and bottom separated by a substantial vertical distance, the top of said first leg being connected to said vessel below said level, the top of said second leg being connected to said vessel approximately at or below said level, the bottom of said first leg being connected to the bottom of said second leg, said second leg having an orientation which has a substantial vertical component,
- (c) a pair of spaced electrode structures located in said second leg and each electrode structure comprising:
  - (i) a stub conduit extending from said second leg at an angle inclined to the horizontal,
  - (ii) means defining with the end of said stub conduit remote from said second leg a gas-tight housing,
  - (iii) an electrode of substantially inert material within said stub conduit, said electrode having a first portion extending into said second leg to contact said acid and a second portion in said housing, said electrode comprising a porous material communicating between the interior of said housing and said second leg,
  - (iv) a seal encircling said electrode at a position spaced along said stub conduit from said second leg and seating against said stub conduit,
  - (v) connection means within said housing connected to said second portion of said electrode and being separated by said seal from said first portion of said electrode, said connection means extending through said

housing and being adapted to receive electric power from a power supply.

- (d) said electrode structures being spaced substantially below said level,
- (e) means for supplying electric power through said connection means to said electrodes at a rate such as to cause boiling of said acid entirely above said electrodes,
- (f) means connected to said second leg for supplying a gas thereto at a pressure and flow sufficient to ensure circulation of said acid in said loop when said electric power is supplied to said electrodes and to stabilize said circulation,
- (g) said means (f) being connected to each of said housings for pressurizing said housings to thereby force at least some of said gas through each electrode into said second leg whereby to protect said connection means against attack by said acid and to reduce acid attack against said seal.

emulsion binder is applied to the partially dried mat, and wherein the latex-bearing partially dried mat is subsequently



further dried to effect final drying, whereby the impression resistance of the mat product is substantially increased.

4,284,470

## HIGH-STRENGTH ROOFING PRODUCTS USING NOVEL GLASS FIBER MATS

Alfredo A. Bondoc, Middlesex, N.J., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 923,553, Jul. 11, 1978, Pat. No. 4,183,782. This application Sep. 26, 1979, Ser. No. 79,192

The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> D21H 1/02, 5/18

U.S. Cl. 162—123

25 Claims

1. A high-strength roofing product comprising:

- (A) a glass fiber mat consisting essentially of glass fibers, voids extending through the thickness of said mat and a binder to hold said fibers together, said fibers having a length of about 1/4 to 3 inches and a diameter of about 3 to 20 microns, said mat having a thickness of about 0.3 to 3 mm. and a basis weight of about 20 to 200 g./m<sup>2</sup>, characterized in that:
    - (a) at least about 70% by weight of said fibers of substantially the same fiber length, are substantially uniformly enmeshed individual filament fibers,
    - (b) less than about 20% of the area of said mat are voids which extends through the thickness of the mat, the rest being fibers, and,
    - (c) at least about 80%, 30% and 10% of said voids have an equivalent diameter which is less than about 50, 10 and 5 microns, respectively, and,
  - (B) a bituminous material impregnated in said mat.
19. A built up roofing system comprising:
- (a) multiple plies of said high-strength built up roofing product as defined in claim 1, and
  - (b) adhesive asphaltic coatings between said membranes.

4,284,471

## METHOD FOR THE PRODUCTION OF A FIBROUS MAT

Gummar Cederqvist, S Lerdala, Sweden, assignor to Rockwool Aktiebolaget, Skovde, Sweden

Continuation of Ser. No. 942,698, Sep. 15, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,184

Claims priority, application Sweden, Sep. 28, 1977, 7710857

Int. Cl.<sup>3</sup> D21F 11/00

U.S. Cl. 162—152

26 Claims

1. In a method of production of an asbestos-free fibrous mat in which a suspension comprising artificial mineral fibers, cellulosic fibers, and resin binder is devatered during shaping into mat form on a wire, wherein the devatered mat is subsequently compressed and dried, the compression being sufficient to cause a substantial reduction in thickness of the mat, the improvement wherein the de-watered mat is partially dried to a dry content of between 60 and 90%, wherein a latex

4,284,472

## METHOD FOR ENHANCED CONTROL OF RADIOIODINE IN THE PRODUCTION OF FISSION PRODUCT MOLYBDENUM 99

Raul J. Pomares, Livermore; Carl P. Ruiz, and Douglas H. Simpson, both of Fremont, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Oct. 16, 1978, Ser. No. 951,651

Int. Cl.<sup>3</sup> G21G 1/06

U.S. Cl. 176—16

12 Claims

1. A method for controlling radioiodine produced by the fission of uranium 235 during the process for the production of molybdenum 99 wherein uranium 235 is alloyed with aluminum forming a target which is irradiated with a neutron flux, for producing molybdenum 99, radioiodine and other fission by-products, the method consisting essentially of the steps of:
 

- (a) dissolving the aluminum-uranium alloyed target containing molybdenum 99, radioiodine and other fission by-products in an aqueous caustic solution;
- (b) mixing with the caustic solution an amount of reactive silver sufficient to react with substantially all of the radioiodine present in the solution for forming a silver containing precipitate;
- (c) filtering the caustic solution for separating the precipitate, undissolved uranium and insoluble fission by-products from the caustic solution filtrate; and
- (d) recovering the solids containing the radioiodine in the form of the silver containing precipitate from the filter.

4,284,473

## SUBMERGED ULTRASONIC VIEWER FOR A NUCLEAR REACTOR

Kiyoshi Kasama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 27, 1979, Ser. No. 24,329

Claims priority, application Japan, Mar. 27, 1978, 53-35186

Int. Cl.<sup>3</sup> G21C 17/00

U.S. Cl. 176—19 R

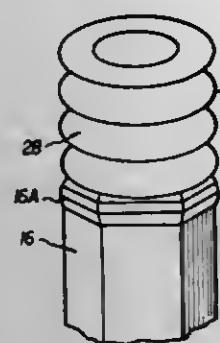
4 Claims

1. In a viewer for detecting floating core components in a liquid metal coolant of a liquid metal cooled nuclear reactor, said viewer submerged in said coolant and including transducer means for transmitting ultrasonic signals and for receiving reflected ultrasonic signals, driver means coupled to said transducer means for scanning said reactor with said ultrasonic signals, and display means for displaying images corresponding to reflected signals received by said transducer means, the improvement comprising:
 

- said core components each having a rod-like shape defining a longitudinal axis and characterized by polygonal cross-sections in planes perpendicular to said longitudinal axis; and



said rod-like core components provided with a reflecting handling head at one end thereof wherein said reflecting handling head is constructed of varying thickness to de-



fine at least one continuously curved reflecting surface around the circumference of said handling head for reflecting ultrasonic signals to said transducer means.

4,284,474

# STRUCTURES FOR HEAT INSULATION OF SURFACES WITHIN A NUCLEAR REACTOR

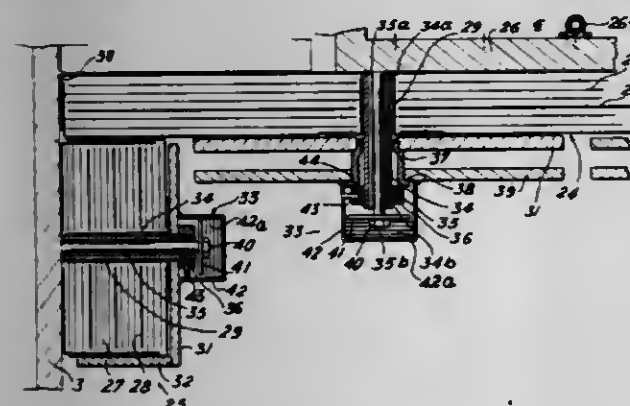
Guy Lemercler, Le Puy Sainte Reparde, France, assignor to Commissariat a l'Energie Atomique, France  
Filed Mar. 28, 1979, Ser. No. 24,574

Claims priority, application France, Apr. 7, 1978, 78 10394

Int. Cl.<sup>3</sup> G21C 13/08

U.S. Cl. 176—38

5 Claims



1. An improvement to a structure for heat insulation of surfaces within a nuclear reactor, said structure comprising an assembly of panels each formed by a stack of metal fabric elements applied against the surface to be protected by means of a double fixing system comprising a tubular member extending through a bore of a panel having one end attached to the surface, the opposite end of said tubular member being threaded and adapted to cooperate with a first nut which applies the panel against the surface by means of a bearing plate, and a stud mounted in the axis of the tubular member having one end attached to said surface, the opposite end of said stud being provided with a threaded head which extends beyond the extremity of the tubular member and cooperates with a second nut which supports a washer for preventing the tubular member and the panel from falling in the event of failure of said tubular member, and a protective housing surrounding the end of the head of the axial stud, said housing being rigidly fixed to the first nut.

4,284,475

WEAR SLEEVE FOR CONTROL ROD GUIDE TUBE  
Andrew J. Anthony, Tarrifville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 26, 1979, Ser. No. 6,605

Int. Cl.<sup>3</sup> G21C 3/30

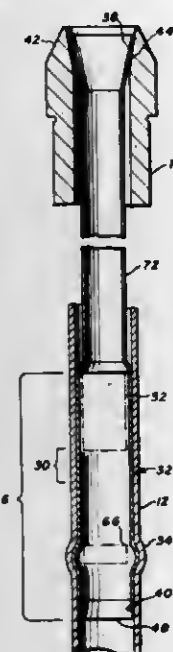
U.S. Cl. 176—78

11 Claims

1. In a fuel assembly for a nuclear reactor, the reactor having

a vertically reciprocable, cylindrical control rod driven from above the reactor core, the combination comprising:

a metal guide tube for telescopically receiving the control rod and for containing an upward flow of cooling liquid therein, the tube including stop means internal to the tube at the upper end thereof, wherein the portion of the tube facing the control rod tip when the control rod is in the withdrawn position is a critical region which may be subject to wear; and



a wear sleeve suspended from the stop means and extending downward through the tube below the critical region, the sleeve being made of a thin-walled, ductile metal having an inner diameter larger than the control rod outer diameter, a portion of the sleeve below the critical region being permanently outwardly deformed into interference engagement with the tube whereby longitudinal movement of the sleeve relative to the tube due to the coolant flow is prevented.

4,284,476

# PROCESS AND APPARATUS FOR UTILIZATION OF THE SENSIBLE HEAT OF HOT COKE FOR DRYING AND PREHEATING COKING COAL

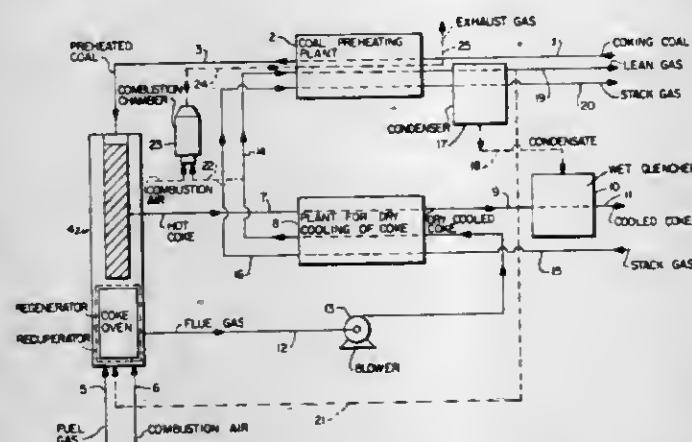
Dietrich Wagener; Claus Flockenhaus, both of Essen, and Joachim F. Meckel, Heiligenhaus, all of Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 927,039, Jul. 24, 1978, abandoned. This application Feb. 21, 1980, Ser. No. 123,475

Int. Cl.<sup>3</sup> C10B 39/02, 39/04, 5/00

U.S. Cl. 201—39

8 Claims



1. A process for dry cooling hot coke after its discharge from a coke oven battery and for drying and preheating moist coking coal prior to its introduction into said coke oven battery to be formed therein into coke, said process comprising:

withdrawing stack gas from a metallurgical installation adjacent to a coke oven battery and directly passing said stack gas through a coke dry cooling plant containing hot coke and therein directly contacting said stack gas with said hot coke and dry cooling said hot coke to form dry cooled coke while simultaneously increasing the temperature of said stack gas;

then passing said stack gas through a coal preheating plant containing moist coking coal and therein directly contacting said stack gas with said moist coking coal and drying and preheating said moist coking coal by transfer of heat thereto from said stack gas; and

maintaining said stack gas in an open system by passing given said stack gas only once through said coke dry cooling plant and said coal preheating plant and not continuously circulating such given stack gas therethrough.

4,284,477

COKING APPARATUS FOR PRODUCING COKE  
Vaughn Mansfield, Gallatin, Tenn., assignor to Mansfield Carbon Products, Inc., Nashville, Tenn.

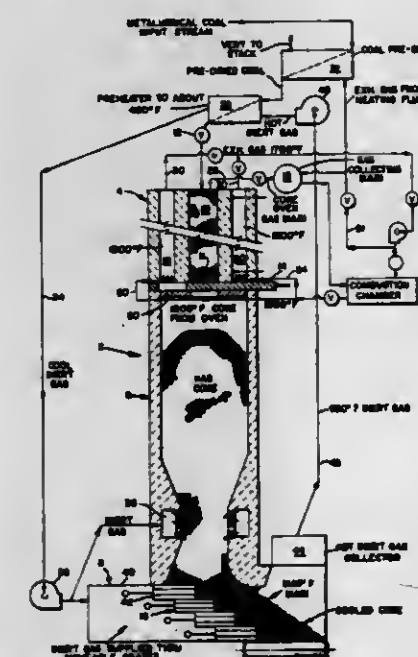
Continuation of Ser. No. 919,299, Jun. 26, 1978, abandoned.

This application Jul. 25, 1980, Ser. No. 172,294

Int. Cl.<sup>3</sup> C10B 1/04, 29/04, 37/04, 39/02

U.S. Cl. 202—110

2 Claims



1. Apparatus for coking coal comprising:

a plurality of adjacent vertically elongate side-by-side pockets each defined between spaced parallel vertically elongate fixed side walls and a vertically elongate fixed end wall rigidly affixed between said side walls and defining therewith a substantially U-shaped fixed wall structure, and a movable vertically elongate end wall spaced oppositely from and parallel to the fixed end wall and extending across the mouth of the U formed by the fixed side and end walls wherein each pocket, save the endmost ones, shares a common fixed side wall with adjacent pockets; each of said pockets having at a lower end thereof individual gate means for opening and closing the same; means for charging coal into said pockets via the upper ends thereof;

gas passage means extending vertically through said side and end walls;

means for feeding hot combustion gases through said passages for heating the coal in said pockets to coking temperatures;

individual means respectively associated with each of said movable end walls for moving the same downwards and away from the opposite end walls whereby to selectively maintain the coal in said pockets under compression and to release the same from compression; and

shaft furnace means disposed beneath and common to said

plurality of said pockets for receiving coke discharged through the lower end thereof.

4,284,478

# APPARATUS FOR QUENCHING HOT COKE

Walter Brömmel, Mühlheim-Ruhr, Fed. Rep. of Germany, assignor to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Division of Ser. No. 952,135, Oct. 17, 1978, Pnt. No. 4,246,072.

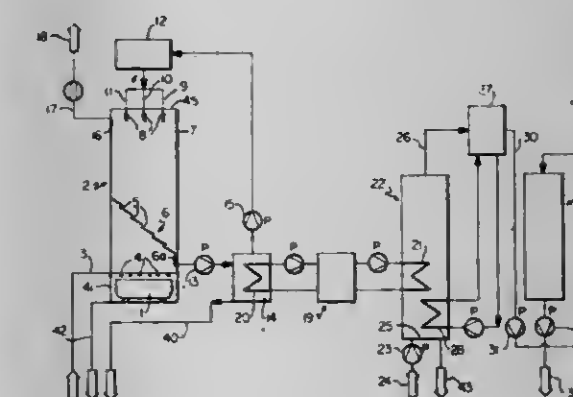
This application Aug. 22, 1980, Ser. No. 181,398

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737624; Aug. 19, 1977, 2737625

Int. Cl.<sup>3</sup> C10B 39/08

U.S. Cl. 202—227

10 Claims



1. An apparatus for quenching hot coke produced in a coke plant, said apparatus comprising:

a quenching tower having an interior including an upper portion which is completely sealed from the exterior surrounding environment and a lower portion, said quenching tower having at least one opening means for introducing a charge of hot coke from a coke plant into said lower portion of the interior of said quenching tower, and means for selectively closing said opening means and for thereby completely sealing said lower portion of the interior of said quenching tower from the exterior surrounding environment;

means for supplying quenching water into said lower portion of the interior of said quenching tower and onto a charge of hot coke positioned therein and for thereby cooling said hot coke and generating steam and quenching gases, which then rise to said upper portion of the interior of said quenching tower;

means for supplying condensing water into said upper portion of the interior of said quenching tower and for thereby condensing said steam to form quenching water condensate;

means, positioned at a midportion of the interior of said quenching tower, for collecting a water mixture of said condensing water and said quenching water condensate, while preventing said water mixture from passing to said lower portion of the interior of said quenching tower, and for allowing the upward passage therethrough of said steam and quenching gases rising from said lower portion to said upper portion of the interior of said quenching tower;

means for discharging the thus collected water mixture from the interior of said quenching tower; and

means for removing said quenching gases remaining in said upper portion of the interior of said quenching tower, after condensing of said steam, from the interior of said quenching tower without directly discharging said quenching gases into the exterior surrounding environment.



4,284,479

## SEALING ARRANGEMENT FOR THE OVEN CHAMBER DOOR ON A COKING OVEN

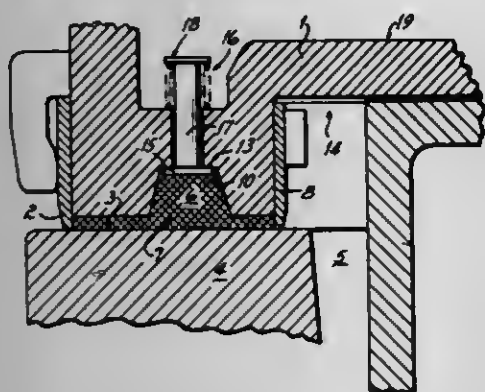
Egon Schulte, Kirchbellen, Fed. Rep. of Germany, assignor to Didier Engineering GmbH, Essen, Fed. Rep. of Germany  
Filed Nov. 30, 1979, Ser. No. 98,970

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1978, 2852013

Int. Cl.<sup>3</sup> C10B 25/16

U.S. Cl. 202-248

10 Claims



1. A door for selectively opening and closing the opening to a coking over chamber comprising a door body adapted to face a door frame surrounding said opening to said chamber about a peripheral portion of said door body in the door closed position, inner and outer sealing strips mounted on said door body, at least said outer sealing strip resiliently engaging said door frame when said door is closed, said inner and outer sealing strips, said door frame and said facing peripheral portion of said door body defining therebetween a channel, and means for injecting a sealing substance into said channel while said door body is in said door closed position to provide a seal between said door body and said door frame.

4,284,480

## METHOD FOR THE CONCENTRATION OF SOLUTIONS

Jacques Sterlini, Paris, France, assignor to BBC Brown, Boveri &amp; Company Limited, Baden, Switzerland

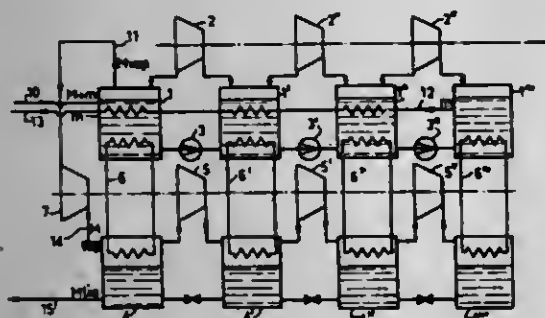
Filed Oct. 18, 1979, Ser. No. 85,868

Claims priority, application France, Oct. 18, 1978, 78 29689

Int. Cl.<sup>3</sup> B01D 1/28, 3/02

U.S. Cl. 203-24

4 Claims



1. A method for the concentration of a dissolved material from a solution of said dissolved material and a solvent, said method comprising:

- providing a first set of stages with exchange cells each having liquid and vapor sides, said exchange cells serially connected at said vapor side by turbines and at said liquid side by conduits including pumps
- providing a second set of stages with exchange cells each having liquid and vapor sides, said exchange cells being serially connected at said vapor sides by compressors and at said liquid sides by conduits including calibrated orifices;

introducing as a working fluid a flow of dilute solution into a first endstage of said first set of stages;  
utilizing only work generated heat from a corresponding stage of said second set of stages to ebullate a portion of said dilute solution by indirect heat exchange;  
utilizing said pumps to transfer at least a portion of the remaining solution to succeeding stages of said first set of stages and towards a second endstage;  
utilizing only work generated heat from the corresponding stages of said second set of stages to ebullate a portion of said dilute solution in said succeeding ones of said first set of stages by indirect heat exchange;  
introducing a flow of concentrated solution into said second endstage of said first set of stages;  
returning the resulting solvent vapor to said first endstage through said turbines to thereby furnish work;  
returning from said succeeding stages to said first endstage of said first set of stages, a resulting concentrated solution having an amount of said dissolved material equal to the amount initially introduced in said first endstage, and exiting said concentrated solution from said first endstage of said first set of stages;  
introducing said returned resulting vapor from said first endstage of said first set of stages through a compressor and into a corresponding first endstage of said second set of stages;  
removing said work generated heat from said vapor in said first endstage of said second set of stages by indirect heat exchange to said corresponding first endstage of said first set of endstages so as to condense at least a portion of said vapor;  
transferring at least a portion of the remaining vapor through said compressors to succeeding stages of said second set of stages and towards a second endstage thereby absorbing work, while removing work generated heat by indirect heat exchange at each said stage to the corresponding stages of said first set of stages so as to condense said vapor; and  
returning from said succeeding stages of said second set of stages to said first endstage of said second set of stages, said condensed solvent vapor, and exiting said condensed solvent vapor from said first endstage of said second set of stages.

4,284,481

## METHOD OF FABRICATING A METALLIC HERMETIC SEALING COVER FOR A CONTAINER

Norman Hascoe, 791 Weaver St., Larchmont, N.Y. 10538

Division of Ser. No. 929,836, Jul. 31, 1978, Pat. No. 4,243,729.

This application Apr. 24, 1980, Ser. No. 143,458

Int. Cl.<sup>3</sup> C25D 5/10, 7/06

U.S. Cl. 204-27

5 Claims



1. The method of fabricating a metallic hermetic sealing cover for a container comprising:  
plating a strip of base metal with a material comprising preponderantly a precious metal to a fraction of the ultimate required minimum surface plating thickness;  
dividing said strip into cover elements of predetermined size; and  
plating said cover elements with said material to provide a resultant minimum thickness of surface plating substantially equal to the required minimum thickness.

4,284,482

## PALLADIUM TREATMENT PROCEDURE

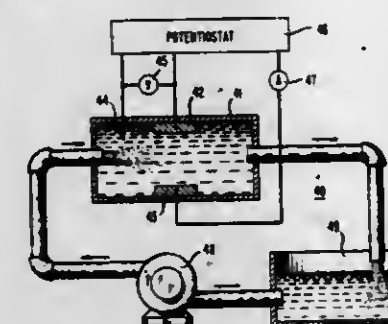
Joseph Yahalom, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 22, 1980, Ser. No. 189,092

Int. Cl.<sup>3</sup> C25F 1/02

U.S. Cl. 204-140

16 Claims



1. A process for making palladium surface and films ductile involving electrochemical oxidation in an aqueous electrochemical solution comprising the step of passing current through a cathode, said aqueous electrochemical solution and an anode characterized in that the palladium film comprises the anode and the anode is maintained at an anode electrode potential greater than the hydrogen electrode potential for one atmosphere pressure of hydrogen and the hydrogen-ion concentration of the aqueous electrochemical solution but less than the electrode potential determined by adding together first, the oxidation potential of palladium metal in the aqueous electrochemical solution and second, 20 percent of the difference between said oxidation potential of palladium and said hydrogen electrode potential.

4,284,483

## HYDROXYL-TERMINATED LIQUID POLYMERS AND PROCESS FOR PREPARATION THEREOF USING A MIXTURE OF AT LEAST ONE HYDROXYL-CONTAINING DISULFIDE AND AT LEAST ONE HYDROXYL-CONTAINING TRISULFIDE

Jack C. Gilles, Shaker Heights, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Division of Ser. No. 829,831, Sep. 1, 1977, Pat. No. 4,207,238.

This application Jan. 7, 1980, Ser. No. 110,284

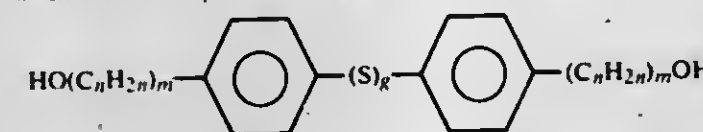
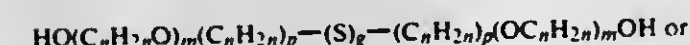
Int. Cl.<sup>3</sup> B01J 19/12

U.S. Cl. 204-158 R

34 Claims

1. A process for preparing a hydroxyl-terminated liquid polymer having an aliphatic polymeric backbone, said process comprising photo polymerizing

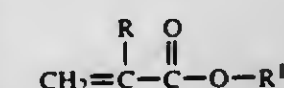
- (1) at least one vinylidene monomer having at least one terminal  $\text{CH}_2=\text{C}<$  group, together with
- (2) at least one hydroxyl-containing disulfide having the formula



wherein m is an integer from 0 to 10, n and p are integers from 1 to 10, and g is 2, and

- (3) at least one hydroxyl-containing trisulfide having the formulas above, except that g is 3, the amount of said trisulfide constituting from about 1 wt.% to about 25 wt.% of the total amount of said trisulfide and disulfide, wherein
- (4) said vinylidene monomer is selected from the group consisting of (a) monoolefins containing 2 to 14 carbon atoms, (b) dienes containing 4 to 10 carbon atoms, (c) vinyl and allyl esters of carboxylic acids containing 2 to 8 carbon atoms, (d) vinyl and allyl ethers of alkyl radicals

containing 1 to 8 carbon atoms, and (e) acrylic acids and acrylates having the formula



said R being hydrogen or an alkyl radical containing 1 to 3 carbon atoms, and  $\text{R}^1$  being hydrogen or an alkyl radical containing 1 to 18 carbon atoms, or an alkoxyalkyl, alkylthioalkyl or cyanoalkyl radical containing 2 to 12 carbon atoms.

4,284,484

## PREPARATION OF 1,3,5,7-TETRAACETAMIDO- AND 1,3,5,7-TETRAAMINOADAMANTANES

Gilbert P. Sollott, Plymouth Meeting, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 10, 1980, Ser. No. 167,572

Int. Cl.<sup>3</sup> B01J 19/12

U.S. Cl. 204-158 R

7 Claims

1. A process for preparing 1,3,5,7-tetraacetamidoadamantane, which comprises reacting 1,3,5,7-tetraiodoadamantane with acetonitrile and water in the presence of actinic radiation.

4,284,485

## PHOTOCURABLE COMPOSITIONS

Godwin Berner, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 5, 1979, Ser. No. 54,770

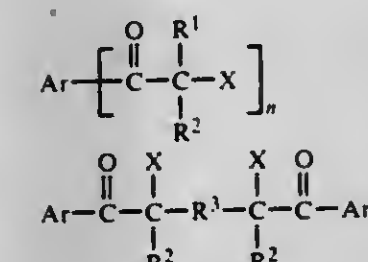
Claims priority, application Switzerland, Jul. 13, 1978, 7622/78

Int. Cl.<sup>3</sup> C08F 4/00, 2/50

U.S. Cl. 204-159.15

8 Claims

1. A photocurable composition consisting of (a) one or more ethylenically unsaturated, photocurable compounds, (b) at least one photo-initiator of the formula I or II



in which n is 1 or 2 and, if n is 1, Ar is unsubstituted phenyl or phenyl substituted by one or more of the radicals F, Cl, Br,  $\text{C}_1\text{-C}_{12}$  alkyl, -Oalk, phenyl, -Ophenyl, -Salk, -SCH<sub>2</sub>C<sub>6</sub>H<sub>4</sub>OH or -Sphenyl, or indanyl or tetrahydronaphthyl, and Alk is a lower alkyl radical having 1-4 C atoms, and if n is 2 Ar is  $\text{C}_6\text{-C}_{12}$  arylene or a group -phenylene-T-phenylene-, in which T is -O-, -S-, -CH<sub>2</sub>- or -CH<sub>2</sub>CH<sub>2</sub>-, X is one of the groups -NR<sup>4</sup>R<sup>5</sup>, -OR<sup>6</sup> or -OSiR<sup>7</sup>(R<sup>8</sup>)<sub>2</sub>, R<sup>1</sup> is unsubstituted  $\text{C}_1\text{-C}_8$  alkyl or  $\text{C}_1\text{-C}_8$  alkyl substituted by -OH, Oalk,  $\text{C}_2\text{-C}_8$  acyloxy, -NR<sup>4</sup>R<sup>5</sup>, -COOalk or -CN, or  $\text{C}_3\text{-C}_4$  alkenyl,  $\text{C}_5\text{-C}_6$  cycloalkyl or  $\text{C}_7\text{-C}_9$  phenylalkyl, R<sup>2</sup> has one of the meanings defined for R<sup>1</sup> or together with R<sup>1</sup> is  $\text{C}_2\text{-C}_8$  alkylene or  $\text{C}_3\text{-C}_9$  oxa- or aza-alkylene, R<sup>3</sup> is a direct bond,  $\text{C}_1\text{-C}_6$  alkylene,  $\text{C}_2\text{-C}_6$  oxa-alkylene,  $\text{C}_2\text{-C}_6$  thia-, S-oxothia- or S-dioxothiaalkylene, phenylene, diphenylene or a group -phenylene-T-phenylene-, or together with the two substituents R<sup>2</sup> and the two C atoms to which these substituents are bonded forms a cyclopentane, cyclohexane, endomethylenecyclohexane or cyclohexane ring, R<sup>4</sup> is  $\text{C}_1\text{-C}_{12}$  alkyl or  $\text{C}_2\text{-C}_4$  alkyl which is substituted by -OH or Oalk, R<sup>5</sup> is  $\text{C}_1\text{-C}_{12}$  alkyl or  $\text{C}_2\text{-C}_4$  alkyl which is substituted by OH or Oalk, or together with R<sup>4</sup> is  $\text{C}_4\text{-C}_5$  alkylene, which can be interrupted by -O- or -NR<sup>9</sup>-, R<sup>6</sup> is hydrogen,  $\text{C}_1\text{-C}_{12}$  alkyl,  $\text{C}_1\text{-C}_8$  alkyl substi-



tuted by Cl, Br, OH, OAlk, SAlk, C<sub>2</sub>-C<sub>8</sub> acyloxy, —COOAlk, —CONHAlk, —CON(Alk)<sub>2</sub> or CN, or C<sub>3</sub>-C<sub>5</sub> alkenyl, cyclohexyl, benzyl, unsubstituted phenyl or phenyl substituted by Cl or Alk, or 2-tetrahydropyranyl, R<sup>7</sup> and R<sup>8</sup> are identical or different and are C<sub>1</sub>-C<sub>4</sub> alkyl or phenyl and R<sup>9</sup> is C<sub>1</sub>-C<sub>4</sub> alkyl, —CH<sub>2</sub>CH<sub>2</sub>CN or —CH<sub>2</sub>CH<sub>2</sub>COOAlk, and (c) at least one light stabiliser from the category of the polyalkylpiperidine derivatives.

4,284,486

# SOLID POLE OXYGEN SENSOR AND ITS MANUFACTURING PROCESS

Hiroshi Shinohara, Okazaki; Yasuhiro Otsuka, Toyota; Hideo Kamiya, Toyota; Hiroshi Wakizaka, Toyota, and Toshinobu Furutani, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

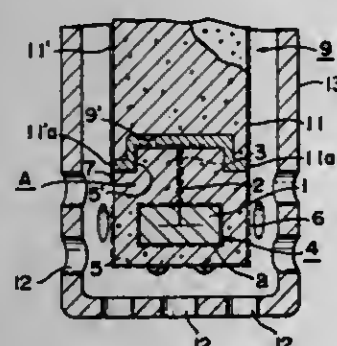
Filed Mar. 21, 1980, Ser. No. 132,415

Claims priority, application Japan, Sep. 22, 1979, 54-122348

Int. Cl.<sup>3</sup> G01N 27/58

U.S. Cl. 204—195 S

32 Claims



1. A process of manufacturing a solid pole oxygen sensor, said process comprising the steps of:

forming a solid pole by burying one end of a lead wire in a powder mixture and sintering it with the upper end of the wire exposed thereabove;

forming an internal electrode on the outside surface of said solid pole with said internal electrode electrically connected to said lead wire;

enclosing said solid pole in a solid electrolyte with the upper end of said lead wire connected to the outside surface of said solid electrolyte and sintering it, thereby constituting a column of solid electrolyte having a projection on the top side thereof and internally holding a solid pole;

forming an external electrode on the outside surface of said column, thereby completing an oxygen sensor element; forming on the side surface of a ceramic insulator with a recess formed in the bottom thereof, one electroconductive zone and another electroconductive zone being non-conductive to the former; and

attaching and joining said oxygen sensor element to said insulator in such a manner that said oxygen sensor element is attached to said insulator, with the projection mating with said recess so that said first electroconductive zone may be electrically connected to the upper end of said lead wire and said second electroconductive zone may be electrically connected to said external electrode.

17. A solid pole oxygen sensor comprising:

a lead wire;

a solid pole with one end of said lead wire buried therein, the other end of the wire being exposed;

an internal electrode on the outside surface of said solid pole and electrically connected to said lead wire;

a solid electrolyte enclosing said solid pole and being connected to the other end of said lead wire at its outer surface;

an external electrode on the outside surface of said solid electrolyte;

a ceramic insulator having formed thereon one electroconductive zone and another electroconductive zone spaced therefrom and nonconductive thereto;

a projection on the top of said solid electrolyte; a recess, of profile matching that of the projection, on the bottom of the ceramic insulator; said projection being fitted into said recess for joining the element and the insulator; and, the first electroconductive zone on the insulator is connected to the lead wire, and the second electroconductive zone is connected to the external electrode.

4,284,487

# OXYGEN ANALYZER PROBE

Lyle K. Barnes, Michigan City, Ind., and Richard C. Barringer, Morley, Mich., assignors to Milton Roy Company, St. Petersburg, Fla.

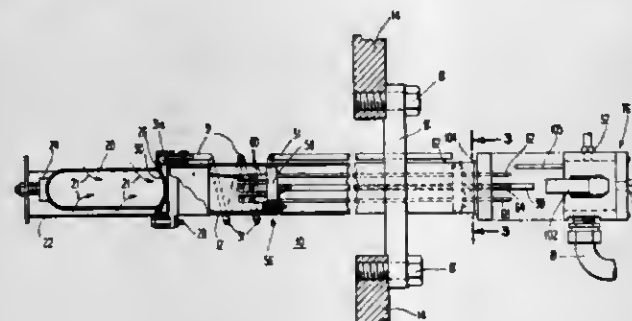
Continuation of Ser. No. 951,246, Oct. 13, 1978, abandoned.

This application May 27, 1980, Ser. No. 153,004

Int. Cl.<sup>3</sup> G01N 27/58

U.S. Cl. 204—195 S

11 Claims



1. An oxygen analyzer probe for use in situ in a flue gas stream of a furnace of the type having a housing with a first end adapted to be situated in said furnace and a second end adapted to be external thereto, a solid electrolytic oxygen sensor adjacent said first end of said housing, a first electrode on one side of said sensor, a second electrode on the other side of said sensor, a first noble metal lead connected to said first electrode and a second noble metal lead connected to said second electrode, the improvement comprising:

a terminal block within said housing, said terminal block being more proximate to said first than to said second end, said first and said second noble metal leads being releasably connected to said terminal block;

first and second intermediate leads connected to said first and said second noble metal leads respectively at said terminal block, said first and said second intermediate leads being comprised of a metal dissimilar to said first and said second noble metal leads, and

an electrical connector external to said housing, said intermediate leads being electrically connected to an oxygen analyzer circuit at said connector.

4,284,488

# SACRIFICIAL ANODE ASSEMBLY

Robert Brittain, Walsall, and Andrew L. Hickman, Wombourne, both of England, assignors to Global Cathodic Protection, Ltd., Salop, England

Filed Mar. 31, 1980, Ser. No. 135,764

Claims priority, application United Kingdom, Mar. 30, 1979, 11327/79

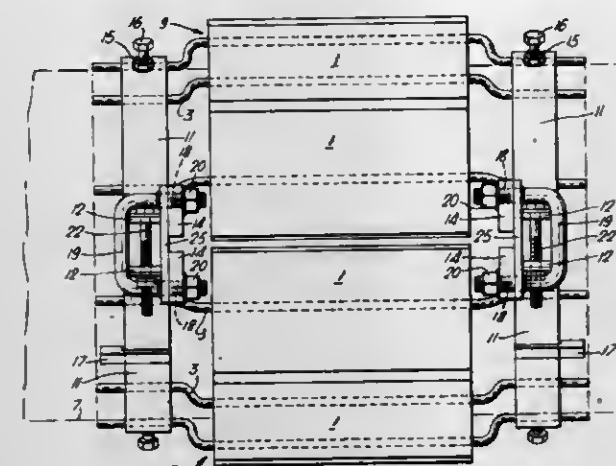
Int. Cl.<sup>3</sup> C23F 13/00

U.S. Cl. 204—197

6 Claims

1. A sacrificial anode for use in cathodic protection, the said sacrificial anode having two parts, each of the parts including two mounting straps, an anode body and an electrically conducting member connected between the mounting straps, the anode body being electrically connected to and mechanically mounted upon the electrically conducting member, a hinge member connecting together a strap of one of the parts and a corresponding strap of the other of the parts, the said straps each being pivotally connected to the hinge member at a re-

spective separate pivot point, whereby the said parts can be hingedly opened in a jaw-like manner while being held together in order to enable them to be arranged about a member



to be protected, and means to clamp together a strap associated with one of the parts and a corresponding strap associated with the other of the parts.

4,284,489

# POWER TRANSFER NETWORK

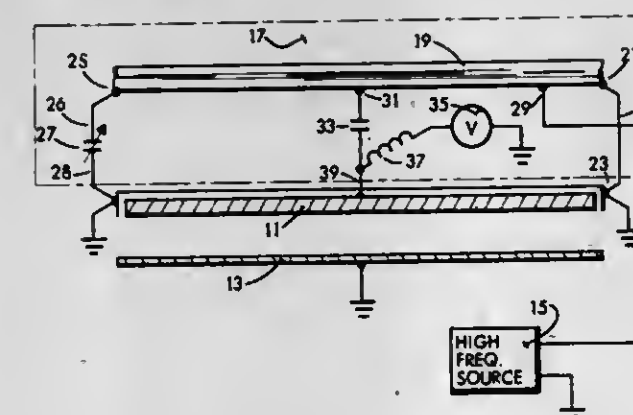
Harold J. Weber, Sherborn, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Filed Sep. 26, 1978, Ser. No. 945,805

Int. Cl.<sup>3</sup> C23C 15/00

U.S. Cl. 204—298

17 Claims



1. Apparatus for supplying power efficiently to the discharge plasma load in a sputtering machine by means of r.f. energy of a predetermined frequency in the megahertz range and wherein there is an electrode configuration including target means having a relatively large area and metallic surroundings which are grounded, the stray capacitance of the target means to the surroundings being greater than the order of about 200 picofarads whereby the plasma load has a resistance parallel with the stray capacitance which is substantially greater than the capacitive reactance of the stray capacitance, said apparatus including:

A. a source of megahertz r.f. power having a relatively low impedance at its output of the same order as the capacitive reactance of the stray capacitance,

B. a load network between the source and the electrode configuration, said configuration including said target means and substrate supporting anode means at substantially ground potential, said load network comprising

i. a parallel resonant circuit including a single inductor autotransformer which is formed of conductive tubing, ii. a first portion of the autotransformer including at most all of the inductor and being connected to a variable tuning capacitor having one plate thereof connected to one end of the first portion, the other plate connected to ground potential and the other end of the first portion connected to ground potential,

iii. a second portion of the autotransformer including less

than all of the inductor and defined by an output tap on the inductor and the end of the first portion connected to ground potential, means including a d.c. blocking element and a coupling line extending from said output tap to said target means whereby the stray capacitance is connected in parallel with said second portion of the autotransformer,

iv. said parallel resonant circuit being in resonance at the source frequency with the capacitive reactance of the tuning capacitor and stray capacitance balancing the inductive reactance of that part of the transformer participating in the parallel resonant circuit, and

C. an input tap on the inductor and the source being coupled to said input tap, the location of said input tap relative to the inductor being chosen to provide proper impedance match between the source and the parallel resonant circuit, the location of the output tap being chosen to provide the proper impedance match for the plasma of the sputtering machine when operating at a voltage for effective sputtering.

4,284,490

# R.F. SPUTTERING APPARATUS INCLUDING MULTI-NETWORK POWER SUPPLY

Harold J. Weber, Sherborn, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

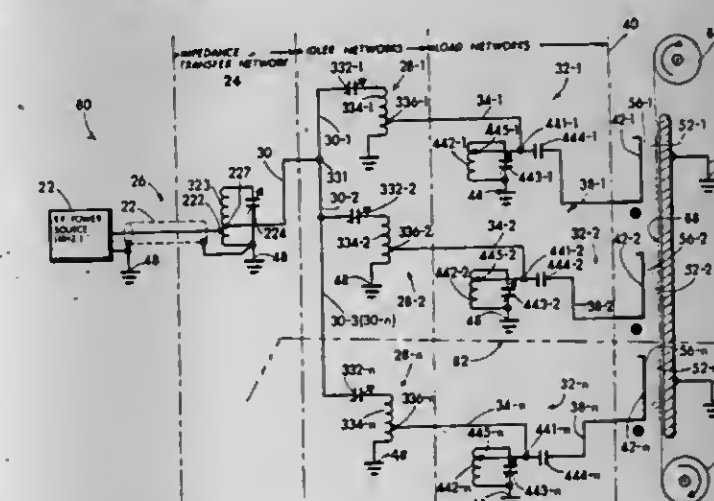
Continuation-in-part of Ser. No. 945,805, Sep. 28, 1978. This

application Aug. 21, 1979, Ser. No. 66,917

Int. Cl.<sup>3</sup> C23C 15/00

U.S. Cl. 204—298

50 Claims



1. Apparatus for supplying power efficiently to the discharge plasma load in a sputtering chamber by means of r.f. energy of a predetermined frequency in the megahertz range which comprises:

A. a source of megahertz r.f. power having an impedance of the order of 50 ohms at its output terminals,

B. electrodes of the type adapted to function as cathode means and anode means during the sputtering process to produce sputtering plasma between them,

C. a pressure chamber including grounded metallic walls having said electrode means mounted therein and including grounded metallic structure surrounding and in relatively close proximity to a substantial portion of at least said cathode means for confining said plasma when generated, the input impedance of said electrode means including deleterious power transfer effects produced by the said surrounding structure and the metallic walls during sputtering operation of said apparatus, said effects being brought about principally by a first capacitive reactance parallel with said plasma having an impedance ohmage of the same order as that of said source impedance but which is a substantial number of times less than the impedance of the resistive component of said plasma, the electrodes being electrically coupled to said plasma during operation of said apparatus,



D. said apparatus including means to provide for transporting a substrate member relative to said anode means within said chamber between the anode means and the cathode means so that the plasma will sputter material derived from said cathode means upon said substrate member during operation of said apparatus and

E. means for coupling said source to said electrodes to transfer power from said source to said plasma which comprises:

- i. a string of three inductor and capacitor combination networks each being resonant at the frequency of said source and being connected in series between said source and electrodes, the first network following the source being an impedance transfer network effective to raise the voltage and impedance of the source, the second network following the impedance transfer network being an idler network, said idler network being effective substantially to raise the voltage of the impedance transfer network and
- a. having an output terminal at a certain voltage and impedance and
- b. a coupling line extending from said output terminal to said cathode means so that the output terminal voltage of said idler network is applied to said coupling line at the impedance of said output terminal of said idler network,

the third network being a load network also connected to said coupling line and whose total capacitive reactance participating in the resonance condition of said load network includes the said first capacitive reactance parallel with said plasma,

- ii. at least the second and third network inductors being transformers,
- iii. each of the networks being constructed and arranged to have a ratio of  $Q/Q_L$  which is at least of the order of ten to provide efficient power transfer under load.

4,284,491

## APPARATUS FOR ELECTROPHORESIS

Olof Vesterberg, Saltsjö-Duvnäs, Sweden, assignor to C. Desaga GmbH Nachf. Erich Fecht, Heidelberg, Fed. Rep. of Germany

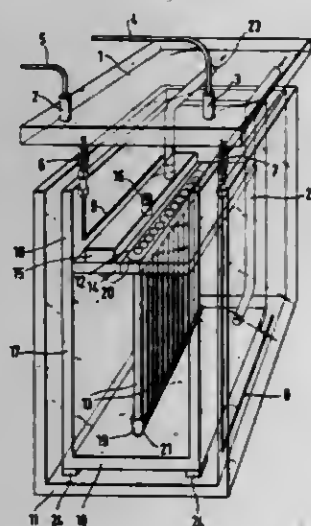
Filed Nov. 13, 1979, Ser. No. 94,307

Claims priority, application Sweden, Nov. 13, 1978, 7811719; Fed. Rep. of Germany, Oct. 27, 1979, 2943541

Int. Cl.<sup>3</sup> B01D 13/02, 57/02

U.S. Cl. 204—299 R

10 Claims



1. A device for conducting electrophoresis for the quantitative determination and/or preparation of chemical substances, said device comprising:

- first and second electrode vessel means for containing buffer solution and adapted to be connected to poles of a direct current source;
- a plurality of substantially vertical channel means for containing carrier medium and having opposite ends opening

into said first and second electrode vessel means, first ends of said channel means commonly opening into a cavity; means for sealing, in an airtight manner, said cavity and thereby said first ends of said channel means from the interior of the respective said electrode vessel means; and means for connecting said cavity to a source of overpressure or underpressure.

4,284,492

## REVERSE OSMOSIS ELECTRODIALYSIS COMBINED MEANS

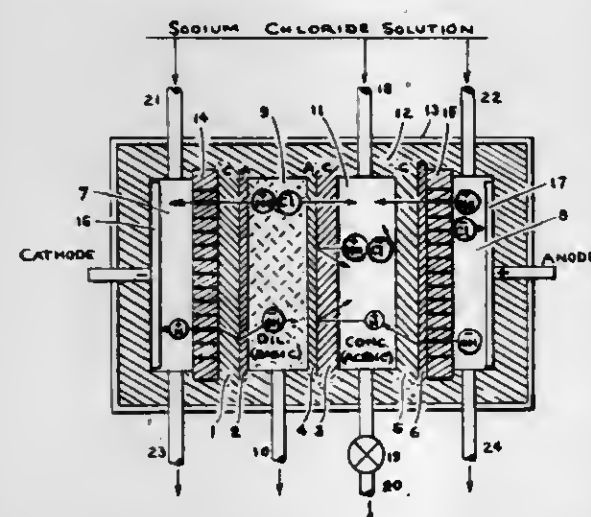
William S. Karn, 518 Dickson Ave., Pittsburgh, Pa. 15202

Filed Dec. 5, 1979, Ser. No. 100,486

Int. Cl.<sup>3</sup> B01D 13/02

U.S. Cl. 204—299 R

3 Claims



1. The combination of membrane and fluid flow and electric current means in a hydraulic pressure driven membrane type ion separatory means wherein the improvement comprises that each of said membranes is a cationic-anionic ion-exchange membrane comprising a single sheet of homogeneous resin with one side of said sheet comprising anion exchange material to form an anion exchange layer and the other side of said sheet comprising cation exchange material to form a cation exchange layer.

4,284,493

## ELECTROCOATING APPARATUS

Leo L. Case, Troy, and Michael A. Koltuniak, Warren, both of Mich., assignors to Elcoat Systems, Inc., Warren, Mich.

Filed Dec. 18, 1979, Ser. No. 104,876

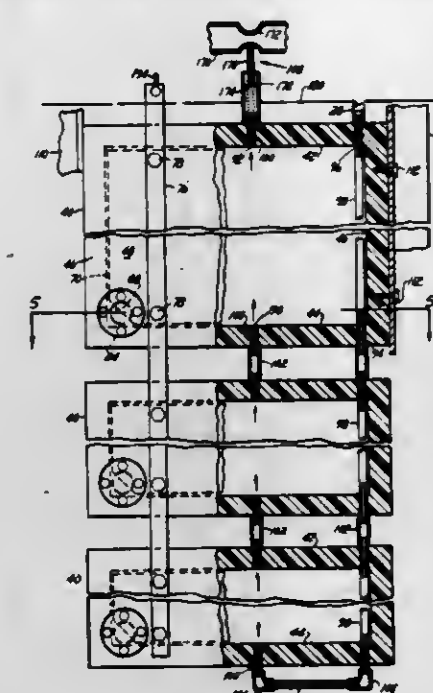
Int. Cl.<sup>3</sup> C25D 11/22

U.S. Cl. 204—299 EC

17 Claims

1. In an electrocoating apparatus, a membrane box assembly comprising a plurality of identical membrane boxes, each box having top and bottom walls, side walls and a back wall, each box having a membrane forming the front wall thereof, an electrode plate secured to the inner surface of said back wall, an inlet opening in said bottom wall and an outlet opening in said top wall, aligned openings in said top and bottom walls and a supply tube extending between said aligned openings, support members for supporting two or more of said boxes in vertically stacked relation, piping connecting the lower end of the supply tube of an upper box with the upper end of the supply tube of the next lower box of said assembly, additional piping connecting the outlet opening of a lower box with the

inlet opening of the next upper box of said assembly, and piping disposed exteriorly of the lowermost box of said assembly and



communicating the lower end of its supply tube with its inlet opening.

4,284,494

## CONTROL OF EMISSIONS IN FCC REGENERATOR FLUE GAS

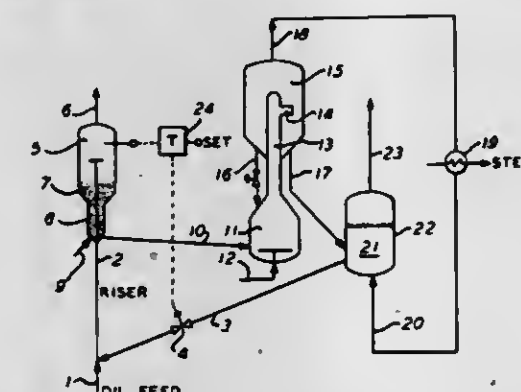
David B. Bartholic, Watchung, and John W. Byrne, Saddle Brook, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed May 1, 1978, Ser. No. 901,346

Int. Cl.<sup>3</sup> C10G 11/14; B01J 37/12

U.S. Cl. 208—164

5 Claims



1. In a process for catalytic cracking of a sulfur containing hydrocarbon charge by contacting said charge at cracking temperature with a circulating inventory of cracking catalyst which inventory includes a component capable of sorbing oxides of sulfur in an oxidizing atmosphere and of reaction in a reducing atmosphere to release sulfur as hydrogen sulfide whereby the catalyst acquires an inactivating carbonaceous deposit containing sulfur, separating vaporous products of reaction including hydrogen sulfide from circulating catalyst inventory containing said deposit, regenerating the so separated inventory by contact with air at a temperature to burn said carbonaceous deposit thus generating oxides of carbon and sulfur and regenerating the catalyst, separating products of combustion from regenerated catalyst and returning regenerated catalyst to renewed contact with hydrocarbon charge with reduction of sulfur associated with the regenerated catalyst;

the improvement which comprises again contacting said products of combustion and said regenerated catalyst at a temperature substantially below the temperature of regeneration to thereby induce sorption by said catalyst inven-

tory being returned to contact with said charge of an amount of sulfur oxides greater than that sorbed during said regeneration, and to return said regenerated catalyst to contact with said charge at a temperature substantially below the temperature of said regeneration.

4,284,495

## COATING APPARATUS AND METHOD

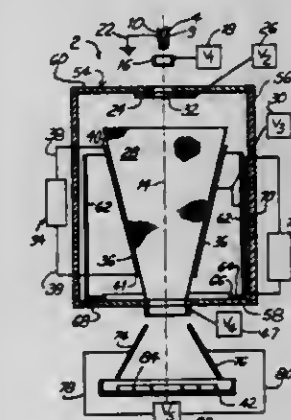
William A. Newton, Suite 238, 300 East Bldg., 300 31st St., North, St. Petersburg, Fla. 33713

Continuation-in-part of Ser. No. 101,758, Dec. 10, 1979. This application Feb. 15, 1980, Ser. No. 121,895

Int. Cl.<sup>3</sup> B07C 5/342

U.S. Cl. 209—3.1

21 Claims



1. An evaporator apparatus for coating individual particles with a coating material, the apparatus comprising: means for supplying a liquid mixture of said particles, said coating material and a carrier liquid; droplet forming means for forming a plurality of liquid droplets from said liquid mixture; charging means for electrically charging said droplets proceeding from said droplet forming means; temperature regulating means for controlling the temperatures within a predetermined spacial region; and electrode means for controlling the rate of movement of said evaporating droplets to allow completion of the evaporation of said carrier liquid while said droplets are within said predetermined region; whereby the evaporation of said carrier liquid encapsulates said particles with said coating material.

4,284,496

## PARTICLE GUIDING APPARATUS AND METHOD

William A. Newton, Suite 238, 300 East Bldg., 300 31st St., North, St. Petersburg, Fla. 33713

Filed Dec. 10, 1979, Ser. No. 101,758

Int. Cl.<sup>3</sup> B07C 9/00

U.S. Cl. 209—3.3

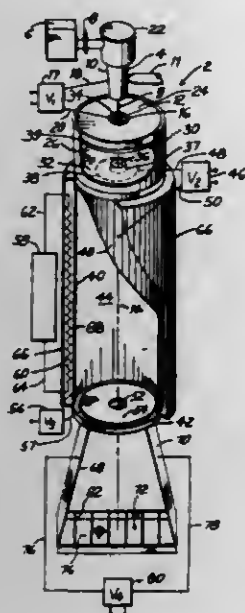
50 Claims

1. In a particle analyzer including droplet forming means for forming a plurality of liquid droplets, having individually isolated particles contained therein, and for initially providing the droplets with a substantially uniform velocity in a substantially linear trajectory, and means for charging the droplets, the improvement comprising:

- evaporating means for evaporating the liquid of the droplets which surrounds the particle therein;
- electrode means for generating an electrostatic field for positioning the particles substantially along a center axis and for moving the particles along said center axis at a sufficient rate of movement to allow completion of the



evaporation of the droplets within a predetermined region;



detection means for measuring the particle's characteristics after completion of the evaporation of the droplets.

4,284,497

#### ROTOR FOR SEDIMENTATION FIELD FLOW FRACTIONATION

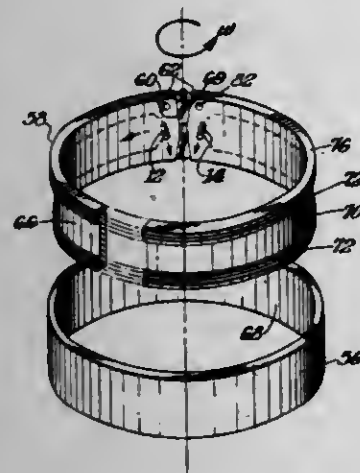
John W. Grant, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 29, 1980, Ser. No. 125,850

Int. Cl.<sup>3</sup> B03B 5/00

U.S. Cl. 209—155

4 Claims



1. An apparatus for separating particulates suspended in a fluid medium according to their effective masses, said apparatus having an annular cylindrical channel with a cylinder axis, means for rotating said channel about said axis, means for passing said fluid medium circumferentially through said channel, and means for introducing said particulates into said medium for passage through said channel, said channel having an outer support ring and an inner ring separated at a point along its circumference mating with said outer ring to define said channel, the improvement wherein:

said inner ring has a radial thickness such that the distorting effects of centrifugal force on said inner ring are about balanced by the centrifugal pressure of said fluid medium.

4,284,498

#### APPARATUS FOR FIELD FLOW FRACTIONATION

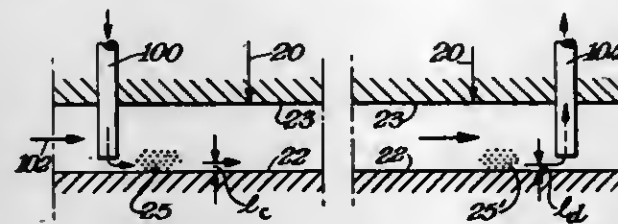
John W. Grant, Chadds Ford, Pa.; Joseph J. Kirkland, Wilmington, and Wallace W. Yau, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 29, 1980, Ser. No. 125,852

Int. Cl.<sup>3</sup> B03B 5/00

U.S. Cl. 209—155

11 Claims



1. An apparatus for separating particulates suspended in a fluid medium according to their effective masses, said apparatus having an annular cylindrical channel with a cylinder axis, means for rotating said channel about said axis, means for passing said fluid medium circumferentially through said channel, and means for introducing a sample of said particulates into said medium for passage through said channel, the improvement wherein said channel is generally rectangular in cross section, having radially inner and outer walls and inlet and outlet ends, and has an inlet positioned to introduce said particulates approximately at the radial distance 1 inwardly from the outer wall, where 1 is the point of equilibrium between the average force field exerted on each particulate by the rotational centrifugal force and by the normal opposing diffusion forces due to Brownian motion.

4,284,499

#### APPARATUS FOR THE FLOAT CONCENTRATION OF ORE

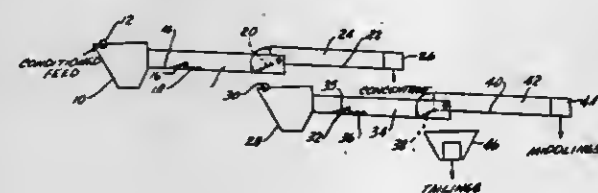
Brij M. Moudgil, New York, N.Y., and Booker W. Morey, Portola Valley, Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 897,778, Apr. 19, 1978, abandoned. This application Nov. 28, 1979, Ser. No. 98,363

Int. Cl.<sup>3</sup> B03D 1/02, 1/14

U.S. Cl. 209—166

11 Claims



2. Apparatus for the concentration of ore comprising:

- (a) a downwardly sloping table;
- (b) means for feeding a slurry of ore onto a higher end of said downwardly sloping table;
- (c) aerator means disposed along the downwardly sloping table for aerating the ore slurry as the ore slurry flows along the downwardly sloping table;
- (d) disperser means disposed in an operative relationship with said aerator means for dispersing ore particles, flowing within the ore slurry and near a surface of said downwardly sloping table, upwardly from said surface and over said aerator means; and
- (e) splitter means disposed proximate a lower end of said downwardly sloping table for separating the ore slurry into a float concentrate and a non-float fraction.

4,284,500

#### IN-LINE PRESSURIZED WET SCREENING APPARATUS

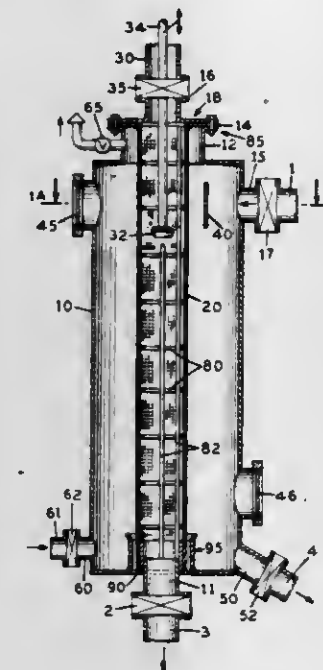
David R. Keck, Seabrook, Tex., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Jan. 18, 1980, Ser. No. 113,258

Int. Cl.<sup>3</sup> B07B 1/18, 1/50

U.S. Cl. 209—250

9 Claims



1. A pressurized in-line wet screening apparatus for separating oversize particles from a fluid slurry comprising:

- a rigid, hollow body member capable of withstanding the pressure of the fluid slurry, the body member having a valved slurry inlet port and a slurry outlet port, each port adapted to mate with slurry conduit means;
- a washer access port opposite from the slurry outlet port;
- a hollow, open-ended screen assembly fixedly mounted within the body member between the slurry outlet port and the washer access port and in axial alignment with the washer access port;
- a valved oversize particle discharge port at the lowermost end of the body member adapted to mate with oversize particle conduit means; and
- retractable backwasher means externally mounted on the body member in axial alignment with the washer access port and the screen assembly, where the backwasher means comprises a fluid discharging spray head adapted to pass from a retracted position outside of the body member, through the washer access port and axially through the interior of the screen assembly during backwashing to dislodge and wash out accumulated oversize particles, and then to withdraw to its retracted position.

4,284,501

#### CONTROL APPARATUS FOR PURIFYING ACCUMULATED CONDENSATE

Friedrich Schön, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Aug. 28, 1980, Ser. No. 182,231

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2935106

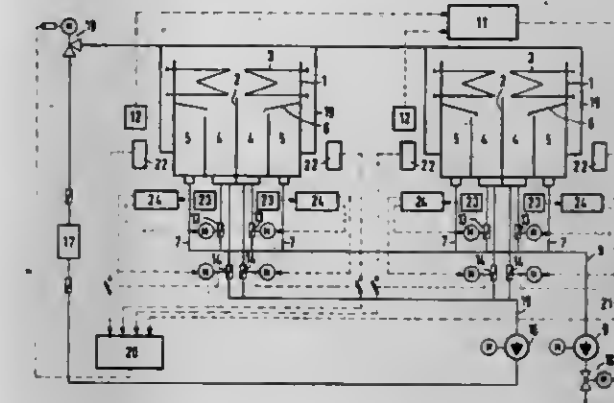
Int. Cl.<sup>3</sup> C02B 1/00

U.S. Cl. 210—96.1

2 Claims

1. Control apparatus for the purification of collected condensate, comprising condensers, at least two collecting chambers having open tops and at least two collecting chambers having covered tops for said condensers, a feed line having connections to said covered collecting chambers and connections for receiving run-off from said open collecting chambers, a first set of shut-off valves disposed in said feed line connections to said open collecting chambers, a main condensate pump disposed in said feed line, a purification line having

connections for receiving run-off from said open collecting chambers and leading to at least one covered collecting chamber, a second set of shut-off valves disposed in said purification line connections to said open collecting chambers, a purification pump disposed in said purification line, a filter arrangement disposed in said purification line, means for measuring conductivity of condensate in at least one of said open collect-



ing chambers and for maintaining one of said first and second sets of shut-off valves in an open position while the other of said sets is in a closed position depending on the measured conductivity, means for measuring condensate level in said open collecting chambers, and maximum selection means connected to said condensate level measuring means for adjusting flow rate through said purification line depending on condensate level in said open collection chambers.

4,284,502

#### APPARATUS FOR TREATING UREMIC PATIENTS

Peter Kramer, Goettigen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

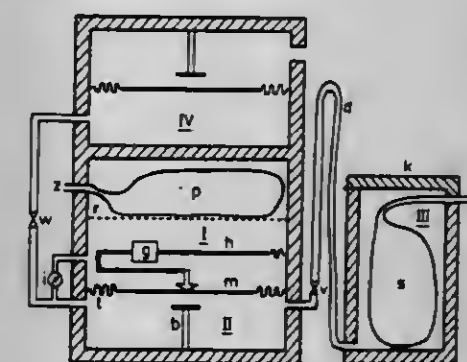
Continuation of Ser. No. 938,759, Sep. 1, 1978, abandoned. This application Oct. 24, 1979, Ser. No. 88,065

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739350

Int. Cl.<sup>3</sup> B01D 31/00; A61M 1/03

U.S. Cl. 210—98

5 Claims



1. Apparatus comprising means for treating the blood of uremic patients constructed and arranged to separate freshly withdrawn blood by means of a filter into plasma water and residual blood, the plasma water being passed into an exchange device from which a substitution solution is returned into the blood circulation after combination with the residual blood, said exchange device comprising a closed container which is completely filled with fluid and can be closed air-tight, said container further comprising separate enclosed chamber I and enclosed chamber II, which are separated from one another by a movable or flexible partition, chamber I being filled with fluid and being constructed and arranged to take up additional plasma water, and chamber II being filled with substitution solution, said exchange device further comprising means to exert pressure by weight on said partition so as to create a



suction in chamber I and a corresponding pressure in chamber II.

4,284,503

# DEVICE FOR AERATING SEWAGE OR SEWAGE-SLUDGES

Theo Stähler, Mühlenhof, 6253 Hadamar-Niederzeuzheim, Fed. Rep. of Germany

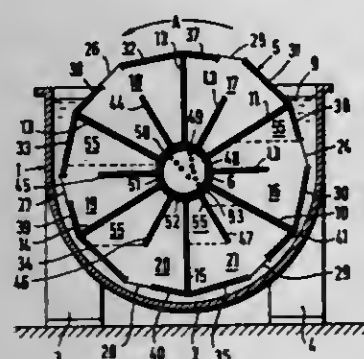
Filed Mar. 24, 1980, Ser. No. 132,905

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1979, 2911975

Int. Cl.<sup>3</sup> C02F 3/08

U.S. Cl. 210-150

18 Claims



1. A device for aerating sewage or sewage-sludges for the purpose of converting any harmful substances contained therein into harmless substances, said device comprising a sludge-aerating basin, a hollow element positioned to rotate therein about its axis, said hollow element being spaced from the inner wall of said basin; a portion of said hollow element protruding above sewage level when the basin is full, said hollow element having partitions directed parallel to and substantially and radially outwardly from the axis of rotation forming outwardly-open reaction chambers, the outer ends of said partitions continue approximately peripherally in both directions forming front and rear covering webs adjacent their outer portions having slotted apertures therebetween, with the front covering webs extending downwardly at the point where the partition dips beneath sewage surface, and the rear covering webs extending downwardly at the point where the partition emerges from beneath the sewage surface, said reaction chambers having baffle-plates directed radially from, and parallel with, the axis of rotation, for guiding air, the air effervescing around said baffle plates and being retained in said reaction chambers.

4,284,504

# CENTRIFUGAL SPIN-ON FILTER OR SEPARATOR AND METHOD OF MAKING AND ASSEMBLING THE SAME

Willis R. Alexander, Hagerstown, Md., and Robert J. Shaltis, Hastings, Mich., assignors to Hastings Manufacturing Company, Hastings, Mich.

Filed Oct. 9, 1979, Ser. No. 82,548

Int. Cl.<sup>3</sup> B04B 9/00

U.S. Cl. 210-168

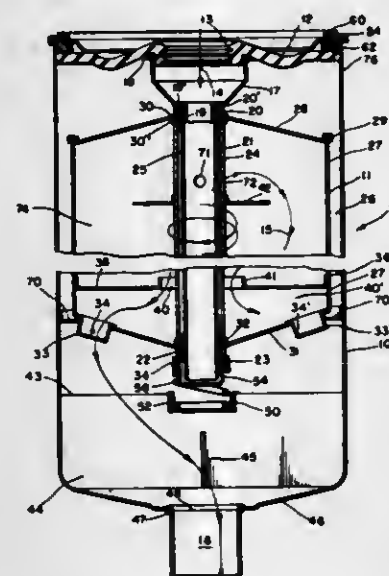
14 Claims

1. A centrifugal separator cartridge comprising a cylindrical spin-on housing having opposite inlet and outlet ends and an intermediate cylindrical wall connected to said ends, a screw threaded inlet through said inlet end for liquid to be treated, an outlet through said outlet end for treated liquid, a hollow inner shaft non-rotatably mounted longitudinally within said spin-on housing, first adapter means separably connecting one end of said inner shaft with the inlet of said housing for passage of liquid through said inlet into said shaft, longitudinally spaced bearing members encompassing the exterior of said inner shaft adjacent its opposite ends,

a centrifugal separator rotor unit within said housing rotatably mounted by said bearing members on said inner shaft, said rotor unit comprising a cylindrical rotor casing having opposite end covers provided with aligned end open-

ings, a sleeve mounted in said opposite end covers and extending through said end openings to rotate with said rotor casing, said bearing members being fitted in opposite ends of said sleeve and spacing said sleeve from said inner shaft, the inner shaft and bearing members projecting longitudinally beyond the end openings in the rotor casing and covers, said rotor unit being supported upon said inner shaft in longitudinally spaced relationship with inlet and outlet ends of said housing, the inner shaft and sleeve having coacting peripheral openings adjacent the inlet ends thereof to permit the flow of liquid directly into the interior of the rotor casing, said rotor unit having outlet liquid jet means providing liquid flow between the interior of the rotor unit and the interior of the housing whereby jet reaction forces rotate the rotor unit,

a second adapter capping the end of said inner shaft opposite its inlet end,



a spring supporting pedestal secured within said housing and longitudinally spaced between said rotor unit and the outlet of the housing, a spring supporting recess within said pedestal, and spring means having one end seated in said recess and another end pressed against said second adapter means and urging said second adapter means, said rotor unit, said inner shaft and first adapter means together toward said inlet end of said housing where said first adapter means is pressed against the inlet end of said housing;

said spring supporting pedestal having liquid passage means therethrough for liquid flow from said rotor unit to said housing outlet, and

said first adapter being a funnel-shaped member having an enlarged end seated against the inlet end of said housing about said inlet and a reduced neck portion fitting into the inlet end of said inner shaft.

4,284,505

# FLEXIBLE MEMBRANE FILTER ASSEMBLY

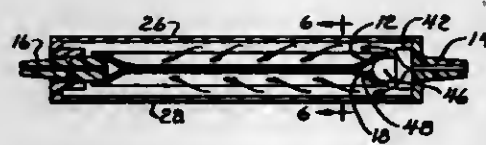
J. Lee Pope, Jr., Baltimore, Md., and James W. Scott, Lindenhurst, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 29, 1979, Ser. No. 89,601

Int. Cl.<sup>3</sup> B01D 31/00

U.S. Cl. 210-236

9 Claims



1. A filter assembly comprising:

4,284,507

# KNIT PILE FILTER

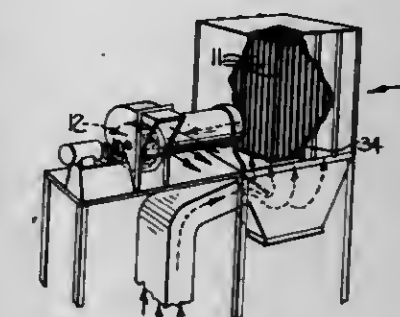
Frank T. Beane, Rte. #7, Highway #49, Concord, N.C. 28025

Continuation-in-part of Ser. No. 904,485, May 10, 1978. This application May 9, 1979, Ser. No. 37,286

Int. Cl.<sup>3</sup> B01D 23/04, 29/14, 46/02

U.S. Cl. 210-435

15 Claims



housing means defining an interior fluid passageway and inlet and outlet opening means communicating therewith; a pair of spaced-apart facing co-extensive microporous filter membranes carried within said fluid passageway in parallel flow relationship to filter liquid passing therealong at a selected pressure;

said membranes having a modulus of elasticity to maintain said membranes spaced from each other at a selected normal flow pressure and to permit said membranes to flex to a mutually supporting position, where each membrane substantially fully rests against the other membrane at a flow pressure higher than said selected flow pressure, said membranes being spaced apart a selected distance which is sufficiently small that the stress in each of said flexed membranes does not exceed its elastic limit when resting substantially fully against said other membrane.

4,284,506

# BIOMEDICAL DEVICES

Marvin T. Tetenbaum, Lawrenceville, and Barton C. Case, Hightstown, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,571

Int. Cl.<sup>3</sup> B01D 31/00; B29C 27/14

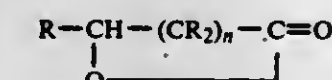
U.S. Cl. 210-321.4

10 Claims

1. In a separatory device capable of use in biomedical applications wherein at least one separatory membrane is secured in a housing, in a manner sufficient to perform the selected biomedical function, by means of a flexible cured polyurethane composition provided by reacting a first component comprising an NCO-terminated prepolymer with a second component comprising at least one polyol, the improvement comprising using as said polyurethane composition the reaction product of:

- at least one of said NCO-terminated prepolymers, and
- at least one hydroxyl-terminated lactone polyester having an average molecular weight of between about 200 and about 1000 comprising the reaction product of:

- at least one lactone represented by the structural formula:



wherein n is an integer which can vary from 1 to about 10, and R is selected from the group consisting of hydrogen, alkyl, cycloalkyl, and alkoxy groups, having from about 1 to about 6 carbon atoms; and

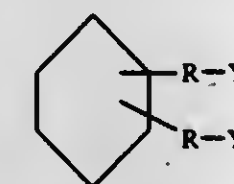
- at least one saturated difunctional polyol selected from the group consisting of

- glycols represented by the structural formula:



wherein n is an integer which can vary from about 0 to 12, and R' is selected from the group consisting of hydrogen and an alkyl group having from about 1 to about 6 carbon atoms; and

- cycloaliphatic polyols represented by the structural formula:



wherein R is an alkyl group having from about 1 to about 6 carbon atoms and Y is a primary hydroxyl group.

11. In a bag filter apparatus having a fabric bag for filtering material from flowing fluid, housing means for enclosing and supporting said bag, and circulating means including inlet and outlet means for directing a flow of fluid through said housing means and said bag, the improvement wherein said bag comprises a tube of circularly knitted crimped, synthetic yarn having a denier in the range of from about 70 to about 300 and knit into stitches defining a ground and stitches defining terry loop pile extending from the ground to a predetermined height, the stitches defining open areas in the range of from about 1 micron to about 100 microns, and the tube being closed at one end.

4,284,508

# METHANE PRODUCTION BY ATTACHED FILM

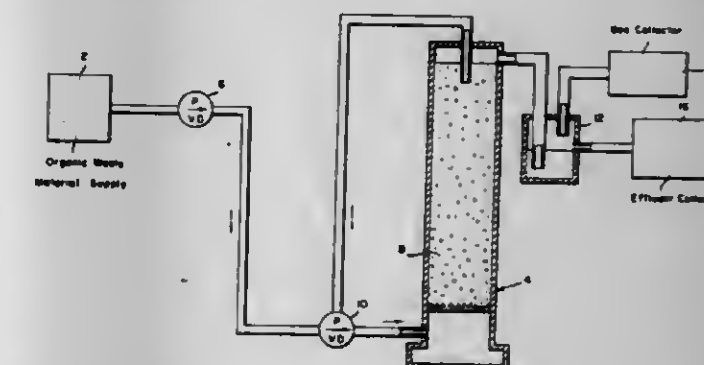
William J. Jewell, 202 Eastwood Ave., Ithaca, N.Y. 14850

Filed Oct. 1, 1979, Ser. No. 80,559

Int. Cl.<sup>3</sup> C02F 3/28

U.S. Cl. 210-603

12 Claims



1. A method for producing methane and carbon dioxide gases, comprising the steps of

- seeding a dilute organic waste material with a heterogeneous bacterial culture including a methane-producing bacteria;
- supplying said seeded waste material to an anaerobic attached film expanded bed reactor containing a particulate support media having a film coated thereon, said support media comprising porous water-insoluble inorganic biomaterial, each particle of which has a diameter of from about 5 to less than 200 microns;
- establishing a low-velocity upward flow of said seeded waste material through said reactor to expand the bed of support media by about 20% through which the particulates of said support media are evenly distributed, said bacterial compound being attached to said film and reacting with said organic material to produce methane gas and residual, effluent material, said residual, effluent material being filtered by said film during upward flow there-through; and
- separating said methane gas from said effluent material,



whereby methane gas is continuously produced from a supply of organic waste material.

4,284,509

# PROCESS FOR REMOVING OILS OR PETROLEUM FROM THE SURFACE OF THE SEA

Walter Lindörfer, Kassel; Fritz Wagner, Stöckheim; Wilhelm Jahn-Held, Stanfenberg, and Walther Schulz, Vechta, all of Fed. Rep. of Germany, assignors to Gesellschaft für Biotechnologische Forschung, Brunswick, Fed. Rep. of Germany  
Filed Nov. 15, 1979, Ser. No. 94,865

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911016

Int. Cl.<sup>3</sup> C02F 1/54

U.S. Cl. 210—610

6 Claims

1. A process for removing oil from the surface of the sea and from shoals, this oil being in the form of a layer left behind after the majority of the oil floating on the water has been pumped away or otherwise removed, comprising the steps of applying to said layer an effective amount of metabolites of microbially produced glycolipids which consist of mono- or diesters of  $\alpha,\alpha'$ -trehalose and  $\alpha$ -alkyl- $\beta$ -hydroxy fatty acids having at least 10 carbon atoms in said alkyl group and which contain mono-, di- or oligo-saccharides as the hydrophilic component and which reduce the surface and interface tension of the oil/water system in order to form agglomerates of the oil, and then removing the agglomerates from the surface of the water.

4,284,510

# TWO ZONE PROCESS FOR BIOLOGICAL TREATMENT OF WASTE WATER

Guy Savard, Westmount; Robert G. H. Lee, Montreal, and Derek Hornsey, Roxboro, all of Canada, assignors to Canadian Liquid Air Ltd./Air Liquide Canada LTEE., Montreal, Canada

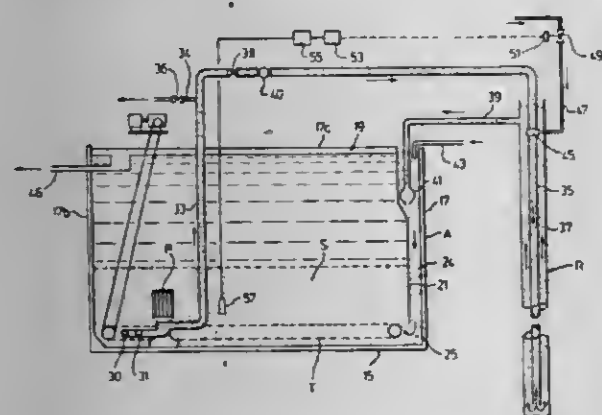
Continuation-in-part of Ser. No. 905,008, May 11, 1978, Pat. No. 4,192,740, which is a continuation-in-part of Ser. No. 730,478, Oct. 7, 1976, abandoned. This application Nov. 8, 1979, Ser. No. 92,283

The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> C02F 3/26

U.S. Cl. 210—614

7 Claims



1. A process of treating waste water containing biodegradable waste to provide a clarified liquid effluent and a disposable sludge, in which waste water is continuously passed through a single treating enclosure open to the atmosphere containing waste-degrading microorganisms, to which oxygen is added to sustain the microorganisms and from which the clarified effluent is continuously overflowed and from which excess sludge and gases are removed; in which there is initially established a charge including (a) in a lower part of the enclosure a biological reaction zone containing mixed liquor containing said microorganisms and in which a biological reaction to degrade the waste is conducted, (b) in an upper part of the enclosure a clarification zone in which clarified liquid rises and overflows, and (c) between the reaction and clarification zones a transition

zone in which the liquid of the mixed liquor rises and the solids settle; and continuously there is withdrawn from the biological reaction zone a recycle stream of mixed liquor from the reaction zone and the stream conducted through an oxygen-dissolving device disposed outside the reaction zone and influent waste water and oxygen are added to it; the thus supplemented stream is injected into a lower part of the reaction zone remote from the vicinity of withdrawal, the waste water is conducted into the recycle stream at a variable rate within a range related to the depth and surface area of the enclosure to provide a residence time within the reaction zone effective for the biodegradation of the waste and for the formation and settling of biological floc, oxygen is added to said recycle stream at a rate to provide an oxygen concentration within a controlled range below the saturation level of oxygen in the liquid effective to meet the oxygen demand of the organisms and maintaining it in contact with the liquid in a contact zone of said stream for a time and under a pressure such that the oxygen is dissolved in the liquid; the overall flow rate of said recycle stream is controlled to a substantially constant rate several times that of the incoming waste water effective to provide (d) for dissolving the oxygen which is added to the recycle stream, (e) an amount of dilution of the recycle stream entering the reaction zone effective to prevent the oxygen coming out of solution at an upper part of the reaction zone, the flow of said supplemented recycle stream entering the reaction zone is distributed to reach a substantial area of a lower part thereof, (f) to provide a wide spread direct flow through the reaction zone, from the vicinity of injection to the vicinity of withdrawal, whereby there is controlled agitation effective to keep the solids dispersed, and good access of the organisms to the biodegradable waste, (g) and to provide, at an intermediate level of the enclosure, an upward velocity of the mixed liquor less than the settling rate of the solids, whereby there is maintained in the enclosure said separate reaction and clarification zones intervened by said transition zone; the concentration of dissolved oxygen in the reaction zone is continuously monitored to determine variations thereof resulting from variations in the flow rate and concentration therein of waste; the rate of addition of the oxygen to the recycle stream is periodically adjusted in response to variations in the oxygen concentration in the reaction zone to maintain said concentration within said controlled range and at a level where there is substantially avoided effervescence that would lead to gas bubbles rising into the clarification zone; the effluent is continuously withdrawn from the clarification zone to keep pace with the influent waste water; and the excess sludge is continuously removed from the reaction zone and carbon dioxide from the mixed liquor, comprising the steps of,

continuously injecting along the bottom of the biological reaction zone said supplemented recycle stream in a horizontal shallow inflow having a width substantially greater than its depth, and withdrawing mixed liquor from near the bottom of the reaction zone at a vicinity remote from the inflow in an outflow having a substantially greater width than its depth, thereby to provide between the inflow and the outflow a horizontally flowing undercurrent having an extensive uninterrupted interface with an overlying relatively quiescent upwardly flowing body of mixed liquor, and in which,

the depth of the charge is from about 8 feet to about 100 feet, the depth of the clarification zone is at least about 2 feet, the distance between the inflow and the outflow is from about 6 feet to about 200 feet, the initial depth of the inflow is within the range from about 6 inches to about 6 feet, the depth of the biological zone is at least about 2 feet, the calculated average linear velocity of the inflow at the vicinity of the injection is within the range from about 1 to about 35 feet per minute, the average horizontal velocity in the reaction zone is within the range from about  $\frac{1}{2}$  to about 20 feet per minute,

and the recirculation rate is within the range from about 1 to about 15 times the average waste water influent flow rate.

4,284,511

# PROCESS FOR USING MAGNETICALLY BALLASTED SORBENTS

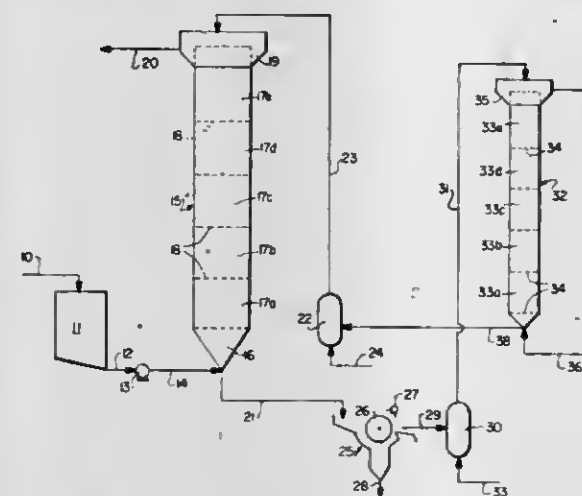
William Weitzen, Bethesda, Md., and Jerry C. Trippe, Fairfax Station, Va., assignors to General Technology Applications, Inc., Rosslyn, Va.

Filed Aug. 30, 1979, Ser. No. 71,040

Int. Cl.<sup>3</sup> B01D 15/02

U.S. Cl. 210—661

15 Claims



8. A process for sorbing heavy metal ions from aqueous solution comprising:

passing said ion-containing solution upwardly through a bed of sorbent granules at a rate sufficient to at least about double the settled volume of the granules, said granules ballasted with at least 5% by weight of finely divided particles of a corrosion resistant, iron-chromium, magnetic alloy and displaying a settling velocity in the liquid of at least about 30 cm per minute; periodically removing from the bottom of said bed a portion of liquid containing sorbent granules loaded with sorbed heavy metal ions and magnetically separating the sorbent granules from the liquid, and introducing a like portion of fresh sorbent granules into the top of said bed.

4,284,512

# IRON SELECTIVE RESINS PREPARED FROM A PHENOL, HCHO AND A DI-SECONDARY AMINE

Jonathan H. Hodgkin, Burwood, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Australia

Filed Dec. 3, 1979, Ser. No. 100,020

Claims priority, application Australia, Nov. 29, 1979, PE1490

Int. Cl.<sup>3</sup> C02F 1/42, 1/64; C08G 14/06, 14/12

U.S. Cl. 210—688

14 Claims

1. A metal-chelating resin, selective for ferric ions and consisting of the acid-quaternized form of cross-linked polymer produced by the condensation of a phenolic component comprising one or more phenols, formaldehyde, and a diamino component consisting essentially of one or more di(secondary amino) compounds under neutral conditions.

12. A method for the selective removal of ferric ions from an aqueous solution which comprises contacting the solution with a resin as claimed in claim 1.

4,284,513

# PROCESS FOR PREVENTING ENCRUSTATIONS ON SURFACES WHICH ARE IN CONSTANT CONTACT WITH AQUEOUS SOLUTIONS CONTAINING MATTER PRONE TO CRYSTALLIZE

Gerhardt Scholl, Spiesen-Elversberg, and Friedrich Hofmann, St. Ingbert, both of Fed. Rep. of Germany, assignors to Saarberg-Hoelter Saarbergwerke A.G. and Umwelttechnik GmbH, both of Saarbrücken, Fed. Rep. of Germany

Continuation of Ser. No. 891,408, Mar. 29, 1978, abandoned.

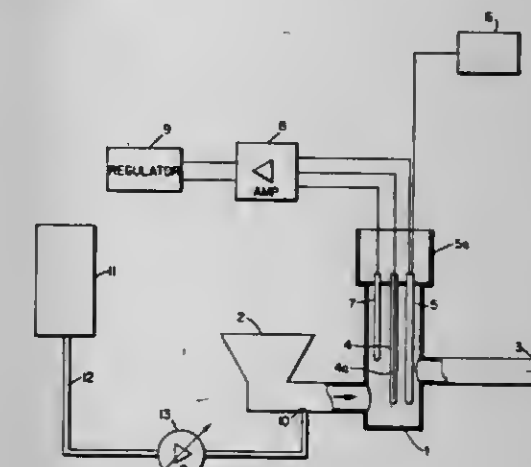
This application Jul. 20, 1979, Ser. No. 59,358

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1977, 2713540; Mar. 28, 1977, 2713544

Int. Cl.<sup>3</sup> C02F 5/12, 5/14; C23F 15/00

U.S. Cl. 210—699

11 Claims



1. Method for preventing the deposit of precipitated crystalline materials on the surface of measuring equipment receivers for equipment in power plant gas desulfurizing installations, whose measuring cell is flowed through by a material tending to crystallize out containing aqueous liquid for measuring the physical or chemical properties of this liquid, characterized by the fact that the liquid flowing to the measuring receiver has a chemical substance conducted into it which forms a thin protective film on the surface to be protected, and further characterized by feeding solution from a container to an electrode in the measuring cell and pumping the chemical substance by a proportioning pump into the liquid immediately before it flows into the measuring cell, and flowing liquid and the chemical substance in the measuring cell through small openings in a glass tube surrounding a second electrode in the measuring cell, said glass tube constituting a surface upon which the thin film is formed.

4,284,514

# TREATMENT OF HAZARDOUS WASTE

David R. Wright, Tring, England, assignor to Stablax A.G., Zug, Switzerland

Filed Dec. 20, 1979, Ser. No. 105,712

Claims priority, application United Kingdom, Dec. 29, 1978, 50209/78

Int. Cl.<sup>3</sup> C02F 1/52, 1/72

U.S. Cl. 210—721

13 Claims

1. A process for pretreating hazardous waste received in containers at a waste disposal plant prior to solidification, such method comprising placing the containers unopened in a vessel containing a liquid pretreatment media which neutralizes, precipitates or chemically modifies said hazardous waste, submitting the containers in the vessel to an agitating process which ruptures the containers thereby depositing the hazardous waste into the vessel to be acted upon by the pretreatment







4. The method of producing a blend of oil intended for use in an oil filled electrical apparatus, the blend of oil having a substantially equal molecular weight density within predetermined molecular weight limits, said method comprising the steps of establishing a pseudo-rectangular molecular weight distribution curve having molecular weight limits of 500-700, determining the molecular weight distribution curves for equal quantities of a number of candidate synthetic and natural hydrocarbon oils, selecting from the distribution curves for the candidate oils a first curve that fills a portion of the established pseudo-rectangular distribution curve, selecting from the remaining distribution curves for the candidate oils those curves which when combined with the selected first curve and with each other fills the remaining portion of the pseudo-rectangular curve, normalizing the selected distribution curves to the predetermined quantity and blending the selected hydrocarbon oils represented by the selected distribution curves to form the liquid blend.

7. A liquid blend intended for use in an oil-filled electrical apparatus to minimize the detrimental effects that can occur during high fault conditions which oil composition is a biodegradable and environmentally safe oil and consists essentially of a blend of oils including a natural saturated hydrocarbon oil and a synthetic saturated aliphatic hydrocarbon oil, said blend having a substantially equal molecular weight density in the range molecular weight range of about 500 to about 700, a fire point above 200° C. and a pour point near 0° C.

4,284,523

#### MINIMIZING OXYGENATED AROMATIC COMPOUND CONTENT OF AQUEOUS SOLUTION OF RECLAIMED METAL OXIDATION CATALYST

John K. Darin; Walter Partenheimer, both of Naperville, Ill., and Joseph D. Figuly, Munster, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 968,073, Dec. 11, 1978, abandoned.

This application May 22, 1980, Ser. No. 152,159

Int. Cl.<sup>3</sup> B01J 23/94, 23/92; C07C 51/265; C01G 45/00, 51/06 U.S. Cl. 252-420 5 Claims

1. The method of reclaiming catalyst metals comprising cobalt and manganese from the residue obtained after separation of benzene di- and/or tricarboxylic acid from the liquid effluent obtained by the liquid phase oxidation of a xylene or a trimethylbenzene and after the evaporation of low boiling materials from the liquid following such separation, or after separation of o-phthalic acid or o-phthalic acid and trimellitic acid after their conversion to their respective intramolecular anhydrides and evaporation of such anhydrides and materials of lower boiling temperature from liquid effluents obtained by the liquid phase oxidation of o-xylene, or a combination of o-xylene and pseudocumene; which catalyst metal reclamation method comprises extracting such residue with water in a weight ratio of water to residue of from 0.35:1 up to 1.5:1 at a temperature in the range of from 70° to 100° C., then diluting the 70° to 100° C. temperature extract solution with water in an amount to precipitate 15 to 20% of the dissolved oxygen-containing compounds boiling higher than the anhydride of trimellitic acid before separating the solids insoluble from said extraction and thereafter cooling the resultant mixture of insolubles, precipitate and diluted extract solution to a temperature in the range of 20° C. to 35° C., or after said 70° C. to 100° C. extraction cooling the resultant mixture of insolubles and aqueous extract solution to a temperature in the range of 20° C. to 35° C. and then diluting the cooled extract solution with an amount of water to precipitate 15 to 20% of the dissolved oxygen-containing compounds boiling higher than the anhydride of trimellitic acid without by said dilution of the cooled solution causing a substantial temperature change from the cooling, and finally separating the solution containing catalyst metal from the insolubles and precipitates.

2. The metal of claim 1 wherein such residue so extracted is obtained from the dehydration and evaporation of liquid effluent from the neat oxidation of liquid o-xylene in the presence of

catalysis provided by cobalt and manganese as metal oxidation catalysts promoted by bromine.

3. The method of claim 2 wherein the extraction is conducted at 77° C. with a water to residue weight ratio of 1:1 and the cooling and separating are conducted at a temperature of 21° to 24° C.

4,284,524

#### ALKALINE DISHWASHER DETERGENT

Lawrence A. Gilbert, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 30, 1980, Ser. No. 164,710

Int. Cl.<sup>3</sup> C11D 7/36, 7/40

U.S. Cl. 252-99

9 Claims

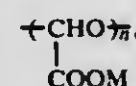
1. An automatic dishwashing composition providing optimum cleaning; spotting and filming; and physical characteristics consisting essentially of:

- (1) from about 20% to about 60% of a detergency builder selected from the group consisting of alkali metal triphosphates, pyrophosphates, orthophosphates, carbonates and mixtures thereof;
- (2) from about 10% to about 30% alkali metal silicate solids providing from about 5% to about 15% of SiO<sub>2</sub>;
- (3) a material selected from the group consisting of sodium and potassium dichloroisocyanurates; dichloroisocyanuric acid; 1,3-dichloro-5,5-dimethylhydantoin; N,N'-dichlorobenzoylene urea; paratoluene sulfodichloroamide; trichloromelamine; N-chloroammelene; N-chlorosuccinimide; N,N'-dichloroazodicarbonamide; N-chloroacetyl urea; N,N'-dichlorobiuret; chlorinated dicyandiamide; sodium hypochlorite; calcium hypochlorite; lithium hypochlorite; chlorinated trisodium phosphate; and mixtures thereof; to provide available chlorine at a level of from about 0.5% to about 3%;
- (4) from about 1% to about 9.5% of a low foaming nonionic surfactant; selected from the group consisting of
  - (a) the condensation product of 1 mole of a saturated or unsaturated, straight or branched chain alcohol or fatty acid containing from about 10 to about 20 carbon atoms with from about 4 to about 50 moles of ethylene oxide;
  - (b) polyethylene glycols having molecular weights of from about 1,400 to about 30,000;
  - (c) the condensation products of 1 mole of alkyl phenol wherein the alkyl chain contains from about 8 to about 18 carbon atoms and from about 4 to about 50 moles of ethylene oxide;
  - (d) polyoxypropylene, polyoxyethylene condensates having the formula



where y equals at least 15 and (C<sub>2</sub>H<sub>4</sub>O)<sub>x+z</sub> equals 20% to 90% of the total weight of the compound and the molecular weight is from about 2,000 to about 10,000;

- (e) the compounds of (a) which are capped with propylene oxide, butylene oxide, and/or short chain alcohols, and/or short chain fatty acids; and
- (f) mixtures thereof;
- (5) from about 1% to about 30% of a stabilized water-soluble polymer consisting essentially of polyacetal carboxylate segments having the structure



wherein M is selected from the group consisting of alkali metal, ammonium tetraalkyl ammonium and alkanol amine groups having from 1 to about 4 carbon atoms in the alkyl and alkanol chains; n averages at least 4; and the total number of polyacetal carboxylate segments are at least 50% by weight of the total polymer;

said composition having a pH of from about 9 to 10.9 at 2,500

ppm and being substantially free of materials having a pH of 12 or more at a concentration of 1% in water and other organic chelating builders.

4,284,525

#### TITANIUM TRICHLORIDE CATALYTIC COMPONENT AND METHOD FOR HOMO- OF CO-POLYMERIZATION OF $\alpha$ -OLEFIN

Yoichi Sunada, Shinnanyo; Yoshikazu Takahashi, Hikari; and Masaru Takitani, Shinnanyo, all of Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1979, Ser. No. 106,243

Claims priority, application Japan, Nov. 26, 1979, 54-152818

Int. Cl.<sup>3</sup> C08F 4/64

U.S. Cl. 252-429 B

11 Claims

1. A titanium trichloride catalytic component for polymerization of  $\alpha$ -olefin obtained in the following manner: separating said titanium trichloride catalytic component from a solution prepared by dissolving titanium tetrachloride, an organic ether compound and an organo-aluminum compound in a solvent, said solvent being a mixed solvent prepared by mixing 20 to 70% by volume of an aromatic hydrocarbon halide with a solvent consisting of saturated aliphatic hydrocarbon and/or alicyclic hydrocarbon; said organo-aluminum compound, said titanium tetrachloride and said organic ether compound being added to said mixed solvent at a solvent temperature not exceeding 55° C. and then, while raising the temperature of the resulting solution to a value between 45° and 150° C. said temperature is temporarily lowered by cooling to below 40° C.; and, at the time of cooling said solution the organic ether compound and/or titanium tetrachloride is further added; wherein the temporary cooling step is repeated at least twice to allow titanium trichloride catalytic component having an average particle diameter between 10 and 1000 $\mu$  to separate out of said solution.

4,284,526

#### PROCESS FOR THE POLYMERIZATION OF ALPHA-OLEFINS, CATALYST EMPLOYED IN SAID PROCESS AND METHOD FOR THE PREPARATION THEREOF

Sebastiano Cesca, San Donato Milanese; Alberto Greco, Dresano; Guglielmo Bertolini, Pavia, and Mario Bruzzone, San Donato Milanese, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Division of Ser. No. 863,695, Dec. 23, 1977, which is a continuation of Ser. No. 568,169, Apr. 15, 1975, abandoned. This application May 12, 1980, Ser. No. 148,975

Claims priority, application Italy, Apr. 17, 1974, 21517 A/74 Int. Cl.<sup>3</sup> C08F 4/02

U.S. Cl. 252-429 C

9 Claims

1. Catalyst for the polymerization of alpha-olefins consisting of

- (a) A member of the group consisting of alkyl-halides, alkyl-derivatives and hydrides of the metals belonging to the first three groups of the Periodic System, and
- (b) the combination product of titanium trichloride and a chloride of another transition metal, derived from the reaction of TiCl<sub>4</sub> and a carbonyl compound of said other transition metal, finely dispersed and carried on a material of high superficial area selected from the group consisting of the chlorinated oxides of the elements belonging to the 2nd to 4th groups of the Periodic System and which has been previously chlorinated.

4,284,527

#### POLYMERIZATION CATALYST

Thomas J. Pullukat, Hoffman Estates, and Mitsuzo Shida, Barrington, both of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 916,807, Jun. 19, 1978. This application Oct. 24, 1979, Ser. No. 87,702

Int. Cl.<sup>3</sup> C08F 3/04

U.S. Cl. 252-430

10 Claims

1. A catalyst, prepared by the method comprising: preparing (1) a mixture by dispersing on a finely divided, difficult to reduce, inorganic support of the class consisting of silica, alumina, thoria, zirconia, titania, magnesia and mixtures thereof a tetravalent or lower valent organic chromium compound; (2) calcining (1) in air or inert atmosphere and at an elevated temperature of 80°-260° C. to bond the chromium compound on said support; (3) reacting the product of (2) with an alkyl ester of titanium, boron, vanadium or mixtures thereof or boric acid at an elevated temperature; and, immediately after (3) while avoiding any substantial contact with an inert gas, (4) activating the product of (3) with a dry gas that contains oxygen by heating at an elevated temperature said product of (3) in said gas.

4,284,528

#### SYNTHETIC CO<sub>2</sub> ACCEPTOR

Michael S. Lancet, and George P. Curran, both of Pittsburgh, Pa., assignors to Conoco Inc., Stamford, Conn.

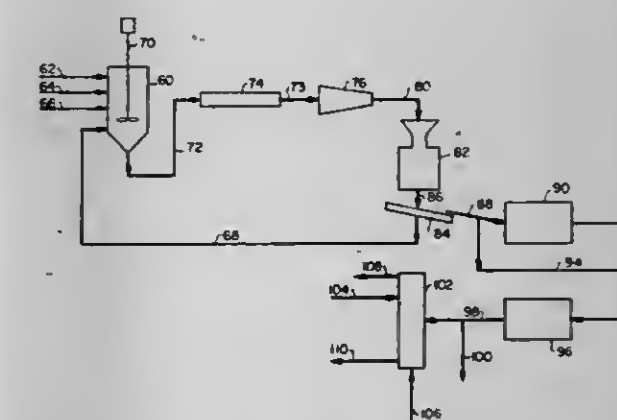
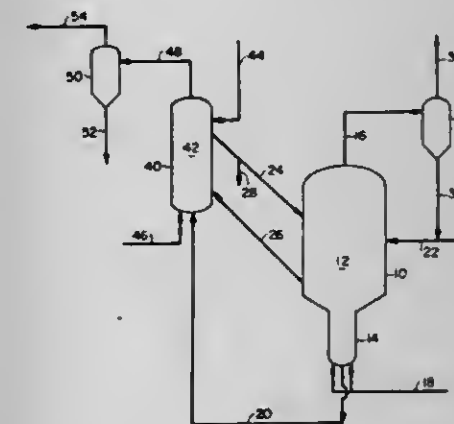
Division of Ser. No. 20,005, Mar. 12, 1979, Pat. No. 4,231,760.

This application Feb. 25, 1980, Ser. No. 124,199

Int. Cl.<sup>3</sup> B01J 27/20, 20/10, 20/04; C10J 3/12

U.S. Cl. 252-443

5 Claims



1. A synthetic CO<sub>2</sub> acceptor consisting essentially of at least one calcium compound selected from the group consisting of calcium oxide and calcium carbonate supported in a refractory carrier matrix, said carrier having the general formula Ca<sub>5</sub>(SiO<sub>4</sub>)<sub>2</sub>CO<sub>3</sub>, wherein said calcium compound is present in an amount up to about 50 weight percent, calculated as calcium oxide, based on the weight of the acceptor.

2. A method for producing a synthetic CO<sub>2</sub> acceptor, said



acceptor comprising a mixture of calcium carbonate and spurrite,  $\text{Ca}_5(\text{SiO}_4)_2\text{CO}_3$  said method consisting essentially of:

- (a) mixing calcium carbonate, silica and water to produce a pelletizable mixture containing from about 85 to about 90 weight percent calcium carbonate and from about 10 to about 15 weight percent silica;
- (b) pelletizing said mixture to produce particles of a desired size; and
- (c) heating said particles to a temperature of at least 1500° F. for at least 30 minutes at a steam pressure of at least about 18 atmospheres and a carbon dioxide pressure of at least 2 atmospheres to produce said synthetic  $\text{CO}_2$  acceptor.

5. The method of claim 2 wherein said synthetic  $\text{CO}_2$  acceptor of step (c) is further heated in the presence of finely divided silica at a temperature from about 1450° to about 1600° F. at a carbon dioxide pressure of at least 2 atmospheres to further harden said synthetic  $\text{CO}_2$  acceptor particles.

4,284,529

## HYDROCARBON CONVERSION CATALYST

David S. Shihabi, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,793

Int. Cl.<sup>3</sup> B01J 29/28

U.S. Cl. 252—455 Z

8 Claims

1. A catalyst composition comprising an inorganic matrix and from 10 to 90 wt. % of the alkali metal form of a steamed crystalline zeolite having a silica/alumina ratio above 12, a constraint index between about 1 and about 12, and an alpha value not less than about 5, said catalyst having substantially no activity for cracking n-hexane.

4. The catalyst composition described in claim 1 or 2 including a hydrogenation metal.

4,284,530

## NOVEL SUPPORT FOR CATALYSTS

Fawzy G. Sherif, Stony Point, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 17, 1979, Ser. No. 104,330

Int. Cl.<sup>3</sup> B01J 23/22, 21/16, 21/12

U.S. Cl. 252—455 R

10 Claims

1. A vanadium-containing catalyst for oxidizing sulfur dioxide supported by a microporous siliceous material said support characterized by:

- (a) a silica content greater than 85 percent by weight;
- (b) an alumina content greater than 3 but less than 5 percent by weight;
- (c) an iron content less than 2 percent by weight;
- (d) a surface area greater than 10 m<sup>2</sup>/g;
- (e) a bulk density greater than 0.10 and less than 0.35 g/cc;
- (f) a mean pore diameter greater than 0.3 and less than 2.5 micrometers;
- (g) a pore volume greater than 65 percent; and
- (h) a porosity greater than 65 percent; whereby a catalyst with high catalytic activity and high durability is provided.

3. A catalyst as described in claim 1 wherein said microporous siliceous support comprises a major portion of particles of the Actinopterychus type of marine diatomaceous earth.

5. A catalyst as described in claim 1 wherein said microporous siliceous support comprises a major portion of particles of acid-leached montmorillonite clay.

4,284,531

## METHANATION CATALYSTS AND PROCESS FOR THEIR PREPARATION

Howard D. Simpson; Hugh W. Gowdy, both of Irvine, and Steven D. Light, Fullerton, all of Calif., assignors to Union Oil Co. of California, Brea, Calif.

Filed Sep. 5, 1979, Ser. No. 72,662

Int. Cl.<sup>3</sup> B01J 21/04, 23/64, 23/84, 23/86

U.S. Cl. 252—465

19 Claims

1. A methanation catalyst suitable for use in the synthesis of

synthetic fuel gas from liquid hydrocarbons, said methanation catalyst comprising an interspersed mixture of metals selected from Groups IV(B), V(B), or VI(B), in combination with two Group VIII metals, composited with an inorganic refractory oxide support or matrix; said methanation catalyst having an average pore diameter of from about 60 Å to about 400 Å; a surface area ranging from about 50 M<sup>2</sup>/g to about 500 M<sup>2</sup>/g; a pore volume of from about 0.2 cc/g to about 0.8 cc/g; a compacted bulk density of from about 0.6 to about 1.2; and wherein said catalyst comprises either Group IV(B), V(B) or VI(B) metals or a mixture thereof; combined with two Group VIII metals; and an inorganic refractory oxide support or matrix in a molar ratio range of from about 10:20:70 to about 1:1:98.

4,284,532

## STABLE LIQUID DETERGENT COMPOSITIONS

John W. Leikhim; James M. Gajewski, and Maryann Kuzel, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 11, 1979, Ser. No. 83,907

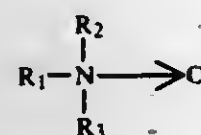
Int. Cl.<sup>3</sup> C11D 1/34, 1/68, 1/75, 17/08

U.S. Cl. 252—528

1 Claim

1. A stable liquid detergent comprising:

- (a) about 11.5% of an ethoxylated alcohol nonionic surfactant of the formula  $\text{R}(\text{C}_2\text{H}_4\text{O})_n\text{OH}$  wherein R is an aliphatic hydrocarbyl radical containing from about 12 to about 13 carbon atoms, wherein the average n is about 6.5, said surfactant having an HLB value of from about 10 to about 13;
- (b) about 6.7% of an amine oxide surfactant having the formula



wherein R<sub>1</sub> is an alkyl radical containing from about 12 to about 16 carbon atoms and R<sub>2</sub> and R<sub>3</sub> are methyl;

- (c) (i) about 5% of a water-soluble salt of citric acid; (ii) about 7% of a water-soluble salt of pyrophosphoric acid, and
- (d) about 12% of a hydrophilic material selected from the group consisting of monoalkyl esters of phosphoric acid, ethoxylated monoalkyl esters of phosphoric acid and mixtures thereof, said hydrophilic material having an HLB value above about 14; and
- (e) about 46% water.

4,284,533

## LIQUID ABRASIVE-CONTAINING CLEANSER COMPOSITION

Tetsuya Imamura, Tokyo, and Ryozi Shiozaki, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 957,164, Nov. 2, 1978, abandoned. This application Mar. 17, 1980, Ser. No. 130,765

Claims priority, application Japan, Nov. 28, 1977, 52-143042 Int. Cl.<sup>3</sup> C11D 1/72, 3/14

U.S. Cl. 252—542

11 Claims

1. A liquid abrasive cleanser composition consisting essentially of:

- (a) 0.1 to 0.6 wt. % of cross-linked polyacrylic acid having an average degree of polymerization of 10<sup>3</sup> to 10<sup>5</sup> and a Brookfield yield value of at least about 100 g/sec.cm., said cross-linked polyacrylic acid having been prepared by copolymerizing acrylic acid or methacrylic acid with triallyl isocyanurate,
- (b) 1 to 10 wt. % of hydrotrope of formula (I) or formula (II):

ROH

(I)

wherein R is alkyl having 1 to 3 carbon atoms, or



(II)

wherein R' is hydrogen, alkyl having 1 to 4 carbon atoms, phenyl or benzyl, R' is ethylene, propylene or mixture thereof, and n is the average addition mole number with the provisos that n is 1 to 20 when R' is hydrogen and n is 1 to 3 when R' is a group of other than hydrogen,

- (c) 0.5 to 10 wt. % of nonionic synthetic organic surfactant having an HLB of 10 to 17,
- (d) 7 to 20 wt. % of water-insoluble abrasive having a particle size of from about 2 to about 150 microns, and the balance of the composition is essentially water and a water-soluble pH regulator in an amount effective to maintain the composition at a pH of 6 to 8.

4,284,534

## AQUEOUS BUBBLE BLOWING COMPOSITION

Joseph R. Ehrlich, New York, N.Y., assignor to Jack S. Wachtel, Larchmont, N.Y., a part interest

Continuation-in-part of Ser. No. 26,527, Apr. 3, 1979, abandoned. This application Oct. 24, 1980, Ser. No. 200,424

Int. Cl.<sup>3</sup> C11D 1/20; B01J 13/00

U.S. Cl. 252—542

11 Claims

1. A non-toxic, non-eye-irritating bubble composition, consisting essentially of an aqueous solution of from about 2.0 to about 6% by weight of lauric diethanolamide, from about 1.0 to about 3% by weight of an alkanolamido half ester of a sulfosuccinic acid salt as surfactant, from about 0.05 to about 6% of a water-soluble film-forming agent selected from the group consisting of polyvinylpyrrolidone, polyethylenoxide, polyvinylalcohol, a cellulose and gelatin, the weight ratio of said lauric diethanolamide to said surfactant on a dry basis being from about 1.7:1 to about 2.4:1, from 0 to about 10% by weight of glycerin, and the balance water.

4,284,535

## RUBBER COMPOSITES SUITABLE FOR TIRE SIDEWALLS FROM HEXADIENE POLYMER

Joginder Lal, Akron, Ohio, and Paul H. Sandstrom, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

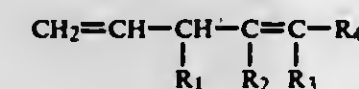
Division of Ser. No. 948,293, Oct. 5, 1978, Pat. No. 4,240,487, which is a continuation of Ser. No. 728,482, Sep. 30, 1976, abandoned. This application May 9, 1980, Ser. No. 148,318

Int. Cl.<sup>3</sup> C08L 7/00, 9/00

U.S. Cl. 260—4 R

7 Claims

1. An elastomeric composition consisting essentially of, based on 100 parts by weight rubber (A) about 15 to about 60 parts by weight of rubbery polymer of at least one nonconjugated diolefin having the formula:



where R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are hydrogen, a lower alkyl group containing up to 4 carbon atoms or an aryl group, and R<sub>4</sub> is a lower alkyl group containing up to 4 carbon atoms or an aryl group, (B) about 85 to about 40 parts by weight of high unsaturation rubber selected from the group consisting of at least one of natural high cis-1,4-polyisoprene rubber, synthetic high cis-1,4-polyisoprene, high cis-1,4-polybutadiene, butadiene/styrene rubber and polyalkenylenes and (C) 0 to about 40 parts by weight of at least one low unsaturation rubber selected from an EPDM and halobutyl rubber, where said EPDM rubber is an ethylene-propylene-nonconjugated diene terpolymer containing from about 20 to about 75 weight percent units derived from ethylene, from about 80 to 25 weight percent units derived from propylene, and a minor proportion of from about 1 to 15 weight percent units derived from a C<sub>5</sub>-C<sub>30</sub> nonconjugated diene and where said halobutyl rubber is a chlorinated or brominated butyl rubber prepared by copolymerization of isobutylene and isoprene to form a butyl-type rubbery copolymer containing about 95 to about 98 weight percent isobutylene and, correspondingly, about 5 to about 2 weight percent isoprene and then chlorinating or brominating said copolymer to form the halobutyl rubber containing about 0.5 to about 2.0 weight percent chlorine or bromine and about 0.5 to about 3.5 mole percent unsaturation expressed in units of carbon-to-carbon double bonds per kilogram of polymer.

4,284,536

## COMPOSITION FOR ADHESION OF RUBBER TO REINFORCING MATERIALS

Rao S. Bezawada, Somerville, N.J., assignor to American Cyanamid Co., Stamford, Conn.

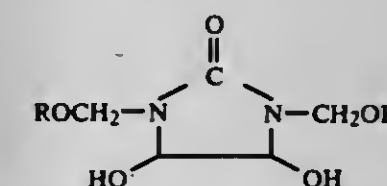
Filed Jan. 23, 1980, Ser. No. 161,954

Int. Cl.<sup>3</sup> C08L 7/00, 9/00, 9/06, 61/24

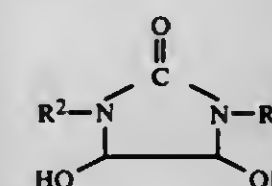
U.S. Cl. 260—4 AR

10 Claims

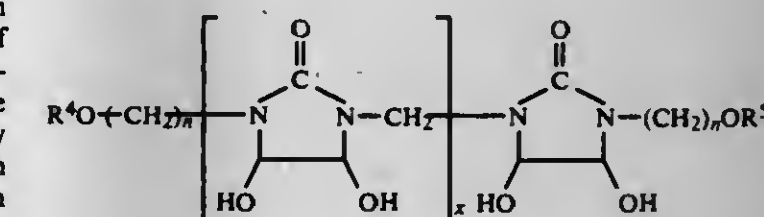
1. A vulcanizable rubber composition consisting essentially of (A) a rubber comprising natural rubber, polybutadiene, polyisoprene, ethylenepropylene terpolymer rubber, butadiene-styrene copolymer rubber, butadiene-acrylonitrile copolymer rubber, chloroprene rubber, chlorosulfonated polyethylene or a mixture thereof; (B) a sulfur vulcanizing agent; and (C) from about 1 to 10 parts by weight, per hundred parts by weight of rubber, of a compound selected from the group consisting of (1) compounds of the formula:



wherein R and R' are individually lower (C<sub>1</sub>-C<sub>4</sub>) alkyl, aryl (C<sub>6</sub>-C<sub>10</sub>) or cycloalkyl having 5 or 6 carbon atoms in the ring; (2) compounds of the formula:



wherein R<sup>2</sup> and R<sup>3</sup> are individually alkyl (C<sub>1</sub>-C<sub>8</sub>) aryl (C<sub>6</sub>-C<sub>10</sub>), cycloalkyl having 5 or 6 carbon atoms in the ring, cyano, carboxy, carboalkoxy, amido or dialkylamido substituted lower (C<sub>1</sub>-C<sub>4</sub>) alkyl or hydroxy substituted lower (C<sub>2</sub>-C<sub>4</sub>) alkyl; or (3) compounds of the formula:



wherein R<sup>4</sup> and R<sup>5</sup> are, individually, hydrogen, lower (C<sub>1</sub>-C<sub>4</sub>) alkyl, or cycloalkyl having 5 or 6 carbon atoms in the ring; n is an integer from 1 to 4, inclusive, and x is 1 or 2.



4,284,537

# CONJUGATE OF STREPTOCOCCAL M PROTEIN PEPTIDE VACCINE

Edwin H. Beachey, Memphis, Tenn., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jul. 3, 1980, Ser. No. 165,619

Int. Cl.<sup>3</sup> A61K 39/07, 39/385, 39/40, 39/44

U.S. Cl. 260—6 6 Claims

1. The conjugation of M24 protein particle CB6 or CB7 with polylysine which produces a conjugation antisera against animal streptococcus infection.

4,284,538

# SIZING COMPOSITION FOR GLASS FIBERS

Roy R. Graham, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 21, 1979, Ser. No. 50,561

Int. Cl.<sup>3</sup> C03C 25/02; C08L 3/02

U.S. Cl. 260—17.4 ST 18 Claims

1. A sizing composition for glass fibers useful in rendering sized glass fibers with improved water dispersibility, comprising:

about 0.1 to about 1.5 weight percent of the aqueous sizing composition of an aqueous emulsion mixture of cationic imidazoline; an aliphatic, aromatic or polymeric ester; and a polyethylene when the mixture is around 30 percent active.

12. In the method of forming chopped glass fiber strand for dispersion in a slush for producing glass paper, which comprises drawing glass streams through orifices in a bushing to form individual glass fibers, moving the fibers away from the bushing, chopping the fiber, applying to the fibers while they are moving and before they are chopped an aqueous sizing solution, comprising 0.1 to about 1.5 weight percent of the sizing composition being an aqueous emulsion having a cationic imidazoline, an aliphatic, aromatic, or polymeric ester; and polyethylene with the remaining amount of the sizing composition being water.

4,284,539

# COMPOSITIONS INCLUDING MERCAPTOORGANOPOLYSILOXANES, ALIPHATICALLY UNSATURATED POLYDIORGANOSILOXANES AND CARBOXYLIC ACID SALTS OF METALS

Gary R. Homan, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

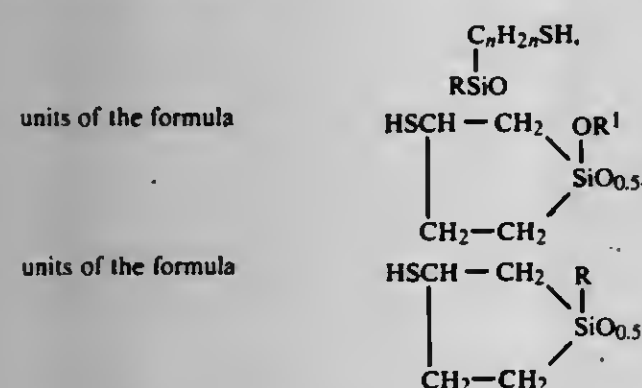
Filed Dec. 3, 1979, Ser. No. 99,257

Int. Cl.<sup>3</sup> C08L 91/00

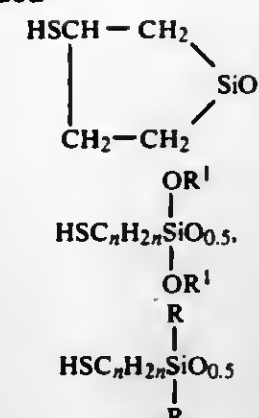
U.S. Cl. 260—18 S 6 Claims

1. A composition of matter comprising a material prepared by mixing

(A) a mercaptoorganopolysiloxane consisting essentially of a combination of units selected from dimethylsiloxane units, hydroxydimethylsiloxane units, trimethylsiloxane units, units of the formula



units of the formula

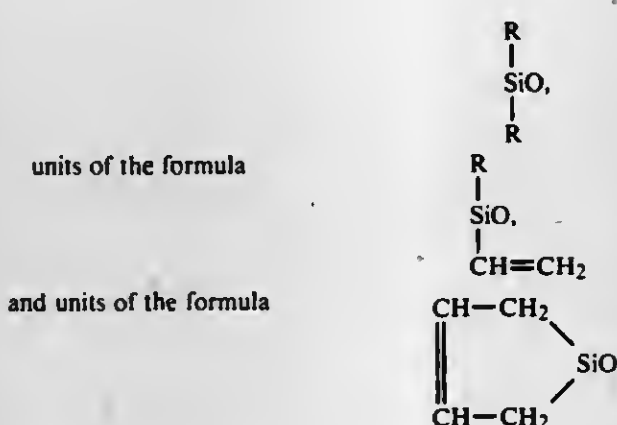


units of the formula

and units of the formula

wherein: R is a monovalent radical selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms inclusive and phenyl radical; R<sup>1</sup> is a monovalent radical selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms inclusive; and n has a value of from 1 to 4 inclusive, there being in said mercaptoorganopolysiloxane an average of at least two sulfur-containing siloxane units per molecule, but not more than 10 mole percent sulfur containing units based upon the total number of siloxane units in the mercaptoorganopolysiloxane;

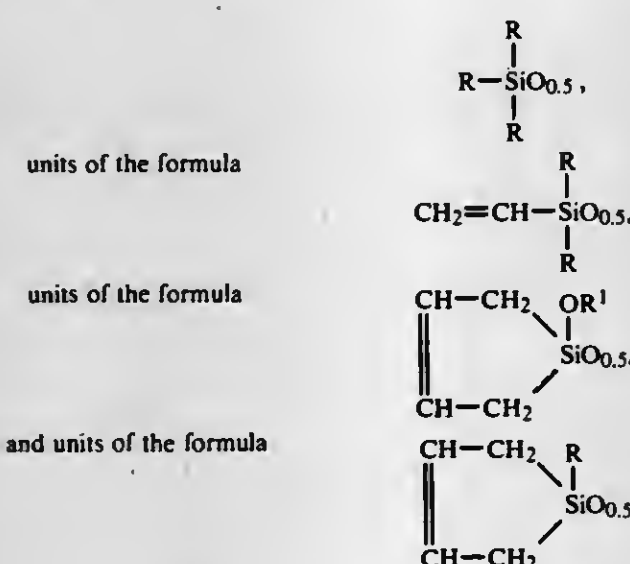
(B) an aliphatically unsaturated polydiorganosiloxane having at least three diorganosiloxane units per molecule wherein each unit of the combination forming the molecule is selected from the group consisting of units of the formula



units of the formula

and units of the formula

any endblocking units present being selected from the group consisting of units of the formula



units of the formula

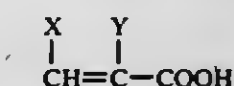
units of the formula

and units of the formula

wherein R and R<sup>1</sup> are as defined above, there being at least two aliphatically unsaturated siloxane units per molecule; (C) an organic peroxide in an amount equal to from about 0 to about 10 parts by weight per 100 parts of the combined weight of (A) and (B);

(D) a filler in an amount equal to from about 0 to about 200 parts by weight per 100 parts of the combined weight of (A) and (B); and

(E) a carboxylic acid salt of a metal selected from the group consisting of iron, manganese and nickel in an amount equal to from about 0.01 to about 5 parts by weight per 100 parts of the combined weight of (A) and (B).



where X is H or COOR or COOH,

where Y is H or Me, and

where R is alkyl of 1-6 carbon atoms, an inorganic filler, and 0.05-10 phr of an ammonium polyphosphate having the general formula



wherein n is an integer having a number average value greater than 10, m/n has an average value between about 0.7 and about 1.1, and m has a maximum value equal to n+2.

4,284,540

# POLYETHYLENE TEREPHTHALATE MOLDING COMPOSITIONS

Hiroshi Iida; Kiichi Kometani, and Masana Yanagi, all of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 16, 1980, Ser. No. 140,886

Claims priority, application Japan, Apr. 17, 1979, 54-46018

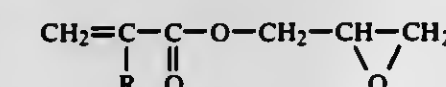
Int. Cl.<sup>3</sup> C08L 63/00, 67/00

U.S. Cl. 260—22 R 13 Claims

1. Polyethylene terephthalate molding compositions which comprise

(a) polyethylene terephthalate having an intrinsic viscosity of at least 0.4 as measured at 1% concentration in o-chlorophenol at 25° C.,

(b) from 0.1 to 40 parts by weight, based on 100 parts by weight of polyethylene terephthalate, of a copolymer of an  $\alpha$ -olefin, and a glycidyl ester of  $\alpha,\beta$ -unsaturated-aliphatic carboxylic acid having the general formula



wherein R is hydrogen or a lower alkyl radical, and

(c) from 0.1 to 5 parts by weight, based on 100 parts by weight of polyethylene terephthalate, of the barium salt of a fatty acid having 8 to 33 carbon atoms.

4,284,541

# HOT-MELT PRESSURE SENSITIVE ADHESIVE COMPOUND

Masami Takeda, Iwakuni, and Riichiro Nagano, Yamaguchi, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,497

Claims priority, application Japan, Nov. 14, 1978, 53-139358

Int. Cl.<sup>3</sup> C08L 51/04, 51/06

U.S. Cl. 260—27 R 22 Claims

1. A hot-melt pressure sensitive adhesive compound consisting essentially of:

(a) 30 to 70% by weight of a modified ethylene- $\alpha$ -olefin copolymer rubber containing from 40 to 85 mol % of ethylene units, having a melt index of 5 to 500 and prepared by grafting an unsaturated carboxylic acid or derivative thereof to an ethylene- $\alpha$ -olefin copolymer rubber or a partial ester of said modified copolymer rubber, and

(b) 70 to 30% by weight of a tackifier selected from the group consisting of aliphatic, aromatic alicyclic and copolymer type petroleum resins, terpene resin, rosin and cumarone-indene resin.

4,284,542

# HOT MELT ADHESIVE COMPOSITION

Richard J. Boyce, Glen Farms, Md., and Terence A. Cooper, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 36,539, May 7, 1979, abandoned. This application Apr. 7, 1980, Ser. No. 132,499

Int. Cl.<sup>3</sup> C08L 93/00

U.S. Cl. 260—27 R 9 Claims

1. Masterbatch compositions suitable for preparing adhesive and sealant compositions, said masterbatch compositions consisting essentially of an alkali metal ionomer of a random co-

polymer of ethylene, methyl acrylate, and at least one carboxylated monomer of the general formula



where X is H or COOR or COOH,

where Y is H or Me, and

where R is alkyl of 1-6 carbon atoms, an inorganic filler, and 0.05-10 phr of an ammonium polyphosphate having the general formula



wherein n is an integer having a number average value greater than 10, m/n has an average value between about 0.7 and about 1.1, and m has a maximum value equal to n+2.

4,284,543

# EXTENDING THE MOLTEN STABILITY OF POLY (ETHYLENE-VINYL ACETATE) HOT-MELT ADHESIVES BY ADDITION OF LITHIUM METAL ION

Samuel D. Hollis, Savannah, Ga., assignor to Union Camp Corporation, Wayne, N.J.

Filed Sep. 2, 1980, Ser. No. 183,354

Int. Cl.<sup>3</sup> C08L 23/26, 31/04

U.S. Cl. 260—27 EV 9 Claims

1. A method of increasing the molten stability of ethylene-vinyl acetate copolymer hot-melt adhesive compositions containing hydrocarbon resin tackifier and at least one antioxidant compound, which comprises; mixing with said compositions a stabilizing proportion of a soluble lithium metal ion.

4,284,544

# PROCESS FOR THE PREPARATION OF WATER-DISPERSIBLE OR WATER-SOLUBLE BLOCKED POLYISOCYANATES, THE BLOCKED POLYISOCYANATES OBTAINABLE BY THIS PROCESS AND LACQUER BINDERS CONTAINING THESE BLOCKED POLYISOCYANATES AS ISOCYANATE COMPONENT

Christian Wegner, Cologne; Kurt Findeisen, Odenthal, and Franz Weider, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 102,059

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2853937

Int. Cl.<sup>3</sup> C08L 75/06

U.S. Cl. 260—29.2 TN 8 Claims

1. A binder for coating compounds which is to be applied from the aqueous phase, which binder contains a polyisocyanate component and a polyhydroxyl component and is optionally dispersed in water or partly dispersed and partly dissolved, characterized in that:

(1) the polyisocyanate component consists of a water-dispersible or water-soluble blocked polyisocyanate obtainable by a process comprising reacting a polyisocyanate which is neither soluble nor dispersible in water with

(a) a blocking agent, such that 50 to 99.8% of the isocyanate groups are blocked, and either

(b) organic polyaminosulfonates in an amount sufficient to render the polyisocyanate dispersible or soluble, or

(c) organic polyaminosulfonic acids and subsequently neutralizing sufficient acid groups to render the polyisocyanate dispersible or soluble; and

(2) the polyhydroxyl component consists of a polyester polyol which is neither dispersible nor soluble in water and/or a polyhydroxy polyacrylate which is neither dispersible nor soluble in water;

the above-mentioned components being present in such pro-



portions that from 0.5 to 2 equivalents of hydroxyl groups are available per equivalent of blocked isocyanate groups.

4,284,545

# COMPOSITION AND PROCESS FOR MAKING PRECIPITATED NYLON-POLYVINYL ALCOHOL BICONSTITUENT COMPOSITION

Neal E. Franks, Suffern, N.Y., and Julianna K. Varga, Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.  
Continuation-in-part of Ser. No. 938,907, Sep. 1, 1978, Pat. No. 4,196,282, which is a continuation-in-part of Ser. No. 854,957, Nov. 25, 1977, Pat. No. 4,145,532. This application Jul. 2, 1979, Ser. No. 54,359.

Int. Cl.<sup>3</sup> C08L 29/04, 77/06

U.S. Cl. 260—29.6 NR

14 Claims

1. A biconstituent dispersion comprising:  
(A) a first distinct phase comprising a solution of  
(1) a nylon having an amide group index (molecular weight of repeating unit ÷ number of amide groups per repeating unit) or less than 145,  
(2) a tertiary amine oxide nylon solvent which has an N-methylamine oxide group endo or exo to an aromatic or saturated or unsaturated ring and which has substantial stability at about 125° C., and  
(3) a nylon solubility enhancing amount of water, and  
(B) a second distinct phase comprising a solution of  
(1) polyvinyl alcohol  
(2) a tertiary amine oxide polyvinyl alcohol solvent, and  
(3) a polyvinyl alcohol solubility enhancing amount of water.

4,284,546

# COATING SUBSTANCES WITH A HIGH CONCENTRATION OF SOLIDS, FOR COATED PAPERS

Pierre Delfosse, Paris, France, and Dieter Strauch, Zofingen, Switzerland, assignors to Omya S. A., Paris, France  
Filed Oct. 29, 1979, Ser. No. 88,799

Claims priority, application France, Oct. 30, 1978, 78 30723

Int. Cl.<sup>3</sup> B05D 3/02, 3/12; B32B 23/08, 27/10

U.S. Cl. 260—29.6 R

3 Claims

1. A paper coating substance having a high solids content and containing natural calcium carbonate as substantially the only pigment; said calcium carbonate being in an aqueous form comprising 79.3% by weight of calcium carbonate; said aqueous calcium carbonate having a pH of about 9.5; all of the calcium carbonate particles being smaller than 2 μm; 82.5% by weight of said calcium carbonate particles being smaller than 1 μm; 14% by weight of said calcium carbonate particles being smaller than 0.2 μm; said coating substance containing a synthetic binder consisting essentially of a styrene-acrylate latex in an amount of 12 parts by weight per 100 parts by weight of said calcium carbonate calculated dry; the concentration of solids in said coating substance comprising about 72% by weight.

4,284,547

# WATER-IN-RESIN EMULSIONS CONTAINING POLYESTER RESINS

Richard C. Sulick, 3821 Dill Rd., Drayton Plains, Mich. 48020  
Filed Jun. 26, 1980, Ser. No. 163,261

Int. Cl.<sup>3</sup> C08L 67/06

U.S. Cl. 260—29.6 NR

3 Claims

1. A water in resin emulsion comprising a mixture of water dispersed in discrete droplets in a continuous phase of a resinous, copolymerizable composition including:  
(a) a copolymerizable mixture containing a liquid unsaturated polyester of a polyhydric alcohol and saturated and ethylenically unsaturated dicarboxylic acids and a compound having a polymerizable CH<sub>2</sub>=C group, said copolymerizable mixture having a molecular weight in the range of from about 2500 to about 3500;  
(b) a cobalt salt promoter for promoting the cure of said copolymerizable mixture, present in an amount in the range of from about 0.25 to about 1.5% based on the

weight of said copolymerizable mixture and a 12% cobalt content in said salt;

- (c) a tertiary aromatic amine accelerator for accelerating said promoter, present in an amount in the range of from about 0.75 to about 1.75% based on the weight of said copolymerizable mixture; and,  
(d) a lithium salt emulsifier for insuring the stability of an emulsion of water in said copolymerizable mixture upon agitation thereof, present in an amount in the range of from about 0.5 to about 1.5% based on the weight of said copolymerizable mixture and a 2% lithium content in said salt.

4,284,548

# AMBIENT TEMPERATURE CURABLE HYDROXYL CONTAINING POLYMER/SILICON COMPOSITIONS

Lawrence G. Kaufman, North Bergen; Charles N. Merriam, Martinsville, both of N.J., and Enrico J. Pepe, Amawalk, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,614

Int. Cl.<sup>3</sup> C08F 8/32, 8/42; C08C 19/00

U.S. Cl. 260—38

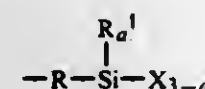
43 Claims

1. A substantially anhydrous, acid-free, room temperature curable composition which comprises  
(A) an organic thermoplastic polymer containing at least two hydroxyl radicals which are directly bonded to non-carboxylic carbon atoms of said polymer; and  
(B) a hydrolyzable aminoorganosilicon acylamino compound having the formula



and mixtures thereof, wherein:

X is an alkoxy radical having 1 to 6 carbon atoms; R is a divalent alkylene radical having 1 to 4 carbon atoms; R<sup>1</sup> is hydrogen or an alkyl radical having 1 to 4 carbon atoms; R<sup>2</sup> is a divalent alkylene radical having 2 to 4 carbon atoms; R<sup>3</sup> is a radical selected from the group consisting of hydrogen, an alkyl radical having 1 to 20 carbon atoms or a phenyl radical; R<sup>4</sup> is a radical selected from the group consisting of an alkyl radical having 1 to 20 carbon atoms, a phenyl radical or a silyl radical of the formula:



wherein X, R and R<sup>1</sup> are the same as defined above; Q is a radical selected from the group consisting of hydrogen, an alkyl radical of 1 to 4 carbon atoms, a phenyl radical or an ester radical of the formula —COOR<sup>5</sup> wherein R<sup>5</sup> is an alkyl radical having 1 to 4 carbon atoms; and wherein a has a value of 0 to 2 and t and x each have a value of 0 to 4, with the proviso that when x is at least 1, R<sup>4</sup> can also be hydrogen; and wherein said composition contains about 5 to 50 parts by weight of said hydrolyzable silicon compound (B) per 100 parts by weight of said organic polymer (A).

4,284,549

# POLYMER BLENDS WITH IMPROVED HYDROLYTIC STABILITY

Gideon Salee, Williamsville, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation of Ser. No. 905,623, May 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 863,555, Dec. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 819,539, Jul. 27, 1977, abandoned. This application May 28, 1980, Ser. No. 154,174

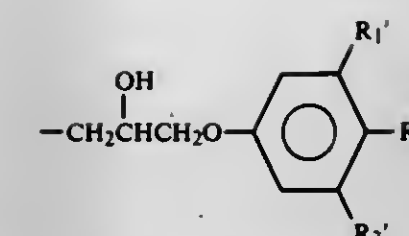
Int. Cl.<sup>3</sup> C08L 67/02, 81/04; C08K 7/14

U.S. Cl. 260—40 R

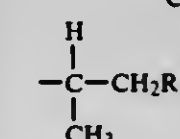
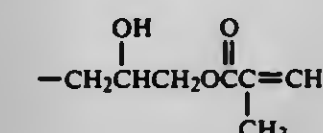
22 Claims

1. A thermoplastic polymeric composition having improved hydrolytic stability comprising, in admixture, (a) a linear aromatic polyester of components comprising a bisphenol and a dicarboxylic acid, and (b) polyphenylene sulfide.

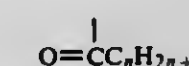
14. The composition of claim 1 wherein the filler material is glass fiber present in an amount of about 5 to about 70 weight percent based on the combined weight of the polyester and the phenylene sulfide polymer.



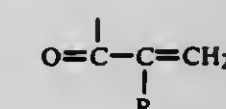
where R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each either hydrogen, normal alkyl, —C<sub>n</sub>H<sub>2n+1</sub>, with n varying between 1 and 20, or t-butyl, but if one R' is t-butyl, then the adjacent R' is hydrogen,



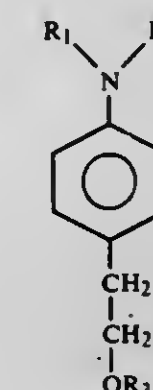
where R<sub>1</sub> is —C<sub>n</sub>H<sub>2n+1</sub> with n varying from 0 to 17, or (f) —CH<sub>2</sub>CH<sub>2</sub>OH; and where R<sub>3</sub> is either hydrogen, or a lower normal alkanoyl group,



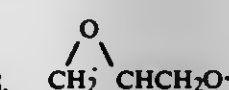
with n varying between 1 and 20, or



wherein R is hydrogen or a methyl group; or (B) a polymeric amine having 10 or fewer amine groups which is the reaction product of the amine



in which R<sub>1</sub> and R<sub>2</sub> are each hydrogen and R<sub>3</sub> is as defined in (A), with the diglycidyl ether of bisphenol A, viz.,



where R<sub>1</sub> and R<sub>2</sub> are the same or different and are selected from the following groups:

- (a) —CH<sub>3</sub>;  
(b) —CH<sub>2</sub>CH<sub>2</sub>C<sub>n</sub>H<sub>2n+1</sub> with n varying between 0 and 18,

# TERTIARY AROMATIC AMINE ACCELERATORS DERIVED FROM PARA-AMINOPHENETHANOL

Harold Argentar, Rockville, Md., assignor to American Dental Association Health Foundation, Washington, D.C.

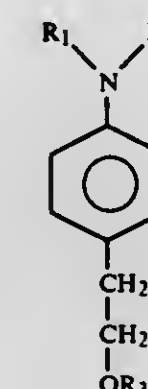
Filed Nov. 30, 1979, Ser. No. 98,886

Int. Cl.<sup>3</sup> C08K 5/18; C08F 2/44; C08G 63/46

U.S. Cl. 260—42.43

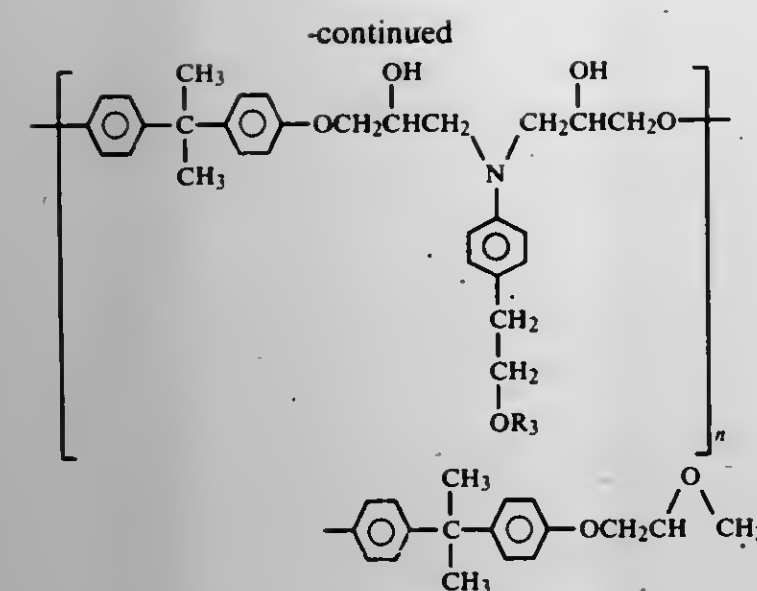
12 Claims

1. A composition of matter comprising (1) a component selected from the group consisting of polymerizable vinyl monomers and unsaturated polyesters, (2) a peroxide catalyst, and (3) a tertiary aromatic amine having the following structure:

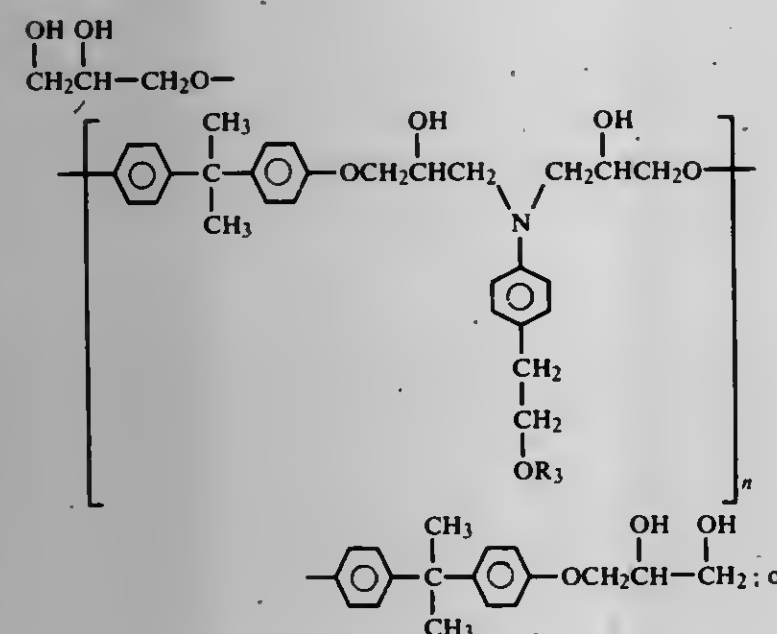


(A)

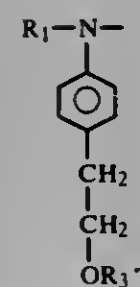




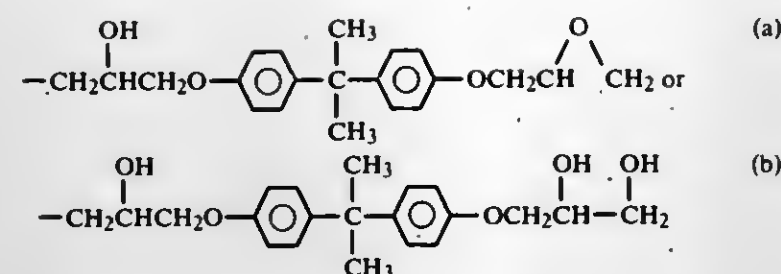
where n varies between 1 and 10, or the hydrolysis product of this polymeric amine, viz.,



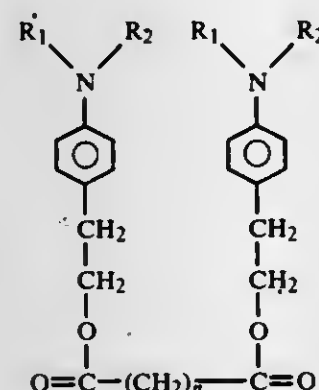
(C) an amine having the formula



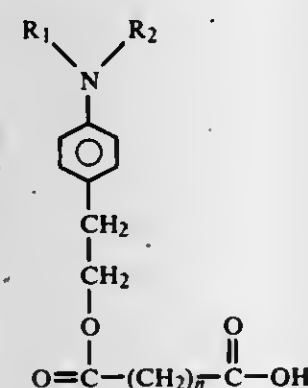
with n varying between 1 and 10, where R<sub>1</sub> and R<sub>2</sub> are as defined in (A) or are of the formula



and where R<sub>3</sub> is as defined in (A); or  
(D) a polymeric amine having 10 or fewer amine groups which is the reaction product of the amine (B) with methacrylic or acrylic acid; or  
(E) an amine having the formula



where R<sub>1</sub> and R<sub>2</sub> are as defined in (A) but with no greater than 5 carbon atoms in the alkyl substituents of R<sub>1</sub> and R<sub>2</sub>, and where n varies between 2 and 10; or  
(F) an amine having the formula



where R<sub>1</sub> and R<sub>2</sub> are as defined in (A), and where n varies between 2 and 10.

#### 4,284,552

### PROCESS FOR THE PREPARATION OF COA-SPC FROM BAKERS' YEAST

Edsel T. Bucovaz; John C. Morrison; Walter D. Whybrew, and Stanley J. Tarnowski, Jr., all of Memphis, Tenn., assignors to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 900,125, Apr. 26, 1978. This application Jul. 17, 1979, Ser. No. 58,143

Int. Cl.<sup>3</sup> C07G 7/00

U.S. Cl. 260—112 R

18 Claims

1. A process for preparing CoA-SPC Bakers' yeast extract which comprises:  
lysing Bakers' yeast cells;  
separating the Bakers' yeast cell lysate into solid and supernatant fractions wherein said solid fraction is substantially free of t-factor;  
treating said solid fraction to solubilize insoluble proteinaceous material other than the insoluble CoA-SPC;  
separating said solubilized proteinaceous materials from the fraction containing said insoluble CoA-SPC;  
contacting said fraction containing said insoluble CoA-SPC

with said supernatant fraction containing t-factor to produce soluble CoA-SPC; and  
wherein said t-factor is characterized by that fraction of Bakers' yeast having a molecular weight of 400 to 1000 and which solubilizes insoluble CoA-SPC in the presence of chloride ions.

#### 4,284,553

### REVERSIBLE METHOD FOR COVALENT IMMOBILIZATION OF BIOCHEMICALS

Rodney J. Brawn, Logan, Utah; Harold E. Swaisgood, and Horace R. Horton, both of Raleigh, N.C., assignors to North Carolina State University at Raleigh, Raleigh, N.C.

Filed Jun. 20, 1980, Ser. No. 161,645

Int. Cl.<sup>3</sup> C09C 3/08, 3/10, 3/12; C12N 9/96

U.S. Cl. 260—112 R

10 Claims

1. A reversible method for the covalent immobilization of proteins which comprises:

- treating an inorganic oxide material to provide an activated surface thereon by the steps of:
  - silanizing and succinylating the inorganic oxide material to provide a succinamidopropyl-surface;
  - converting the succinamidopropyl-surface to the acyl chloride derivative by treatment with thionyl chloride under anhydrous conditions; and
  - reacting the acyl chloride derivative with either 3-mercaptopropionic acid or mercaptoacetic acid under anhydrous conditions, whereby the surface of said inorganic oxide material is activated; and
- contacting the activated surface with protein having a reactive amino group whereby said protein is covalently bonded to the activated surface.

#### 4,284,554

### MONOAZO COMPOUNDS HAVING A 6-(2'-N-ALKYLANILINO)-4-CHLORO-1',3',5'-TRIAZINYL-6'-AMINO OR ALKYLAMINO)-1-HYDROXY-3-SULFONAPHTHALENE COUPLING COMPONENT RADICAL

Paul Doswald, Münchenstein, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Dec. 18, 1978, Ser. No. 970,348

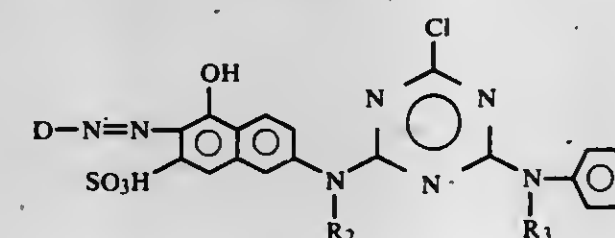
Claims priority; application Switzerland, Dec. 23, 1977, 15955/77

Int. Cl.<sup>3</sup> C09B 29/00

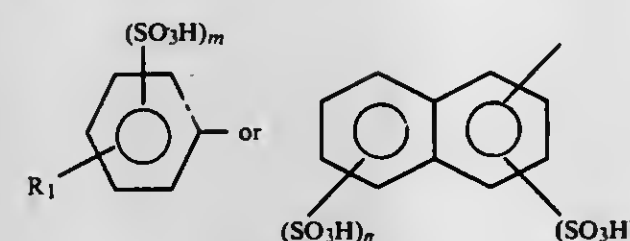
U.S. Cl. 260—153

16 Claims

1. A compound of the formula



or a salt thereof each cation of which is non-chromophoric, wherein D is



wherein R<sub>1</sub> is hydrogen, C<sub>1-4</sub>alkyl or C<sub>1-4</sub>alkoxy, m is 1 or 2,

n is 1 or 2, and  
p is 0 or 1,  
with the proviso that n+p is 2 or 3,  
R<sub>2</sub> is hydrogen or C<sub>1-4</sub>alkyl, and  
R<sub>3</sub> is C<sub>1-4</sub>alkyl,  
or a mixture of such compounds in free acid or salt form.

#### 4,284,555

### 7-CHLORO-8-(SUBSTITUTED AMINO CARBONYLOXY)-1-PHENYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES

Elijah H. Gold, West Orange, and Wei K. Chang, Livingston, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

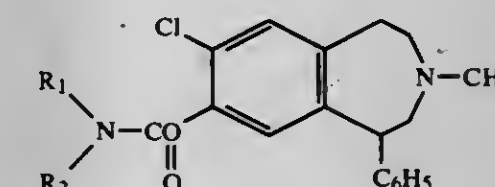
Filed Apr. 27, 1979, Ser. No. 34,055

Int. Cl.<sup>3</sup> C07D 223/16; A61K 31/55

U.S. Cl. 260—239 BB

6 Claims

1. A compound of the formula



and the pharmaceutically acceptable acid addition salts thereof wherein R<sub>1</sub> and R<sub>2</sub> are members of the group consisting of hydrogen, alkyl, methoxyalkyl, and hydroxy alkyl wherein the alkyl and alkoxy groups have 1 to 6 carbon atoms.

#### 4,284,556

### 7,8-AMINO, HYDROXY-1-PHENYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES

Kenneth G. Holden, Haddonfield; Carl Kaiser, Haddon Heights, both of N.J., and Joseph Weinstock, Phoenixville, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

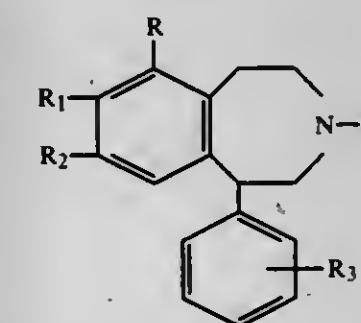
Filed Jan. 31, 1980, Ser. No. 117,181

Int. Cl.<sup>3</sup> C07D 223/16; A61K 31/55

U.S. Cl. 260—239 BB

9 Claims

1. A compound of the formula:



in which:

R is hydrogen, halo or lower alkyl of 1-3 carbons;  
R<sub>1</sub> and R<sub>2</sub> are hydroxy, amino, acetamido or methylsulfonamido with the proviso that one of R<sub>1</sub> and R<sub>2</sub> is always hydroxy and R<sub>1</sub> and R<sub>2</sub> are not both hydroxy;  
R<sub>3</sub> is hydrogen, halo, methyl, methoxy, methylthio or hydroxy; and  
R<sub>4</sub> is hydrogen, allyl or methyl; together with pharmaceutically acceptable, acid addition salts thereof.



4,284,557

## INTERMEDIATE RACEMATES FOR THE PREPARATION OF BIOTIN AND A PROCESS FOR THEIR PREPARATION

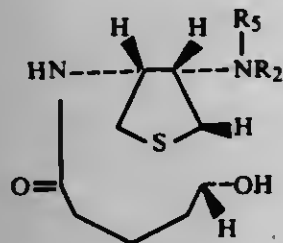
Enrico G. Baggiolini, Bloomfield; Hsi L. Lee, West Paterson, and Milan R. Uskokovic, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.  
Division of Ser. No. 43,282, May 29, 1979, Pat. No. 4,247,704, which is a continuation-in-part of Ser. No. 965,660, Dec. 1, 1978, Pat. No. 4,245,104, which is a continuation-in-part of Ser. No. 822,119, Aug. 5, 1977, Pat. No. 4,130,713. This application May 15, 1980, Ser. No. 150,116

Int. Cl.<sup>3</sup> C07D 513/08, 513/06

U.S. Cl. 260—239.3 B

7 Claims

1. The racemate of a compound of the formula:



wherein R<sub>2</sub> is benzyl or alpha-lower alkyl substituted benzyl, R<sub>5</sub> is hydrogen or —COOR<sub>4</sub> and R<sub>4</sub> is lower alkyl, aryl or aryl (lower) alkyl, wherein the aryl moiety in the above substituents is phenyl, naphthyl, anthryl, phenanthryl or azulyl which can be unsubstituted or substituted in one or more positions with halogen, nitro, lower alkylendioxy, lower alkyl or lower alkoxy.

VIII-IX'

4,284,559

## 10-HYDROXY-1,2,3,4,10,14B-HEXAHYDRODIBENZO-[C,F] PYRAZINO-1,2A-AZEPINES

Willem J. van der Burg, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Sep. 21, 1979, Ser. No. 77,693

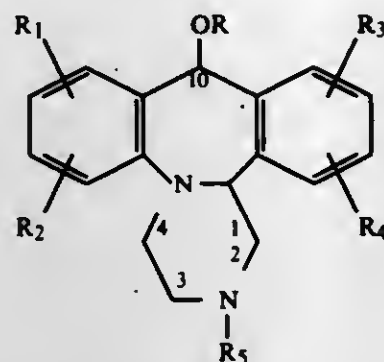
Claims priority, application Netherlands, Sep. 26, 1978, 7809726

Int. Cl.<sup>3</sup> C07D 487/04

U.S. Cl. 260—243.3

14 Claims

1. A compound of the formula:



wherein:

- (a) R is hydrogen, alkyl of one to six carbons, aralkyl of seven to ten carbons, or a carboxylic acyl group of one to six carbons;  
(b) R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> each represent hydrogen, hydroxy, halogen, alkyl of one to six carbons, alkoxy of one to six carbons, alkylthio of one to six carbons, or trifluoromethyl; and  
(c) R<sub>5</sub> represents hydrogen or an alkyl group of one to six carbons;  
and pharmaceutically acceptable non-toxic salts thereof.

4,284,560

## PROCESS FOR THE PREPARATION OF COMPLEX COMPOUNDS OF THE COBALT PHTHALOCYANINE SERIES

Helmut Seidler, Bad Godesberg, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 21, 1977, Ser. No. 761,328

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1976, 2602644

Int. Cl.<sup>3</sup> C09B 47/22

U.S. Cl. 260—314.5

3 Claims

1. Process for the preparation of a complex salt of trivalent cobalt having six coordinate bonds, four of which are occupied by a phthalocyanine ring system having two negative charges and the remaining two of which are each occupied by a primary, secondary, or tertiary aliphatic, aromatic, or heterocyclic monoamine or polyamine which comprises reacting cobalt phthalocyanine with oxygen and a halogen acid to produce the corresponding cobalt (III) phthalocyanine halide, which is then reacted with said amine to produce said complex salt in a highly purified form.

4,284,561

## HYDROXAMIC ACID DERIVATIVES OF MERCAPTOACYL AMINO ACIDS

Edward W. Petrillo, Jr., Pennington, and Miguel A. Ondetti, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 3, 1979, Ser. No. 99,382

Int. Cl.<sup>3</sup> C07D 207/08, 277/06; A61K 31/40, 31/425

U.S. Cl. 260—326.2

19 Claims

1. A compound having the formula

4,284,558

## CHEMICAL PROCESS FOR FLUORINATING A TERTIARY CARBON ATOM IN THE STEROID NUCLEUS

Derek H. R. Barton, London, England, and Robert H. Hesse, Cambridge, Mass., assignors to Research Institute for Medicine and Chemistry, Inc., Cambridge, Mass.

Continuation of Ser. No. 581,283, May 27, 1975, Pat. No. 4,036,864. This application Mar. 9, 1977, Ser. No. 775,879

Claims priority, application United Kingdom, Jun. 4, 1974, 24734/74

The portion of the term of this patent subsequent to Jul. 19, 1994, has been disclaimed.

Int. Cl.<sup>3</sup> C07J 1/00

U.S. Cl. 260—239.55 R

6 Claims

1. A process for the electrophilic fluorination of a saturated organic compound containing a hydrogen atom bound to a tertiary carbon atom consisting essentially of reacting the said compound with an electrophilic fluorinating agent selected from the group consisting of molecular fluorine, pentafluorosulphur hypofluorite and lower fluoroalkyl hypofluorites in which the fluoroalkyl moiety contains at least two fluorine atoms per carbon atom, said fluorinating agent being substantially homogeneously dispersed in a liquid medium and said reaction being conducted in the presence of a free radical inhibitor to suppress formation of free fluorine radicals so that said hydrogen atom is electrophilically replaced by a fluorine atom, and recovering the thus-obtained tertiary organic fluoride.

or loweralkyl, R' is hydrogen or loweralkyl and M is an alkali metal, an alkaline earth metal or a tetraalkylammonium.

4,284,563

9,10,11,12,12-PENTACHLORO 4,6-DIOXA-5-THIA-1-AZA-TRICYCLO[7.2.1.0<sup>2,8</sup>]DODEC-11-ENE

John L. Wong, Louisville, Ky., assignor to Research Corporation, New York, N.Y.

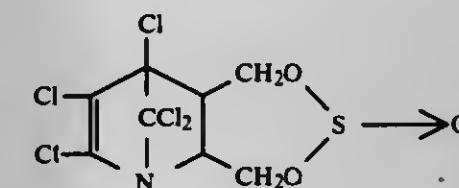
Division of Ser. No. 876,136, Feb. 8, 1978, Pat. No. 4,167,367, which is a division of Ser. No. 778,114, Mar. 16, 1977, Pat. No. 4,115,391, which is a division of Ser. No. 672,322, Mar. 31, 1976, Pat. No. 4,081,448, which is a continuation-in-part of Ser. No. 454,576, Mar. 25, 1974. This application Feb. 14, 1979, Ser. No. 12,025

Int. Cl.<sup>3</sup> C07D 411/14

U.S. Cl. 260—330.3

1 Claim

1. A compound having a structural formula:



4,284,564

## PROCESS FOR THE IN-SOLVENT, IN-SITU GENERATION OF HALOALKYL ALKYL ETHERS USEFUL TO PRODUCE

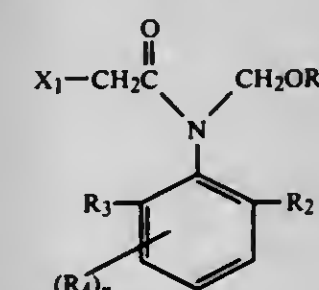
N-SUBSTITUTED-2-HALOACETANILIDES  
Gerhard H. Alt, University City, and John P. Chupp, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.  
Filed Mar. 25, 1980, Ser. No. 133,720

Int. Cl.<sup>3</sup> C07C 103/375; C07D 305/06, 307/06, 309/04

U.S. Cl. 260—333

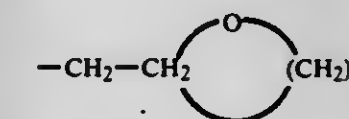
12 Claims

1. A process for preparing a compound of the formula



(IV)

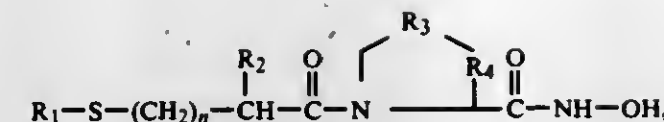
where X<sub>1</sub> is chloro, bromo or iodo; R is C<sub>1-10</sub> alkyl, C<sub>3-10</sub> alkenyl, C<sub>3-10</sub> cycloalkyl, C<sub>3-10</sub> alkynyl, C<sub>1-5</sub> alkoxy (C<sub>2-5</sub>) alkyl, mono-halo (C<sub>2-5</sub>) alkyl, mono-halo (C<sub>3-5</sub>) alkenyl or



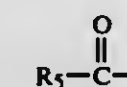
y is the integer 2, 3 or 4; with the proviso that when R is alkenyl or alkynyl the carbon atom attached to the oxygen may not share a double or triple bond with an adjacent carbon atom;

R<sub>2</sub> is C<sub>1-8</sub> alkyl, C<sub>2-8</sub> alkenyl, C<sub>3-8</sub> alkynyl, C<sub>1-8</sub> alkoxy, C<sub>1-8</sub> alkoxy (C<sub>1-5</sub>) alkyl, halo (C<sub>1-5</sub>) alkyl, halogen, NO<sub>2</sub>, C<sub>1-5</sub> alkoxy (C<sub>1-5</sub>) alkoxy or C<sub>1-5</sub> alkoxy (C<sub>1-5</sub>) alkoxy (C<sub>1-5</sub>) alkoxy; R<sub>3</sub> is hydrogen, C<sub>1-8</sub> alkyl, C<sub>2-8</sub> alkenyl, C<sub>1-8</sub> alkoxy, C<sub>1-8</sub> alkoxy (C<sub>1-5</sub>) alkyl, halo (C<sub>1-5</sub>) alkyl, halogen or NO<sub>2</sub>;

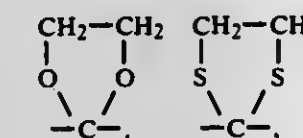
R<sub>4</sub> is C<sub>1-8</sub> alkyl, halo (C<sub>1-5</sub>) alkyl, halogen or NO<sub>2</sub>; n is the integer zero, one or two;



wherein

R<sub>1</sub> is hydrogen, alkyl, aryl, arylalkyl orwherein R<sub>5</sub> is alkyl or aryl;

R<sub>2</sub> is hydrogen, alkyl, trifluoromethyl or pentafluoroethyl;  
R<sub>3</sub> is —CH<sub>2</sub>—, —CH(OH)—, —CH(O-alkyl)—, —CH(O-aryl)—, —CH(S-alkyl), —CH(S-aryl), —C(O-alkyl)<sub>2</sub>, —C(S-alkyl)<sub>2</sub>,



—CCl<sub>2</sub>—, —CF<sub>2</sub>—, —CHCl—, or —CHF— and R<sub>4</sub> is —CH<sub>2</sub>; or together, R<sub>3</sub> and R<sub>4</sub> are —CH=CH—; and n is 0, 1 or 2;

wherein the term "aryl" refers to phenyl or phenyl substituted with one, two or three halogen, alkyl, alkoxy, hydroxy,



nitro, amino, alkylamino, dialkylamino, trifluoromethyl, cyano or carboxyl groups, and the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms.

4,284,562

## PROCESS FOR PREPARING PYRROLE-2-ACETIC ACIDS

Neal G. Anderson, North Brunswick, N.J., and John R. Carson, Norristown, Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

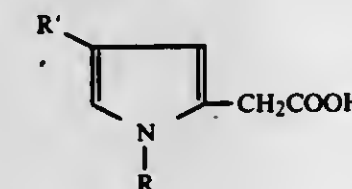
Continuation-in-part of Ser. No. 97,757, Nov. 27, 1979, abandoned. This application Jun. 20, 1980, Ser. No. 161,240

Int. Cl.<sup>3</sup> C07D 207/337

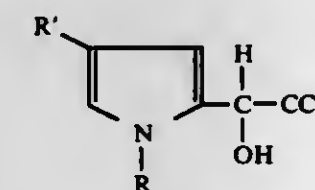
U.S. Cl. 260—326.2

6 Claims

1. The process for preparing N-H and N-loweralkylpyrrole-2-acetic acids of the formula:



which comprises reacting a corresponding compound of the formula:



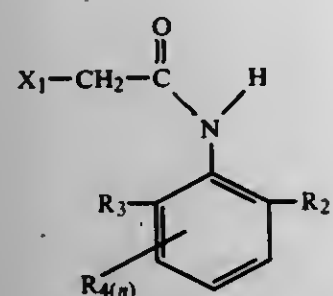
in the presence of sodium dithionite and of a base of the formula MOH, wherein in the foregoing formulas, R is hydrogen



which comprises reacting, in a solvent and in the presence of a phase transfer catalyst, an alcohol of the formula

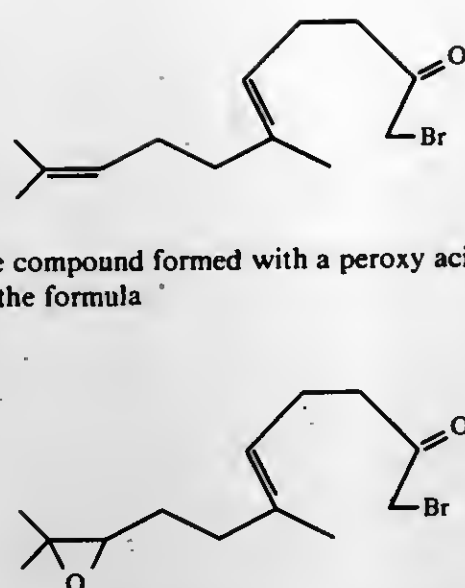


(where R is as defined in Formula IV); formaldehyde, an acid halide and a compound of the formula

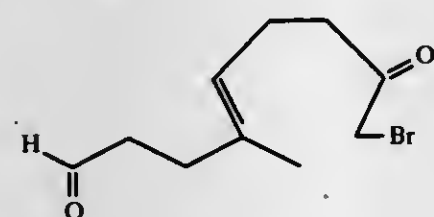


(where X<sub>1</sub>, R<sub>1</sub>, R<sub>3</sub>, R<sub>4</sub> and n are as defined in Formula IV); followed by addition of excess base.

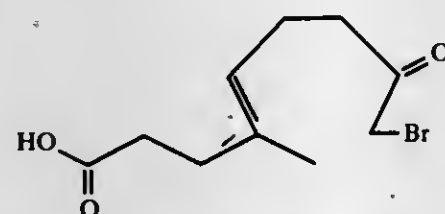
(VI) reacting the compound formed with a peroxy acid to form an epoxide of the formula



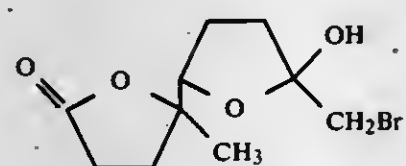
reacting the epoxide with periodic acid to form an aldehyde of the formula



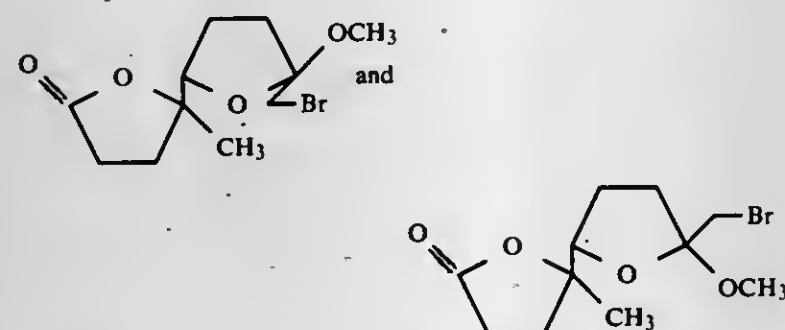
reacting the aldehyde with an oxidizing agent to form an acid of the formula



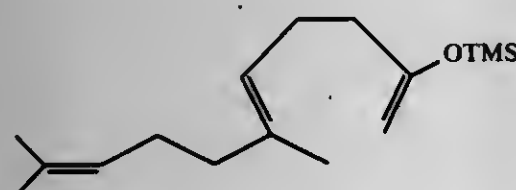
reacting the acid formed with a peroxy acid to form a bromo hemiketal γ-lactone of the formula



reacting the bromo hemiketal γ-lactone with a trialkyl orthoformate to form a mixture of the cis/trans-bromo ketal lactone of the formula

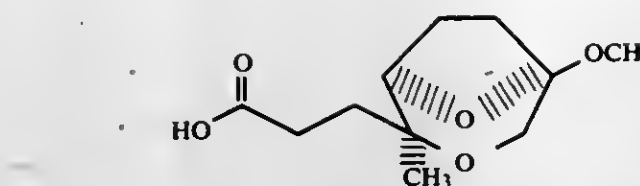


with trimethylsilyl chloride to form an enol silylether of the formula

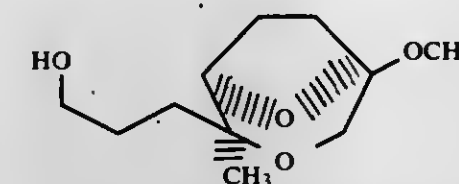


reacting the enol silylether with a brominating agent to form a bromide of the formula

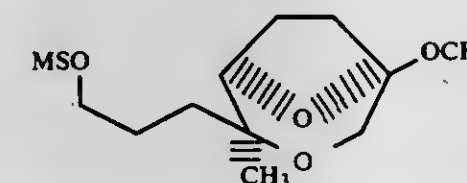
cyclizing the cis bromo ketal lactone with a cyclizing agent to form a bicyclic ketal acid of the formula



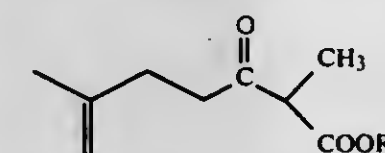
reacting the ketal acid with a first reducing agent to form an alcohol of the formula



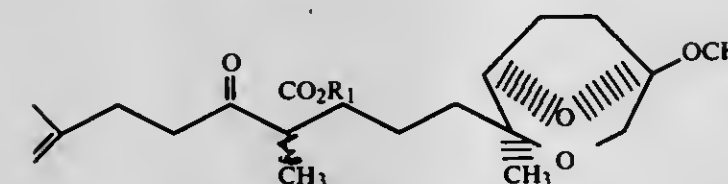
reacting the alcohol with methanesulfonyl chloride to form a mesylate of the formula



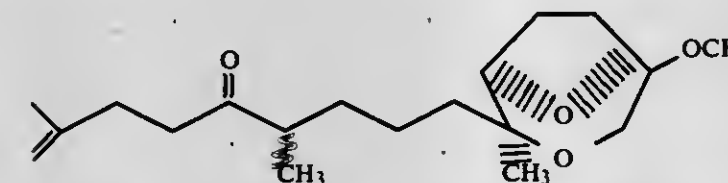
reacting the mesylate with a compound of the formula



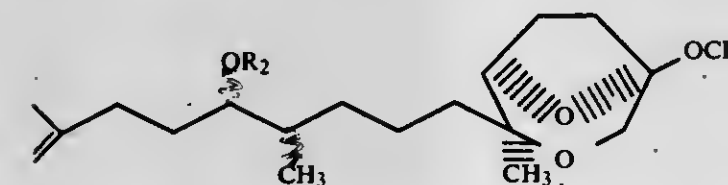
to form a condensation product of the formula



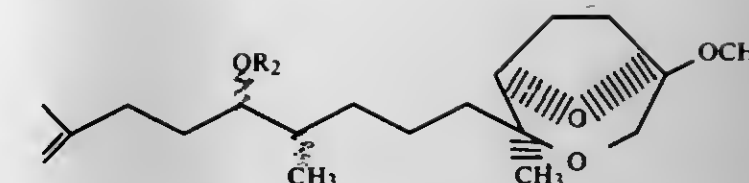
hydrolyzing and decarboxylating the carboxylic ester with a decarboxylating agent to form a ketone of the formula



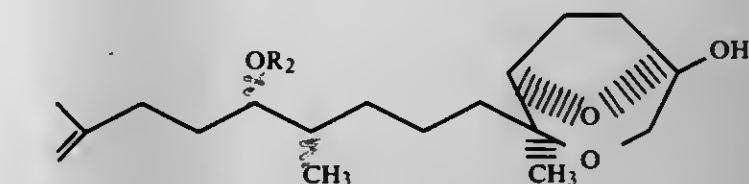
reducing the ketone with a second reducing agent to form an alcohol of the formula



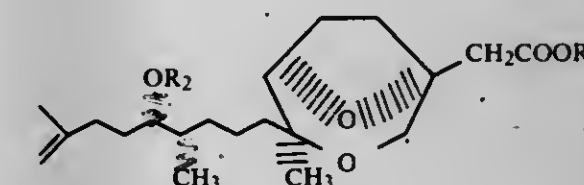
esterifying the alcohol with an esterifying agent to form an ester of the formula



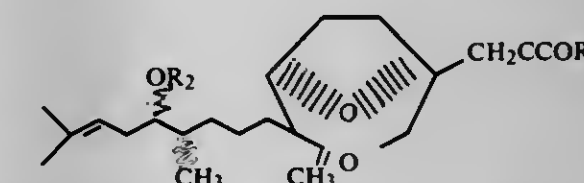
reacting the ketal with acid to form a hemiketal of the formula



reacting the hemiketal with (carbethoxymethylene)triphenylphosphorane to form a compound of the formula



isomerizing the 8-nonenyl ester with an isomerizing agent to form a 7-nonenyl ester of the formula



and hydrolyzing the esters with a hydrolyzing agent, wherein R<sub>1</sub> is hydrogen or a lower alkyl group having 1-5 carbon atoms, R<sub>2</sub> is hydrogen or lower acyl having 2-5 carbon atoms, TMS is a trimethylsilyl group and MS is a methylsulfonyl group.

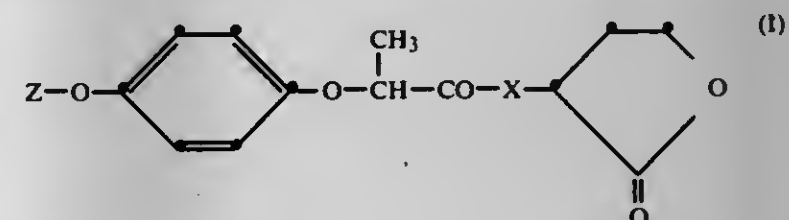
4,284,566

## HERBICIDAL

α-[4-TRIFLUOROMETHYLPHENOXY]-PROPIONIC ACID γ-BUTYROLACTONE ESTER AND THIOESTER  
Beat Böhner, Binningen, and Hermann Rempfler, Ettlingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,797  
Claims priority, application Switzerland, Jan. 4, 1979, 52/79  
Int. Cl.<sup>3</sup> C07D 307/32

U.S. Cl. 260-343.6 3 Claims  
1. An α-phenoxy-propionic acid-γ-butyrolactone ester or thioester of the formula I



wherein  
X is oxygen or sulfur,  
Z is the 4-trifluoromethylphenyl group.



4,284,567

# METHOD FOR THE CYCLIZATION OF GAMMA-DELTA, OR DELTA-EPSILON UNSATURATED ALCOHOLS

Aldo Prevedello, San Donato Milanese; Maurizio Brunelli, Milan, and Edoardo Platone, San Donato Milanese, all of Italy, assignors to Anic, S.p.A., Palermo, Italy  
Division of Ser. No. 5,507, Jan. 22, 1979, Pat. No. 4,199,516, which is a division of Ser. No. 918,445, Jun. 23, 1978, Pat. No. 4,150,037, which is a continuation of Ser. No. 670,728, Mar. 26, 1976, abandoned. This application Oct. 4, 1979, Ser. No. 81,885  
Claims priority, application Italy, Mar. 27, 1975, 21724 A/75; Nov. 27, 1975, 29726 A/75

Int. Cl.<sup>3</sup> C07D 307/16, 309/04

U.S. Cl. 260—345.1

12 Claims

1. A method for the cyclization of 3,7-dimethyl-3-hydroxy-6-octenenitrile comprising the step of contacting said nitrile with a cationic ion exchange resin at a temperature in a range of 20° C. to 180° C. or more, consistent with the stability of said resin which is employed in a weight ratio of resin to nitrile from an almost catalytic quantity to one or higher.

4,284,568

# ANTITUMOR AGENTS

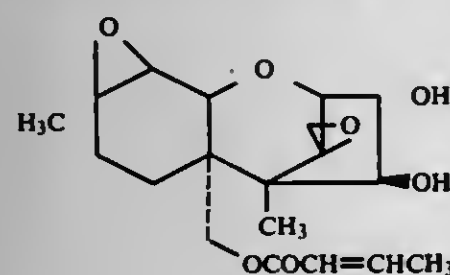
Henry Schmitz, Syracuse; Takushi Kaneko, Fayetteville; John M. Essery, Pleasantville, and Terrence W. Doyle, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Apr. 4, 1980, Ser. No. 137,336

Int. Cl.<sup>3</sup> C07D 311/78

U.S. Cl. 260—345.2

1. The compound having the formula



4,284,569

# ANTIATHEROSCLEROTIC FUROCHROMONES

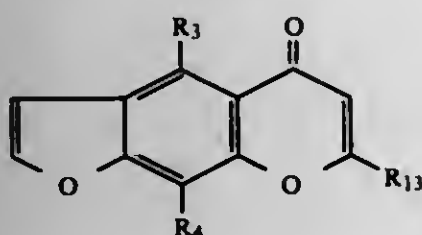
Ronald B. Gammill, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 11,816, Feb. 13, 1979, abandoned. This application Jan. 28, 1980, Ser. No. 116,322

Int. Cl.<sup>3</sup> C07D 311/78, 307/36

U.S. Cl. 260—345.2

1. A furochromone of formula VI.



wherein R<sub>13</sub> is —CH<sub>2</sub>—S—R<sub>10</sub>, —CH<sub>2</sub>—SO—R<sub>10</sub>, or —CH<sub>2</sub>—SO<sub>2</sub>—R<sub>10</sub>, wherein R<sub>10</sub> is alkyl of one to 5 carbon atoms, inclusive; wherein one of R<sub>3</sub> and R<sub>4</sub> is methoxy and the other is methoxy or hydrogen.

4,284,570

# ANTIBACTERIAL COMPOUNDS

Norman H. Rogers, Rudgwick, and Peter J. O'Hanlon, Redhill, both of England, assignors to Beecham Group Limited, England

Division of Ser. No. 21,712, Mar. 19, 1979, Pat. No. 4,248,887.

This application Oct. 18, 1979, Ser. No. 85,894

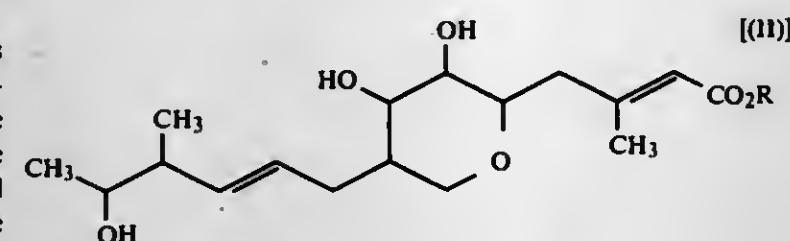
Claims priority, application United Kingdom, Apr. 21, 1978, 15807/78

Int. Cl.<sup>3</sup> C07D 309/10

U.S. Cl. 260—345.7 R

1 Claim

1. A compound of formula



wherein R is hydrogen or a salt-forming cation.

4,284,571

# PROCESS FOR PRODUCING PHTHALIC ANHYDRIDE AND CATALYST THEREFOR

Takahisa Sato; Yoshiyuki Nakanishi; Keizo Maruyama, all of Himeji, and Takehiko Suzuki, Ohtsu, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan  
Filed Nov. 28, 1979, Ser. No. 97,982

Claims priority, application Japan, Nov. 29, 1978, 53/146459

Int. Cl.<sup>3</sup> C07D 307/89

U.S. Cl. 260—346.4

15 Claims

1. A process for producing phthalic anhydride, which comprises packing a catalyst into a multitude fixed bed converter, said catalyst comprising a catalytically active material composed of 1 to 20 parts by weight as V<sub>2</sub>O<sub>5</sub> of vanadium oxide, 99 to 80 parts by weight of anatase-type titanium oxide being porous and having a particle diameter substantially of 0.4 to 0.7 micron and a specific surface area of 10 to 60 m<sup>2</sup>/g, and per 100 parts by weight of the sum of said two components, 0.01 to 1 part by weight as Nb<sub>2</sub>O<sub>5</sub> of niobium oxide, 0.05 to 1.2 parts by weight as an oxide of at least one ingredient selected from the group consisting of potassium, cesium, rubidium and thallium, and 0.2 to 1.2 parts by weight as P<sub>2</sub>O<sub>5</sub> of phosphorus, and a porous carrier having an alumina content of not more than 10% by weight, a silicon carbide content of at least 80% by weight and an apparent porosity of at least 10% supporting said catalytically active material thereon in an amount of about 3 to 15 grams per 100 cubic centimeters of said carrier, wherein the total volume of pores having a diameter of 0.15 to 0.45 micron present in the layer of the catalytically active material on the carrier is at least 50% of that of pores having a diameter of not more than 10 microns present in said layer of the catalytically active material; and passing a starting gas comprising o-xylene or naphthalene and oxygen or a molecular oxygen-containing gas, said starting gas having a temperature of not more than 150° C. at the inlet of the converter and a concentration of oxygen of not more than 12% by volume, through the catalyst layer at a temperature of 300° to 450° C., thereby catalytically oxidizing the o-xylene or naphthalene.

4,284,572

# BLOCKED ISOCYANATE DIOLS AND PREPARATION THEREOF

Henry Stanley, Cedar Grove, and Dilip K. Ray-Chandhuri, Bridgewater, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Dec. 15, 1978, Ser. No. 969,771

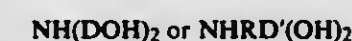
Int. Cl.<sup>3</sup> C07D 307/16; C07C 127/19, 69/78

U.S. Cl. 260—347.4

7 Claims

1. A blocked isocyanate diol consisting of an organic diiso-

cyanate containing one isocyanate group which has been reacted with a blocking agent containing a hydroxyl group, and a second isocyanate group which has been reacted with the amine portion of an amine diol of one of the general formulae:



wherein

D is an alkylene (C<sub>2</sub>—C<sub>20</sub>) or aralkylene (C<sub>7</sub>—C<sub>20</sub>) radical in which the hydroxyl group is attached to an aliphatic carbon atom,

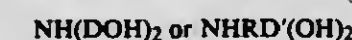
D' is an alkylene (C<sub>2</sub>—C<sub>20</sub>) or aralkylene (C<sub>8</sub>—C<sub>20</sub>) radical in which each of the hydroxyl groups is attached to a different aliphatic carbon atom, and

R is hydrogen or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, alkaryl, or aralkyl radical which is not reactive with active hydrogen atoms or isocyanate groups.

5. A process for preparing a blocked isocyanate diol comprising the steps of:

a. reacting a blocking agent which contains a hydroxyl group with an organic diisocyanate at a temperature of 25°–100° C. for 1–8 hours for aromatic diisocyanates and at 50°–120° C. for 3–10 hours for aliphatic diisocyanates, wherein the ratio of blocking agent to diisocyanate is from 0.8:1.0 to 1.2:1.0, to obtain a blocked adduct;

b. reacting the blocked adduct with an amine diol of one of the general formulae:



wherein

D is an alkylene (C<sub>2</sub>—C<sub>20</sub>) or aralkylene (C<sub>7</sub>—C<sub>20</sub>) radical in which the hydroxyl group is attached to an aliphatic carbon atom,

D' is an alkylene (C<sub>2</sub>—C<sub>20</sub>) or aralkylene (C<sub>8</sub>—C<sub>20</sub>) radical in which each of the hydroxyl groups is attached to a different aliphatic carbon atom, and

R is hydrogen or an unsubstituted or substituted alkyl, alkenyl, cycloalkyl, cycloalkenyl, aryl, alkaryl, or aralkyl radical which is not reactive with active hydrogen atoms or isocyanate groups,

wherein the ratio of blocked adduct to amine diol is from 0.8:1.0 to 1.1:1.0, said reaction being carried out at a temperature of 0°–100° C. for 1–8 hours under anhydrous conditions; and

c. isolating the resultant product.

4,284,573

# PREPARATION OF GLYCIDYL ETHERS

John F. Arnett, Newton, and George A. Doorakian, Bedford, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 1, 1979, Ser. No. 80,769

Int. Cl.<sup>3</sup> C07D 301/28

U.S. Cl. 260—348.15

10 Claims

1. A method of producing a glycidyl ether of a phenol comprising the steps of:

(a) introducing a catalytic amount of a tri(n-butyl)methyl phosphonium bicarbonate salt into a liquid phase mixture of a phenol with excess epichlorohydrin to thereby produce at reactive conditions a coupled reaction product comprising the corresponding propylenechlorohydrin ether of said phenol; and

(b) contacting the coupled reaction product in a liquid organic solvent with sufficient aqueous base in the presence of a catalytic amount of the tri(n-butyl)methyl phosphonium bicarbonate or its in situ derivative salts to convert the propylenechlorohydrin groups to glycidyl ether groups.

4,284,574

# DIGLYCIDYL ETHERS OF DI-SECONDARY ALCOHOLS, THEIR PREPARATION, AND CURABLE COMPOSITIONS CONTAINING THEM

Madan M. Bagga, Cambridge, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,693

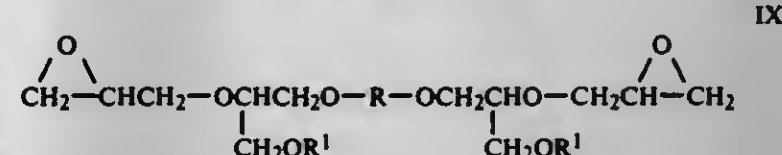
Claims priority, application United Kingdom, Jun. 15, 1979, 20990/79

Int. Cl.<sup>3</sup> C07D 303/34, 303/27

U.S. Cl. 260—348.43

6 Claims

1. A compound of the general formula



where

R represents

(i) a phenylene or naphthylene group, or  
(ii) a phenylene or naphthylene group substituted in the nucleus by one or two alkyl groups, each of from 1 to 4 carbon atoms, or

(iii) a phenylene or naphthylene group substituted in the nucleus by one or two chlorine atoms or by one or two bromine atoms, or

(iv) a radical consisting of two or three phenylene groups linked by one or two carbon-carbon bonds, ether oxygen atoms, sulfur atoms, sulfonyl groups, sulfoxide groups, or alkylene groups of 1 to 5 carbon atoms, or

(v) a radical consisting of two or three phenylene groups linked by one or two carbon-carbon bonds, ether oxygen atoms, sulfur atoms, sulfonyl groups, sulfoxide groups, or alkylene groups of 1 to 5 carbon atoms, substituted in one or two phenylene groups by a total of at most two alkyl groups, each of from 1 to 4 carbon atoms, or

(vi) a radical consisting of two or three phenylene groups linked by one or two carbon-carbon bonds, ether oxygen atoms, sulfur atoms, sulfonyl groups, sulfoxide groups, or alkylene groups of 1 to 5 carbon atoms, substituted in one or two phenylene groups by a total of at most two halogen atoms selected from chlorine and bromine,

each R<sup>1</sup> represents

(vii) a straight chain or branched alkyl group of 1 to 16 carbon atoms,

(viii) a straight chain or branched alkyl group of 1 to 16 carbon atoms, substituted by a total of at most four halogen atoms selected from chlorine and bromine, or

(ix) a straight chain or branched alkenyl group of 2 to 6 carbon atoms,

(x) a straight chain or branched alkenyl group of 2 to 6 carbon atoms, substituted by a total of at most four halogen atoms selected from chlorine and bromine, or

(xi) a phenyl or naphthyl group, or

(xii) a phenyl or naphthyl group, substituted in the nucleus by one or two chlorine atoms or by one or two bromine atoms, or

(xiii) a phenyl or naphthyl group, substituted in the nucleus by one or two alkyl groups, each of 1 to 4 carbon atoms, and having in all at most 12 carbon atoms, or

(xiv) a phenylalkyl or naphthylalkyl group having in all at most 12 carbon atoms, or

(xv) a phenylalkyl or naphthylalkyl group, substituted in the nucleus by one or two chlorine or by one or two bromine atoms, having in all from 7 to 12 carbon atoms, or

(xvi) a phenylalkyl or naphthylalkyl group, substituted in the nucleus by one or two alkyl groups each of 1 to 4 carbon atoms, said phenylalkyl or naphthylalkyl group having in all at most 12 carbon atoms, or



(xvii) a mononuclear cycloalkyl group of 3 to 6 carbon atoms,

or

(xviii) a mononuclear cycloalkylalkyl group of from 4 to 10 carbon atoms.

4,284,575

# SUBSTITUTED BENZENESULFONYLAZIDES

Frederick W. Bollinger, and George G. Hazen, both of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

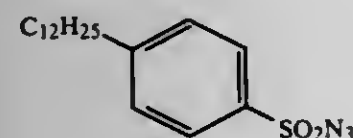
Filed Oct. 10, 1980, Ser. No. 195,997

Int. Cl.<sup>3</sup> C07C 117/00

U.S. Cl. 260—349

2 Claims

1. A compound having the formula:



4,284,576

# PREPARATION OF ANTHRAQUINONE FROM TETRAHYDROANTHRAQUINONE

Norbert Schenk, Leverkusen; Jürg Kregel, Essen; Paul Losacker, Leichlingen, and Wolfgang Swodenk, Odenthal-Globusch, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 822,011, Aug. 4, 1977, abandoned, which is a continuation of Ser. No. 706,091, Jul. 16, 1976, abandoned. This application Sep. 22, 1978, Ser. No. 944,934

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1975, 2532398

Int. Cl.<sup>3</sup> C07C 50/18

U.S. Cl. 260—369

12 Claims

1. In a process for the preparation of anthraquinone by reacting a liquid feed containing naphthalene, phthalic anhydride and tetrahydroanthraquinone with oxygen at elevated temperature while simultaneously separating off at least part of the naphthalene, in a distillation system which consists of a column having a rectifying section and a boiler, the improvement wherein the boiler of the distillation system has several chambers and is operated as a cascade and the liquid feed containing naphthalene, phthalic anhydride and tetrahydroanthraquinone is fed only into the lowest chamber of the boiler.

4,284,577

# NOVEL VITAMIN D<sub>3</sub> DERIVATIVE AND PROCESS FOR PREPARING THE SAME

Sachiko Yamada, 1227-4-1218, Hatsuazawamachi, Hachioji-shi, Tokyo, Japan; Masayuki Ohmori, Sagamikomachi, Japan, and Hiroaki Takayama, 2-6-12-31, Hatagaya, Shibuya-ku, Tokyo, Japan, assignors to Sachiko Yamada and Hiroaki Takayama, both of Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,390

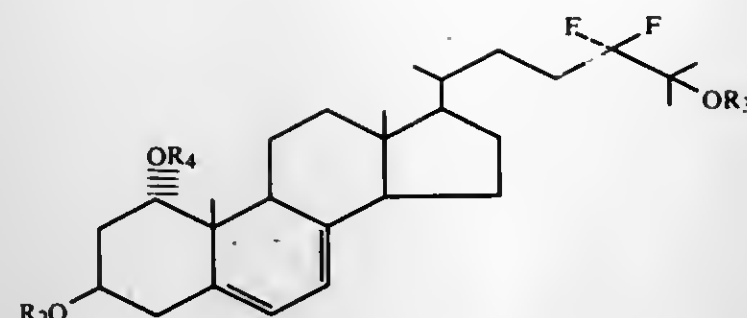
Claims priority, application Japan, Feb. 16, 1979, 54-16000; Feb. 19, 1979, 54-17220

Int. Cl.<sup>3</sup> C07J 9/00

U.S. Cl. 260—397.2

2 Claims

1. A provitamin D<sub>3</sub> derivative of the formula:



wherein R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> may be the same or different and represent hydrogen or a hydroxyl-protecting group.

4,284,578

# PROCESS FOR THE DIRECTED INTERESTERIFICATION OF A TRIGLYCERIDE OIL OR OIL MIXTURE

René De Lathauwer, Herent; Martin Van Opstal, and Albert J. Dijkstra, both of Izegem, all of Belgium, assignors to Safinco, Izegem, Belgium

Filed Sep. 11, 1979, Ser. No. 74,474

Claims priority, application Belgium, Sep. 14, 1978, 190,485

Int. Cl.<sup>3</sup> C11C 3/02

U.S. Cl. 260—410.7

21 Claims

1. Process for the directed interesterification of a triglyceride oil or oil mixture which comprises:

- adding a low temperature-active interesterification catalyst to the triglyceride oil or oil mixture;
- activating the interesterification catalyst;
- cooling the triglyceride oil or oil mixture containing activated interesterification catalyst to a preselected upper cycle temperature, said temperature being above the reference cloud point temperature of the triglyceride oil or oil mixture;
- carrying out a first temperature and time regulated cycle, taking 20 minutes or less wherein, in sequence:
  - the temperature of the triglyceride oil or oil mixture is rapidly reduced from the upper cycle temperature to the reference cloud point temperature or a preselected lower cycle temperature, said lower cycle temperature being below the reference cloud point temperature; and
  - if the temperature of the triglyceride oil or oil mixture is below the reference cloud point temperature, the temperature of the triglyceride mixture is increased to the reference cloud point temperature;
- carrying out at least three successive temperature and time regulated cycles with each such cycle taking 120 minutes or less wherein, in sequence:
  - the temperature of the triglyceride oil or oil mixture is increased from the reference cloud point temperature to the upper cycle temperature;
  - the temperature of the triglyceride oil or oil mixture is rapidly reduced from the upper cycle temperature to the lower cycle temperature; and
  - the temperature of the triglyceride oil or oil mixture is increased from the lower cycle temperature to the reference cloud point temperature.

4,284,579

# (N-PHOSPHONACETYL-L-ASPARTATO)(1,2-DIAMINOCYCLOHEXANE)PLATINUM(II) OR ALKALI METAL SALT

Sandra J. Meischen; Glen R. Gale, both of Charleston, S.C., and Marion B. Naff, Bethesda, Md., assignors to The United States of America as represented by the Department of Health & Human Services, Washington, D.C.

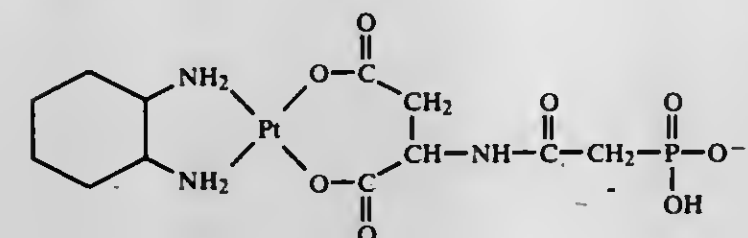
Continuation-in-part of Ser. No. 58,287, Jul. 17, 1979, abandoned. This application Jun. 9, 1980, Ser. No. 155,531

Int. Cl.<sup>3</sup> C07F 15/00

U.S. Cl. 260—429 R

2 Claims

1. The compound (N-phosphonacetyl-L-aspartato)(1,2-diaminocyclohexane)platinum(II) or alkali metal salt of the formula



where X is Na<sup>+</sup>, K<sup>+</sup>, Li<sup>+</sup>, or H

4,284,580

# FRACTIONATION OF TRIGLYCERIDE MIXTURE

Ted J. Logan, and Richard M. King, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 2, 1980, Ser. No. 108,999

Int. Cl.<sup>3</sup> C09F 5/10; C11B 3/00

U.S. Cl. 260—428.5

17 Claims

1. A process for separating a mixture of triglycerides with different Iodine Values and having their carboxylic acid moieties containing from 6 to 26 carbon atoms, to produce fractions of higher Iodine Value and lower Iodine Value, said process comprising the steps of

- contacting a solution of said mixture in solvent with surface aluminated silica gel adsorbent to selectively adsorb triglyceride of higher Iodine Value and to leave in solution a fraction of said mixture enriched in content of triglyceride of lower Iodine Value,
- removing solution of fraction enriched in content of triglyceride of lower Iodine Value from contact with adsorbent which has selectively adsorbed triglyceride of higher Iodine Value,
- contacting adsorbent which has selectively adsorbed triglyceride of higher Iodine Value with solvent to cause desorption of adsorbed triglyceride and provide a solution in solvent of fraction enriched in content of triglyceride of higher Iodine Value,
- removing solution of fraction enriched in content of triglyceride of higher Iodine Value from contact with adsorbent;

said mixture of triglycerides being essentially free of impurities which can foul the adsorbent; the solvent in step (a) and the solvent in step (c) having the same composition or different compositions and being characterized by a solubility parameter (on a 25° C. basis) ranging from about 7.0 to about 15.0, a solubility parameter dispersion component (on a 25° C. basis) ranging from about 7.0 to about 9.0, a solubility parameter polar component (on a 25° C. basis) ranging from about 0 to about 6.0 and a solubility parameter hydrogen bonding component (on a 25° C. basis) ranging from 0 to about 11.5; said adsorbent being derived from silica gel having a mean pore diameter of at least about 75 angstroms and a surface area of at least about 100 square meters per gram; said adsorbent being further characterized by a ratio of surface-silicon atoms to aluminum atoms ranging from about 3:1 to about 20:1, a moisture content less than about 10% by weight, and a particle size ranging from about 200 mesh to about 20 mesh; said adsorbent

having cation substituents selected from the group consisting of cation substituents capable of forming  $\pi$  complexes and cation substituents not capable of forming  $\pi$  complexes and combinations of these; the solvent in step (a) and the solvent in step (c) and the ratio of surface-silicon atoms to aluminum atoms in the adsorbent and the level of cation substituents capable of forming  $\pi$  complexes being selected to provide selectivity in step (a) and desorption in step (c).

4,284,581

# LITHIUMALUMINIUM HYDRIDE COMPOUNDS

Ryoji Noyori, Aichi, Japan, assignor to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Oct. 5, 1979, Ser. No. 82,240

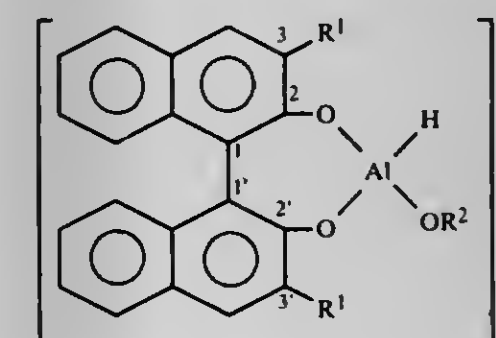
Claims priority, application Japan, Oct. 12, 1978, 53-124704; May 10, 1979, 54-56299

Int. Cl.<sup>3</sup> C07F 5/06

U.S. Cl. 260—448 AD

24 Claims

1. A lithium 1,1'-binaphthyl-2,2'-dioxyaluminum hydride compound of the general formula:



IX

wherein R<sup>1</sup> represents a hydrogen atom, or a methyl or ethyl group, and R<sup>2</sup> represents a straight- or branched-chain alkyl group containing from 1 to 12 carbon atoms unsubstituted or substituted by at least one fluorine atom, hydroxy group, or straight- or branched-chain alkoxy group containing from 1 to 4 carbon atoms, or represents a phenyl group unsubstituted or substituted by at least one straight- or branched-chain alkyl group containing from 1 to 4 carbon atoms.

4,284,582

# PROCESS FOR THE PREPARATION OF CYCLOPROPANE DERIVATIVES, INTERMEDIATES IN THE SYNTHESIS OF PYRETHROID INSECTICIDES

Albert E. Kaye, and Alan C. Tucker, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 28,852, Apr. 10, 1979, abandoned. This application Aug. 12, 1980, Ser. No. 177,453

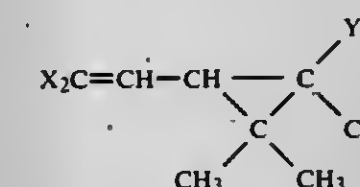
Claims priority, application United Kingdom, Apr. 28, 1978, 16943/78; Apr. 28, 1978, 16944/78; Apr. 28, 1978, 16945/78

Int. Cl.<sup>3</sup> C07C 120/00, 121/48

U.S. Cl. 260—464

8 Claims

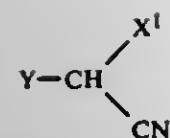
1. A process for the preparation of a compound of formula:



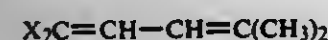
(I)

wherein both groups X are chlorine, bromine or trifluoromethyl, or one X is chlorine or bromine and the other is trifluoromethyl, and Y is —CN or —COOR in which R is an alkyl group of 1 to 4 carbon atoms, in which a compound of the formula:





wherein  $X^1$  is chlorine or bromine and Y has the meaning defined above, is reacted with a diene of the formula:



wherein X has the meaning defined above, the reaction taking place at a temperature from 0° to 140° C. for a time of 30 minutes to 30 hours, in the presence of from 0.01 to 0.1 mol per mol of the diene of a catalyst selected from the group consisting of metallic copper, cupric acetate, cupric chloride, copper stearate, cupric oxide, cuprous cyanide, cuprous chloride, copper acetylacetonate, di- $\mu$ -methoxybis(pentane-2,4-dionato)dycopper and di- $\mu$ -methoxybis(salicylaldehydato)dycopper, from 0.5 to 2.0 moles per mol of the diene of a base selected from the group consisting of an alkali or alkaline earth metal carbonate or borate, an alkali metal (1-4C) alkoxide and an alkaline earth metal oxide, and in a solvent selected from the group consisting of water together with a phase transfer catalyst, methanol, ethanol, isopropanol, tert.butanol, ethyl acetate, butyl acetate, acetonitrile, dimethylformamide, dimethylsulphoxide and N,N-dimethyl acetamide.

4,284,583

#### AMMOXIDATION PROCESS WITH EXTERNAL CATALYST REGENERATION ZONE

Peter R. Pujado, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 88,987, Oct. 29, 1979. This application Jul. 22, 1980, Ser. No. 171,226

Int. Cl.<sup>3</sup> C07C 120/14; B01J 37/12; F27B 15/08

U.S. Cl. 260-465 C

13 Claims

1. A process for the ammoxidation of alkylaromatic hydrocarbons which comprises the steps of:

- passing a feed stream which comprises an alkyl-aromatic hydrocarbon into the lower one-half of a reaction zone which is maintained at ammoxidation conditions including a temperature of between 350° C. and 550° C. and which contains a fluidized bed of catalyst;
- passing a first oxygen-containing stream and ammonia into the lower one-half of the reaction zone;
- removing from the reaction zone an effluent comprising an aromatic nitrile and recovering the aromatic nitrile;
- transferring a stream of used catalyst from the reaction zone into an isolated regeneration zone which is maintained at catalyst oxidation conditions including a temperature between 350° C. and 550° C. and which contains a fluidized bed of catalyst;
- heating a second oxygen-containing stream to a temperature above 350° C. and passing the second air stream into the regeneration zone;
- removing from the regeneration zone a regeneration zone effluent stream which comprises at least 10 mole percent oxygen and passing the regeneration zone effluent stream into the reaction zone as a third oxygen-containing vapor stream which supplies at least 8 mole percent of the total oxygen consumed within the reaction zone; and,
- transferring a stream of regenerated catalyst from the regeneration zone to the reaction zone.

(II)

#### 4,284,584 PROCESS FOR THE PREPARATION OF ACYL CYANIDES

Kurt Findeisen, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Continuation of Ser. No. 777,286, Mar. 11, 1977, abandoned.

This application Dec. 8, 1978, Ser. No. 967,932

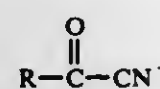
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1976, 2614240

Int. Cl.<sup>3</sup> C07C 51/54, 63/04

U.S. Cl. 260-545 R

18 Claims

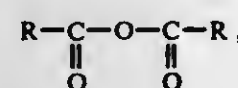
1. A process for the preparation of an acyl cyanide of the general formula



(I)

in which

R represents alkyl or substituted alkyl of from 1 to 8 carbon atoms, cycloalkyl or substituted cycloalkyl with 3 to 12 carbon atoms, aryl or substituted aryl; or an optionally substituted 5-membered or 6-membered heterocyclic radical which can also be fused with a benzene ring, which process comprises reacting a carboxylic acid anhydride of the general formula



(II)

in which

R has the abovementioned meaning, in the presence of a compound of the general formula



(III)

in which

R has the abovementioned meaning, and X represents a  $-COCl$ ,  $-COF$ ,  $-COBr$ ,  $-CCl_3$ ,  $-CF_3$ ,  $-CBr_3$ ,  $-CHCl_2$ ,  $-CHF_2$  or  $-CHBr_2$  group, with an alkali metal cyanide or anhydrous hydrocyanic acid, at a temperature of between 50° and 300° C.

4,284,585

#### PROCESS FOR THE PREPARATION OF ACETIC ANHYDRIDE

Joseph Pugach, Ho-Ho-Kus, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.

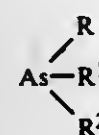
Filed Dec. 26, 1979, Ser. No. 106,627

Int. Cl.<sup>3</sup> C07C 51/56

U.S. Cl. 260-549

7 Claims

1. A process for the preparation of acetic anhydride which comprises reacting carbon monoxide, a halide which is an iodide or bromide and a compound selected from the group consisting of methyl acetate and dimethyl ether under substantially anhydrous conditions in the presence of 1 to 75 weight percent acetic acid, in the presence of a Group VIII noble metal catalyst and in the presence of a multiple promoter comprising metallic zirconium, and an organo-phosphorus compound or an organo nitrogen compound wherein the phosphorus and nitrogen are trivalent, or an arsine of the formula:



wherein R and  $R^1$  are monocyclic aryl groups or alkyl groups and  $R^2$  is the radical

4,284,586

#### FUEL SYSTEM

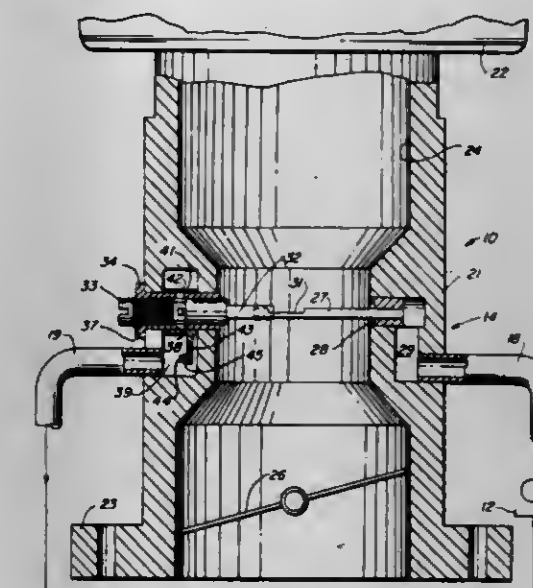
Irving H. Hallberg, Des Plaines, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 23, 1979, Ser. No. 23,378

Int. Cl.<sup>3</sup> F02M 7/12, 37/00

U.S. Cl. 261-36 A

4 Claims



1. In a fuel system having a fuel source and a charge forming apparatus arranged for recirculating excess fuel, a regulator outlet port exposed to an air stream which strips fuel therefrom and a spaced return port for receiving excess fuel from said outlet port, said return port being in a location removed from said air stream, characterized by means to vary the effective size of said return port to vary the quantity of excess fuel recirculated and thus the amount of fuel to said outlet port which varies the fuel-air ratio delivered by the system, which means to vary the effective size of said return port comprises: a rotatable sleeve surrounding said body having an opening corresponding generally in size to said return port, and means to rotate said sleeve and the relative position of said opening with respect to said return port to thus vary the effective size of said return port.

4,284,587

#### TAMPER RESISTANT CHOKE PULL-OFF

Jerry H. Winkley, St. Louis, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Nov. 2, 1979, Ser. No. 90,733

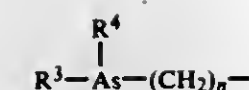
Int. Cl.<sup>3</sup> F02M 1/10

U.S. Cl. 261-39 B

4 Claims



1. In a carburetor for an internal combustion engine, the carburetor having an air passage through which air is drawn into the engine, a choke valve positioned at the inlet of the passage, the choke valve being pivotally mounted on a choke shaft for opening and closing the choke valve, a choke housing and a vacuum motor attached to the body of the carburetor at a location remote from the choke housing, and a link connecting the vacuum motor and the choke shaft for the vacuum motor to exert a choke valve opening force on the choke shaft when the engine is started, the improvement comprising means for making the vacuum motor and link assembly tamper resis-



a monocyclic aryl group or an alkyl group, and wherein  $R^3$  and  $R^4$  are each a monocyclic aryl group or an alkyl group, n being zero or a digit from 1-20.

4,284,588

#### PROCESS FOR THE PREPARATION OF ACETIC ANHYDRIDE

Joseph Pugach, Ho-Ho-Kus, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.

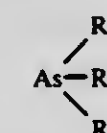
Filed Dec. 26, 1979, Ser. No. 106,628

Int. Cl.<sup>3</sup> C07C 51/56

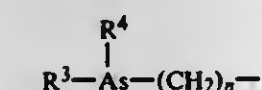
U.S. Cl. 260-549

5 Claims

1. A process for the preparation of acetic anhydride which comprises reacting carbon monoxide, a halide which is an iodide or bromide and a compound selected from the group consisting of a methyl acetate and dimethyl ether under substantially anhydrous conditions in the presence of 1 to 75 weight percent acetic acid, in the presence of a Group VIII noble metal catalyst and in the presence of a multiple promoter comprising metallic hafnium, and an organo-phosphorus compound or an organo-nitrogen compound wherein the phosphorus and nitrogen are trivalent, or an arsine of the formula:



wherein R and  $R^1$  are monocyclic aryl groups or alkyl groups and  $R^2$  is the radical



a monocyclic aryl group or an alkyl group, and wherein  $R^3$  and  $R^4$  are each a monocyclic aryl group or an alkyl group, n being zero or a digit from 1-20.

4,284,587

#### RADIOENZYMATIC ASSAY OF CATECHOLAMINES

Garland A. Johnson, Charleston Township, Kalamazoo County, and Jacob D. Peuler, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 681,999, Apr. 30, 1976, abandoned. This application Oct. 12, 1978, Ser. No. 950,864

Int. Cl.<sup>3</sup> G01N 31/00, 31/08, 33/48; B01D 9/04, 11/04, 15/08; C07C 91/30, 91/34

U.S. Cl. 564-365

6 Claims

1. A method for purifying an O-methylated catecholamine selected from the group consisting of O-methylated epinephrine, norepinephrine and dopamine prepared from the catechol-O-methyl transferase catalyzed methylation of the said catecholamine obtained from a mammalian system which comprises preferentially extracting the O-methylated catecholamine from the enzymatic incubation mixture with an organic solvent, repartitioning into an aqueous acid of sufficient strength to protonate the amine function of the O-methylated catecholamine said acid leaving essentially no residue upon evaporation, separating the acid phase from the organic phase, and separating said O-methylated catecholamine from another O-methylated catecholamine or impurity by chromatographic means.



tant to inhibit someone from changing the position at which the vacuum motor causes the choke valve to open, the tamper resisting means including a cover installed on the carburetor and shrouding at least a part of the vacuum motor, the link, and the portion of the choke shaft to which the link is connected thereby to inhibit access to these parts, the vacuum motor being mounted on a bracket attached to the carburetor and the cover being attachable to the bracket and having a semi-circular rear portion and a forwardly extending arm covering the link, the length of the arm portion being sufficient to also substantially cover the portion of the choke shaft extending from the body of the carburetor, the link being connected to this extending portion of the choke shaft.

4,284,590

## MULTIPLE ASPIRATOR FOR NEBULIZER

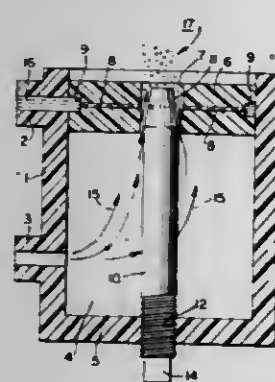
Roy DeBoer, Jr., Lake in the Hills, and Kenneth G. Miller, Palatine, both of Ill., assignors to Respiratory Care, Inc., Arlington Heights, Ill.

Filed Sep. 17, 1980, Ser. No. 188,102

Int. Cl.<sup>3</sup> B01F 3/04

U.S. Cl. 261—62

8 Claims



1. A multiple aspirator comprising:

a disk shaped member having an axis, two faces spaced along said axis with each face perpendicular thereto, an outer peripheral edge concentric with said axis and an axial aperture, concentric with said axis, connecting one face with the other;

a plurality of bores in said disk-shaped member, said bores being radial to said axis and angularly disposed about said axis, said bores connecting said outer peripheral edge with said axial aperture;

means to force a stream of gas from one side of said disk shaped member to the other through said axial aperture;

a rod shaped member, concentric on said axis, located to restrict the axial aperture so that gas flow from one side of said disk shaped member to the other can take place only in the annular clearance between said rod and said axial aperture;

means to supply fluid to the outer peripheral edge of said disk shaped member;

whereby the flow of gas in said annular clearance causes fluid to be drawn through each of said bores to said annular space, whereat it is nebulized and transported;

whereby each of said bores constitutes part of a separate aspirator, individual to its bore, and whereby each of said separate aspirators operates independently of the other separate aspirators.

4,284,591  
INJECTION MOLDING OF OPTICAL LENSES AND OPTICAL MOLDS

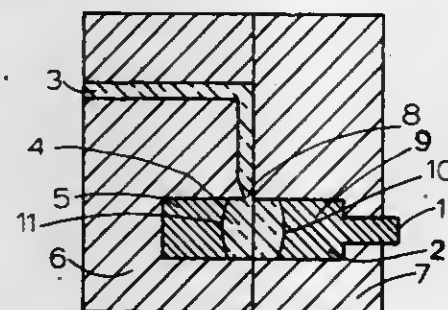
Charles W. Neefe, Big Spring, Tex., assignor to Neefe Optics Lab Inc., Big Spring, Tex.

Continuation-in-part of Ser. No. 144,565, Apr. 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 31,479, Apr. 19, 1979, abandoned, which is a continuation-in-part of Ser. No. 793,388, May 25, 1977, abandoned. This application Oct. 23, 1980, Ser. No. 200,261

Int. Cl.<sup>3</sup> B29D 11/00

U.S. Cl. 264—1.1

3 Claims



1. A method of molding optical lenses by the steps of heating and melting a resinous lens material, forcing with pressure the heated and melted resinous material into a runner tube and through a tapered restricted opening at the edge of the mold cavity, the velocity of the melted resinous material being increased upon passing through the tapered restricted opening and the temperature of the melted resinous material is increased by internal frictional forces upon passing through the tapered restricted opening and the viscosity of the melted resinous material is lowered upon passing through the tapered restricted opening, filling the lens mold cavity with the heated low viscosity resinous material, by allowing the melted lens material to rapidly move from the tapered restricted opening across the lens mold cavity, the molten lens material entering at the restricted opening and moving across to the opposite edge of the lens cavity to a point 180° removed from the entry gate and filling the lens cavity from the center line toward the two sides located 90° removed from the filling opening and providing air vents having an opening width of from one to three thousandths of an inch at the sides 90° removed from the filling opening, allowing the pressure within the mold cavity to equal the pressure present in the runner tube, allowing the heated resinous material to cool until the resinous material present in said restricted opening is solidified and sealing one stationary and one moveable opposed curved optical mold surfaces within said mold cavity, applying external force to the moveable optical mold surface moving said optical mold surface against the heated and melted resinous material present within the mold cavity, maintaining the external applied force on the resinous material and allowing the resinous material to cool and become a solid, opening the mold and removing the resinous optical lens.

4,284,592

## COMBUSTION INHIBITORS

Geoffrey I. Evans, Malvern, and Stuart Gordon, Cleobury Mortimer, both of England, assignors to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Continuation of Ser. No. 674,877, Apr. 8, 1976, abandoned. This application Jan. 15, 1980, Ser. No. 112,273

Claims priority, application United Kingdom, Apr. 9, 1975, 14651/75

Int. Cl.<sup>3</sup> C06B 21/00

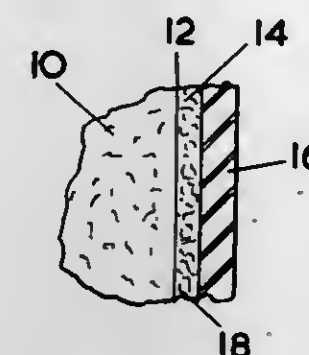
U.S. Cl. 264—3 R

14 Claims

1. A method of priming a body of gas producing material comprising nitrocellulose and an energetic nitric ester plasticiser therefor to facilitate bonding a silicone elastomer combus-

tion inhibitor to a surface thereof which is to be inhibited, said method comprising the steps of:

(a) coating said surface with a solution of a polyvinyl acetal, said solution containing a cross-linking agent and having dispersed therein a particulate metal, and causing or allowing the coating to cure,



(b) applying to the coating formed in step (a) a coating of a solution of a siloxane resin, said resin having been formed by hydrolysis of a mixture comprising 92-94% by weight of difunctional chlorosilanes and 6-8% by weight of trifunctional chlorosilanes, said solution containing a cross-linking agent for the resin, and causing or allowing the coating to cure.

4,284,593

## PREPARATION OF SHAPED BODIES

Peter W. Sutcliffe, Radley; Jim W. Isaacs, Harwell, and Colin E. Lyon, Charlton Heights, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed May 17, 1979, Ser. No. 39,965

Claims priority, application United Kingdom, May 26, 1978, 23670/78

Int. Cl.<sup>3</sup> G21C 21/00

U.S. Cl. 264—0.5

15 Claims

1. A method for the preparation of a shaped body which includes pressing a powder to give a "green" shaped body wherein the powder has been made by comminuting gel particles prepared by means of a gelation process, said gel particles prior to comminuting being of a size which presents no substantial dust hazard.

4,284,594

## METHOD OF MANUFACTURING HOLLOW FIBER

Yasushi Joh; Akihiko Niino, both of Yokohama; Noriaki Kaneko, Kamakura; Toshio Sano, Yokohama; Noriyuki Ichige, Tokyo; Koji Ichikawa, Kawasaki; Akira Fukutome, Tokyo, and Hisako Sonobe, Fujisawa, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1979, Ser. No. 102,537

Claims priority, application Japan, Dec. 20, 1978, 53-158054

Int. Cl.<sup>3</sup> B29D 27/00

U.S. Cl. 264—41

9 Claims

1. In a method of manufacturing a hollow fiber characterized in that a spinning solution consisting essentially of cellulose ester dissolved in an organic solvent is extruded from an annular slit of an orifice while simultaneously introducing a core liquid into the inside hollow portion of the extruded spinning solution, the improvement comprising: (a) using a monoterpene or a solution of the monoterpene as core liquid; and (b) incorporating into the spinning solution a component which renders the monoterpene or the solution of the monoterpene nonmiscible with the spinning solution and develops phase separation therebetween.

4,284,595

## ORIENTATION AND DEPOSITION OF FIBERS IN THE MANUFACTURE OF FIBERBOARD

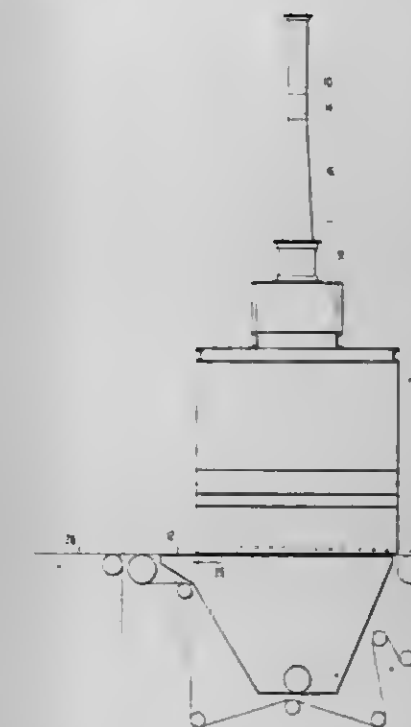
Thomas E. Peters, Boise, Id., and Joseph S. Bleymaier, Columbia, Md., assignors to Morrison-Knudsen Forest Products Company, Inc., Boise, Id.

Filed Jan. 19, 1979, Ser. No. 4,857

Int. Cl.<sup>3</sup> B29J 5/00; B29C 27/00

U.S. Cl. 264—24

15 Claims



1. Continuous-line method for orienting and depositing lightweight furnish, including fibrous material with curable binder, in the manufacture of fiberboard having directional properties, comprising the steps of

providing a web presenting an extended surface area for deposition of furnish, moving such web continuously to establish a forming direction,

providing lightweight furnish including elongated fibers moving along a flow path which is substantially normal to such surface for deposition of furnish,

guiding such furnish in the direction of such web, orienting and depositing fibers with preferred orientation utilizing electrical and mechanical forces by

disposing a plurality of elongated electrically conductive rods in spaced relationship from each other along such forming direction and in predetermined adjacent relationship above the web, with longitudinal axes of such elongated rods being in transverse relationship to the forming direction,

establishing electrical potential in such rods to attract fibers to such rods and establish an electric field which exerts a force on fibers moving toward the web tending to orient longitudinal axes of such elongated fibers in parallel relationship to the plane of the mat being formed and aligned with the forming direction, and

controllably driving the elongated electrically charged rods to rotate such rods about their respective axes to deposit fibers adhering to such rods by contact of such fibers with a mat forming surface presented by such web.

11. Apparatus for use in continuous-line manufacture of fiberboard from lightweight furnish including fine textured elongated fibers and curable binding materials, such apparatus providing desired orientation and uniform deposition of fibers to enhance directional appearance characteristics in the fiberboard being formed, comprising

means for delivering lightweight furnish, web means presenting a mat forming surface, such web means including a continuously moving web having a longitudinal axis and a lateral dimension measured perpendicularly to such longitudinal axis and presenting a



preselected area for deposition of furnish having a lateral dimension correlated to that of the lateral dimension of the fiberboard being formed, such means for delivering furnish in the direction of such web providing substantially uniform lateral and longitudinal distribution controlled flow of furnish as substantially individualized fibers moving toward such web for orientation and deposition purposes, and orientation and deposition means comprising guide wall means defining a flow-through structure for passage of furnish toward the web, such flow-through structure having cross-sectional lateral and longitudinal dimensions measured transversely to the flow path of furnish, which dimensions are correlated with corresponding dimensions of the preselected area of deposition of the fibers, and a plurality of elongated electrically conductive rods having their longitudinal axes disposed in transverse relationship to the longitudinal axis of such web, such rods extending laterally across such web a distance correlated with the lateral dimension of the fiberboard being formed and being positioned in closely spaced relationship to such web, such closely spaced relationship being preselected in the direction of approach of fibers toward the web, such laterally extending rods being spaced from each other longitudinally in a predetermined manner along the direction of travel of such web, drive means for rotating such plurality of elongated electrically conductive rods about their respective longitudinal axes, and means for electrically energizing such rods to establish an electric field in the flow path of fibers approaching such rods and deposition on such mat forming surface.

4,284,596

# PROCESS FOR PRODUCING FOAMED ARTICLES OF AROMATIC POLYESTERS

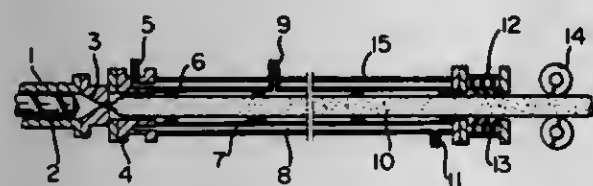
Norio Inokuchi, Hino; Teruhisa Fukumoto, and Yoshio Mori, both of Sagami, Japan, assignors to Teitin Limited, Osaka, Japan

Filed Jan. 8, 1980, Ser. No. 110,399

Claims priority, application Japan, Sep. 21, 1979, 54-120808  
Int. Cl.<sup>3</sup> B29D 27/00

U.S. Cl. 264-45.3

8 Claims



1. A process for producing a foamed article of an aromatic polyester by mixing an aromatic polyester, 0.05 to 5% by weight, based on the aromatic polyester, of an epoxy compound which has two or more epoxy groups, 0.05 to 3% by weight based on the aromatic polyester, of a metal compound selected from the group consisting of organic acid salts, inorganic acid salts, and oxides of a metal of Group Ia, IIa or IIIa of the periodic table, and 0.05 to 30% by weight, based on the aromatic polyester, of a blowing agent in a melt extrusion shaping machine while introducing the blowing agent thereinto under pressure, said process comprising mixing said materials with a fibrous filler in said melt extrusion shaping machine, then extruding the molten mixture from said extrusion shaping machine, further expanding the extruded and unsolidified foamed article in an atmosphere maintained at reduced pressure, and solidifying said article by cooling in an atmosphere maintained at reduced pressure.

4,284,597

# APPARATUS FOR STRIPPING A SOLID MASS IN A STRIP FROM A MILL

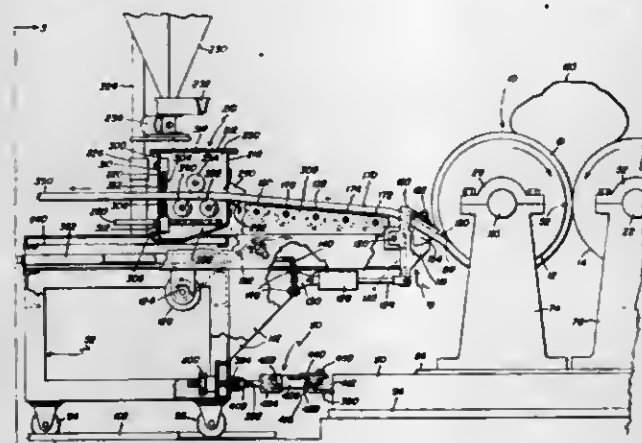
Edward I. Stein, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Mar. 13, 1979, Ser. No. 20,129

Int. Cl.<sup>3</sup> B29H 21/04, 21/06

U.S. Cl. 264-130

14 Claims



1. An apparatus for stripping continuously a solid mass in a strip from a two roll mill comprising:  
a frame with a first end and a second end opposite said first end;  
a two roll mill located adjacent said first end of said frame; knife means at said first end of said frame adapted to cut a strip of solid mass from said two roll mill;  
first roller means on said frame adjacent said knife means for passing back said cut strip of solid mass toward the second end of said frame opposite said first end;  
dusting means adjacent said first roller means through which said cut strip of solid mass passes adapted to dust said cut strip of solid mass with powder;  
second roller means in said dusting means for carrying the cut strip of solid mass through said dusting means from said first roller means and passing said cut strip of solid mass to the second end of same frame.

14. A process for continuously stripping solid mass from a two roll mill, in a strip; dusting the strip with talc for subsequent packaging the strip comprising passing the solid mass on said two roll mill in a contact with an apparatus for stripping continuously a solid mass in a strip from a two roll mill comprising:  
a frame with a first end and a second end opposite said first end  
a two roll mill located adjacent said first end of said frame; knife means at said first end of said frame adapted to cut a strip of solid mass from said two roll mill;  
cutting a strip and passing the strip to first roller means on said frame adjacent said knife means for passing back said cut strip of solid mass toward the second end of said frame opposite said first end;  
passing said strip to dusting means adjacent said first roller means through which said cut strip of solid mass passes adapted to dust said cut strip of solid mass with powder; dusting said strip by passing to second roller means in said dusting means for carrying the cut strip of solid mass through said dusting means from said first roller means and passing said cut strip of solid mass to the second end of same frame.

4,284,598

# METHOD FOR MAKING BICOMPONENT FILAMENTS

James P. Craig, Jr., Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 25, 1980, Ser. No. 124,379

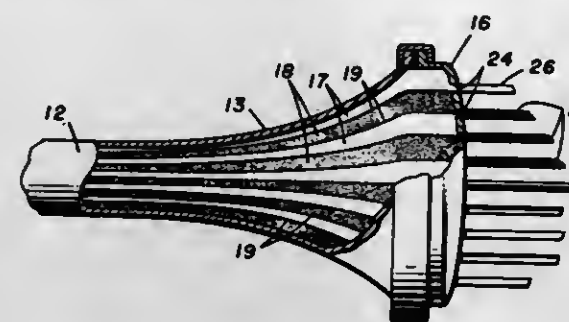
Int. Cl.<sup>3</sup> B29F 3/10

U.S. Cl. 264-171

5 Claims

1. The method of making bicomponent filaments from two different spin dopes, comprising

a. assembling said dopes into alternating layers in a feed tube connected to a transition tube leading to a spinnerette having a diameter greater than the diameter of the tube;  
b. and feeding the dope layers from the feed tube through



the transition tube and the spinnerette to form filaments, said transition tube having a parabolic configuration such that the linear rate of flow of the dope layers through said transition tube decreases at a uniform rate along the length of the transition tube.

4,284,599

# STERILIZATION SYSTEM

Harold W. Andersen; Shirley R. Andersen, both of Oyster Bay; Clifford Zaner, Holbrook, and Charles H. Harrison, Oyster Bay, all of N.Y., assignors to Anprosol Incorporated, Oyster Bay, N.Y.

Division of Ser. No. 924,018, Jul. 12, 1978, abandoned. This application Mar. 23, 1979, Ser. No. 23,494

Int. Cl.<sup>3</sup> C23F 11/18

U.S. Cl. 422-18

19 Claims



1. A method of sterilizing medical articles including metal medical articles comprising:  
(I) storing separately a hypochlorite phosphates, and a non-ionic surfactant which is compatible with chlorine and said phosphates, each in a separate sealed compartment in a multi-compartment package,  
(II) maintaining said components in said sealed compartments of said package in an inactivated condition thereby prolonging shelf-life until ready for use,  
(III) releasing and transferring said components from said multi-compartment package into a vessel at the time sterilization is to be effected.  
(IV) simultaneously with step (III) effecting mixing said components to thereby activate the components and provide in said vessel an activated sterilizing solution which is substantially non-irritating to tissue and which comprises 0.02 to 1% of said hypochlorite, 1.4 to 20% of said phosphates as di(alkali metal) phosphate and 0.08% to 21% as mono(alkali metal) phosphate, and 0.1 to 0.5% of said nonionic surfactant which is compatible with chlorine and said phosphates, with the proviso that the lower limit of said di(alkali metal) phosphate is 4% when the amount of said hypochlorite is from 0.5 to 1%, said percentages being based on weight (in grams) per 100 ml. of solution, and  
(V) contacting said medical articles with said sterilizing

solution to effect sterilization free of deleterious effects on said metal medical articles.

4,284,600

# METHOD FOR BIOHAZARD STEAM STERILIZATION

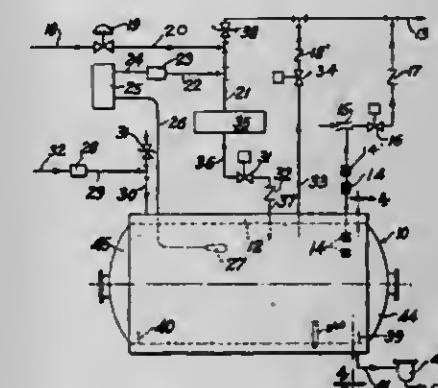
John R. Gillis, Harborside; Peter Miraldi, Erie, both of Pa., and Marius X. Stavers, Scotch Plains, N.J., assignors to American Sterilizer Company, Erie, Pa.

Filed Dec. 6, 1979, Ser. No. 100,739

The portion of the term of this patent subsequent to Aug. 28, 1996, has been disclaimed.  
Int. Cl.<sup>3</sup> A61L 2/06, 2/26

U.S. Cl. 422-26

5 Claims



1. A method of sterilizing comprising, providing a chamber having no drain line, said chamber having a steam line with a first check valve in said steam line, an opening above the bottom of said chamber with an evacuating means connected thereto, and a second check valve and filter connected in series between said evacuating means and said opening, loading said chamber with highly infectious material to be sterilized, evacuating said chamber and said filter through said opening through said filter and through said second check valve to a subatmosphere pressure by said evacuating means, admitting steam to said chamber and raising the temperature of said chamber to sterilizing temperature, maintaining said sterilizing temperature in said chamber for a period of time sufficient to accomplish sterilization, and removing said material from said chamber.

4,284,601

# SURFACTANT FOAMS AND THEIR USE

Dong M. Chay, and David J. Haack, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 18, 1980, Ser. No. 178,783

Int. Cl.<sup>3</sup> B01J 11/18; C09K 3/00

U.S. Cl. 422-40

15 Claims

1. A method of preventing fumes from a fumable material that has been exposed to the atmosphere from escaping in the atmosphere comprising covering the fumable material with a foam prepared from a composition which comprises an aqueous mixture of ammonium lauryl sulfate, methyl polyoxyethylene cocoamine chloride, dimethyl cocoamine oxide and polyvinyl alcohol in a proportion in parts by weight, 100% basis, of 7-35, 25-55, 20-35 and 2.5-7.5, respectively with enough water and air to give foam density of from 0.005-0.130 g/cc.



4,284,602

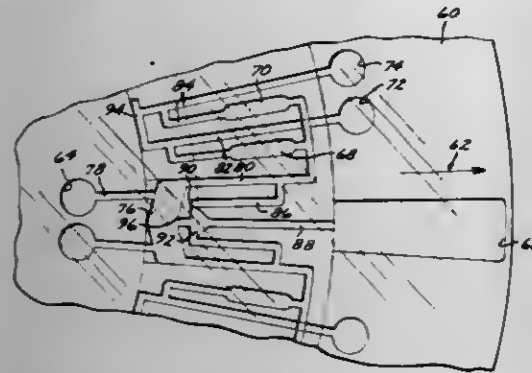
## INTEGRATED FLUID MANIPULATOR

Arden A. Kelton, Westminster; William P. Waters, Newport Beach; David G. Shunk, Poway, and Michael L. Bell, Hacienda Heights, all of Calif., assignors to Immutron, Inc., Newport Beach, Calif.

Filed Dec. 10, 1979, Ser. No. 101,807

Int. Cl.<sup>3</sup> B04B 5/12; G01N 21/07

U.S. Cl. 422-72



1. In centrifugal chemical-medical analysis apparatus, the combination of: a rotatable element adapted to be mounted on and rotated by a suitable machine, said element being formed with fluid inlet means; means forming a measuring chamber in said element radially outwardly of said inlet means and conduit means interconnecting said inlet means and said measuring chamber; said element being further formed with a vented fluid outlet means from said measuring chamber; a passageway connected to said conduit means and in communication with said measuring chamber through said conduit means; and overflow outlet means communicating with said passageway, said overflow outlet means being radially located with respect to said measuring chamber to control the filling level in said measuring chamber.

4,284,603

## TEST TUBE DECANTER RACK

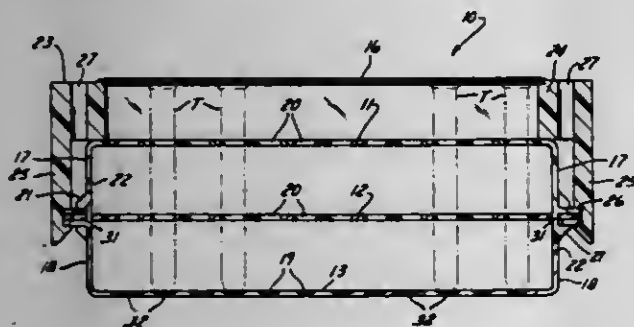
Gordon K. Korom, Grayslake, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed May 8, 1980, Ser. No. 147,882

Int. Cl.<sup>3</sup> B01L 9/06; B01D 35/02

U.S. Cl. 422-101

6 Claims



1. A laboratory apparatus which permits simultaneous decantation of the liquid contents of a plurality of vertically aligned test tubes which comprises:  
a top portion having a horizontal plate with a plurality of apertures;  
a middle portion having a horizontal plate with a plurality of apertures;  
a bottom portion having a horizontal plate with a plurality of depressions to provide seats for the bottoms of test tubes; a pair of sidewalls which are operatively associated with said top, bottom and middle portions so as to vertically align the apertures and depressions;  
and  
a porous retaining means constructed and arranged to span said top portion so as to retain test tubes in an inverted

rack while permitting decantation of liquid contents of said tubes while retaining a solid phase within the tube and having marginal end portions extending around and engaging with said sidewalls.

4,284,604

## PIPETTE WITH ADJUSTABLE VOLUME

Jukka Tervamäki, Helsinki, Finland, assignor to Kommandiittiyhio Finnipipette Osmo A Suovaniemi, Helsinki, Finland

Filed May 31, 1979, Ser. No. 44,155

Claims priority, application Finland, Jun. 2, 1978, 781764

Int. Cl.<sup>3</sup> B03C 1/00; B01L 3/02

U.S. Cl. 422-100

4 Claims



1. An adjustable pipette comprising:  
a tubular frame including an elongated slot therein said slot being disposed along the longitudinal axis of said frame, said frame including an opening at its upper end;  
a tip releaseably connected to the lower end of said frame;  
a piston slidably reciprocable in said frame;  
a tubular sleeve slidably and non-rotatably disposed in said frame, said sleeve including an elongated slot aligned with said elongated slot in said frame;  
a bushing disposed within said sleeve, said bushing including a threaded opening;  
an adjustment rod slidably mounted in the upper portion of said frame and coupled for movement with said piston, the upper end of said adjustment rod extending through the opening at the upper end of said frame and having means to permit manual actuation thereof; the lower end of said adjustment rod including threading engageable with said threading in said bushing; and  
an extension disposed at the end of said threaded portion of said rod, said extension being disposed within said sleeve, said extension including indicator means and means for biasing said indicator means into said slot in said sleeve to thereby provide a visual indication of the relative position of said actuation rod and said sleeve and thus the volume of fluid to be drawn into said pipette, as well as to provide resistance to the turning of said adjustment rod with respect to said sleeve.

4,284,605

## LINEAR DRIVE SHAFT SEAL

Michel A. Pierrat, Andover, Mass., assignor to Ferrofluidics Corporation, Nashua, N.H.

Filed May 14, 1980, Ser. No. 149,141

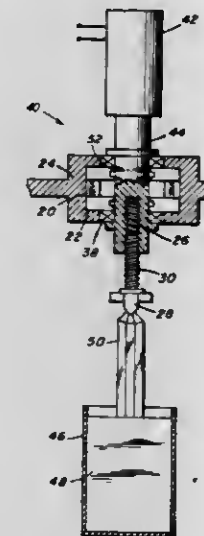
Int. Cl.<sup>3</sup> C30B 15/30, 35/00; F16J 15/56

U.S. Cl. 422-249

11 Claims

1. A linear drive-shaft sealing apparatus useful for magnetic isolation of a linear-motion drive shaft from a driving means, the apparatus comprising:

- (a) a first input drive shaft adapted for connection to the driving means and for linear motion thereby;
- (b) a magnetically permeable, cylindrical element capable of rotary motion;
- (c) a first means to convert the linear motion of the input drive shaft by the driving means into rotary motion of the cylindrical element;
- (d) a housing surrounding the cylindrical element, and defining an annular space therebetween;
- (e) a second, isolated, output drive shaft;
- (f) a second means to reconvert the rotary motion of the cylindrical element to linear motion of the second drive shaft; and
- (g) a multiple-stage, magnetic-fluid seal to isolate the second drive shaft from the first drive shaft, the seal comprising:



- (i) a permanent ring magnet disposed within the housing and surrounding the cylindrical element;
- (ii) one or more magnetically permeable pole pieces adjacent to the magnet and defining in the space between the housing and the cylindrical element a plurality of gaps, across which gaps the flux of the magnetic field passes; and
- (iii) magnetic fluid captured within the gaps to provide a plurality of close, but separate, seal stages, whereby the second drive shaft is driven in a linear manner by the driving means, but is isolated therefrom by the multiple-stage magnetic fluid seal between the housing and the cylindrical element.

4,284,606

## EXTRACTION

John S. Rendell, Stanford-le-Hope, and Maurice J. Cahalan, Whitechurch, both of England, assignors to RTL Coptactor Holding S.A., Zug, Switzerland

Filed Nov. 27, 1978, Ser. No. 963,776

Claims priority, application United Kingdom, Nov. 25, 1977, 49179/77

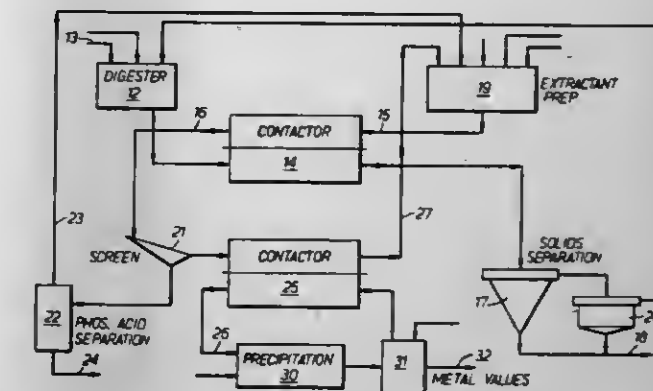
Int. Cl.<sup>3</sup> C01G 43/00; C01B 25/01

U.S. Cl. 423-6

10 Claims

1. A process for the extraction of phosphoric acid and metal values from phosphate rock comprising  
acidulating the phosphate rock to convert the phosphate of the rock into phosphoric acid;  
contacting a slurry of the acidulated rock with selective

extractants for phosphoric acid and metal values contained in the slurry;



removing the extractants substantially independently of the solids of the slurry; and  
recovering the phosphoric acid and metal values.

4,284,607

## CHLORINATION OF ALUMINOUS MATERIALS USING PRESELECTED SOLID REDUCING AGENTS

Charles J. Culleton, Tarentum; Subodh K. Das, Apollo, both of Pa., and Ronald C. Schoener, Colville, Wash., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 10, 1979, Ser. No. 73,925

Int. Cl.<sup>3</sup> C01F 7/60

U.S. Cl. 423-137

11 Claims

1. A process for the chlorination of aluminous material which comprises reacting aluminous material with chlorine at a temperature of from 575° to 750° C. in the presence of a solid reducing agent obtained by calcining green petroleum coke at a temperature from 650° to 900° C. for a period of from 10 to 120 minutes.

4,284,608

## PROCESS FOR REGENERATING SULFUR DIOXIDE GAS SCRUBBING SOLUTIONS

Leopold Pessel, Wyndmoor, Pa., assignor to American Electronic Laboratories, Inc., Lansdale, Pa.

Continuation-in-part of Ser. No. 816,293, Jul. 18, 1977, Pat. No. 4,157,988, which is a division of Ser. No. 678,291, Apr. 19, 1976, Pat. No. 4,091,075, which is a continuation-in-part of Ser. No. 545,928, Jan. 31, 1975, Pat. No. 4,070,441. This application Dec. 26, 1978, Ser. No. 973,255

The portion of this patent subsequent to Jan. 24, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> C01B 17/00

U.S. Cl. 423-242

6 Claims

1. In a one-step process of removing sulfur dioxide from a gas stream by contact with an aqueous scrubbing solution of a metal salt providing ferric ions, the metal salt being reacted stoichiometrically with sulfur dioxide to reduce the ferric ions of the metal salt to ferrous ions, with the concurrent formation of sulfuric acid which dissolves in the solution, and including as a second step the regeneration of the solution by oxidation of the ferrous ions of the reduced metal salt to ferric ions, thus permitting continuous or repeated use of the solution, the improvement comprising effecting the regeneration of the solution by anodic oxidation of the ferrous ions of the reduced metal salt.



4,284,609

## CONDENSATION CLEANING OF PARTICULATE LADEN GASES

Egbert deVries, Kettering, Ohio, assignor to Quad Environmental Technologies Corp., Highland Park, Ill.  
Continuation-in-part of Ser. No. 814,420, Jul. 11, 1977, Pat. No. 4,141,702. This application Jan. 24, 1979, Ser. No. 6,015. The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> C01B 17/00; B01D 47/00, 45/00; C01B 17/16  
U.S. Cl. 423—242 24 Claims

1. A method for removing finely divided particulate matter and other contaminants from gas streams selected from the group consisting of furnace emissions, steel industry waste gases, food industry waste gases and combustion flue gases which comprises:

humidifying the gas stream with water;  
subjecting the humidified gas stream to indirect contact heat exchange sufficient to lower the gas stream to a temperature below its dew point, thereby condensing water on the surfaces of said particulate matter, and to provide an energy transfer for condensation of water vapor in said gas stream of at least 5 hp per 1000 cfm, said heat exchange being accomplished by passing said humidified gas stream directly to and downwardly through a heat exchange element having smooth and essentially vertical gas passages of relatively large dimension thereby causing migration of said particulate matter from the gas stream to the surfaces of said heat exchange element;  
separating condensed water, now containing particulate matter, from the gas stream, and  
recovering a gas stream substantially depleted of particulate matter.

4,284,610

## BN BONDED BN FIBER ARTICLE AND METHOD OF MANUFACTURE

Robert S. Hamilton, Youngstown, N.Y., assignor to Kennecott Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 968,070, Dec. 11, 1978, abandoned, and Ser. No. 913,916, Jan. 8, 1978, abandoned, each is a continuation of Ser. No. 773,588, Mar. 2, 1977, Pat. No. 4,130,631, and Ser. No. 773,587, Mar. 2, 1977, abandoned. This application Mar. 20, 1979, Ser. No. 22,251.

The portion of the term of this patent subsequent to Dec. 19, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> C01B 35/08; H01M 8/02  
U.S. Cl. 423—290 28 Claims

1. A method for manufacturing a boron nitride article comprising:

- blending from about 0.5 to about 40 weight percent of a bonding compound selected from the group consisting of boron oxide, boric acid and mixtures thereof with from about 60 to about 99.5 weight percent of structural fiber manufactured from boron oxide, partially nitrated boron oxide, boron nitride or mixtures of such fibers in an anhydrous fluid vehicle in which the bonding compound and the structural fiber are insoluble, the bonding compound having a lower melting temperature than the melting or decomposition temperature of the structural fiber;
- forming a shaped article with the resulting blend and removing sufficient fluid vehicle to permit intimate contact of the structural fiber with the bonding compound;
- heating the shaped article in an anhydrous gas selected from the group consisting of inert gases, nitrogen, ammonia, carbon dioxide and mixtures thereof to a temperature above the melting temperature of the bonding compound and below the melting or decomposition temperature of the structural fiber for a time sufficient to melt at least some of the bonding compound to the structural fibers; and
- heating the shaped article in an ammonia atmosphere to a sufficient temperature and for a sufficient time to con-

vert the bonding compound and structural fibers to boron nitride.

24. An article having sufficient flexibility that samples 3 mm thick show no apparent cracking or deterioration when bent around a 1.5 cm diameter rod; said article comprising boron nitride fibers bonded together with from about 25 to about 70 percent by weight of article of boron nitride bonds, essentially all of said bonds having smooth non-porous surfaces.

4,284,611

## AQUEOUS PHOSPHATE-STABILIZED POLYALUMINUM SULFATE SOLUTIONS AND PREPARATION THEREOF

Alan B. Gancy, Syracuse, and Christian A. Wamser, Camillus, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jul. 25, 1979, Ser. No. 60,260

Int. Cl.<sup>3</sup> C01B 25/36

U.S. Cl. 423—308 15 Claims

1. An aqueous chloride-free, phosphate-stabilized polyaluminum sulfate solution, useful as a coagulant in water treatment, having the formula:



wherein

x is about 1.2 to 1.62;  
y is about 0.595 to 0.87; and  
z is about 0.06 to 0.19,

with the proviso that the sum of  $x + 2y + z$  is 3.

8. A process for preparing an aqueous chloride-free, phosphate-stabilized polyaluminum sulfate solution, useful as a coagulant in water treatment, having the formula:



wherein

x is about 1.2 to 1.62;  
y is about 0.595 to 0.87; and  
z is about 0.06 to 0.19,

comprising blending an overbasified aqueous chloride-free phosphate-stabilized polyaluminum sulfate solution with an aqueous chloride-free, alum solution, with the proviso that the sum of  $x + 2y + z$  is 3.

13. A process for preparing an aqueous chloride-free, phosphate-stabilized polyaluminum sulfate solution, useful as a coagulant in water treatment, of a composition having the formula:



wherein

x is about 1.2 to 1.62;  
y is about 0.595 to 0.87; and  
z is about 0.06 to 0.19

which comprises:

reacting  $\text{Al}_2\text{O}_3 \cdot n\text{H}_2\text{O}$ , wherein n is at least 3, with chloride-free phosphoric acid, in a ratio of about 3 to 10 moles of  $\text{H}_3\text{PO}_4$  per mole of  $\text{Al}_2\text{O}_3 \cdot n\text{H}_2\text{O}$ ; and  
mixing the resultant reaction product with an aqueous chloride-free polyaluminum sulfate solution, with the proviso that the sum of  $x + 2y + z$  is 3.

4,284,612

## PREPARATION OF SiC WHISKERS

Ottis J. Horne, Jr., Johnson City, and Lloyd I. Grindstaff, Elizabethton, both of Tenn., assignors to Great Lakes Carbon Corporation, New York, N.Y.

Filed Jan. 28, 1980, Ser. No. 115,683

Int. Cl.<sup>3</sup> C01B 31/36

U.S. Cl. 423—345 16 Claims

1. A process for the manufacture of SiC whiskers comprising the steps of:

- (1) Selecting an organic fiber from the group consisting of polymers, copolymers, and terpolymers of acrylonitrile oxidized in air at a temperature from 200° to 400° C.;
- (2) Grinding or chopping the fiber obtained in step 1 to form a short fiber of approximately 10 to 100μ length;
- (3) Mixing the ground fiber obtained above with amorphous  $\text{SiO}_2$ ;
- (4) Placing the mixture obtained above in a furnace and increasing the temperature to a carbide-forming temperature within the range of 1400° to 1800° C. in a non-oxidizing atmosphere;
- (5) When the temperature reaches said carbide-forming temperature, maintaining the mixture at that temperature in an atmosphere of inert gas for a period of 1 to 4 hours; and
- (6) Removing the product from the furnace.

12. A process for the manufacture of SiC whiskers comprised of:

- (1) Ashing rice hulls at a temperature from about 400° to 700° C. to form amorphous  $\text{SiO}_2$ ;
- (2) Mixing the ash with ground fibers from 10 to 100μ in length selected from the group consisting of polyacrylonitrile fibers oxidized in air at 200° to 400° C., carbonized polyacrylonitrile fibers, graphitized polyacrylonitrile fibers, graphitized viscose rayon, carbonized mesophase petroleum pitch fibers, and fibrous alpha-cellulose carbonized in a nonoxidizing atmosphere;
- (3) Placing the mixture obtained in an inert atmosphere of argon;
- (4) Increasing the temperature at a rate of from 100° C. to 200° C. per minute from ambient to a carbide-forming temperature between 1400° C. and 1800° C., holding the mixture at that temperature in argon for a period of approximately one hour to form SiC whiskers; and
- (5) Removing the product from the heating chamber.

4,284,613

## PROCESS FOR AMMONIATING PHOSPHORIC ACID

Donald M. Martin, and Peter A. Rowe, both of Ipswich, England, assignors to Fisons Limited, London, England

Filed Oct. 4, 1979, Ser. No. 81,817

Claims priority, application United Kingdom, Oct. 7, 1978, 39732/78

Int. Cl.<sup>3</sup> C01B 25/28

U.S. Cl. 423—310 8 Claims

1. A process for ammoniating phosphoric acid which comprises reacting ammonia with phosphoric acid under pressure in an agitated tank reaction vessel to form a reaction mixture comprising ammonium phosphate characterised in that the reaction mixture is circulated within the reaction vessel and allowed to foam whereby there is formed a foaming reaction mixture comprising steam and ammonium phosphate; and in that steam and ammonium phosphate are discharged from the reaction vessel through a common outlet which outlet has means for controlling pressure within the reaction vessel.

4,284,614

## PROCESS FOR PRODUCTION OF HIGH PURITY PHOSPHORIC ACID FROM HIGH ALUMINA PHOSPHATE PEBBLE ROCK

Fernando Ore, Whittier, Calif., assignor to Occidental Petroleum Corp., Irvine, Calif.

Continuation-in-part of Ser. No. 676,559, Apr. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 583,687, Jun. 4, 1975, abandoned, which is a continuation of Ser. No. 301,085, Oct. 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 204,670, Dec. 3, 1971, abandoned. This application May 1, 1980, Ser. No. 145,641

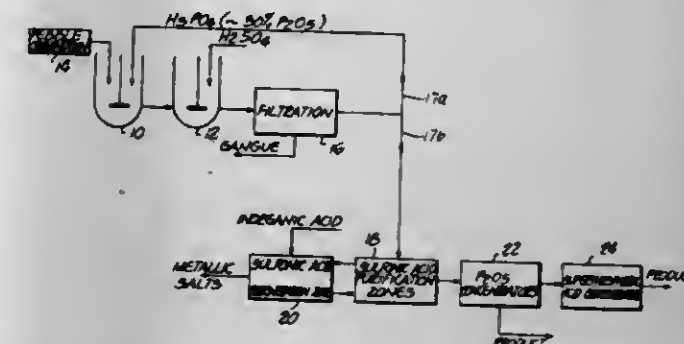
Int. Cl.<sup>3</sup> C01B 25/46, 25/22

U.S. Cl. 423—321 S 29 Claims

1. A process for the purification of phosphoric acid obtained from the digestion of phosphate bearing rock containing metal

impurities which comprise calcium, magnesium, aluminum, ferric iron, and ferrous iron, which process comprises:

- (a) contacting high alumina phosphate pebble rock having a bone phosphate of lime value less than about 68 with aqueous phosphoric acid containing from about 10% up to about 35%  $\text{P}_2\text{O}_5$  at an elevated temperature of from about 140° F. to about 220° F. to form a reaction mass containing extracted phosphate values from the phosphate pebble rock in the form of monocalcium phosphate and a residual solid phosphate pebble rock gangue;
- (b) contacting the reaction mass with concentrated sulfuric acid comprising from about 90% to about 100%  $\text{H}_2\text{SO}_4$  at an elevated temperature of from about 140° F. to about 220° F. to convert the monocalcium phosphate to solid calcium sulfate and phosphoric acid and form a crude phosphoric acid containing solid calcium sulfate, metal impurities selected from the group consisting of calcium, magnesium, aluminum, ferric iron and ferrous iron and solid phosphate pebble rock gangue;



- (c) separating the crude phosphoric acid containing the ionic metal impurities from the solid phosphate pebble rock gangue and the solid calcium sulfate;
- (d) contacting the crude phosphoric acid containing ionic metal impurities with a water-immiscible organic solvent containing a water-immiscible organic sulfonic acid compound selected from the group consisting of alkylaryl, polyalkylaryl, alkanoylaryl, polyalkanoylaryl sulfonic acids and aromatic ring-substituted derivatives thereof wherein the substituent is selected from fluoro, bromo, chloro, iodo, hydroxy, alkoxy and omegacarboxyalkoxy groups to extract ionic metal impurities and form:
- (i) a water-immiscible organic phase containing the organic sulfonic acid compound containing extracted ionic metal impurities; and
- (ii) an aqueous phase containing a purified phosphoric acid; and
- (e) separating the aqueous phase containing the purified phosphoric acid from the water-immiscible organic phase containing the organic sulfonic acid compound containing extracted ionic metal impurities.

4,284,615

## PROCESS FOR THE PRODUCTION OF CARBON FIBERS

Kunio Maruyama, Okayama, Japan, assignor to Japan Exlan Company, Ltd. and Sumitomo Chemical Company Limited, both of Osaka, Japan

Filed Mar. 6, 1980, Ser. No. 127,980

Claims priority, application Japan, Mar. 8, 1979, 54-27436

Int. Cl.<sup>3</sup> D01F 9/12, 9/16, 9/22

U.S. Cl. 423—447.4 5 Claims

1. An improved process for the production of carbon fibers characterized by fixing 0.1-5 weight % of a chemical substance selected from the group consisting of glycerin, polyethylene glycol, polypropylene glycol, and alkyl derivatives thereof, and mixtures or compounds of two or more of these chemical substances onto thermally stabilized carbon precursor fibers and/or carbonized fibers to give the fibers good collectivity, and carbonizing the thermally stabilized fibers and/or graphitizing the fibers, said alkyl derivatives being selected from ether compounds obtained by reacting said



chemical substances with an alcohol selected from the group consisting of methyl alcohol, ethyl alcohol, propyl alcohol, butyl alcohol, pentanol and hexanol or ester compounds obtained by reacting said chemical substances with an organic acid selected for the group consisting of formic acid, acetic acid, oxalic acid, malonic acid, succinic acid, butyric acid, lactic acid and malic acid.

4,284,616

# PROCESS FOR RECOVERING CARBON BLACK AND HYDROCARBONS FROM USED TIRES

Age Solbakken, Montgomery; Fred P. Apffel, Houston; Sam P. Robinson, Houston, and Bobby L. Hayes, Houston, all of Tex., assignors to Intesco, Inc.  
Continuation-in-part of Ser. No. 878,088, Feb. 15, 1978. This application Jan. 15, 1979, Ser. No. 3,655

The portion of the term of this patent subsequent to Feb. 10, 1998, has been disclaimed.

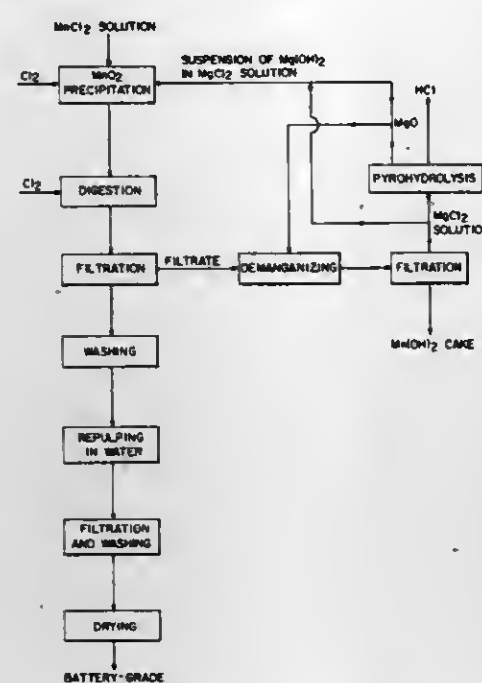
Int. Cl.<sup>3</sup> C01B 31/02, 31/00; C09C 1/48

U.S. Cl. 423—461

37 Claims

1. A process for manufacturing carbon black and hydrocarbons from discarded tires, comprising:
  - cutting the tires into fragments;
  - pyrolyzing the fragments in a pyrolysis reaction vessel at a temperature and pressure and for a reaction time sufficient to cause the fragments to dissociate into a vapor phase and a solid phase;
  - recycling a portion of said solid phase back into the reactor;
  - said pyrolyzing step including indirectly, internally heating the fragments in the reaction vessel with molten salt;
  - producing carbon black from the solid phase; and
  - processing said vapor phase to produce hydrocarbons.

solution in the presence of chlorine under pressure in an autoclave so as to reduce substantially the magnesium content of said MnO<sub>2</sub> precipitate,



- (c) separating the digested MnO<sub>2</sub> precipitate from the MgCl<sub>2</sub> solution,
- (d) washing and drying the MnO<sub>2</sub> precipitate.

4,284,619

# ESTERS USEFUL AS BRAIN IMAGING AGENTS

Tz-Hong Lin, Fremont, Calif., assignor to Medi-Physics, Inc., Emeryville, Calif.

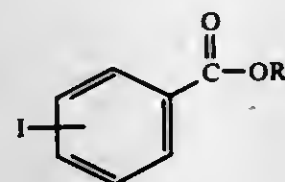
Filed Nov. 29, 1978, Ser. No. 964,563

Int. Cl.<sup>3</sup> A61K 49/00, 43/00; C07C 69/76

U.S. Cl. 424—1.5

6 Claims

1. A method of imaging the brain comprising intravenously injecting into a patient an effective amount of a composition comprising a compound of the formula



wherein I is a radioisotope of iodine, and R is selected from the group consisting of alkyl, aryl, substituted aryl, aralkyl, a polyhydric alcohol, and a 5- or 6-membered heterocyclic ring, in a carrier suitable for intravenous injection and scanning the brain with a scintiscanning means.

4,284,620

# N-(2-HYDROXYETHYL)-2,4,6-TRIIODO-3,5-BIS-(2-KETO-L-GULONAMIDO)BENZAMIDE AND RADIOLOGICAL COMPOSITIONS CONTAINING SAME

Youlin Lin, Chesterfield, and Kenneth R. Smith, Black Jack, both of Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Filed Mar. 23, 1979, Ser. No. 23,506

Int. Cl.<sup>3</sup> A61K 49/04; C07H 5/06

U.S. Cl. 424—5

5 Claims

1. A process for the production of battery-grade manganese dioxide which comprises:
  - (a) contacting a manganese chloride solution with chlorine, while maintaining the pH of the solution between 0.5 and 3 by adding MgO and/or Mg(OH)<sub>2</sub> so as to thereby produce a MgCl<sub>2</sub> solution poor in manganese and which contains a MnO<sub>2</sub> precipitate that is contaminated by magnesium, the operating conditions being such that the produced MgCl<sub>2</sub> solution contains at least 85 g./l. of magnesium,
  - (b) allowing the MnO<sub>2</sub> precipitate to digest in said MgCl<sub>2</sub>

composition containing an x-ray contrast agent in a pharmaceutically acceptable radiological vehicle is injected in a sufficient amount to provide adequate visualization and thereafter x-ray visualization carried out, the improvement comprising utilizing as the radiological composition a composition containing N-(2-hydroxyethyl)-2,4,6-triiodo-3,5-bis-(2-keto-L-gulonamido)benzamide in a sufficient amount to provide satisfactory x-ray visualization together with a pharmaceutically acceptable radiological vehicle.

5. 3,5-Bis-(2,3,4,6-di-O-isopropylidene-2-keto-L-gulonamido)-N-(2-hydroxyethyl)-2,4,6-triiodobenzamide.

4,284,621

# AGENTS FOR PROTECTION AGAINST LIGHT

Reinhard Preuss, Krefeld; Egbert Charlet, Roesrath; Peter Finkel, Cologne, and Hans J. Rosenkranz, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 28, 1979, Ser. No. 24,742

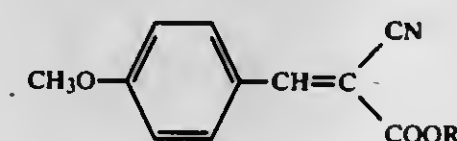
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1978, 2816819

Int. Cl.<sup>3</sup> A61K 7/42, 7/44

U.S. Cl. 424—59

8 Claims

1. A composition for protection against UV light in the UVA region having a wavelength range from 320 to 400 nm, comprising an oil or wax carrier having dissolved therein an effective UVA absorbing amount of a 4-methoxybenzylidenecyanoacetic acid ester of the formula



in which

R denotes a n-hexyl, n-octyl or n-decyl radical or a primary isoalkyl radical with 9 or 10 carbon atoms.

4,284,622

# ATTRACTANT FOR SUNFLOWER MOTH

Edward W. Underhill; Warren F. Steck; Melvin D. Chisbolm, and Alfred P. Arthur, all of Saskatoon, Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Mar. 28, 1980, Ser. No. 135,077

Int. Cl.<sup>2</sup> A01N 17/14

U.S. Cl. 424—84

11 Claims

1. A method of attracting male sunflower moths *Homoeosoma electellum*, during the flight period and in the expected locale of such moths, to specific loci or to disseminated attractant; comprising distributing by one of (a) providing at each locus and (b) disseminating, an attractant consisting essentially of Z-9, E-12-tetradecadien-1-ol, in an amount effective to attract such moths.

4,284,623

# METHOD OF TREATING INFLAMMATION USING BOVINE MILK

Lee R. Beck, 2550 Dunmore Place, Birmingham, Ala. 35226

Filed Nov. 9, 1979, Ser. No. 92,957

Int. Cl.<sup>3</sup> A61K 39/395

U.S. Cl. 424—85

16 Claims

1. A method of treating inflammation in an animal which comprises administering to said animal an anti-inflammatory effective amount of milk collected from a bovid being maintained in an anti-inflammatory factor producing state; wherein said inflammation is caused by a condition selected from the group consisting of acute and subacute bursitis, acute non-specific tendonitis, systemic lupus erythematosus, systemic dermatomyositis, acute rheumatic carditis, pemphigus, bullous dermatitis, hepatoformis, severe erythema, multifactorial exfoliative dermatitis, cirrhosis, seasonal perennial rhinitis, bronchial

asthma, atopic dermatitis, serum sickness, keratitis, ophthalmic iritis, diffuse urethritis, choroiditis, optic neuritis, sympathetic ophthalmia, symptomatic sarcoidosis, Loeffler's Syndrome, berylliosis and hemolytic anemia.

4,284,624

# MIXED DISULFIDES

Sesha I. Natarajan, Neshanic Station; Miguel A. Ondetti; Shih-jung Lan, both of Princeton, and Keith K. Wong, Milltown, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

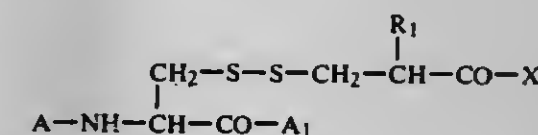
Filed May 2, 1980, Ser. No. 146,729

Int. Cl.<sup>3</sup> A61K 31/40; C07D 207/416

U.S. Cl. 424—177

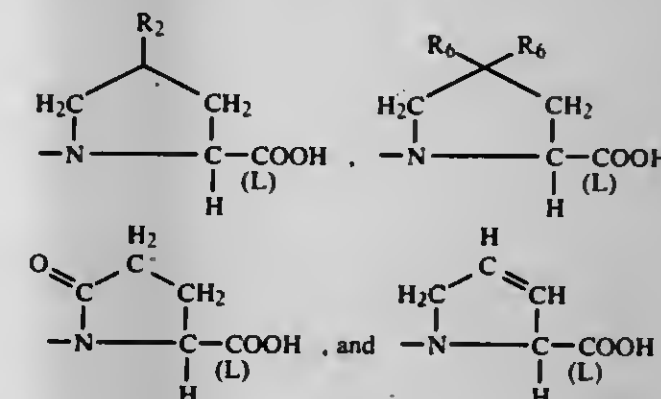
8 Claims

3. A composition for treating hypertension comprising a pharmaceutically acceptable carrier and an effective amount of one or more hypotensive agents or pharmaceutically acceptable salts thereof of the formula

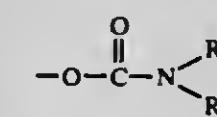


wherein

A and A<sub>1</sub> are each amino acid residues independently selected from the group consisting of glycyl, alanyl, valyl, leucyl, α-glutamyl, γ-glutamyl, α-aspartyl, β-aspartyl, phenylalanyl, tyrosyl, lysyl, arginyl, and prolyl, said A residue being joined through a carbonyl group and said A<sub>1</sub> residue being joined through an amino group;  
X is an α-imino acid residue selected from the group consisting of



R<sub>2</sub> is hydrogen, hydroxy, lower alkyl, halogen, keto,

or -Y-R<sub>5</sub>;

Y is O or S;

R<sub>5</sub> is lower alkyl, phenyl, phenyl-lower alkylene, 1- or 2-naphthyl, biphenyl, substituted phenyl, substituted phenyl-lower alkylene, substituted 1- or 2-naphthyl, or substituted biphenyl wherein said substituent is on the phenyl ring and is one or two members selected from the group consisting of lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, fluoro, trifluoromethyl, acetyloxy, and hydroxy;

R<sub>6</sub> is halogen or -Y-R<sub>7</sub>;

R<sub>7</sub> is lower alkyl, phenyl, phenyl-lower alkylene, substituted phenyl, or substituted phenyl-lower alkylene wherein said substituent is one or two members selected from the group consisting of lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, fluoro, trifluoromethyl, acetyloxy, and hydroxy, or the



R<sub>7</sub> groups join in an alkylene chain of 2 or 3 carbons to complete a 5- or 6-membered ring or said ring in which one of the carbon atoms has a lower alkyl or di(lower alkyl)substituent; and  
R<sub>3</sub> and R<sub>4</sub> are independently selected from the group consisting of hydrogen and lower alkyl.

4,284,625

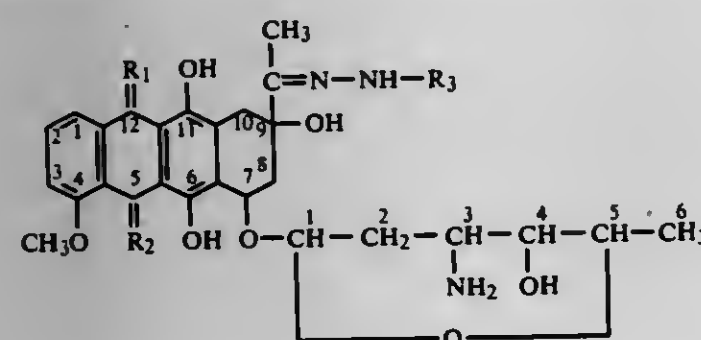
# NAPHTHACENE PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Georges Jolles, Sceaux, France, assignor to Rhone-Poulenc S.A., Paris, France  
Division of Ser. No. 307,955, Nov. 20, 1972, Pat. No. 3,965,088, which is a continuation-in-part of Ser. No. 187,559, Oct. 7, 1971, Pat. No. 3,957,755, which is a continuation-in-part of Ser. No. 768,532, Oct. 17, 1968, abandoned. This application Jan. 27, 1976, Ser. No. 652,848

Claims priority, application France, Oct. 18, 1967, 67.124943  
Int. Cl.<sup>3</sup> A61K 31/71; C07H 15/22

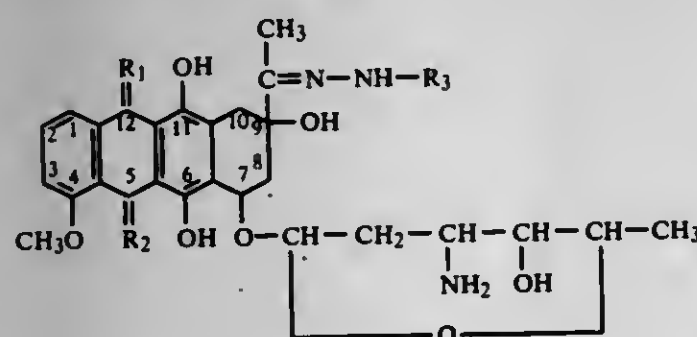
U.S. Cl. 424—180 20 Claims

1. A pharmaceutical composition for parenteral administration and useful for the treatment of acute myeloblastic leukaemia which comprises, as active ingredient, a naphthacene of the formula:



wherein one of R<sub>1</sub> and R<sub>2</sub> is oxygen and the other is oxygen or =N-NHR<sub>3</sub>, and R<sub>3</sub> is alkanoyl of up to 4 carbon atoms, alkanoyl of up to 4 carbon atoms substituted by a sulphonic acid group, alkanoyl of up to 4 carbon atoms substituted by a quaternary ammonium group, thiocarbamoyl, methylthiocarbamoyl, amidino, or benzoyl, or a non-toxic salt thereof, in association with a significant amount of a sterile injectable pharmaceutically-acceptable carrier.

11. Method for the treatment of, acute myeloblastic leukaemia in a human patient which comprises administering parenterally to the patient a quantity of from 2 to 10 mg/kg per day of a naphthacene of the formula:



wherein one of R<sub>1</sub> and R<sub>2</sub> is oxygen and the other is oxygen or =N-NHR<sub>3</sub>, and R<sub>3</sub> is alkanoyl of up to 4 carbon atoms, alkanoyl of up to 4 carbon atoms substituted by a sulphonic acid group, alkanoyl of up to 4 carbon atoms substituted by a quaternary ammonium group, thiocarbamoyl, methylthiocarbamoyl, amidino, or benzoyl, or a non-toxic salt thereof.

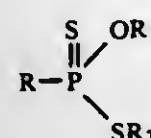
## 4,284,626 O-ARYL S-BRANCHED ALKYL ALKYLPHOSPHONODITHIOATE INSECTICIDES AND NEMATOCIDES

Mohamed A. Fahmy, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,329  
Int. Cl.<sup>3</sup> A01N 57/022; C07F 9/40

U.S. Cl. 424—222 22 Claims

1. A method for controlling insects and nematodes which comprises applying thereto or their habitat a pesticidal amount of a compound of the formula



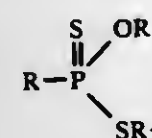
in which

R is an alkyl of 1 to 8 carbon atoms;

R<sub>1</sub> is phenyl or phenyl substituted with 1 to 4 members selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, Cl, Br, F, nitro and trifluoromethyl; and

R<sub>2</sub> is a tertiary alkyl of 4 to 8 carbon atoms.

12. A compound of the formula



in which

R is an alkyl of 1 to 8 carbon atoms;

R<sub>1</sub> is phenyl or phenyl substituted with 1 to 4 members selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfinyl of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, Cl, Br, F, nitro and trifluoromethyl; and

R<sub>2</sub> is a tertiary alkyl of 4 to 8 carbon atoms.

4,284,627

# ANTIMALARIAL COMPOSITIONS

Wolfgang Raether, Dreieich; Walter Dürckheimer, Hattersheim am Main, and Hans Seidenath, Bad Nauheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 934,900, Oct. 26, 1978. This application Jul. 7, 1980, Ser. No. 166,295

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748333

Int. Cl.<sup>3</sup> A61K 31/625, 31/53, 31/505, 31/435

U.S. Cl. 424—229 3 Claims

1. An anti-malarial composition containing as the active ingredient a mixture of 7-chloro-10-hydroxy-3-(4-trifluoromethyl-phenyl)-3,4-dihydroacridino-1,9-(2H, 10)-dione and N'-(5,6-dimethoxy-4-pyrimidinyl)-sulfanilamide in a proportion by weight of between 1:1 and 1:32.

## 4,284,628 2-HYDROXY BENZAMIDE DERIVATIVES AND USE THEREOF AS A FUNGICIDE

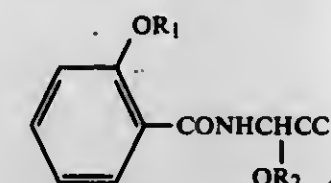
Taizo Nakagawa; Seiji Mochizuki, both of Ageo; Kaoru Ohmori, Okegawa; Kengo Koike, Ageo; Mineo Maruyama, Ageo, and Eiichi Tanaka, Ageo, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1979, Ser. No. 65,910

Claims priority, application Japan, Aug. 25, 1978, 53-102789  
Int. Cl.<sup>3</sup> A01N 37/26; C07C 103/78

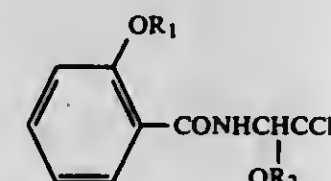
U.S. Cl. 424—230

1. A compound represented by the formula:



wherein R<sub>1</sub> is hydrogen, lower alkyl carbonyl, lower alkoxy carbonyl, phenoxy carbonyl, lower alkyl sulfonyl or lower alkyl carbamoyl, R<sub>2</sub> is phenyl; phenyl substituted by one or more members selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, lower alkoxy carbonyl, halogen, formyl, cyano, thiocarbonyl, nitro, lower alkyl sulfinyl, lower alkyl sulfonyl, lower alkyl carbonyl, acetyl amino or phenyl; or naphthyl, with the proviso that when R<sub>1</sub> is hydrogen or lower alkyl carbonyl, R<sub>2</sub> is the said substituted phenyl or naphthyl.

11. A method for preventing diseases of plant caused by fungi comprising applying to said fungi a fungicidally effective amount of a compound represented by the formula:



wherein R<sub>1</sub> is hydrogen, lower alkyl carbonyl, lower alkoxy carbonyl, phenoxy carbonyl, lower alkyl sulfonyl or lower alkyl carbamoyl, R<sub>2</sub> is phenyl; phenyl substituted by one or more members selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, lower alkoxy carbonyl, halogen, formyl cyano, thiocarbonyl, nitro, lower alkyl sulfinyl, lower alkyl sulfonyl, lower alkyl carbonyl, acetyl amino or phenyl; or naphthyl, with the proviso that when R<sub>1</sub> is hydrogen or lower alkyl carbonyl, R<sub>2</sub> is said substituted phenyl or naphthyl.

4,284,629

# PROCESS FOR THE PREPARATION OF 4-PYRIDONE-3-CARBOXYLIC ACIDS AND/OR DERIVATIVES THEREOF

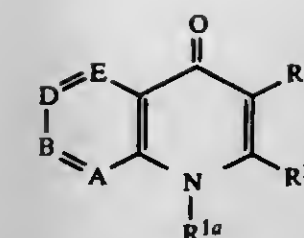
Klaus Grohe, Odenthal; Hans-Joachim Zeiler, Velbert, and Karl G. Metzger, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 1, 1979, Ser. No. 8,634

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2808070

Int. Cl.<sup>3</sup> A01N 43/84; C07D 471/04, 413/04, 279/10  
U.S. Cl. 424—246 18 Claims

1. A compound of the formula



19 Claims

or a salt thereof in which

R<sup>1a</sup> denotes a cycloalkyl group having 3 to 7 carbon atoms or an amino group —NR<sup>4</sup>R<sup>5</sup>,

(I) in which

R<sup>4</sup> and R<sup>5</sup> are identical or different, and denote a straight-chain or branched C<sub>1</sub> to C<sub>4</sub> alkyl group or, together with the nitrogen atom which they substitute, form a 5-membered to 7-membered ring,

R<sup>2</sup> denotes a hydrogen atom or an alkyl group having 1 to 6 carbon atoms, an aralkyl group having 1 to 4 carbon atoms in the aliphatic part and 6 to 10 carbon atoms in the aromatic part or an aryl group having 6 to 10 carbon atoms and

R<sup>3a</sup> denotes a carboxyl group or a derivative which is a nitrile, an ester or an acid amide,

the symbols A and D are nitrogen atoms and the symbols B and E remaining in each case represent a carbon atom which is unsubstituted or substituted by C<sub>1</sub> to C<sub>6</sub> alkyl, C<sub>1</sub> to C<sub>4</sub> alkoxy, C<sub>1</sub> to C<sub>6</sub> alkylmercapto, trifluoromethyl, halogen, cyano, carboxyl which is esterified by C<sub>1</sub> to C<sub>4</sub> alkyl, benzyl or phenyl each of which is unsubstituted or substituted by C<sub>1</sub> to C<sub>3</sub> alkyl, nitro or halogen, or amino substituted by carbalkoxy.

4,284,630

# STABILIZED WATER-IN-OIL EMULSIONS

Ruey J. Yu, 4 Lindenwood Ave., Ambler, Pa. 19002, and Eugene J. Van Scott, 1138 Sewell La., Rydal, Pa. 19046

Continuation of Ser. No. 888,938, Mar. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 852,147, Nov. 16, 1977, abandoned. This application May 29, 1979, Ser. No. 43,266

Int. Cl.<sup>3</sup> A61K 31/58

U.S. Cl. 424—241

34 Claims

1. A method for stabilizing a water-in-oil emulsion for topical application to the human body, so that said emulsion will be stable when stored for two months and stable when subjected to freezing with subsequent thawing to room temperature comprising: admixing an oil base dispersion medium, an emulsifying agent, and a water based, aqueous dispersed phase, and a stabilizing effective amount of up to about 2%, by weight, of a member selected from the group consisting of magnesium hydroxide and magnesium oxide.

30. A method for improving the efficacy of a medicinal compound selected from the group consisting of hydrocortisone, triamcinolone acetonide, and 6-aminonicotinamide which is effective to alleviate the symptoms of inflammatory skin diseases psoriasis and eczema by topical application to involved areas of the human body comprising:

providing a stabilized water-in-oil emulsion vehicle for said compound which is stable when stored for two months and stable when subjected to freezing with subsequent thawing to room temperature by admixing an oil based dispersion medium, an emulsifying agent, and a water based dispersion phase with a stabilizing agent present in a stabilizing effective amount of up to about 2%, by weight selected from the group consisting of magnesium hydroxide and magnesium oxide; whereby when an anti-inflammatory effective amount of said compound in said vehicle is topically applied to inflamed areas of the human body to alleviate the symptoms of said inflammation, said vehicle will provide a moist and occlusive covering thereof.



4,284,631

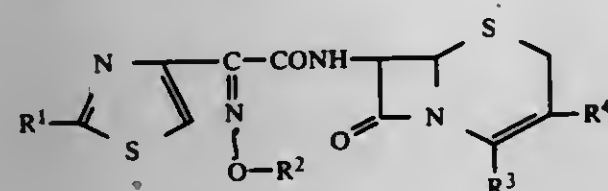
## 7-SUBSTITUTED CEPHEM COMPOUNDS AND PHARMACEUTICAL ANTIBACTERIAL COMPOSITIONS CONTAINING THEM

Takao Takaya, Kawanishi; Hisashi Takasugi, Osaka; Toshiyuki Chiba, Osaka, and Kiyoshi Tsuji, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan  
Filed Jul. 23, 1979, Ser. No. 59,893

Claims priority, application United Kingdom, Jul. 31, 1978, 31694/78

Int. Cl.<sup>3</sup> A61K 31/545; C07D 501/59, 501/16  
U.S. Cl. 424—246 27 Claims

1. A compound of the formula:



wherein

R<sup>1</sup> is amino or protected amino,

R<sup>2</sup> is lower alkyl of from one to six carbon atoms substituted with a substituent selected from the group consisting of cyano, carbamoyl, hydroxy, protected hydroxy, amino, protected amino, lower alkoxy, lower alkythio, lower alkenylthio, and heterocyclic selected from the group consisting of furyl, pyrrolyl, imidazolyl, pyrazolyl, pyridyl, picolyl, pyrimidinyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, oxazolyl, isoxazolyl, oxadiazolyl, thiazolyl, isothiazolyl, and thiadiazolyl, or substituted heterocyclic with at least one lower alkyl, hydroxy or amino substituent,

R<sup>3</sup> is carboxy or protected carboxy, and

R<sup>4</sup> is hydrogen or halogen, and its pharmaceutically acceptable salt.

27. A pharmaceutical antibacterial composition comprising an effective amount of a compound of claim 1 in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,284,632

## 3-PYRROLIN-2-ONE DERIVATIVES AND COMPOSITIONS

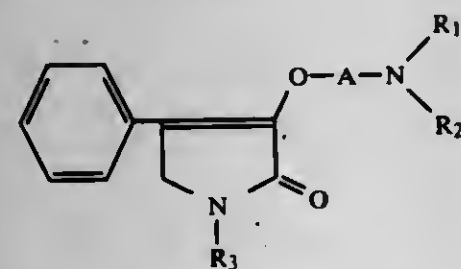
Gerhard Satzinger, Denzlingen; Manfred F. Herrmann, St. Peter, and Gustav Hechtischer, Freiburg, all of Fed. Rep. of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 922,018, Jul. 5, 1978, Pat. No. 4,205,078, which is a continuation of Ser. No. 821,259, Aug. 3, 1977, abandoned. This application Sep. 14, 1979, Ser. No. 75,479

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636723

Int. Cl.<sup>3</sup> A61K 31/535, 31/54; C07D 413/12, 417/12  
U.S. Cl. 424—246 8 Claims

1. A compound of the formula:



wherein R<sub>1</sub> and R<sub>2</sub> together with the nitrogen atom to which they are attached form a saturated 5-, 6- or 7-membered heterocyclic ring which can also contain a further nitrogen atom or an oxygen or sulphur atom, A is a straight-chain or branched hydrocarbon chain containing 2 to 4 carbon atoms and R<sub>3</sub> is a saturated or unsaturated, straight-chain or branched aliphatic

hydrocarbon radical containing up to 6 carbon atoms or is the radical —Alk—Ar, wherein Alk is an alkylene chain containing up to 3 carbon atoms and Ar is a phenyl or heteroaryl radical optionally substituted by halogen atoms and/or lower alkoxy radicals; and the pharmacologically compatible salts thereof.

8. A pharmaceutical composition comprising an antihypertensive effective amount of at least one compound according to claim 1, in admixture with a solid or liquid pharmaceutical diluent or carrier.

4,284,633

## DERIVATIVES OF XANTHINE

Walter-Gunar Friebe, Darmstadt; Max Thiel, Mannheim; Wolfgang Kampe, Heddeshheim; Otto-Henning Wilhelms, Weinheim-Rittenweier, and Androniki Roesch, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,870

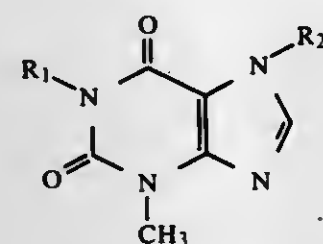
Claims priority, application Fed. Rep. of Germany, May 31, 1979, 2922159

Int. Cl.<sup>3</sup> C07D 473/06

U.S. Cl. 424—253

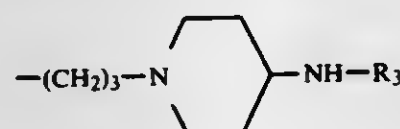
9 Claims

1. A xanthine derivative of the formula



in which

one of R<sub>1</sub> and R<sub>2</sub> is a methyl radical and the other a radical of the formula



R<sub>3</sub> is a hydrogen atom or a lower alkanoyl radical containing up to 8 carbon atoms and which can be substituted by halogen, phenyl or naphthyl, an alkenoyl radical containing up to 8 carbon atoms which can be substituted by phenyl or naphthyl, a phenyl- or alkyl-sulfonyl radical, or a C<sub>3</sub>-C<sub>7</sub>-cycloalkylcarbonyl, furanocarbonyl, thiophenecarbonyl, pyridinocarbonyl or benzoyl radical which can be substituted by halogen, hydroxyl, C<sub>1</sub>-C<sub>8</sub>-alkyl, lower C<sub>1</sub>-C<sub>8</sub>-alkoxy, C<sub>1</sub>-C<sub>8</sub>-alkoxycarbonyl, C<sub>1</sub>-C<sub>8</sub>-alkanoyloxy, carboxyl, nitro, amino, nitrilo, trifluoromethyl, carbamoyl or benzyl,

or a pharmacologically acceptable salt thereof.

4,284,634

## 1,4-DIHYDROPYRIDINE DERIVATIVES, AND PHARMACEUTICAL METHOD OF THE SAME

Yoshinari Satu, Takaishi, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 809,788, Jun. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 701,994, Jul. 1, 1976, Pat. No. 4,145,432. This application May 17, 1979, Ser. No. 39,752

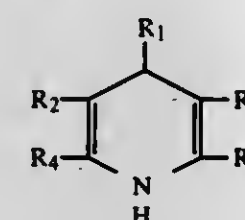
Claims priority, application United Kingdom, Jul. 2, 1975, 27945/75; Sep. 29, 1975, 39854/75; Dec. 16, 1975, 51524/75; Apr. 5, 1976, 13761/76; Dec. 17, 1976, 52720/76; Jun. 6, 1978, 26429/78; Oct. 10, 1978, 39978/78

Int. Cl.<sup>3</sup> C07D 213/55; A61K 31/455

U.S. Cl. 424—266

50 Claims

1. A compound of the formula:



wherein

R<sub>1</sub> is unsubstituted phenyl, phenyl monosubstituted with halogen, nitro, hydroxy, halo(lower)alkyl, lower alkyl, lower alkoxy, lower alkenyloxy, cyano, lower alkoxycarbonyl or lower alkylsulfamoyl, and disubstituted phenyls selected from 2-chloro-5-nitro, 2-3 and 3-4 dichloros and 3-4 dimethoxy,

R<sub>2</sub> and R<sub>3</sub> are lower alkoxycarbonyl, halo(lower)alkoxycarbonyl, hydroxy(lower)alkoxycarbonyl, lower alkoxy(lower)alkoxycarbonyl, phenyl(lower)alkoxycarbonyl, phenyl(lower)alkoxy(lower)alkoxycarbonyl, phenoxy(lower)alkoxycarbonyl, N,N-(di)-(lower)alkylamino(lower)alkoxycarbonyl and N-lower alkyl-N-phenyl(lower)alkylamino(lower)alkoxycarbonyl,

R<sub>4</sub> is hydroxy(lower)alkyl or gem-di(lower)alkoxy(lower)alkyl, and

R<sub>5</sub> is hydrogen, lower alkyl, or the same as R<sub>4</sub>.

4,284,635

## ANALGESIC

## 1,2,4,5-TETRA-ALKYL-4-ARYLPYPERIDINES

Dennis M. Zimmerman, Mooresville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 29, 1978, Ser. No. 965,137

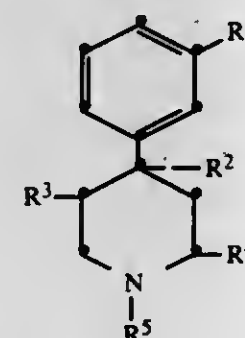
The portion of the term of this patent subsequent to Mar. 28, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> A61K 31/445; C07D 211/22, 211/14

U.S. Cl. 424—267

22 Claims

1. A compound having the formula



wherein:

R<sup>1</sup> is hydrogen, hydroxy or methoxy;

R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> independently are C<sub>1</sub>-C<sub>5</sub> alkyl;

R<sup>5</sup> is C<sub>1</sub>-C<sub>10</sub> alkyl, benzyl or CH<sub>2</sub>R<sup>6</sup>, in which R<sup>6</sup> is C<sub>2</sub>-C<sub>7</sub>

alkenyl or C<sub>3</sub>-C<sub>6</sub> cycloalkyl; or a pharmaceutically acceptable acid addition salt thereof.

17. A method of inducing analgesia in animals comprising administering an analgesically effective dose of a compound of claim 1.

4,284,636

## CINNAMOYLPIPERIDINOBUTYROPHENONE ANTIPSYCHOTIC AGENTS

Albert A. Carr, and Robert A. Farr, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

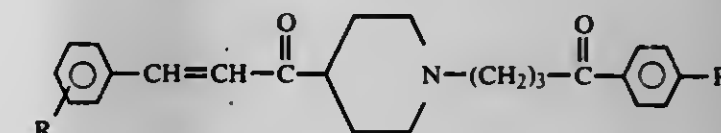
Filed Sep. 4, 1979, Ser. No. 72,498

Int. Cl.<sup>3</sup> C07D 211/70, 405/06; A61K 31/445

U.S. Cl. 424—267

11 Claims

1. A compound of the formula



wherein R is hydrogen, C<sub>1-4</sub> alkyl, C<sub>1-4</sub> alkoxy, fluorine, chlorine, bromine, or trifluoromethyl; and R' is hydrogen, fluorine, chlorine or bromine; and pharmaceutically acceptable acid addition salts thereof.

4,284,637

## PHARMACEUTICALLY ACTIVE 2-(4-AMINOBUTOXY)STILBENES

Ryoji Kikumoto, Machida; Akihiro Tobe, Kawasaki; Harukazu Fukami, Yokohama; Kunibiro Ninomiya, Yokohama, and Mitsuo Egawa, Yokohama, all of Japan, assignors to Mitsubishi Chemical Ind., Limited, Tokyo, Japan

Division of Ser. No. 11,998, Feb. 14, 1979, Pat. No. 4,217,366.

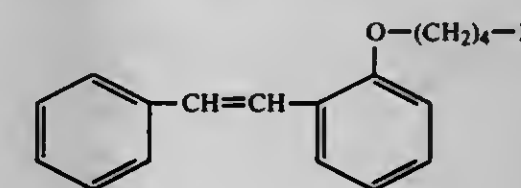
This application Oct. 1, 1979, Ser. No. 80,215

Int. Cl.<sup>3</sup> A61K 31/40, 31/445, 31/495; C07D 221/00

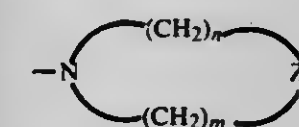
U.S. Cl. 424—267

7 Claims

1. A compound having the formula:



wherein R is



wherein Z is selected from the group consisting of —CH<sub>2</sub>—, —CR<sub>3</sub>H—, and R<sub>3</sub> being C<sub>1</sub>-C<sub>5</sub> alkyl, and —CHOH—; and wherein m and n are each integers of 0 to 4 with m+n being equal to 4, or the acid addition salts thereof.

7. A method of treating convulsions and seizures or relieving skeletal muscle spasm in warm-blooded animals which comprises administering to said animals an effective amount for treatment of convulsions and seizures or relief of skeletal muscle spasm of a compound of claim 1 or the acid addition salt thereof.



4,284,638

**PHARMACEUTICAL COMPOSITIONS WITH CENTRAL DEPRESSANT AND ANTIPSYCHOTIC ACTIVITY WHICH CONTAIN AS ACTIVE INGREDIENTS A BUTYROPHENONE DERIVATIVE WHICH IS BASICALLY SUBSTITUTED IN THE 4-POSITION AND A C-(2-BENZOFURANYL)-PIPERIDINE OR C-(2-BENZOFURANYL)-TETRAHYDRO-PYRIDINE**

Peter Waldmeier, Reinach, and Aleksandra Delini-Stula, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 14, 1979, Ser. No. 93,970

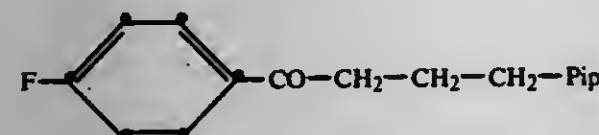
Claims priority, application Switzerland, Nov. 21, 1978, 11918/18

Int. Cl.<sup>3</sup> A61K 31/445

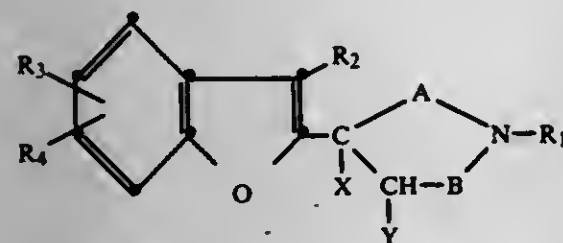
U.S. Cl. 424-267

10 Claims

1. A pharmaceutical composition with central depressant and antipsychotic activity which contains, as first active ingredient, a butyrophenone derivative of the formula I



in which Pip is a piperidino radical which is substituted in the 4-position by hydroxyl and a radical selected from halophenyl, trifluoromethylphenyl and lower alkylphenyl, or a pharmaceutically acceptable acid addition salt thereof, and as second active ingredient, an unsubstituted or substituted C-(2-benzofuranyl)-piperidine or C-(2-benzofuranyl)-tetrahydropyridine of the formula II



wherein R<sub>1</sub> is hydrogen, an alkyl group containing at most 4 carbon atoms, the allyl, 3-oxobutyl, 3-hydroxybutyl, 2-propenyl or cyclopropylmethyl group, R<sub>2</sub> is hydrogen or a methyl group, R<sub>3</sub> is hydrogen, halogen having an atomic number up to 35, a lower alkyl or alkoxy group, the trifluoromethyl group or a cycloalkyl group containing 5 to 8 carbon atoms, R<sub>4</sub> is hydrogen, a lower alkyl group or halogen having an atomic number up to 35, or R<sub>3</sub> and R<sub>4</sub> together are a 1,3-butadienylene radical in the 4,5-position, corresponding to a fused benzene ring, or a trimethylenylene radical in the 5,6-position, A is the ethylene group and B is the methylene group, or A is the methylene group and B is the ethylene group, and each of X and Y is hydrogen or together are an additional bond, or a pharmaceutically acceptable acid addition salt thereof, the ratio of the first and second active ingredient being from 1:2 to 1:100, together with at least one conventional carrier or adjunct.

4. A pharmaceutical composition according to claim 1 which contains haloperidol or a pharmaceutically acceptable acid addition salt thereof, and 4-(5,6-dimethyl-2-benzofuranyl)-piperidine or a pharmaceutically acceptable acid addition salt thereof.

4,284,639

**COMBATING FUNGI WITH 1-PHENOXY-2-(2,4-DICHLOROPHENYL)-1-(1,2,4-TRIAZOL-1-YL)-ETHAN-2-ONES AND -OLS**

Wolfgang Krämer; Karl H. Büchel, both of Wuppertal; Wilhelm Brandes, Leichlingen; Paul-Ernst Fröhberger, Leverkusen, and Manfred Plempel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 28,620, Apr. 9, 1979, abandoned, which is a continuation of Ser. No. 872,988, Jan. 27, 1978, abandoned.

This application Feb. 28, 1980, Ser. No. 125,724

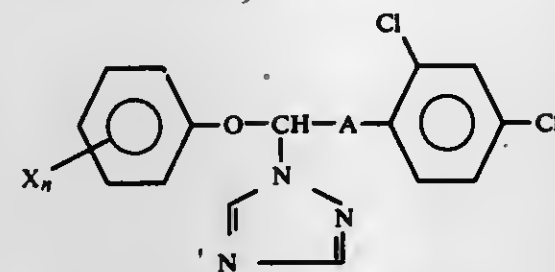
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1977, 2705678; Feb. 11, 1977, 2705679

Int. Cl.<sup>3</sup> A01N 43/64; C07D 249/08; A61K 31/41

U.S. Cl. 424-269

11 Claims

1. A 1-phenoxy-1-(2,4-dichlorophenyl)-1-(1,2,4-triazol-1-yl)-ethan-2-one or -ol of the formula



in which

A is -C(O)- or -CH(OH)-, X each independently is halogen, alkyl with 1 to 4 carbon atoms, phenyl or halogen substituted phenyl, and n is 0, 1, 2 or 3, or a salt thereof.

8. A fungicidal or antimicrobial composition containing as active ingredient a fungicidally or antimicrobially effective amount of a compound or salt according to claim 1 in admixture with a diluent.

9. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound or salt according to claim 1.

11. A method of treating a patient suffering from microbial infection which comprises administering to such patient an antimicrobially effective amount of a compound or salt according to claim 1.

4,284,640

**ETHYLENE DERIVATIVES**

Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote; Charon R. Ganellin, Welwyn Garden City, and Hunter D. Prain, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 930,102, Aug. 1, 1978, Pat. No. 4,220,652, which is a division of Ser. No. 797,160, May 16, 1977, Pat. No. 4,124,717, which is a division of Ser. No. 629,174, Nov. 5, 1975, Pat. No. 4,046,907, which is a continuation-in-part of Ser. No. 468,617, May 9, 1974, Pat. No. 3,953,460. This application Feb. 4, 1980, Ser. No. 117,903

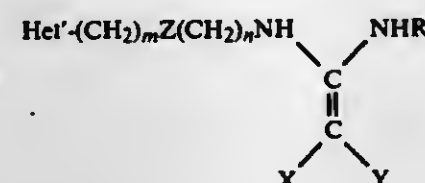
Claims priority, application United Kingdom, May 17, 1973, 23568/73

Int. Cl.<sup>3</sup> A01N 43/82; C07D 285/08, 285/10, 285/12

U.S. Cl. 424-270

6 Claims

1. A compound of the formula:



wherein X and Y, which may be the same or different, are hydrogen, nitro, cyano or SO<sub>2</sub>Ar but are not both hydrogen; Het' is thiadiazolyl unsubstituted or substituted by amino; R is hydrogen, lower alkyl or Het-(CH<sub>2</sub>)<sub>m</sub>Z-(CH<sub>2</sub>)<sub>n</sub>; Z is sulphur or methylene; m is 0, 1 or 2 and n is 2 or 3 provided that the sum of m and n is 3 or 4; Het is an oxazolyl, isoxazolyl or triazolyl ring unsubstituted or substituted by lower alkyl, hydroxyl, halogen or amino or a thiadiazolyl ring unsubstituted or substituted by amino, said Het' and Het being attached at a ring carbon; and Ar is phenyl unsubstituted or substituted by halogen or methyl or a pharmaceutically acceptable acid addition salt thereof.

6. A method of inhibiting H-2 histamine receptors which comprises administering to an animal in need thereof in an effective amount to inhibit said receptors a compound of claim 1.

4,284,641

**PHARMACEUTICALLY ACTIVE IMIDAZOLE DERIVATIVES**

Peter B. Thorogood, London, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Aug. 24, 1978, Ser. No. 936,406

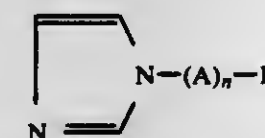
Claims priority, application United Kingdom, Aug. 26, 1977, 35912/77; Aug. 26, 1977, 35913/77; Feb. 1, 1978, 3983/78; Feb. 1, 1978, 3984/78; Aug. 8, 1978, 32526/78; Aug. 8, 1978, 32536/78; Aug. 22, 1978, 34106/78

Int. Cl.<sup>3</sup> A61K 31/415

U.S. Cl. 424-273 R

76 Claims

1. A method for the treatment or prophylaxis of a thromboembolic disorder of a mammal or a mammalian tissue comprising the administration to the mammal or mammalian tissue of a non-toxic, anti-thrombo-embolic amount of an imidazole of the formula



in which A is a straight or branched, saturated or unsaturated acyclic hydrocarbon radical of from 1 to 3 carbon atoms, n is 0 or 1, and R is a cycloalkyl or cycloalkenyl radical of from 4 to 9 carbon atoms and optionally substituted by one two, three or more alkyl radicals each containing from 1 to 4 carbon atoms, or, when n is 1, A and R together form an alkyl radical of from 4 to 7 carbon atoms or an alkenyl or alkynyl radical of from 4 to 9 carbon atoms, the imidazole being the free base or a pharmaceutically acceptable salt thereof.

4,284,642

**1,3-DIARYL-2-IMINO-IMIDAZOLIDINES AND COMPOSITIONS THEREOF**

Lajos Toldy; Zoltan Zubovics; Mariann Kürti, and Inge Schäfer, all of Budapest, Hungary, assignors to Egyt Gyógyszervegyészeti Gyar, Budapest, Hungary

Filed Apr. 16, 1979, Ser. No. 30,149

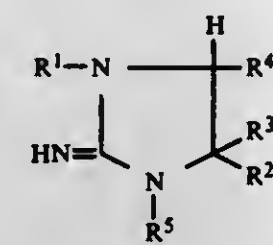
Claims priority, application Hungary, Apr. 21, 1978, GO 1400

Int. Cl.<sup>3</sup> C07D 233/46; A61K 31/415

U.S. Cl. 424-273 R

6 Claims

1. A compound of the formula (I),



wherein

R<sup>1</sup> and R<sup>2</sup> each represent a phenyl group optionally substituted with 1 to 3 carbon lower alkoxy, halo, lower alkyl, monohalo-lower-alkyl, dihalo-lower-alkyl and/or trihalo-lower-alkyl groups,

R<sup>2</sup> stands for hydrogen, formyl, carboxy, lower alkoxy-carbonyl, hydroxy-alkoxy-carbonyl, unsubstituted lower alkyl, or a lower alkyl group substituted with hydroxy, 1 to 3 halogen atoms, lower alkoxy, lower alkanoyloxy, cyano, an amino group or a group of the general formula -CO-Y, wherein

Y stands for hydroxy, amino, lower alkoxy or hydroxy-lower-alkoxy group,

R<sup>3</sup> and R<sup>4</sup> each represent hydrogen atoms or a lower alkyl group, with the provision that when R<sup>1</sup> and R<sup>2</sup> each represent a phenyl group, R<sup>2</sup> and R<sup>3</sup> may not stand for hydrogen; or a pharmaceutically acceptable acid addition salt, an inorganic meta salt complex, a pure isomer or a isomeric mixture thereof.

4. A pharmaceutical composition containing an antiphlogistic effective amount of a compound of the formula (I), in claim 1, or a pharmaceutically acceptable acid addition salt, an inorganic metal salt complex, a pure isomer or an isomeric mixture thereof, together with a pharmaceutical carrier, additive and/or auxiliary agent.

4,284,643

**COMBATING ARTHROPODS WITH NOVEL FLUORINE-CONTAINING PHENYLACETIC ACID ESTERS**

Rainer Fuchs, Wuppertal; Erich Klauke, Odenthal; Ingeborg Hamann, Cologne; Bernhard Homeyer, Leverkusen; Wolfgang Behrenz, Overath; Wilhelm Stendel, Wuppertal; Reinhard Lantzsch, and Albrecht Marhold, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 64,253

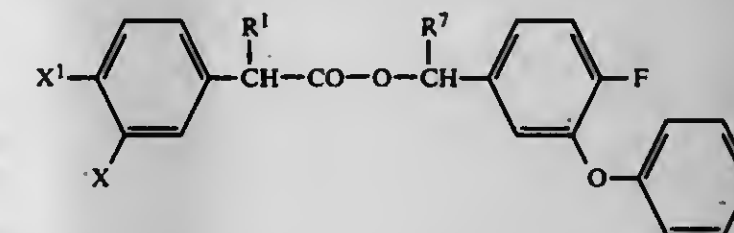
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837524; Oct. 14, 1978, 2844816

Int. Cl.<sup>3</sup> A01N 43/30; C07C 69/612, 121/75

U.S. Cl. 424-282

12 Claims

1. A fluorine-containing phenylacetic acid ester of the formula



in which

R<sup>1</sup> represents C<sub>2-4</sub>-alkyl, C<sub>2-4</sub>-alkenyl or cyclopropyl,

R<sup>7</sup> represents hydrogen, cyano or ethynyl,

X represents H, halogen, alkyl, alkoxy, OCHF<sub>2</sub>, SCHF<sub>2</sub>, SCCF<sub>2</sub> or SCF<sub>3</sub> and

X<sup>1</sup> represents halogenoalkoxy or halogenoalkylthio or together with X, represents fluorine-substituted methylenedioxy or ethylenedioxy, or, in the case where R<sup>1</sup> represents cyclopropyl, represents hydrogen, halogen, alkyl, halogenoalkyl, alkoxy or alkylthio or, together with X, represents methylenedioxy which is optionally F substituted.



4,284,644

## SPIROBENZOFURANONE COMPOUNDS

Hirosada Sugihara, Osaka; Masazumi Watanabe, Kawanishi; Mitsuru Kawada, Amagasaki, and Isuke Imada, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

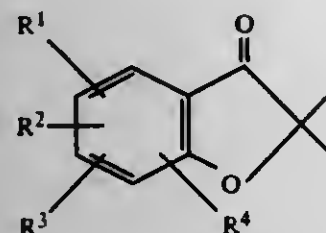
Continuation-in-part of Ser. No. 968,520, Dec. 11, 1978, abandoned. This application Jan. 25, 1980, Ser. No. 115,548. Claims priority, application Japan, Dec. 27, 1977, 52-159177; Jun. 19, 1978, 53-74700; Nov. 6, 1978, 53-136967; May 4, 1979, 54-55082; Jun. 25, 1979, 54-80551

Int. Cl.<sup>3</sup> A61K 31/34

U.S. Cl. 424—285

30 Claims

1. A compound of the formula

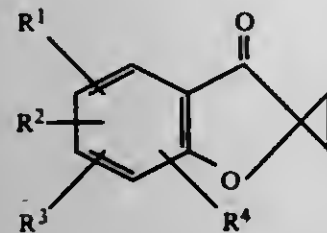


wherein

each of R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> is independently hydrogen, C<sub>1-6</sub> alkyl, nitro, halogen, hydroxyl, C<sub>1-6</sub> alkoxy, mono- or di-C<sub>1-4</sub> alkylamino-C<sub>1-6</sub> alkoxy, phenyl-C<sub>1-4</sub> alkoxy, C<sub>2-6</sub> alkanoyloxy, benzoyloxy, C<sub>2-6</sub> alkanoyl, benzoyl, sulfonyl, carbonyl, C<sub>2-6</sub> alkoxy-carbonyl, carbamoyl, C<sub>1-4</sub> alkylcarbamoyl, di-C<sub>1-4</sub> alkylamino-C<sub>1-4</sub> alkylcarbamoyl, N-C<sub>1-4</sub> alkylpyrrolidinyl-C<sub>1-4</sub> alkylcarbamoyl, ureido, C<sub>1-4</sub> alkylureido, thioureido, C<sub>1-4</sub> alkylthioureido, C<sub>1-4</sub> alkylthio, C<sub>1-4</sub> alkylsulfinyl, C<sub>1-4</sub> alkylsulfonyl, aminomethyl, mono- or di-C<sub>1-4</sub> alkylaminomethyl, cyano, phenyl, amino, mono- or bis-(β-hydroxyethyl)amino, C<sub>1-4</sub> alkylamino, di-C<sub>1-4</sub> alkylamino, C<sub>2-4</sub> alkanoylamino, C<sub>1-4</sub> alkanesulfonylamino, 1-pyrrolidinyl, piperidino, a 1-piperazinyl group, or morpholino, said 1-piperazinyl group being unsubstituted or substituted at the nitrogen atom of its 4-position by C<sub>1-4</sub> alkyl, phenyl-C<sub>1-4</sub> alkyl or C<sub>2-4</sub> alkanoyl, or

two of R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> together form —CH=CH—CH=CH— at adjacent carbon atoms of the benzene ring.

17. A method of managing peptic ulcer in a patient which comprises administering to said patient a compound of the formula



wherein

each of R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> is independently hydrogen, C<sub>1-6</sub> alkyl, nitro, halogen, hydroxyl, C<sub>1-6</sub> alkoxy, mono- or di-C<sub>1-4</sub> alkylamino-C<sub>1-6</sub> alkoxy, phenyl-C<sub>1-4</sub> alkoxy, C<sub>2-6</sub> alkanoyloxy, benzoyloxy, C<sub>2-6</sub> alkanoyl, benzoyl, sulfonyl, carbonyl, C<sub>2-6</sub> alkoxy-carbonyl, carbamoyl, C<sub>1-4</sub> alkylcarbamoyl, di-C<sub>1-4</sub> alkylamino-C<sub>1-4</sub> alkylcarbamoyl, N-C<sub>1-4</sub> alkylpyrrolidinyl-C<sub>1-4</sub> alkylcarbamoyl, ureido, C<sub>1-4</sub> alkylureido, thioureido, C<sub>1-4</sub> alkylthioureido, C<sub>1-4</sub> alkylthio, C<sub>1-4</sub> alkylsulfinyl, C<sub>1-4</sub> alkylsulfonyl, aminomethyl, mono- or di-C<sub>1-4</sub> alkylaminomethyl, cyano, phenyl, amino, mono- or bis-(β-hydroxyethyl)amino, C<sub>1-4</sub> alkylamino, di-C<sub>1-4</sub> alkylamino, C<sub>2-4</sub> alkanoylamino, C<sub>1-4</sub> alkanesulfonylamino, 1-pyrrolidinyl, piperidino, a 1-piperazinyl group, or morpholino, said 1-piperazinyl group being unsubstituted or substituted at the nitrogen

atoms of its 4-position by C<sub>1-4</sub> alkyl, phenyl-C<sub>1-4</sub> alkyl or C<sub>2-4</sub> alkanoyl, or  
two of R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> together form —CH=CH—CH=CH— at adjacent carbon atoms of the benzene ring.  
said compound being administered in an amount effective to manage peptic ulcer in said patient.

4,284,645

## 3-CHLOROSTYRYL-2,2-DIMETHYL-CYCLO-PROPANECARBOXYLIC ACID

## 4-FLUORO-3-PHENOXY-α-CYANO-BENZYL ESTERS AND THEIR USE AS ECTOPARASITICIDES

Rainer Fuchs, and Wilhelm Stendel, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 20, 1979, Ser. No. 77,502

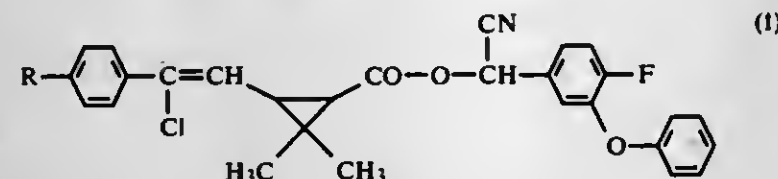
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1978, 2844271

Int. Cl.<sup>3</sup> A01N 53/00; C07C 121/75

U.S. Cl. 424—304

8 Claims

1. A 3-chlorostyryl-2,2-dimethyl-cyclopropanecarboxylic acid ester of the formula



in which R represents hydrogen or fluorine.

4. A method of freeing or protecting domesticated animals from ectoparasitical pests, which comprises externally applying to said animals an ectoparasiticide amount of a compound according to claim 1 in admixture with a diluent or carrier.

4,284,646

## PROSTANOIC ACID DERIVATIVES AND THEIR PREPARATION

Helmut Vorbrüggen; Norbert Schwarz; Olaf Loge, and Walter Elger, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 932,823, Aug. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 821,130, Aug. 2, 1977, abandoned. This application Aug. 24, 1979, Ser. No. 69,193

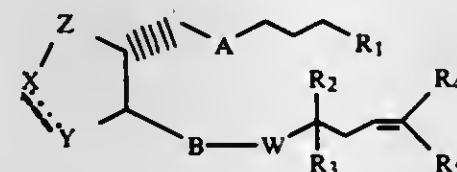
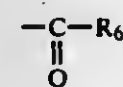
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1976, 2635985

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 424—305

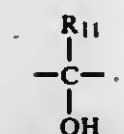
11 Claims

1. A compound of the formula

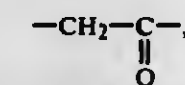
wherein R<sub>1</sub> is

wherein R<sub>6</sub> is hydroxy, a straight-chain or branched alkoxy of 1-10 carbon atoms; aryloxy; O—CH<sub>2</sub>—U—V wherein U is a direct bond, carbonyl or carbonyloxy and V is a phenyl ring substituted by one or more of phenyl, alkoxy of 1-2 carbon atoms, or halogen A is cis- or trans—CH=CH—; B is trans—CH=CH— or —C≡C—; W is free or functionally modi-

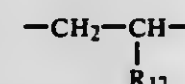
fied hydroxymethylene, a free or functionally modified carbonyl, or



wherein R<sub>11</sub> is alkyl of 1-5 carbon atoms and the OH-group can be in the α- or β-position and can be functionally modified; Z is carbonyl or hydroxymethylene, either of which can be free or functionally modified, X:Z:Y is either



when Z is a free or functionally modified hydroxymethylene group, or is



, when Z is a free or functionally modified carbonyl group, wherein R<sub>12</sub> is a free or functionally modified hydroxy; R<sub>2</sub> is a hydrogen atom or alkyl; R<sub>3</sub> is a hydrogen atom or alkyl; R<sub>4</sub> and R<sub>5</sub> each are methyl or one of R<sub>4</sub> and R<sub>5</sub> is a chlorine atom and the other is methyl; and, when R<sub>6</sub> is hydroxy, the physiologically acceptable salts thereof with bases; wherein "functionally modified" OH refers to OH etherified by tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyl-tert-butylsilyl or tri-p-benzylsilyl or esterified by the acyl group of a C<sub>1-15</sub> organic carboxylic or sulfonic acid; and "functionally modified" carbonyl refers to carbonyl converted to a cyclic ketal with ethylene glycol, 1,3-propanediol, 2,2-demethyl-1,3-propanediol, 1,2-cyclopentanediol, or glycerol.

4,284,647

## PROCESS FOR WASTE NITROGEN REMOVAL

Saul W. Brusilow, Baltimore; Mark L. Batshaw, Pikesville, both of Md., and Norman S. Radin, Ann Arbor, Mich., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Mar. 31, 1980, Ser. No. 135,685

Int. Cl.<sup>3</sup> A61K 31/19

U.S. Cl. 424—317

9 Claims

1. A process for controlling waste nitrogen accumulation diseases in humans, caused by an impairment in the normal synthesis of urea from ordinary waste nitrogen in the body or in the normal excretion thereof, said process comprising administering an effective amount of at least one compound selected from the group consisting of benzoic acid, phenylacetic acid and the non-toxic, pharmaceutically-acceptable salts of said acids to a human suffering from such waste nitrogen accumulation disease, the amount of said compound used being sufficient to react with the waste nitrogen to form an amino acid acylation product for urinary discharge of said product.

4,284,648

## NASAL ADMINISTRATION OF PROPRANOLOL

Anwar A. Hussain; Shinichiro Hirai, and Rima Bawarsbi, all of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Aug. 3, 1979, Ser. No. 63,176

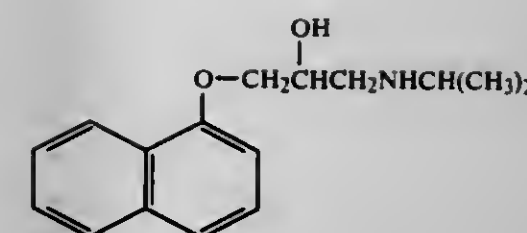
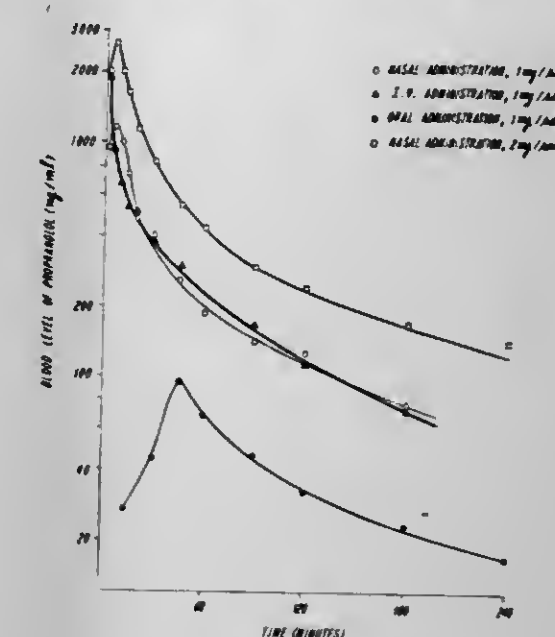
Int. Cl.<sup>3</sup> A61K 31/135, 9/00

U.S. Cl. 424—330

7 Claims

1. A method for eliciting a β-andrenergic blocking response in a warm-blooded animal in need of such therapy, comprising

nasally administering to said animal a therapeutically effective amount of a compound having the formula:



or nontoxic pharmaceutically acceptable derivative thereof.

4,284,649

## THICKENED GELATINOUS EDIBLE ALCOHOLIC MEDICATED CARRIER

Sol B. Wiczer, 1000 Vermont Ave., Washington, D.C. 20005  
Filed Nov. 22, 1977, Ser. No. 853,865

Int. Cl.<sup>3</sup> A61K 31/44, 31/60, 31/135, 47/00

U.S. Cl. 424—362

9 Claims

1. In an oral medicating product having an alcohol containing base containing orally ingestible medicating substances compatibly ingestible in the said alcohol containing base, the improvement comprising

a taste imparting beverage alcohol having an alcoholic proof strength in the range of about 25-120, as said alcoholic base,

medicating substances homogeneously distributed in said beverage alcohol base in concentration to provide a medicating effect in small unit dosage quantities of said medicating product, said product being

gelled with about 3 to 10% of a methyl cellulose gelling agent added by mixing at ambient temperatures to provide a substantially solid medicating gel.

4,284,650

## COMPOSITION FOR CHEWING GUMS

Jean-Jacques Goupil, 30 Avenue du President Wilson, 94230 Cachan, France

Continuation of Ser. No. 893,783, Apr. 5, 1978. This application Sep. 13, 1979, Ser. No. 75,090

Int. Cl.<sup>3</sup> A23G 3/30

U.S. Cl. 426—5

5 Claims

1. A chewing gum composition in the form of a tablet, said tablet consisting essentially of an aromatized alkaline earth-free gum base, sodium fluoride, and a water soluble artificial sweetener consisting essentially of xylitol mixed with L-sorbose of the formula C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>, said artificial sweetener comprising between about 45% and about 90% by weight of the composition, and the weight ratio of said xylitol to said sorbose is between about 1:10 and about 10:1 and said composition being



free of alkaline earth constituents capable of forming insoluble fluoride compounds.

4,284,651

# METHOD OF PREPARING CITRUS FRUIT SECTIONS WITH FRESH FRUIT FLAVOR AND APPEARANCE

Joseph H. Bruemmer, Tampa, Fla., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 50,895, Jun. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 944,679, Sep. 22, 1978, abandoned. This application Jul. 23, 1980, Ser. No. 171,627

Int. Cl.<sup>3</sup> A23L 1/212

U.S. Cl. 426—50

3 Claims

1. A method for preparing thick albedo type citrus fruit sections with fresh fruit flavor and appearance comprising in combination the following steps:

- washing the fruit with mild detergent and rinsing;
- heating the citrus fruit to a surface temperature of about 40° to 60° C. and a core temperature of about 20° to 40° C.;
- scoring the peel surface of the fruit so as to barely penetrate the albedo or white layer, but not to penetrate the juice sections;
- vacuum infusing the air bubbles of the thick albedo of the fruit with an aqueous solution of pectinase at about 25 to 30 inches of mercury to replace the gas bubbles in the albedo of the fruit with pectinase solution;
- incubating the fruit for a period of about 10 to 60 minutes at a temperature of about 30° to 60° C.;
- removing the peel and other membrane of the fruit;
- separating each juice section intact from the segment membranes;
- storing the fruit under refrigeration.

4,284,652

# MATRIX, PRODUCT THEREWITH, AND PROCESS

Edwin H. Christensen, Western Springs, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Continuation of Ser. No. 761,956, Jan. 24, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,401

Int. Cl.<sup>3</sup> A23L 1/30

U.S. Cl. 426—72

41 Claims

1. A soft dry pet food consisting of about 10 to about 50 percent of a non-adhesive, non-functional animal or vegetable protein source by weight of the pet food, a sufficient amount of vitamins and minerals to form a nutritious pet food, and 50 percent to 90 percent of a matrix by weight of the pet food wherein the matrix consists of:

- about 10 to about 90 percent of at least one amylaceous ingredient by weight of the matrix wherein at least 1 percent based on the weight of the matrix is a derivatized starch;
- about 5 to about 55 percent of at least one fat component by weight of the matrix;
- about 3 to about 50 percent of at least one polyhydric alcohol by weight of the matrix; and
- at least 5 percent water by weight of the matrix.

4,284,653

# PROCESS FOR HANDLING AND PROCESSING FISH MEAT

Ritsuo Shigeoka, Hachioji; Elzo Nagahisa, Sagami-hara, and Takafumi Yamauchi, Hachioji, all of Japan, assignors to Nippon Suisan Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 9, 1980, Ser. No. 111,007  
Claims priority, application Japan, Jan. 13, 1979, 54-3165; Jan. 13, 1979, 54-3166; Dec. 18, 1979, 54-164307

Int. Cl.<sup>3</sup> A22C 25/00; A23L 3/36

U.S. Cl. 426—312

8 Claims

1. A process of treating fish meat contaminated with spore-zoa which comprises adding to the fish meat effective inhibit-

ing amounts of at least one food compatible and edible additive which inhibits thiol protease.

4,284,654

# USE OF 1-HYDROXY-1-ETHYNYL-2,2,6-TRIMETHYL CYCLOHEXANE IN AUGMENTING OR ENHANCING THE AROMA OR TASTE OF FOODSTUFFS

Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel; John B. Hall, Rumson; Robin Kasper, Eatontown; Manfred H. Vock, Locust; Ronald Schreck, Keyport; Edward J. Granda, Englishtown, and Joaquin F. Vinals, Red Bank, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 88,451, Oct. 26, 1979, Pat. No. 4,250,332.

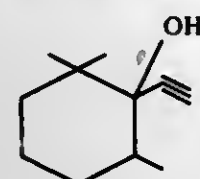
This application Jun. 5, 1980, Ser. No. 156,677

Int. Cl.<sup>3</sup> A23L 1/226

U.S. Cl. 426—538

1 Claim

1. The process for augmenting or enhancing the aroma or taste of a foodstuff comprising adding to said foodstuff from 0.02 parts per million up to about 500 parts per million based on said foodstuff of the compound having the structure:



4,284,655

# LOW-FAT COMESTIBLE SPREAD SUBSTITUTES

Donald E. Miller, and Cecilia Gilmore, both of Strongsville, Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Apr. 22, 1980, Ser. No. 142,802

Int. Cl.<sup>3</sup> A23D 5/00

U.S. Cl. 426—602

8 Claims

1. A flavored comestible spread consisting essentially of an oil-in-water dispersion of

- water;
- a partial glyceride ester composition containing about 38–48% diglyceride, monoglyceride present in the ratio monoglycerides to diglycerides of about 1:5 to 1:1.5 based on the diglyceride content, and triglyceride in an amount less than the mono- and diglyceride contents combined, said partial glyceride having a Capillary Melting Point less than about 120° F.;
- surface active cellulosic thickener; and
- a flavoring proportion of flavorant; the weight proportions of (a), (b) and (c) being about 30–100:10:0.5–2, sufficient to produce a plastic consistency and Brookfield viscosity of at least about 100,000 cps through a temperature range of about 38°–90° F.

4,284,656

# NOVEL PROTEIN CURD PRODUCT AND PROCESS OF PREPARATION

Stephen C. P. Hwa, 10 Belvue Ct., Penfield, N.Y. 14526

Filed Dec. 14, 1979, Ser. No. 103,732

Int. Cl.<sup>3</sup> A23J 1/14, 3/00

U.S. Cl. 426—641

13 Claims

1. A process for preparing a high protein, low fat foodstuff material comprising the steps of:

- extracting protein from a defatted soy bean material with water to provide an aqueous protein extract having at least 2.0 weight percent protein;
- separating residual defatted soy bean material from the aqueous protein extract;
- coagulating protein from the aqueous protein extract to produce a protein curd product and a whey by adjusting the pH to within the range from about 5.4 to about 8.0 and

heating the aqueous protein extract to within a temperature range from about 80° C. to about 170° C.,  
d. separating the protein curd product from the whey, and  
e. washing the protein curd product with water to produce a high protein, low fat foodstuff.

4,284,657

# FLUIDIZED OLEORESIN COMPOSITIONS

Norman K. Stanton, Arlington Heights, Ill., assignor to Kraf, Inc., Glenview, Ill.

Filed Jan. 9, 1980, Ser. No. 110,787

Int. Cl.<sup>3</sup> A23L 1/221

U.S. Cl. 426—651

7 Claims

1. An aqueous based, fluidized substantially sterile oleoresin composition comprising from about 10 to about 20 percent by weight of a natural oleoresin, from about 10 to about 20 percent by weight of a surfactant selected from the group consisting of polyoxyethylene ethers of sorbitol monooleate having about 20 oxyethylene groups per molecule and mixtures thereof, from about 0.25 to about 2 percent by weight of an edible hydrophilic gum which provides aqueous thickening properties under acidic conditions, from about 0.025 to about 1 percent by weight of phosphoric acid, and at least about 60 percent by weight of water.

4,284,658

# REGENERATOR SEAL

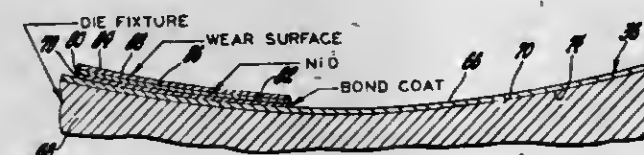
Leonard C. Davis; Theodore Pacala, and George R. Sippel, all of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1979, Ser. No. 96,924

Int. Cl.<sup>3</sup> B05D 1/08

U.S. Cl. 427—34

3 Claims



1. A method for manufacturing a seal cross arm assembly for a rotary heat exchange regenerator comprising the steps of forming a cross arm substrate member having free opposite ends thereon joined by a center segment having side edges between the opposite ends, equally stressing the member to a flattened condition, fixedly securing the substrate member to a holding fixture to maintain a concave bend between the opposite ends at the outer surface of the substrate member to maintain a controlled prestress therein during subsequent processing steps, bond coating the outer surface to form an oxidation resistant surface thereon, plasma spray coating a layer of nickel oxide on the bond coating to prevent contamination thereof by subsequently applied wear surface material, plasma spray depositing a nickel oxide/calcium fluoride wear coating to a uniform depth across the plasma spray coating of nickel oxide for defining a wear surface of concave form, and thereafter heat treating the prestressed and coated substrate member to produce a thermally induced growth stress in the wear coating that substantially equalizes the prestress in the substrate member thereby to produce a resultant flat wear surface on the cross arm assembly when the substrate member is removed from the holding fixture and placed in a gas turbine engine regenerator and operated under temperature conditions in the order of 1400° F.

4,284,659

# INSULATION LAYER REFLOW

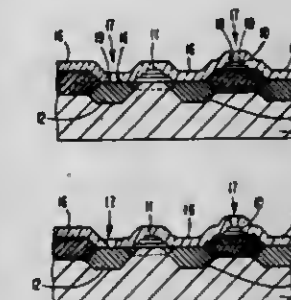
Ralph J. Jaccodine, Allentown, Pa., and Ami Kestenbaum, East Windsor Township, Mercer County, N.J., assignors to Bell Telephone Laboratories, Murray Hill, N.J. and Western Electric Co., Inc., New York, N.Y.

Filed May 12, 1980, Ser. No. 148,858

Int. Cl.<sup>3</sup> B05D 3/06

U.S. Cl. 427—53.1

9 Claims



1. A method of forming an interlevel glass dielectric layer in a semiconductor device, comprising the steps of: depositing a layer of glass dielectric material on a partially completed semiconductor device; forming feed-through apertures in the glass dielectric material; and exposing the apertured glass dielectric layer to high energy laser radiation which is selectively coupled to said layer to reflow the layer to form a smooth surface topography around said apertures without substantially heating said partially completed semiconductor device.

4,284,660

# ELECTROLESS DEPOSITION PROCESS FOR ZIRCONIUM AND ZIRCONIUM ALLOYS

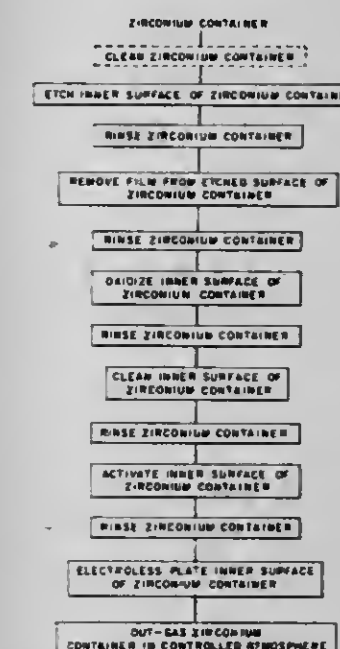
Robert E. Donaghy, and Anna H. Sberman, both of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Filed May 11, 1978, Ser. No. 904,783

Int. Cl.<sup>3</sup> B05D 3/12

U.S. Cl. 427—57

15 Claims



1. A method for producing a zirconium or a zirconium alloy container for fissionable nuclear reactor fuel, which container is resistant to stress corrosion cracking and embrittlement when subjected to fission reactions in nuclear reactor use, which method comprises the steps of:  
(a) etching the inside surface of said container,  
(b) desmutting the etched surface of said container to remove only loosely adhering material,  
(c) oxidizing the inside surface of said container with steam to produce a zirconium oxide coating thereon,



- (d) cleaning the oxidized surface of said container to remove substantially all foreign matter therefrom;  
 (e) activating the oxidized surface of said container for electroless deposition of a metal layer thereon, and  
 (f) contacting the activated surface of said container with an electroless metal plating solution to deposit a metal layer thereon.

4,284,661

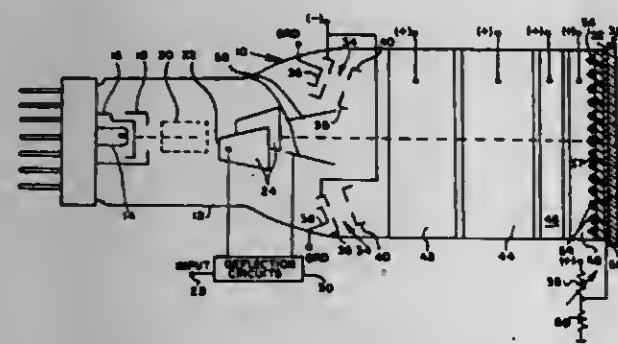
# PROCESS FOR MAKING BISTABLE STORAGE CATHODE RAY TUBE

Duane A. Haven, Portland, and Robert L. Arneson, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg. Division of Ser. No. 710,496, Aug. 2, 1976, Pat. No. 4,159,439. This application Jan. 31, 1979, Ser. No. 8,293

Int. Cl.<sup>3</sup> H01J 31/08, 29/10

U.S. Cl. 427—64

4 Claims



1. A method of making a storage target for use with a cathode ray tube comprising the steps of:  
 applying a conductive layer onto an inside surface of an insulating support member;  
 forming a pattern of collector electrode members on said conductive layer;  
 forming an insulating material at least around each of said collector electrode members except for outer exposed areas thereof; and  
 fixing a layer of dielectric storage material along said conductive layer and in engagement with said insulating material around said collector electrode members.

4,284,662

# METHOD OF MANUFACTURING COLOR PICTURE TUBES

Osamu Matsuzaki; Michio Abe, both of Mobara; Koichi Mitobe, Mutsuzawa, and Seikichi Tanno, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

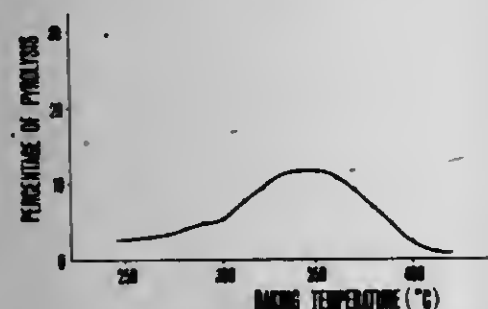
Filed Jan. 23, 1979, Ser. No. 5,860

Claims priority, application Japan, Jan. 23, 1978, 53-5257

Int. Cl.<sup>3</sup> B05D 5/06

U.S. Cl. 427—68

7 Claims



1. In a method of manufacturing a colour picture tube of the type comprising the steps of coating phosphors of three primary colours on the inner surface of the face plate of the colour picture tube to form dots or stripes of the phosphors; applying an acrylic resin emulsion on said dots or stripes of the phosphors to form an acrylic resin film; vapour depositing

metal onto said film to form a metallic reflecting film; subjecting said acrylic resin film to a pyrolysis for decomposing it into gases; and removing the gases; the improvement wherein said acrylic resin film-forming emulsion consists essentially of a mixture of a plurality of film-forming emulsions each consisting essentially of a different acrylic resin having a different pyrolysis characteristic, wherein one of the emulsions of said mixture consists essentially of a first film-forming acrylic polymer having a peak pyrolysis temperature lower than that of a second acrylic film-forming polymer contained in a second emulsion of said mixture and said first polymer is present in an amount of 5 to 40% by weight based on the total weight of said film-forming polymers, whereby said mixture results in an acrylic film-forming emulsion the film formed by which has a pyrolysis characteristic that is different from the pyrolysis characteristic of that formed by any of the emulsions forming said mixture.

4,284,663

# FABRICATION OF OPTICAL WAVEGUIDES BY INDIFFUSION OF METALS

John R. Carruthers, Murray Hill; Ivan P. Kaminow, New Shrewsbury, and Ronald V. Schmidt, Matawan, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 684,974, May 10, 1976, abandoned, which is a continuation of Ser. No. 477,165, Jun. 6, 1974, abandoned. This application Dec. 17, 1979, Ser. No. 104,676

Int. Cl.<sup>3</sup> B05D 5/06

U.S. Cl. 427—164

7 Claims

1. A method of fabricating a light guide along a surface of a crystal transparent to at least a portion of the optical spectrum comprising the steps of providing a path of increased index of refraction along said surface, said path forming a light guide; and providing means for coupling an optical wave into said light guide; characterized in that said step of providing a path of increased index includes the step of depositing a layer of a diffusant selected from the group consisting of elements having atomic numbers 21–30, gold and silver onto said surface of said crystal, said layer having a thickness in the range of about 200 Angstroms to about 800 Angstroms and indiffusing said diffusant by heating said crystal to a temperature in the range of about 800 degrees C. to 1100 degrees C. for a time between four hours and eight hours, said time being sufficient to effect an increase in the index of refraction of a surface layer of said crystal suitable for guiding an optical wave, said increase being of the order of one percent at said surface and which decreases by one-half at a depth of the order of one micrometer below said surface.

4,284,664

# FIBER REINFORCED CERAMICS PRODUCED WITHOUT PRESSING OR SINTERING USING A SLURRY COMPRISING A SILICATE AND A POWDERED CERAMIC

Harry W. Rauch, Sr., Chester, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Dec. 5, 1979, Ser. No. 100,283

Int. Cl.<sup>3</sup> B05D 1/12, 3/00; B32B 13/02

U.S. Cl. 427—180

8 Claims

1. A ceramic composite prepared without pressing or sintering by:  
 applying to a reinforcing medium a slurry of an aqueous alkali silicate and a powdered ceramic; and  
 removing the moisture content by drying.  
 5. A process for preparing a composite ceramic without pressing or sintering comprising the steps of:  
 applying to a reinforcing medium a slurry of an aqueous alkali silicate and a powdered ceramic; and  
 removing the moisture content by drying.

4,284,665

# PROCESS FOR COATING AN ELECTRICALLY NONCONDUCTIVE MATERIAL WITH METAL

Seppo O. Heimala, Pori, and Frans H. Tuovinen, Ulvila, both of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Dec. 20, 1979, Ser. No. 105,555

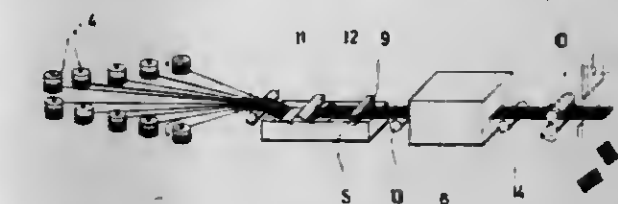
Claims priority, application Finland, Dec. 20, 1978, 783935

Int. Cl.<sup>3</sup> C23C 3/02

U.S. Cl. 427—203

7 Claims

1. A process for coating an electrically nonconductive material with a metal, comprising impregnating the surface of the nonconductive material with a metal or compound thereof in pulverous form less noble than the metal used for coating the surface of the nonconductive material, by first applying a coarser powder of said less noble metal or compound having a particle size of approximately 50–500  $\mu$ m and then, on the surface, applying a finer powder of said less noble metal or compound having a particle size of 1–50  $\mu$ m, and finally spraying a solution of the nobler metal on the surface of the electrically nonconductive material.



said bath, causing the liquid adherent to said bundle to harden, and chopping said bundle transversely into pieces wherein the individual steel wire pieces have a length to thickness ratio between about 50 and 200.

4,284,668

# PAINT SEALANT WITH TEFLON T.F.E

Charles R. Nixon, Redington Beach, Fla., assignor to Tough-Guard, Inc., Pinellas Park, Fla.

Filed Aug. 27, 1979, Ser. No. 69,706

Int. Cl.<sup>3</sup> B05D 3/02, 3/12, 1/36, 7/00

U.S. Cl. 427—355

6 Claims

1. A process for protecting a painted surface, which comprises:  
 providing a paint sealant composition in the form of a tetrafluoroethylene monomer, a tetrafluoroethylene dispersion carrier, an abrasive compound and an abrasive dispersion carrier;  
 buffing the paint sealant composition on the painted surface until sufficient heat is created to dissipate the dispersion carriers and to polymerize the tetrafluoroethylene monomer, so as to create a layer of a polymer over the painted surface.

4,284,669

# METHOD OF MAKING SOLDER COATED TUBES

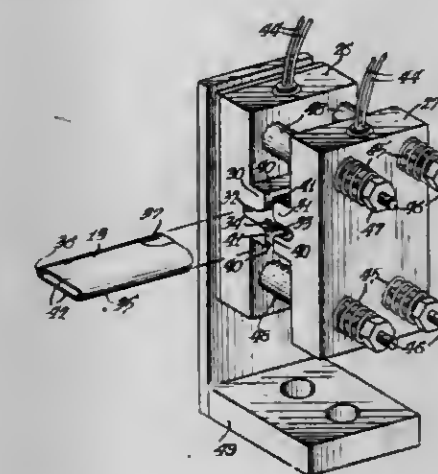
James J. Carravetta, Racine, Wis., and Edward A. Robinson, Bloomington, Ill., assignors to Modine Manufacturing Company, Racine, Wis.

Division of Ser. No. 73,217, Sep. 7, 1979. This application Aug. 22, 1980, Ser. No. 180,490

Int. Cl.<sup>3</sup> C23C 1/04; B05C 11/04

U.S. Cl. 427—357

5 Claims



1. The method of applying a substantially uniform coating of heated molten solder to the surface of a flat tube at and adjacent to the side edges thereof, comprising: drawing said flat tube through a bath of said molten solder; passing said coated tube between spaced heated platens comprising opposite shaping die members forming a slot embracing the opposite side edge area of said coated tube, said heated die members being at a temperature for maintaining said solder in a molten condition, said die members having means providing a gap in the

4,284,667

# REINFORCING MEMBER FOR CASTABLE MATERIAL AND PROCESS OF MIXING REINFORCING ELEMENTS WITH SAID MATERIAL

Joris Moens, Kortrijk, Belgium, assignor to N. V. Bekaert S. A., Zvevegem, Belgium

Division of Ser. No. 850,246, Nov. 10, 1977, Pat. No. 4,224,377, which is a continuation of Ser. No. 456,592, Apr. 1, 1974, abandoned. This application Jan. 18, 1980, Ser. No. 113,320

Claims priority, application United Kingdom, Apr. 16, 1973, 18322/73

Int. Cl.<sup>3</sup> B32B 5/06, 7/00

U.S. Cl. 427—331

5 Claims

1. A process for making a multiplicity of reinforcing members for a castable cementitious matrix material such as mortar or concrete, which process comprises bundling a number of steel wires of a thickness between about 0.1 mm. and 1 mm. by



platens at at least one of the flat sides of the tubes; and means for immediately cooling said coating of solder.

4,284,670

# METHOD FOR APPLYING LUBRICANTS ONTO METAL WORKING SURFACES

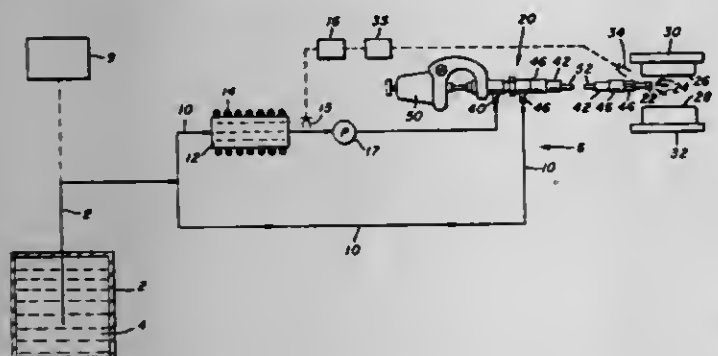
Richard P. Kole, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 712,388, Aug. 6, 1976, abandoned. This application Nov. 21, 1977, Ser. No. 853,493

Int. Cl.<sup>3</sup> B05D 1/02

U.S. Cl. 427—422

5 Claims



1. A method of uniformly spraying an ordinarily high viscosity nonaqueous lubricant containing solid additives onto the metal working surfaces of heated dies in a forging press comprising the steps of:

- heating said lubricant to approximately 170° to 300° F. to reduce its viscosity to approximately 1.0 centipoise;
- continuously recirculating a constant volume of said lubricant at a pressure of approximately 30 to 70 pounds per square inch and a temperature of approximately 170° to 300° F. from the source of heat to a spray nozzle;
- hydraulically atomizing said recirculating lubricant by selectively feeding said lubricant through said nozzle under said pressure; and
- directing said atomized lubricant onto said metal working surfaces.

4,284,671

# POLYESTER COMPOSITIONS FOR GAS AND MOISTURE BARRIER MATERIALS

Leopoldo V. Cancio; Gerald W. Miller, and Pai-Chuan Wu, all of Cincinnati, Ohio, assignors to Clopay Corporation, Cincinnati, Ohio

Filed May 11, 1979, Ser. No. 38,094

Int. Cl.<sup>3</sup> B65D 00/00; B32B 27/06

U.S. Cl. 428—35

13 Claims

1. A gas and moisture barrier material fabricated into a structural layer comprising a polymer blend which consists essentially of

- (a) a polymer selected from the group of a polyester and copolymers thereof, and
- (b) poly(ethylene/vinyl alcohol).

13. A container formed from a layer of barrier material defined in claims 1, 2, 3, 4, 6 or 7.

4,284,672

# FLEXIBLE PACKAGING COMPOSITE COMPRISING AN OUTER POLYAMIDE LAYER, AN INTERMEDIATE METAL FOIL LAYER AND AN INTERIOR HEAT-SEALABLE LAYER

Nathan Stillman, Walnut Creek, Calif., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 18, 1979, Ser. No. 104,799

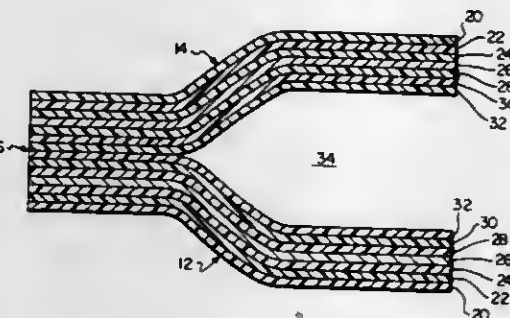
Int. Cl.<sup>3</sup> B32B 1/02, 15/08; B65D 37/00

U.S. Cl. 428—35

8 Claims

1. A composite, flexible packaging film consisting essentially of

- an outer layer of balanced biaxially oriented thermoplastic polymer;
- a middle layer of flexible metal foil affixed to one surface of said outer layer;
- an inner layer of a heat-sealable ethylene copolymer or rubber-modified high-density polyethylene affixed to a surface of said middle layer opposite said outer layer; and



a first adhesive layer between said middle and inner layers.  
8. A composite, flexible packaging film according to claim 1, which is formed into two sheets; said sheets oriented one on top of another with their inner layers facing each other; said sheets heat sealed at their edges to form a flexible pouch.

4,284,673

# METHOD OF MANUFACTURING A PANEL, PROVIDED WITH A FRAME FOAMED OF SYNTHETIC MATERIAL AT LEAST AT ONE LATERAL FACE THEREOF, AS WELL AS A PANEL OBTAINED THROUGH THE METHOD

Egbert Ockels, Veendam, Netherlands, assignor to Markomark B.V., Netherlands

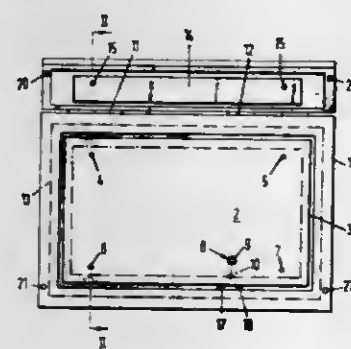
Filed Jun. 6, 1979, Ser. No. 46,074

Claims priority, application Netherlands, Jun. 9, 1978, 7806307

Int. Cl.<sup>3</sup> B29D 27/00

U.S. Cl. 428—54

9 Claims



1. A method of manufacturing a panel, having a porous particle board core and a frame of foamed synthetic material molded in a cavity formed along at least one side edge of said core, comprising the steps of:

- (a) providing first and second communicating channels in said core, said first channel having a depth less than the panel thickness and said second channel connecting said first channel with said at least one side edge of said core;
- (b) coating said second channel with a gas-impermeable material;
- (c) providing at least one vent in said core, said vent having a depth less than the panel thickness, through which ambient air in said cavity can leave said cavity during molding, migrating first through said porous core itself;
- (d) placing said particle board core into a mold, said cavity being defined along at least that part of the circumference of said core corresponding to said at least one side edge, for forming said frame;
- (e) closing and sealing a cover over said cavity, without sealing said first channel and said at least one vent;
- (f) filling said cavity with a curable bi-component foamable

synthetic material through said first and second channels, at low pressure, the formation of bubbles being substantially prevented by said gas impermeable coating, said material foaming through an exothermic reaction, said exothermic reaction sufficiently increasing the pressure and temperature of said foaming material to force said ambient air out of said cavity towards said at least one vent and to force said material to penetrate the interstices of the adjacent sections of said core prior to curing; and, after curing,

(g) removing said panel from said mold, said frame material having so penetrated said porous particle board core that said frame is integral therewith and not easily separated therefrom.

9. A panel provided with a frame obtained through application of the method according to claim 1.

4,284,674

# THERMAL INSULATION

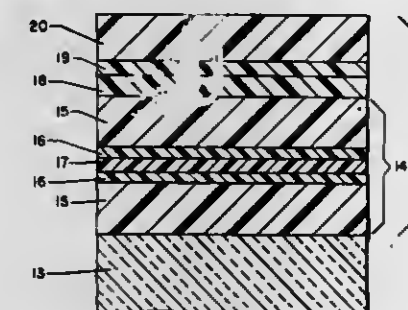
Nicholas Sheptak, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Nov. 8, 1979, Ser. No. 92,624

Int. Cl.<sup>3</sup> B32B 1/04, 3/02, 27/34, 27/32

U.S. Cl. 428—69

18 Claims



1. A multi-ply laminate comprising:

- (1) a multi-layer coextruded film consisting essentially of (a) a core layer of ethylene vinyl alcohol adhered on each side to (b) a polyamide layer, each such polyamide layer being adhered to (c) a layer of a modified polyolefin which consists of a polyolefin polymer or copolymer blended with polyethylene grafted with an unsaturated fused ring carboxylic acid anhydride;
- (2) a layer of primer material effective to enhance adhesion between said modified polyolefin layer; and
- (3) an adjacent outer layer of a plastic material capable of conveying toughness and moisture barrier properties to said laminate.

7. A multi-ply laminate comprising:

- (1) a five-layer coextruded cast film of about 1.5 to 5 mils in thickness consisting essentially of a core layer of ethylene-vinyl alcohol comprising about 10% of the film thickness adhered on each side to nylon comprising about 5% of the film thickness, each nylon layer being adhered to a layer of modified polyolefin comprising ethylene vinyl acetate blended with high density polyethylene grafted with an unsaturated fused ring carboxylic acid anhydride, each of said modified polyolefin layers comprising about 40% of the film thickness;
- (2) a layer of about 0.5 to 2.0 mils of low density polyethylene adhered to one side of one of said modified polyolefin layers;
- (3) a layer of about 0.01 to 0.10 mils of a polyester-polyurethane primer adhered to said polyethylene layer; and
- (4) an outwardly facing layer of oriented polypropylene adhered to said primer layer.

9. In a thermal insulating unit comprising a porous mass of thermally insulative material and a sealed pouch hermetically enclosing said porous mass; the improvement which comprises providing a heat sealed, puncture resistant insulating unit having vapor and gas barrier properties wherein the pouch is formed of a multi-ply laminate of claim 1.

4,284,675

# CARRIERS FOR CATALYSTS

Toshiyuki Sakai, Funabashi; Koichi Matsuo, Tachikawa, and Shozo Naito, Hino, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 869,184, Jan. 12, 1978, abandoned. This application May 30, 1980, Ser. No. 155,034

Claims priority, application Japan, Jan. 26, 1977, 52/6754; Jul. 8, 1977, 52/81608

Int. Cl.<sup>3</sup> B32B 3/12

U.S. Cl. 428—116

9 Claims

1. A catalyst carrier comprising a ceramic substrate, an active alumina coating formed thereon and at least one sinter inhibitor contained in the active alumina coating in which:

- (1) the amount by weight of the active alumina coating is in the range of 10–25% by weight of the ceramic substrate,
- (2) the water absorption of the active alumina-coated ceramic substrate is at least 12% by weight thereof, and
- (3) at least one sinter inhibitor of 0.1–2.0% by weight calculated as metal and based on the coated ceramic substrate, selected from the group consisting of Mg, Al, and Th and compounds thereof, is dispersed in the active alumina coating.

4,284,676

# METHOD AND APPARATUS FOR FLATTENING WOOD BASED PANELS

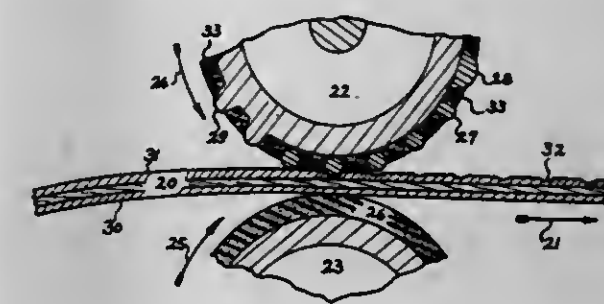
Roland Etzold, 233 Lassen Ave., Mountain View, Calif. 94043  
Division of Ser. No. 726,901, Sep. 27, 1976, Pat. No. 4,139,407.

This application Feb. 8, 1979, Ser. No. 10,237

Int. Cl.<sup>3</sup> B32B 3/28

U.S. Cl. 428—167

2 Claims



1. A substantially flat building panel having a front face and a backside which had been substantially curved with a concave face having substantially parallel, elongated indentations on its backside in closely spaced relationship, the panel compressed in density under the indentations and being recovered there by partial springback from greater density compression, the panel between adjacent indentations having minute, curved sections, concave on the face and perpendicular to the long axis of said indentations, said curved sections being separated from one another at said indentations by minute bends of the panel in the opposite direction to the curved sections whereby the appearance of the panel is substantially flat.

4,284,677

# GLAZING UNIT

Siegfried H. Herliczek, Petersburg, Mich., assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Apr. 24, 1979, Ser. No. 32,810

Int. Cl.<sup>3</sup> B32B 1/04; E04C 1/00; B32B 17/10, 15/02

U.S. Cl. 428—192

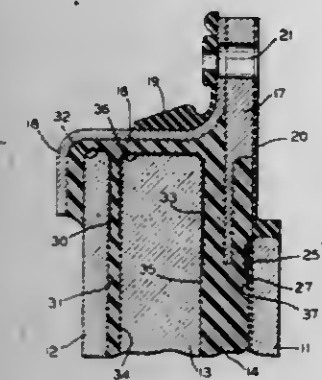
3 Claims

1. In an electrically conducting laminated glazing unit including at least two sheets of glass and an interposed plastic interlayer bonded to said sheets and in which said plastic interlayer and one of said glass sheets extends beyond an edge of the other of the sheets, a bus bar along the margin of an inwardly disposed surface of one of said sheets, a transparent electrically conducting film also on said surface and in contact with said



bus bar, a first layer of polyisobutylene resin covering the area of the bus bar between said glass surface and the plastic interlayer, and a second layer of polyisobutylene resin disposed over the extended portion of said one glass sheet between the glass and the plastic interlayers, said resin layers comprising between 65 percent and 80 percent by weight of polyisobutylene with the remainder consisting essentially of carbon black and having a viscosity average molecular weight of between 8500 and 12000.

3. A laminated aircraft glazing unit including at least one sheet of glass and a layer of non-brittle thermoplastic material integrally bonded thereto over a surface of the sheet and ex-



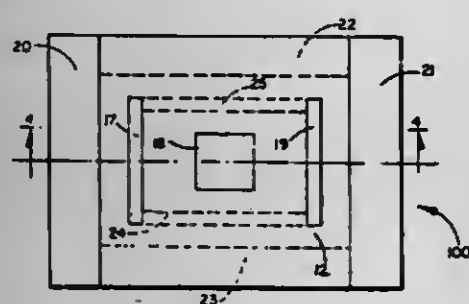
tending outwardly beyond the glass sheet, a thickened portion on the extended part of said thermoplastic layer integrally bonded to an edge of said glass sheet, a strip of polyisobutylene resin tape between the glass sheet and the thermoplastic layer along a margin of said glass sheet adjacent said edge, and a second strip of polyisobutylene resin tape between said edge of the glass sheet and the thickened portion of the extended thermoplastic layer, said resin tapes comprising between 65 percent and 80 percent by weight of polyisobutylene with the remainder consisting essentially of carbon black and having a viscosity average molecular weight of between 8500 and 12000.

4,284,678

#### HIGH RESOLUTION MASK AND METHOD OF FABRICATION THEREOF

Addison B. Jones, La Mirada, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.  
Continuation of Ser. No. 943,034, Sep. 18, 1978, abandoned, which is a continuation of Ser. No. 810,469, Jun. 27, 1977, abandoned. This application Jan. 17, 1980, Ser. No. 113,006  
Int. Cl.<sup>3</sup> B32B 3/00, 27/00; B05D 3/06  
U.S. Cl. 428—195

18 Claims



1. A mask for use in fine-line lithography, comprising:  
a continuous membrane which is thin enough to be substantially transparent to radiation in the form of soft x-rays or low voltage E-beams,  
a patterned layer which is substantially opaque to said radiation,  
said patterned layer disposed on said thin membrane, and  
support means associated with said thin membrane to provide structural support at the edges of said thin membrane such that said radiation passes through the portion of said thin membrane inside said support means,

wherein said thin, continuous membrane has a thickness in the range from about 0.2 microns to about 2.0 microns.

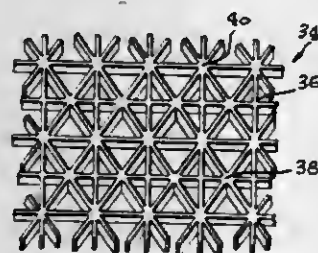
10. The method of making a mask for use in fine-line lithography, comprising the steps of:  
providing a support substrate to provide mechanical and thermal stabilization of a continuous membrane during mask fabrication,  
providing a layer of a release agent on said support substrate, forming on said layer of a release agent a continuous membrane of material which is thin enough to be substantially transparent to radiation in the form of soft x-rays or low voltage E-beams,  
forming on said thin membrane a patterned layer of material which is opaque to said radiation wherein said patterned layer is supported on said membrane  
affixing a support member to the edges of said thin membrane and  
removing said support substrate,  
wherein said thin, continuous membrane has a thickness in the range from about 0.2 to about 2.0 microns.

4,284,679

#### FILLED RESIN COATED TAPE

Leiv H. Blad, Van Nuys, and Charles F. Griffin, Burbank, both of Calif., assignors to Lockheed Corporation, Burbank, Calif.  
Filed Nov. 6, 1978, Ser. No. 957,805  
Int. Cl.<sup>3</sup> B32B 7/02  
U.S. Cl. 428—218

10 Claims



1. A resinous material suitable for the fabrication of laminated structures comprising:  
a first layer of resin; and  
at least one second uncured and substantially non-self-curing layer of filled resin contiguous with said first layer, said first layer being relatively non-compressible compared to said second layer and said second layer being readily flowable under a compressive force and adapted to be easily squeezed out of the region of the force, said flowable second layer being adapted to retain said flowability for an extended period of time until used to fabricate said laminated structures.

4,284,680

#### MULTI-LAYERED, NEEDLE PUNCHED, FELT-LIKE CUSHIONING MATERIAL AND PRODUCTION METHOD THEREOF

Shunya Awano, Matsudo, and Akio Shittaka, Narashino, both of Japan, assignors to Ichikawa Woolen Textile Co., Ltd., Tokyo, Japan  
Filed Jan. 28, 1980, Ser. No. 115,673  
Claims priority, application Japan, Jan. 30, 1979, 54/8758  
Int. Cl.<sup>3</sup> B32B 5/02  
U.S. Cl. 428—234

5 Claims

1. A method for producing a multi-layered, needle-punched, felt-like cushioning material having a plurality of fibrous batts and a plurality of foundation fabrics, said process comprising:  
(a) feeding a fibrous batt web and a sheet of foundation fabric to a needling apparatus to needle said fabric to one face of said fibrous batt;  
(b) reintroducing the leading end of the needled fabric into the needling apparatus to needle said needled fabric to said

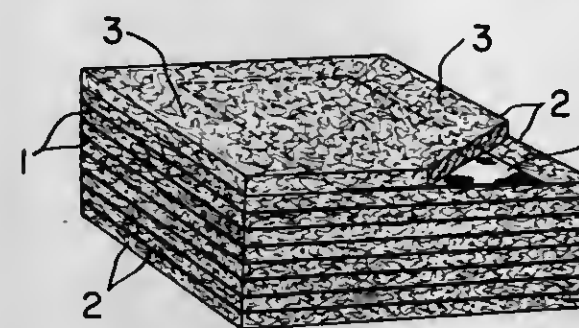
4,284,682

#### HEAT SEALABLE, FLAME AND ABRASION RESISTANT COATED FABRIC

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Richard P. Tschirch, Westwood and Kenneth R. Sidman, Wayland, both of Mass.  
Filed Apr. 30, 1980, Ser. No. 145,107  
Int. Cl.<sup>3</sup> B32B 7/00; D03D 3/00; D04B 1/00; D04H 1/00  
U.S. Cl. 428—263

10 Claims

1. A flexible, abrasion resistant, flame retardant coated fabric capable of being joined by heat or dielectric sealing procedures which coated fabric comprises a fabric substrate, selected from the group consisting of the woven, knitted and bonded web fabrics of synthetic and natural fibers, bonded to a flame retardant coating of an elastomeric composition comprising about 30 to about 60 wt. percent of a soluble, thermoplastic polyurethane and from about 70 to about 40 weight percent of a flame retardant additive selected from the group consisting of decabromodiphenyloxide and antimony oxide in a weight ratio of about 3:1, respectively, and decabromodiphenyloxide, antimony oxide and ammonium polyphosphate in a weight ratio of about 3:1:3, respectively.



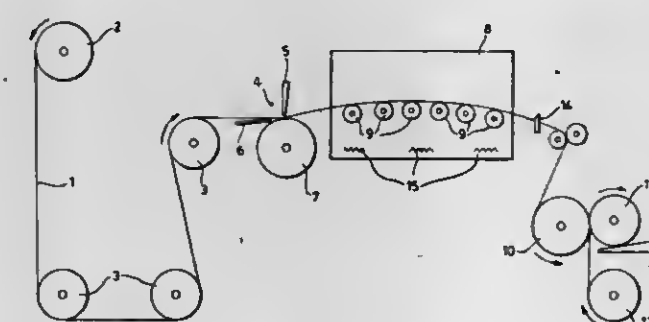
superimposed fabric through said needle apparatus until a predetermined number of outer layers of the same single fibrous web have been needled to said circular felt;  
(e) turning said circular felt inside out and repeating step (d);  
(f) heating the felt to heat-set the fibers of said batts and fabrics; and,  
(g) severing open said circular felt to form said cushioning material.

4,284,683

#### STRUCTURAL LAMINATE

James N. Tidmarsh, Clifton, and Gerald N. Swift, Kingswood, both of England, assignors to Dycem Limited, Bristol, England  
Filed Jun. 26, 1979, Ser. No. 52,144  
Int. Cl.<sup>3</sup> B32B 27/04, 27/06, 27/08  
U.S. Cl. 428—246

9 Claims



9. A composite sheet material comprising bonded together in sequence:

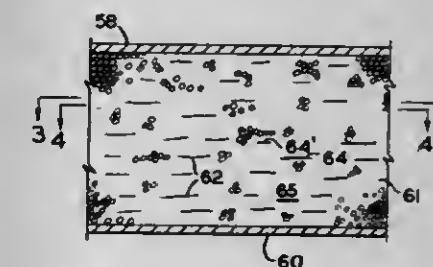
- (1) a top layer of highly-plasticised polyvinylchloride, comprising 15 to 45% by weight of polyvinylchloride and 55 to 85% by weight of a plasticiser, wherein the plasticiser has a molecular weight in the range of about 750 to about 1250;
- (2) an intermediate barrier layer between the highly-plasticised polyvinylchloride layer and the underlying backing layer, wherein the intermediate layer consists essentially of a non-foamed polymeric material selected from polyvinylchloride containing a lower proportion of plasticiser than is contained in the highly-plasticised polyvinylchloride layer, a polyurethane, polychloroprene and a modified olefin polymer, the intermediate layer providing a barrier to the migration of plasticiser from the highly-plasticised polyvinylchloride layer to or through the backing; and
- (3) a fibrous backing.

Donald E. Hipchen, Seminole; Michael J. Skowronski, and Joseph R. Hagan, both of Clearwater, all of Fla., assignors to The Celotex Corporation, Tampa, Fla.  
Continuation of Ser. No. 886,110, Mar. 13, 1978, abandoned, which is a continuation of Ser. No. 745,169, Nov. 26, 1976, abandoned, which is a division of Ser. No. 650,243, Jan. 19, 1976, Pat. No. 4,028,158. This application Sep. 28, 1979, Ser. No. 79,771

The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> B32B 5/20, 5/26, 5/28  
U.S. Cl. 428—285

15 Claims



- A. at least one planar facing sheet;
- B. a rigid foam attached to one surface of the facing sheet, the rigid foam formed from a foam-forming mixture; and
- C. glass fibers wherein:
  - I. the glass fibers are distributed substantially evenly throughout the rigid foam,
  - II. the glass fibers are straight,
  - III. the glass fibers are greater than one foot in length,
  - IV. the glass fibers are arranged in layers,
  - V. each layer of glass fibers is substantially parallel to the facing sheet, and
  - VI. the rigid foam completely fills the interstices between the glass fibers, the glass fibers being held in fixed relationship with respect to each other solely by the rigid foam.



4,284,684

**MAGNETIC RECORDING MEDIUM AND METHOD OF MANUFACTURING THE SAME**

Yuichi Kubota, Komoro, Japan, assignor to TDK Electronic Co., Ltd., Tokyo, Japan

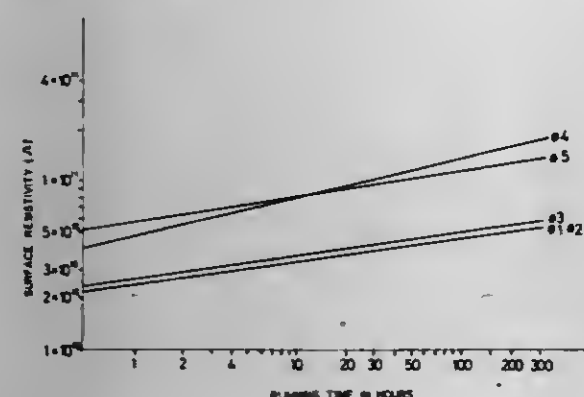
Filed Mar. 13, 1979, Ser. No. 20,143

Claims priority, application Japan, Mar. 16, 1978, 53-29247

Int. Cl.<sup>3</sup> H01F 10/02

U.S. Cl. 428—328

11 Claims



1. A method of manufacturing a magnetic recording medium by applying a magnetic coating material containing a magnetic powder and a binder on a base, characterized in that an antistatic additive, prepared by pulverizing and dispersing at least either nickel powder or copper powder which has the skeletal structure of a mother salt or having an aggregated structure, in the presence of a polymeric material, said pulverizing being effected by the exertion of a shearing force of a sufficient magnitude such that the skeletal structure is no longer retained or the aggregated structure is disintegrated, is mixed in said magnetic coating material.

4,284,685

**ABRASION RESISTANT SILICONE COATED POLYCARBONATE ARTICLE**

Daniel R. Olson; Ona V. Orkin, both of Schenectady, and Karen K. Webb, Ballston Lake, all of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Jan. 10, 1980, Ser. No. 110,886

Int. Cl.<sup>3</sup> B32B 27/30, 27/08; G02B 1/08

U.S. Cl. 428—331

23 Claims

1. A coated polycarbonate article having improved abrasion and chemical solvent resistance comprising a polycarbonate substrate having adhered on at least one surface thereof (i) an adhesion promoting primer layer having a controlled thickness of from about 0.015 to about 0.15 mils consisting essentially of a thermoset acrylic polymer; and (ii) a top coat on said primer layer comprised of a colloidal silica-filled thermoset organopolysiloxane.

4,284,686

**SPECTACLE LENSES TO REDUCE DISCOMFORT FROM APHAKIA AND CERTAIN EYE DISEASES**

Brent M. Wedding, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,250

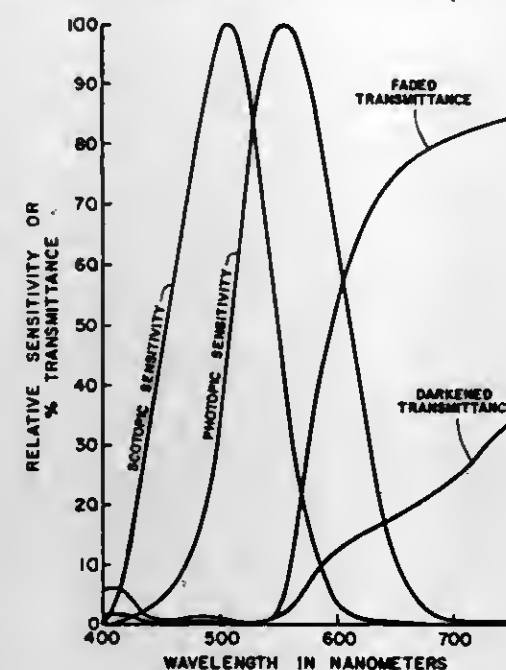
Int. Cl.<sup>3</sup> C03C 3/26, 3/08, 3/30

U.S. Cl. 428—334

17 Claims

1. A photochromic glass article especially suitable for spectacle lenses having an integral colored surface layer and exhibiting near-zero transmittance of radiations having wavelengths shorter than a selected cutoff wavelength ranging between about 440–550 nm, said glass consisting essentially, expressed in weight percent on the oxide basis, of about 0–2.5% Li<sub>2</sub>O, 0–9% Na<sub>2</sub>O, 0–17% K<sub>2</sub>O, 0–6% Cs<sub>2</sub>O, 8–20% Li<sub>2</sub>O+Na<sub>2</sub>O+K<sub>2</sub>O+Cs<sub>2</sub>O, 14–23% B<sub>2</sub>O<sub>3</sub>, 5–25% Al<sub>2</sub>O<sub>3</sub>, 0–25%

P<sub>2</sub>O<sub>5</sub>, 20–65% SiO<sub>2</sub>, 0.004–0.02% CuO, 0.15–0.3% Ag, 0.1–0.25% Cl, and 0.1–0.2% Br, wherein the molar ratio of



alkali metal oxides: B<sub>2</sub>O<sub>3</sub> varies between about 0.55–0.85 and the weight ratio Ag:(Cl+Br) ranges between about 0.65–0.95.

4,284,687

**COMPOUND BODY**

Klaus Dreyer, Essee; Hans Grewe, Grefrath-Vinkrath; Johannes Kolaska, Bottrop, and Norbert Reiter, Mettmann, all of Fed. Rep. of Germany, assignors to Fried Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Nov. 16, 1979, Ser. No. 95,099

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851584

Int. Cl.<sup>3</sup> B32B 9/00, 15/04

U.S. Cl. 428—336

7 Claims

1. A compound body used as a part subject to wear and for machining metallic materials, comprising a metallic basic body and at least two superposed hard substance layers each free from binder metals, the two superposed hard substance layers comprising at least one inner layer disposed on the metallic basic body and at least one outer layer disposed on the inner layer, wherein the at least one inner layer disposed on said basic body comprises at least one compound selected from the group consisting of carbides and nitrides of the elements Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Si, and B, and wherein the at least one outer layer disposed on said inner layer comprises at least one oxide and at least one nitride and/or at least one oxynitride of the elements Cr, Al, Ca, Mg, Th, Sc, Y, La, Ti, Zr, Hf, V, Nb, and Ta, the nitrogen content of said outer layer being about 0.1 to about 30 atom percent for each outer layer that is present.

4,284,688

**MULTI-LAYER, HIGH-TEMPERATURE CORROSION PROTECTION COATING**

Albin Stücheli, Zurich, and Walter Trindler, Lengnau, both of Switzerland, assignors to BBC Brown, Boveri &amp; Company Limited, Baden, Switzerland

Filed Dec. 3, 1979, Ser. No. 99,708

Claims priority, application Switzerland, Dec. 21, 1978, 12995/78; Dec. 21, 1978, 12996/78

Int. Cl.<sup>3</sup> B22F 7/04, 7/08

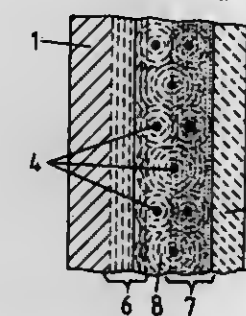
U.S. Cl. 428—559

11 Claims

1. An article for use at high operating temperatures comprising a base material which is a metal, suitable for high temperature application, whose outer metallic surface forms a surface of the article when unprotected by a protective coating but whose outer surface is corrodible at high operating temperatures when unprotected, said metal being one into which nickel

can diffuse at high operating temperatures and a multi-layer, high-temperature corrosion protection coat upon the corrodible metallic surface which comprises:

- (a) first protective layer adjacent to said metallic surface said layer having a nickel containing matrix and comprising 1–15% zirconium alone, or a mixture of zirconium and of up to 80% titanium replacing zirconium, present at least in part as fine particles disposed in said matrix, 10–30% chromium, optionally 0.05–2% yttrium, lanthanum, rare-earth and/or beryllium, up to 4% silicon, up to 2% boron, and remainder essentially nickel;
- (b) a second protective layer adjacent to said first protective



layer comprising at least 60% chromium and remainder selected from the group consisting of iron, iron plus nickel and mixtures thereof;

- (c) a diffusion zone of high nickel content extending from the base material into the first protective layer (a);
- (d) a diffusion zone which is a nickel chromium alloy of variable constitution within the first protective layer (a) and beneath the second protective layer (b) and;
- (e) diffusion regions of zirconium nickel alloy of variable zirconium content surrounding the zirconium particles; the proportions of the metals in the protective layers (a) and (b) being the proportions before the creation of the diffusion zones.

4,284,689

**LIGHT-ABSORBING MATERIALS**

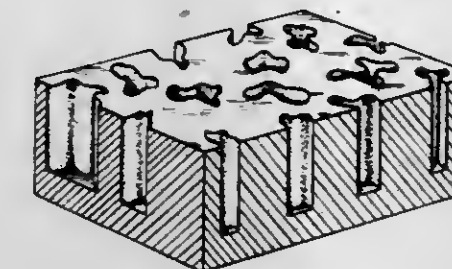
Harold G. Craighead, Eatontown, and Richard E. Howard, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 7, 1980, Ser. No. 137,602

Int. Cl.<sup>3</sup> B32B 15/04; C23C 15/00; B32B 3/00

U.S. Cl. 428—620

24 Claims



1. A body with a channeled portion comprising a material forming said body that contains a multiplicity of open voids where the mean depth of said voids is at least 0.3 μm, where 20 to 80 percent of the volume of said channeled portion measured to said mean depth consists of voids, where the channel dimension of said voids is less than 3 μm and where the wall direction over 75 percent of the wall length within any localized area defined by a square 10 μm on side is within 20 degrees of the mean direction for said walls within said localized area.

11. A process for fabrication of a body having voids comprising the steps of bringing a material into close proximity to a sputterable composition such that at least a portion of said sputterable composition is exposed, and sputtering from said

4,284,690

**CYLINDRICAL TAPERED SLEEVE OPTIMIZED FOR WEIGHT AND HEAT CONDUCTION**

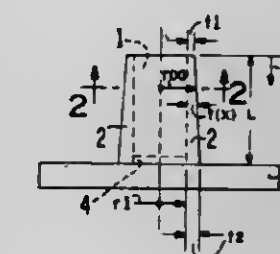
Charles W. Koehler, Millitas, and Gerrit Van Ommering, San Francisco, both of Calif., assignors to Ford Aerospace &amp; Communications Corp., Detroit, Mich.

Filed Mar. 4, 1980, Ser. No. 127,160

Int. Cl.<sup>3</sup> H01M 2/02

U.S. Cl. 429—26

7 Claims



1. In combination, a cylindrical battery cell which generates substantially uniform amounts of heat along its cylindrical surface; and

a roughly cylindrical shaped sleeve having a top and a bottom, said sleeve fitting snugly around said battery cell and having a uniformly tapered thickness along its longitudinal axis, the greatest sleeve thickness being at the bottom thereof.

4,284,691

**ELECTROCHEMICAL CELL**

Franz Goebel, Sudbury, and William T. McHugh, Westwood, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 13, 1980, Ser. No. 159,271

Int. Cl.<sup>3</sup> H01M 2/26

U.S. Cl. 429—105

26 Claims



1. An electrochemical cell comprising: an elongated metal housing having an interior wall; an elongated metal terminal within and along the direction of the housing; and

an electrochemical system contained within the housing and including an electrolytic solution and a plurality of battery stack components exposed to the electrolytic solution and arranged in a stacked array encircling the elongated metal terminal, said array of battery stack components comprising:

a plurality of metal electrode structures in direct physical contact with the elongated metal terminal and spaced from the interior wall of the housing; and

a plurality of carbon electrode/insulator structures arranged in the array in alternation with the metal electrode structures and each comprising:

a metal substrate spaced from the elongated metal terminal.



rainal and in direct physical contact with the interior wall of the housing;

first and second porous carbon layers on opposite sides of, and in direct physical contact with, the metal substrate and spaced from the elongated metal terminal, each of said porous carbon layers having a network of electrolyte-conducting channels there-through for the receipt of, and to be permeated by, the electrolytic solution within the housing; and first and second porous insulators in direct physical contact with the first and second carbon layers, respectively, and in direct physical contact with adjacent ones of the metal electrode structures and separating the carbon layers from the adjacent metal electrode structures.

4,284,692

# COMPOSITIONS FOR STABILIZING ELECTROLYTES IN LI/TiS<sub>2</sub> SYSTEMS

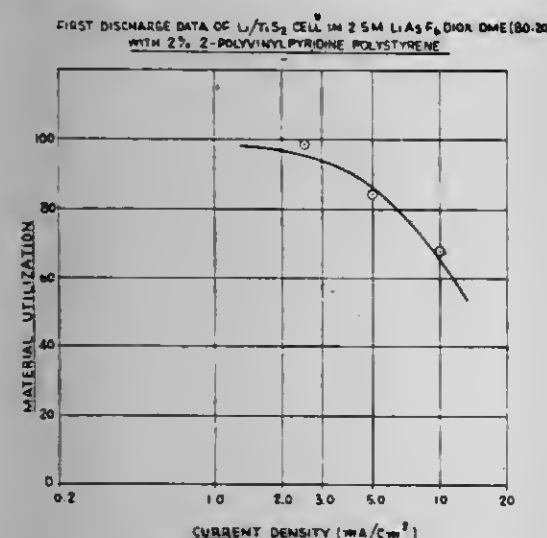
Bhaskara M. L. Rao, Fanwood; Daniel J. Eustace, Scotch Plains, and Dan Farcasiu, Princeton, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 28, 1980, Ser. No. 144,680

Int. Cl.<sup>3</sup> H01M 6/14

U.S. Cl. 429—194

12 Claims



CELLS ARE RECHARGEABLE IN THAT 3 CYCLES TO 70% M.U. HAS BEEN NOTED AT 5% RATE CHARGE-DISCHARGE.

1. In a current producing Li/TiS<sub>2</sub> electrochemical cell having an electrolyte containing at least one lithium salt solute in a solvent comprising a cyclic ether, at least one composition for inhibiting polymerization of said cyclic ether by TiS<sub>2</sub>, said composition being selected from a group consisting essentially of at least one of the following:

- (a) Li<sub>x</sub>TiS<sub>2</sub> where: x is less than approximately 0.1 and greater than approximately 0.025; and
- (b) at least one sterically hindered amine which does not intercalate with TiS<sub>2</sub>.

4,284,693

# ORIENTING AND SIZING BATTERY GRIDS AND ARTICLES FORMED THEREBY

Jerry T. McDowell, Greeneville, Tenn., assignor to Ball Corporation, Muncie, Ind.

Division of Ser. No. 949,934, Oct. 10, 1978, Pat. No. 4,220,030.

This application Mar. 28, 1980, Ser. No. 134,831

Int. Cl.<sup>3</sup> H01M 4/74

U.S. Cl. 429—211

8 Claims

1. A battery grid comprising a metal grid structure defining a header and a lug connecting portion thereon, an open net-

work depending from the header over the entire length thereof, said open network being provided with nodes having



elements projecting therefrom to define cells, said nodes having a right trapezoid cross section.

4,284,694

# METHOD FOR IMPROVING THE ADHERENCE OF A PHOSPHOR-PHOTOBINDER LAYER TO A GLASS SUPPORT

Stanley A. Harper, New Providence, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 25, 1980, Ser. No. 143,765

Int. Cl.<sup>3</sup> G03C 5/00

U.S. Cl. 430—23

10 Claims

1. A method for preparing a luminescent screen upon a glass surface comprising

- (a) depositing on said glass surface a layer of an aqueous solution containing polyvinyl alcohol and a water-soluble zirconyl compound,
- (b) drying said layer to produce a precoat on said surface,
- (c) depositing upon said precoat a coating comprising phosphor particles and a photosensitive binder therefor,
- (d) exposing said coating to a light image whereby to form in said coating selected regions of greater solubility and selected regions of lesser solubility,
- (e) and then developing said exposed coating by selectively removing said regions of greater solubility.

4,284,695

# METHOD OF MANUFACTURING LUMINESCENT SCREENS FOR COLOR-PICTURE TUBES WITH TWO EXPOSURES

Bruno Fischer, Esslingen, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

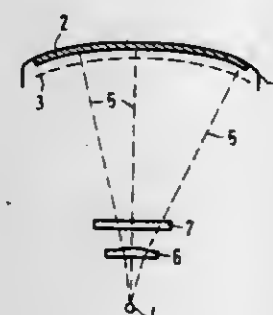
Filed Jan. 3, 1980, Ser. No. 109,387

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1979, 2902239

Int. Cl.<sup>3</sup> G03C 5/00

U.S. Cl. 430—24

7 Claims



1. A method of manufacturing luminescent screens for color-picture tubes consisting of two exposure stages, including the steps of:

- providing a faceplate coated with a light sensitive layer of luminescent material,
- providing a shadow mask disposed behind said faceplate,

4,284,697

# IMAGE FORMATION METHOD

Yujiro Ando; Yukimasa Shinohara, both of Yokohama, and Katsunobu Ohara, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 700,850, Jan. 29, 1976, abandoned.

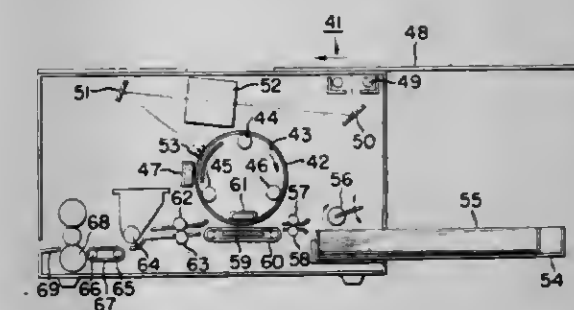
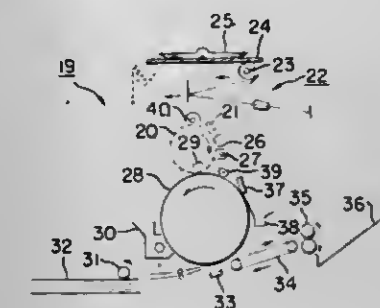
This application Apr. 10, 1978, Ser. No. 894,709

Claims priority, application Japan, Jul. 8, 1975, 50/83752

Int. Cl.<sup>3</sup> G03G 13/22

U.S. Cl. 430—53

30 Claims



13. An image formation method for forming an image on an image reception member by modulating an ion flow or charged particles at a modulation position with the aid of a screen member having a number of fine passage openings, wherein one of said members has an arcuate cross-section at the modulation position while the other member has a linear cross-section, said method comprising:

- forming a primary image on said screen member;
- forming a secondary image on said image reception member with ion flow or charged particles modulated by said primary image; and
- rotating or moving, during modulation, said screen member and said image reception member at different relative speeds at the modulating position, the peripheral speed of said one member being less than that of said other member, whereby a sharp secondary image corresponding to the primary image is formed on said image reception member.

4,284,698

# LAYERED ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

Takeo Kazami, Numazu; Takamichi Enomoto, Shiroshima; Tatsuya Kato, Numazu, and Toshio Fukagai, Shizuoka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 6, 1980, Ser. No. 147,306

Claims priority, application Japan, May 15, 1979, 54/58696

Int. Cl.<sup>3</sup> G03G 5/06, 5/10

U.S. Cl. 430—59

8 Claims

1. In a layered electrophotographic photoconductor comprising an electroconductive support material and a photoconductive double layer which consists of a charge generation layer and a charge transport layer, the improvement comprising:

- a. said charge generation layer comprises a disazo pigment selected from the group consisting of disazo pigments of the formula

inserting a lens behind said shadow mask, providing a light source behind said lens, activating said light source for a first exposure interval so as to provide light to pass through said lens and said shadow mask to said faceplate in order to provide 90% of the total amount of light required to harden said luminescent material, whereby stripes with sharp edge definition are formed on said coated faceplate, inserting a filter between said mask and said lens, and activating said light source for a second exposure interval so as to provide light to pass through said lens, said filter and said shadow mask to said faceplate in order to complete the hardening of said layer of luminescent material, wherein the transmission of light through said filter increases towards the vertical edges of said filter with the greatest transmission of light at the diagonal edges of said filter, whereby width stability of the stripes is achieved.

4,284,696

# LIGHT TRANSMISSION PARTICLE FOR FORMING COLOR IMAGE

Eisuke Ishida, Nara; Yuji Takashima, Osaka; Hisanori Nishiguchi, Neyagawa; Yoshihide Miyazawa, Toyko, and Katsuchi Motohashi, Urawa, all of Japan, assignors to Hodogaya Chemical Co., Ltd. and Matsushita Electric Industrial Co., Ltd., both of Japan

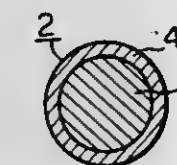
Filed May 15, 1978, Ser. No. 906,120

Claims priority, application Japan, May 20, 1977, 52/59271

Int. Cl.<sup>3</sup> B41M 5/18, 5/22; G03G 9/00, 13/01

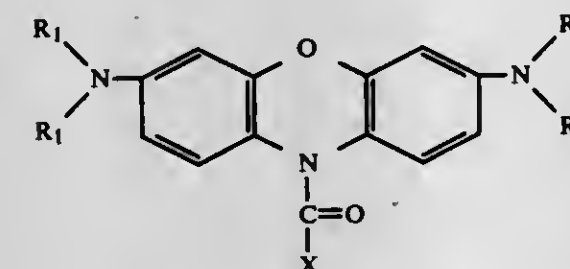
U.S. Cl. 430—42

9 Claims



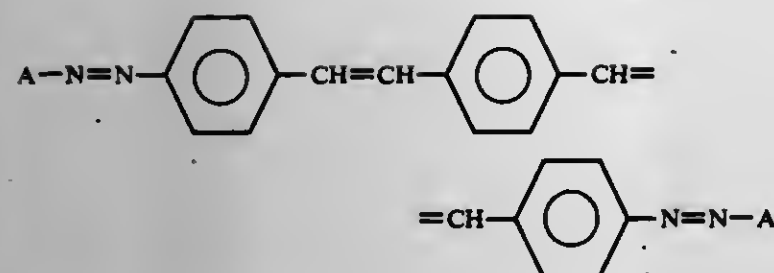
4. A light transmitting particle for forming a color image comprising:

- (a) a transparent bead selected from the group consisting of a glass bead, an acrylic ester resin bead, a styrene resin bead, a phenol resin bead, an epoxy resin bead and a melamine resin bead;
- (b) a colorless sublimable dye layer coated on the surface of said bead, said colorless sublimable dye layer comprising 100 parts by weight of a transparent resin binder and 0.3 to 30 parts by weight of at least one acyl leucophenoxazine compound having a general formula [I]:

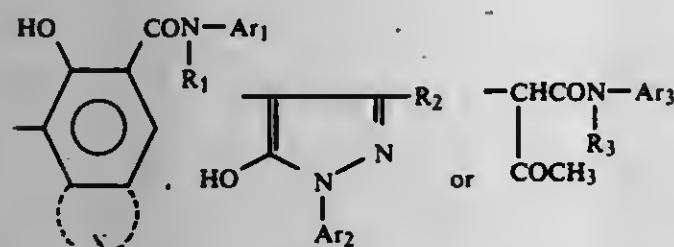


wherein R<sub>1</sub> and R<sub>2</sub> represent lower alkyl groups and X represents an alkyl group substituted with a halogen atom.





where A represents



and X represents an aromatic ring, or a heterocyclic ring, or their substituted rings; Ar<sub>1</sub> represents an aromatic ring, or a heterocyclic ring, or their substituted rings; Ar<sub>2</sub> and Ar<sub>3</sub> each represent an aromatic ring, R<sub>1</sub> and R<sub>1</sub> each represent hydrogen, a lower alkyl group, a phenyl group or their substituted groups; and R<sub>2</sub> represents a lower alkyl group, a carboxyl group or its ester group, and

b. said charge transport layer comprises a charge transport material capable of forming a charge-transfer complex by reaction with 2,4,7-trinitro-9-fluorenone, the light energy value corresponding to the wavelength of the maximum visible spectral absorption of said charge-transfer complex being in the range of 1.6 to 2.1 eV, and being selected from the group consisting of:

9-methyl-3-formylcarbazole-1'-methyl-1'-phenylhydrazine,  
9-(4-diethylaminostyryl-1)-anthracene,  
9-(4-dibenzylaminobenzylidene-1)-fluorene,  
9-{4-di-(4-methylbenzyl)aminobenzylidene}-fluorene,  
4-methoxy-1-formylnaphthalene-1'-methyl-1'-phenylhydrazine, and  
4-dibenzylaminobenzaldehyde-1'-methyl-1'-phenylhydrazine.

3. A layered electrophotographic photoconductor as claimed in claim 1, wherein said charge-transfer material is 9-(4-diethylaminostyryl-1)-anthracene.

4,284,699

#### POLYESTER BINDER COMPONENT IN MULTILAYER PHOTOCONDUCTIVE ELEMENT

Martin A. Berwick, Kendall, and Edgar E. Riecke, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 768,460, Feb. 14, 1977, Pat. No. 4,173,472, which is a continuation-in-part of Ser. No. 696,248, Jun. 15, 1976, abandoned. This application May 30, 1978, Ser. No. 910,399

Int. Cl.<sup>3</sup> G03G 5/05, 5/10

U.S. Cl. 430-96

12 Claims

1. In a multilayer photoconductive element having a photoconductive insulating composition in electrical contact with a conducting layer, the improvement wherein said element comprises, as a component of said photoconductive composition, an amorphous, water-insoluble polyester which is substantially free of any acid functions and is selected from the group consisting of

(a) polyesters having recurring units derived from at least one aromatic dicarboxylic acid component and at least one diol component, at least one of said acid or diol components being a non-linear monomer selected from the

group consisting of an isophthalic acid component or a branched-chain alkylene diol having the formula



wherein R<sup>1</sup> is a branched-chain alkylene group having from 2 to about 15 carbon atoms, and

(b) polyester copolymers having recurring units derived from at least one aromatic dicarboxylic acid component and at least one diol component, at least one of said acid or said diol components being a mixture of at least two different acids or two different diols, respectively, so that a copolyester is obtained, and at least one of said acid or one of said diol components being selected from the group consisting of a non-linear monomer as defined above or a cycloaliphatic diol; with the provisos that (1) said photoconductive insulating composition comprises a polymeric binder(s) other than said polyester so that said polyester constitutes about 1 to less than 50 percent by weight based on the total dry weight of all binders contained in said photoconductive insulating composition and is within the range of from about 1 to about 40 weight percent based on the total dry weight of said photoconductive insulating compositions; and (2) said polyester and said other polymeric binder(s) together constitute an optically homogeneous mixture of binders.

4,284,700

#### POLYMER COATED TRANSITION METAL POWDER AS ELECTROSTATIC IMAGE TONER

Toshihiko Oguchi, Kawasaki; Akio Ishizawa, Ichikawa, and Hiromi Yoshida, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 875,682, Feb. 6, 1978. This application Dec. 19, 1979, Ser. No. 105,275

Claims priority, application Japan, Feb. 4, 1977, 52-10771

Int. Cl.<sup>3</sup> G03G 9/08

U.S. Cl. 430-105

6 Claims

1. A toner powder capable of developing permanent visible images from latent electrostatic images comprising a thermoplastic resin and a coated powder comprising a transition metal or compound thereof which is coated with a polymer made from a free radical polymerizable monomer having an E value of (-)0.8 to (+)0.8 by in situ polymerization.

4,284,701

#### ELECTROPHOTOGRAPHIC TONER OF SPECIFIC SIZE DISTRIBUTION

Jerry J. Abbott, Longmont; Sterritt R. Fuller, Boulder, and Paul D. Jachimiak, Lafayette, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 848,173, Nov. 3, 1977. This application Sep. 3, 1980, Ser. No. 183,701

Int. Cl.<sup>3</sup> G03G 9/08

U.S. Cl. 430-111

11 Claims

1. An electrostatic toner material comprising particles having the following size distributions:

less than 15% by weight being greater than 16 microns in size, from 7 to 15% by weight being less than 5 microns in size, the remainder being from 5 to 16 microns in size, the particle median size by weight being from 8 to 12 microns.

4,284,702

#### ELECTROGRAPHIC DEVELOPING METHOD

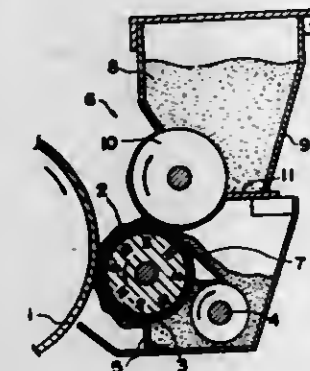
Kenji Tabuchi; Susumu Tanaka; Kenichi Wada; Tateki Oka, and Hiroaki Mizunoe, all of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 949,426, Oct. 5, 1978, abandoned. This application Dec. 17, 1979, Ser. No. 104,456

Int. Cl.<sup>3</sup> G03G 13/08, 13/09

U.S. Cl. 430-122

13 Claims



1. An electrographic developing method for developing electrostatic latent images which comprises the steps of:

- (1) mixing insulating non-magnetic toner particles and carrier granules consisting essentially of an electrical insulating resin and at least 50%, by weight of the carrier granules, of magnetizable fine particles where the carrier granules have the properties of (1) triboelectrically charging the toner particles to a polarity suitable for developing the latent image by frictional contact with the toner particles, (2) being magnetic, (3) having an electro-resistivity of at least 10<sup>12</sup> ohm-cm, and (4) being all substantially within the size range of 5 to 40 μm; said toner particles being present in an amount of 2-50% by weight of the toner-carrier mixture;
- (2) magnetically attracting said mixture onto a developing sleeve which opposes a recording medium with narrow clearance at the developing station of 1.0 mm and under; and
- (3) flowing said mixture around the developing sleeve and to the developing station for applying said mixture on an electrostatic latent image formed on the recording medium and for developing said electrostatic latent image into a visible image.

4,284,703

#### PEEL-APART-DEVELOPABLE LIGHT-SENSITIVE MATERIALS AND IMAGE-FORMING METHOD USING THE SAME

Eiichi Inoue, Tokyo, and Takao Nakayama, Yokohama, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minamishiga, Japan

Continuation of Ser. No. 810,828, Jun. 28, 1977, abandoned.

This application Dec. 3, 1979, Ser. No. 99,811

Claims priority, application Japan, Jun. 28, 1976, 51/76742

Int. Cl.<sup>3</sup> G03C 5/08, 5/18

U.S. Cl. 430-142

15 Claims

1. A method for forming images which consists of imagewise exposing through an original for a period of about 0.1 seconds to about 60 seconds a light-sensitive element (a) to actinic radiation, said light-sensitive element (a) comprising (i) a first support having coated thereon (ii) a thin layer of a metal or a metal alloy and (iii) a light sensitive composition layer which comprises as a binder at least one organic high molecular weight material having a glass transition temperature of about 110° C. or less selected from the group consisting of polyvinyl acetate, polyvinyl chloride and polyethylene oxide and, as a light-sensitive compound, at least one aromatic azido compound in this order, wherein said actinic radiation decomposes said azido compound; laminating said imagewise exposed light-sensitive element (a) with an adhesive element (b) comprising (i) a second support having coated thereon (ii) an adhesive

composition layer having a thickness of about 0.5 μm to about 50 μm, so that the light-sensitive composition layer (iii) of said imagewise exposed light-sensitive element (a) and the adhesive composition layer (ii) of said adhesive element (b) are adjacent each other; heating the product of said laminating to about 100° C. to about 120° C. for 2 minutes or less and then peeling apart, after the product has cooled to room temperature, one of said first support (i) or said second support (ii) from the product whereby a positive opaque metal or metal alloy image of said original is formed on said first support (i) and a negative opaque metal or metal alloy image of said original is formed on said light-sensitive composition layer (iii) said second support, where at least one of said first support and said second support is flexible and functions as the support which peels apart from said product.

4,284,704

#### PHOTOGRAPHIC ELEMENTS WITH INCORPORATED HYDROGEN SOURCE PHOTOREDUCTANT AND TETRAZOLIUM SALT

James C. Fleming; Joseph W. Manthey, and Ralph T. Brongo, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 714,434, Aug. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 509,616, Sep. 26, 1974, abandoned, which is a continuation-in-part of Ser. No. 384,861, Aug. 2, 1973, abandoned. This application Sep. 29, 1978, Ser. No. 947,306

The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> G03C 1/727, 1/60

U.S. Cl. 430-154

17 Claims

1. In a photographic element comprising a support, a photoreductant, and in chemical association with the photoreductant, a tetrazolium salt capable of reduction by the exposed form of said photoreductant to a formazan dye, said salt and said photoreductant being disposed in at least one layer on said support in amounts effective to photogenerate an image, the improvement in which said photoreductant incorporates one or more labile hydrogen atoms capable of causing said photoreductant to reduce said salt on exposure to activating radiation in the presence of a base.

4,284,705

#### PHOTOSENSITIVE DIAZO SALT COMPOSITIONS AND LITHOGRAPHIC PLATE COMPRISING SAME

Georges A. Philpot, Paris; Jacques R. G. Haec, Boanell-sur-Marne, and Simone J. Kempen, Orly, all of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 924,107, Jul. 12, 1978, Pat. No. 4,215,041. This application Dec. 31, 1979, Ser. No. 108,724

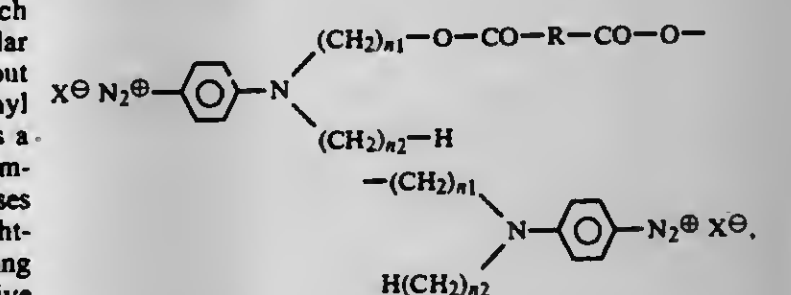
Claims priority, application France, Sep. 8, 1977, 77 24471

Int. Cl.<sup>3</sup> G03C 1/52, 1/71, 7/08

U.S. Cl. 430-159

6 Claims

1. A presensitized lithographic plate comprising, on a support, provided with a hydrophilic surface a layer including a diazonium compound corresponding to one of the following general formulas:









4,284,710

## RADIATION CROSSLINKABLE POLYESTERS AND POLYESTERETHERS

(6) Marion Burg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

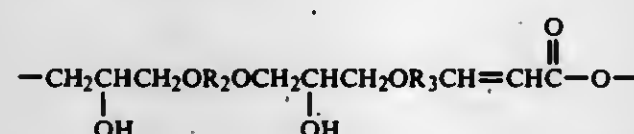
Filed May 1, 1980, Ser. No. 145,755

Int. Cl.<sup>3</sup> G03C 1/94, 1/68

U.S. Cl. 430-271

22 Claims

1. A class of condensation polymers composed of radiation-sensitive, film-forming, linear polyesters and polyesterethers having within the polymeric backbone a multiplicity of repeating units of the formula:



wherein R<sub>2</sub> is a divalent aryl, alkyl, aralkyl, or cycloalkyl radical having two to twenty carbon atoms, which radical may be substituted with a C<sub>1</sub> to C<sub>10</sub> alkyl or cycloalkyl, aryl, or halogen group; and wherein R<sub>3</sub> is a divalent aryl, aryl, arylacryloyl, furylacryloyl, pyridylacryloyl, or thienylacryloyl group in which the aromatic unit for aryl is phenyl, biphenyl, or naphthyl and wherein one of the of the R<sub>3</sub> cyclic carbon atoms is directly attached to the β-carbon of the α,β-ethylenic ester group of the repeating unit, and wherein the aromatic unit of the R<sub>3</sub> group can be substituted with a C<sub>1</sub> to C<sub>8</sub> alkyl or cycloalkyl, aryl, aralkyl, or halogen group.

4,284,711

## PRESENSITIZED PLANOGRAPHIC PRINTING PLATES WITH COBALT ADHESIVE LAYER

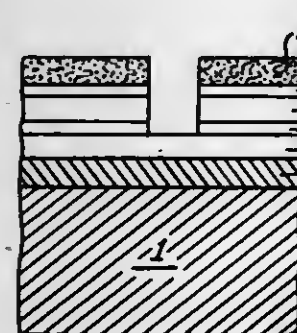
Armando Birlain-Noris, Galileo 101, Mexico City, Mexico (5)

Filed Aug. 21, 1979, Ser. No. 68,435

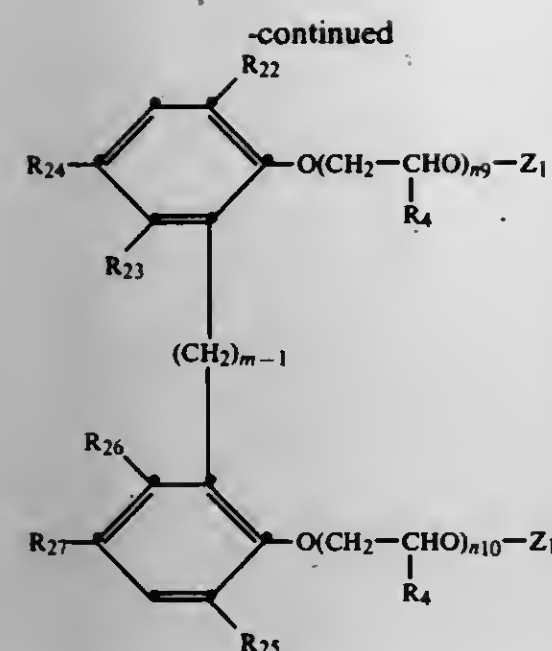
Int. Cl.<sup>3</sup> G03F 7/02; G03C 1/94

U.S. Cl. 430-276

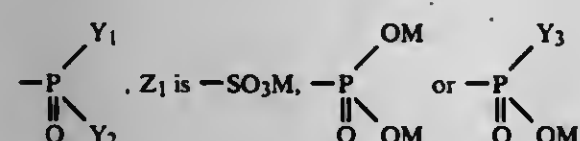
4 Claims



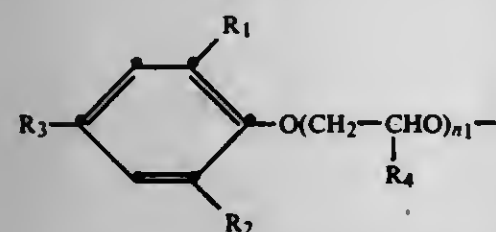
1. A presensitized planographic printing plate comprising a base sheet consisting essentially of an aluminum sheet, the metal working surface thereof for forming at least one of the elements of the lithographic printing pair, a presensitizing coating, and a metallic adhesive means comprising a thin cobalt metal layer electroplated on said metal working surface for serving as an adhesive for said presensitizing coating; said presensitizing coating being an organic light sensitive coating directly applied on said adhesive cobalt layer, such that the use of any organic adhesive between the metal working surface and said presensitizing coating is avoided.



in which R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are each hydrogen, chlorine, bromine, alkyl having 1 to 8 carbon atoms, which can be substituted by phenyl, or cycloalkyl having 5 or 6 carbon atoms, R<sub>4</sub> is hydrogen or methyl, R<sub>5</sub> to R<sub>8</sub> are each hydrogen, chlorine, bromine or alkyl having 1 to 8 carbon atoms, R<sub>9</sub> to R<sub>14</sub> and R<sub>22</sub> to R<sub>27</sub> are each hydrogen, chlorine or bromine and R<sub>15</sub> to R<sub>21</sub> are hydrogen, chlorine, bromine or alkyl having 1 to 30 carbon atoms, at least one of the radicals R<sub>1</sub>, R<sub>2</sub> or R<sub>3</sub> being alkyl having at least 3 carbon atoms or cycloalkyl having 5 or 6 carbon atoms, at least one of the radicals R<sub>15</sub> to R<sub>17</sub> and at least two of the radicals R<sub>5</sub> to R<sub>8</sub> and at least two of the radicals R<sub>18</sub> to R<sub>21</sub> being alkyl having at least 3 carbon atoms, the sum of the carbon atoms in the radicals R<sub>5</sub> to R<sub>8</sub> and R<sub>18</sub> to R<sub>21</sub> being at least 8 in each case and at least 50% of all the R<sub>4</sub> radicals in the formulae (1) to (6) being hydrogen, Z is hydrogen or



Y<sub>1</sub>, Y<sub>2</sub> and Y<sub>3</sub> are each a radical of the formula



M is hydrogen, an alkali metal or ammonium, m is an integer from 1 to 5 and n<sub>1</sub> is an integer from 4 to 100, n<sub>2</sub> to n<sub>5</sub> are integers and the sum of (n<sub>2</sub>+n<sub>3</sub>) and of (n<sub>4</sub>+n<sub>5</sub>) is 8 to 200 in each case, n<sub>6</sub> is an integer from 1 to 60 and n<sub>7</sub> to n<sub>10</sub> are integers and the sum of (n<sub>7</sub>+n<sub>8</sub>) and of (n<sub>9</sub>+n<sub>10</sub>) is 2 to 40 in each case, and, optionally, (c) a solvent which is immiscible with water and then finely dispersing the mixture in an aqueous solution of the hydrophilic colloid, which, optionally, contains further water-soluble or dispersed water-insoluble constituents.

4,284,712

## FABRICATION OF VIDEO DISC FLYLEADS

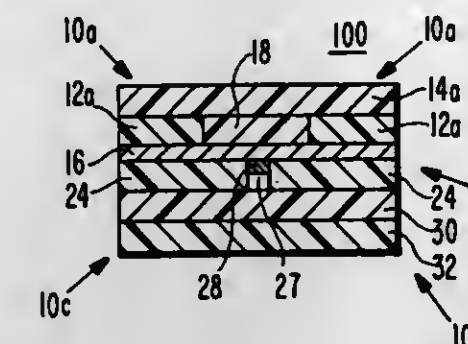
Edward A. James, Pennington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 11, 1980, Ser. No. 167,699

Int. Cl.<sup>3</sup> G03C 5/00, 11/00

U.S. Cl. 430-312

5 Claims



1. A method for preparing a flylead from a beryllium copper alloy sheet having one side include a solder layer pattern comprising the steps of:

- (a) age hardening the beryllium copper alloy sheet;
- (b) laminating both sides of the alloy sheet with a dry film photoresist;
- (c) exposing the first side of the laminated alloy sheet to actinic radiation to record a first pattern comprising the flylead pattern;
- (d) exposing the second side of the laminated alloy sheet to actinic radiation to record a second pattern comprising the solder layer pattern;
- (e) developing the second pattern to expose the alloy sheet surface;
- (f) electroplating the exposed alloy sheet surface with a solder;
- (g) relaminating the electroplated alloy sheet second side;
- (h) developing the first pattern;
- (i) etching the first pattern into the alloy sheet; and
- (j) removing the remaining photoresist from both sides of the etched alloy sheet to obtain a flylead having one side include a solder layer pattern.

4,284,713

## IMAGE FORMING METHOD

Masamichi Sato, and Itsuo Fujii, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Mar. 15, 1976, Ser. No. 666,996

Claims priority, application Japan, Mar. 14, 1975, 50-31479

Int. Cl.<sup>3</sup> G03C 5/00

U.S. Cl. 430-323

54 Claims

1. A method for forming an image comprising in sequence forming a silver image in the emulsion layer of a photographic material which comprises a transparent support having a masking layer thereon, said masking layer having thereon a silver halide emulsion layer, either directly or on at least one subbing layer on the masking layer, by exposing and developing said photographic material, heating said photographic material to thermally decompose the binder of the emulsion layer, selectively removing the thermally decomposed emulsion layer at non-image areas to uncover the masking layer lying thereunder using a binder-removing solution selected from the group consisting of the aqueous solutions containing sodium hypochlorite, potassium hypochlorite, sodium hypobromite, potassium hypobromite, sodium chlorite, potassium chlorite, sodium chlorate, potassium chlorate, sodium bromate and potassium bromate, and then etching away the masking layer at the uncovered areas.

4,284,714

## METHOD OF FORMING A PHOTOGRAPHIC IMAGE

Junkichi Ogawa; Mitsugu Tanaka, and Minoru Yamada, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 9, 1980, Ser. No. 148,478

Claims priority, application Japan, May 9, 1979, 54-57430

Int. Cl.<sup>3</sup> G03C 7/00

U.S. Cl. 430-364

9 Claims

1. A method of forming a photographic image consisting of metallic silver and a dye, comprising imagewise exposing a silver halide photosensitive material to light, development processing said material to form an image in the presence of a naphthalene compound selected from the group consisting of 1,3-, 1,6-2,3-, or 1,7-dihydroxynaphthalene and a p-phenylenediamine type developing agent or a precursor of the p-phenylenediamine compound, and fixing said image.

4,284,715

## METHOD AND APPARATUS FOR FABRICATING A TRANSLUCENT GRADED DENSITY MEMBRANE

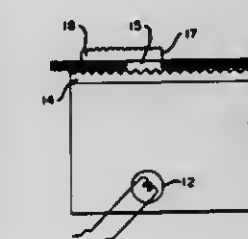
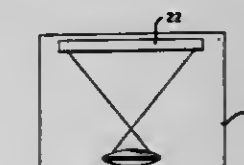
William R. Horst, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 31, 1979, Ser. No. 108,877

Int. Cl.<sup>3</sup> G03C 5/00

U.S. Cl. 430-395

3 Claims



1. A method for fabricating a translucent graded density film, comprising the steps of: providing a source of light; diffusing light from said source; blocking a portion of said diffused light with an apertured opaque element which allows passage of the remainder of said diffused light through said aperture; further diffusing said light passing through said aperture and causing a portion of said further diffused light to be reflected from the substantially opaque surface of said apertured element; and exposing a photosensitive film to said light passing through said aperture and said light reflected from said substantially opaque surface to produce a film exhibiting an incremental gradient in optical density across an area of the film.



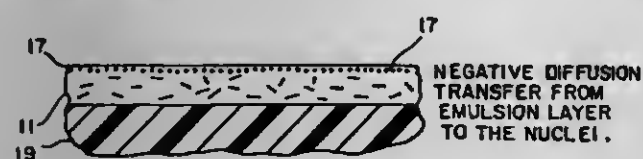
4,284,716

## BROADBAND REFLECTIVE LASER RECORDING AND DATA STORAGE MEDIUM WITH ABSORPTIVE UNDERLAYER

Jerome Drexler, Los Altos Hills, and Eric W. Boaldin, Woodside, both of Calif., assignors to Drexler Technology Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 55,270, Jul. 6, 1979, and a continuation-in-part of Ser. No. 121,732, Feb. 15, 1980, abandoned. This application Apr. 14, 1980, Ser. No. 140,136. The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> G03C 1/84, 1/76; G02B 27/22; G03C 5/24  
U.S. Cl. 430—510 8 Claims



1. A reflective data recording medium comprising,
  - a colloid matrix underlayer disposed on a substrate, said underlayer having primarily filamentary silver particles therein characterized by an optical density to red light between 0.2 and 3.0, and absorptive of visible and infrared light, and
  - a reflective surface layer primarily of non-filamentary individual silver particles in said colloid matrix, said reflective surface layer disposed atop said underlayer, having maximum silver particle dimensions primarily under 0.05 microns, some of which are aggregated with similar particles, and having a volume concentration of silver particles greater in said surface layer than in said colloid matrix underlayer, said reflective surface layer having at least one area having substantially uniform reflectivity, said uniform reflectivity being between 10% and 75%.

4,284,717

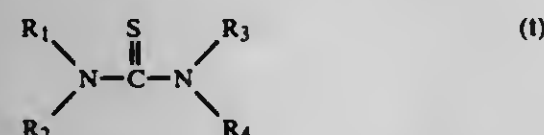
## SILVER HALIDE PHOTOGRAPHIC EMULSION

Ichizo Toya, and Yoshiharu Fuseya, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 4, 1979, Ser. No. 100,161

Claims priority, application Japan, Dec. 7, 1978, 53/151594

Int. Cl.<sup>3</sup> G03C 1/02, 1/28  
U.S. Cl. 430—567 22 Claims  
1. A silver halide photographic emulsion containing silver halide grains formed in the presence of a silver halide solvent or a salt thereof of the formula (I):



wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> are each a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted nitrogen-containing heterocyclic ring; R<sub>1</sub> and R<sub>2</sub>, R<sub>2</sub> and R<sub>3</sub>, or R<sub>3</sub> and R<sub>4</sub> when taken together may form a 5- or 6-membered heterocyclic ring; provided that at least one of R<sub>1</sub> to R<sub>4</sub> is a 5- or 6-membered nitrogen-containing heterocyclic ring, an alkyl group or aryl group substituted with an amino group, an alkyl group substituted with a nitrogen-containing heterocyclic ring, or R<sub>1</sub> and R<sub>2</sub>, R<sub>2</sub> and R<sub>3</sub>, or R<sub>3</sub> and R<sub>4</sub> form a 5- or 6-membered nitrogen-containing heterocyclic ring containing at least two nitrogen atoms.

4,284,718

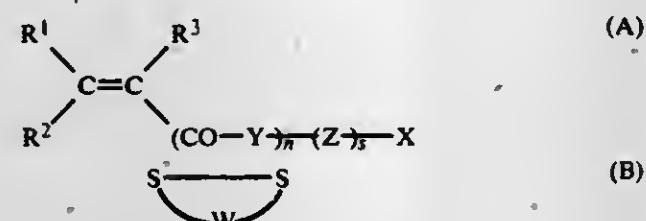
## PHOTOGRAPHIC SILVER HALIDE MATERIALS CONTAINING SULFUR CONTAINING POLYMERS

Peter Berghaller, Cologne; Wilhelm Saleck, Bergisch-Gladbach, and Günter Helling, Cologne, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Aug. 6, 1980, Ser. No. 175,898

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932690

Int. Cl.<sup>3</sup> G03C 1/72  
U.S. Cl. 430—629 6 Claims  
1. A photographic element comprising a support and at least one photosensitive silver halide emulsion layer, characterized in that said silver halide emulsion layer contains at least one polymer containing polymerised units of at least one compound A and at least one compound B which correspond to the following formulae:



in which

- R<sup>1</sup> represents hydrogen or an alkyl group;  
R<sup>2</sup> represents hydrogen or an alkoxy carbonyl or carboxyl group;  
R<sup>3</sup> represents hydrogen or an alkyl; cycloalkyl; aralkyl or aryl group a heterocyclic radical; or a carboxyl or alkoxy carbonyl group;  
Y represents —O— or NR<sup>4</sup>—;  
R<sup>4</sup> represents hydrogen or an alkyl or hydroxy alkyl group;  
Z represents a difunctional organic radical;  
X represents hydrogen, a hydroxy group; an —O-alkyl; —S-alkyl; —SO-alkyl or —CO-alkyl group, a carboxyl group or a —CONR<sup>5</sup>R<sup>6</sup>; NR<sup>5</sup>R<sup>6</sup> or —SO<sub>3</sub>M group or a heterocyclic group;  
R<sup>5</sup> and R<sup>6</sup> which may be the same or different represent alkyl groups or, together, represent the atoms required to complete a heterocyclic group;  
M represents hydrogen or a cation;  
n=0 or 1;  
s=0 or 1;  
W represents a difunctional hydrocarbon radical which may be interrupted by at least one heteroatom; and/or  
R<sup>4</sup> together with Z and/or X represents the atoms required to complete a heterocyclic ring.

4,284,719

## SUBSTRATE COMPOSITION AND USE THEREOF

Halina Agerhem, Malmö, and Hans J. Nilsson, Lund, both of Sweden, assignors to Kockums Chemical AB, Malmö, Sweden

Filed Apr. 23, 1980, Ser. No. 143,065

Claims priority, application Sweden, May 17, 1979, 7904320  
Int. Cl.<sup>3</sup> C12Q 1/34, 1/00; C12M 1/40

U.S. Cl. 435—18 15 Claims  
1. A pulverulent enzymatic substrate composition which composition comprises a water-insoluble hydrophobic enzymatic substrate adsorbed on a particulate polyvinyl chloride free of plasticizer and wherein the polyvinyl chloride has an average grain size of at most 0.5 mm, said substrate making up 1-30% by weight of the composition.

4,284,720

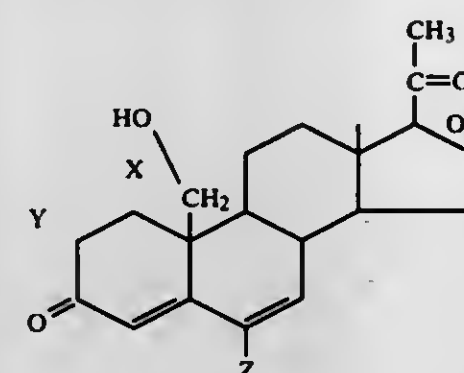
## PROCESS FOR THE PREPARATION OF 19-HYDROXY STEROIDS OF THE ANDROSTANE AND PREGNANE SERIES

Karl Petzoldt, Berlin, Fed. Rep. of Germany, assignor to Schering, A.G., Berlin, Fed. Rep. of Germany

Filed Jan. 14, 1980, Ser. No. 112,683

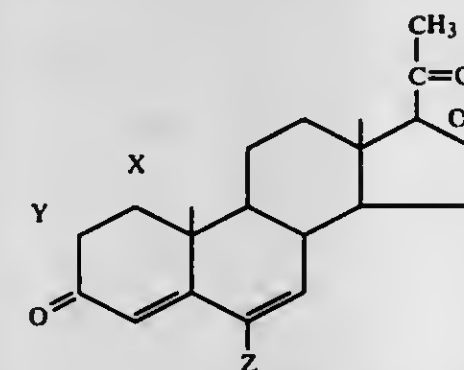
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2901564

Int. Cl.<sup>3</sup> C12P 33/06  
U.S. Cl. 435—58 3 Claims  
1. A process for preparing a 19-hydroxy steroid of the formula



wherein

X and Y each is hydrogen or together represent a carbon-carbon bond or a methylene group,  
Z is hydrogen, fluorine, chlorine or methyl, and  
R is hydrogen or an acyloxy group of 1-8 carbon atoms, comprising fermenting at 10-methyl steroid of the formula



wherein X, Y, Z and R are as defined above, with a fungal culture of the genus *Nigrospora* and isolating said 19-hydroxy steroid.

4,284,722

## HEAT AND ACID-STABLE ALPHA-AMYLASE ENZYMES AND PROCESSES FOR PRODUCING THE SAME

Masaki Tamuri, Yokosuka; Mitsuo Kanno, Miyoshi, and Yoshiko Ishii, Tokyo, all of Japan, assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 934,135, Aug. 16, 1978, abandoned, which is a continuation of Ser. No. 764,923, Feb. 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 678,513, Apr. 19, 1976, abandoned. This application Nov. 13, 1979, Ser. No. 93,407

Int. Cl.<sup>3</sup> C12N 9/28; C12P 19/14, 19/24, 19/20  
U.S. Cl. 435—94 18 Claims

1. A heat and acid-stable alpha-amylase enzyme derived from a *Bacillus stearothermophilus* microorganism and having a pH optimum between 4.0 and 5.2 characterized as (1) capable of retaining at least about 70% of its initial alpha-amylase activity when held at 90° C. and at a pH of 6.0 for 10 minutes in the absence of added calcium ion; (2) capable of retaining at least about 50% of its initial alpha-amylase activity when held at 90° C. at a pH of 6.0 for 60 minutes in the absence of added calcium ion; and (3) capable of retaining at least about 50% of its initial alpha-amylase activity when held at 80° C. and at a pH of 4.5 for 10 minutes in the presence of 5 mM of calcium ion.

4,284,723

## PREPARATION OF EPOXIDES AND GLYCOLS FROM GASEOUS ALKENES

Saul L. Needleman, Oakland; William F. Amon, Jr., Danville, and John Geigert, Concord, all of Calif., assignors to Cetus Corporation, Berkeley, Calif.

Continuation-in-part of Ser. No. 914,384, Jun. 14, 1978, abandoned. This application May 16, 1979, Ser. No. 39,337. The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> C12P 17/02, 7/18  
U.S. Cl. 435—123 12 Claims

1. A method for the manufacture of epoxides or glycols from a gaseous olefin selected from the group consisting of ethylene, propylene, isobutylene, butene-1, cis-butene-2, trans-butene-2, allene, and 1,3-butadiene, said method comprising providing in a reactor, a reaction mixture of a halogenating enzyme, an oxidizing agent, and a halide ion source, passing the gaseous olefin continuously through said reaction mixture to convert said olefin to a halohydrin, and converting said halohydrin to an epoxide enzymatically.

4,284,724

## METHOD OF HIGHLY CONCENTRATED CULTIVATION OF YEASTS

Hideki Fukuda, 1696-2, Honjo, Harima-cho, Kako-gun, Hyogo-ken; Takeshi Shiotani, 2-63, Okihama-cho, Takasago-cho, Takasago-shi, Hyogo-ken, and Wataru Okada, 4-2, Takakura-dai, Suma-ku, Kobe-shi, Hyogo-ken, all of Japan

Continuation of Ser. No. 827,541, Aug. 25, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,225

Int. Cl.<sup>3</sup> C12N 1/16  
U.S. Cl. 435—255 6 Claims

1. A method of highly concentrated aerobic cultivation of yeast cells in a batch process using a cultivating system comprising a fermentor and a separator, said method comprising: cultivating said yeast cells in said fermentor using a feed liquor comprising carbon source, nutrients and diluting water; setting the starting-up cell concentration at at least 0.1%; removing continuously or intermittently from said fermentor during the course of cultivation, a broth containing a portion of said yeast cells and feed liquor in such a manner that the amount of filtrate removed from said separator is within the

4,284,721

## METHOD FOR MANUFACTURING DIPEPTIDES

Kiyotaka Oyama, Shin-nanyo; Shigeaki Nishimura, Kudamatsu; Yuji Nonaka, Shin-nanyo; Tsutomu Hashimoto, and Keiichi Kihara, both of Tokuyama, all of Japan, assignors to Sagami Chemical Research Center; Ajinomoto Co., Inc., both of Tokyo and Toyo Soda Mfg. Co., Ltd., Yamaguchi, all of Japan

Filed Apr. 1, 1980, Ser. No. 136,347

Claims priority, application Japan, Apr. 3, 1979, 54-40170  
Int. Cl.<sup>3</sup> C12P 21/02; C07C 103/52

U.S. Cl. 435—70 10 Claims  
1. A method for manufacturing a dipeptide from an N-substituted aspartic acid and a phenylalanine lower alkyl ester, said method comprising subjecting said N-substituted aspartic acid and said phenylalanine lower alkyl ester to a reaction in an organic solvent immiscible with water in the presence of a water-containing immobilized metallo-proteinase.



range of from 0.3 to 4 times the volume of said feed liquor fed during the course of cultivation;  
separating said broth into yeast cells and filtrate, said filtrate containing growth inhibiting substances;  
removing said filtrate from the cultivation system;  
recycling the total amount of separated yeast cells to said fermentor wherein cultivation is continuing; and  
repeating the above steps to bring the final cell concentration between 6% and about 20% thereby to substantially suppress growth of undesired miscellaneous microorganisms.

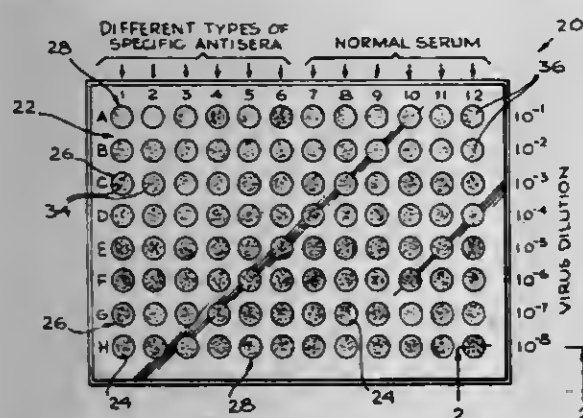
4,284,725

**VIRUS TITRATION AND IDENTIFICATION SYSTEM**  
Robert H. Fennel, III, Walkersville, and Robert W. McKinney, Frederick, both of Md., assignors to Dynasciences Corporation, Los Angeles, Calif.

Filed Aug. 13, 1976, Ser. No. 714,072  
Int. Cl.<sup>3</sup> C12M 1/20

U.S. Cl. 435-301

14 Claims



1. An improved virus titration and identification system comprising, in combination:
  - (a) a transparent plate having a plurality of spaced wells therein arranged in a plurality of spaced rows in a plurality of orientations;
  - (b) a plurality of dried aliquots of viable antisera for specific viruses, said aliquots being disposed in wells in separate ones of said rows, one row of a given orientation for each specific virus; and,
  - (c) a plurality of dried aliquots of normal serum disposed in rows in the remainder of said wells.

4,284,726

**COMPOSITE ANION ADSORBENT AND METHOD FOR MAKING SAME**

Yasumasa Shigetomi, 5-32, 2-chome, Tsushima-Minami, Okayama, Japan

Filed May 14, 1979, Ser. No. 38,702  
Claims priority, application Japan, May 13, 1978, 53-056904  
Int. Cl.<sup>3</sup> B01J 41/12; C08K 3/22

U.S. Cl. 521-28

4 Claims

1. A method for producing a composite anion adsorbent comprising the steps of:
  - preparing organic hydrophilic polymer gel using a compound selected from the group consisting of formalin-crosslinked polyacrylamide, formalin-crosslinked polyvinyl alcohol, metal-crosslinked polyvinyl alcohol, urea-formaldehyde, and formalin-crosslinked dibenzalborbitol;
  - mixing into the organic hydrophilic polymer gel an inorganic adsorbent or combination thereof selected from the group consisting of iron hydroxide, hydrated iron oxide, aluminum hydroxide, hydrated aluminum oxide, titanium hydroxide, hydrated titanium oxide, titanate, manganese hydroxide, hydrated manganese oxide, tin hydroxide, stannic acid, zirconium hydroxide, hydrated zirconium oxide; and
  - dehydrating the mixture thus prepared under 50°-100° C.

4,284,727

**PROCESS FOR TREATING ANION EXCHANGE RESINS**  
Eugene J. Boros, South Charleston, and David W. Peck, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sep. 28, 1979, Ser. No. 80,079  
Int. Cl.<sup>3</sup> L08D 5/20

U.S. Cl. 521-28

5 Claims

1. A process for treating anion exchange resins containing a major portion of weak-base groups in catalytically inactive salt form and a minor portion of strong-base groups in catalytically inactive salt form which comprises contacting said ion exchange resin with an aqueous solution containing ammonium hydroxide and ammonium chloride for a time sufficient to convert said weak-base groups to their catalytically active free amine form while maintaining said strong-base groups in their catalytically inactive salt form, wherein said aqueous solution contains from about 2 to about 12 percent by weight ammonium chloride and from about 1 to about 10 percent ammonium hydroxide.

4,284,728

**HR FOAMS MADE WITH REACTIVE POLYOL COMPOSITIONS HAVING IMPROVED STABILITY**  
John G. Demou, Lincoln Park; Edward R. Pray, Dearborn, and Robert L. McBrayer, Lincoln Park, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed May 5, 1980, Ser. No. 146,954  
Int. Cl.<sup>3</sup> C08G 18/14

U.S. Cl. 521-155

30 Claims

1. A reactive mixture for the preparation of a high resiliency polyurethane foam, comprising:
  - (a) an active-hydrogen containing compound;
  - (b) a cross-linking agent containing reactive amine; and
  - (c) an amine reactive stabilizer selected from the group consisting of carbon dioxide and an acid which is reactive with the cross-linking agent such that it reduces the activity thereof to be substantially equal to that of the active-hydrogen containing compound.

4,284,729

**PROCESS FOR COLORING THERMOSETTING RESINS**  
John P. Cross, and George H. Britton, Jr., both of Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 31, 1980, Ser. No. 135,402  
Int. Cl.<sup>3</sup> C08G 18/14

U.S. Cl. 521-158

12 Claims

1. A process for coloring thermosetting resins, made by the polyaddition reaction in a reaction mixture of a nucleophile with an electrophile, which comprises adding to the reaction mixture before or during the polyaddition reaction a polymeric liquid reactive coloring agent suitable for incorporation in the resin with the formation of covalent bonds, said coloring agent having the formula:



wherein R is an organic dyestuff radical; the polymeric constituent is selected from polyalkylene oxides and copolymers of polyalkylene oxides in which the alkylene moiety of the polymeric constituent contains 2 or more carbon atoms and such polymeric constituent has a molecular weight of from about 44 to about 1500; and n is an integer of from 1 to about 6; and X is selected from —OH, —NH<sub>2</sub> and —SH, wherein the organic dyestuff radical and polymeric constituent are selected so as to provide said coloring agent in the liquid phase at ambient conditions of temperature and pressure; said coloring agent being added in an amount sufficient to provide coloration of said thermosetting resin.

4,284,730

**LIQUID CARBODIIMIDE- AND URETONIMINE-ISOCYANURATE-CONTAINING POLYISOCYANATE COMPOSITIONS AND MICROCELLULAR FOAMS MADE THEREFROM**  
Thirumurti Narayan, Grosse Ile, and Peter T. Kan, Plymouth, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Feb. 7, 1980, Ser. No. 119,273  
Int. Cl.<sup>3</sup> C08G 18/14, 18/16, 18/79

U.S. Cl. 521-160

50 Claims

1. A highly stable liquid carbodiimide- and uretonimine-isocyanurate-containing polyisocyanate composition prepared by partially trimerizing a mixture of an organic polyisocyanate and a carbodiimide- and uretonimine-containing polyisocyanate in the presence of a catalytic amount of a trimerization catalyst followed by deactivating said trimerization catalyst.
6. A process for the preparation of a stable liquid carbodiimide- and uretonimine-isocyanurate-containing polyisocyanate composition comprising partially trimerizing a mixture of an organic polyisocyanate and carbodiimide- and uretonimine-containing polyisocyanate in the presence of a catalytic amount of a trimerization catalyst followed by deactivating said catalyst.
31. In a process for the manufacture of microcellular foams by the reaction of organic polyisocyanates and polyols, catalysts, cross-linking agents, surfactants, and additives, wherein the improvement comprises a highly stable organic polyisocyanate prepared by partially trimerizing a mixture of an organic polyisocyanate and carbodiimide- and uretonimine-containing polyisocyanate in the presence of a catalytic amount of a trimerization catalyst followed by deactivating said catalyst.

4,284,731

**POLYURETHANE ADHESIVE COMPOSITIONS CONTAINING DICYCLOPENTENYLOXYALKYL (METH) ACRYLATE**

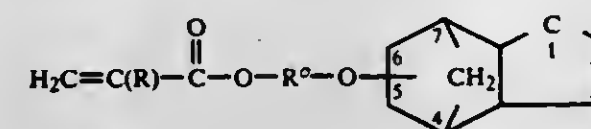
Vincent J. Moser, Hatboro, and Robert A. Slowik, Levittown, both of Pa., assignors to Rohm and Haas, Philadelphia, Pa.

Filed Mar. 3, 1980, Ser. No. 126,758  
Int. Cl.<sup>3</sup> C08G 18/10

U.S. Cl. 525-28

11 Claims

1. A spreadable laminating adhesive composition comprising, as its essential components,
  - (a) from about 30% to about 50% by weight of a urethane prepolymer derived from the reaction of a member selected from the group consisting of a hydroxyl-terminated polyether and a hydroxyl-terminated polyester with an organic polyisocyanate, the urethane prepolymer having a free —NCO content of from about 2% to 8% by weight thereof,
  - (b) from about 70% to about 50% by weight of at least one member selected from the group consisting of dicyclopentenylacrylate and dicyclopentenylmethacrylate represented by the formula



wherein R is selected from the group consisting of H and CH<sub>3</sub>, and R' is selected from the group consisting of (i) a C<sub>2</sub>-C<sub>8</sub> divalent alkylene group and (ii) a C<sub>2</sub>-C<sub>8</sub> divalent oxyalkylene group,

- (c) from about 1% to about 3% by weight, based on the total amount of components (a) and (b), of at least one polyol,
- (d) a small but effective amount of a catalyst for the condensation reaction of the urethane prepolymer of (a) with the polyol of (c), and
- (e) a small but effective amount of a catalyst for the polymerization of component (b).

4,284,732

**HALOGEN-CONTAINING UNSATURATED BIS-ESTERS AND POLYMERS AND COPOLYMERS BASED ON THESE ESTERS**

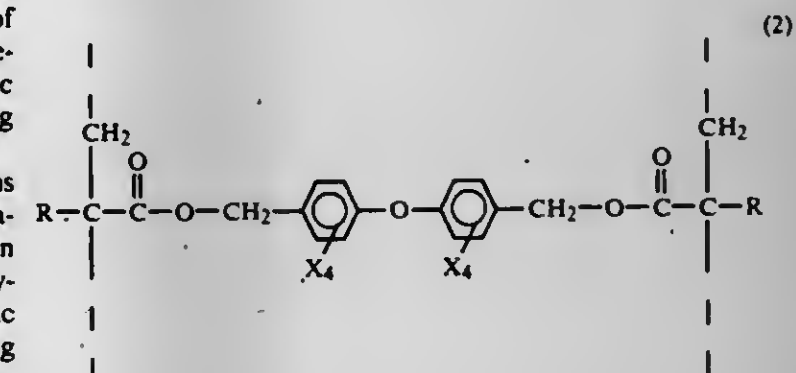
Egon N. Petersen, Neukirchen-Seelscheid; Norbert Vollkommer, Troisdorf; Georg Blumfeld, St. Augustin; Hermann Richzenhain, Much-Schwellenbach, and Wilhelm Vogt, Cologne, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Cologne, Fed. Rep. of Germany  
Continuation of Ser. No. 815,464, Jul. 13, 1977, abandoned, which is a division of Ser. No. 780,577, Mar. 23, 1976, Pat. No. 4,149,008. This application Jul. 19, 1979, Ser. No. 59,091  
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1976, 2612843

Int. Cl.<sup>3</sup> C08L 67/06; C08F 222/20

U.S. Cl. 525-609

9 Claims

1. A polymer containing basic units with the structural formula



in which R represents hydrogen or a methyl group and of the 8X substituents 7X to 8X representing chlorine or bromine and up to 1X represents hydrogen.

4,284,733

**THERMOPLASTIC COMPOSITION CONTAINING A POLY(METHYL ETHERYL BENZENE) RESIN AND A POLY(PHENYLENE OXIDE) RESIN**

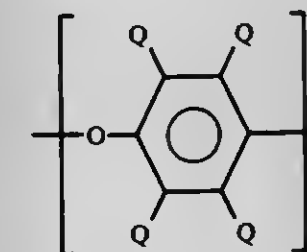
Robert V. Russo, Brooklyn, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 8, 1980, Ser. No. 119,901  
Int. Cl.<sup>3</sup> C08L 25/16, 71/04

U.S. Cl. 525-68

12 Claims

1. A polymeric composition comprising homogeneous and compatible blend of about
  - (a) 20 to 80 weight percent poly(methyl etheryl benzene) resin comprising at least 50 weight percent of polymerized units derived from a mixture of isomers of methyl etheryl benzene consisting essentially of 0 to 0.1 percent by weight 1-methyl-2-ethenyl benzene, 0 to 15 weight percent, 1-methyl-3-ethenyl benzene, and at least 85 weight percent 1-methyl-4-ethenyl benzene; and
  - (b) 80 to 20 weight percent of a poly(phenylene oxide) resin having the formula



wherein each Q independently is hydrogen, a hydrocarbon radical, a haloalkyl radical having at least two carbon atoms between the halogen atom and phenyl nucleus, or halogen, provided that each is free of a tertiary carbon atom; and n is at least 20.



7. The composition of claim 1 wherein said poly(methyl ethenyl benzene) resin is a high impact copolymer comprising a backbone polymer chain which is a polymer selected from the group consisting of polybutadiene, a styrenebutadiene rubber, an ethylene-propylene rubber, an ethylene-propylene-diene elastomer, and a nitrile rubber; and polymeric units derived from said polymerizable mixture of methyl ethenyl benzene isomers grafted thereto.

4,284,734

# MOLDABLE BLEND OF INTERPOLYMER OF RUBBER, METHACRYLIC ACID AND STYRENE WITH POLYURETHANE

Clarence E. Chaney, Verona, Pa., assignor to Arco Polymers, Inc., Philadelphia, Pa.

Filed Sep. 11, 1980, Ser. No. 186,030

Int. Cl.<sup>3</sup> C08L 75/04, 75/06

U.S. Cl. 525-92

1 Claim

1. Thermoplastic molding compositions consisting of a blend of:

- A. From about 40% to about 70% by weight of an interpolymers comprising from about 8 to about 16% block polyalkadiene about 51 to about 85% styrene and from about 5% to about 45% methacrylic acid.
- B. From about 30% to about 60% of a polyurethane thermoplastic rubber.

4,284,735

# POLYPHENYLENE OXIDE BLEND WITH RUBBER-MALEIMIDE-STYRENE COPOLYMER

Ronald A. Fava, Monroeville, Pa., assignor to Arco Polymers, Inc., Philadelphia, Pa.

Filed Jun. 23, 1980, Ser. No. 162,000

Int. Cl.<sup>3</sup> C08L 53/00

U.S. Cl. 525-93

2 Claims

1. A thermoplastic molding composition which comprises:
  - A. about (50±15)% polyphenylene oxide.
  - B. about (50±15)% interpolymers of three components
    - (aa) a rubbery block copolymer prepared using a butyl lithium catalyst from 5 to 35% vinyl aromatic compound and from 65 to 95% conjugated alkylidene, said rubbery block copolymer constituting from 5% to 35% of the interpolymers of three components;
    - (bb) maleimide constituting from 5% to 35% of the interpolymers of three components; and
    - (cc) styrene constituting from 60% to 90% of the interpolymers of three components.

4,284,736

# UNSATURATED POLYESTER COMPOSITIONS

Lowell R. Comstock, South Charleston, and Percy L. Smith, Dunbar, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 107,514, Jan. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 8,070, Feb. 2, 1970, abandoned, and Ser. No. 72,798, Sep. 16, 1970, Pat. No. 3,718,714. This application Feb. 26, 1973, Ser. No. 336,121

The portion of the term of this patent subsequent to Feb. 27, 1990, has been disclaimed.

Int. Cl.<sup>3</sup> C08L 67/06

U.S. Cl. 525-169

32 Claims

1. A polyester composition, suitable for use in molding, comprising an ethylenically unsaturated monomer, an unsaturated polyester which is the condensation product of an ethylenically unsaturated polycarboxylic acid or anhydride and a polyol, and, as a low profile additive, a thermoplastic terpolymer of a vinyl halide monomer, a vinyl ester of a saturated, monocarboxylic acid, and as the third component of said terpolymer an unsaturated dicarboxylic acid or anhydride thereof; or as the third component a glycidyl ester of an unsaturated, monocarboxylic acid, said terpolymer being present in said composition in an amount of about 1 to about 85 percent by weight based on the weight of said unsaturated polyester,

wherein said terpolymer contains (a) at least about 45 weight percent polymerized vinyl halide, (b) from about 0.25 to about 10 weight percent of polymerized unsaturated dicarboxylic acid or anhydride thereof, or from about 1 to about 15 weight percent of polymerized glycidyl ester of an unsaturated, monocarboxylic acid, and (c) the remainder of said terpolymer being polymerized vinyl ester of a saturated, monocarboxylic acid.

4,284,737

# PROCESS FOR DEWATERING A GRAFTED RUBBER LATEX

Robert L. Kruse, Belchertown, and Wan C. Wu, Longmeadow, both of Mass., assignors to Monsanto Company, St. Louis, Mich.

Continuation-in-part of Ser. No. 945,983, Sep. 27, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,439

Int. Cl.<sup>3</sup> C08F 279/04

U.S. Cl. 525-243

18 Claims

1. A process for dewatering a grafted diene rubber aqueous latex comprising:

- A. mixing a grafted diene rubber latex, said diene rubber being rubber particles grafted with alkenyl aromatic and alkenyl nitrile monomer, said rubber particles being emulsified in said aqueous latex by an anionic surfactant, with an alkenyl nitrile monomer and optionally an alkenyl aromatic monomer;
- B. dispersing a cationic surfactant into said latex an amount sufficient to deemulsify said rubber particles;
- C. extracting said grafted diene rubber particles into said monomers as a liquid oil phase, said aqueous latex forming a separate water phase; and
- D. separating said water phase from said liquid oil phase, said oil phase having said grafted diene rubber particles evenly dispersed therein and being essentially free of said water phase.

4,284,738

# ETHYLENE-PROPYLENE BLOCK COPOLYMERIZATION PROCESS AND PRODUCT

Edward A. Zukowski, Clark, N.J., assignor to El Paso Polymers Company, Paramus, N.J.

Filed Aug. 11, 1980, Ser. No. 177,296

Int. Cl.<sup>3</sup> C08F 297/08

U.S. Cl. 525-247

24 Claims

1. A continuous sequential vapor phase block copolymerization process for the production of impact resistant ethylene-propylene polymers at high productivity rates, which comprises:

- (A) providing a preformed propylene polymer in finely divided form, said preformed polymer containing active catalyst residues and having been prepared by polymerizing propylene in the presence of a catalyst composition containing the components
  - (a) an aluminum trialkyl or an aluminum trialkyl at least partially complexed with an electron donor compound, and
  - (b) titanium tri- or tetrahalide supported on magnesium dihalide, or a complex of a titanium tri- or tetrahalide with an electron donor compound supported on magnesium dihalide, the components (a) and (b) being provided in a molar ratio of Al/Ti between about 10 and about 200;
- (B) introducing said preformed polymer, ethylene and propylene into at least one continuously agitated reaction zone,
- (C) introducing an additional quantity of component (a) to said reaction zone, said quantity ranging from about 5 to about 50% of the quantity in the preparation of the prepolymer; and
- (D) polymerizing said ethylene and propylene monomers in the vapor phase in the reaction zone onto said preformed propylene prepolymer.

4,284,739

# BLOCK COPOLYMERIZATION PROCESS

Edward A. Zukowski, Clark, N.J., assignor to El Paso Polymers Company, Paramus, N.J.

Filed Jul. 27, 1979, Ser. No. 64,961

Int. Cl.<sup>3</sup> C08F 255/04

U.S. Cl. 525-268

11 Claims

1. A continuous sequential vapor phase block copolymerization process for the production of impact resistant ethylene-propylene polymers at high productivity rates, which comprises:

- (A) providing a preformed propylene polymer in finely divided form, said preformed polymer containing active catalyst residues and having been prepared by polymerizing propylene in the presence of a catalyst composition containing the components
  - (a) an aluminum trialkyl at least partially complexed with an aromatic acid ester electron donor compound wherein the aluminum trialkyl is one containing from 1 to 8 carbon atoms in the alkyl groups and the molar ratio of trialkyl aluminum to electron donor ranges between 2 and about 5, and
  - (b) a complex of a titanium tri- or tetrahalide with an aromatic acid ester electron donor compound supported on magnesium dihalide wherein the titanium content of component (b) is about 1 and about 3 weight percent,

wherein catalyst components (a) and (b) are provided to the reaction zone in a molar ratio of Al/Ti of between about 10 and about 200;

- (B) introducing said preformed polymer into at least one continuously agitated reaction zone;
- (C) introducing ethylene and propylene monomers to said reaction zone in a molar ratio of ethylene to propylene of from about 0.15 to about 0.3;
- (D) polymerizing said ethylene and propylene monomers in the vapor phase in the reaction zone onto said preformed propylene prepolymer at a temperature of from about 50° F. to about 210° F.

4,284,740

# ACRYLATE COPOLYMERS GRAFTED ONTO A POLAR, WATER-SOLUBLE BACKBONE POLYMER

Eugene Y. C. Chang, Bridgewater, N.J., assignor to American Cyanamid Co., Stamford, Conn.

Continuation of Ser. No. 965,115, Nov. 30, 1978, abandoned.

This application Mar. 31, 1980, Ser. No. 136,127

Int. Cl.<sup>3</sup> C08F 265/10, 261/04

U.S. Cl. 525-292

11 Claims

1. A sulfur vulcanizable elastomer composition comprising (A) from about 20 to 40 weight percent, based on the total weight of said vulcanizable elastomer, of a polar water-soluble backbone polymer having grafted thereon (B) from about 60 to 80 weight percent, same basis, of a copolymer of a major proportion of one or more esters of acrylic acid and a minor proportion of an active halogen containing monoethylenically unsaturated ester or ether comonomer.

4,284,741

# POLYMERS OF CONJUGATED DIENES WHICH HAVE TERMINAL CONJUGATED UNSATURATED ALICYCLIC FUNCTIONAL GROUPS

Carl A. Uraneck, and John E. Burleigh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 55,680, Jul. 10, 1979, Pat. No. 4,258,162.

This application Sep. 12, 1980, Ser. No. 186,786

Int. Cl.<sup>3</sup> C08F 4/48; C08C 19/32, 19/40

U.S. Cl. 525-297

46 Claims

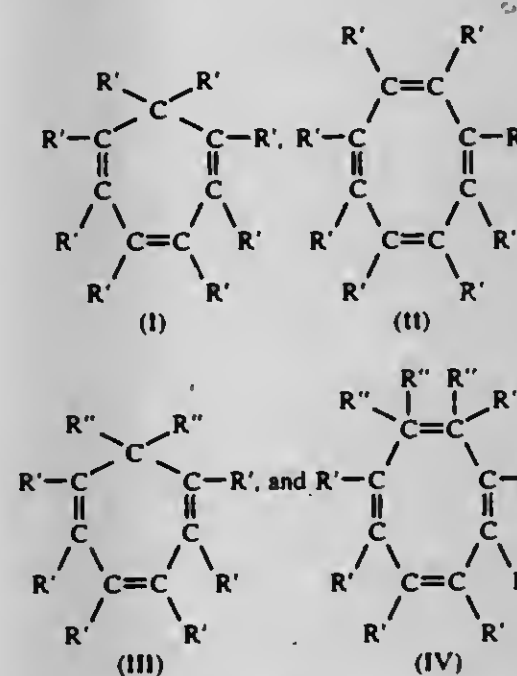
1. The process for the preparation of a conjugated diene polymer containing alicyclic conjugated unsaturated functional groups which comprises:

- (a) polymerizing at least one conjugated diene hydrocarbon

monomer, optionally further employing a hydrocarbon monovinylarene comonomer, employing an organolithium initiator, under anionic solution polymerization conditions, thereby preparing a polymerization admixture containing a conjugated diene polymer containing active lithium termination,

wherein said organolithium initiator is selected from the group consisting of (B) hydrocarbyl monolithium initiators, and (C) hydrocarbonic lithium multichelic initiators, and therefore (b) treating said polymerization admixture by treating mode (E),

wherein said treating mode (E) employs at least a stoichiometric amount an alicyclic unsaturated triene or tetraene selected from the group consisting of



wherein R' is hydrogen or alkyl such that the total number of carbon atoms in the molecule does not exceed 20; and R'' is R', chlorine, bromine, or iodine, with the proviso that only one R'' is halogen in each molecule of said (III) or (IV), thereby resulting in a conjugated diene polymer containing terminal conjugated unsaturation.

4,284,742

# PUNCTURE-SEALING TIRE

Harold H. Bowerman, Jr., Fairview Park, and Robert W. Ireland, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

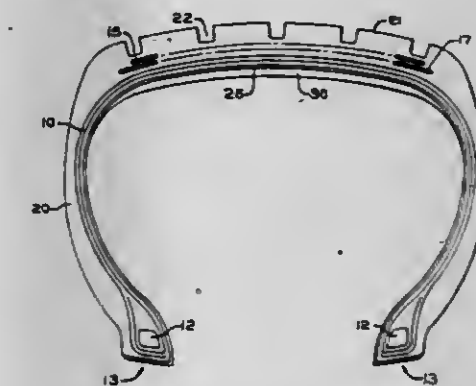
Division of Ser. No. 791,759, Apr. 28, 1977, Pat. No. 4,214,619.

This application Jan. 21, 1980, Ser. No. 113,883

Int. Cl.<sup>3</sup> C08F 8/32; B60C 5/14, 17/00

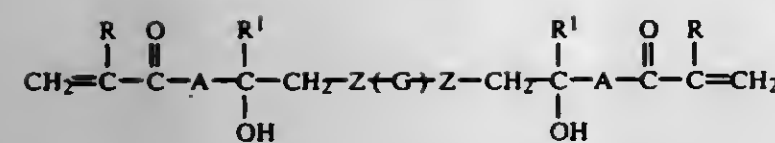
U.S. Cl. 525-329

5 Claims

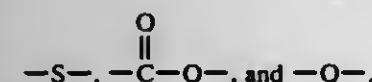


1. A tire sealant composition comprising: (1) at least one vinylidene-terminated polymer having the formula

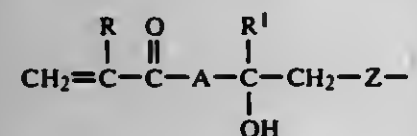




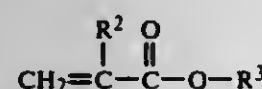
wherein Z is selected from the group consisting of



A is a bivalent radical containing 1 to 10 atoms wherein at least one of said atom is selected from the group consisting of C, O, S and N, R and R<sup>1</sup> are hydrogen or alkyl radicals containing 1 to 4 carbon atoms, and G is a polymeric backbone comprising carbon-carbon linkages, said vinylidene-terminated polymer containing an average of from about 1.5 to about 4



groups per molecule, wherein said backbone comprising carbon-carbon linkages contains polymerized units of at least one vinylidene monomer having at least one terminal  $\text{CH}_2=\text{C}<$  group said monomer being selected from the group consisting of (a) monoolefins containing 2 to 14 carbon atoms, (b) dienes containing 4 to 10 carbon atoms, (c) vinyl and allyl esters of carboxylic acids containing 2 to 8 carbon atoms, (d) vinyl and allyl ethers of alkyl radicals containing 1 to 8 carbon atoms, (e) acrylic acids and acrylates having the formula



said R<sup>2</sup> being hydrogen or an alkyl radical containing 1 to 3 carbon atoms and said R<sup>3</sup> being hydrogen, an alkyl or hydroxy alkyl radical containing 1 to 18 carbon atoms, or an alkoxyalkyl, alkylthioalkyl or cyanoalkyl radical containing 2 to 12 carbon atoms; and

(2) at least one amine selected from the group consisting of N-(2-aminoethyl) piperazine and 1,3-di-4-piperidylpropane.

4,284,743

#### PROCESS FOR THE CROSS-LINKING OF HIGH DENSITY POLYETHYLENE WITH DIENE UNITS IN SOLID STATE

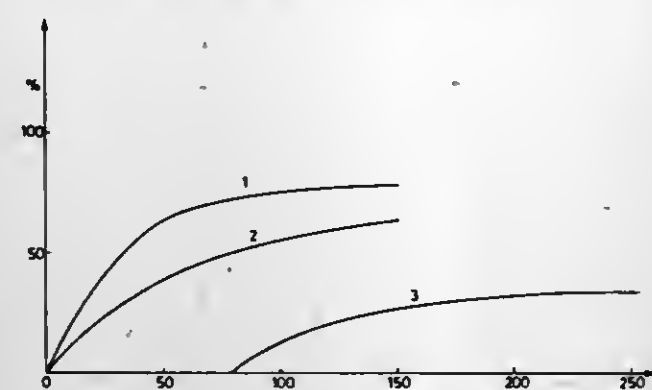
Gian P. Giuliani, and Roberto Paiella, both of San Donato Milanese, Italy, assignors to Anic S.p.A., Palermo, Italy  
Continuation of Ser. No. 891,274, Mar. 28, 1978, abandoned, which is a continuation of Ser. No. 692,776, Jan. 4, 1976, abandoned. This application Dec. 17, 1979, Ser. No. 104,389  
Claims priority, application Italy, Jun. 6, 1975, 24078 A/75  
Int. Cl.<sup>3</sup> C08C 19/20, 19/22

U.S. Cl. 525-349

2 Claims

1. A process for cross-linking high density polyethylene containing diene unsaturation in the amount of 0.1 to 100 double bonds per 1000 carbon atoms which comprises melt-mixing said high density polyethylene with a sulfur based vulcanizing system and at a temperature of from 150°-180° C.

for a period of time that avoids any premature cross-linking and thereafter heating said polyethylene at a temperature of



from 100°-130° C. to obtain high density cross-linked polyethylene.

4,284,744

#### POLYMERS CONTAINING CHEMICALLY BONDED METAL ATOMS

Robert C. Shaffer, Playa del Ray, Calif., assignor to Hitco, Irving, Calif.

Division of Ser. No. 893,622, Apr. 5, 1978, Pat. No. 4,185,043, Continuation-in-part of Ser. No. 714,403, Aug. 16, 1976, Pat. No. 4,087,482. This application Sep. 14, 1979, Ser. No. 75,593  
Int. Cl.<sup>3</sup> C08L 67/06

U.S. Cl. 525-389

2 Claims

1. A thermosetting polymer obtained by reacting a thermoplastic polymer with a vinyl monomer crosslinking agent, said thermoplastic polymer containing tungsten and/or molybdenum metal atoms chemically bonded in the polymer chain, said thermoplastic polymer comprising the reaction product of (1) a metal complex which is a reaction product of tungsten carbonyl and/or molybdenum carbonyl with pyrrolidine and (2) a condensation product of an ethylenically unsaturated dicarboxylic acid or anhydride and a polyhydric alcohol, said condensation product containing free carboxyl groups.

4,284,745

#### CROSS-LINKABLE SATURATED POWDEROUS COMPOSITIONS AND POWDEROUS PAINTING AND COATING COMPOSITIONS CONTAINING SAME

Jacques Meyer, Paris, and Daniel Bernelin, Ris-Orangis, both of France, assignors to Rhone-Poulenc Industries, Paris, France  
Division of Ser. No. 833,953, Sep. 16, 1977, Pat. No. 4,182,840.

This application Mar. 26, 1979, Ser. No. 24,008  
Claims priority, application France, Sep. 22, 1976, 76 28415; May 9, 1977, 77 14039; Jun. 11, 1977, 77 21240  
Int. Cl.<sup>3</sup> C08G 63/76, 18/82, 59/16

U.S. Cl. 525-408

24 Claims

1. A powderous homogeneous saturated binder composition of matter adapted for coatings having a nonglossy surface comprising:

- at least one cross-linkable epoxide resin;
- a sufficient amount of a cross-linking agent therefor having functional groups selected from the group consisting of acid groups and acid anhydride groups; and,
- a catalytic amount of a salt of an at least bivalent metal ion and an organic anion selected from the group consisting of carboxylic anions and acetylacetonate.

4,284,746

#### PERFLUOROALKYL-SUBSTITUTED AMINES AS EPOXY RESIN CURING AGENTS

Akira Ohmori, Ibaraki, Japan, assignor to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Oct. 12, 1979, Ser. No. 84,436

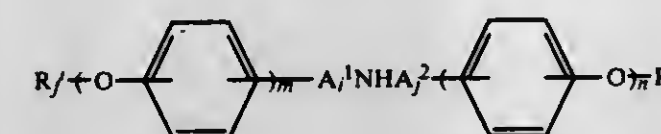
Claims priority, application Japan, Oct. 14, 1978, 53-126505; Oct. 14, 1978, 53-126507

Int. Cl.<sup>3</sup> C08G 59/50

U.S. Cl. 525-510

16 Claims

1. An epoxy resin composition comprising:
- (1) an epoxy resin containing two or more epoxy groups per molecule and
- (2) an amine containing at least one perfluoroalkyl group and one or more primary and/or secondary amino groups per molecule of the formula:



wherein R<sub>f</sub>' is a C<sub>1</sub>-C<sub>15</sub> perfluoroalkyl group, R is a hydrogen atom, a C<sub>1</sub>-C<sub>16</sub> alkyl group, a phenyl group having or not 1 to 4 substituents selected from the group consisting of halogen atoms and C<sub>1</sub>-C<sub>4</sub> alkyl groups, a phenyl(C<sub>1</sub>-C<sub>4</sub>) alkyl group having or not on the benzene ring 1 to 4 substituents selected from the group consisting of halogen atoms and C<sub>1</sub>-C<sub>4</sub> alkyl groups, a tri(C<sub>1</sub>-C<sub>3</sub>) alkoxyalkyl group or a C<sub>1</sub>-C<sub>15</sub> perfluoroalkyl group, A<sup>1</sup> and A<sup>2</sup> are each a C<sub>1</sub>-C<sub>4</sub> alkylene group, a C<sub>2</sub>-C<sub>4</sub> alkylene group substituted with one or two hydroxyl groups, a methyleneoxy(C<sub>3</sub>-C<sub>4</sub>)alkylene group in which one of the hydrogen atoms in the alkylene moiety is substituted with a hydroxyl group or a phenylene group and i, j, m and n are each 0 or 1, at least one of them being 1.

4,284,747

#### CIS-TRANS FLUOROPOLYOL POLYACRYLATE

James R. Griffith, Riverdale Heights, and Jacques G. O'Rear, Temple Hills, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 962,856, Nov. 22, 1978, abandoned.

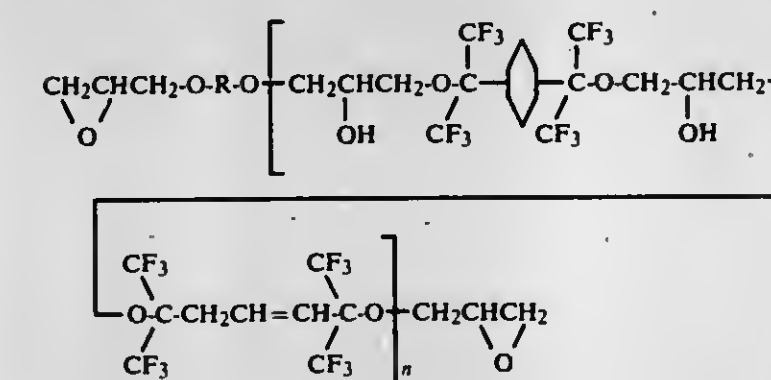
This application Feb. 25, 1980, Ser. No. 124,203

Int. Cl.<sup>3</sup> C08L 63/00

U.S. Cl. 525-530

11 Claims

1. A cis-trans fluoropolyol acrylate prepared from a fluoropolyol having the structural formula:



wherein R is selected from the group consisting of  $-\text{C}(\text{CF}_3)_2\text{C}_6\text{H}_4\text{C}(\text{CF}_3)_2-$  and  $-\text{C}(\text{CF}_3)_2\text{CH}_2\text{CH}=\text{CH}(\text{CF}_3)_2\text{C}-$ , R' is selected from the group consisting of  $-\text{H}$  and  $-(\text{CF}_2)_x\text{F}$ , n has an average value of 4 to 10, and x is from 0 to 8; said cis-trans fluoropolyol acrylate exhibiting at least 60 percent esterification based on the number of epoxy and secondary hydroxyl groups.

4,284,748

#### OLEFIN POLYMERIZATION

Melvin B. Welch, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 7, 1979, Ser. No. 73,467

Int. Cl.<sup>3</sup> C08F 4/02, 10/02

U.S. Cl. 526-119

15 Claims

1. A catalyst for the polymerization of olefins consisting essentially of two components wherein component A is formed in an inert hydrocarbon diluent by
  - (1) reacting a silicon-containing finely divided solid in which the silica content ranges from about 80-100 weight percent with a tetravalent titanium alkoxide compound in which the alkyl group of the alkoxide contains from 1 to about 12 carbon atoms;
  - (2) contacting the product obtained in step (1) with an organomagnesium compound wherein the organo portion is a hydrocarbyl group of 1 to about 12 carbon atoms; and
  - (3) treating the product obtained in step (2) with a titanium tetrahalide; and
- component B is a metallic hydride or organometallic compound wherein said metal is selected from a metal of Groups IA, IIA, and IIIA of the Periodic Table.

4,284,749

#### CONTINUOUS WEAR HYDRATABLE, BOILABLE METHYLMETHACRYLATE COPOLYMER CONTACT LENS

Charles W. Neefe, P.O. Box 429, Big Spring, Tex. 79720

Filed Jul. 23, 1979, Ser. No. 59,972

Int. Cl.<sup>3</sup> C08F 20/58; G02C 7/04

U.S. Cl. 526-304

6 Claims

1. A material for making flexible, nonelastic, oxygen permeable contact lenses having an oxygen equivalent of 7.8% at a thickness of 0.20 millimeter which may be sterilized by heat or chemicals, made of a copolymer comprising, 100 parts by weight methylmethacrylate monomer copolymerized with from 1 to 50 parts by weight of N-(1,1-dimethyl-3-oxobutyl) acrylamide monomer and 2 to 30 parts by weight methacrylic acid and 1 to 20 parts by weight propylene glycol monomethacrylate.

4,284,750

#### POLYURETHANE RESINS

Charles J. Amirsakis, Lake Geneva, Wis., assignor to Morton-Norwich Products, Inc., Chicago, Ill.

Filed Jan. 20, 1980, Ser. No. 161,495

Int. Cl.<sup>3</sup> C08G 18/42

U.S. Cl. 528-79

26 Claims

1. A thermoplastic polyurethane composition characterized by excellent mechanical and thermal properties, high hardness and the capability of binding or adhering to magnetic pigments, said composition being essentially free of cross-links and comprising the reaction product of:

- (A) an hydroxyl-terminated polyester which is the reaction product of 1,4-cyclohexanedimethanol and a dicarboxylic acid selected from the group consisting of adipic acid, azelaic acid and 1,12-dodecanedioic acid or mixtures thereof, said polyester having an hydroxyl number of from about 50 to about 250,
- (B) a chain extender selected from the group consisting of ethylene glycol, propylene glycol, 1,4-butanediol, 1,3-butanediol, 1,5-pentanediol, 1,6-hexanediol, 1,4-cyclohexanedimethanol and hydroquinone di(β-hydroxyethyl) ether, the resultant hydroxyl number of said polyester and chain extender together being from about 130 to about 300, and
- (C) an aliphatic or aromatic diisocyanate in an amount substantially equivalent to the molar quantity of (A) plus (B).



4,284,751

## POLYURETHANE SEALANT SYSTEM

Jack W. Hutt, Tarzana, and Fernando E. Blanco, Arieta, both of Calif., assignors to Products Research & Chemical Corp., Burbank, Calif.

Filed May 14, 1980, Ser. No. 149,586

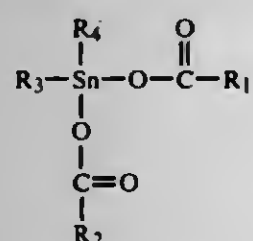
Int. Cl.<sup>3</sup> C08G 18/10, 18/80

U.S. Cl. 528—45

29 Claims

1. A polyurethane sealant which when exposed to ambient moisture, will cure rapidly to form a seal having high tensile strength consisting essentially of

(A) a polyurethane polymer containing terminal isocyanate groups in an amount of not more than about 2.0 weight % based on the weight of said polyurethane, said terminal isocyanate groups being blocked to prevent further reaction by a volatile blocking agent, said polyurethane polymer being the reaction product of (1) a liquid poly (lower) alkylene ether polyol having a molecular weight of greater than about 6,000 and from three to five hydroxyl groups with (2) a sterically unhindered aromatic diisocyanate; (B) a catalytic curing effective amount of (a) an organic bismuth salt selected from the group consisting of bismuth tri-(2-ethyl hexoate) and bismuth tri-(neo-decanoate) and (b) an organic tin salt of the formula:



wherein each of R<sub>1</sub> and R<sub>2</sub> is alkyl of from 1 to 12 carbon atoms and each of R<sub>3</sub> and R<sub>4</sub> are lower alkyl; (C) up to 200 weight %, based on the weight of the polyol, of inert fillers; and (D) up to 100 weight %, based on the weight of the polyol, of polyurethane compatible plasticizers.

4,284,752

## PROCESS FOR PRODUCING CROSSLINKED UNSATURATED POLYMERS BY REACTION OF β-AMINOCROTONIC ACID ESTERS, NITRILES OR AMIDES WITH POLYISOCYANATES

Theobald Haag, Frenkendorf, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 8, 1980, Ser. No. 147,991

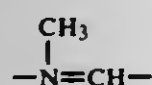
Claims priority, application Switzerland, May 8, 1979, 4309/79

Int. Cl.<sup>3</sup> C08G 18/00

U.S. Cl. 528—68

15 Claims

1. A process for producing crosslinked unsaturated polymers, which process comprises reacting monomeric or oligomeric β-aminocrotonic acid esters or β-aminocrotonic acid nitriles or β-aminocrotonic acid amides with polyisocyanates, the composition of the reaction mixture being such that to one molecular group of the formula



of the respective β-aminocrotonic acid derivative there is at least one isocyanate group.

4,284,753

## HEAT CURABLE POLYEPOXIDE-UNSATURATED AROMATIC MONOMER RESIN COMPOSITIONS

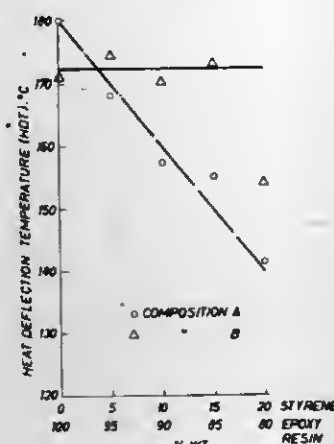
Ralph W. Hewitt, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 14, 1980, Ser. No. 140,026

Int. Cl.<sup>3</sup> C08G 59/42

U.S. Cl. 528—89

18 Claims



1. A heat-curable composition comprising:

- (1) from about 50 to about 99 parts by weight of a polyepoxide possessing more than one vic-epoxy group,
- (2) from about 1 to about 50 parts by weight of an unsaturated aromatic monomer,
- (3) from about 0.25 to about 2.0 stoichiometric equivalents based on the polyepoxide of a carboxyl-containing compound,
- (4) an epoxy curing accelerator composition comprising from about 0.001 to about 10 parts by weight per 100 parts by weight of the polyepoxide of an onium compound, and
- (5) a curing amount of a free-radical curing agent.

4,284,754

## OLIGOMERIC PHOSPHATE/AMINO COMPOSITION

Mohinder S. Chattha, Livonia, and Henk van Oene, Detroit, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1980, Ser. No. 109,597

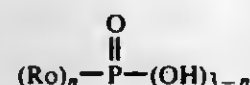
Int. Cl.<sup>3</sup> C08G 59/40; C08L 63/00

U.S. Cl. 528—107

8 Claims

1. A thermosetting composition which exclusive of pigments, solvents and other nonreactive components consists essentially of:

- (A) an oligomeric hydroxy functional phosphate ester having a number average molecular weight of between about 500 and about 5000 and being prepared by reaction of:
  - (i) polyepoxide resin having a number average molecular weight of between about 120 and about 4500 and being selected from the group consisting of aliphatic, cycloaliphatic and aromatic polyepoxides; and
  - (ii) acid phosphate ester having the formula



wherein n=1 to 2 and R is selected from alkyl and aryl groups containing between about 1 and about 20 carbon atoms,

said acid phosphate ester and said polyepoxide being reacted in such amounts that there are between about 0.7 and about 1.1 acid groups per epoxy group in said reaction mixture;

(B) up to about 50 weight percent based on the total weight of components (A), (B) and (C) of a hydroxy functional compound having a number average molecular weight of between about 120 and about 4000; and

(C) an amine aldehyde crosslinking agent in an amount

ranging from about 15 to about 50 weight percent based on the total weight of (A), (B) and (C).

4,284,755

## N-SUBSTITUTED ASPARTIC ACID DERIVATIVES AS CURING AGENTS FOR EPOXIDE RESINS

Friedrich Lohse, Oberwil; Friedrich Stockinger, Hölstein, and Sameer H. Eldin, Birsfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 30, 1980, Ser. No. 145,076

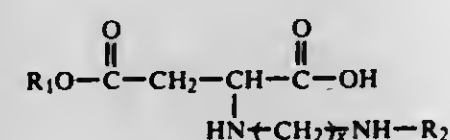
Claims priority, application Switzerland, May 8, 1979, 4305/79

Int. Cl.<sup>3</sup> C08G 59/52

U.S. Cl. 528—111

9 Claims

1. An N-substituted aspartic acid monoester of the formula I



wherein R<sub>1</sub> is an alkyl group which has 1 to 12 C atoms and which optionally contains ether oxygen atoms, or it is a cyclohexyl, phenyl, tolyl or benzyl group, R<sub>2</sub> is an alkyl group having 3 or 4 C atoms, or it is a cyclohexyl, phenyl, tolyl or methoxyphenyl group, and x is the number 2 or 3.

4,284,756

## POLYESTER COMPOSITIONS, SHAPED ARTICLES OBTAINED FROM THEM AND PROCESSES FOR PREPARING THEM

Patrick J. Hurner, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 29, 1979, Ser. No. 43,424

Claims priority, application United Kingdom, Jun. 9, 1978, 26606/78

Int. Cl.<sup>3</sup> C08G 8/02, 63/42

U.S. Cl. 528—128

7 Claims

1. A linear polyester which contains polymerized in its molecule polymerized units of bis(hydroxyalkoxy)xanth-9-ones, the amount of said bis(hydroxyalkoxy)xanth-9-ones being 0.05 to 10% by weight based on the total polymer.

4,284,757

## THERMOTROPIC AROMATIC COPOLYESTERS AND PROCESSES FOR THEIR PREPARATION

Bernard Fayulle, Ecully, France, assignor to Rhone Poulenc Industries, Paris, France

Filed Feb. 26, 1980, Ser. No. 124,855

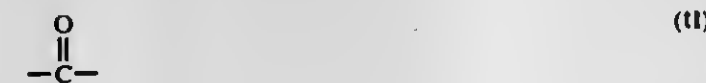
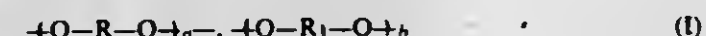
Claims priority, application France, Mar. 2, 1979, 79 05920

Int. Cl.<sup>3</sup> C08G 63/64

U.S. Cl. 528—191

10 Claims

1. A thermotropic carbonate polyester of high molecular weight, which can be shaped, characterized in that it possesses an inherent viscosity of more than 0.3 dl g<sup>-1</sup> (measured on a solution containing 0.5 g of polymer in 100 cm<sup>3</sup> of a 50/50 by volume mixture of para-chlorophenol and 1,2-dichloroethane) and a flow point which is above or equal to 150° C. and below 330° C., and in that it consists essentially of units of the formulae:



in which the radicals R, which are identical, each represent a

para-phenylene radical which is monosubstituted by a methyl or ethyl group or a chlorine or bromine atom;

the radicals R<sub>1</sub> each represent an unsubstituted paraphenylene radical, with 0.3 ≤ a ≤ 1, 0 ≤ b ≤ 0.7 and a + b = 1; and the radicals R<sub>2</sub>, which may be identical or different, each represent a radical chosen from amongst para-phenylene, 1,4-cyclohexylene, 4,4'-biphenylene, 2,6-naphthylene, 1,1'-(4,4'-ethylenedioxydiphenylene), 1,1'-(4,4'-butylenedioxydiphenylene) and 1,1'-(4,4'-hexylenedioxydiphenylene) groups,

the amount of the units (II) in the mixture (II)+(III) being between 30 and 90 mol % and the molar ratio of the units (I) to the sum of the units (II)+(III) being between 0.95 and 1.05.

4,284,758

## GLYOXAL/CYCLIC UREA CONDENSATES

(I) Bernard F. North, Rock Hill, S.C., assignor to Sun Chemical Corp., New York, N.Y.

Continuation-in-part of Ser. No. 92,630, Nov. 8, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,248

Int. Cl.<sup>3</sup> C08G 4/00

U.S. Cl. 528—245

5 Claims

1. The alkylated product of the reaction of approximately stoichiometric amounts of glyoxal and one or more cyclic ureas.

4,284,759

## PREPARATION OF AMINOPLAST RESIN PARTICLES

Richard G. C. Henbest, and John Harrison, both of Norton, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 3, 1979, Ser. No. 35,643

Claims priority, application United Kingdom, May 31, 1978, 25658/78

Int. Cl.<sup>3</sup> C08G 12/12

U.S. Cl. 528—261

9 Claims

1. A process for the manufacture of particles suitable for use as pigments in paper making which comprises:

- (A) reacting in an aqueous medium urea, formaldehyde and a source of inorganic oxyacid radicals selected from the group consisting of sulphite, phosphate, phosphite, and borate radicals, said source being present in such a quantity that there are 0.2 to 15 moles, per 100 moles of formaldehyde, of said oxyacid radicals, to form an aqueous urea-formaldehyde resin solution;
- (B) adding an aqueous acid to said resin solution, the amount of said acid being sufficient to cause said resin to gel in an extended form of a mass of high area particles lightly bonded together;
- (C) drying the resultant gelled resin mass;
- (D) curing said mass by heating at 100° C. to 200° C.; and
- (E) comminuting said cured gelled resin mass to powder form.

4,284,760

## PROCESS FOR THE MANUFACTURE OF UNSATURATED POLYESTER RESINS

William H. Millick, 3rd, Wilmington, N.C., and Norman R. Newburg, Wilmington, Del., assignors to Hercofina, Wilmington, N.C.

Filed Mar. 13, 1980, Ser. No. 129,939

Int. Cl.<sup>3</sup> C08G 63/52

U.S. Cl. 528—306

5 Claims

1. A process for producing styrene-soluble unsaturated polyester resins from DMT process residue having a methoxyl content within the range of 8 to 25%, which process comprises forming from said residue a hydroxyl-terminated ester product having a methoxyl content which is inversely related to the methoxyl content of said residue and is within the range defined by equations



$$Y = 3.0 - 0.10X \text{ and } Y = 4.0 + 0.25X$$

where Y is the methoxyl content of said ester product and X is the methoxyl content of said residue and is within the range of 8 to 25 by

(a) transesterifying said residue with an excess of at least one dihydric alcohol until the methoxyl content is within the above defined range, or

(b) transesterifying said residue with an excess of at least one dihydric alcohol until the methoxyl content is below the value defined by the equation  $Y = 3.0 - 0.10X$  and adding thereto a sufficient quantity of said residue to adjust the methoxyl content of the product to a value within the above defined range, and

reacting said ester product with an unsaturated dicarboxylic acid or its anhydride to form said unsaturated polyester resin.

4,284,761

### THIODIETHANOL-BASED POLYURETHANE ELASTOMERS HAVING IMPROVED DYNAMIC PROPERTIES AND METHOD FOR PRODUCTION THEREOF

Volker D. Arendt, Princeton, and Tsi T. Li, Milltown, both of N.J., assignors to American Cyanamid Co., Stamford, Conn.

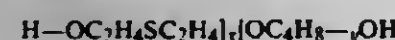
Filed Jul. 23, 1980, Ser. No. 171,615

Int. Cl.<sup>3</sup> C08G 65/08

U.S. Cl. 528—373

8 Claims

1. A polyether-thioether copolymer glycol, represented by the formula:



wherein the mole ratio of x/y ranges from about 45:55 to about 60:40 respectively, prepared by a process which comprises: (a) condensing, at a temperature of about 160°–205° C., in the presence of an acidic condensation catalyst, 1,4-butanediol with sufficient thiodiethanol to produce a trimer, represented by the formula:



(b) completing the condensation, under the same conditions, by the incremental addition to said trimer, of the remaining thiodiethanol at a rate corresponding essentially to the rate of removal of water of reaction therefrom, such that no significant excess of thiodiethanol is present in the reaction mixture at any given time; (c) extracting the product of (b) with water, at a ratio of polymeric diol to water between about 2/1 and 3/1; and (d) recovering the extracted copolymer glycol.

4,284,762

### METHOD FOR INHIBITING CORROSION-CAUSING TENDENCY AND COLORATION OF HALOGEN-CONTAINING OLEFIN RESINS WITH HYDROTALCITE

Shigeo Miyata, Takamatsu, and Masataka Kuroda, Kagawa, both of Japan, assignors to Kyowa Chemical Industry Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1979, Ser. No. 102,523

Claims priority, application Japan, Dec. 14, 1978, 53/153732

Int. Cl.<sup>3</sup> C08F 6/00

U.S. Cl. 528—485

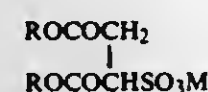
5 Claims

1. In a method for inhibiting the corrosion-causing tendency and coloration of an olefin polymer or copolymer selected from the group consisting of polyethylene, polypropylene, poly(1-butene), poly(4-methyl-1-pentene), an ethylene-propylene copolymer and a copolymer of at least one alpha-olefin with a diene, said olefin polymer or copolymer containing a halogen component, by incorporating about 0.01 to about 5 parts by weight of a hydrotalcite in the halogen component-containing olefin polymer or copolymer, the improvement which comprises mixing the olefin polymer or copolymer, containing a halogen component attributed to a polymerization

catalyst and/or to post-halogenation, with a hydrotalcite of the formula



wherein  $0 < x \leq 0.5$ , m is a positive number, and  $A^{n-}$  represents an anion having a valence of n, or with a product resulting from the surface-coating of said hydrotalcite with an anionic surface-active agent selected from the group consisting of an alkali metal salt of a fatty acid of the formula RCOOM in which R is an alkyl group having 3 to 40 carbon atoms and M represents an alkali metal atom, an alkali metal salt of an alkyl-sulfate of the formula ROSO<sub>3</sub>M in which R and M are as defined above, an alkali metal salt of an alkylsulfonate of the formula RSO<sub>3</sub>M in which R and M are as defined above, an alkali metal salt of an alkylarylsulfonate of the formula R-aryl-SO<sub>3</sub>M in which R and M are as defined above and aryl represents phenyl, naphthyl or tolyl, and an alkali metal salt of a sulfosuccinic ester of the formula



in which R and M are as defined above, said hydrotalcite having

- a BET specific surface area of not more than 30 m<sup>2</sup>/g, and
- an average secondary particle size of not more than 3 microns.

4,284,763

### SUGAR ACETALS, THEIR PREPARATION AND USE

Leslie A. W. Thelwall, Swindon; Leslie Hough, Wimbledon, and Anthony C. Richardson, Henley-on-Thames, all of England, assignors to Talres Development (N.A.) N.V., Curacao, Netherlands Antilles

Filed Mar. 26, 1980, Ser. No. 133,975

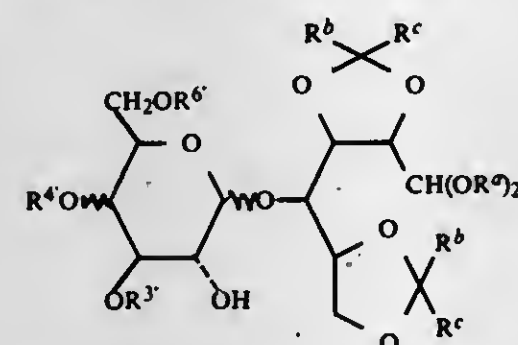
Claims priority, application United Kingdom, Apr. 6, 1979, 12263/79

Int. Cl.<sup>3</sup> C07H 5/02, 9/02

U.S. Cl. 536—4

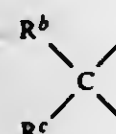
10 Claims

1. A sugar acetal of the general formula



wherein:

- R<sup>a</sup> is C<sub>1-3</sub> alkyl, phenyl or benzyl;  
R<sup>b</sup> is hydrogen, C<sub>1-3</sub> alkyl, phenyl or benzyl;  
R<sup>c</sup> is hydrogen, C<sub>1-3</sub> alkyl, phenyl or benzyl;  
R<sup>d</sup>, R<sup>e</sup> and R<sup>f</sup> are hydrogen atoms or one of R<sup>d</sup> and R<sup>e</sup> is a hydrogen atom and the other or R<sup>d</sup> and R<sup>e</sup> forms with R<sup>f</sup> a group of formula



in which R<sup>b</sup> and R<sup>c</sup> are as defined.

4,284,764

### PROCESS FOR THE PREPARATION OF 5-FLUORO-5-DEOXY AND 5-EPI-FLUORO-5-DEOXY-4,6-DI-O-(AMINOGLYCOSYL)-1,3-DIAMINOCYCLOITOLS AND NOVEL 5-FLUORO-5-DEOXY AND 5-EPI-FLUORO-5-DEOXY DERIVATIVES PRODUCED THEREBY

Peter J. L. Daniels, Cedar Grove, and Dinanath Rane, Verona, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 893,638, Apr. 4, 1978, abandoned, which is a continuation-in-part of Ser. No. 792,825, May 2, 1977, abandoned. This application Feb. 19, 1980, Ser. No. 122,097

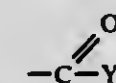
Int. Cl.<sup>3</sup> A61K 31/71; C07H 15/22

U.S. Cl. 536—10

10 Claims

6. A 5-fluoro-5-deoxy or 5-epi-fluoro-5-deoxy derivative of a 4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitol wherein said 4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitol is selected from the group consisting of gentamicin A, gentamicin B, gentamicin B<sub>1</sub>, gentamicin C<sub>2a</sub>, gentamicin C<sub>2b</sub>, gentamicin X<sub>2</sub>, verdamycin, tobramycin, Antibiotic G-418, Antibiotic 66-40B, Antibiotic 66-40D, Antibiotic JI-20A, Antibiotic JI-20B, Antibiotic G-52, kanamycin A, kanamycin B and 3',4'-dideoxykanamycin B;

and the 1-N-X derivatives thereof, wherein X is —CH<sub>2</sub>Y or



wherein Y is a member selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkyl, cycloalkylalkyl, hydroxyalkyl, aminoalkyl, alkylaminoalkyl, aminohydroxyalkyl and alkylaminohydroxyalkyl, said Y having up to 4 carbon atoms and when substituted by both amino and hydroxy groups, said groups are on different carbon atoms;

and the pharmaceutically acceptable acid addition salt thereof.

4,284,765

### AUTOMATIC AGING ANALYZER USING A MOTOR HAVING A CONSTANT TORQUE

Charles J. Geyer, Jr., Berwyn, and Ben E. White, Wayne, both of Pa., assignors to Fiber Associates, Inc., Berwyn, Pa.

Filed Dec. 11, 1979, Ser. No. 102,397

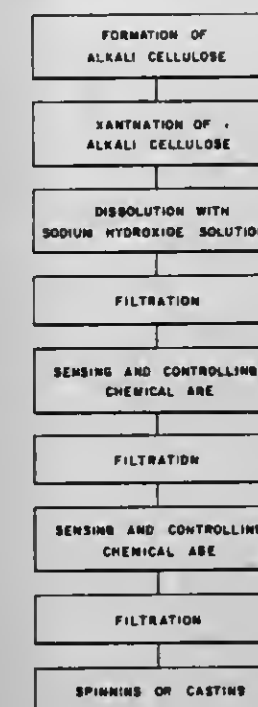
Int. Cl.<sup>3</sup> C08B 9/04, 17/00

U.S. Cl. 536—60

4 Claims

1. In a process for the manufacture of viscose products which includes the step of ripening a homogeneous viscose solution prior to spinning or casting, the improvement which comprises in the ripening stage the steps of operating a motor means having a constant torque in said viscose during ripening, said motor means having its speed influenced by the viscosity of said viscose solution, monitoring the change in speed of said motor resulting from the change in viscosity of said viscose solution during ripening, and then controlling the temperature of said viscose in response to said monitoring, so as to bring the viscose solution to the desired degree of ripeness whereby the

resistance on said motor means changes as the viscose ripens because of the change in viscosity and the temperature is ad-



4,284,766

### PROCESS FOR THE PREPARATION OF CEPHALOSPORIN COMPOUNDS

Stuart B. Laing, Harrow, and Gordon G. Weingarten, London, both of England, assignors to Glaxo Group Limited, London, England

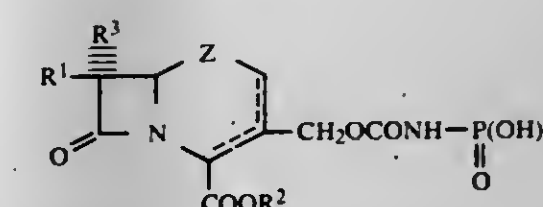
Filed Sep. 20, 1979, Ser. No. 77,757

Claims priority, application United Kingdom, Sep. 21, 1978, 37675/78

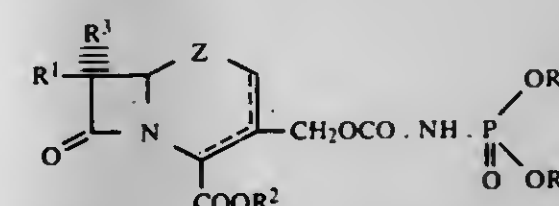
Int. Cl.<sup>3</sup> C07D 501/04

3 Claims

1. In a process for the preparation of a compound of formula



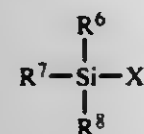
wherein R<sup>1</sup> represents a C<sub>1</sub>–C<sub>40</sub> protected amino group, R<sup>2</sup> represents a group selected from the group consisting of hydrogen atoms and carboxyl blocking groups, R<sup>3</sup> represents a group selected from the group consisting of hydrogen atoms and C<sub>1</sub>–C<sub>8</sub> alkyl, C<sub>1</sub>–C<sub>8</sub> alkylthio and C<sub>1</sub>–C<sub>8</sub> alkoxy groups; Z is >S or >S=O (α- or β-); and the dotted line bridging the 2-, 3- and 4-positions of the molecule indicates that the compounds may be ceph-2-em or ceph-3-em compounds, and salts thereof, the steps which consist of reacting a compound of formula



wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, Z and the dotted line are as herein defined, and R<sup>4</sup> and R<sup>5</sup>, which may be the same or different, each represents a group selected from the group consisting of alkyl,



aralkyl, alicyclic or aryl groups, or R<sup>4</sup> and R<sup>5</sup> together form a divalent group with at least 3 carbon atoms bridging the oxygen atoms, with a compound of formula



wherein R<sup>6</sup>, R<sup>7</sup> and R<sup>8</sup>, which may be the same or different, each represents a group selected from the group consisting of alkyl, aralkyl, alicyclic or aryl groups, or any two of R<sup>6</sup>, R<sup>7</sup> and R<sup>8</sup> together form a divalent group containing at least 3 carbon atoms; and X represents an atom selected from the group consisting of chlorine, bromine or iodine atoms, followed by hydrolysis.

4,284,767

## PROCESS FOR PREPARING

## 3-CARBAMOYLOXYMETHYL CEPHALOSPORINS

David C. Humber, London; Stuart B. Laing, Harrow, and Gordon G. Weingarten, London, all of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 27,804, Apr. 6, 1979, abandoned. This application Jan. 15, 1980, Ser. No. 112,201

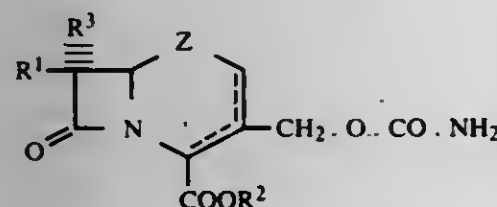
Claims priority, application United Kingdom, Apr. 7, 1978, 13799/78

Int. Cl.<sup>3</sup> C07D 501/04

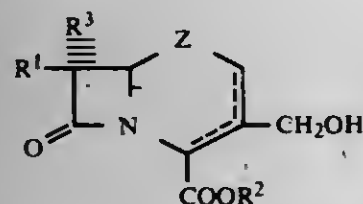
U.S. Cl. 544—22

4 Claims

1. In a process for the preparation of a 3-carbamoyloxymethyl cephalosporin of formula



(wherein R<sup>1</sup> represents a C<sub>1</sub>-C<sub>40</sub> protected amino group; R<sup>2</sup> represents a group selected from the group consisting of hydrogen atoms and carboxyl blocking groups; R<sup>3</sup> represents a group selected from the group consisting of hydrogen atoms and C<sub>1</sub>-C<sub>8</sub> alkyl, C<sub>1</sub>-C<sub>8</sub> alkylthio and C<sub>1</sub>-C<sub>8</sub> alkoxy groups; Z is >S or >S=O (α- or β-); and the dotted line bridging the 2-, 3- and 4-positions of the molecule indicates that the compounds are ceph-2-em or ceph-3-em compounds) and, salts thereof, the steps which consist in contacting a 3-hydroxymethyl cephalosporin of formula



(wherein R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, Z and the dotted line are as hereinbefore defined) with dichlorophosphinyl isocyanate and hydrolysing the resulting cephalosporin reaction product in at least one stage to the compound of formula (III).

(III)

4,284,768

## 1,2-DIHYDRO-4-AMINO-2-OXO-3-QUINOLINE-CARBOXYLIC ACID DERIVATIVES

Arthur A. Santilli, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.

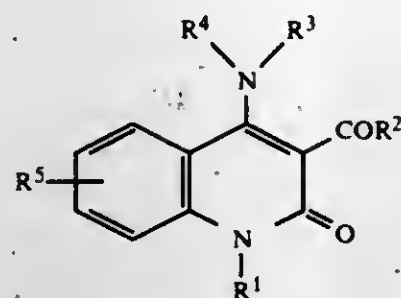
Filed Jul. 2, 1980, Ser. No. 166,273

Int. Cl.<sup>3</sup> C07D 215/54, 413/04

U.S. Cl. 544—128

11 Claims

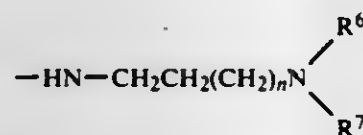
1. A compound of the formula:



in which

R<sup>1</sup> is hydrogen, alkyl of one to six carbon atoms, alkyl or propargyl;

R<sup>2</sup> is hydroxy, alkoxy of one to six carbon atoms, alkylamino of one to six carbon atoms, dialkylamine in which each alkyl group is of one to six carbon atoms or



wherein n is 0 or 1 and R<sup>6</sup> and R<sup>7</sup> are alkyl of one to three carbon atoms provided that when —COR<sup>2</sup> is an amide R<sup>3</sup> and R<sup>4</sup> are hydrogen;

R<sup>3</sup> and R<sup>4</sup> are, independently hydrogen or alkyl of one to six carbon atoms, and when taken together with the nitrogen atom to which they are attached, R<sup>3</sup> and R<sup>4</sup> form a 4-morpholinyl, 4-methyl-1-piperazinyl or 4-(2-hydroxyethyl)-1-piperazinyl substituent, and

R<sup>5</sup> is hydrogen, chlorine or bromine, or a pharmaceutically acceptable salt thereof.

4,284,769

## PREPARATION OF TRIAZINYL NITRILES

Willem J. Mijls, Rozendaal; Charles H. V. Dusseau, Heemstede, and Hermannus J. M. Sinnige, Apeldoorn, all of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 918,242, Jun. 23, 1978, abandoned, which is a division of Ser. No. 749,502, Dec. 10, 1976, Pat. No. 4,124,763. This application Aug. 1, 1979, Ser. No. 62,642

Claims priority, application Netherlands, Dec. 16, 1975, 7514613

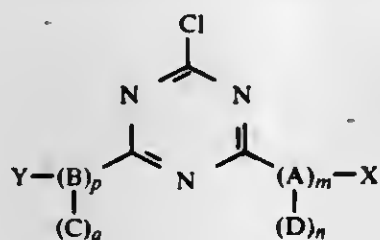
Int. Cl.<sup>3</sup> C07D 251/42, 251/48, 251/24, 251/38

U.S. Cl. 544—180

3 Claims

1. A process for the preparation of novel radical initiators comprising

(a) contacting a solution of (i) a compound of the formula



wherein

(1) m, n, p, and q independently are 0 or 1, provided if m=0, then n=0; and if p=0, then q=0;

(2) the groups Y, B and C, X, A and D, or both are capable of forming a heterocyclic ring having 2 to 5 carbon atoms;

(3) X, Y, C, and D are independently selected from the group consisting of substituted and unsubstituted alkyl groups having from 1 to about 20 carbon atoms, the substituted alkyl groups being substituted with a substituent selected from the group consisting of fluorine, chlorine, bromine, iodine, alkyl, aryl, alkoxy, alkylthio, carboxylester, cyano, hydroxyl, —NH<sub>2</sub>, —COOH, and —SO<sub>3</sub>H; alkenyl groups having from about 2 to about 20 carbon atoms, cycloalkyl groups having from 3 to 6 carbon atoms, and phenyl;

(4) if m=0, X may also be chlorine;

(5) if p=0, Y may also be chlorine;

(6) if m=1, X and D independently may also be hydrogen;

(7) if p=1, Y and C independently may also be hydrogen;

(8) if m=1, and n=1, A is nitrogen;

(9) if m=1 and n=0, A is one member selected from the group consisting of oxygen and sulfur;

(10) if p=1 and q=1, B is nitrogen;

(11) if p=1 and q=0, B is one member selected from the group consisting of oxygen and sulfur;

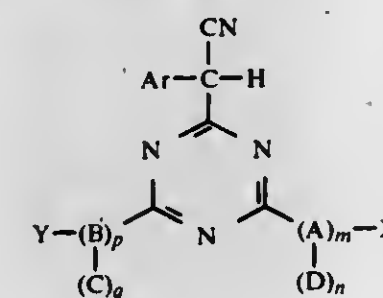
(12) and Ar is a substituted or unsubstituted aryl group having from 6 to 30 carbon atoms, the substituted aryl group being substituted with a substituent selected from the group consisting of alkyl having 1 to 4 carbon atoms, aryl, fluorine, chlorine, bromine, iodine, acyl, aroyl, carboxyl, alkoxy, aryloxy, amino, nitro, alkyl sulfonyl, aryl sulfonyl, alkyl sulfinyl, and aryl sulfinyl, with a compound of the formula Ar—CH<sub>2</sub>—CN, a quaternary ammonium compound in a water immiscible, or practically water-immiscible organic solvent, and a solution of alkali in water;

(b) allowing the reaction to go to substantial completion;

(c) acidifying the reaction mixture;

(d) isolating the organic phase;

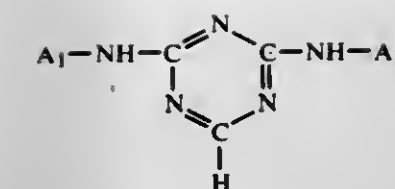
(e) washing the organic phase until neutral, to thus produce the compound



wherein the terms A, Ar, B, C, D, X, Y, m, n, p, and q have the meanings defined above;

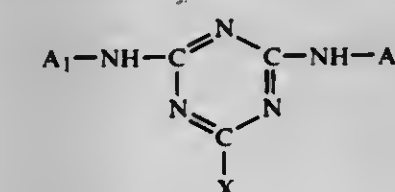
(f) oxidatively coupling the foregoing compound; and

(g) isolating the novel radical initiator.



(1)

wherein each of A<sub>1</sub> and A<sub>2</sub> independently is an anthrapyrimidine, anthrapyridone, anthrapyrimidone, azabenzanthrone, benzanthrone, anthrone, anthrimide, anthrimidecarbazole, isothiazoleanthrone, pyrazole-anthrone, pyrimidanthrone, quinoxalineanthraquinone, oxazole-anthraquinone, thiazole-anthraquinone, oxadiazole-anthraquinone, pyrazole-anthraquinone, pyrazino-anthraquinone, anthraquinone or phthaloyl-acridone radical which can carry as substituents halogen atoms, alkyl, alkoxy, aryl, aryloxy, aralkyl, aralkoxy, aralkylmercapto, arylmercapto, cyano, thiocyno, acyl, acylamino, carbalkoxy, sulfonamide and carboxamide groups, which comprises reacting compounds of the formula



(2)

wherein X is halogen and A<sub>1</sub> and A<sub>2</sub> are as defined for formula (1), in a basic medium with hydrazine, hydrazine hydrate, methyl hydrazine, ethyl hydrazine, phenyl hydrazine, hydrazinium chloride, hydrazinium dichloride, hydrazinium sulfate, hydrazinium bromide or benzenesulfonyl hydrazide.

4,284,771

## PROCESS FOR PREPARING MELAMINE

Hsuan L. Tien, Wayne, N.J., and Kenneth E. Olson, Riverside, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 8, 1980, Ser. No. 184,580

Int. Cl.<sup>3</sup> C07D 251/56

U.S. Cl. 544—200

7 Claims

1. A process for preparing melamine which consists essentially in: reacting cyanogen and ammonia at atmospheric pressure and at a temperature in the range from about 300° C. to about 600° C. in the presence of silica or alumina or silica-alumina and in the presence or absence of nitrogen.

4,284,772

## MONOCHLORO-S-TRIAZINE DERIVATIVES

Gerrit Hoentjen, Westervoort; Stephanus A. G. de Graaf, Renkum; Albert H. Bijkerk, Rheden, and Cornelis R. H. I. de Jonge, De Steeg, all of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 818,371, Jul. 25, 1977, Pat. No. 4,204,060, which is a continuation of Ser. No. 651,086, Jan. 21, 1976, abandoned. This application May 9, 1979, Ser. No. 37,568

Claims priority, application Netherlands, Oct. 4, 1975, 7511696

The portion of the term of this patent subsequent to May 30, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> C07D 251/26

U.S. Cl. 544—218

9 Claims

1. A compound of the formula

4,284,770

## PROCESS FOR THE MANUFACTURE OF VAT DYES

Athanassios Tzikas, Pratteln, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 7, 1979, Ser. No. 36,622

Claims priority, application Switzerland, May 17, 1978, 5342/78

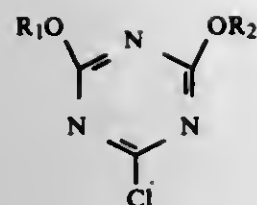
Int. Cl.<sup>3</sup> C07D 251/48, 401/12, 403/12, 413/12

U.S. Cl. 544—187

7 Claims

1. A process for the manufacture of vat dyes of the formula





wherein  $R_1$  and  $R_2$  are independently a member of the group consisting of (1) alkyl having 10 to 20 carbon atoms; (2) alkyl having 10 to 20 carbon atoms substituted with a member selected from the group consisting of alkyl having from 1 to 4 carbon atoms, alkoxy having from 1 to 8 carbon atoms, and aryl having from 6 to 9 carbon atoms; (3) alkenyl having 10 to 20 carbon atoms; and (4) furfuryl.

4,284,773

## 1,2,3,5-TETRAHYDROIMIDAZOTHIEOPYRIMIDIN-2-ONES

Fumiyoshi Ishikawa, and Shinichiro Ashida, both of Minamifunabori, Japan, assignors to Daiichi Selyaku Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1979, Ser. No. 66,113

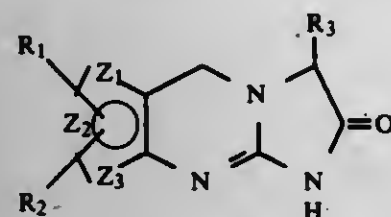
Claims priority, application Japan, Aug. 11, 1978, 53-97832

Int. Cl.<sup>3</sup> C07D 495/14; A61K 31/505

U.S. Cl. 544-247

6 Claims

1. A compound represented by the formula:



wherein one of  $Z_1, Z_2$  and  $Z_3$  is a sulfur atom and the remaining two of  $Z_1, Z_2$  and  $Z_3$  represent CH,  $R_1$  and  $R_2$  each represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, a phenyl group, or a chlorine atom or, when  $Z_1$  or  $Z_3$  is a sulfur atom,  $R_1$  and  $R_2$  taken together can represent an alkylene chain of 3 to 5 carbon atoms, and  $R_3$  represents a hydrogen atom or an alkyl group having 1 to 5 carbon atoms, and a pharmaceutically acceptable acid addition salt thereof.

4,284,774

## SULFOARYLATED NIGROSINE DYE AND USE IN JET-PRINTING INKS

Bennett G. Buell, Bridgewater, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 7, 1979, Ser. No. 92,005

Int. Cl.<sup>3</sup> C09B 57/00

U.S. Cl. 544-348

10 Claims

1. Nigrosine base aryl monosulfonate containing at least about 0.5 aryl monosulfonate groups of the structure  $-Ar-SO_3A$  wherein  $Ar$  is aryl and  $A$  is hydrogen or alkali metal per effective formula weight of nigrosine base.

4,284,775

## 1,4-DIAZABICYCLOOCTANE DI-N,N'-QUATERNIZED COMPOUNDS

George H. Tesme, North Haven, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 956,109, Oct. 30, 1978, Pat. No. 4,216,322.

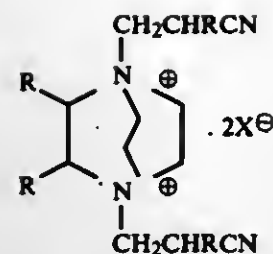
This application Feb. 4, 1980, Ser. No. 117,860

Int. Cl.<sup>3</sup> C07D 471/08

U.S. Cl. 544-351

2 Claims

1. A 1,4-diazabicyclooctane diammonium dihalide having the formula



wherein each  $R$  is independently selected from the group consisting of hydrogen, lower-alkyl, aryl, aralkyl, and cycloalkyl, and  $X$  is chlorine or bromine.

4,284,776

## RADIATION CURABLE MICHAEL ADDITION AMINE ADDUCTS OF AMIDE ACRYLATE COMPOUNDS

Gerald W. Gruber, Sewickley; Charles B. Friedlander, Glenshaw; William H. McDonald, Arnold, and Rostyslaw Dowbenko, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 9, 1977, Ser. No. 858,973

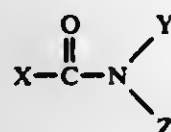
Int. Cl.<sup>3</sup> C07D 295/10, 211/08

U.S. Cl. 544-400

11 Claims

1. Radiation polymerizable acrylyloxy-containing compound comprising Michael addition adduct of

(a) amide acrylate compound of the general formula



wherein  $X, Y$  and  $Z$  may each independently be hydrogen, alkyl, aryl, acrylyloxyalkyl, acrylyloxy aliphatic ester or acrylyloxy aliphatic ether, with the proviso that  $X, Y$  and  $Z$  together have at least two acrylyloxy groups, and (b) a stoichiometrically deficient amount of at least one member selected from the group consisting of a primary amine and a secondary amine.

4,284,777

## ANTIBACTERIALS:

## 1-DIFLUOROMETHYL-6,7-METHYLENEDIOXY-1,4-DIHYDRO-4-OXO-3-QUINOLINECARBOXYLIC ACID AND ITS ESTERS

Kyu T. Lee, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 972,959, Dec. 26, 1978, Pat. No. 4,216,324,

which is a division of Ser. No. 758,331, Jan. 14, 1977, Pat. No.

4,147,788, which is a continuation-in-part of Ser. No. 660,852,

Feb. 23, 1976, abandoned. This application Feb. 14, 1980, Ser.

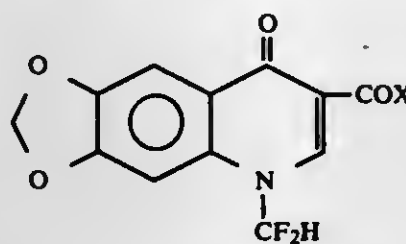
No. 121,487

Int. Cl.<sup>3</sup> C07D 491/14

U.S. Cl. 546-90

3 Claims

1. A process for preparing a compound of the formula:



wherein  $X = -OCH_3, -OCH_2H_5, -OC_3H_7$  or  $-Cl$ , which comprises contacting a compound of the formula:

4,284,780

## AMINO ACID DERIVATIVES

Miguel A. Ondetti, Princeton, and Michael E. Condon, Lawrenceville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 759,685, Jan. 17, 1977, Pat. No. 4,113,715.

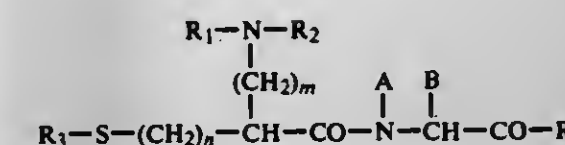
This application May 1, 1978, Ser. No. 901,372

Int. Cl.<sup>3</sup> C07D 211/60

U.S. Cl. 546-189

4 Claims

1. A compound of the formula



where

$R_3 = CH_3, C_2H_5$ , or  $C_3H_7$ ; with the radical  $-CF_2$  in an aprotic solvent; then optionally hydrolyzing in dilute acid and contacting with  $PCl_5$ .

4,284,778

## NITROGEN-CONTAINING HETEROCYCLIC RING DERIVATIVES

Kazuo Kubo, Urawa; Noriki Ito, Iwatsuki; Isao Souzu, Urawa; Yasuo Isomura, Yokohama; Hiroshige Homma, Omiya, and Masuo Murakami, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 876,517, Feb. 9, 1978, Pat. No. 4,186,200,

which is a continuation-in-part of Ser. No. 814,323, Jul. 11, 1977,

abandoned. This application Aug. 20, 1979, Ser. No. 68,172

Claims priority, application Japan, Jul. 22, 1976, 51/87486;

Dec. 29, 1976, 51/158228; Mar. 31, 1977, 52/36384; Apr. 13,

1977, 52/42423; May 1, 1977, 52/464

Int. Cl.<sup>3</sup> C07D 498/04

U.S. Cl. 546-115

2 Claims

1. 5-Oxo-7-phenyl-2,3-dihydro-5H-oxazolo[3,2-a]pyridine.

2. 6-Oxo-8-phenyl-3,4-dihydro-2H,6H-pyrido[2,1-b][1,3]oxazine.

4,284,779

## AMINO ACID DERIVATIVES

Miguel A. Ondetti, Princeton, and Michael E. Condon, Lawrenceville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 759,685, Jan. 17, 1977, Pat. No. 4,113,715.

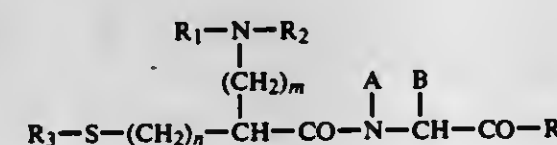
This application Oct. 31, 1977, Ser. No. 846,734

Int. Cl.<sup>3</sup> C07D 211/60

U.S. Cl. 546-189

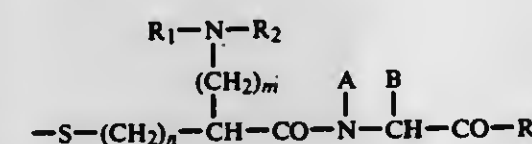
10 Claims

1. A compound of the formula



and salts thereof,

wherein

 $R$  is hydroxy or lower alkoxy $R_1$  is hydrogen, lower alkanoyl or amino(imino)methyl; $R_2$  is hydrogen, lower alkyl or phenyl-lower alkylene; $R_3$  is hydrogen, lower alkanoyl, benzoyl or

A and B together form a  $(CH_2)_p$  bridge which completes an unsubstituted ring of 6 atoms with the nitrogen and carbon to which they are joined or said ring substituted with a hydroxy group;

 $m$  is 1,2,3 or 4; $n$  is 0 or 1; and $p$  is 4.

4,284,781

## SUPPORTED VANADIA CATALYST AND USE THEREOF FOR NITRILE PRODUCTION

Morgan C. Sze, Upper Montclair, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Division of Ser. No. 819,771, Jul. 28, 1977, Pat. No. 4,092,271,

which is a continuation-in-part of Ser. No. 727,060, Sep. 27,

1976, abandoned. This application Mar. 2, 1978, Ser. No.

882,667

Int. Cl.<sup>2</sup> C07D 213/57; C07C 120/14

U.S. Cl. 546-286

24 Claims

1. In a process for producing a nitrile by the catalytic ammoxidation of a compound containing at least one alkyl group convertible to a nitrile group by reaction with ammonia in the presence or absence of gaseous oxygen, the improvement comprising:

effecting said ammoxidation with a catalyst comprising vanadia supported on a porous support in an amount to provide a vanadia to support weight ratio ranging from about 0.3:1 to about 3:1 substantially entirely within the pores of the support, said vanadia having been placed in molten form substantially within the pores of a support having a surface area greater than about 50 m<sup>2</sup> per gram, a porosity greater than about 0.4 cc per gram, said catalyst containing an alkali metal in an amount to provide a vanadia metal to alkali metal mole ratio of from 2:1 to 30:1.



4,284,782

## PROCESS FOR THE MANUFACTURE OF 6-HYDROXYPYRID-2-ONES

Frank Schmidt, Bruchköbel, Fed. Rep. of Germany, assignor to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany  
Filed Sep. 17, 1979, Ser. No. 76,237

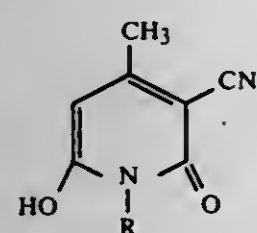
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845863

Int. Cl.<sup>3</sup> C07D 239/22

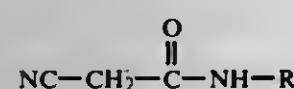
U.S. Cl. 546—288

8 Claims

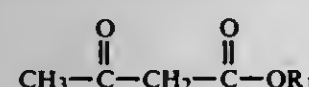
1. In the process for the manufacture of 6-hydroxypyrid-2-ones of the formula



wherein R is hydrogen or alkyl having 1 to 4 carbon atoms comprising reacting a cyanoacetamide of the formula



with an acetoacetic acid ester of the formula



wherein R<sub>1</sub> is selected from the group consisting of alkyl having 1 to 8 carbon atoms, alkenyl having 1 to 8 carbon atoms, cycloalkyl having 3 to 6 carbon atoms and cycloalkenyl having 3 to 6 carbon atoms, at elevated temperatures in an aqueous solution or suspension in the presence of a basic compound in a molar amount at least equal to that of said cyanoacetamide, the improvement comprises said basic compound being an amine of the formula RNH<sub>2</sub> with R being the identical to the pyridone nitrogen substituent, and the reaction is carried out at temperatures from 50° to 200° C. at superatmospheric pressure of 0.5 to 50 bars.

4,284,783

## LIQUID PHASE PREPARATION OF 2-CHLORO-5-TRIFLUOROMETHYLPYRIDINE AND 2-CHLORO-5-PERCHLOROFLUOROMETHYLPYRIDINE

Graham Whittaker, and Anne O'Brien, both of Frodsham, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 95,679, Nov. 19, 1979, Pat. No. 4,257,857. This application Sep. 25, 1980, Ser. No. 190,629

Claims priority, application United Kingdom, Jan. 22, 1979, 2196/79

Int. Cl.<sup>3</sup> C07D 213/26

U.S. Cl. 546—345

12 Claims

1. A process for the selective preparation of 2-chloro-5-trifluoromethylpyridine or a 2-chloro-5-perchlorofluoromethylpyridine which comprises chlorinating 3-trifluoromethylpyridine or a 3-perchlorofluoromethylpyridine respectively in the liquid phase by contacting the 3-trifluoromethylpyridine or a 3-perchlorofluoromethylpyridine respectively with chlorine in the presence of a peroxy or azonitrile free-radical initiator which is effective for said chlorination and recovering the desired product from the reaction mixture.

4,284,784

## PROCESS FOR THE PREPARATION OF 4-METHYLTHIAZOLE

Sa V. Ho, St. Louis, Mo., assignor to Merck & Co., Inc., Rahway, N.J.

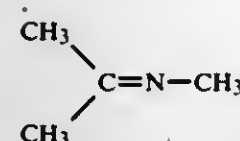
Filed May 22, 1980, Ser. No. 152,282

Int. Cl.<sup>3</sup> C07D 277/20

U.S. Cl. 548—202

16 Claims

1. A process for the preparation of 4-methylthiazole which comprises reacting an imine having the formula:



with sulfur dioxide in the presence of a catalyst consisting of a mixture of oxides of iron and one or two of the oxides of metals selected from alkaline earth metals, transition metals, and the Group IIIa and IVa metals of the periodic table.

4,284,785

## SUBSTITUTED PHENYL ESTERS OF ISOXAZOLECARBOXYLIC ACIDS

John W. Haniffin, Jr., Suffern, and David N. Ridge, Upper Grandview, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 19, 1979, Ser. No. 105,168

Int. Cl.<sup>3</sup> C07D 261/12; A61K 31/42

U.S. Cl. 548—248

34 Claims

1. 5-Methyl-4-isoxazolecarboxylic acid, o-methoxyphenyl ester.  
24. 5-Methyl-4-isoxazolecarboxylic acid, m-bromophenyl ester.

4,284,786

## 5-METHYLISOXAZOLE-4-CARBOXYLIC-(4-TRIFLUOROMETHYL)-ANILIDE

Friedrich-Johannes Kümmerer, Hochheim am Main, and Rudolf Schleyerbach, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 13, 1979, Ser. No. 103,551

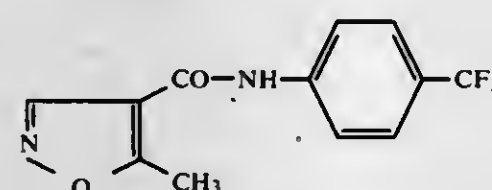
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854439

Int. Cl.<sup>3</sup> C07D 261/12; A61K 31/42

U.S. Cl. 548—248

1 Claim

1. 5-Methylisoxazole-4-carboxylic acid-4-trifluoromethyl-anilide of the formula



(i)

4,284,787

## PROCESS FOR THE PREPARATION OF 1,2,3-TRIAZOLES SUBSTITUTED IN THE 2-POSITION

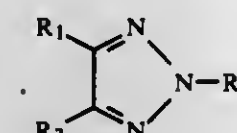
Hans Knupfer, and Carl-Wolfgang Schellhammer, both of Bergisch-Gladbach, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,049

U.S. Cl. 548—256

4 Claims

1. A process for the preparation of a compound of the formula

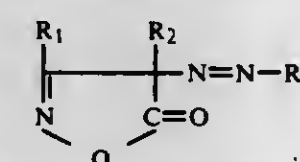


wherein

R<sub>1</sub> and R<sub>2</sub> each independently is C<sub>1</sub>-C<sub>18</sub>-alkyl; C<sub>1</sub>-C<sub>18</sub>-alkyl substituted by —OH, halogen, amino, C<sub>1</sub>-C<sub>4</sub>-alkoxy, cyano, carboxyl, carbalkoxy, carbamoyl; alkylsulphonyl or arylsulphonyl or sulphonamoyl; cyclohexyl; cyclopentyl; vinyl; allyl; propenyl; phenyl; phenyl substituted by halogen, alkyl, alkoxy, nitro, cyano, phenyl, carboxyl, sulphonyl, carbalkoxy, carbamoyl, sulphonamoyl, sulphonic acid esters, alkylcarbonyl or arylcarbonyl; naphthyl; pyridyl; thienyl; or benzyl radicals or phenylethyl radicals, or

R<sub>1</sub> and R<sub>2</sub>, together with the triazole ring carbon atoms to which they are bonded, can also form 5-membered or 6-membered carbocyclic ring, and

R<sub>3</sub> is phenyl; naphthyl; pyridyl or coumarin-7-yl optionally substituted by phenyl, by naphthyl, by alkoxycarbonyl or by 1,2,4-triazol-1-yl, 1,2,3-triazol-1-yl or 1,2,3-triazol-2-yl, it being possible for the triazolyl radicals to carry 5-alkyl-, aryl- and aralkylsubstituents, it also being possible for the radicals in the 4-position and 5-position to form, together, the remaining members of a fused-on benzene ring or naphthalene ring; pyrazolyl; pyrazolyl substituted by halogen, alkyl, aryl and aralkyl; thien-2-yl; carbostyryl-7-yl; 2-styrylbenzotriazol-5-yl; 5-phenyl-1,2,4-thiadiazolyl; 2-methyl or styryl-benzoxazol-5-yl or -6-yl and 2-methyl or styryl-benzthiazol-5-yl or -6-yl, comprising contacting a compound of the formula



with a basic compound at a temperature between about 20° and 150° C.

4,284,788

IMIDAZOLIDONE INTERMEDIATES OF BIOTIN  
Kraft Hohenlohe-Oehringen, Inasbruck, Austria, and Anton Fliri, Cambridge, Mass., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 31, 1980, Ser. No. 135,796

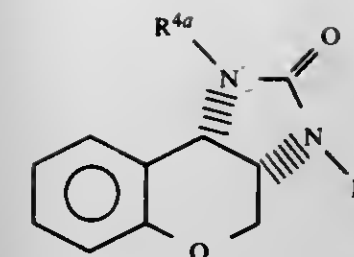
Claims priority, application Switzerland, Apr. 6, 1979, 3293/79

Int. Cl.<sup>3</sup> C07D 491/052, 491/044

U.S. Cl. 548—303

11 Claims

1. A compound of the formula:



1a

wherein R<sup>4a</sup> is azidosulphonyl.

4,284,789

## THIO-INDIGO DYESTUFFS

Ernst Spietschka, Idstein, and Manfred Urban, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany  
Division of Ser. No. 959,446, Nov. 13, 1978, Pat. No. 4,229,583, which is a continuation-in-part of Ser. No. 655,102, Feb. 4, 1976, abandoned. This application May 9, 1980, Ser. No. 148,218  
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1975, 2504935

Int. Cl.<sup>3</sup> C09B 7/00

U.S. Cl. 549—52

2 Claims

1. A thioindigo dyestuff prepared by oxidizing, at a temperature of —20° to +50° C., a 3-hydroxy-thionaphthene or benzothionaphthene with an aqueous alkaline solution of an ammonium or alkali metal peroxo-disulfate.

4,284,790

## 3-HYDROXYBENZYL COMPOUNDS USEFUL AS ANTIOXIDANTS

Hans Hinsken, Lörrach, Fed. Rep. of Germany; Horst Mayerhofer, Oberwil, and Wolfgang Mueller, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland  
Filed Jan. 23, 1979, Ser. No. 5,758

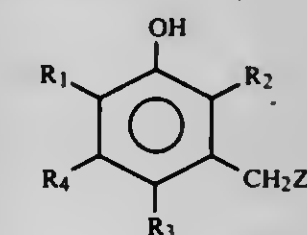
Claims priority, application Switzerland, Jan. 27, 1978, 926/78; Feb. 2, 1978, 1137/78

Int. Cl.<sup>3</sup> C07C 149/40, 149/41; C08K 5/13, 5/37

U.S. Cl. 560—15

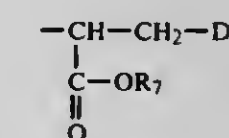
6 Claims

1. A compound of the formula



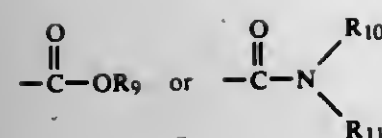
wherein

R<sub>1</sub> is C<sub>1-18</sub> alkyl, C<sub>5-8</sub> cycloalkyl, C<sub>1-5</sub> alkyl-C<sub>5-8</sub> cycloalkyl having an aggregate of carbon atoms not exceeding 10, or unsubstituted phenyl, and  
R<sub>4</sub> is hydrogen or C<sub>1-4</sub> alkyl; or  
R<sub>1</sub> and R<sub>4</sub> together form —CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>—; each of R<sub>2</sub> and R<sub>3</sub>, independently, is C<sub>1-4</sub> alkyl or cyclohexyl, with the proviso that both R<sub>2</sub> and R<sub>3</sub> cannot be cyclohexyl; and Z is a group —XR<sub>5</sub> where X is oxygen or sulphur, and R<sub>5</sub> is a group



where D is





each of R<sub>7</sub> and R<sub>9</sub>, independently, is C<sub>1-18</sub> alkyl, C<sub>5-8</sub> cycloalkyl, phenyl-C<sub>1-4</sub> alkyl, unsubstituted phenyl, phenyl monosubstituted by C<sub>1-4</sub> alkyl or phenyl disubstituted by C<sub>1-4</sub> alkyl, R<sub>10</sub> is hydrogen, C<sub>1-18</sub> alkyl, C<sub>5-8</sub> cycloalkyl, benzyl, unsubstituted phenyl, phenyl monosubstituted by C<sub>1-4</sub> alkyl or phenyl disubstituted by C<sub>1-4</sub> alkyl, and R<sub>11</sub> is C<sub>1-8</sub> alkyl or phenyl.

**4,284,791**  
**COMBATING FUNGI WITH**  
**N-CHLOROACETYL-N-(2,6-DI-SUBSTITUTED**  
**PHENYL)-ALANINE ESTERS**

Winfried Lunkenheimer, Wuppertal; Wilhelm Brandes, and Peter Kraus, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

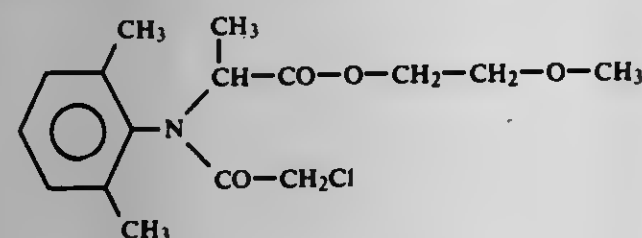
Filed Oct. 5, 1977, Ser. No. 839,716

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 2648074

Int. Cl.<sup>3</sup> C07C 101/44; A61K 31/215

U.S. Cl. 560—43

1. N-chloroacetyl-N-(2,6-dimethylphenyl)-alanine methoxyethyl ester of the formula



**4,284,792**  
**19-HYDROXY-19-METHYL-INTER-PHENYLENE-PG<sub>1</sub>**  
**COMPOUNDS**

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

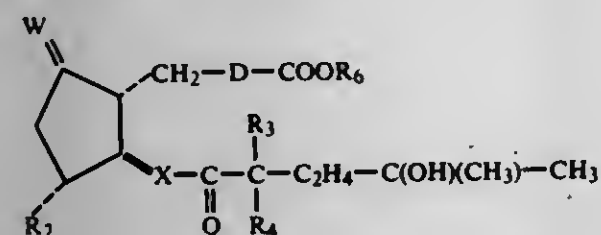
Division of Ser. No. 25,878, Apr. 2, 1979, Pat. No. 4,228,104.

This application Mar. 24, 1980, Ser. No. 133,200

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 560—55

1. A compound of the formula



wherein D is

- (1) —(m-Ph)—(CH<sub>2</sub>)<sub>2</sub>—, or
- (2) —(m-Ph)—O—CH<sub>2</sub>—,

wherein —(m-Ph)— is inter-meta-phenylene, and wherein Q is α-OH:β-R<sub>5</sub> or α-R<sub>5</sub>:β-OH, wherein R<sub>5</sub> is hydrogen or methyl;

wherein R<sub>6</sub> is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p-Ph)—CO—CH<sub>3</sub>,

(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH<sub>3</sub>,

(i) —(p-Ph)—NH—CO—(p-Ph)—,

(j) —(p-Ph)—NH—CO—CH<sub>3</sub>,

(k) —(p-Ph)—NH—CO—NH<sub>2</sub>,

(l) —(p-Ph)—CH=N—NH—CO—NH<sub>2</sub>,

(m) β-naphthyl,

(n) —CH<sub>2</sub>—CO—R<sub>28</sub>,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R<sub>28</sub> is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R<sub>2</sub> is hydrogen, hydroxyl, or hydroxymethyl;

wherein R<sub>3</sub> and R<sub>4</sub> are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is fluoro only when the other is hydrogen or fluoro;

wherein W is oxo, methylene, α-OH:β-H, or α-H:β-OH; and

wherein X is cis- or trans-CH=CH— or —C=C—.

**4,284,793**  
**METHOD FOR PRODUCING PLASTICIZERS**

Fumio Sagara; Hiroshi Kawabata, and Kiyosori Shiba, all of Ichiharashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 924,728, Jul. 14, 1978,

abandoned. This application Mar. 25, 1980, Ser. No. 133,863

Claims priority, application Japan, Nov. 30, 1977, 52/143368

Int. Cl.<sup>3</sup> C07C 67/48, 67/08

U.S. Cl. 560—78

5 Claims

1. In a method for producing dialkyl phthalate plasticizer by esterification in the presence of a tetraalkyl titanate, followed by treatment of the resulting ester with adsorbent(s) and filtration,

the improvement which comprises:

- (1) reacting phthalic anhydride with an alkanol having 4-18 carbon atoms at a temperature of 150° C.-250° C., for 3-6 hours, in the presence of a tetraalkyl titanate or its polymer to obtain a dialkyl phthalate having an acid value of 0.1 or lower and distilling off the remaining unreacted alkanol from the resulting phthalate at a high temperature and under a reduced pressure;
- (2) subjecting the dialkyl phthalate obtained from the step (1), without the conventional treatment of blowing steam into said dialkyl phthalate after said distilling off, to a contact treatment with a solid alkali selected from the group consisting of sodium carbonate, sodium bicarbonate, calcium carbonate, barium carbonate, sodium hydroxide and potassium hydroxide, in the absence of water, at a temperature of 100° C. to 200° C.;
- (3) treating the resulting liquid obtained in said contact treatment, with adsorbent(s); and
- (4) separating the dialkyl phthalate from the resulting material by filtration.

**4,284,794**  
**PROSTAGLANDIN DERIVATIVES**

Paul A. Grieco, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Filed Dec. 16, 1976, Ser. No. 750,956

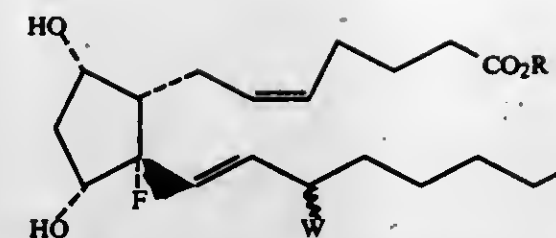
Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 560—121

12 Claims

1. An optically active compound of the formula:

wherein Q is



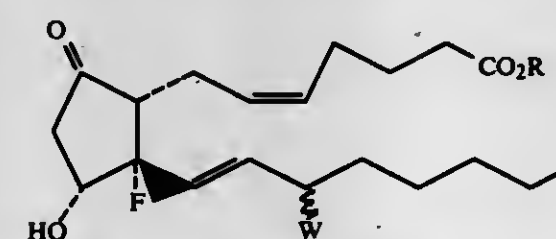
or a racemic compound of that formula and the mirror image thereof wherein R is H or CH<sub>3</sub> and W is



or



7. An optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof wherein R is H or CH<sub>3</sub> and W is



or



**4,284,795**  
**19,20-DIDEHYDRO-PG<sub>2</sub> COMPOUNDS**

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

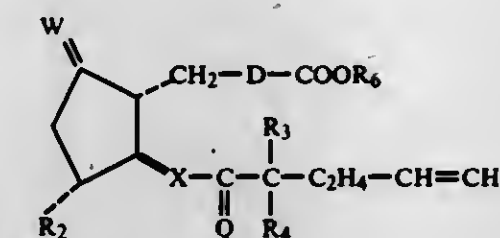
Division of Ser. No. 26,066, Apr. 2, 1979, Pat. No. 4,243,611.

This application Oct. 17, 1979, Ser. No. 85,620

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 560—121

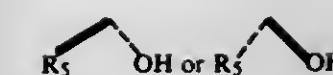
1. A compound of the formula



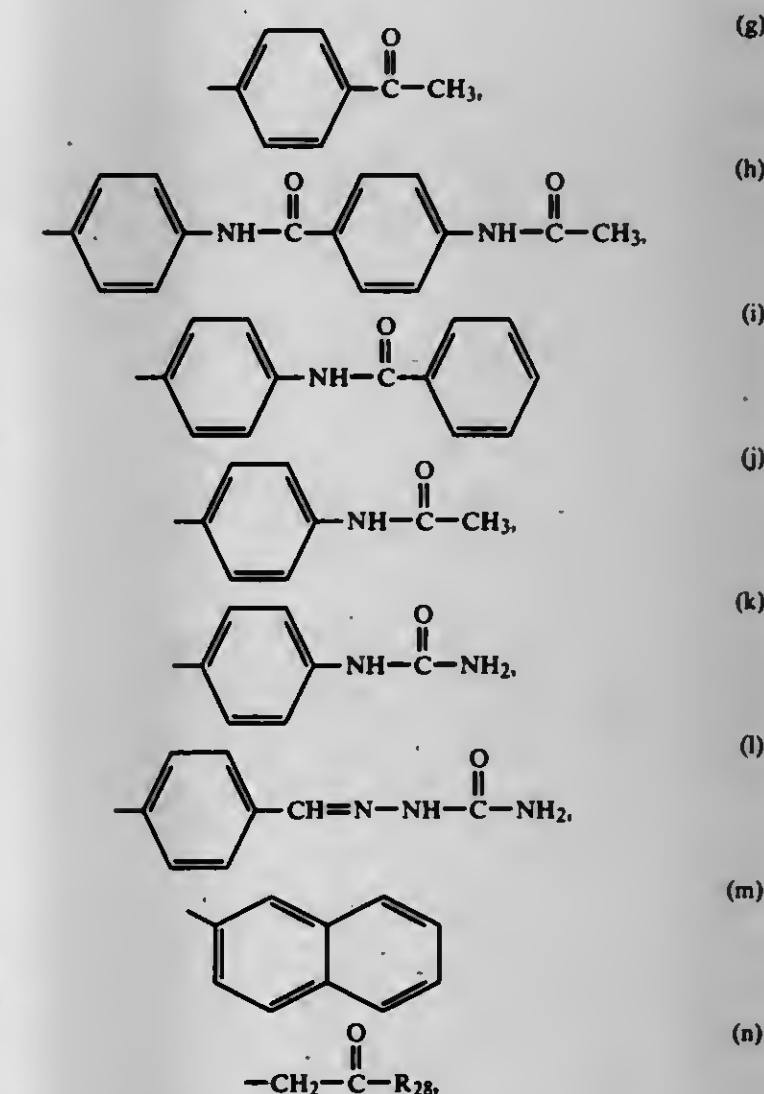
wherein D is

- (1) cis-CH=CH—CH<sub>2</sub>—(CH<sub>2</sub>)<sub>g</sub>—CH<sub>2</sub>—,
- (2) cis-CH=CH—CH<sub>2</sub>—(CH<sub>2</sub>)<sub>g</sub>—CF<sub>2</sub>—,
- (3) cis-CH<sub>2</sub>—CH=CH—CH<sub>2</sub>—CH<sub>2</sub>—,
- (4) trans-(CH<sub>2</sub>)<sub>3</sub>—CH=CH—,

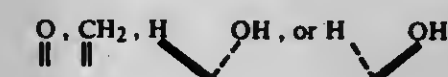
wherein g is zero, one, 2, or 3;



wherein R<sub>5</sub> is hydrogen or methyl, wherein R<sub>6</sub> is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive, (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive, (e) phenyl, (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;



3 Claims wherein R<sub>28</sub> is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or (o) a pharmacologically acceptable cation; wherein R<sub>2</sub> is hydrogen, hydroxyl, or hydroxymethyl; wherein R<sub>3</sub> and R<sub>4</sub> are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is fluoro only when the other is hydrogen or fluoro; wherein W is



and wherein X is cis- or trans-CH=CH— or —C=C—.



4,284,796

## PREPARATION OF

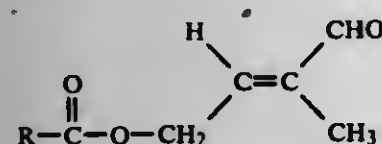
## 4-ACYLOXY-2-METHYL-CROTONALDEHYDES

Rolf Fischer, Heidelberg, and Hans-Martin Weitz, Bad Dürkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany  
Filed Sep. 25, 1979, Ser. No. 78,722

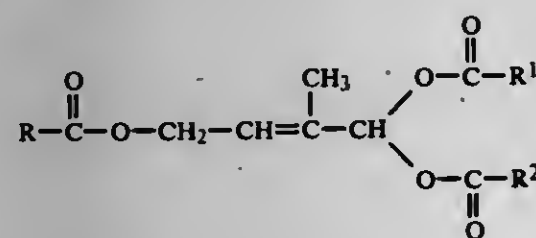
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1978, 2844949

Int. Cl.<sup>3</sup> C07C 67/29, 67/297, 69/025, 69/145, 69/24  
U.S. Cl. 560-262 5 Claims

1. A process for the preparation of a 4-acyloxy-2-methylcrotonaldehyde of the formula



where R is hydrogen or an aliphatic radical of 1 to 5 carbon atoms, wherein a 1,1,4-triacyloxy-2-methyl-but-2-ene of the formula



where R, R<sup>1</sup> and R<sup>2</sup> are each hydrogen or an aliphatic radical of 1 to 5 carbon atoms, is reacted with water at a temperature of from 0°-200° C. in the presence of from 0.1 to 50 moles per mole of II of a carboxylic acid of the formula



where R has the above meanings.

4,284,797

## PROCESS FOR SEPARATING MIXTURES OF 3- AND 4-NITROPHthalic ACID

Peter Furrer, Bottmingen, and Harry Beyeler, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 31, 1979, Ser. No. 44,122

Claims priority, application Switzerland, Jun. 5, 1978, 6135/78

Int. Cl.<sup>3</sup> C07C 79/46

U.S. Cl. 562-434 9 Claims

1. A process for separating mixtures of 3- and 4-nitrophthalic acid, which process comprises treating a mixture of 3- and 4-nitrophthalic acid, which mixture is free from inorganic acid residues, in an aqueous-organic medium containing 1-20 percent by volume of water, at a temperature of between 20° and 100° C., stepwise with a base capable of forming salts of 3- and 4-nitrophthalic acid, which salts are essentially insoluble in the reaction medium, the treatment being carried out by adding base until a pH value of about 2.8 is obtained, separating the precipitating product consisting mainly of a 3-nitrophthalic acid mono-salt, subsequently precipitating, by the addition of further base, a product consisting principally of a 4-nitrophthalic acid salt, and finally converting the resulting nitrophthalic acid salts separately into the corresponding free acids.

4,284,798

13,14-DIDEHYDRO-INTER-OXA-11-HYDROXYMETHYL-19-OXO-PGF<sub>1</sub> COMPOUNDS

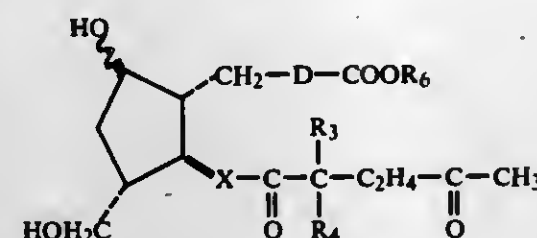
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,031

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula



wherein D is

- (1) (CH<sub>2</sub>)<sub>3</sub>-O-CH<sub>2</sub>-
- (2) (CH<sub>2</sub>)<sub>2</sub>-O-(CH<sub>2</sub>)<sub>2</sub>-
- (3) -CH<sub>2</sub>-O-(CH<sub>2</sub>)<sub>3</sub>-

wherein Q is α-OH:β-R<sub>5</sub> or α-R<sub>5</sub>:β-OH, wherein R<sub>5</sub> is hydrogen or methyl;

wherein R<sub>6</sub> is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,
- (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
- (g) -(p-Ph)-CO-CH<sub>3</sub>,
- (h) -(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH<sub>3</sub>,
- (i) -(p-Ph)-NH-CO-(p-Ph),
- (j) -(p-Ph)-NH-CO-CH<sub>3</sub>,
- (k) -(p-Ph)-NH-CO-NH<sub>2</sub>,
- (l) -(p-Ph)-CH=N-NH-CO-NH<sub>2</sub>,
- (m) β-naphthyl,
- (n) -CH<sub>2</sub>-CO-R<sub>28</sub>,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R<sub>28</sub> is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein R<sub>3</sub> and R<sub>4</sub> are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is fluoro only when the other is hydrogen or fluoro; and wherein X is -C=C-

4,284,799

13,14-DIHYDRO-19-OXO-PGF<sub>2</sub> ANALOGS

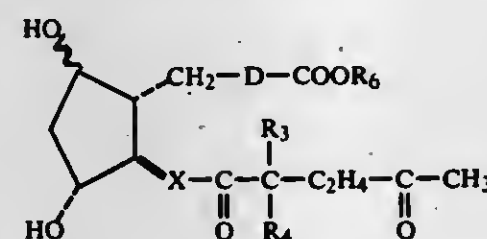
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,984

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula



wherein D is

- (1) cis-CH=CH-CH<sub>2</sub>-(CH<sub>2</sub>)<sub>g</sub>-CF<sub>2</sub>-

- (2) cis-CH<sub>2</sub>-CH=CH-CH<sub>2</sub>-CH<sub>2</sub>-, or
  - (3) trans-(CH<sub>2</sub>)<sub>3</sub>-CH=CH-;
- wherein g is zero, one, two, or three;  
wherein Q is α-OH:β-R<sub>5</sub> or α-R<sub>5</sub>:β-OH, wherein R<sub>5</sub> is hydrogen or methyl;  
wherein R<sub>6</sub> is
- (a) hydrogen,
  - (b) alkyl of one to 12 carbon atoms, inclusive,
  - (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
  - (d) aralkyl of 7 to 12 carbon atoms, inclusive,
  - (e) phenyl,
  - (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
  - (g) -(p-Ph)-CO-CH<sub>3</sub>,
  - (h) -(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH<sub>3</sub>,
  - (i) -(p-Ph)-NH-CO-(p-Ph),
  - (j) -(p-Ph)-NH-CO-CH<sub>3</sub>,
  - (k) -(p-Ph)-NH-CO-NH<sub>2</sub>,
  - (l) -(p-Ph)-CH=N-NH-CO-NH<sub>2</sub>,
  - (m) β-naphthyl,
  - (n) -CH<sub>2</sub>-CO-R<sub>28</sub>,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R<sub>28</sub> is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein R<sub>3</sub> and R<sub>4</sub> are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is fluoro only when the other is hydrogen or fluoro; and wherein X is -CH<sub>2</sub>CH<sub>2</sub>-.

4,284,800

13,14-DIHYDRO-19-OXO-PGE<sub>1</sub> ANALOGS

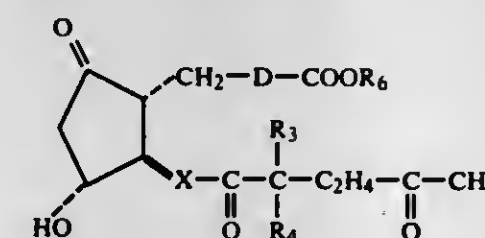
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,063

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula



wherein D is

- (1) (CH<sub>2</sub>)<sub>3</sub>-(CH<sub>2</sub>)<sub>g</sub>-CF<sub>2</sub>-;
- wherein g is zero, one, two, or three;  
wherein Q is α-OH:β-R<sub>5</sub> or α-R<sub>5</sub>:β-OH, wherein R<sub>5</sub> is hydrogen or methyl;  
wherein R<sub>6</sub> is
- (a) hydrogen,
  - (b) alkyl of one to 12 carbon atoms, inclusive,
  - (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
  - (d) aralkyl of 7 to 12 carbon atoms, inclusive,
  - (e) phenyl,
  - (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
  - (g) -(p-Ph)-CO-CH<sub>3</sub>,
  - (h) -(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH<sub>3</sub>,
  - (i) -(p-Ph)-NH-CO-(p-Ph),
  - (j) -(p-Ph)-NH-CO-CH<sub>3</sub>,
  - (k) -(p-Ph)-NH-CO-NH<sub>2</sub>,
  - (l) -(p-Ph)-CH=N-NH-CO-NH<sub>2</sub>,
  - (m) β-naphthyl,
  - (n) -CH<sub>2</sub>-CO-R<sub>28</sub>,

wherein (p-Ph) is para-phenyl or inter-para-phenylene;

wherein R<sub>28</sub> is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein R<sub>3</sub> and R<sub>4</sub> are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is fluoro only when the other is hydrogen or fluoro; and wherein X is -CH<sub>2</sub>CH<sub>2</sub>-.

4,284,801

13,14-DIHYDRO-19-OXO-PGF<sub>1</sub> ANALOGS

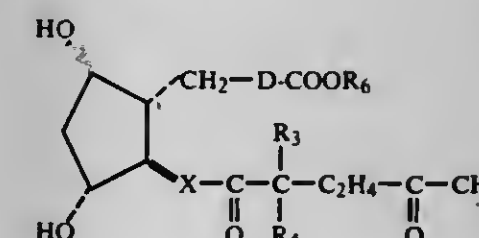
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,062

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula



wherein D is (CH<sub>2</sub>)<sub>3</sub>-(CH<sub>2</sub>)<sub>g</sub>-CF<sub>2</sub>-;

wherein g is zero, one, two, or three;  
wherein Q is α-OH:β-R<sub>5</sub> or α-R<sub>5</sub>:β-OH, wherein R<sub>5</sub> is hydrogen or methyl;  
wherein R<sub>6</sub> is

- (a) hydrogen,
  - (b) alkyl of one to 12 carbon atoms, inclusive,
  - (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
  - (d) aralkyl of 7 to 12 carbon atoms, inclusive,
  - (e) phenyl,
  - (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
  - (g) -(p-Ph)-CO-CH<sub>3</sub>,
  - (h) -(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH<sub>3</sub>,
  - (i) -(p-Ph)-NH-CO-(p-Ph),
  - (j) -(p-Ph)-NH-CO-CH<sub>3</sub>,
  - (k) -(p-Ph)-NH-CO-NH<sub>2</sub>,
  - (l) -(p-Ph)-CH=N-NH-CO-NH<sub>2</sub>,
  - (m) β-naphthyl,
  - (n) -CH<sub>2</sub>-CO-R<sub>28</sub>,
- wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R<sub>28</sub> is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
- (o) a pharmacologically acceptable cation; wherein R<sub>3</sub> and R<sub>4</sub> are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is fluoro only when the other is hydrogen or fluoro; and wherein X is -CH<sub>2</sub>CH<sub>2</sub>-.

4,284,802

13,14-DIHYDRO-INTER-OXA-19-OXO-PGF<sub>1</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,732

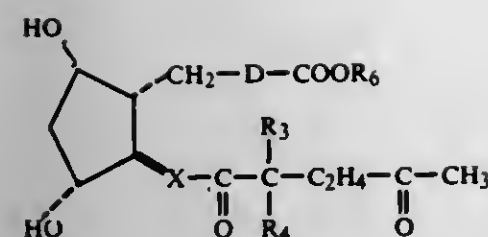
Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula

4 Claims





wherein

D is

- (1)  $(CH_2)_3-O-CH_2-$ ,
- (2)  $(CH_2)_2-O-(CH_2)CH_2-$ , or
- (3)  $-CH_2-O-(CH_2)_3-$ ,

wherein

Q is  $\alpha-OH:\beta-R_5$  or  $\alpha-R_5:\beta-OH$ , wherein  $R_5$  is hydrogen or methyl;

wherein

$R_6$  is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,
- (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
- (g)  $-(p-Ph)-CO-CH_3$ ,
- (h)  $-(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH_3$ ,
- (i)  $-(p-Ph)-NH-CO-(p-Ph)-$ ,
- (j)  $-(p-Ph)-NH-CO-CH_3$ ,
- (k)  $-(p-Ph)-NH-CO-NH_2$ ,
- (l)  $-(p-Ph)-CH=N-NH-CO-NH_2$ ,
- (m)  $\beta$ -naphthyl,
- (n)  $-CH_2-CO-R_{28}$ ,

wherein (p-Ph) is para-phenyl or inter-para-phenylene,

wherein  $R_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein  $R_3$  and  $R_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $R_3$  and  $R_4$  is fluoro only when the other is hydrogen or fluoro; and wherein X is  $-CH_2CH_2-$ .

4,284,803

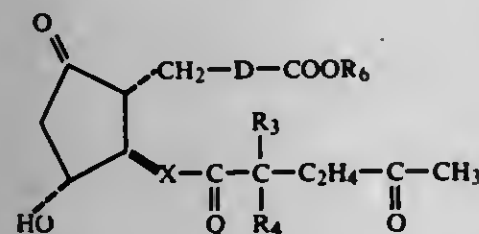
### 13,14-DIHYDRO-INTER-OXA-19-OXO-PGE<sub>1</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,731  
Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula



wherein D is

- (1)  $(CH_2)_3-O-CH_2-$ ,
- (2)  $(CH_2)_2-O-(CH_2)CH_2-$ , or
- (3)  $-CH_2-O-(CH_2)_3-$ ,

wherein Q is  $\alpha-OH:\beta-R_5$  or  $\alpha-R_5:\beta-OH$ , wherein  $R_5$  is hydrogen or methyl;

wherein  $R_6$  is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,
- (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
- (g)  $-(p-Ph)-CO-CH_3$ ,
- (h)  $-(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH_3$ ,
- (i)  $-(p-Ph)-NH-CO-(p-Ph)-$ ,
- (j)  $-(p-Ph)-NH-CO-CH_3$ ,
- (k)  $-(p-Ph)-NH-CO-NH_2$ ,
- (l)  $-(p-Ph)-CH=N-NH-CO-NH_2$ ,
- (m)  $\beta$ -naphthyl,
- (n)  $-CH_2-CO-R_{28}$ ,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein  $R_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein  $R_3$  and  $R_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $R_3$  and  $R_4$  is fluoro only when the other is hydrogen or fluoro; and wherein X is  $-CH_2CH_2-$ .

4,284,804

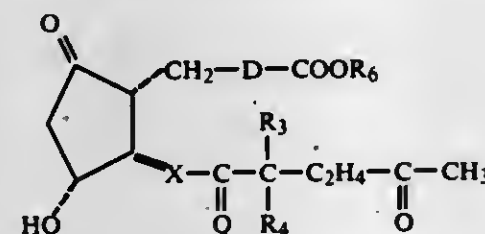
### 13,14-DIHYDRO-19-OXO-PGE<sub>2</sub> ANALOGS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,985  
Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula



wherein D is

- (1)  $cis-CH=CH-CH_2-(CH_2)_g-CF_2-$ ,
- (2)  $cis-CH_2-CH=CH-CH_2-CH_2-$ , or
- (3)  $trans-(CH_2)_3-CH=CH-$ ,

wherein g is zero, one, two, or three;

wherein Q is  $\alpha-OH:\beta-R_5$  or  $\alpha-R_5:\beta-OH$ , wherein  $R_5$  is hydrogen or methyl;

wherein  $R_6$  is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,
- (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
- (g)  $-(p-Ph)-CO-CH_3$ ,
- (h)  $-(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH_3$ ,
- (i)  $-(p-Ph)-NH-CO-(p-Ph)-$ ,
- (j)  $-(p-Ph)-NH-CO-CH_3$ ,
- (k)  $-(p-Ph)-NH-CO-NH_2$ ,
- (l)  $-(p-Ph)-CH=N-NH-CO-NH_2$ ,
- (m)  $\beta$ -naphthyl,
- (n)  $-CH_2-CO-R_{28}$ ,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein  $R_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein  $R_3$  and  $R_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $R_3$  and  $R_4$  is fluoro only when the other is hydrogen or fluoro; and

wherein X is  $-CH_2CH_2-$ .

4,284,805

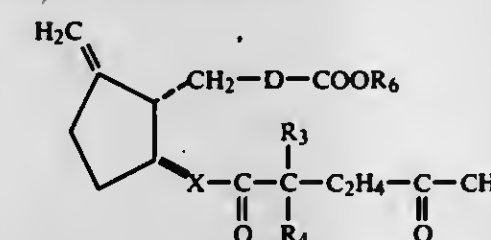
### 13,14-DIDEHYDRO-INTER-OXA-11-DEOXY-9-DEOXY-9-METHYLENE-19-OXO-PGF<sub>1</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,957  
Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula



wherein D is

- (1)  $(CH_2)_3-O-CH_2-$ ,
- (2)  $(CH_2)_2-O-(CH_2)_2-$ , or
- (3)  $-CH_2-O-(CH_2)_3-$ ,

wherein Q is  $\alpha-OH:\beta-R_5$  or  $\alpha-R_5:\beta-OH$ , wherein  $R_5$  is hydrogen or methyl;

wherein  $R_6$  is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,
- (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
- (g)  $-(p-Ph)-CO-CH_3$ ,
- (h)  $-(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH_3$ ,
- (i)  $-(p-Ph)-NH-CO-(p-Ph)-$ ,
- (j)  $-(p-Ph)-NH-CO-CH_3$ ,
- (k)  $-(p-Ph)-NH-CO-NH_2$ ,
- (l)  $-(p-Ph)-CH=N-NH-CO-NH_2$ ,
- (m)  $\beta$ -naphthyl,
- (n)  $-CH_2-CO-R_{28}$ ,

wherein (p-Ph) is para-phenyl or inter-para-phenylene,

wherein  $R_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein  $R_3$  and  $R_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $R_3$  and  $R_4$  is fluoro only when the other is hydrogen or fluoro; and

wherein X is  $-C\equiv C-$ .

4,284,806

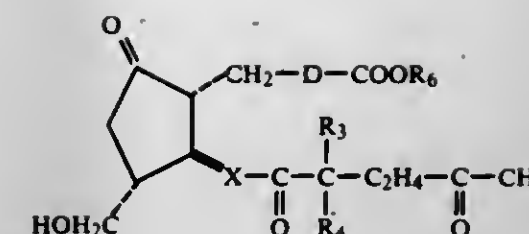
### 13,14-DIDEHYDRO-INTER-OXA-11-DEOXY-11-HYDROXYMETHYL-19-OXO-PGE<sub>1</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,953  
Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula



wherein D is

- (1)  $(CH_2)_3-O-CH_2-$ ,
- (2)  $(CH_2)_2-O-(CH_2)_2-$ , or
- (3)  $-CH_2-O-(CH_2)_3-$ ,

wherein Q is  $\alpha-OH:\beta-R_5$  or  $\alpha-R_5:\beta-OH$ , wherein  $R_5$  is hydrogen or methyl;

wherein  $R_6$  is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,
- (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
- (g)  $-(p-Ph)-CO-CH_3$ ,
- (h)  $-(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH_3$ ,
- (i)  $-(p-Ph)-NH-CO-(p-Ph)-$ ,
- (j)  $-(p-Ph)-NH-CO-CH_3$ ,
- (k)  $-(p-Ph)-NH-CO-NH_2$ ,
- (l)  $-(p-Ph)-CH=N-NH-CO-NH_2$ ,
- (m)  $\beta$ -naphthyl,
- (n)  $-CH_2-CO-R_{28}$ ,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein  $R_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein  $R_3$  and  $R_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $R_3$  and  $R_4$  is fluoro only when the other is hydrogen or fluoro; and

wherein X is  $-C\equiv C-$ .

4,284,807

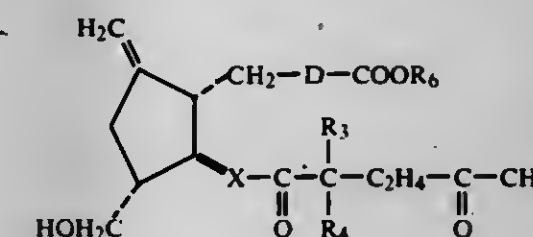
### 13,14-DIDEHYDRO-INTER-OXA-11-DEOXY-11-HYDROXYMETHYL-9-DEOXY-9-METHYLENE-19-OXO-PGF<sub>1</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,954  
Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula



wherein D is

- (1)  $(CH_2)_3-O-CH_2-$ ,
- (2)  $(CH_2)_2-O-(CH_2)_2-$ , or
- (3)  $-CH_2-O-(CH_2)_3-$ ,

wherein Q is  $\alpha-OH:\beta-R_5$  or  $\alpha-R_5:\beta-OH$ , wherein  $R_5$  is hydrogen or methyl;

wherein  $R_6$  is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,



- (d) aralkyl of 7 to 12 carbon atoms, inclusive,  
 (e) phenyl,  
 (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,  
 (g)  $-(p\text{-Ph})-\text{CO}-\text{CH}_3$ ,  
 (h)  $-(p\text{-Ph})-\text{NH}-\text{CO}-(p\text{-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,  
 (i)  $-(p\text{-Ph})-\text{NH}-\text{CO}-(p\text{-Ph})$ ,  
 (j)  $-(p\text{-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,  
 (k)  $-(p\text{-Ph})-\text{NH}-\text{CO}-\text{NH}_2$ ,  
 (l)  $-(p\text{-Ph})-\text{CH}=\text{N}-\text{NH}-\text{CO}-\text{NH}_2$ ,  
 (m)  $\beta$ -naphthyl,  
 (n)  $-\text{CH}_2-\text{CO}-\text{R}_{28}$ .

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein  $\text{R}_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein  $\text{R}_3$  and  $\text{R}_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $\text{R}_3$  and  $\text{R}_4$  is fluoro only when the other is hydrogen or fluoro; and wherein X is  $-\text{C}=\text{C}-$ .

4,284,808

### 13,14-DIDEHYDRO-INTER-OXA-19-OXO-PGE<sub>1</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

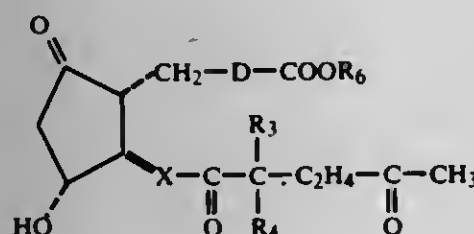
Division of Ser. No. 25,579, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,033

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula

4 Claims



wherein D is

- (1)  $(\text{CH}_2)_3-\text{O}-\text{CH}_2-$ ,  
 (2)  $(\text{CH}_2)_2-\text{O}-(\text{CH}_2)_2-$ , or  
 (3)  $-\text{CH}_2-\text{O}-(\text{CH}_2)_3-$ ;

wherein Q is  $\alpha\text{-OH}:\beta\text{-R}_5$  or  $\alpha\text{-R}_5:\beta\text{-OH}$ , wherein  $\text{R}_5$  is hydrogen or methyl;

wherein  $\text{R}_6$  is

- (a) hydrogen,  
 (b) alkyl of one to 12 carbon atoms, inclusive,  
 (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,  
 (d) aralkyl of 7 to 12 carbon atoms, inclusive,  
 (e) phenyl,  
 (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,  
 (g)  $-(p\text{-Ph})-\text{CO}-\text{CH}_3$ ,  
 (h)  $-(p\text{-Ph})-\text{NH}-\text{CO}-(p\text{-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,  
 (i)  $-(p\text{-Ph})-\text{NH}-\text{CO}-(p\text{-Ph})$ ,  
 (j)  $-(p\text{-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,  
 (k)  $-(p\text{-Ph})-\text{NH}-\text{CO}-\text{NH}_2$ ,  
 (l)  $-(p\text{-Ph})-\text{CH}=\text{N}-\text{NH}-\text{CO}-\text{NH}_2$ ,  
 (m)  $\beta$ -naphthyl,  
 (n)  $-\text{CH}_2-\text{CO}-\text{R}_{28}$ .

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein  $\text{R}_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein  $\text{R}_3$  and  $\text{R}_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $\text{R}_3$  and  $\text{R}_4$  is fluoro only when the other is hydrogen or fluoro; and

wherein X is  $-\text{C}=\text{C}-$ .

4,284,809

### 13,14-DIDEHYDRO-INTER-OXA-19-OXO-PGF<sub>1</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

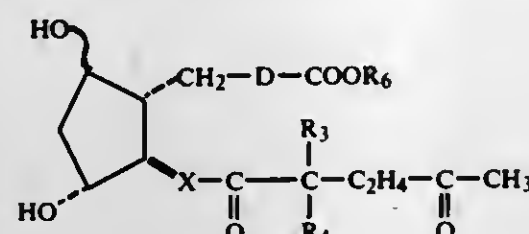
Division of Ser. No. 25,579, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,034

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula

4 Claims



wherein D is

- (1)  $(\text{CH}_2)_3-\text{O}-\text{CH}_2-$ ,  
 (2)  $(\text{CH}_2)_2-\text{O}-(\text{CH}_2)_2-$ , or  
 (3)  $-\text{CH}_2-\text{O}-(\text{CH}_2)_3-$ ;

wherein Q is  $\alpha\text{-OH}:\beta\text{-R}_5$  or  $\alpha\text{-R}_5:\beta\text{-OH}$ , wherein  $\text{R}_5$  is hydrogen or methyl;

wherein  $\text{R}_6$  is

- (a) hydrogen,  
 (b) alkyl of one to 12 carbon atoms, inclusive,  
 (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive,  
 (e) phenyl,  
 (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,  
 (g)  $-(p\text{-Ph})-\text{CO}-\text{CH}_3$ ,  
 (h)  $-(p\text{-Ph})-\text{NH}-\text{CO}-(p\text{-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,  
 (i)  $-(p\text{-Ph})-\text{NH}-\text{CO}-(p\text{-Ph})$ ,  
 (j)  $-(p\text{-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,  
 (k)  $-(p\text{-Ph})-\text{NH}-\text{CO}-\text{NH}_2$ ,  
 (l)  $-(p\text{-Ph})-\text{CH}=\text{N}-\text{NH}-\text{CO}-\text{NH}_2$ ,  
 (m)  $\beta$ -naphthyl,  
 (n)  $-\text{CH}_2-\text{CO}-\text{R}_{28}$ .

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein  $\text{R}_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein  $\text{R}_3$  and  $\text{R}_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $\text{R}_3$  and  $\text{R}_4$  is fluoro only when the other is hydrogen or fluoro; and wherein X is  $-\text{C}=\text{C}-$ .

4,284,810

### 19-OXO-PGE<sub>1</sub> ANALOGS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

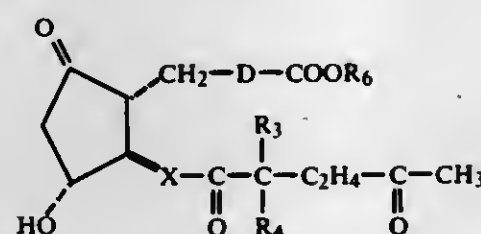
Division of Ser. No. 25,579, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,045

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula

4 Claims



wherein

D is

- $(\text{CH}_2)_3-(\text{CH}_2)_g-\text{CF}_2-$ ;

wherein

g is zero, one, two, or three;

wherein

Q is  $\alpha\text{-OH}:\beta\text{-R}_5$  or  $\alpha\text{-R}_5:\beta\text{-OH}$ , wherein  $\text{R}_5$  is hydrogen or methyl;

wherein

 $\text{R}_6$  is

- (a) hydrogen,  
 (b) alkyl of one to 12 carbon atoms, inclusive,  
 (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,  
 (d) aralkyl of 7 to 12 carbon atoms, inclusive,  
 (e) phenyl,  
 (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,  
 (g)  $-(p\text{-Ph})-\text{CO}-\text{CH}_3$ ,  
 (h)  $-(p\text{-Ph})-\text{NH}-\text{CO}-(p\text{-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,  
 (i)  $-(p\text{-Ph})-\text{NH}-\text{CO}-(p\text{-Ph})$ ,  
 (j)  $-(p\text{-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,  
 (k)  $-(p\text{-Ph})-\text{NH}-\text{CO}-\text{NH}_2$ ,  
 (l)  $-(p\text{-Ph})-\text{CH}=\text{N}-\text{NH}-\text{CO}-\text{NH}_2$ ,  
 (m)  $\beta$ -naphthyl,  
 (n)  $-\text{CH}_2-\text{CO}-\text{R}_{28}$ .

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein  $\text{R}_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein  $\text{R}_3$  and  $\text{R}_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $\text{R}_3$  and  $\text{R}_4$  is fluoro only when the other is hydrogen or fluoro; and wherein X is cis- or trans- $\text{CH}=\text{CH}-$ .

4,284,811

### 19-OXO-PGF<sub>2</sub> ANALOGS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

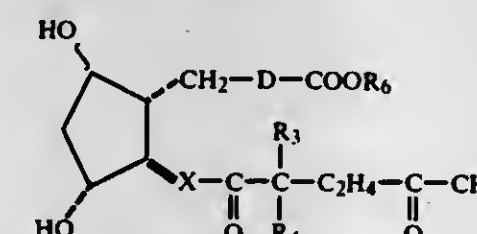
Division of Ser. No. 25,579, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,218

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula

4 Claims



wherein D is

- (1) cis- $\text{CH}=\text{CH}-\text{CH}_2-(\text{CH}_2)_g-\text{CF}_2-$ ,  
 (2) cis- $\text{CH}_2-\text{CH}=\text{CH}-\text{CH}_2-\text{CH}_2-$ , or  
 (3) trans- $(\text{CH}_2)_3-\text{CH}=\text{CH}-$ ;

wherein g is zero, one, two, or three;

wherein Q is  $\alpha\text{-OH}:\beta\text{-R}_5$  or  $\alpha\text{-R}_5:\beta\text{-OH}$ , wherein  $\text{R}_5$  is hydrogen or methyl;

wherein  $\text{R}_6$  is

- (a) hydrogen,  
 (b) alkyl of one to 12 carbon atoms, inclusive,  
 (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,  
 (d) aralkyl of 7 to 12 carbon atoms, inclusive,  
 (e) phenyl,  
 (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,  
 (g)  $-(p\text{-Ph})-\text{CO}-\text{CH}_3$ ,  
 (h)  $-(p\text{-Ph})-\text{NH}-\text{CO}-(p\text{-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,  
 (i)  $-(p\text{-Ph})-\text{NH}-\text{CO}-(p\text{-Ph})$ ,  
 (j)  $-(p\text{-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,  
 (k)  $-(p\text{-Ph})-\text{NH}-\text{CO}-\text{NH}_2$ ,  
 (l)  $-(p\text{-Ph})-\text{CH}=\text{N}-\text{NH}-\text{CO}-\text{NH}_2$ ,  
 (m)  $\beta$ -naphthyl.

(n)  $-\text{CH}_2-\text{CO}-\text{R}_{28}$ .

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein  $\text{R}_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein  $\text{R}_3$  and  $\text{R}_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $\text{R}_3$  and  $\text{R}_4$  is fluoro only when the other is hydrogen or fluoro; and wherein X is cis- or trans- $\text{CH}=\text{CH}-$ .

4,284,812

### 19-OXO-PGF<sub>1</sub> ANALOGS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

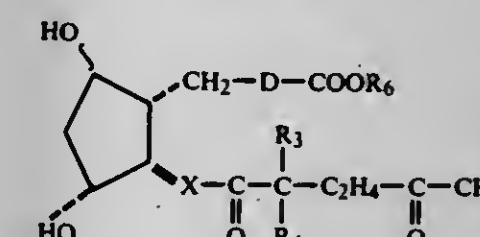
Division of Ser. No. 25,579, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,365

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

1. A compound of the formula

4 Claims



wherein D is

- $(\text{CH}_2)_3-(\text{CH}_2)_g-\text{CF}_2-$ ;

wherein

g is zero, one, two, or three;

wherein

Q is  $\alpha\text{-OH}:\beta\text{-R}_5$  or  $\alpha\text{-R}_5:\beta\text{-OH}$ , wherein  $\text{R}_5$  is hydrogen or methyl;

wherein  $\text{R}_6$  is

- (a) hydrogen,  
 (b) alkyl of one to 12 carbon atoms, inclusive,  
 (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,  
 (d) aralkyl of 7 to 12 carbon atoms, inclusive,  
 (e) phenyl,  
 (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,  
 (g)  $-(p\text{-Ph})-\text{CO}-\text{CH}_3$ ,  
 (h)  $-(p\text{-Ph})-\text{NH}-\text{CO}-(p\text{-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,  
 (i)  $-(p\text{-Ph})-\text{NH}-\text{CO}-(p\text{-Ph})$ ,  
 (j)  $-(p\text{-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,  
 (k)  $-(p\text{-Ph})-\text{NH}-\text{CO}-\text{NH}_2$ ,  
 (l)  $-(p\text{-Ph})-\text{CH}=\text{N}-\text{NH}-\text{CO}-\text{NH}_2$ ,  
 (m)  $\beta$ -naphthyl,  
 (n)  $-\text{CH}_2-\text{CO}-\text{R}_{28}$ .

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein  $\text{R}_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein  $\text{R}_3$  and  $\text{R}_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $\text{R}_3$  and  $\text{R}_4$  is fluoro only when the other is hydrogen or fluoro; and wherein X is cis- or trans- $\text{CH}=\text{CH}-$ .

4,284,813

**BENZAMIDE DERIVATIVES AND HERBICIDAL COMPOSITION CONTAINING THE SAME**  
 Tetsuo Takematsu, and Masaaki Hoya, both of Utsunomiya, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1979, Ser. No. 94,848

Claims priority, application Japan, Dec. 5, 1978, 53-149633

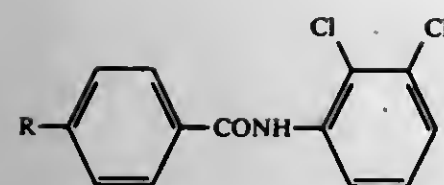
Int. Cl.<sup>3</sup> C07C 103/22, 103/28

U.S. Cl. 564-168

1. Benzamide derivatives having the formula

1 Claim





wherein R represents a straight or branched chain alkyl group, having 1 to 8 carbon atoms, a straight or branched chain alkoxy group having 1 to 12 carbon atoms; or an amino group.

4,284,814

### PROPENE TRIMER AND PROPENE TETRAMER AND USE THEREOF IN PERFUMERY

Robert S. De Simone, Middletown, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 941,101, Sep. 8, 1978, Pat. No. 4,219,450.

This application Dec. 3, 1979, Ser. No. 99,699

Int. Cl.<sup>3</sup> C07C 131/00

U.S. Cl. 564—253

2 Claims

1. A propene trimer oxime comprising a mixture of branched chain nonanone oximes, said mixture having a refractive index ( $n_D^{20}$ ) range of 1.4417 to 1.4578, a specific gravity ( $D_{20}$ ) range of 0.8735 to 0.8929 and a boiling range of 53° to 70° C. at 1 to 0.8 mm. Hg.

2. A propene tetramer oxime comprising a mixture of branched chain dodecanone oximes, said mixture having a refractive index ( $n_D^{20}$ ) range of 1.4595 to 1.4620, a specific gravity ( $D_{20}$ ) range of 0.8764 to 0.8841 and a boiling range of 86° to 104° C. at 0.07 to 0.1 mm. Hg.

4,284,815

### TUNGSTEN CATALYZED ANILINE-FORMALDEHYDE CONDENSATION

Edward T. Marquis, Lewis W. Watts, Jr., and Robert M. Gipson, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,474

Int. Cl.<sup>3</sup> C07C 85/18

U.S. Cl. 564—332

3 Claims

1. A method of preparing diaminodiphenylmethane and higher homologues thereof which comprises the step of condensing aniline and formaldehyde in the presence of a tungsten boride or sulfide catalyst.

4,284,816

### METHOD OF PREPARING POLYAMINOPOLYPHENYLMETHANES

Edward T. Marquis, and Lewis W. Watts, Jr., both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 17, 1980, Ser. No. 188,162

Int. Cl.<sup>3</sup> C07C 85/18

U.S. Cl. 564—332

3 Claims

1. A method of preparing diaminodiphenylmethane and higher homologues thereof which comprises the step of condensing aniline and formaldehyde in the presence of a tungsten silicide catalyst.

4,284,817

### PROCESS FOR PREPARING THIOPHENOLS

Kyung S. Shim, Irvington, and Adam E. Skrzec, West Nyack, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 2, 1977, Ser. No. 802,682

Int. Cl.<sup>3</sup> C07C 149/28

U.S. Cl. 568—67

12 Claims

1. A process for producing thiophenol which comprises reacting benzene with at least a stoichiometric amount of hydrogen sulfide in contact with an absorptive catalyst having a large surface area.

4,284,818

### PROCESS FOR PREPARING

#### HEXAMETHYLTETRAHYDRONAPHTHALENES

Hiroshi Sato; Koiti Fujisawa, both of Toyonaka; Hideo Tojima, Kyoto, and Seimei Yasui, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 12, 1979, Ser. No. 19,587

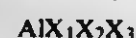
Claims priority, application Japan, Mar. 30, 1978, 53/37602

Int. Cl.<sup>3</sup> C07C 2/68, 45/46

U.S. Cl. 568—323

18 Claims

1. A process for producing 1,1,3,4,4,6-hexamethyl-1,2,3,4-tetrahydronaphthalene, which comprises reaction between p-cymene and a 2,3-dimethylbutene in an aliphatic hydrocarbon or cyclohexane solvent using a catalytic amount of anhydrous aluminum halide of the formula,



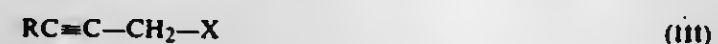
wherein  $X_1$ ,  $X_2$  and  $X_3$  are the same or different, and are halogen atoms, provided that  $X_1$ ,  $X_2$  and  $X_3$  may not be all fluorine atoms, in the presence of secondary alkyl halides of formula (I),



wherein  $R^1$  and  $R^2$  are each an alkyl group or may form a cyclic ring, and X is a halogen atom; tertiary alkyl halides of formula (II),



wherein  $R^1$ ,  $R^2$  and  $R^3$  are each an alkyl group or two of them may form a cyclic ring, and X is a halogen atom; propargyl halides of formula (III),



wherein R is a hydrogen atom or an alkyl group, and X is a halogen atom; or allyl halides of formula (IV),



wherein R is a hydrogen atom or an alkyl group and X is a halogen atom.

4,284,819

### ACETYL HYDRINDACENES, ACETYL INDANES, MIXTURES OF SAME, PROCESSES FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

Mark A. Sprecker, Sea Bright; Manfred H. Vock, Locust; Frederick L. Schmitt, Holmdel; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 953,180, Oct. 20, 1978, Pat. No. 4,209,543.

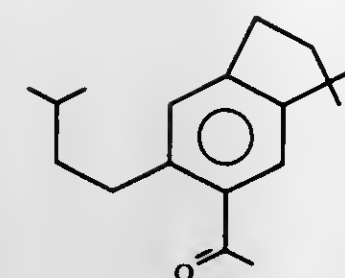
This application Jun. 5, 1980, Ser. No. 156,772

Int. Cl.<sup>3</sup> C07C 49/792

U.S. Cl. 568—327

2 Claims

1. 6-Acetyl-5-(3-methylbutyl)-1,1-dimethylindane having the structure:



existing in the liquid phase at ambient temperature and pressure.

4,284,820

### 3,6,6-TRIMETHYLBICYCLO[3.1.0]HEXANE

#### DERIVATIVES AS PYRETHROID INTERMEDIATES

Johannes L. M. Syrier, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 23, 1980, Ser. No. 189,982

Claims priority, application United Kingdom, Sep. 28, 1979, 33836/79

Int. Cl.<sup>3</sup> C07C 49/443

U.S. Cl. 568—374

2 Claims

1. 3,6,6-Trimethyl-3-hydroxybicyclo[3.1.0]hexan-4-one.

4,284,821

### DICHLOROVINYLCYCLOBUTANONES, PROCESSES FOR PREPARING THEM, AND THEIR USE AS INTERMEDIATES FOR PRODUCING PESTICIDAL COMPOSITIONS

Pierre Martin, Rheinfelden, and Daniel Bellus, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,516

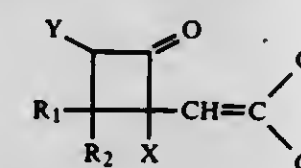
Claims priority, application Switzerland, Nov. 24, 1977, 14406/77; Oct. 26, 1978, 11076/78

Int. Cl.<sup>3</sup> C07C 49/533, 53/48

U.S. Cl. 568—381

3 Claims

1. A compound of the formula I



wherein

one of  $R_1$  and  $R_2$  is methyl and the other is hydrogen or methyl, or

$R_1$  and  $R_2$  together are alkylene having 2-4 C atoms,

X is chlorine and Y is hydrogen, or

X is hydrogen and Y is chlorine.

4,284,822

### PROCESS FOR PREPARING HEXAFLUOROACETONE

Takashi Tohzu, Settsu, and Yohnosuke Ohsaka, Takatsuki, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Mar. 28, 1980, Ser. No. 135,164

Claims priority, application Japan, Mar. 31, 1979, 54-38694

Int. Cl.<sup>3</sup> C07C 45/32

U.S. Cl. 568—399

3 Claims

1. A process for preparing hexafluoroacetone which comprises reacting hexafluoropropene with oxygen in the presence of a metal oxide selected from the group consisting of tin oxides, iron oxides and indium oxides.

4,284,823

### PROCESS FOR PREPARING 3-(3,5-DI-TERT-ALKYL-4-HYDROXY-PHENYL)-2,2-DI-SUBSTITUTED PROPIONALDEHYDES

Richard H. Kline, Silver Lake, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

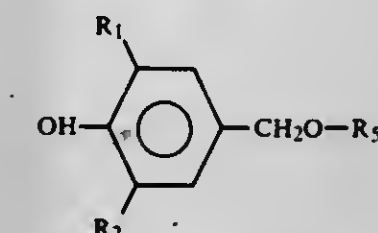
Filed Oct. 15, 1979, Ser. No. 84,490

Int. Cl.<sup>3</sup> C07C 45/61

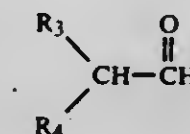
U.S. Cl. 568—433

7 Claims

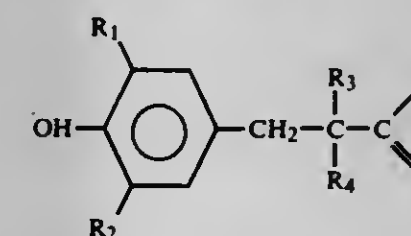
1. A process comprising reacting a compound having the general structural Formula II:



with a compound having the general Formula III:



in the presence of a catalyst selected from the group consisting of alkali metal hydroxides and alkali metal alkoxides while dissolved in an organic solvent selected from the group consisting of aliphatic alcohols, aliphatic ethers and aliphatic nitriles to yield an aldehyde having the structural Formula I:



wherein  $R_1$  and  $R_2$  are the same or different radicals selected from the group consisting of tertiary alkyl radicals having from 4 to 12 carbon atoms,  $R_3$  and  $R_4$  are the same or different radicals selected from the group consisting of alkyl radicals containing from 1 to 12 carbon atoms, cycloalkyl radicals containing from 5 to 12 carbon atoms and phenyl radicals or  $R_3$  and  $R_4$  with the carbon atoms to which they are joined may form a cycloalkyl ring of from 5 to 12 carbon atoms,  $R_5$  is selected from the group consisting of hydrogen, alkyl radicals containing from 1 to 12 carbon atoms, or a cycloalkyl radical containing 5 to 6 carbon atoms.

4,284,824

### METHYL SUBSTITUTED NORBORANE CARBOXALDEHYDES

Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed May 22, 1980, Ser. No. 152,187

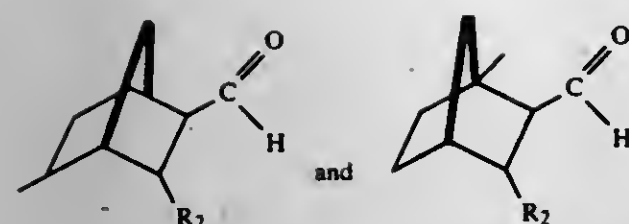
Int. Cl.<sup>3</sup> C07C 47/347, 47/445

U.S. Cl. 568—445

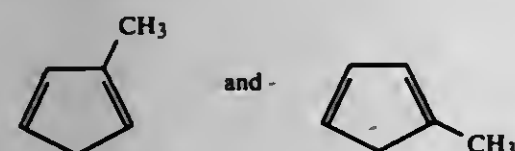
1 Claim

1. A product which is a mixture of methyl substituted norborane carboxaldehyde having the structures:

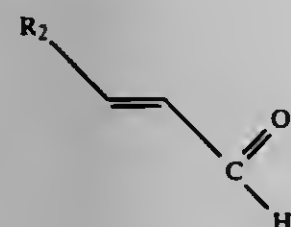




produced according to the process consisting of the steps of (i) intimately admixing a mixture of methyl cyclopentadienes having the structures:



with and alpha, beta unsaturated aldehyde defined according to the structure:



where  $R_2$  is methyl or hydrogen in the presence of a catalyst having the structure:



wherein  $R'$  is  $C_1$ - $C_3$  alkyl and  $X$  is chloro or bromo with  $m+n=3$  and  $m$  being 1 or 2 and  $n$  being 1 or 2; the temperature of reaction being between  $0^\circ\text{C}$ . and  $50^\circ\text{C}$ .; the reaction taking place in the presence of a solvent; the reaction taking place in the presence of a triethanolamine promoter and (ii) reacting hydrogen with the resulting reaction product at a pressure of between 25 psig and 100 psig and at a temperature of between about  $15^\circ\text{C}$ . and about  $50^\circ\text{C}$ . in the presence of a catalyst selected from the group consisting of Raney Nickel and supported palladium.

## 4,284,825

**4-SUBSTITUTED BENZALDEHYDE-DIALKYLACETAL**  
Dieter Degner, Dannstadt-Schaarnheim; Manfred Barl, Otterstadt, and Harro Siegel, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 31, 1979, Ser. No. 89,952  
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848397

Int. Cl.<sup>3</sup> C07C 43/307

U.S. Cl. 568—592

1. 4-Benzyloxybenzaldehyde-dimethylacetal.

## 4,284,826

## POLYETHER POLYOLS

David Aelony, Beersheva, Israel, assignor to Makhteshim Chemical Works Ltd., Beersheva, Israel

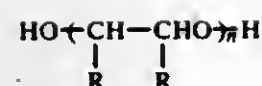
Filed Nov. 16, 1979, Ser. No. 94,879  
Claims priority, application Israel, Nov. 19, 1978, 55989

Int. Cl.<sup>3</sup> C07C 43/13

U.S. Cl. 568—614

3 Claims

1. A low molecular weight, low viscosity liquid diol oligomer of 4,4,4-trichloro-1,2-epoxybutane of the formula



wherein

$R$  and  $R'$  are selected from hydrogen and  $-\text{CH}_2\text{CCl}_3$ , wherein  $R$  and  $R'$  are different, and wherein  $n$  is an integer from 2 to 4.

## 4,284,827

## PROCESS TO PREPARE METALATED OLEFINS

Jerry A. Walker, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

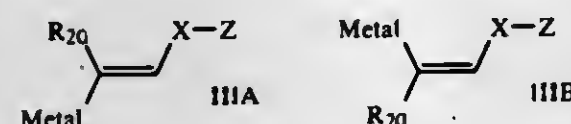
Continuation of Ser. No. 19,509, Mar. 12, 1979, abandoned. This application Dec. 17, 1979, Ser. No. 104,611

Int. Cl.<sup>3</sup> C07C 41/18, 41/24

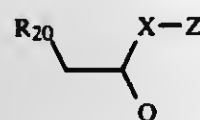
U.S. Cl. 568—686

26 Claims

1. A process for the preparation of compounds of the formula:

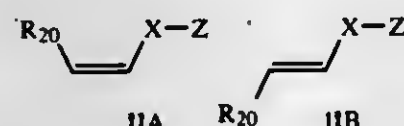


where  $R_{20}$  is a fluorine or chlorine atom or a  $-\text{NR}_a\text{R}_b$  group where  $R_a$  and  $R_b$  are the same or different and are alkyl of 1 thru 3 carbon atoms; where  $X$  is an oxygen or sulfur atom; where  $Z$  is alkyl of 1 thru 6 carbon atoms, phenyl or p-methylphenyl where the ratio of trans (IIIB) to cis (IIIA) isomers is greater than 70:30, which comprises reacting a compound of the formula:



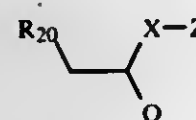
where  $Q$  is a chlorine, bromine or iodine or iodine atom or a trimethylamino group with at least 1.5 equivalents of a compound of the formula  $R$ -Metal where  $R$  is alkyl of 1 thru 5 carbon atoms or phenyl; where metal is lithium, sodium, or potassium, in a dry organic solvent in a temperature range of  $-15^\circ$  to  $-120^\circ$ .

13. A process for the preparation of compounds of the formula:



where the ratio of trans (IIIB) to cis (IIA) isomers is greater than 70:30 which comprises

(1) reacting a compound of the formula:



with at least 1 equivalent of a compound of the formula  $R$ -Metal in a dry organic solvent in a temperature range of  $-15^\circ$  to  $-120^\circ$  and

(2) quenching with a proton source so that the pH of the reaction mixture does not become less than 6, where  $R_{20}$ ,  $X$ ,  $Z$ ,  $Q$ , Metal and  $R$  are defined in claim 1.

## 4,284,828

## PROCESS FOR THE MANUFACTURE OF

**4,5-DICHLORO-2-(4-CHLOROPHENOXY)PHENOL**  
Claus D. Weis, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 9, 1979, Ser. No. 92,814

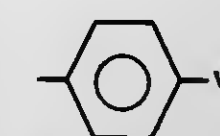
Claims priority, application Switzerland, Nov. 21, 1978, 11919/78

Int. Cl.<sup>3</sup> C07C 41/22

U.S. Cl. 568—637

10 Claims

1. A process for the manufacture of 4,5-dichloro-2-(4-chlorophenoxy)phenol, which comprises selectively chlorinating one molar equivalent of 2-phenoxyanisole at a temperature between  $-10^\circ$  and  $+50^\circ\text{C}$ ., in a lower halogenated aliphatic hydrocarbon which contains at least one hydrogen atom, a lower aliphatic nitrile, dimethyl formamide, dimethylmethane-phosphonate or methanol, with about 3 to 5 molar equivalents of chlorine, and demethylating the 4,5-dichloro-2-(4-chlorophenoxy)anisole obtained as intermediate with an acid.



wherein  $W_1$  is selected from the group consisting of hydrogen, fluoro and chloro; and the pharmaceutically acceptable acid addition salts of those compounds wherein  $R_1$  is  $-\text{CO}-(\text{CH}_2)_p-\text{NR}_5\text{R}_6$  and/or  $R_2$ ,  $R_4$  or  $W$  is pyridyl; and the hemiketals of those compounds wherein  $R_1$  is hydrogen.

## 4,284,830

## MONOHALOGENATION OF SUBSTITUTED PHENOL

Ronald D. Kaaden, and Darryl R. Fabey, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

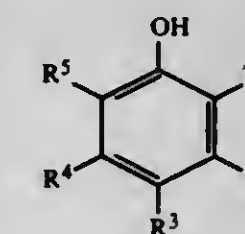
Filed Feb. 1, 1980, Ser. No. 117,747

Int. Cl.<sup>3</sup> C07C 39/26, 39/28

U.S. Cl. 568—779

6 Claims

1. A process for producing a mono-halogenated hydrocarbyl substituted phenol which comprises reacting a hydrocarbyl substituted phenol having the formula



wherein  $R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ , and  $R^5$  are hydrogen, alkyl, cycloalkyl, or aryl radicals having 1 to 10 carbon atoms with the further provision that at least one of the radicals  $R^1$  to  $R^5$  is a hydrocarbyl radical, wherein at least one of the radicals,  $R$  has to be hydrogen,

with a halogen selected from the group consisting of chlorine, bromine and iodine in the presence of a non-polar diluent selected from the group consisting of benzene, mono-, di- and trialkyl substituted benzenes having 7 to 10 carbon atoms and halosubstituted hydrocarbons having 1 to 3 carbon atoms and 1 to 3 halogen atoms selected from the group consisting of chlorine and/or bromine the mole ratio of halogen to phenol being in the range of 0.5:1 to 1.5:1, and separating the monohalohydrocarbyl phenol from the reaction mixture obtained in the reaction step.

## 4,284,831

## PROCESS FOR THE PRODUCTION OF TERTIARY ALCOHOLS

Yoshiharu Okumura, Kawagoe, and Katsumi Kaneko, Ooi, both of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1980, Ser. No. 146,443

Claims priority, application Japan, Jun. 26, 1979, 54-79671

Int. Cl.<sup>3</sup> C07C 29/04

U.S. Cl. 568—899

10 Claims

3. In a process for the production of tertiary alcohols by causing an isooolefin or a hydrocarbon mixture containing an isooolefin to react with water in the presence of an acidic cation exchange resin, the improvement which comprises carrying out the reaction in the presence of an oxy acid selected from the group consisting of oxacetic acid, lactic acid, 3-oxopro-

wherein

$R_1$  is selected from the group consisting of hydrogen, benzyl, alkanoyl having from one to five carbon atoms,  $-\text{P}(\text{O})(\text{OH})_2$  and the sodium and potassium salts thereof,  $-\text{CO}(\text{CH}_2)_2\text{COOH}$  and the sodium and potassium salts thereof, and  $-\text{CO}-(\text{CH}_2)_p-\text{NR}_5\text{R}_6$  wherein  $p$  is 0 or an integer from 1 to 4; each of  $R_5$  and  $R_6$  when taken individually is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms;  $R_5$  and  $R_6$  when taken together with the nitrogen to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of piperidino, pyrrolo, pyrrolidino, morpholino and N-alkylpiperazino having from one to four carbon atoms in the alkyl group;

each of  $R_2$  and  $R_4$  is selected from the group consisting of hydrogen, alkyl having from one to six carbon atoms, phenyl, pyridyl and phenylalkyl having from one to four carbon atoms in the alkyl moiety;

$R_3$  is selected from the group consisting of hydrogen and methyl;

$Z$  is selected from the group consisting of (a) alkylene having from one to thirteen carbon atoms; (b)  $-(\text{alk}_1)_m-\text{O}-(\text{alk}_2)_n-$  wherein each of  $(\text{alk}_1)$  and  $(\text{alk}_2)$  is alkylene having from one to thirteen carbon atoms, with the proviso that the summation of carbon atoms in  $(\text{alk}_1)$  plus  $(\text{alk}_2)$  is not greater than thirteen; each of  $m$  and  $n$  is 0 or 1; and

$W$  is selected from the group consisting of hydrogen, pyridyl,





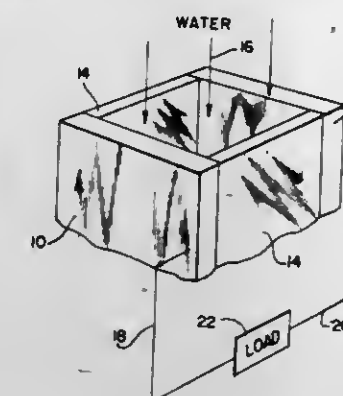


# ELECTRICAL

4,284,838  
**THERMOELECTRIC CONVERTER AND METHOD**  
 Robert B. Indech, 46 Roger Williams Green, Providence, R.I. 02904

Filed Jun. 7, 1979, Ser. No. 46,269  
 Int. Cl.<sup>3</sup> H07L 37/00; H01L 35/00  
 U.S. Cl. 136—202

11 Claims

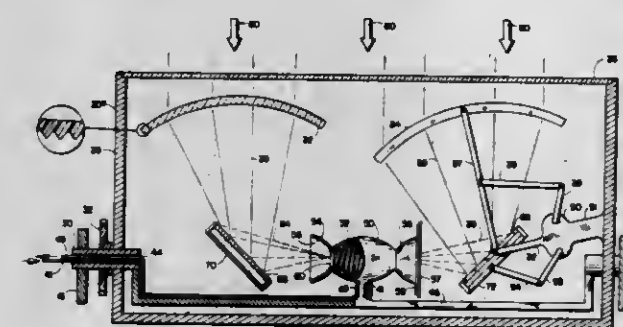


1. A thermoelectric converter comprising a pair of dissimilar metal members in spaced relation, a separating material filling the space between said members, said material being a flowing fluid heat conductive and electrically conductive, and means for applying a thermal gradient through said members and said material to generate usable electric power.

4,284,839  
**INTERNAL REFRACTOR FOCUSING SOLAR ENERGY COLLECTOR APPARATUS AND METHOD**  
 Steven A. Johnson, 136 N. 1st West, Preston, Id. 83263

Filed Dec. 18, 1978, Ser. No. 970,673  
 Int. Cl.<sup>3</sup> H01L 31/04; F24J 3/02  
 U.S. Cl. 136—246

18 Claims U.S. Cl. 174—48



1. A solar collector comprising:  
 a shell structure, the shell structure having an open top;  
 first mounting means for the shell structure for rotating the shell structure about an axis to orient the open top of the shell structure toward the sun;  
 solar energy absorber means inside the shell structure and mounted coaxially with the axis;  
 second mounting means for supporting the solar energy absorber means inside the shell structure in a nonrotatable position relative to the sun to thereby accommodate rotational movement of the shell structure about the solar energy absorber means, the second mounting means comprising a first hollow shaft and a second shaft, the shell structure being rotatably mounted on the first hollow shaft and the second shaft, the second mounting means further comprising a bridge structure extending between the first hollow shaft and the second shaft, the bridge structure supporting the solar energy absorber means; and  
 focusing means in the shell structure for focusing solar energy toward the solar energy absorber means and focusing the solar energy coaxially on the solar energy absorber means, said focusing means comprising a Fresnel lens means inside the shell structure and mounted to focus solar energy on a mirror means, the mirror means reflect-

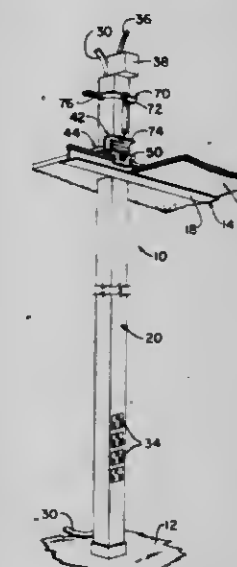
ing the solar energy toward the solar energy absorber means.

10. A solar collector comprising:  
 a shell structure, the shell structure having an open top;  
 first mounting means for the shell structure for rotating the shell structure about an axis to orient the open top of the shell structure toward the sun;  
 solar energy absorber means inside the shell structure;  
 second mounting means for supporting the solar energy absorber means inside the shell structure in a nonrotatable position relative to the sun to thereby accommodate rotational movement of the shell structure about the solar energy absorber means, the second mounting means including a hollow axle; and  
 focusing means in the shell structure for focusing solar energy toward the solar energy absorber means, the focusing means comprising a Fresnel lens means and a mirror, the Fresnel lens means focusing solar flux on the mirror and the mirror reflecting the focused solar flux toward the solar energy absorber means, the Fresnel lens means further comprising support means for moveably supporting the Fresnel lens means inside said shell structure to accommodate movement of the Fresnel lens means in tracking relationship to the sun, the support structure further comprising support means for supporting said mirror relative to said Fresnel lens means to accommodate reflecting solar energy to said solar energy absorber means.

4,284,840  
**SERVICE POLE ASSEMBLY**  
 Charles T. Baker, West Hartford, Conn., assignor to The Wire-mold Company, West Hartford, Conn.

Continuation of Ser. No. 806,770, Jun. 15, 1977, abandoned.  
 This application Oct. 15, 1979, Ser. No. 84,890  
 Int. Cl.<sup>3</sup> H02G 3/04

7 Claims



1. For installation in a room including a floor and ceiling suspension members relatively movable toward and away from the floor, a service pole assembly comprising an elongated hollow pole of sufficient length to extend from the floor above a ceiling suspension member, a pole hanger attachable in fixed relation to the ceiling suspension member, and a connector between the hanger and the pole, the connector including a first bracket attached to the hanger and supported for free sliding movement on the pole and a second bracket fixed to the pole above the hanger, and spring means connected between the hanger and the second bracket for urging the pole into floor bottoming engagement, the connector cooperating with the hanger in maintaining the pole in an upright position and providing for relative movement of the hanger longitudinally along the pole upon corresponding relative movement of the ceiling suspension member and the floor toward and away from each other.



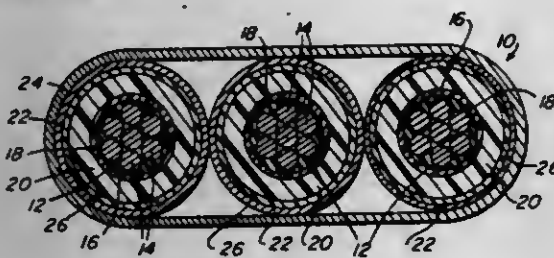
4,284,841  
CABLE

Donatas Tijnelis, Buffalo Grove, Ill.; Clinton A. Boyd, Tulsa, and Joseph E. Vandevier, Broken Arrow, both of Okla., assignors to Centrilit, Inc., Tulsa, Okla.

Filed Sep. 7, 1979, Ser. No. 73,414  
Int. Cl.<sup>3</sup> H01B 7/22

U.S. Cl. 174-103

9 Claims



1. In a multiple conductor cable especially suitable for high temperature use, the combination of each conductor comprising:

- a plurality of strands comprising copper;
- a resilient material surrounding each conductor and filling any voids between the strands thereof;
- a high electric resistivity plastic covering said resilient material;
- a lead jacket surrounding said high electric resistivity plastic;
- an oil resistant insulation material surrounding said lead jacket;
- a braid layer tightly covering said insulation material; and
- an external armor surrounding said braid layer.

## 4,284,842

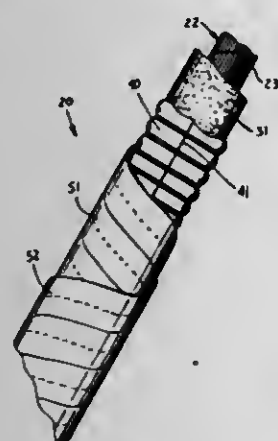
## CABLE HAVING SUPERIOR RESISTANCE TO FLAME SPREAD AND SMOKE EVOLUTION

Candido J. Arroyo, Lilburn; Nicholas J. Cogelia, Duluth, and Ralph J. Darsey, Lawrenceville, all of Ga., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J. and Western Electric Company, Inc., New York, N.Y.

Filed Oct. 31, 1979, Ser. No. 89,788  
Int. Cl.<sup>3</sup> H01B 7/34

U.S. Cl. 174-107

15 Claims



1. A cable which resists flame spread and smoke evolution, said cable comprising:

- a core which includes an insulated conductor;
- a layer which encloses the core and which comprises an inorganic, cellular material;
- a metallic barrier which encloses said cellular layer and which comprises a strip having longitudinal edge portions formed into a seam, said metallic barrier having an outwardly facing surface which has a relatively low emissivity; and
- an outer cover of a flame retardant material which encloses said metallic barrier and which comprises:

- a first tape comprising a thermosetting material having at least translucent optical clarity and having a relatively

low thermal diffusivity, said first tape wrapped about the barrier with an overlapped sealed seam; and

- a second tape comprising a thermosetting material having at least translucent optical clarity and having a relatively low thermal diffusivity, said second tape wrapped about said first tape with an overlapped sealed seam.

## 4,284,843

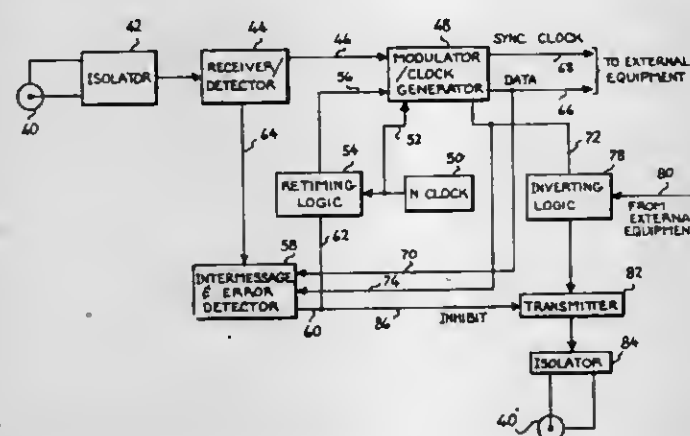
## REPEATING STATION FOR USE IN DIGITAL DATA COMMUNICATIONS LINK

Emery A. White, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed May 10, 1979, Ser. No. 37,834  
Int. Cl.<sup>3</sup> H04L 25/02

U.S. Cl. 178-69 G

17 Claims



1. For use in a digital data communication link, a repeating station for selectively forwarding serially transmitted digital data including incoming messages of defined length and identifiable beginning comprising:

- (a) detecting means for receiving incoming digital data and for providing data signals representative thereof;
- (b) a free running internal clock for providing clocking signals at a predetermined frequency which in a multiple of the bit rate of said transmitted digital data;
- (c) retiming logic responsive to said clocking signals for generating timing signals;
- (d) modulating means substantially instantaneously responsive to said data signals and said timing signals to reconstruct the incoming digital data in a time relationship governed by said clocking means to thereby provide reconstructed digital data signals; and
- (e) transmitting means for transmitting said reconstructed digital data signals on said data communication link.

## 4,284,844

## LOUDSPEAKER SYSTEM

David E. Belles, Pittsford, N.Y., assignor to Belles Research Corp., East Rochester, N.Y.

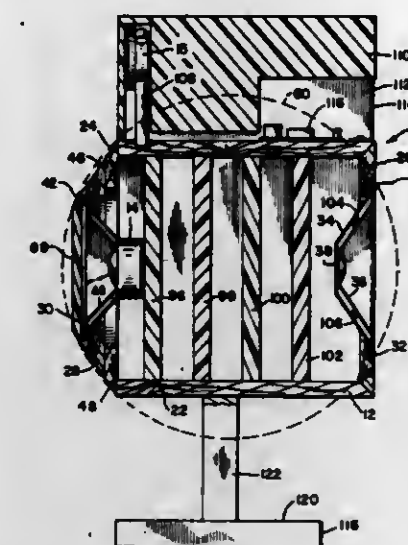
Filed May 7, 1979, Ser. No. 36,613  
Int. Cl.<sup>3</sup> H04R 1/26, 1/28

U.S. Cl. 179-1 E

21 Claims

1. A loudspeaker system comprising a generally cubic enclosure having front and rear ends, openings in said ends, a loudspeaker mounted in said front end opening to radiate outwardly from said enclosure, and said front end being a gener-

ally square baffle, each edge of which is inwardly tapered toward said front end opening, the intersections of said tapered



edges defining points along the outline of an imaginary spherical surface which substantially surrounds said enclosure.

## 4,284,845

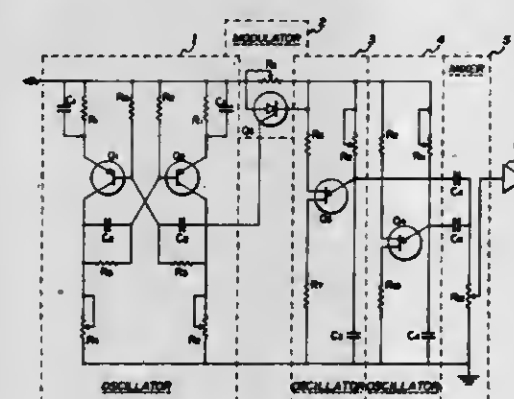
## PEST ELIMINATOR

Claude A. Belcher, 4456 Arch, San Diego, Calif. 92116  
Filed Jul. 30, 1979, Ser. No. 61,597

Int. Cl.<sup>3</sup> G08B 3/00

U.S. Cl. 179-1 R

5 Claims



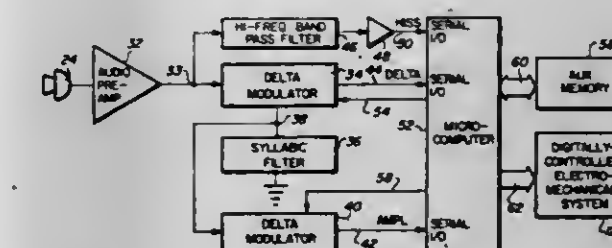
1. A pest repelling apparatus which comprises, means for simultaneously emitting at least first and second audio signals; means for simultaneously and periodically shifting the frequency of each of said first and second signals from a base frequency to a lower frequency and vice versa; wherein said means for simultaneously emitting comprises: a first oscillator; a second oscillator; a power amplifier having its input terminal AC coupled to the outputs of said first and second oscillators; and a loud speaker driven by the output signal of the amplifier; said means for simultaneously and periodically shifting frequencies comprise: a resistive load in series with the supply line of said first and second oscillators; and means for periodically shunting said resistive load.

## 4,284,846

SYSTEM AND METHOD FOR SOUND RECOGNITION  
John Marley, 8715 E. Mackenzie Dr., Scottsdale, Ariz. 85251  
Continuation-in-part of Ser. No. 903,697, May 8, 1978, Pat. No. 4,181,813. This application Aug. 1, 1979, Ser. No. 62,759  
The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.  
Int. Cl.<sup>3</sup> G10L 1/00

U.S. Cl. 179-1 SE

10 Claims



1. A method for producing a signal representing a characteristic sound contained in a stream of sound signals, said method comprising the steps of:

- (a) producing a first sequence of analog signals representing said sound signals;
- (b) operating upon said first sequence of analog signals to detect portions of said analog signals undergoing major slope changes and producing a sequence of digital pulses, the edges of said digital pulses corresponding in time to the beginnings and ends of said portions of said analog signals;
- (c) operating upon said sequence of digital pulses to detect major slope transitions of said analog signals;
- (d) measuring time intervals between predetermined ones of said detected major slope transitions;
- (e) computing a plurality of waveform characteristic ratios between predetermined ones of said time intervals;
- (f) comparing said waveform characteristic ratios with a plurality of stored characteristic ratios to determine if said waveform characteristic ratios match any of said stored characteristic ratios; and
- (g) producing a signal representing a sound corresponding to a matching one of said characteristic ratios.

## 4,284,847

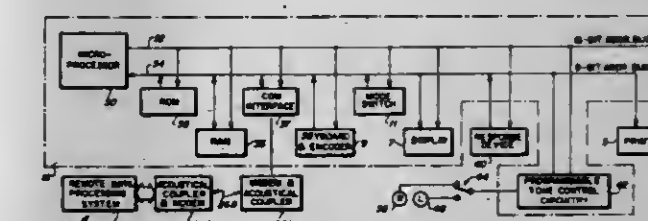
## AUDIOMETRIC TESTING, ANALYZING, AND RECORDING APPARATUS AND METHOD

Richard Besserman, 4824 E. Crystal La., Scottsdale, Ariz. 85253  
Continuation of Ser. No. 920,684, Jan. 30, 1978, abandoned.

This application Feb. 8, 1980, Ser. No. 119,818  
Int. Cl.<sup>3</sup> H04R 29/00

U.S. Cl. 179-1 N

23 Claims



1. A method for audiometric testing of a first person by utilizing an audiometer located at the site of audiometric testing of the first person, the audiometer including

- (i) a first processor,
- (ii) a first memory included in the first processor,
- (iii) a first coupling means for optionally operatively coupling, at the option of an operator, the audiometer to a second processor, the second processor being a remote processor including a second memory capable of storing a plurality of prior threshold levels previously obtained by past audiometric testing of the first person, said audiometer being operable, with no modification thereto, to effect said audiometric testing with or without being operatively



coupled to the second processor, said coupling means including mode selection means for enabling the operator to select either a mode of operation of said audiometer wherein said audiometer is operatively coupled to a second processor or a mode of operation wherein said audiometer is not operatively coupled to the second processor, (iv) a printer coupled to the first processor, said method comprising the steps of:

- manually entering said plurality of prior threshold levels into the audiometer, if the audiometer is not operatively connected by the coupling means to the second processor (of if) and said plurality of prior threshold levels is not contained in the second memory, the audiometer including keyboard means coupled to the first processor for manual entry of audiometric information into the audiometer;
- utilizing the first processor to effect transfer of said plurality of prior threshold levels from the keyboard means to the first memory if the audiometer is not operatively coupled to the second processor;
- utilizing the first processor to access the second processor via the coupling means to request the second processor to fetch said plurality of prior threshold levels from the second memory if the audiometer is coupled by the coupling means to the second processor;
- utilizing the second processor to fetch said plurality of prior threshold levels from the second memory and to transmit the plurality of prior threshold levels to the first processor via the coupling means in response to said request and then operatively decoupling the second processor from the audiometer;
- utilizing the first processor to digitally control selection of test tone frequencies and test tone intensities in accordance with a threshold bracketing subroutine stored in the first memory for execution by the first processor to determine a plurality of present threshold levels of the first person at the selected test tone frequencies, respectively;
- utilizing the first processor to temporarily store said plurality of present threshold levels;
- utilizing the first processor to compute a threshold shift which has occurred in the first person since said previous audiometric testing; and
- utilizing the first processor to effect printing of information indicative of whether said threshold shift is significant.

4,284,848

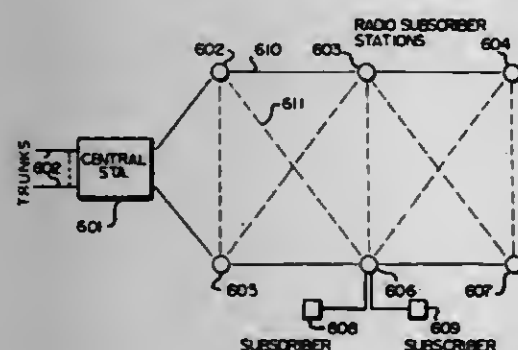
### SWITCHED NETWORK TELEPHONE SUBSCRIBER DISTRIBUTION SYSTEM

Edward G. Frost, 12000 Old Georgetown Rd., Rockville, Md. 20852

Filed Aug. 1, 1979, Ser. No. 62,785  
Int. Cl.<sup>3</sup> H04B 7/14

U.S. Cl. 179-2 EB

32 Claims



21. The method of servicing telephone subscribers, which are not physically connected into a primary telephone system, by means of a network having a central station and plural spaced subscriber stations, the central station serving to provide access to the primary telephone system for the network

subscribers, the spaced subscriber stations each serving to provide access to the network for at least one subscriber by transmitting and receiving calls intended for that subscriber, said method being characterized by the steps of:

relaying calls to subscriber stations located beyond the transmission range of the central station by means of at least one of several others of said subscriber stations configured as a repeater station, said other subscriber stations being capable of receiving and transmitting calls via more than one frequency which is selected by the central station; and automatically changing, in mid-call if necessary, the subscriber stations used as repeater stations for a call, as call traffic permits, to minimize the number of subscriber stations so used.

4,284,849

### MONITORING AND SIGNALLING SYSTEM

Richard W. Anderson, Reading; Robert J. Fahey, Framingham; William R. McClellan, Westford, and J. Edward Schleener, Winchester, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 14, 1979, Ser. No. 94,016  
Int. Cl.<sup>3</sup> H04M 11/04

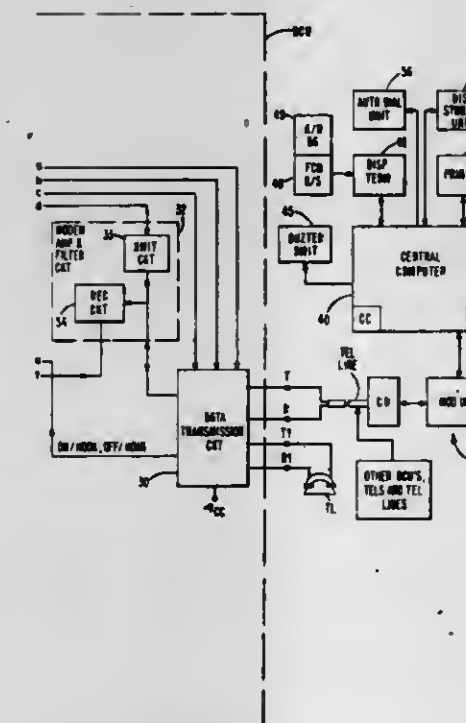
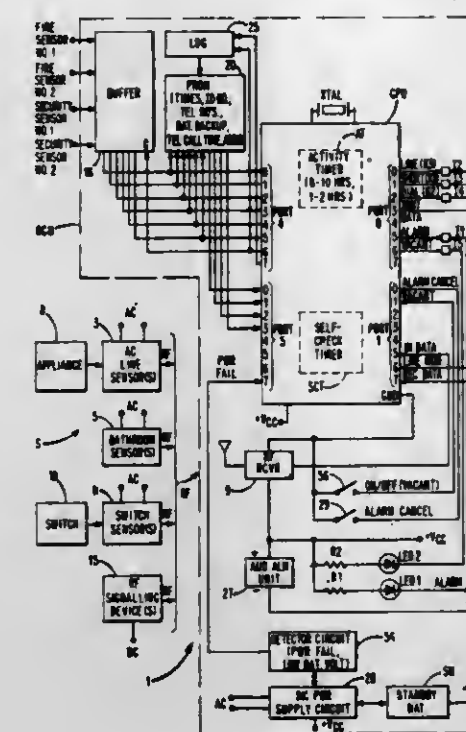
U.S. Cl. 179-5 R

26 Claims

1. In a monitoring and signalling system, apparatus comprising:

- sensor means arranged to monitor the occurrence of an associated activity and operative in response to monitoring the occurrence of the activity to produce a signal indicative of the occurrence of the activity;
- sensor activity recording means for recording sensor activity data representing a count of the number of times the sensor means has monitored its associated activity and produced signals, said data having a first value when the sensor means has not monitored its associated activity and has not produced signals and a different value when the sensor means has monitored its associated activity and produced signals;
- processing means operative when signals are produced by the sensor means to receive and process said signals and in response to processing each signal to change the value of the sensor activity data in the sensor activity recording means to record the occurrence of the activity monitored by the sensor means, whereby the sensor activity recording means maintains a continuing tally of the number of times the sensor means has monitored its associated activity and produced signals;
- timing means operative on a regular basis to cause the existing sensor activity data recorded by the sensor activity recording means to be read out therefrom; and
- sensor data processing means arranged to receive and process sensor activity data read out from the sensor activity recording means and operative whenever the sensor activity data has its first value indicating that the sensor means

has not monitored its associated activity and produced signals since the last readout of sensor activity data from



the sensor activity recording means to produce an output condition indicative of this fact.

4,284,850

### DIGITAL MEMORY PROVIDING FIXED AND VARIABLE DELAYS IN A TASI SYSTEM

Glenn R. Clingenpeel, Northglenn, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Continuation-in-part of Ser. No. 863,903, Dec. 23, 1977. This application Jan. 12, 1979, Ser. No. 3,032

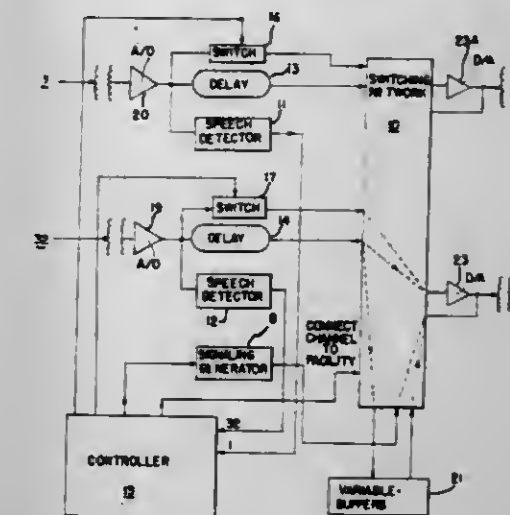
Int. Cl.<sup>2</sup> H04J 5/00

U.S. Cl. 370-81

4 Claims

- A time assignment speech interpolation system comprising:
  - means for sampling signals detected on each input speech channel;
  - a random access digital memory connected between said input speech channels and transmission facilities extending to a remote location, said samples being stored in a fixed portion of said memory for a fixed time;
  - an address generator for generating addresses in a variable

portion of said memory which stores said samples in linked segments of said variable portion; control means having a first portion for storing the addresses of said samples in said linked segments of said variable



portion for variable times until a transmission facility is available and subsequently for retrieving said samples in said linked segments for transmission to a transmission facility.

4,284,851

### ARRANGEMENT FOR FRUSTRATING FRAUDULENT TELEPHONE CALLS

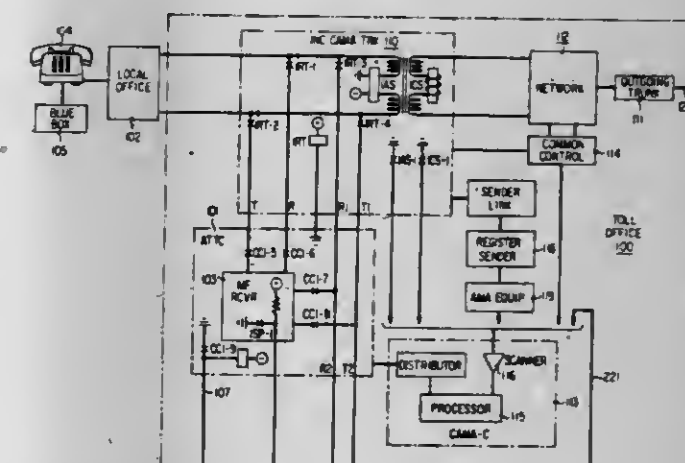
Philip F. Schweitzer, Colts Neck, and John R. Shine, Rumson, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 29, 1979, Ser. No. 53,395

Int. Cl.<sup>3</sup> H04M 1/66

U.S. Cl. 179-18 DA

14 Claims



- For use in a telephone system wherein called station address information is transmitted between switching offices using a first signaling format different from the signaling format generated by a calling station and wherein said calling station includes a fraud device for simulating said first signaling format in order to manipulate said switching offices to avoid toll charges,
  - means for frustrating the completion of a call originated by said fraud device characterized by
  - means at one of said offices responsive to said fraud device for mutilating the transmission of signals from said fraud device, said mutilating means comprising means for generating discrete signals and means for coupling said discrete signals with signals transmitted from said fraud device.



4,284,852

# ALTERNATE ROUTING FOR A TELEPHONE SYSTEM

Edmund Szybliski, Verdun, and Maurice E. Lavigne, Orleans, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

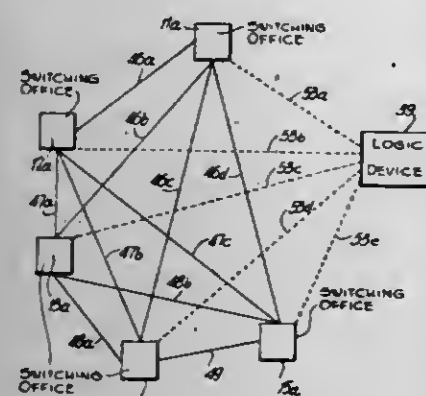
Filed Aug. 17, 1979, Ser. No. 67,542

Claims priority, application Canada, Jun. 22, 1979, 330426

Int. Cl.<sup>3</sup> H04Q 3/54

U.S. Cl. 179—18 EA

14 Claims



1. An alternate routing system for a plurality of telephone switching offices, said system comprising:
  - at least one group of trunk lines connecting any one switching office in said system to any other switching office in said system;
  - a first plurality of storage locations, at each said switching office, for storing an indication of the terminating office to which a call is directed;
  - a second plurality of storage locations, at each said switching office for storing an indication of the switching office most likely to be available as a tandem office between the originating switching office and the terminating switching office;
  - a third plurality of storage locations, at each said switching office, for storing an indication of the trunk lines to be used for accessing the switching office indicated by said second plurality of storage locations as being the tandem offices; and
  - means for periodically updating the information stored in said second plurality of storage locations, concerning the switching office to be employed as a tandem office.

4,284,853

# TELECOMMUNICATION SUBSCRIBER LINE ACCESS CIRCUIT WITH GROUND KEY INDICATION AND A DEVICE FOR CALL SIGNAL GENERATION

Robert Lechner, Otterfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 6, 1980, Ser. No. 127,838

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911584

Int. Cl.<sup>3</sup> H04M 3/02

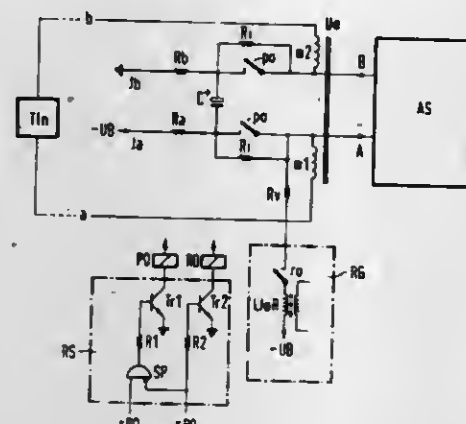
U.S. Cl. 179—18 HB

3 Claims

1. A telecommunications subscriber line access circuit for coupling a two wire subscriber station to a four wire interface to a system, said circuit comprising:
  - (a) a two-to-four wire hybrid transformer;
  - (b) a power supply bridge connected to the two wire side of said transformer for providing a potential difference across the two wires of said subscriber station, said power supply bridge including:
    - (1) a first resistor connected between ground and a first winding of said transformer on the two wire side;
    - (2) a second resistor connected between a source of poten-

tial and the second winding of said transformer on the two wire side; and

- (3) a capacitor connected between said first and second resistors on the sides thereof which are connected to said first and second windings;
- (c) an evaluating circuit connected to said first and second windings for producing and indicating signal upon ground key actuation of said subscriber;
- (d) a cutoff circuit arranged in the power supply bridge, in series with at least one of said first resistor and said second resistor, between said at least one resistor and the respective first and second winding of said transformer at the point at which said evaluating circuit is connected thereto, said cutoff circuit including:
  - (1) a first cutoff switch which is opened, with a delay,



- upon ground key actuation and closed upon termination of ground key actuation; and
- (2) a third resistor bridging said cutoff switch and having a high resistance value;
- (e) means having an output for producing a call signal at said output;
- (f) means for coupling said output of said call signal producing means to one of said first and second windings of said transformer at the point at which said cutoff circuit is connected thereto, said coupling means including:
  - (1) a second cutoff switch; and
  - (2) a fourth resistor connected in series with said second cutoff switch;
- (g) means for controlling said first and said second cutoff switches such that only one of said switches is closed at a time.

4,284,854

# UNIVERSAL SIGNAL GENERATOR FOR GENERATING TELEPHONE SYSTEM HIGH LEVEL SIGNALS

Richard Hayward, John Bottrill, and Robert C. Dittburner, all of Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 20, 1979, Ser. No. 68,224

Claims priority, application Canada, Jun. 29, 1979, 330867

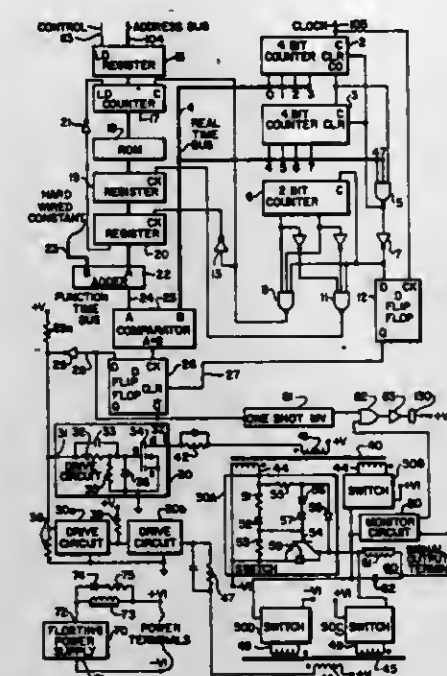
Int. Cl.<sup>3</sup> H04M 1/50

U.S. Cl. 179—84 VF

7 Claims

1. A universal high level signal generator operable in response to clock signals, for generating selectable ones of a plurality of predetermined high level signals, comprising:
  - storage means for storing a plurality of data bytes at least one of each relating to each of the predetermined high level signals;
  - means for generating a signal stream of periodically occurring low and high signal states defining width modulated pulses in response to at least one of the data bytes from the storage means and the clock signals;
  - a switching bridge having a control input connected to the signal stream generating means, a first pair of opposite terminals for connection to a source of energizing power, and a second pair of opposite terminals, the switching bridge being responsive to the high and low signal states

of the signal stream, to alternately connect a potential, appearing across the first pair of opposite terminals, to the



second pair of opposite terminals to provide said high level signals.

4,284,855

# BASE FOR TELEPHONE SET, FOR ALTERNATIVE DESK AND WALL MOUNTING

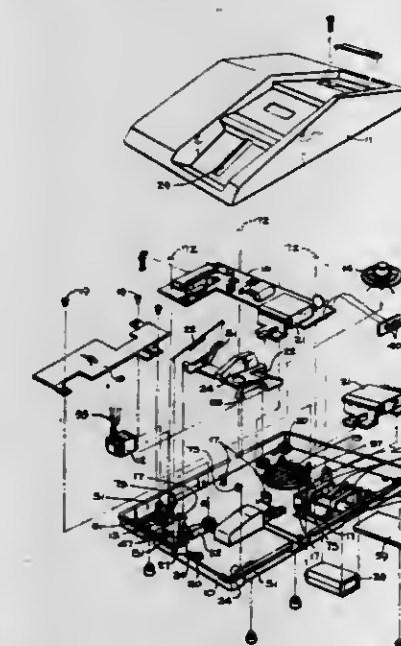
William J. Adams, Franklin; William F. Wernet, Nashville, and Steve W. Haskins, Laverne, all of Tenn., assignors to Northern Telecom, Inc., Ottawa, Canada

Filed Aug. 22, 1979, Ser. No. 68,584

Int. Cl.<sup>3</sup> H04M 1/02

U.S. Cl. 179—100 C

9 Claims



1. An adaptable telephone baseplate for alternative wall and desk top mounting, comprising:
  - a base member and a peripherally extending rim on the base member extending upwardly from a top surface on the base member;
  - an enclosed recess extending from a bottom surface of the base member up through the base member and upwardly of said top surface, for positioning of a modular wall mounting plug therein, said recess being defined by a first aperture in said base member, upwardly extending side walls around the periphery of said first aperture and a top wall extending between said side walls at a position above said base member, said top and side walls enclosing said

recess from the remainder of the top surface of said base member;

modular jack mounting means at a top end of the base member, said modular jack mounting means being aligned with a second aperture through the base member for insertion of a modular line cord plug through said second aperture and into a jack mounted at said mounting means;

a slot in said base member extending from said enclosed recess to said second aperture, for insertion of a short cord between said modular wall mounting plug and a further modular plug adapted for insertion into said jack for wall mounting of the baseplate; and

at least two mounting apertures in said base member, each said mounting aperture of keyhole formation and comprising a circular aperture portion and a waisted slot portion, the slot portion narrower than the diameter of the circular aperture portion and positioned above the circular aperture portion when the baseplate is in a wall mounting position, said waisted slot portion defined by two spaced resilient members for producing a snap fit on a mounting stud attached to a wall.

4,284,856

# MULTI-FREQUENCY SYSTEM AND METHOD FOR ENHANCING AUDITORY STIMULATION AND THE LIKE

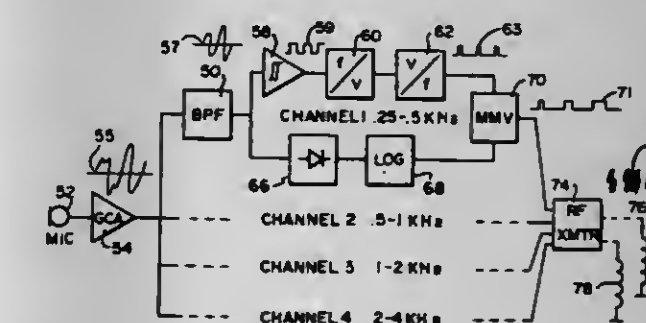
Ingeborg J. Hochmair, and Erwin S. Hochmair, both of Jauerstr 27, A-1130, Vienna, Austria

Filed Sep. 24, 1979, Ser. No. 77,791

Int. Cl.<sup>3</sup> H04R 25/02

U.S. Cl. 179—107 E

22 Claims



1. A multi-frequency system for electrical stimulation comprising:

transmission means for transmitting a plurality of signals each of which is modulated by a signal representing a band of frequencies, said transmission means including at least one coil for transmitting said plurality of modulated signals,

passive multi-channel receiver means for receiving said transmitted signals with each channel responsive to one of said signals representing a band of frequencies, said multi-channel receiver means including a plurality of coils corresponding in number to the number of channels in said receiver means,

a multi-electrode prosthetic device, and means connecting a signal from each of said channels to at least one electrode of said prosthetic device whereby said prosthetic device provides electrical stimulation.

4,284,857

# TONE GENERATOR

Michael Slavin, Troy; Irvin B. Rea, Royal Oak, and George S. Todd, Washington, all of Mich., assignors to Lectra Products, Inc., Troy, Mich.

Filed Jul. 13, 1979, Ser. No. 57,516

Int. Cl.<sup>3</sup> G10K 9/14; H04R 1/02, 13/00

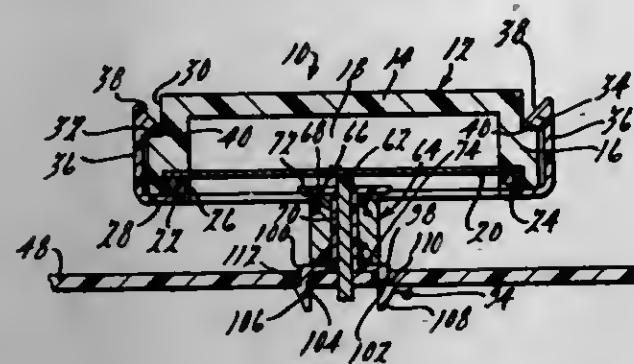
U.S. Cl. 179—115 R

26 Claims

13. In a tone generator of the type having a casing provided with a sound cavity and a diaphragm mounted for free vibra-



tory movement across and closing said cavity, the improvement comprising  
a circuit board,  
a pole piece having a coil mounting portion,



fastening means detachably interconnecting said pole piece and said casing with said coil mounting portion spaced a predetermined distance from said diaphragm, and means mounting said pole piece on said circuit board with said casing above and spaced from said board.

4,284,858

## DICHROIC TRANSDUCER

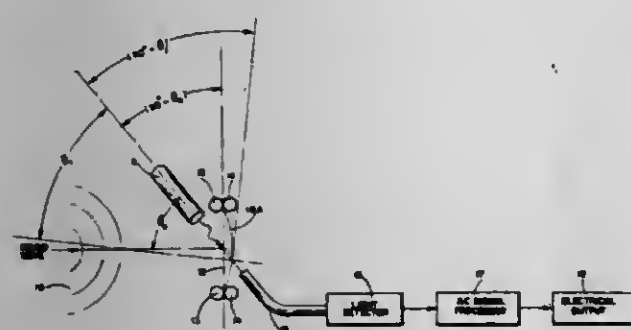
Margie M. Nicholson, San Marino, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 6, 1979, Ser. No. 101,328

Int. Cl.<sup>3</sup> H04R 23/00

U.S. Cl. 179—121 R

6 Claims



1. A dichroic transducer comprising:  
light source means for providing a beam of light;  
a film comprising a dichroic material disposed in the path of said beam of light, said film being stretched so that portions thereof are displaced in response to an incoming information-containing acoustic wave directed at said film, said displaced portions modulating said beam of light directed thereto in accordance with the information contained in said acoustic wave; and  
detector means disposed in the path of said modulated beam of light for detecting said modulated beam.

4,284,859

## ADAPTIVE ELECTRONIC HYBRID CIRCUIT

Takashi Arasaki, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,869

Claims priority, application Japan, Apr. 24, 1978, 53/44496

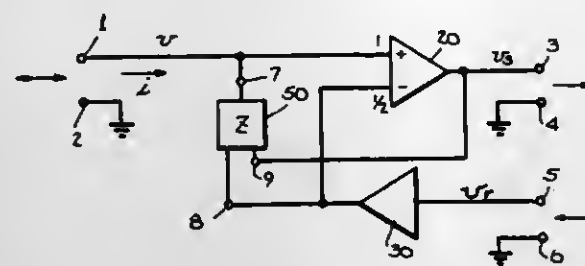
Int. Cl.<sup>3</sup> H04B 1/58

U.S. Cl. 179—170 NC

15 Claims

1. An adaptive electronic hybrid circuit comprising a two-wire terminal for connection to a two-wire circuit, a reception terminal for connection to receive signals from a four-wire circuit and a transmission terminal connected to transmit signals to said four-wire circuit, an adaptive impedance circuit having first, second and third terminals, said adaptive impedance circuit having variable internal impedance characteristics which can be adaptively varied to correspond to the impedance characteristics of said two-wire circuit, an adder connected to add in reverse phase a half value of a reception signal

from said reception terminal to a signal from said two-wire terminal to produce a transmission signal on said transmission terminal, said first terminal of said adaptive impedance circuit being connected to said two-wire circuit, said second terminal of said adaptive impedance circuit being connected to said



reception terminal and said third terminal of said adaptive impedance circuit being connected to the output of said adder, said adaptive impedance circuit being operative in response to the reception of a signal from said adder which is less than said reception signal to change the impedance of said adaptive impedance circuit to minimize said transmission signal.

4,284,860

## TIME DOMAIN MEASUREMENT OF MOVING COIL LOUDSPEAKER DRIVER PARAMETERS

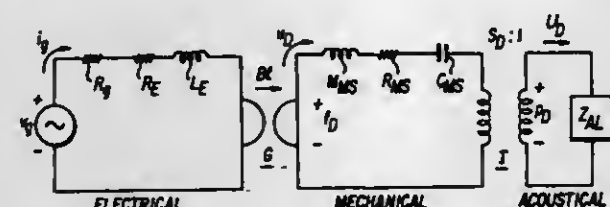
W. Marshall Leach, Jr., Decatur, and Ronald W. Schafer, Atlanta, both of Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed Mar. 28, 1980, Ser. No. 135,085

Int. Cl.<sup>3</sup> H04R 29/00

U.S. Cl. 179—175.1 A

9 Claims



1. A method for measuring the small-signal parameters of a moving-coil electromagnetic transducer driver, comprising:  
mounting said driver in free air;  
coupling the electrical input terminals of said driver to a series circuit including a switching means, a source of DC voltage, and a series resistance;  
closing said switching means such that a DC current flows through said series circuit including said driver;  
measuring the DC source voltage  $V_g$  appearing across the output terminals of said DC voltage source;  
measuring the DC voltage  $V_{re}$  appearing across the terminals of said driver;  
calculating the voice coil resistance  $R_E$  of said driver and the steady state current  $I_{go}$  flowing in said series circuit using said measured voltages  $V_g$  and  $V_{re}$ ;  
opening said switch;  
measuring the AC voltage  $v_{re}(t)$  appearing across the terminals of said driver as a function of time;  
determining the amplitude coefficient  $A$ , the attenuation factor  $\alpha$ , and the frequency  $\omega_d$  of said measured AC voltage; and  
calculating the free-air frequency of resonance  $\omega_s$ , the electrical quality factor  $Q_{ES}$ , the mechanical quality factor  $Q_{MS}$ , and the total quality factor  $Q_{TS}$  for said driver using said amplitude coefficient, said attenuation factor, and frequency  $\omega_d$ .

4,284,861

## SWITCH HINGE

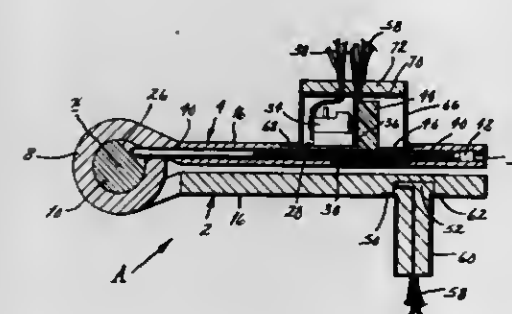
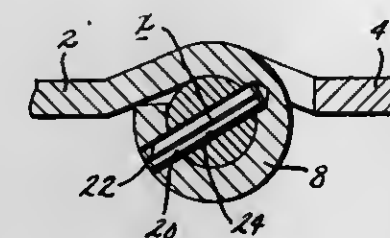
David A. Scaften, Florissant, Mo., assignor to Hager Hinge Company, St. Louis, Mo.

Filed Jan. 9, 1980, Ser. No. 110,603

Int. Cl.<sup>3</sup> H01H 3/16

U.S. Cl. 200—61.7

16 Claims



1. A hinge comprising: first and second hinge leaves each having at least one knuckle, with the knuckles of the leaves being offset from, yet aligned with, each other, the second leaf further having a guideway that opens into the interior of the knuckle on that leaf; a hinge pin located within the knuckles of the leaves to enable the leaves to pivot relative to each other about the axis of the pin, the hinge pin being fixed in position with respect to the knuckle of the first leaf and having a camming surface within the knuckle of the second leaf, with the camming surface being in the region of the end of the guideway, so that as the leaves pivot with respect to each other, the camming surface will move within the knuckle of the second leaf; a push rod located along the guideway and being capable of moving axially therein, the push rod having its end located close enough to the camming surface to be engaged by the camming surface so that the push rod will move axially as the leaves pivot with respect to each other; means for urging the push rod toward the hinge pin within the knuckle of the second leaf; and switch means for changing the condition of an electrical circuit in response to movement of the push rod along the guideway, said switch means including a first component mounted in a fixed position on the second leaf and a second component mounted on the push rod such that it projects laterally therefrom, whereby the relative positions of the first and second components change as the push rod moves along the guideway in response to pivoting movement of the hinge leaves, the second component further being secured to the push rod such that its axial position along the push rod can be altered with relative ease, one of the components being an electrical switch that is in the electrical circuit and the other of the components being an actuator which operates the switch and causes the switch to change condition as relative movement occurs between the switch and the actuator.

4,284,862

## ACCELERATION SWITCH

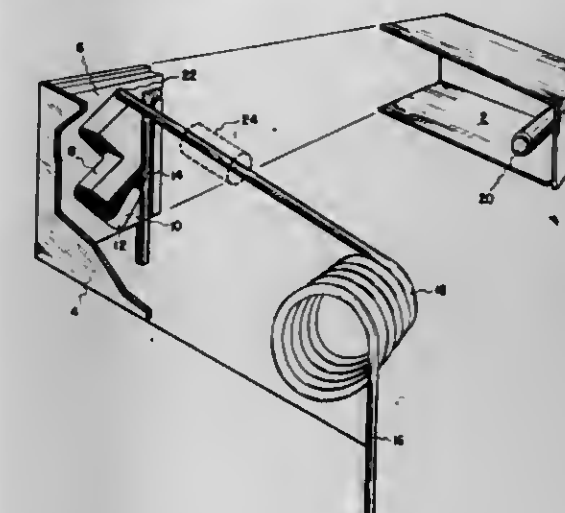
David L. Overman, and Robert N. Johnson, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 20, 1980, Ser. No. 132,205

Int. Cl.<sup>3</sup> H01H 35/02, F42C 15/40

U.S. Cl. 200—61.45 R

9 Claims



1. A switch device comprising  
a first contact means comprising essentially an elastic resilient electrically conductive element biased in a sole direction,  
a second contact means,  
guide means for directing said first contact means along a defined path, said defined path comprising at least three distinct portions,  
wherein successive portions of said path are deviated in direction with respect to one another and each portion of said path forms an acute angle with respect to a line parallel to said sole direction,  
wherein said first contact means will traverse said defined path through at least two portions thereof in a direction generally opposite said sole direction upon application of an acceleration force in said sole direction and will traverse the remainder of said portions in a direction generally along said sole direction upon release of said acceleration force.  
3. A device as in claim 1, wherein said first contact is biased into a first position in said path, said path extending through at least two of said portions thereof from said first position to a second position in a direction generally opposite said sole direction, said path further extending from said second position to a third position in a direction generally along said sole direction,  
wherein said first contact means contacts said second contact means when said first contact means is at said third position.  
9. A switching device as in claim 3 or 8, wherein said first and second contact means remain out of contact with one another until said acceleration force has acted upon said device for a sufficient length of time to move said first contact means to said second position, and until said first contact means has moved to said third position, whereby said device constitutes a time-delay switch.

4,284,863

## VELOCITY CHANGE SENSOR

David S. Breed, Boonton, N.J., assignor to Breed Corporation, Fairfield, N.J.

Filed May 9, 1979, Ser. No. 37,524

Int. Cl.<sup>3</sup> H01H 35/14; B60R 21/08

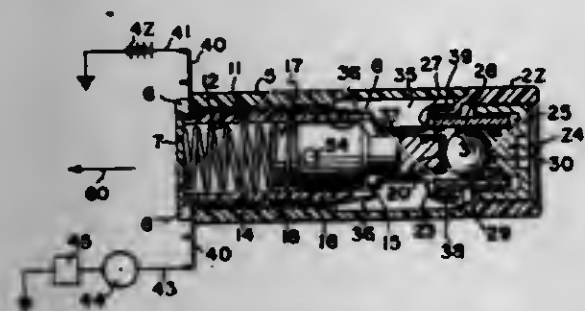
U.S. Cl. 200—61.53

29 Claims

1. In a sensor construction adapted for mounting on a vehicle or the like having an instrumentality to be operated in



response to acceleration of said vehicle above a predetermined threshold, said sensor having a body member provided with a tubular passage having a bore within which a sensing mass is mounted for movement in response to acceleration of said vehicle from an initial position toward a second position in which said sensing mass initiates operation of said instrumentality, and biasing means exerting a predetermined, yieldable



force on said sensing mass restraining movement of the latter from said initial position until said predetermined force is overcome by acceleration whereupon said biasing means is movable relative to said body member and said sensing mass, the improvement comprising means responsive to and following movement of said biasing means a predetermined distance relative to said sensing mass for damping further movement.

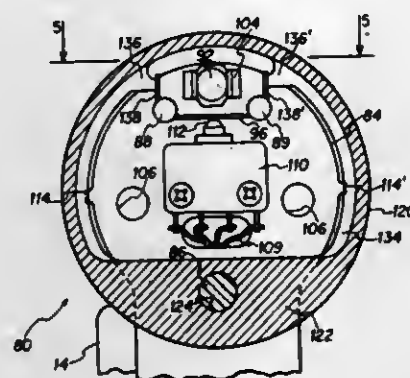
#### 4,284,865 THROTTLE FORCE DETECTOR

Gordon E. Nicholson, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 26, 1979, Ser. No. 52,168  
Int. Cl.<sup>3</sup> H01H 9/06

U.S. Cl. 200—157

4 Claims



1. A switch actuating mechanism, comprising: a graspable housing; plate means for pivotally attaching said housing to a manually operable lever, said housing pivotally movable in either of two opposite directions with respect to said lever when said lever is operated by grasping said housing; a first electrical switch attached to said plate means; and spring means mounted between said housing and said plate means for actuating said first switch in response to the movement of said housing with respect to said lever.

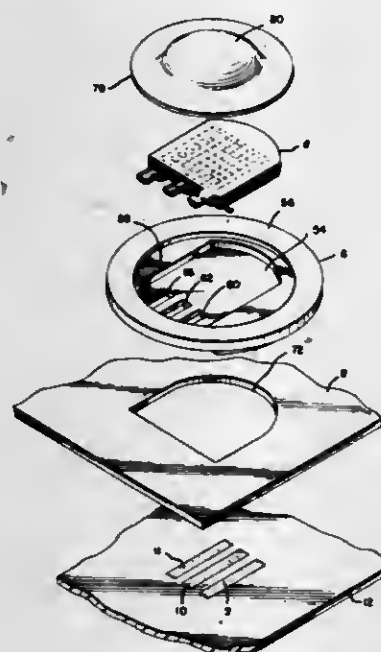
#### 4,284,866 MEMBRANE SWITCH ASSEMBLY

James R. Bryce, Fairport, N.Y., and Donald G. Stillie, Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 25, 1980, Ser. No. 180,746  
Int. Cl.<sup>3</sup> H01H 3/12, 13/02

U.S. Cl. 200—159 B

10 Claims



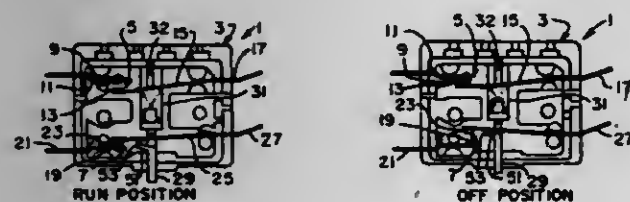
1. A switch assembly mounted in a supporting panel means and a circuit board located adjacent to, and extending parallel to said panel means, said switch assembly having a conductor leads extending therefrom and connected to circuit board conductors in said circuit board, said switch assembly and said supporting panel means being characterized in that: said switch assembly comprises a membrane switch and switch supporting means, said membrane switch being supported in said panel means by said switch supporting means, said membrane switch comprising a pair of flexible insulating substrates having opposed surfaces, switch conductors

#### 4,284,864 LOW ACTUATING FORCE SWITCH

William D. Crow, and John G. Lewis, both of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 26, 1979, Ser. No. 6,570

Int. Cl.<sup>3</sup> H01H 3/00, 35/10; H02P 1/42; H02K 11/00  
U.S. Cl. 200—153 V



1. A switch comprising a fixed contact, a cantilevered resilient, flexible switch arm, a movable contact carried by said switch arm, said movable contact together with said switch arm being movable from an open position in which said movable contact is clear of said fixed contact and a closed position in which said contacts are in electrical contact with one another, and a one-piece plunger for moving said switch arm from its open to its closed position, a resilient spring interposed between said switch arm and said plunger, said plunger and said spring being movable in a direction generally toward said fixed contact for closing contacts, said plunger being movable through a stroke greater than the movement of said switch arm required to close said contacts, said spring being engageable with said switch arm for transmitting movement of said plunger to said switch arm, for substantially taking up said portion of said stroke greater than the movement required to close said contacts substantially without subjecting said switch arm to undue bending, but yet for applying a limited amount of additional force on said switch arm thereby to insure good switch contact when said switch is in its closed position.

on said opposed surfaces and separator means between said opposed surfaces normally maintaining said opposed surfaces in spaced-apart relationship, said separator means permitting relative flexing movement of said substrates normally of their own planes towards each other thereby to move said switch conductors into contact with each other,

said conductor leads comprising resilient sheet metal conductors connected to said switch conductors and extending from said switch assembly towards said circuit board, said conductor leads having contact portions bearing against, and in electrical contact with, said circuit board conductors.

#### 4,284,867 CHEMICAL VAPOR DEPOSITION REACTOR WITH INFRARED REFLECTOR

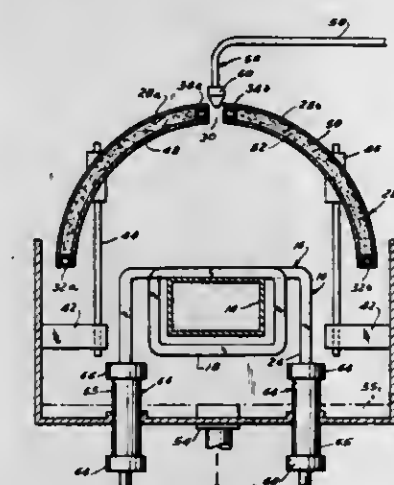
Lawrence Hill, Short Hills; Dennis Garbis, Dix Hills, and Robert Heller, Levittown, all of N.Y., assignors to General Instrument Corporation, Clifton, N.J.

Filed Feb. 9, 1979, Ser. No. 10,746

Int. Cl.<sup>3</sup> H05B 6/42; C23C 13/08

U.S. Cl. 219—10.49 R

1 Claim



1. A chemical vapor deposition reactor comprising the deposition enclosure having a substantially horizontal axis, said enclosure being adapted to receive a wafer mounted on a susceptor therein and having gas inlet and outlet ports, and induction coil comprising a plurality of spaced turns situated external to and surrounding at least a portion of said enclosure, an infrared reflector assembly mounted external to said enclosure with at least a portion of said coil interposed therebetween, said reflector redirecting and focusing energy toward said axis of said enclosure and comprising first and second concave parts with a space therebetween, said space extending in the direction substantially parallel to said axis, and means for preventing deposition of dopants on the surface of said enclosure, said deposition preventing means comprising means for spraying de-ionized liquid on said enclosure, said spray means being at least partially situated within said space between said reflector assembly.

#### 4,284,868 MICROWAVE OVEN

James E. Simpson, Coralville, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Dec. 21, 1978, Ser. No. 971,727

Int. Cl.<sup>3</sup> H05B 6/72

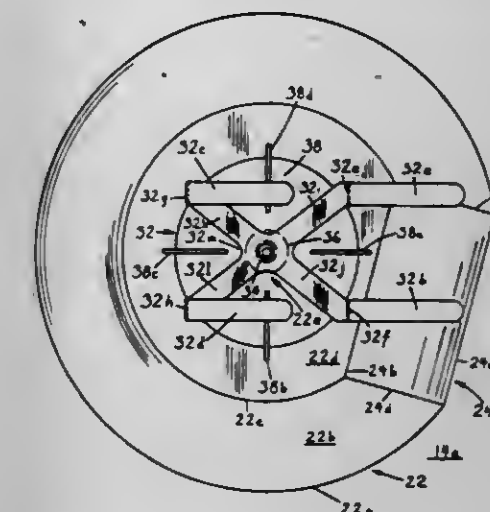
U.S. Cl. 219—10.55 F

39 Claims

4. A directional rotating antenna for use in a microwave oven heating cavity having at least one conductive wall comprising:

- a. at least one pair of end fed radiating elements, all of said elements substantially planar to one wall of a microwave oven heating cavity;

- b. support conductor extending upwardly from an end of each of said elements, and;
- c. transmission line conductor connected between each of said supports to a common junction whereby each of said elements function as a combined transmission line and long wire antenna, each of said transmission line conduc-



tors between said common junction and said support conductor constitute an air dielectric microstrip parallel plate transmission line between said transmission line conductors and said conductive wall of said microwave oven cavity, and said elements provide uniform energy distribution in said microwave oven cavity on rotation about an axis of said wall of said microwave oven cavity.

#### 4,284,869 MICROWAVE WATER HEATER

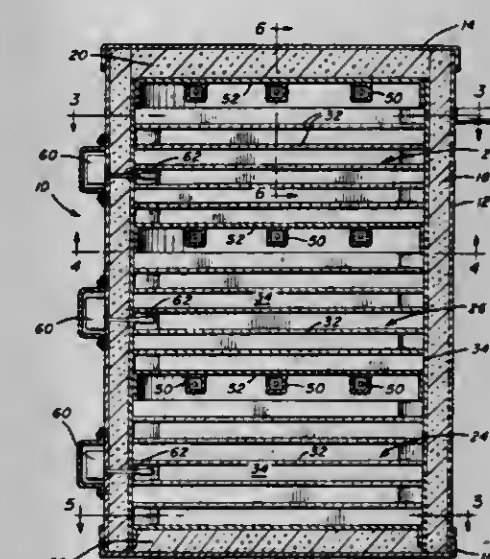
Leo W. Pinkstaff, 1707 Talley St., Savannah, Tenn. 38372

Filed Mar. 6, 1980, Ser. No. 127,863

Int. Cl.<sup>3</sup> H05B 6/80

U.S. Cl. 219—10.55 A

7 Claims



1. A water heater comprising: a housing; a plurality of heating zones formed within said housing; a water inlet connected to said housing; a water outlet connected to said housing; a plurality of energy sources, one of said energy sources being disposed in each of said heating zones; a plurality of thermostats, one of said thermostats being disposed in each of said heating zones and connected to said energy source disposed in the associated heating zone; a fluid flow path defined within said housing extending through each of said heating zones sequentially; and wherein said thermostats in each of said sequential zones are set at incrementally higher temperatures to increase the



water temperature as it flows sequentially through said zones.

4,284,870

## STUD WELDING WITH FLUID SHIELD

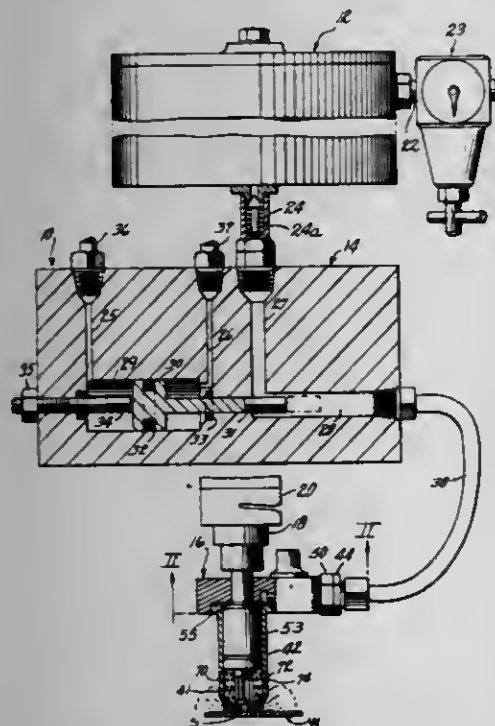
Donald H. Ettinger, Royal Oak, Mich., assignor to USM Corporation, Farmington, Conn.

Filed May 18, 1978, Ser. No. 907,393

Int. Cl.<sup>3</sup> B23K 9/20

U.S. Cl. 219—99

18 Claims



1. Apparatus for arc welding a metallic article such as a stud or the like to a work surface comprising: means for gripping said metallic article; means connecting the apparatus to a power source for providing a welding arc between an article disposed in said article gripping means and said work surface and means disposed on said apparatus adjacent said article gripping means for spraying a liquid in atomized form to provide a thin film of material in liquid form on the area of the work surface surrounding said article, with the article contacting the work and retained in said article gripping means whereby contaminants produced by welding are collected in suspension in the liquid.

18. A method of arc welding a metallic article such as a stud or the like to a work surface comprising the steps of: retaining the article at one end of an elongated gripping collet which is surrounded by a tubular flash shield having a plurality of openings provided therein; with the article contacting the work surface, spraying a liquid in atomized form from adjacent the opposite end of the gripping collet to flow between the collet and the flash shield with a portion thereof directed through the flash shield openings, to provide a thin film of material in liquid form in the area of the work surface surrounding the article for collection of contaminants in suspension during the welding process, sequentially thereafter providing an arc between the article and the surface to form a weld between the article and the surface while the material is in liquid form; and removing the film of material including the contaminants from the work surface to thereby remove contamination produced during the welding operation.

4,284,871

## AUTOMATIC ADJUSTMENT OF THE INITIAL HEIGHT OF A FLAME CUTTER TO A WORKPIECE

Maurice Mawson, Cramlington, and Alexander Jamieson, Blyth, both of England, assignors to Messer Griesheim, Frankfurt am Main, Fed. Rep. of Germany

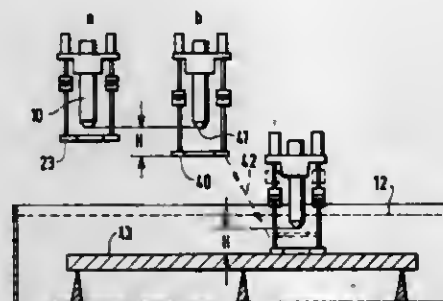
Filed Oct. 23, 1979, Ser. No. 87,350

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2848957

Int. Cl.<sup>3</sup> B23K 9/10

U.S. Cl. 219—121 PV

5 Claims



1. In an apparatus for automatically setting the initial height of a plasma torch cutter over a workpiece having an irregular surface and disposed under a liquid with the plasma torch cutter having a height setting mechanism which is steered in dependence with the plasma arc, the improvement being a sensor means for effecting relative movement between said sensor and said plasma torch cutter whereby the distance therebetween may be set to correspond to said initial height, coupling means for moving said sensor and said plasma torch jointly as a unit by said height setting mechanism toward the workpiece until said sensor contacts the workpiece, and means responsive to said sensor contacting the workpiece for turning off said height setting mechanism and for retracting said sensor by lifting means away from the operative area of said plasma torch cutter.

4,284,872

## METHOD FOR THERMAL TESTING AND COMPENSATION OF INTEGRATED CIRCUITS

Jerald G. Graeme, Tucson, Ariz., assignor to Burr-Brown Research Corporation, Tucson, Ariz.

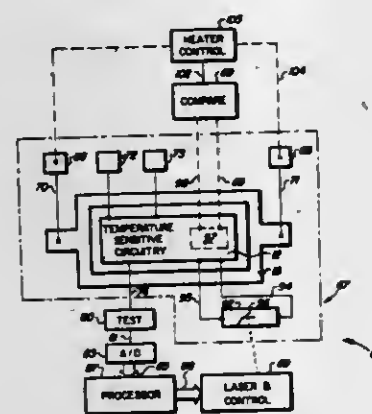
Division of Ser. No. 869,228, Jan. 13, 1978. This application

Apr. 25, 1980, Ser. No. 144,179

Int. Cl.<sup>3</sup> B23K 26/00

U.S. Cl. 219—121 LJ

15 Claims



1. A method of trimming the value of an element of an integrated circuit to compensate for temperature sensitivity of the integrated circuit, the method comprising the steps of:

- applying an operating voltage to a temperature sensitive element of the integrated circuit;
- applying a powering voltage to a heating element in the integrated circuit for a sufficiently long time to heat said temperature sensitive circuitry to approximately a predetermined temperature, the heating element being disposed

in the integrated circuit adjacent to said temperature sensitive circuitry;

- measuring a temperature sensitive electrical parameter of said temperature sensitive circuitry when said time elapses and substantially before thermal equilibrium is established in the integrated circuit;
- comparing the value of the measured temperature sensitive electrical parameter to a reference value;
- producing error information representative of the difference between the value of the measured electrical parameter and the reference value; and
- laser trimming an element of the integrated circuit by an amount determined from said error information to adjust the temperature sensitive electrical parameter to a predetermined value, said element being determinative of said temperature sensitive electrical parameter.

4,284,873

## WELDING TORCH

Jürgen Schlüter, Laatzen, Fed. Rep. of Germany, assignor to E. Schlüter Fachhandel für Schweisstechnik, Laatzen, Fed. Rep. of Germany

Filed May 22, 1979, Ser. No. 41,513

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823837

Int. Cl.<sup>3</sup> B23K 9/00

U.S. Cl. 219—136

13 Claims



1. A torch, particularly a metal inert gas welding torch, comprising

- a torch housing having a front end portion provided with an outlet nozzle adapted to face towards an object to be treated with the torch, and having an outlet at which welding heat and fumes develop in operation of the torch; elongated hermetically closed heat transmitting means confined in its entirety within said housing for automatically transporting heat from a heat receiving zone adjacent said front end portion to a heat releasing zone rearwardly spaced from said heat receiving zone; and combined means for cooling said front end portion and for removing the fumes which develop in operation of the torch, comprising a chamber in said front end portion and having an outlet, means for circulating a cooling medium into said chamber and through said outlet thereof, means for creating a pressure drop in the cooling medium entering the chamber so as to produce suction in the chamber, and channel means connecting said chamber with fume inlet means located in the region of said outlet nozzle near the operating zone and integrated with said outlet nozzle, so that the suction produced in said chamber aspirates fumes through said inlet means and through said channel means and causes them to mix with the cooling medium in the chamber.

4,284,874

## CLAMP TYPE HEATER FOR BACK-PART MOLDING SHOE MACHINES

Arthur W. Prichard, and Francis B. Sharp, both of Leicester, England, assignors to USM Corporation, Farmington, Conn.

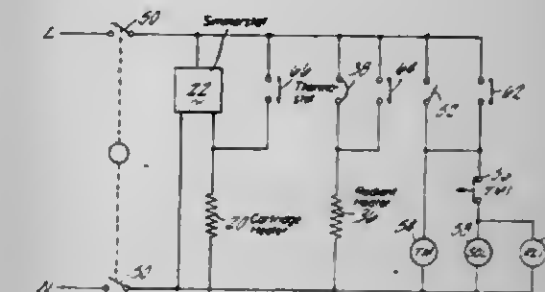
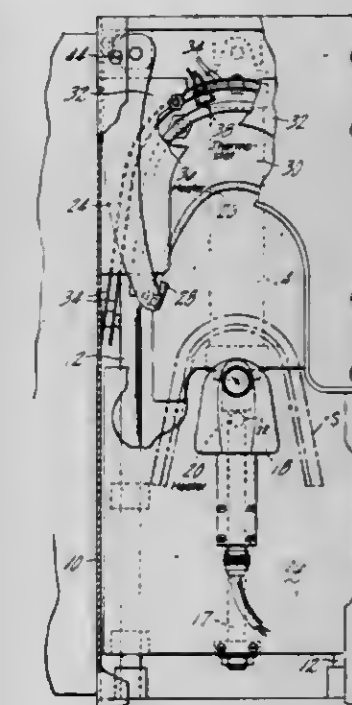
Filed Sep. 17, 1979, Ser. No. 75,905

Claims priority, application United Kingdom, Oct. 5, 1978, 39373/78

Int. Cl.<sup>3</sup> A43D 25/20; H05B 1/02

U.S. Cl. 219—215

11 Claims



1. A heater device for heating portions of shoe uppers prior to molding such portions to a desired shape, the device comprising:

- an inner form and a cooperating outer band;
- a motor means for effecting relative movement between said inner form and said outer band whereby a shoe upper portion placed therebetween can be clamped therebetween;
- a first heating means for heating said inner form and a second heating means for heating said outer band, said second heating means comprising radiant heater means to which the outer surface of the band is exposed, wherein said second heating means is connected to a first circuit, which also incorporates thermostatic control means for limiting the temperature to which said outer band is heated by said second heating means and further to a second circuit, which also incorporates a switch which is operated when the motor means is actuated, the heating device being such that the temperature to which said outer band is heated is controlled by said thermostatic control means when the device is in a rest condition, but said second heating means is rendered operative by said switch when said motor means is activated, regardless of said thermostatic control means; and
- wherein said second heating means is accommodated in a chamber which is open at the bottom, through which said band extends therinto, and further wherein said thermostatic control means is connected to a switch which is operated when the motor means is actuated, the heating device being such that the temperature to which said outer band is heated is controlled by said thermostatic control means when the device is in a rest condition, but said second heating means is rendered operative by said switch when said motor means is activated, regardless of said thermostatic control means; and



static control means is responsive to change in the temperature of the air in the chamber.

4,284,875

## HEAT ROLLER FIXING APPARATUS

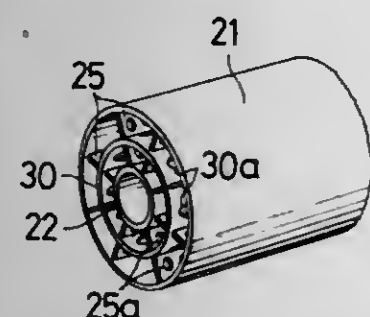
Ryoichi Namiki, Hino; Yuichiro Higashi, Kawasaki; Toshiyuki Kikuchi, Yokohama; Ichiro Fukushima; Yasuo Asahina, both of Tokyo, and Setsumi Soga, Mitaka, all of Japan, assignors to Richo Company Ltd., Tokyo, Japan  
Division of Ser. No. 836,413, Sep. 26, 1977. This application Apr. 2, 1979, Ser. No. 26,322

Claims priority, application Japan, Sep. 27, 1976, 51-115547; Oct. 20, 1976, 51-125916; Nov. 30, 1976, 51-143795; Dec. 3, 1976, 51-145221

Int. Cl.<sup>3</sup> H05B 1/00

U.S. Cl. 219—216

11 Claims



1. In a heat fixing roller apparatus comprising an inner cylinder having a heater therein, an outer cylinder which is made integral with said inner cylinder at respective ends thereof, a vacuum chamber which is formed between said inner cylinder and said outer cylinder and which contains a heating medium, the improvement wherein a heat conductive means for conducting heat from said inner cylinder is disposed between said inner cylinder and said outer cylinder in contact with said inner cylinder, and the lower portion of said heat conductive means is immersed in said heating medium at least when said outer cylinder is stationary, said heat conductive means comprising an intermediate cylinder supported on said inner cylinder by a plurality of heat conductive support arms.

4,284,876

## THERMAL PRINTING SYSTEM

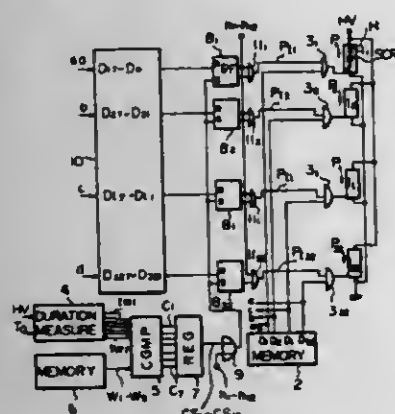
Norio Ishibashi, and Kazuo Nakano, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan  
Filed Apr. 7, 1980, Ser. No. 137,784

Claims priority, application Japan, Apr. 24, 1979, 54/497787; Apr. 24, 1979, 54/49788

Int. Cl.<sup>3</sup> H05B 1/00

U.S. Cl. 219—216

6 Claims



1. A thermal printing system comprising;  
(a) a plurality of thermal elements each having a heater and a switching means connected series to said heater, one end of each heater being connected to a power supply which provides the predetermined width of repetitive power

pulse, and the other end of the switching means being grounded, said thermal elements being aligned on a straight line with close relations to each other contacting a thermal paper in the direction perpendicular to the moving direction of a thermal paper,  
(b) first digital memory which stores the black/white information to be printed for each dot,  
(c) second digital memory which stores the information relating to the previously printed information for each dot,  
(d) conversion means for converting the output of the second digital memory to the trigger timing pulse for initiating the heating of each thermal element, and  
(e) AND circuit means for providing the logical product of said trigger timing pulse and the output of said first digital memory to fire each thermal element.

4,284,877

## ELECTRICALLY HEATED HAIR CURLER

Yoshinori Abura; Fumiya Ueda; Nobuyuki Morihara, and Tomohiro Kami, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

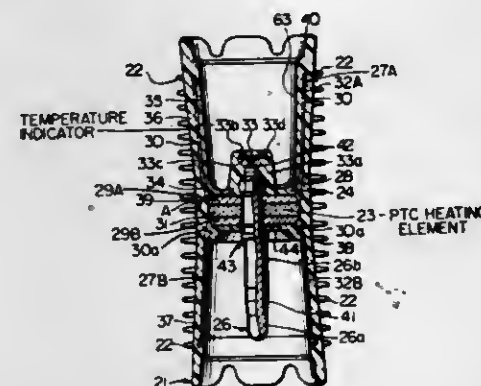
Filed Aug. 21, 1978, Ser. No. 934,726

Claims priority, application Japan, Aug. 27, 1977, 52-103051

Int. Cl.<sup>3</sup> A45D 2/36; H05B 1/00

U.S. Cl. 219—222

15 Claims



1. A hair curler comprising an elongated hair bobbin including an opening at one end, a PTC heating element having a temperature self-controlling function housed in said hair bobbin and including two opposing sides, a pair of opposed cup-shaped generally cylindrical members housed in said bobbin, each cylindrical member including a bottom and a side wall, said heating element being held between the opposed bottoms of said cup-shaped members, each of said bottoms defining an electrode plate arranged in contact with a side of said heating element for conducting heat from said heating element to the side wall of each member, the latter defining heat conductors for transmitting the heat of the heating element to the hair bobbin, and a power supplying pin comprising first and second power supplying terminals which are connected to a respective one of said electrode plates and an insulator interposed between said terminals, one end of said power supplying pin extending in one direction through said heating element and electrode plates for fastening the heating element and said electrode plates together and another end of said pin extending in an opposite direction along a longitudinal axis of the hair bobbin toward said opening of the bobbin, said pin being accessible through said opening and being adapted for connection to a power source.

4,284,878

## FLUID LEVEL DETECTOR

Harold U. Bartels, Riverside, Calif., assignor to Bourns Medical Systems, Inc., Riverside, Calif.

Filed Aug. 20, 1979, Ser. No. 68,116

Int. Cl.<sup>3</sup> F24H 1/06

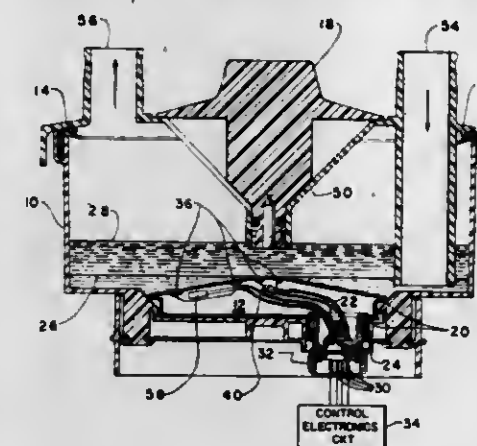
U.S. Cl. 219—272

9 Claims

1. A device for detecting when the level of fluid in a vessel

decreases below a predetermined fluid level, said device comprising:

a thermally conductive cover element covering at least part of the bottom of the vessel and having a raised portion rising to the predetermined fluid level;  
heating means for directly heating conductively substantially all of said cover element except for said raised portion;  
heat sensitive means, attached to the interior of said cover element in said raised portion for producing an output signal which varies in amplitude as a function of the tem-



perature sensed in said raised portion, said output signal varying around a first level when said raised portion is submerged below the surface of said fluid and varying around a second level when said raised portion is exposed to air; and

a control circuit for (a) regulating the temperature of said fluid below the boiling point thereof by controlling the application of electric power to said heating means as a function of the amplitude of said output signal when said output signal varies around said first level, and (b) producing a warning signal when the output signal is varying around the second level.

4,284,879

## METHODS OF CONTAINING FLUIDS DELETERIOUS TO THE CONTAINER

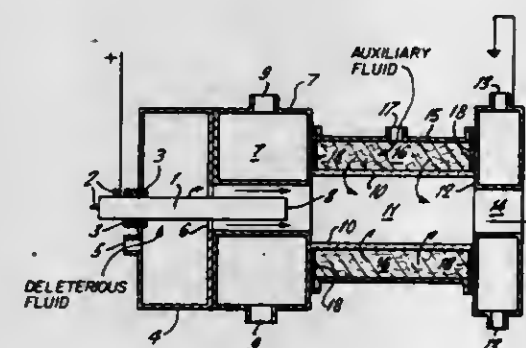
Geoffrey F. Eveson, Grimsby, and Alan W. Scruby, Brigg, both of England, assignors to Laporte Industries Limited, England  
Continuation of Ser. No. 683,715, May 6, 1976, abandoned. This application Jun. 14, 1979, Ser. No. 48,505

Claims priority, application United Kingdom, May 21, 1975, 21715/75

Int. Cl.<sup>3</sup> H01H 1/00

U.S. Cl. 219—383

6 Claims



1. A method of temporarily containing a hot fluid in a chamber defined at least in part by a permeable wall member, the hot fluid having a temperature at least equal to the minimum deterioration temperature of the wall member, the hot fluid thereby having a deleterious effect on the wall member on contact therewith; which comprises: providing for the chamber at least one wall member constructed of heat insulating, refractory ceramic fibers comprising fibers of inorganic com-

pounds selected from the group consisting of alumina, silica, zirconia and silica/alumina, the wall member having a density of from 0.16 to 0.80 g/cm<sup>3</sup> and a uniform permeability, to an auxiliary fluid having no deleterious effect on said wall member, of from 10<sup>-5</sup> to 10<sup>-9</sup> cm<sup>2</sup>; causing said auxiliary fluid to permeate through the permeable wall member, under a pressure from outside the chamber and pass into the chamber, said auxiliary fluid having a temperature below the minimum deterioration temperature of the wall member and being non-deleterious toward the wall member and the fluid to be contained; introducing the fluid having a deleterious effect on the wall into the chamber under a pressure less than the pressure of the auxiliary fluid; and removing the fluid having a deleterious effect from the chamber; whereby the passage of the auxiliary fluid reduces the contact between the deleterious fluid and the wall member during the residence time of the deleterious fluid in said chamber.

4,284,880

## HEATING WELL

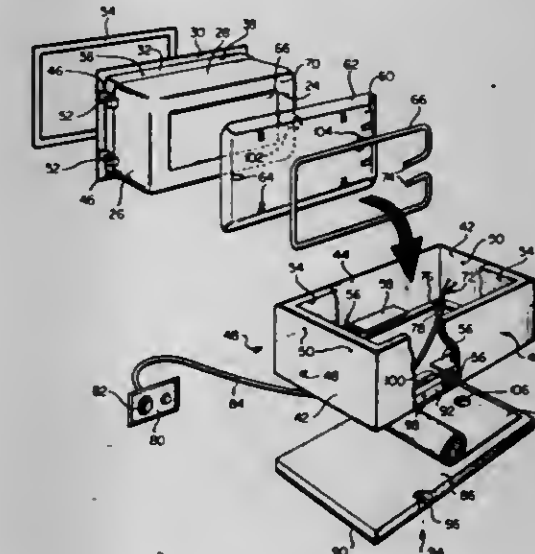
William Keiser, St. Louis, Mo., assignor to International Foodservice Equipment Systems, Inc., Elgin, Ill.

Filed Feb. 6, 1979, Ser. No. 9,948

Int. Cl.<sup>3</sup> H05B 1/00

U.S. Cl. 219—415

5 Claims



1. An improved heating well for mounting to the underside of a counter top having an opening therein and for receiving through said counter top opening a removable food pan and maintaining food in said food pan at a desired temperature, said heating well comprising:

a well pan having an open top end, continuous side walls, and a bottom wall;  
means for mounting the well pan to a counter top under an opening in the counter top;  
an outer housing having an open top end and an open bottom end, said open bottom end having flanges extending therefrom, said well pan being located in the housing with said side walls being spaced inwardly from the housing;  
a plurality of brackets secured to said well pan and extending from said side walls to be adjacent said housing, each of said brackets and said housing having aligned holes there-through;  
a plurality of resilient push rivets adapted to be installed in said aligned holes to secure said housing to said well pan; means including at least two angle members for providing peripheral support surfaces facing the open top end of said housing, each of said angle members having a first leg secured to said housing and a second leg extending inwardly in said housing;  
a metallic heat dispersing plate adapted to fit through the open top end of the housing and be supported on the support surfaces with the bottom wall of said well pan residing on said heating dispersing plate;



means including a high-temperature electric heating element for heating said well pan through said heat dispersing plate, said heat dispersing plate having a plurality of tabs stamped therefrom and bent to extend from the underside thereof and over said heating element to secure said heating element below said heat dispersing plate; a bottom cover, said bottom cover and said bottom end flanges having aligned holes therethrough; and means including a second plurality of resilient push rivets adapted to be installed in said aligned holes to secure said bottom cover to the bottom end of said housing.

4,284,881

## DIGIT WHEEL COUNTER

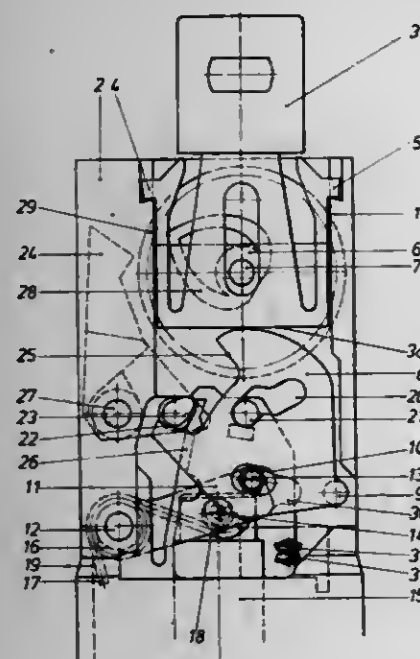
Hans Neher, Hausen, Fed. Rep. of Germany, assignor to J. Hengster K.G., Aldingen, Fed. Rep. of Germany  
Filed Dec. 26, 1979, Ser. No. 107,035

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1979, 2900415

Int. Cl.<sup>3</sup> G06C 15/42

U.S. Cl. 235—1 C

11 Claims



1. In a mechanical counter comprising digit wheel means, stepping pinion means movable between first and second positions, in which said pinion means engage and disengage, respectively, said digit wheel means, and a resetting mechanism comprising a resetting rake which is movable between an initial position, in which said rake is clear of said digit wheel means, and an actuated position, and is arranged to reset said digit wheel means by a movement from said initial to said actuated position, a pivoted member which is pivoted on a first stationary axis and has eccentric portions operatively connected to said pinion means and said rake, and actuating means which are operatively connected to said pivoted member and operable to move by means of said pivoted member said pinion means from said first position to said second position and back to said first position and to move by means of said pivoted member said rake to said actuated position when said pinion means are in said second position and subsequently to move said rake back to said initial position by means of said pivoted member

the improvement residing in that said pivoted member comprises an S-shaped cam slot and a U-shaped recess, said pinion means comprise a pinion-carrying axle, which engages said cam slot, said rake is pivoted on a second stationary axis and carries a coupling pin extending into said recess and is pivotally movable between said initial and actuated positions, said recess has in the direction of the pivotal movement of said pivoted member about said first axis an extent which exceeds the diameter of said coupling pin so that there is

lost motion between said coupling pin and said pivoted member, said pivoted member is adapted to cooperate with said coupling pin only when said pinion means are in said first and second positions, and resilient means are provided which tend to yieldably hold said rake in its initial and actuated positions.

4,284,882

## TAMPER RESISTIVE ODOMETER

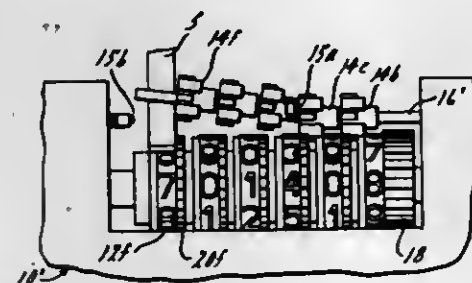
Gary F. Woodward, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 6, 1979, Ser. No. 64,205

Int. Cl.<sup>3</sup> G01C 22/00; G06C 9/00

U.S. Cl. 235—96

7 Claims



1. In a multi-wheel type odometer utilizing an up-counting pinion gear between each pair of adjacent wheels and engaged with at least one of said wheels freely mounted on a common pinion shaft, an improvement comprising:  
a brittle pinion shaft rigidly mounted so as to fracture in the event attempts are made to disengage any up-counting pinion gear from its associated wheel.

4,284,883

## CARD READER WITH IMPROVED DATA PROCESSING TIMING CONTROL

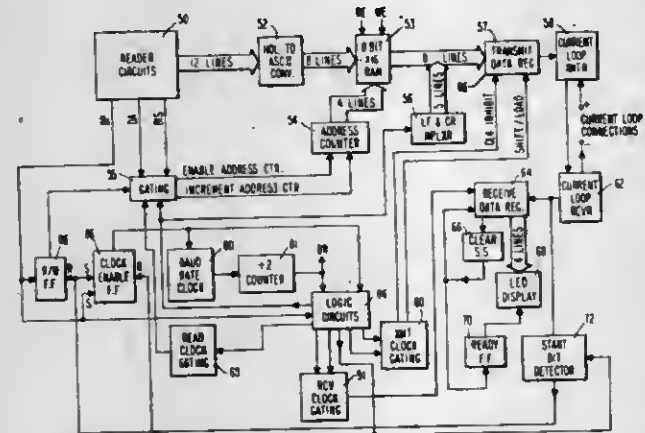
John C. Schisselbauer, Southampton, Pa., assignor to Peripherals Dynamics, Inc., Norristown, Pa.

Filed May 23, 1979, Ser. No. 41,897

Int. Cl.<sup>3</sup> G06K 7/016, 7/00

U.S. Cl. 235—474 Q

6 Claims



1. A badge reader adapted to carry out operations with a device at a remote location comprising means for reading data from a badge, means for storing said read data, operation means for carrying out selected operations with said remote location device including means for transmitting stored data to a remote location and means for receiving data from said remote location, control means for generating operation signals for initiating said selected operations and for generating control signals for controlling said operation means, characterized by said control means including a timing signal generator which controls the timing of said control signals, and timing signal control means for receiving signals from said remote

location and for enabling said timing signal generator only while one of said selected operations is being carried out.

4,284,884

## ELECTRO-OPTIC DEVICES

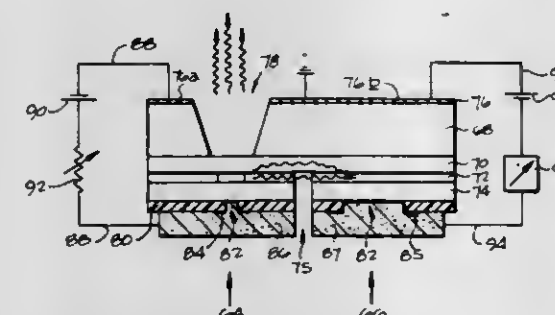
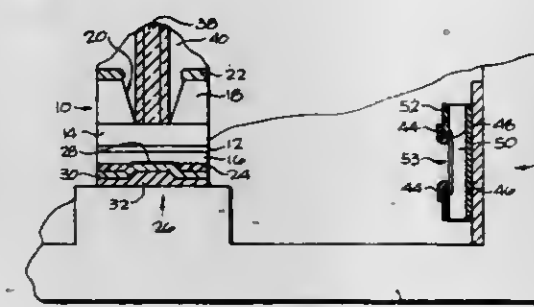
John C. Dymont, Kanata; Jozef Straus, Ottawa; Tibor F. I. Kovats, Ottawa; William J. Sinclair, Ottawa, and Anthony J. Springthorpe, Richmond, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 9, 1980, Ser. No. 138,747

Int. Cl.<sup>3</sup> G02B 27/00

U.S. Cl. 250—205

18 Claims



1. An electro-optic device comprising:  
a Burrus-type light emitting diode having an active layer, the light emitting diode being operable to produce primary top emission of light perpendicular to said layer, and relatively low intensity secondary side emission in the plane of said layer;  
drive means for applying current to drive the light emitting diode;  
monitoring means located in the plane of the active layer for monitoring the secondary side emission and for generating an electrical analog of such monitored secondary side emission; and  
feedback means for applying said electrical analog to the drive means whereby to stabilize primary top emission from said light emitting diode.

4,284,885

## OPTICAL POTENTIOMETER

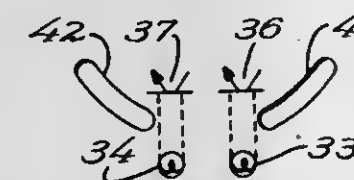
Eugene T. Swensen, Golden Valley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 910,043, May 26, 1978, abandoned. This application Apr. 12, 1979, Ser. No. 29,250

Int. Cl.<sup>3</sup> G01J 1/32

U.S. Cl. 250—211 K

30 Claims



1. An optical potentiometer comprising:

first and second variable light transmissive windows;  
light source means for supplying light to one side of said windows;  
first light responsive means positioned on the other side of said windows for receiving light emitted through said first window and second light responsive means mounted on the other side of said windows for receiving light emitted through said second windows, said first and second light responsive means mounted so that only one of said first and second light responsive means receives light at any time; and,  
means for moving said first and second variable light transmissive windows past said first and second light responsive means.

4,284,886

## RANDOM PULSING OF NEUTRON SOURCE FOR INELASTIC NEUTRON SCATTERING GAMMA RAY SPECTROSCOPY

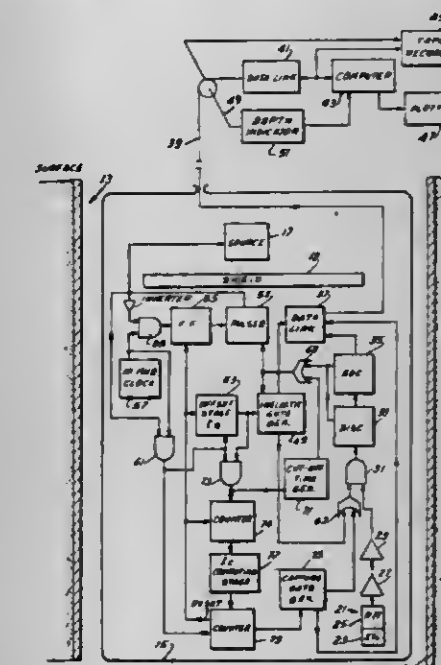
Russel C. Hertzog, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 11, 1979, Ser. No. 28,953

Int. Cl.<sup>3</sup> G01V 5/00

U.S. Cl. 250—270

17 Claims



1. A method for logging a formation surrounding a borehole, comprising the steps of:  
irradiating said formation with a succession of discrete bursts of fast neutrons, each burst having a variable time interval;  
detecting radiation occasioned in said formation by said fast neutrons;  
limiting the number of fast neutrons emitted during an individual burst by shortening the variable time interval of said individual burst as a function of the detected radiation during said individual burst; and  
continuously varying the frequency of occurrence of said succession of discrete bursts to conform the relationship between said variable time interval and the following time interval before the next discrete burst to a predetermined relationship.



4,284,887

# POLYCHROMATIC X-RAY SOURCE FOR DIFFRACTION APPARATUS USING POLYCHROMATIC X-RAYS

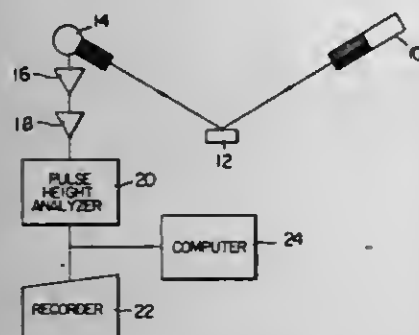
Sho Kusumoto; Yoshio Fukuda, both of Hitachi; Sadao Nemoto, Hitachi, and Naoki Sakurama, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 2, 1979, Ser. No. 16,829

Claims priority, application Japan, Mar. 16, 1978, 53/29253  
Int. Cl.<sup>3</sup> G01N 23/20; G21K 1/00

U.S. Cl. 250-272

28 Claims



1. A polychromatic X-ray source used in a polychromatic X-ray diffraction apparatus, in which polychromatic X-rays are cast along a beam path upon a sample to be analyzed, the energies of the X-rays diffracted from the crystallographic planes of said sample are measured and the physical properties of said sample are detected on the basis of the measured energies, said polychromatic X-ray source comprising:

- a container made of radiation shielding material and having an X-ray outlet channel through which the beam path passes;
- a radionuclide contained in said container so as to emit radioactive primary rays;
- target means mounted in said container so as to intercept the emitted rays from said radionuclide and thereby emit polychromatic secondary X-rays into said channel by scattering and absorbing said primary rays emitted from said radionuclide, said target means being a substance that scatters said radioactive primary rays emitted from said radionuclide through a Compton effect to produce polychromatic X-rays;
- radiation shielding means for opening and closing said channel to the passage of rays traveling along said beam path toward said sample; and
- Soller slit means in said beam path disposed in the vicinity of the outer end of said channel for collimating said polychromatic secondary X-rays along said beam path.

4,284,888

# PYROELECTRIC DETECTORS

David Appleby, Northampton, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

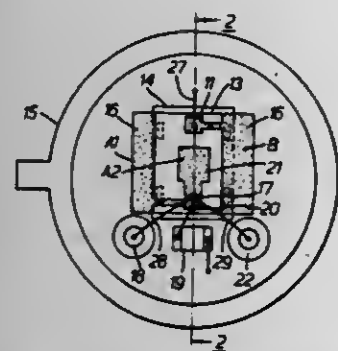
Filed Oct. 18, 1979, Ser. No. 85,983

Claims priority, application United Kingdom, Oct. 24, 1978, 41669/78; Feb. 6, 1979, 04132/79

Int. Cl.<sup>3</sup> G01J 1/00

U.S. Cl. 250-338

34 Claims



1. A pyroelectric detector comprising an element of pyro-

electric material, said element having first and second regions, said first and second regions being connected in parallel with each other, said first region being active to infra-red radiation to produce a first output, said second region being relatively inactive to infra-red radiation so as to produce a null output, said element having a third region, said third region being connected in series with said first and second regions, said third region being oppositely polarized and active to infra-red radiation to produce a further output, wherein said first and further outputs are compared to each other, and are each compared to said null output, whereby to detect intrusion at both near and far ranges.

4,284,889

# METHOD FOR RECORDING RADIATION IMAGE USING STIMULABLE PHOSPHOR

Hisatoyo Kato; Seiji Matsumoto, and Junji Miyahara, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

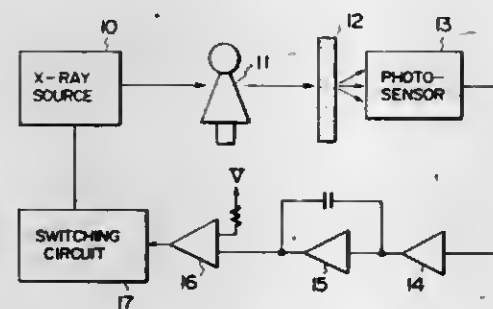
Filed Oct. 1, 1979, Ser. No. 80,310

Claims priority, application Japan, Oct. 5, 1978, 53-122880; Oct. 5, 1978, 53-122882

Int. Cl.<sup>3</sup> G01T 1/00, 1/11; H05B 33/00; H05G 1/30

U.S. Cl. 250-355

4 Claims



1. A method of recording a radiation image on a recording material comprising the steps of exposing a stimulative phosphor to a radiation which carries image information to store the energy of the radiation in an imagewise pattern, stimulating the stimulative phosphor to cause the phosphor to emit light according to the energy stored therein, and recording a visible image on a photosensitive material by use of the light emitted by the stimulated phosphor wherein the improvement comprises steps of measuring the amount of light emitted by the stimulative phosphor by instantaneous emission when the phosphor is exposed to the radiation, and controlling the image recording system in accordance with the results of the measurement.

4,284,890

# COINCIDENCE ANALYSIS CIRCUIT FOR POSITRON ANNIHILATION IMAGING DEVICE

Christopher J. Thompson, Montreal, Canada, assignor to Montreal Neurological Institute, Montreal, Canada

Filed Aug. 27, 1979, Ser. No. 70,066

Int. Cl.<sup>3</sup> G01T 1/20; G01N 21/00

U.S. Cl. 250-363 S

1 Claim

1. A coincidence detector circuit for receiving a plurality of pulsed input signals, pairs of which occur within a selected coincidence resolving time and require to be identified, said detector circuit comprising:

- (a) input means for receiving pulsed input signals and converting them into level discriminated signals;
- (b) a multiple bit delay to which the level discriminated signals are applied for generating output signals corresponding to and delayed with respect to the level discriminated signals;
- (c) a multiple bit holding register connected to receive the delayed output signals from said multiple bit delay for generating holding register output signals which are the

4,284,891

# GAMMA CAMERA

Jean Pergrale, Paris, and Michel Jatteau, Lesigny, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

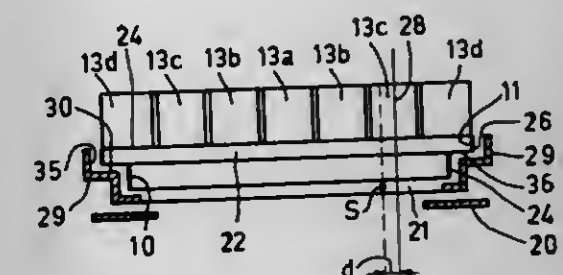
Filed Dec. 3, 1979, Ser. No. 99,456

Claims priority, application France, Dec. 5, 1978, 78 34169

Int. Cl.<sup>3</sup> G01T 1/20

U.S. Cl. 250-363 S

3 Claims



1. In a gamma camera which comprises:  
a scintillation crystal having a first side and an opposite second side; an optical conductor having a first side disposed against the second side of the scintillation crystal and a second opposite side, a transverse dimension of the optical conductor being larger than a transverse dimension of the scintillation crystal so that a portion of the surface of the optical conductor extends beyond the periphery of the scintillation crystal; a network of photomultiplier tubes including peripheral photomultiplier tubes having entrance faces situated adjacent the second side of the optical conductor, the entrance faces of the peripheral photomultiplier tubes projecting beyond the periphery of the scintillation crystal; aperture means for defining the useful field of the gamma camera disposed adjacent the first side of the scintillation crystal; and a metal housing which surrounds the optical conductor and the scintillation crystal; the improvement comprising:  
diffuse light reflector means provided at least on the portion of the surface of the optical conductor which extends beyond the periphery of the scintillation crystal, the reflection and optical diffusing properties of the reflector being a function of the wavelength of the scintillation light, for compensating the signal/distance curves of the photomultiplier tubes so that the signal/distance curves for all photomultiplier tubes in the network substantially coincide for all scintillations occurring within the useful field of the gamma camera.

4,284,892

# METHOD AND DEVICE FOR THE AUTOMATIC READING OF THE IRRADIATION DOSE OF A PORTABLE DOSIMETER

Michel Hulot, Montrouge, and Raymond Prigent, Marcoussis, both of France, assignors to Commissariat à l'Energie Atomique, Paris, France

Filed Jul. 5, 1979, Ser. No. 55,119

Claims priority, application France, Jul. 12, 1978, 78 20806

Int. Cl.<sup>3</sup> H01J 39/29

U.S. Cl. 250-388

5 Claims

1. A device for automatically reading the radiation dose of a portable dosimeter with an ionisation chamber, comprising:  
means for measuring the value of the ionisation chamber charge at each reading operation; means for storing the value of the charge of said ionisation chamber at each reading operation; means for calculating the radiation dose, at any moment, from one of the stored values and from the chamber charge value at said moment; and means for biasing the ionisation chamber, after a reading operation, with a voltage equal to the voltage corresponding to the just measured charge; wherein said means for storing the value of the charge of said ionisation

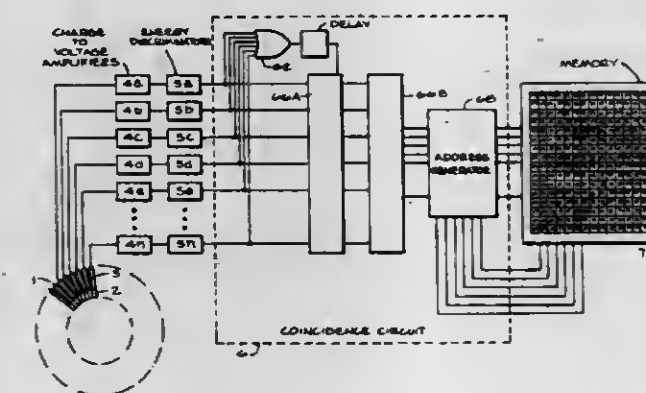
multiple bit delay outputs at the selected coincidence resolving time after the occurrence of any of the pulsed input signals;

(d) a plurality of priority encoders connected to receive output signals from said holding register, said encoders having a plurality of groups of output signals, each of which contains an address of the most significant input, and a further output signal when one or more input signals are present, and including a parity verification circuit for analyzing the further output signal and applying the groups of output signals and the further output signal as an overall output signal from the plurality of priority encoders when the parity is even;

(e) a multiple bit validation register receiving the overall output signal from said plurality of priority encoders, said validation register retaining even parity pairs of said pulsed input signals in an encoded form for a predetermined time;

(f) a high group priority encoder connected to receive output signals from said validation register, for generating an address during the predetermined time, following which the even parity pairs of output signals are received, said priority encoder having outputs which together contain the address of the most significant priority encoder receiving outputs from the holding register;

(g) a high group decoder connected to receive output signals from said high group priority encoder, said high group decoder regenerating the highest numbered input to said high group priority encoder;



(h) a high group mask connected to receive the regenerated inputs from said high group decoder, said high group mask eliminating the highest numbered input;

(i) a low group priority encoder connected to receive output signals from said high group mask and having outputs which together contain the address of a second priority encoder receiving outputs from the holding register, after an appropriate propagation delay;

(j) a low group decoder connected to receive the address from said low group priority encoder;

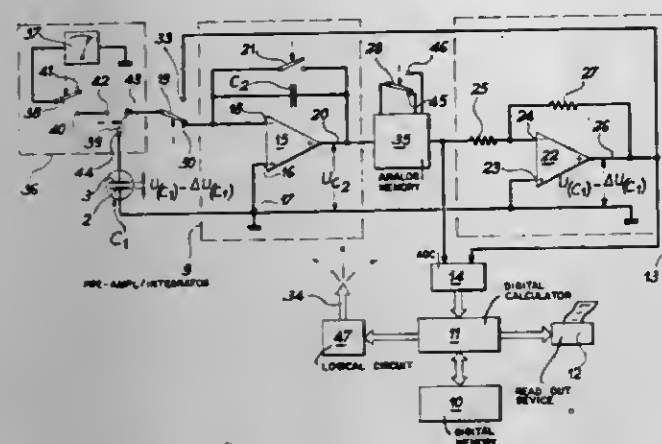
(k) a low group mask connected to receive output signals from said low group decoder and from said high group mask, for generating output signals;

(l) a further priority encoder, eliminating events in which an even number of detectors other than two respond, connected to receive the output signals from said low group mask; and

(m) a plurality of high and low group multiplexers receiving said plurality of groups of output signals from said validation register, said high group multiplexers having output address signals corresponding to the most significant input signals of said plurality of input signals, said low group multiplexers having output address signals corresponding to the least significant group of input signals of said plurality of input signals the outputs from said high group and low group priority encoders and high group and low group multiplexers generating a unique address for both detectors after an appropriate propagation delay.



chamber at each reading operation are connected to said means for measuring the ionisation chamber charge, via an analogue-digital converter; and wherein said means for measuring the



ionisation chamber charge comprise a pre-amplifier-integrator for said ionisation chamber, designed according to the capacitive divisor constituted by a capacitor of said chamber and by an integrating capacitor of said pre-amplifier-integrator.

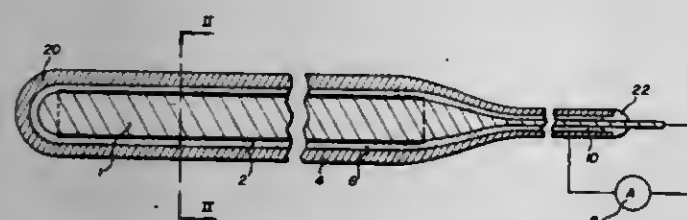
#### 4,284,893 SELF-POWERED NEUTRON AND GAMMA-RAY FLUX DETECTOR

Colln J. Allan; Ross B. Shields, both of Deep River; Jerry M. Cutler, Mississauga, and Gerard F. Lynch, Deep River, all of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Mar. 19, 1979, Ser. No. 21,481  
Claims priority, application Canada, Apr. 20, 1978, 301514  
Int. Cl.<sup>3</sup> G01T 3/00

U.S. Cl. 250-390

1 Claim



1. A self-powered neutron and gamma-ray flux detector, comprising:

- (a) an emitter core,
  - (b) an emitter outer layer around the core,
  - (c) a collector around the emitter outer layer, and
  - (d) dielectric insulation electrically insulating the emitter outer layer from the collector,
- and wherein the improvement comprises:
- (e) the emitter core is of at least one material selected from the group consisting of nickel, iron, titanium and alloys based on these metals, and the emitter outer layer has a thickness in the range of the order of 0.03 mm to of the order of 0.062 mm and is of at least one material selected from the group consisting of platinum, tantalum, osmium, molybdenum and cerium.

#### 4,284,894 COLD CHAMBER FOR THE WORKING OBJECTS FOR MICROSCOPIC AND ELECTRON MICROSCOPIC INVESTIGATIONS

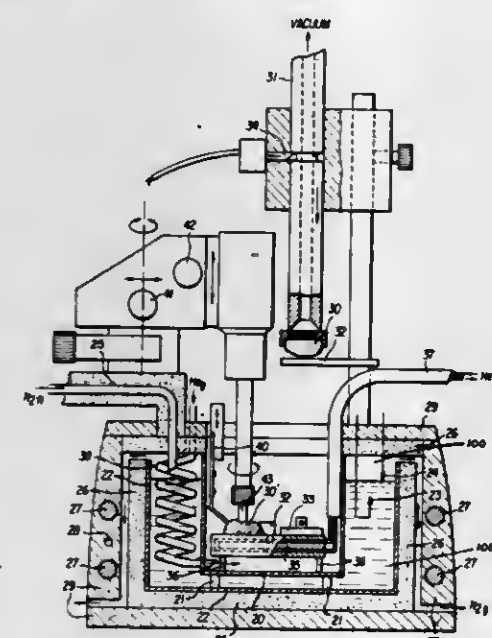
Hellmuth Sitte, Seefeld, Austria; Klaus Neumann, Bexbach, Fed. Rep. of Germany; Heinrich Kleber, Vienna, Austria, and Helmut Hassig, Homburg-Saar, Fed. Rep. of Germany, assignors to C. Reichert Optische Werke, AG, Vienna, Austria  
Filed Feb. 19, 1980, Ser. No. 122,215

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906153

Int. Cl.<sup>3</sup> G01N 21/00

U.S. Cl. 250-443

9 Claims



1. A chamber for working specimens at cryogenic temperatures which comprises:

- a compartment having a bottom and sidewalls providing space for working the specimens, said bottom and sidewalls being heat-conductive,
- an exterior jacket,
- an insulating liner separating said compartment from said jacket,
- a cover for said compartment, and
- a plural cryogen system, said system having a first cooling means containing a first liquid cryogen for cooling a first portion of said chamber, the first liquid cryogen having a first temperature, a second cooling means containing a second liquid cryogen for cooling a second portion of said chamber, the second liquid cryogen having a second temperature, said first temperature being lower than said second temperature, said first portion being proximate to the specimens and said second portion surrounding a substantial part of said first portion.

#### 4,284,895 METHOD AND APPARATUS FOR TOMOGRAPHIC EXAMINATION OF AN OBJECT BY PENETRATING RADIATION

Ira L. Morgan, 10305B Golden Meadow Dr., Austin, Tex. 78758; E. C. George Sudarshan, 7012 Northledge Dr., Austin, Tex.; Alvin L. Mitchell, Austin, Tex.; James P. Coose, Austin, Tex.; Hunter D. Ellinger, Austin, Tex., and James W. Jagger, Austin, Tex., assignors to Ira Lon Morgan and E. C. George Sudarshan, both of Austin, Tex.

Filed Feb. 21, 1978, Ser. No. 879,439

Int. Cl.<sup>3</sup> G01N 21/00

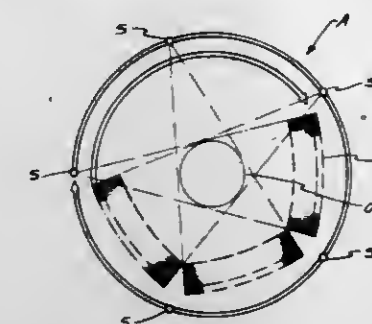
U.S. Cl. 250-445 T

36 Claims

1. Apparatus for examining at least part of an object using penetrating radiation, such as X-rays or gamma rays, comprising:

- (a) transmitting means for transmitting a plurality of photons

of penetrating radiation through the object along a plurality of paths; and  
(b) detecting means disposed on the opposite side of the object from said transmitting means for detecting substan-



tially all the plurality of individual photons emerging from the object along each of the plurality of paths, wherein said detecting means comprises scintillator means having a wall lining absorbent of penetrating ray photons so as to be self-collimating.

#### 4,284,896 COMPUTERIZED TOMOGRAPHIC RECONSTRUCTION METHOD AND SYSTEM UTILIZING REFLECTION

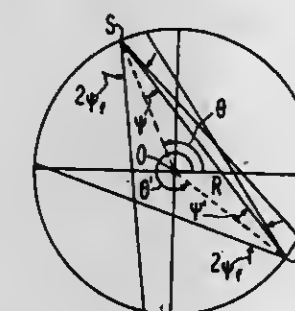
James P. Stonestrom, Palo Alto, Calif., assignor to General Electric Company, Milwaukee, Wis.

Filed Aug. 24, 1979, Ser. No. 69,658

Int. Cl.<sup>3</sup> A61B 6/00

U.S. Cl. 250-445 T

9 Claims



1. In the method for constructing a two-dimensional representation of an object lying in a quasi-plane by positioning a radiation source for providing radiation in the form of a fan beam so that at least some of said radiation passes through said object; positioning detector means including an array of side by side detector elements opposite said source and aligned therewith and lying in said quasi-plane for detecting radiation in said quasi-plane not absorbed or scattered by said object; effecting relative rotation between said object and said source-detector combination about an axis of rotation such that said source and detector means remain in said quasi plane;

effecting measuring from said source at a plurality of angular positions during said rotation to obtain a multiplicity of measured data readings from said detector elements at each said projection; and reconstructing a two-dimensional representation of the object by convolving said data without reordering of same, and scaling and back projecting same; THE IMPROVEMENT COMPRISING: generating estimated detector data at desired projection angles by reflecting said measured detector data obtained during said projections; and performing said reconstruction step utilizing both said measured and said estimated detector data.

#### 4,284,897 FLUORESCENCE DETERMINING MICROSCOPE UTILIZING LASER LIGHT

Ichiro Sawamura; Mamoru Aihara; Kazuhiko Nakamura, and Youichi Kondo, all of Hachioji, Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

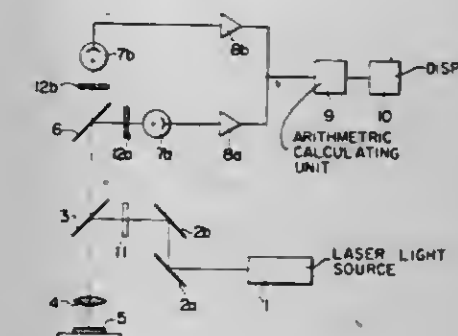
Filed Mar. 13, 1978, Ser. No. 885,640

Claims priority, application Japan, Apr. 30, 1977, 52-50558

Int. Cl.<sup>3</sup> G01N 21/64

U.S. Cl. 250-461 B

5 Claims



1. A microscope for scanning and determining the fluorescence of a cell comprised of a nucleus surrounded by cytoplasm, said microscope comprising:

- a laser light source for emitting light having a spot size smaller than the nucleus of the cell to be scanned;
- scanning means for directing the light from said light source onto the cell to spotwise irradiate the cell to produce fluorescence;
- means for splitting the produced fluorescence into components of different wavelengths; and
- detecting means for detecting the level of the fluorescence of the respective components.

#### 4,284,898 HIGH VOLTAGE STABLE OPTICAL COUPLER

Gerfried Felkel, Neubiberg, and Joerg Klann, Laaber, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

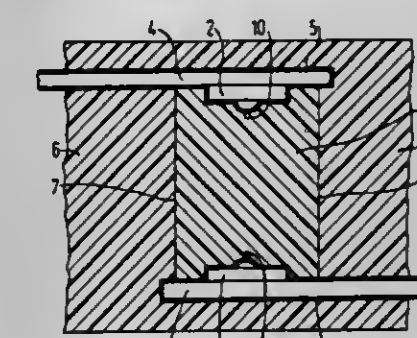
Filed Jan. 31, 1979, Ser. No. 8,103

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806167

Int. Cl.<sup>3</sup> G02B 27/00

U.S. Cl. 250-551

10 Claims



1. In a high voltage stable optical coupler of the type wherein a radiation transmitter and a radiation receiver are mounted on respective conductors, a translucent coupling medium is disposed between the transmitter and the receiver, and a non-translucent enveloping mass surrounds the coupling medium and has the conductors extending therethrough, the improvement therein comprising:

- a radiation-permeable translucent insulating film completely covering at least one of the conductors.



4,284,899

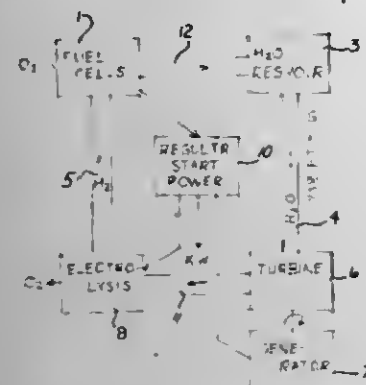
## GRAVITY FED POWER GENERATOR

Donald J. Bendiks, 1020 Water St., New Buffalo, Mich. 49117  
Continuation of Ser. No. 18,605, Mar. 8, 1979, abandoned. This  
application Nov. 2, 1979, Ser. No. 90,673

Int. Cl.<sup>3</sup> F03B 13/06; H02K 7/18

U.S. Cl. 290—1 R

6 Claims



1. A power supply generator system comprising in combination a fuel cell within which hydrogen gas and oxygen are combined to produce water and electrical energy, an impulse turbine, said fuel cell being located above said turbine, said turbine including impeller means, conduit means extending downwardly from said fuel cells to said turbine for conducting by gravitational fall the water produced by said fuel cell to said turbine impeller means to cause rotation of the impeller means for providing electricity upon rotation of said impeller means, an electrolyzer means for producing hydrogen gas by the electrolysis of water, conduit means connecting said turbine with said electrolyzer means for conducting water from said turbine impeller means to the electrolyzer means to produce hydrogen, conduit means connecting said electrolyzer means with said fuel cell for conducting hydrogen to the fuel cell to produce water.

4,284,900

## CLOSED LOOP ENERGY CONVERSION SYSTEM

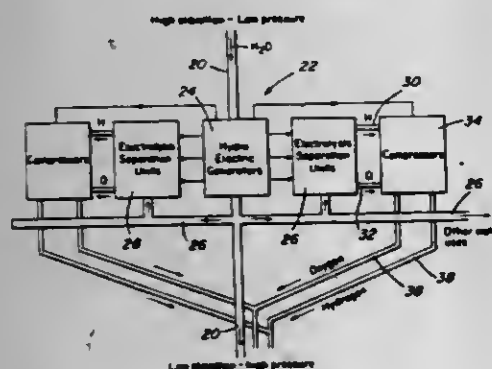
Elton M. Botts, P.O. Box 615, Mattoon, Ill. 61938

Filed Mar. 7, 1979, Ser. No. 18,588

Int. Cl.<sup>3</sup> F03B 13/06

U.S. Cl. 290—43

6 Claims



1. An energy system comprising water stored in means at a high elevation under low pressure, pipeline means for conveying the water to a lower elevation under high pressure, said pipeline means serving to maintain the water fresh and unpolluted and to reduce evaporative losses, at least one hydroelectric generating station in the pipeline means utilizing pressure differentials between the interior of the pipeline means and atmosphere to generate electrical energy, at least one electrolysis separation unit operably associated with said pipeline means, said at least one electrolysis separation unit serving to convert a portion of said water into hydrogen and oxygen gas, said at least one electrolysis separation unit utilizing and being operable by electrical energy supplied by said at least one hydroelectric generating station, compressor means for col-

lecting and delivering said oxygen and hydrogen gas for a desired use, said compressor means also being operable by electrical energy supplied by said at least one hydroelectric generating station, whereby said water is used to create the electrical energy necessary for its own hydrolysis into oxygen and hydrogen gas.

4,284,901

## APPARATUS FOR UTILIZING TIDAL VARIATION TO GENERATE ELECTRICITY

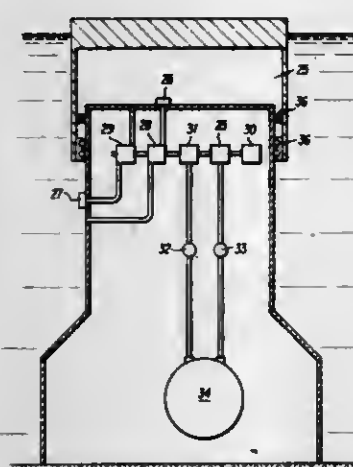
A. Marcel Giguere, 2625 Regina St., Apt. #1008, Ottawa, Ontario, Canada (K2B 5W8)

Filed Mar. 12, 1979, Ser. No. 19,414

Int. Cl.<sup>3</sup> F03B 13/12

U.S. Cl. 290—53

2 Claims



1. Apparatus for producing electricity by harnessing the power of ocean tides comprising at least one power unit, said power unit in turn comprising:

a large column having an upper portion, said column being disposed in a vertical direction so that said column is substantially perpendicular to and the upper portion is generally below the surface of the ocean, said column being permanently fixed to the ocean bed and having a chamber therein;

a float having a chamber therein adjacent the center of gravity of the float, said float chamber being closed on top and of such size that the upper portion of said column is telescopically associated therewith so that the float may move vertically relative to said column and means associated with said float chamber and said column for providing sealed telescopic movement therebetween, said float having a buoyancy factor of twice its weight, a substantial portion of the float at all times being below the surface of the ocean;

means associated with said float chamber and said column chamber including conduit means and turbine means whereby movement of said float vertically upwardly and downwardly causes water to flow sequentially into said float chamber and from said chamber through said conduit means thereby driving said turbine means; and electrical generating means operatively connected with said turbine means whereby said generator means is driven by said turbine means.

4,284,902

## WAVE ACTION GENERATING SYSTEM

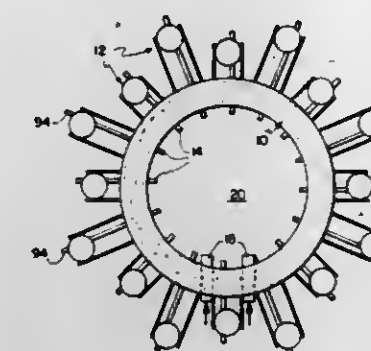
Peter M. Borgren, and Albert J. Amatuzio, both of Duluth, Minn., assignors to Hydrodynamic Energy Systems Corp., Superior, Wis.

Continuation-in-part of Ser. No. 98,214, Nov. 28, 1979. This  
application Mar. 7, 1980, Ser. No. 127,990

Int. Cl.<sup>3</sup> F03B 13/12

U.S. Cl. 290—53

14 Claims



1. A hydrodynamic electric generating system for producing electrical energy from wave action, comprising:

(a) support means mounted on the floor of a body of water, said support means being mounted relative to said body of water so as to separate the same into a relatively shallow reservoir confined by said support means and an open body of water at normal water level and subjected to wave action, the difference in water levels between said confined shallow reservoir and said open body of water creating a controllable hydrostatic pressure head,

(b) a plurality of pumps mounted on said support means in said open body of water, each of said pumps including a housing, a piston mounted for reciprocal movement in said housing and forming upper and lower pump chambers, and a piston rod extending vertically in sealed relation through said pump housing and secured to said piston,

(c) pipe means associated with each pump and communicating with said reservoir, the bottom chamber of said pump and said open body of water,

(d) valve means to control water flow first from said reservoir to said lower pump chamber during upward movement of said piston in response to wave action, and then from said lower chamber to said open body of water,

(e) float means operatively connected to the upper end of said piston rod of each pump and vertically positioned so as to be exposed to wave action,

(f) counterweight means secured to the bottom of said piston rod for biasing the same downwardly,

(g) frame means secured to said support means for guiding the vertical movement of said float means, and

(h) electric generating means mounted in said support means in a position substantially below the water level in said shallow reservoir,

whereby the vertically upward wave action causes said floats and thus said pistons to move upwardly creating an area of lower pressure in said lower pumping chambers thereby inducing water flow from said reservoir through said pipe means into the lower pumping chambers, the cessation of upward wave action force resulting in said counterweights vertically moving said pistons downwardly thereby pumping water from said lower chambers through said pipe means into said open body of water, the water pumped into said open body of water from said plurality of pumps maintaining a hydrostatic pressure head of sufficient magnitude to force water through said electric generating means to produce electrical energy, the water passing through said electric generating means in turn flowing into said reservoir to replenish the water previously drawn therefrom during vertically upward wave motion.

4,284,903

## DEVICE FOR ADJUSTING THE INCLINATION OF MOTOR VEHICLE HEADLAMPS

Erich Mutschler; Hans Prohaska, both of Bietigheim-Bissingen; Franz Schreiber, Kirchheim; Karl-Friedrich Schubert, and Adam Weber, both of Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

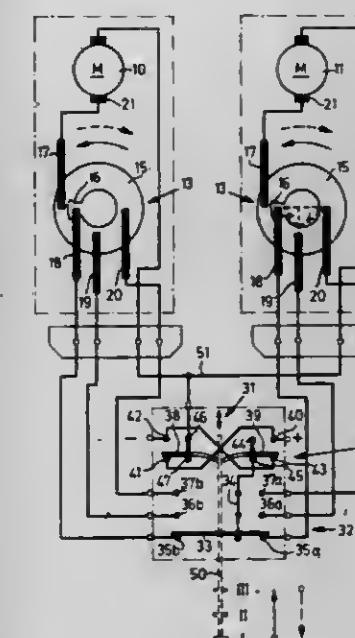
Filed Nov. 17, 1978, Ser. No. 961,734

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1977, 2751728

Int. Cl.<sup>3</sup> H01H 21/00; G05D 3/10

U.S. Cl. 307—10 LS

5 Claims



1. A device for adjusting the inclination of vehicular headlamps comprising:

at least one direct current motor coupled to at least one of said headlamps;

a power source having first and second terminals of opposite polarity;

an operating switch assembly including a multistage adjusting switch having a bridging contact;

a first plurality of position switches each serially connectable with said motor and said bridging contact to interrupt current to said motor when said headlamps are at predetermined positions;

characterized in that:

said operating switch comprises: a switch housing; a reversing switch having input terminals connected to said first and second terminals, a first output terminal connected to said motor, and a second output terminal connected to said bridging contact; said bridging contact being operable to selectively connect each of said plurality of position switches to said reversing switch; said reversing switch when operated in a first direction being operable to connect said first terminal to said first output terminal, and when operated in a second direction being operable to connect said second terminal to said first output terminal and said first terminal to said second output terminal; a switching member carrying said bridging contact; a switch shaft for adjusting said switching member, said switching member being operatively connected with one switching element of said reversing switch; means for connecting said switching element and said switching member in a force-locking manner when the direction of motion of the switch shaft is reversed; said connecting means comprising a plurality of stops disposed on said housing, a first coupling element between said switching element and said housing and a second coupling element between said switching element and said switching member, said first coupling element being adapted to selectively engage said plurality of stops, and said second



coupling element being adapted to transmit a greater degree of motion than said first coupling element.

4,284,904

# ENCAPSULATED MAGNETICALLY SENSITIVE CIRCUIT ELEMENTS FOR DEPTH-INDICATING PURPOSES OR THE LIKE

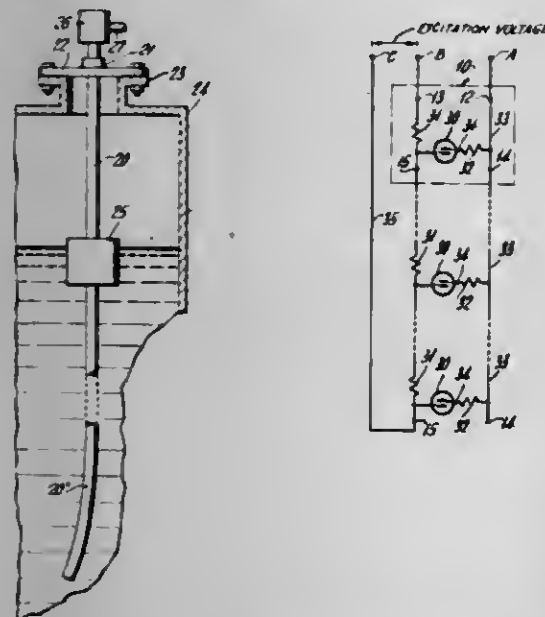
Roland G. Tetro, Bristol, Conn., assignor to Transamerica DeLaval Inc., Princeton, N.J.

Filed Jun. 5, 1978, Ser. No. 912,218

Int. Cl.<sup>3</sup> H01H 35/18

U.S. Cl. 307—118

27 Claims



1. An encapsulated circuit element adapted to define a single unit of length when interconnected in longitudinal succession with a plurality of said elements to form an elongate array representing a succession of a corresponding plurality of said units of length, said encapsulated circuit element comprising an elongate generally rectangular-prismatic encapsulating body of substantially said unit length and having two equally spaced stiffly compliant terminals extending free of said body at each of its opposite longitudinal ends, all said terminals being bent to extend parallel to each other and in the same direction normal to and beyond the plane of one of the elongate surfaces of said body, both terminal bends at one end being spaced by said unit length from both terminal bends at the other end, an electrically conductive connection within said body between one terminal at one end and one terminal at the other end, an electrical resistive connection within said body between the other terminal at one end and the other terminal at the other end, and electrical-connection means serially including a magnetic-reed switch within said body and interconnecting the respective terminals at one end of said body.

4,284,905

# IGFET BOOTSTRAP CIRCUIT

Walter Rosenzweig, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 31, 1979, Ser. No. 44,397

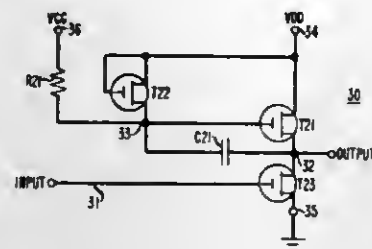
Int. Cl.<sup>3</sup> H03K 19/094, 19/003, 19/20

U.S. Cl. 307—482

8 Claims

1. An IGFET driver circuit comprising a first voltage supply terminal adapted to carry a first bias voltage, an output node, a control node, a first IGFET having its channel coupled between the first voltage supply terminal and the output node, the gate of the first IGFET being coupled to the control node, a second IGFET having its channel coupled between the first voltage supply terminal and the control node, capacitance means coupled between the output node and the control node, a second voltage supply terminal adapted to carry a second bias voltage, at least one input terminal for receiving an input signal, switching means coupled between the output node and the second voltage supply terminal, the switching means re-

sponsive to the input signal at the input terminal for providing a conducting path between the output node and the second voltage supply terminal,



characterized in that there are included a third voltage supply terminal adapted to carry a third bias voltage of greater magnitude than the first bias voltage, and substantially fixed value resistance means coupled between the third voltage supply terminal and the control node.

4,284,906

# CONSTANT AMPLITUDE VARIABLE FREQUENCY SYNCHRONIZED LINEAR RAMP GENERATOR

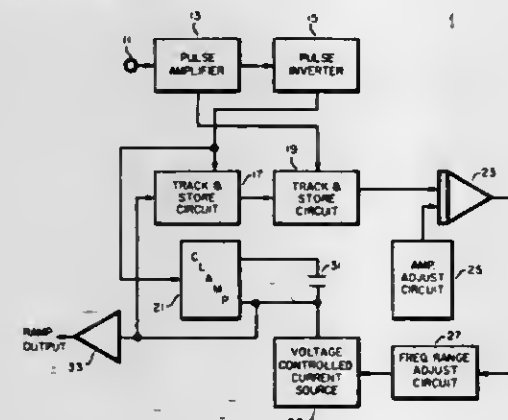
Urbano Manfredi, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 3, 1979, Ser. No. 81,310

Int. Cl.<sup>3</sup> H03K 5/00, 5/08

U.S. Cl. 307—228

13 Claims



1. A constant amplitude, variable frequency, synchronized, linear ramp generator comprising in combination:

trigger pulse source means having first and second outputs for providing a trigger pulse signal, and an inverted trigger pulse signal in response to a sync pulse signal; means for storing an electric current;

current source means having an output effectively connected to said current storage means and an input for supplying said electric current to said current storage means at a predetermined rate;

clamping means having an input connected to the second output of said trigger pulse source means, and a pair of outputs effectively connected across said current storage means for discharging, in response to the said inverted trigger pulse signal, said charge storage means, and thereby cause a sawtooth waveform signal having a plurality of sawtooth waveforms to appear at the first of the pair of outputs thereof;

first monitoring means having a first input effectively connected to the first of the pair of outputs of said clamping means, a second input connected to the second output of said trigger pulse source means, and an output for tracking said sawtooth waveform signal and storing, in response to said inverted trigger pulse signal, representations of said tracked sawtooth waveform signal;

second monitoring means, having a first input connected to

the output of said first monitoring means, a second input connected to the first output of said trigger pulse source means, and an output for sampling the representations of said sawtooth waveform signal stored by said first monitoring means and storing, in response to said trigger pulse signal, the sampled representations of said sawtooth waveform signal; and

integrating means having an input connected to the output of said second monitoring means and an output effectively connected to the input of said current source means for providing a feedback control signal in response to the sampled representations of said sawtooth waveform signal stored by said second monitoring means, said feedback control signal to control the rate at which said current source means supplies charge to said current storage means.

4,284,907

# CHARGE TRANSFER FILTER

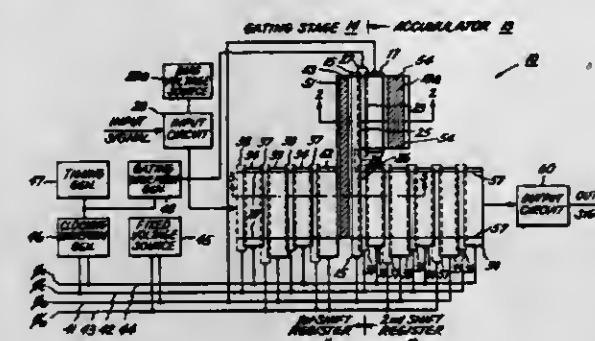
Thomas L. Vogelsohn, and Jerome J. Tiemann, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 24, 1980, Ser. No. 132,777

Int. Cl.<sup>3</sup> G11C 19/28; H01L 29/78; H03H 15/02

U.S. Cl. 307—221 D

3 Claims



1. In combination, a substrate of semiconductor material of one conductivity type,

means for forming a charge storage region in said substrate and for transferring charge therein including a first electrode of generally elongated outline insulatingly overlying said storage region, said first electrode forming with said substrate a first capacitor,

said first electrode having a length in the direction of charge transfer thereunder which is substantially smaller than the width thereof,

a first region of opposite conductivity type and high conductivity in said substrate, said first region being of elongated configuration and having a long side contiguous with a long side of said first storage region,

a second region of opposite conductivity type and high conductivity in said substrate, said second region being of elongated configuration and having a long side spaced a short distance from and parallel to another long side of said first storage region,

a second capacitor having a pair of terminals, one of said terminals connected to said second region of opposite conductivity type and the other of said terminals connected to said substrate,

said first and second capacitors forming a charge storage cell,

means for providing a sequence of first quantities of charge, each quantity corresponding to a respective value of a series of successive values of a signal,

introducing means including said first electrode for introducing serially each of said quantities of charge of said sequence into said storage cell,

removing means including said first electrode for removing periodically a fixed fraction less than one of the total of said first quantities of charge contained in said storage cell to provide a sequence of second quantities of charge, said

fixed fraction of charge periodically removed from said storage cell by said removal means being determined by the ratio of the capacitance of said first capacitor to the total capacitance of said first and second capacitors.

4,284,908

# CHARGE DOMAIN FILTER WITH SINGLE TRANSMISSION ZERO

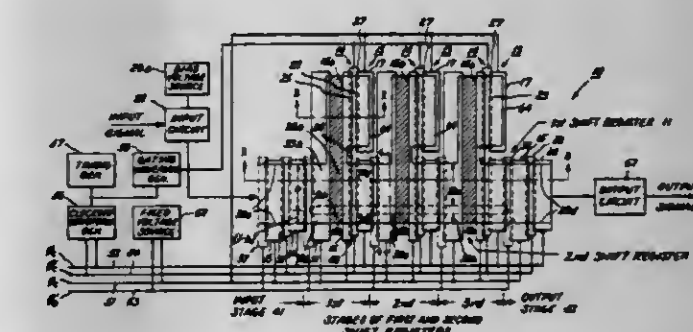
Jerome J. Tiemann, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 27, 1980, Ser. No. 153,687

Int. Cl.<sup>3</sup> G11C 19/28; H01L 29/78; H03H 15/02

U.S. Cl. 307—221 D

2 Claims



1. In combination, a substrate of semiconductor material of one conductivity type having a major surface, means forming a plurality of N charge storage cells adjacent said major surface of said substrate, each storage cell including a first electrode and a second electrode, said first and second electrodes insulatingly overlying said storage cell, said first electrode and said substrate forming a first capacitor having a first capacitance, said second electrode and said substrate forming a second capacitor having a second capacitance,

a first shift register formed in said substrate having N serial coupled stages, each stage including a respective first charge storage region in said substrate underlying a respective one of said first electrodes,

a second shift register formed in said substrate having N serial coupled stages, each stage including a respective first charge storage region in said substrate,

first means for sequentially transferring packets of charge at one frequency from first charge storage region to first charge storage region of the stages of said first shift register,

second means for sequentially transferring packets of charge at said one frequency from first charge storage region to first charge storage region of the stages of said second shift register,

means for providing a first sequence of packets of charge, each packet representing a respective sample of an input signal, successive packets occurring at said one frequency, means for dividing each of said packets of charge of said first sequence into a first part and a second part, the ratio of said first part to said second part being equal to a first fixed value,

means for applying sequentially each of said first parts of said packets of said first sequence to the first stage of said first shift register and for applying sequentially each of said second parts of said packets of said first sequence to the first stage of said second shift register,

a plurality of combining means, each for combining the charge packet in the first charge storage region of a respective stage of said first shift register with the charge packet in an associated second charge storage region and for dividing the combined packet of charge into two portions over one part of a cycle of said first charge transferring means, a first portion of said combined packet being stored in the first charge storage region of a stage of



said first shift register and a second portion of said combined packet being stored in the second charge storage region associated therewith, the ratio of said first portion of charge to the combined packet of charge being equal to a second fixed value, said second fixed value being equal to the ratio of said first capacitance of the sum of said first capacitance and said second capacitance, the frequency response of each of the stages of said first shift register decreasing as the frequency of the input signal thereto increases and the shift in phase of the frequency response of each of the stages of said first register increasing as the frequency of the input signal thereto increases, said second fixed value providing a phase shift at a predetermined angular frequency  $\omega_2$  which is equal to  $\pi$  radians divided by an integer, said integer being equal to N, the number of stages in said first and second shift registers, said first fixed value being equal to

$$\frac{1}{1 + |H_N(\omega_2)|}$$

where  $|H_N(\omega_2)|$  is the absolute magnitude of the amplitude response of N cascaded stages of said first shift register at said predetermined angular frequency  $\omega_2$ .

means for combining the output of the last stage of said first shift register with the output of the last stage of said second shift register, whereby a resultant output is obtained having zero amplitude at angular frequency  $\omega_2$ .

4,284,909

#### CHARGE DOMAIN FILTER WITH A PLURALITY OF TRANSMISSION ZEROS

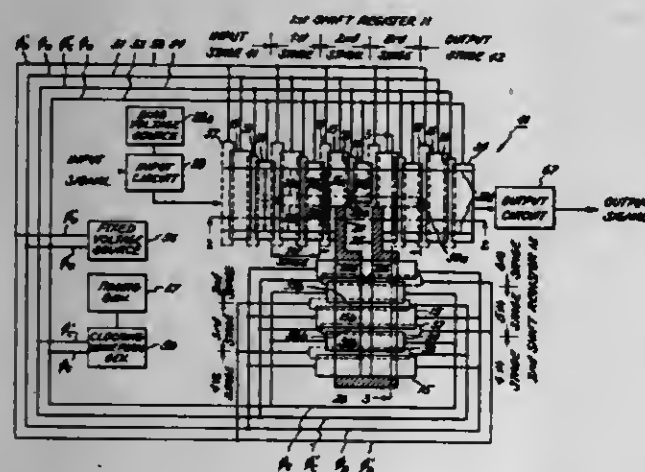
Jerome J. Tiemann, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 27, 1980, Ser. No. 153,702

Int. Cl.<sup>3</sup> G11C 19/28; H01L 29/78; H03H 15/02

U.S. Cl. 307—221 D

4 Claims



- In combination, a first shift register having a plurality of M stages, where M is an integer, each stage including a respective first charge storage region;
- a second shift register having a plurality of N stages where N is an integer greater than M, each stage including a respective first charge storage region;
- first means for sequentially transferring packets of charge at one frequency from first charge storage region to first charge storage region of the stages of said first shift register;
- second means for sequentially transferring packets of charge at said one frequency from first charge storage region to first charge storage region of the stages of said second shift register;
- means providing a first sequence of packets of charge, each packet representing a respective sample of an input signal, successive packets being provided at said one frequency, means for dividing each of said packets of charge of said first

sequence into a first part and a second part, said first and second parts being equal, means for applying each of said first parts of said packets of said first sequence to the first stage of said first shift register and for applying each of said second parts of said packets of said first sequence to the first stage of said second shift register, the product of the difference of said integers N and M and a predetermined frequency of said input signal being equal to an odd integer of one-half of said one frequency, means for combining the output of the last stage of said first shift register with the output of the last stage of said second shift register, whereby a resultant output is obtained having zero response at odd multiples of said predetermined frequency.

4,284,910

#### ADDRESS BUFFER FOR A MOS-MEMORY MODULE

Reediger Hofmann, Munich, and Paul W. von Basse, Wolfraatshausen/Farchet, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

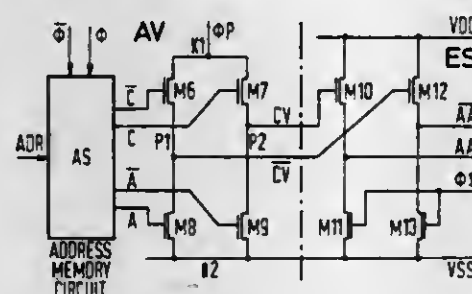
Filed Aug. 15, 1979, Ser. No. 66,524

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840329

Int. Cl.<sup>3</sup> H03K 5/00

U.S. Cl. 307—238.4

4 Claims



- An address buffer in MOS technology comprising: an address memory circuit having an address input driven via a transfer signal, two complementary address outputs, and two complementary high signal level outputs; an isolating amplifier; a following-connected output stage; the isolating amplifier being driven via a control clock pulse and having outputs for complementary control signals; the isolating amplifier having two parallel paths each comprising two transistors, said parallel paths being connected to the control clock pulse via a first common node and being connected to a base voltage source via a second common node; a first transistor of each parallel path being driven by a respective one of the two high signal level outputs of the address memory circuit; and a second transistor of each parallel path being driven by a respective one of the two address outputs of the address memory circuit, the high signal level output driving the first transistor of one of the paths being the inverse of the address output driving the second transistor of the same path.

4,284,911

#### SWITCHING NETWORK

Edward F. McKeon, Short Hills, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 16, 1979, Ser. No. 58,024

Int. Cl.<sup>3</sup> H03K 17/72

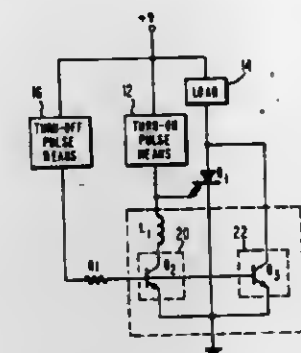
U.S. Cl. 307—252 C

3 Claims

- In a switching network of the type wherein at least one GTO device is rendered conductive or non-conductive to control the flow of current through a load, the improvement comprising:

first and second transistors, said first transistor having its main conduction path connected to conduct current away from the gate of the GTO device, said second transistor

having its main conduction path connected in parallel with the main conduction path of the GTO device, said



first and second transistors having their control electrodes commonly connected to receive the turn-off signal.

4,284,912

#### SWITCHING CIRCUITS FOR DIFFERENTIAL AMPLIFIERS

Hitoshi Fujisaki; Hideo Onodera, and Yasuhiro Toyomura, all of Kodaira, Japan, assignors to Hitachi Denshi K.K., Chiyoda, Japan

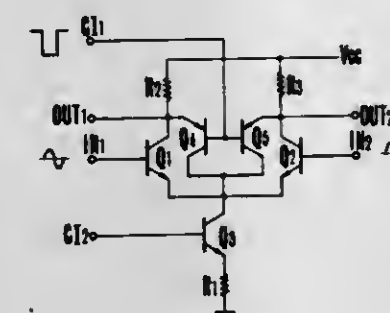
Filed Nov. 1, 1979, Ser. No. 90,147

Claims priority, application Japan, Nov. 9, 1978, 53/137267; Mar. 15, 1979, 54/29356

Int. Cl.<sup>3</sup> H03K 17/60

U.S. Cl. 307—255

4 Claims



- A switching circuit for a differential amplifier including first and second transistors of one conductivity type with their emitter electrodes commonly connected; said switching circuit comprising third and fourth switching transistors having a conductivity type opposite to that of said first and second transistors, the base electrodes of said third and fourth transistors being connected commonly;

means for connecting the collector electrodes of said third and fourth transistors to the commonly connected emitter electrodes of said first and second transistors; means for connecting the collector electrodes of said first and second transistors to the emitter electrodes of said third and fourth transistors respectively; and means for applying a switching signal to the base electrodes of said third and fourth transistors so as to switch the output signals produced by the first and second transistors.

4,284,913

#### COOLING ARRANGEMENT FOR AN INTEGRATED DRIVE-GENERATOR SYSTEM

Scott B. Barahardt, Shawnee Township, Allen County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 31, 1979, Ser. No. 44,299

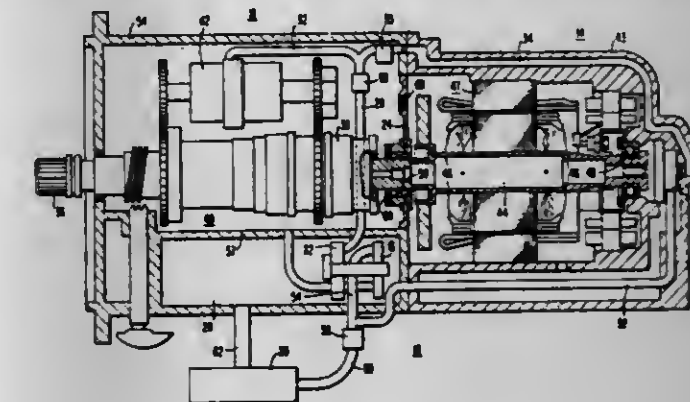
Int. Cl.<sup>3</sup> H02K 9/00

U.S. Cl. 310—54

3 Claims

- An integrated drive generator system comprising: a constant speed drive unit, said unit including an input shaft,

an output shaft, means linked to said input and output shafts for driving said output shaft at constant speed for varying input shaft speeds, and a casing for housing said shafts and constant speed drive means; an electrical generator unit having a rotatable shaft linkable to said constant speed output shaft and a casing for housing said rotatable shaft, said generator casing being attachable to said drive unit casing and having an operational lubrication-coolant fluid level associated therewith; means for supplying lubrication-coolant fluid to said drive unit and said generator unit; a scavenging pump for scavenging heat laden lubrication-



coolant fluid from the casings' interiors, said scavenging pump being in fluid communication with said supplying means and located within said generator casing; means for cooling the heat laden lubrication-coolant fluid prior to its entry into the drive and generator units; and barrier means for obstructing debris migration between the attachable units, said barrier means including means for providing fluid communication between the units comprising a plurality of baffles cooperatively disposed to obstruct migration of solid debris between units and promote fluid transmission therebetween, said baffles being disposed above the normal, operational lubrication-coolant fluid level.

4,284,914

#### PROTECTIVE COVER CAP FOR AN AUTOMOTIVE-TYPE ALTERNATOR-RECTIFIER COMBINATION

Walter Hagenlocher, Stuttgart; Heinz Hesse, Gerlingen; Karl Kleebsch, Allmersbach; Christoph Kugel, Stuttgart; Johann Künz, Serabheim; Werner Lemke, Bletigheim-Bissingen, and Rüdiger Sohle, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 85,112

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1978, 2848410

Int. Cl.<sup>3</sup> H02K 11/00

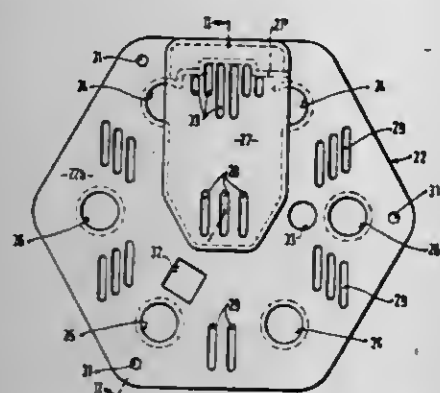
U.S. Cl. 310—68 D

10 Claims

- For and in an alternator rectifier combination, particularly for automotive use, having an alternator stator housing; a shaft (16); an end plate (12) secured to the housing; bearing means (15) secured in said end plate and journaling the shaft; rectifier diodes (14) supported by said end plate to form a combination end plate—rectifier diode support plate assembly (12, 13, 14), said end plate providing heat dissipation and cooling for said rectifier diodes; wherein an air flow (A) is induced in axial direction of the alternator to provide for cooling of said combination end plate—diode support plate assembly, and further for cooling of component elements of the alternator which, in operation, require cooling;



and a protective cover cap and air flow directing element, comprising, in accordance with the invention, a cup-like structure (22) formed with openings (23, 24, 25, 26, 28, 29) therein located on said assembly in essentially



axial alignment with said diodes and said component elements and positioned in advance—in the direction of said air flow—of said end plate to direct said axially induced air flow on said diodes and component elements and cool said diodes and component elements.

4,284,915

# MOBILE ALTERNATOR-RECTIFIER COMBINATION CONSTRUCTION, PARTICULARLY FOR AUTOMOTIVE VEHICLES

Walter Hagenlocher, Stuttgart; Heinz Hesse, Gerlingen; Rüdiger Sohnle, Stuttgart; Christoph Kugel, Stuttgart; Johann Künz, Sersheim; Werner Lemke, Bietigheim-Bissingen, and Karl Kleebauer, Allmersbach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

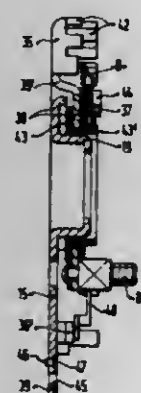
Filed Oct. 15, 1979, Ser. No. 85,113

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847502

Int. Cl.<sup>3</sup> H02K 11/00

U.S. Cl. 310—68 D

28 Claims



1. Mobile alternator-rectifier combination construction, particularly for automotive vehicles, having a frame structure (11); a stator (23, 24) secured to the frame structure and having an armature winding (24); a rotor (26, 27, 28) having a rotor shaft (25); two bearings (18, 21) journaling the rotor; an end cover (13) secured to one end of the frame and retaining one (18) of the two bearings, and extending transversely to the axis of rotation of the shaft; and two groups of rectifier diodes (36, 36') electrically connected to the armature winding, two membrane-like disk-shaped sheet metal support plates (15, 35) positioned adjacent the axial end of the shaft remote from said end cover (13); each support plate including an essentially ring-shaped portion (38) surrounding the shaft

and radially projecting fins (39, 39') defining gaps therebetween;

at least one (15) of the disk-shaped support plates being secured to the frame and the other (21) of said two bearings (18, 21) being secured to the ring-shaped portion (38) of said at least one (15) of the support plates (15, 35);

one group of rectifier diodes (36, 36'), each, being secured to a respective support plate and with the diodes (36, 36') of the groups of rectifier diodes being located on the projecting fins (39, 39') of the respective disk-shaped sheet metal support plates (15, 35);

whereby at least one support plate forms the support for the other bearing (21) and a heat sink and heat dissipation element for the diodes thereon;

electrically insulating means (43, 43') interposed between said support plates including electrical terminal holding means (49); and

resilient contact rails (48) forming connection means between the diodes of the groups of diodes (36, 36'), resiliently pressing against the respectively connected diodes on the associated respective fins.

4,284,916

# ROTARY SIGNAL GENERATOR

Keiichi Onodera, and Hiroshi Yamaura, both of Kawasaki, Japan, assignors to Fuji Electric Co. Ltd., Kanagawa, Japan

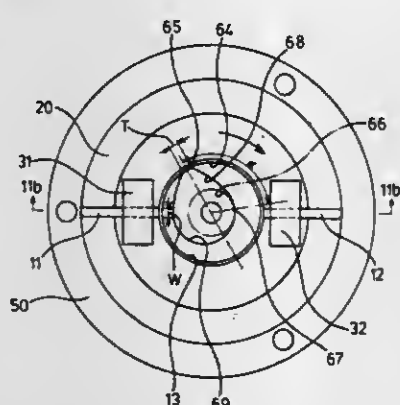
Filed Nov. 7, 1978, Ser. No. 958,558

Claims priority, application Japan, Nov. 10, 1977, 52/135072

Int. Cl.<sup>3</sup> H02K 11/00

U.S. Cl. 310—70 R

4 Claims



1. A rotary signal generator comprising a rotary magnetic pole member which is provided with a single protruded end located at the longest radial distance and with a single minimum radius portion located at the minimum radial distance and a plurality of stationary magnetic pole members uniformly spaced about said rotary magnetic pole member said protruded end and minimum radius portion being connected with a curved surface, each of said stationary magnetic pole members being energized by a permanent magnet and provided with a pick-up coil which generates an output signal when the protruded end of the rotary magnetic pole member traverses the end of the stationary pole, the angle formed by the protruded end and the minimum radius portion in the direction of rotation being not more than 120°.

4,284,917

# ELECTRIC MOTOR CONSTRUCTION

Mark Yasseml, Glendale, Calif., assignor to Excellon Industries, Torrance, Calif.

Filed Mar. 29, 1979, Ser. No. 25,280

Int. Cl.<sup>3</sup> H02K 5/00

U.S. Cl. 310—89

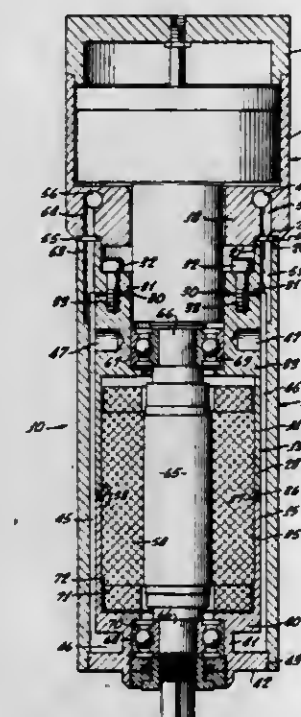
14 Claims

1. An electric motor comprising a housing means, said housing means including first and second housing members, said first and second housing members having circumfer-

ential walls, said circumferential walls having end portions telescoped together,

said first and second housing members defining first and second bearing support surfaces, respectively, said first and second bearing support surfaces being axially aligned,

and adhesive means interposed between said end portions for bonding said circumferential walls together so that said first and second housing members form a unitary structure, there being no fastener means for securing



said first and second housing members together so that said first and second housing members are substantially undistorted,

a first bearing carried by said first bearing support surface, a second bearing carried by said second bearing support surface, said first and second bearings being axially aligned by said first and second bearing support surfaces, a field in said housing means, and an armature assembly rotatable in said first and second bearings.

4,284,918

# POROUS INTERFACE STABILIZED LIQUID METAL CURRENT COLLECTOR

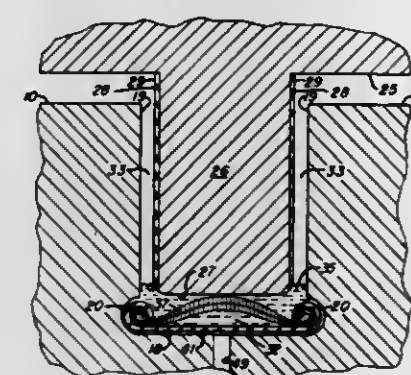
Michael J. Cannell, Annapolis, Md.; Slade L. Carr, Jr., Voorheesville, N.Y.; Howard O. Stevens, Severna Park, and Harold Surosky, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 17, 1979, Ser. No. 86,181

Int. Cl.<sup>3</sup> H02K 31/00

U.S. Cl. 310—178

14 Claims



1. A homopolar electrical machine comprising: a stator having an inner surface with channels formed

therein, each said channel including radial sidewalls and a bottom surface portion;

a rotor concentrically positioned within said stator, said rotor including outwardly projecting flanges; each of said flanges extending into a respective channel in said stator and being spaced from said radially extending sidewalls and said bottom portion;

liquid metal disposed in each said channel for making electrical contact between said flange and said channel;

a porous means removably secured in said channels and immersed in said liquid metal for maintaining said liquid metal in contact with said flanges;

means for removably securing said porous means in said channels;

said porous means comprises a porous, compliant strip of resilient material and a support means supporting said strip of material along its longitudinal edge portions such that the central longitudinal portion of said strip of material is resiliently biased toward the peripheral surface of said flange;

said strip of material comprises a porous material of woven filaments to provide a plurality of interstices therein and said support means comprises a holder element for said material having longitudinal edge portions crimped around respective said longitudinal edge portions of said strip of material to maintain said central portion in the biased position; and

said means for securing said porous means includes grooves formed in opposite sidewalls of said channels and said longitudinal crimped edges of said holder element are dimensioned to slidably engage said grooves and to maintain said strip of material in a fixed position.

4,284,919

# POLE CHANGEABLE THREE PHASE WINDING

Herbert Auringer, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

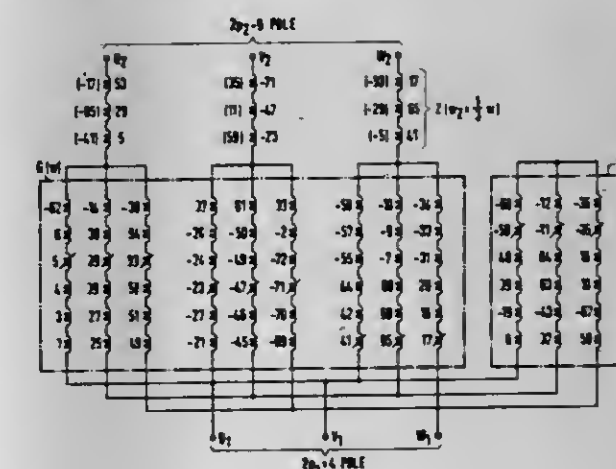
Filed Sep. 19, 1979, Ser. No. 76,689

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842286

Int. Cl.<sup>3</sup> H02K 3/00

U.S. Cl. 310—198

6 Claims



1. In a pole-changeable three-phase winding for a fractional pole pair number ratio of primary  $p_1$  and secondary pole pair numbers  $p_2$  according to  $p_1:p_2=(3m \pm 1):3n$  ( $m, n$  being positive integers), with  $G$  base winding branches operative in both pole number levels, one third of which are associated with all three phases and with  $N$  null winding branches operative only at the primary pole pair number  $p_1$ , the division into  $G$  base winding and  $N$  null winding branches per phase occurring according to  $G+N=2p_1/t$ , wherein  $t$  is an integral divisor of  $2p_1$  and  $G$  is divisible by the number three, the improvement comprising a reduction in the number coils in the  $G$  base winding branches and in the  $N$  null winding branches of the individual phases predetermined increase of the winding factor and a



number of additional coils disposed between the terminals for the secondary pole pair number  $p_2$  and the coil-reduced G base winding branches as additional null winding branches Z, the number of additional coils being equal to the reduction in the number of coils.

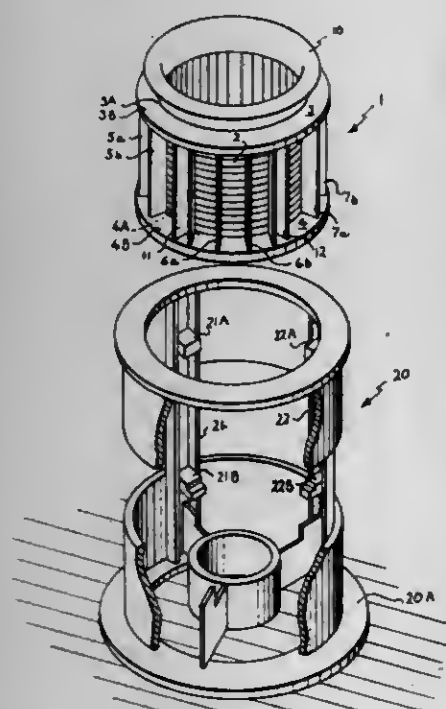
4,284,920

**DYNAMOELECTRIC MACHINE STATOR ASSEMBLY**  
Donald A. Nelson, Scotia, N.Y., assignor to General Electric Co., Schenectady, N.Y.

Filed Aug. 10, 1979, Ser. No. 65,662  
Int. Cl.<sup>3</sup> H02K 1/06

U.S. Cl. 310-217

7 Claims



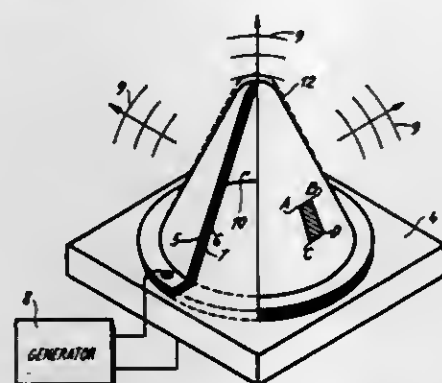
1. A dynamoelectric machine stator core assembly comprising a stack of generally flat, insulated metal laminations arranged in mutually facing relationship to define a bore for receiving a rotor adapted to be mounted within the bore in rotatable relationship to the stator, first and second annular clamping flanges mounted, respectively, over opposite ends of said stack with an inner portion of each flange overlapping the stack, and with an outer portion of each flange extending radially outward beyond the outer peripheral surface of the stack, a plurality of tension bars arcuately spaced around said peripheral surface of the stator, the ends of each of said tension bars being affixed, respectively, to said outer portions of the respective flanges thereby to hold said flanges in clamping relationship to the stack of laminations, in combination with the improvement comprising:

- a plurality of torque ribs each being about equal in length to one of said tension bars, and each being generally V-shaped in cross-section over its entire length, with a key portion defined by the outer surface of the apex thereof,
- a plurality of arcuately spaced positioning means defined on the outer peripheral surface of said stack, each of said positioning means being effective to engage therewith one of said torque rib key portions, thereby to prevent relative movement between the key portion and an adjacent positioning means,
- the ends of each of said torque ribs being mounted, respectively, in fixed relationship to the outer portion of the respective clamping flanges, and the key portions of each of the torque ribs being positioned, respectively, in engagement with one of said positioning means, thereby to rigidly and tightly secure the stator laminations against rotation relative to said flanges.

4,284,921  
**POLYMERIC PIEZOELECTRIC TRANSDUCER WITH THERMOFORMED PROTUBERANCES**  
Claire Lemonon; Francois Micheron, and Pierre Wang, all of Paris, France, assignors to Thomson-CSF, Paris, France  
Filed Nov. 15, 1978, Ser. No. 961,013  
Claims priority, application France, Nov. 17, 1977, 77 34589  
Int. Cl.<sup>3</sup> H01L 41/08

U.S. Cl. 310-328

6 Claims



1. A transducer device using a film of polymeric material capable of showing piezoelectric properties when it is strained in its plane and electrically biased by a field applied in a direction normal to its faces, said transducer device comprising at least one transducer element formed by a least one thermoformed protuberance created in said film; the strained wall of said protuberance being electrically polarized and disposed between electrodes forming a capacitor; said protuberance being formed by adjacent annular corrugations and a central dome; said protuberance forming a diaphragm; the sides of said corrugations being electrically biased by oppositely directed electrical fields; two sets of electrodes being deposited on said protuberance; one of said sets covering the faces of said annular corrugations and the other of said sets covering the faces of said central dome; said diaphragm being mechanically coupled with an electromechanical transducer; said electromechanical transducer being a loudspeaker motor driving a cone surrounding said central dome; said diaphragm acting as a suspension for the cone and as a means for detecting its movements.

4,284,922  
**LINEAR BEAM MICROWAVE AMPLIFIER HAVING SECTION COMPRISING THREE RESONANT COUPLED CIRCUITS TWO OF WHICH ARE RESONANT CAVITIES WHICH INTERACT WITH THE BEAM**

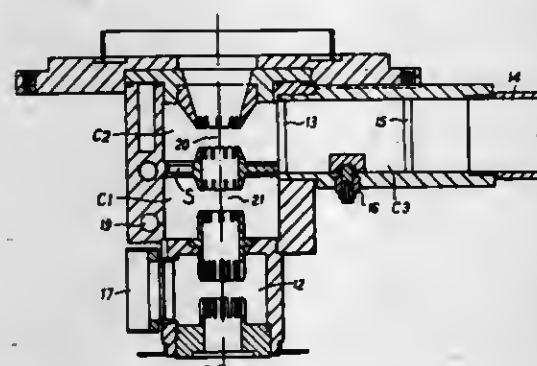
Dudley Perring, Charvil; Michael J. Smith, Chalfont St. Giles, and John P. Randall, Hillingdon, all of England, assignors to EMI-Varian Limited, Hayes, England

Filed Sep. 5, 1979, Ser. No. 72,678  
Claims priority, application United Kingdom, Sep. 6, 1978, 35769/78

U.S. Cl. 315-5.39

Int. Cl.<sup>3</sup> H01J 25/10

30 Claims



1. An output section for a microwave amplifier for operating

with a predetermined mid-band frequency and having a linear electron beam path for a beam of predetermined velocity in the output section comprising:

- a first resonant cavity defining a portion of the beam path and adapted to be coupled to a preceding section of the amplifier only via the beam, the cavity being arranged to interact with the beam,
- a second resonant cavity defining a succeeding portion of the beam path and adapted to be coupled to a succeeding section of the amplifier only via the beam, the cavity being arranged to interact with the beam,
- the section having no other resonant cavities defining portions of the beam path,
- a third resonant cavity, the cavities being dimensioned for stable operation of the output section and having coupling means adapted to facilitate the said stable operation, the coupling means comprising
- a first coupling coupling the first and second cavities other than along the beam path but not coupling the third and first cavities,
- a second coupling coupling the third cavity to the second cavity but not coupling the third and first cavities, and
- a third coupling for coupling the third cavity to an output transmission line.

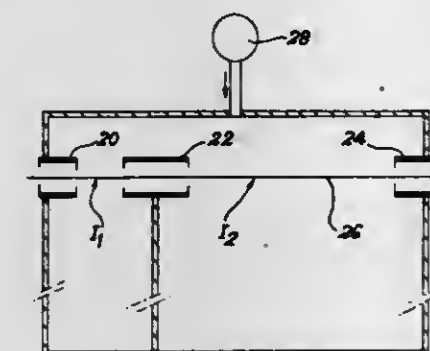
4,284,923

**ION BEAM BUNCHER-DEBUNCHER**  
Jacques Pottier, Orsay, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 13, 1979, Ser. No. 93,217  
Claims priority, application France, Nov. 23, 1978, 78 33103  
Int. Cl.<sup>3</sup> H01J 23/20

U.S. Cl. 315-5.51

2 Claims



1. An ion beam buncher-debuncher of the type having a resonant structure supplied by a high frequency or hyperfrequency generator, said structure comprising a cylindrical wall closed by two lateral faces respectively traversed by a supply pipe and a discharge pipe for the beam, together with a sliding tube arranged between the said pipes and defining with the supply pipe a first gap and with the discharge pipe a second gap, the ion beam being introduced into the said structure by the supply pipe firstly undergoing in the first gap a first action on the part of the electrical field therein, then traversing the sliding tube and finally undergoing in the second gap a second action on the part of the electrical field therein and leaving the structure by the discharge pipe, wherein the supply and discharge pipes have different cross-sections, the sliding tube having a flared shape passing from a small cross-section equal to that of one of the pipes to a large cross-section equal to that of the other pipe. one of the two gaps affecting the ion beam with a substantial weaker electric field than that affected by the other gap.

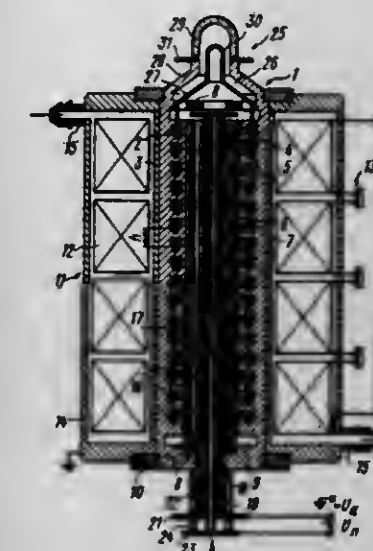
4,284,924  
**MICROWAVE MAGNETRON-TYPE DEVICE**

Jury I. Dodonov, Profsojuznaya ulitsa, 93, korpus 2, kv. 384, Moscow, U.S.S.R.

Filed Sep. 12, 1979, Ser. No. 75,205  
Int. Cl.<sup>3</sup> H01J 25/50

U.S. Cl. 315-39.51

3 Claims



1. A microwave magnetron-type device, comprising: at least one anode block, each said at least one anode block having cavities formed therein; said device further comprising vanes for electrically connecting said cavities; each said at least one anode block further comprising annular metal straps electrically associated with respective said vanes in each said at least one anode block, and having the same polarity at  $\pi$ -mode; said annular metal straps otherwise having different polarities, and electrically associating those of said vanes having the same polarity and forming pairs of said annular metal straps in each said at least one anode block; each said at least one anode block having an axis, said pairs of said annular metal straps being arranged with respect to one another along the axis of respective said at least one anode block to form a single multi-stage retardation system; said device further comprising means for creating a magnetic field having a magnetic field density and directed along the axis of each said at least one anode block, and embracing all of said at least one anode blocks; each said at least one anode block having end faces, said device further comprising means for increasing the magnetic field density in direct proximity to the end faces of each said at least one anode block, and forming a gap with said end faces of said end faces of respective said at least one anode block; at least some of said annular metal straps being at least partially made of a magnetic material having a mass, the mass of said magnetic material of said annular metal straps being so distributed along the axis of each said at least one anode block that the magnetic field density varies along the axis of respective said at least one anode block as follows:

$$B_x = B_0 - B_{01} \left( \sin \frac{n\pi}{l} X_1 \right) + B_{02} \left( 1 + \cos \frac{2\pi}{h} X_1 \right),$$

where  
 $B_x$  is a variation in the magnetic field density along the axis of said at least one anode block;  
 $B_0$  is a constant component of the homogeneous magnetic field density along the axis of said at least one anode block;  
 $B_{01}$  is the amplitude of variation in the magnetic field



density along the axis of said at least one anode block, over its length  $X_1$ , which does not exceed 50% of  $B_0$ ;  $B_0$  is the amplitude of fluctuation of the magnetic field density from one said pair of said annular metal straps of said single multi-stage retardation system to another along the axis of said at least one anode block, over its length  $X_1$ , which does not exceed 20% of  $B_0$ ;  $h$  is the spacing between said pairs of said annular metal straps;  $n=1,2,3\dots$  is a coefficient equal to the number of half-cycles of a sinusoidal distribution of an amplitude of a high-frequency electric field of a respective mode; said vanes having ends, each said at least one anode block having an anode opening formed therein, and defined by the ends of said vanes; said device further comprising a cathode arranged in said anode opening of respective said at least one anode block; each said cathode having a heater of said cathode, each said heater being arranged, together with corresponding said cathode in direct proximity thereto, in corresponding said anode opening; said device further including means comprising evacuated cermet insulators for holding said cathode and heater in said anode opening; said device further comprising a filament current source for said heater, and electrically associated therewith; said device further comprising an anodic voltage source electrically associated with said at least one anode block and said cathode thereof; said means for creating a magnetic field including a source of voltage; said device further comprising at least one power output section including an output coupler electrically associated with said at least one anode block.

## 4,284,925

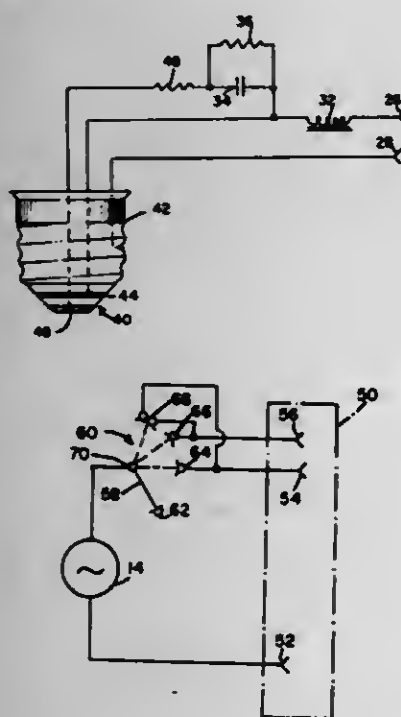
## MULTIPLE LEVEL DIMMING CIRCUIT FOR FLUORESCENT LAMP

Carlo S. Bessone, Woburn, and William J. Roche, Merrimac, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 18, 1979, Ser. No. 104,996  
Int. Cl.<sup>3</sup> H05B 41/40

U.S. Cl. 315-240

11 Claims



1. A multiple level dimming circuit for use with a fluorescent lamp operated from a voltage supply source comprising, in combination:

inductive ballast means having a first terminal adapted to be

selectively connected to said supply source and a second terminal adapted to be connected to said fluorescent lamp; a third terminal adapted to be selectively connected to said supply source; means including a discharge resistor and a capacitor ballast means series connected in that order between said third terminal and said first terminal; bleeder resistance means connected across said capacitor ballast means; and said voltage supply source including a single-pole multiple-throw switch having a common terminal connected to one side of said supply source and at least first and second position contacts and a third position contact means, said first and third terminals being connectable to said first and second position contacts, respectively, and said third position contact means being connected to both said first and second position contacts.

## 4,284,926

## DECORATIVE LIGHTING CONTROL WITH A WAVEFORM GENERATOR

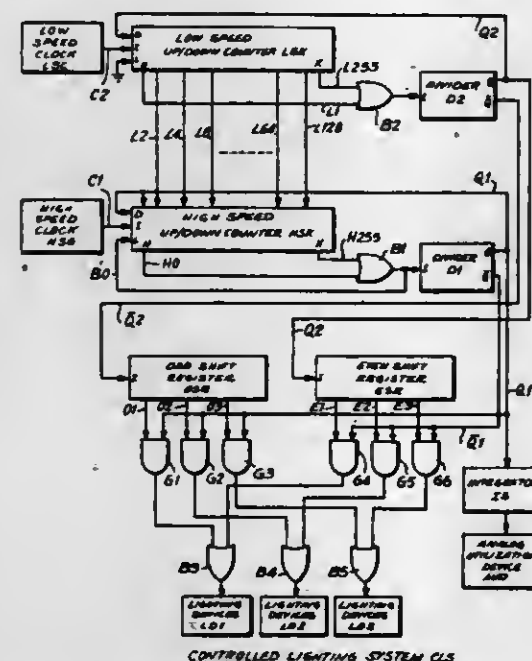
Frank Dingas, 176 W. 87th St., New York, N.Y. 10024

Filed Nov. 24, 1978, Ser. No. 963,349

Int. Cl.<sup>3</sup> H05B 37/02; H03K 7/08

U.S. Cl. 315-312

16 Claims



1. A waveform generator comprising: a multi-stage up-down counter means, said up-down counter means having a plurality of load input terminals connected to the stages for registering a desired initial count in response to a coded combination of signals received in parallel, a count input for unit changing the registered count in response to a received pulse, a direction input for controlling the direction of the counting in response to the level of a received signal, an upper output for emitting a signal whenever the registered count reaches a given upper value, and a lower output for emitting a signal whenever the registered count reaches a given lower value; loading means for controllably feeding a coded parallel combination of signals representing a desired initial count to said load input terminals; a pulse source connected to said count input and operating at a given frequency; and binary means for emitting a signal upon receipt of a signal from one of said outputs and being connected to said upper output and said lower output, and said binary means having an output for controlling said loading means and for emitting a width modulated waveform signal.

## 4,284,927

## METHOD FOR BREAKING DIRECT CURRENT AND D.C. BREAKER FOR EFFECTING SAME

Andronik G. Iosifian, Bolshevistsky pereulok, 9, kv. 14; Vladilen P. Fotin, Gospitalny val, 3, korpus 5, kv. 140, both of Moscow; Vladimir N. Bondalev, ulitsa Lenina, 9, kv. 45, Istra Moskovskoi oblasti; Evgeny I. Lapshin, ulitsa Bosova, 1, kv. 3, Istra Moskovskoi oblasti; Alexandr S. Ostrovsky, ulitsa Lenina, 9-a, kv. 72, Istra Moskovskoi oblasti, and Alexandr I. Savchenko, ulitsa Pervomaiskaya, 10, kv. 22, Istra Moskovskoi oblasti, all of U.S.S.R.

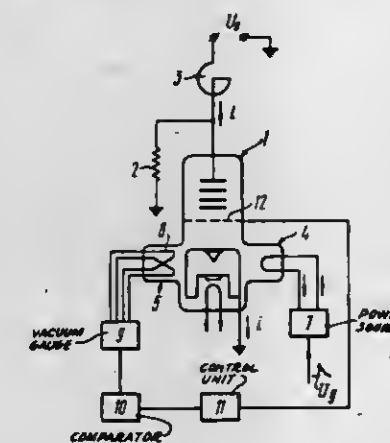
Filed Jan. 2, 1978, Ser. No. 912,110

Claims priority, application U.S.S.R., Jun. 6, 1977, 2493251

Int. Cl.<sup>3</sup> H01J 17/20

U.S. Cl. 315-340

2 Claims



1. A method for breaking direct current in a gas discharge device comprising:

- (a) setting initial gas pressure level so that ratio of maximum current density in a positive gas discharge column to said initial pressure is below a critical value when a current channel moves at a high speed across a cavity of said device;
- (b) passing the direct current through said device;
- (c) decreasing said gas pressure in said current channel due to absorption of gas by intermediate electrodes in said device;
- (d) decreasing subsequently the density of gas in the current channel resulting in uniform distribution of said current in the discharge chamber; and
- (e) increasing the current and voltage simultaneously across load to reach a predetermined point where it causes to break said current.

## 4,284,928

## SWITCHABLE VERY-HIGH-VOLTAGE DIRECT-CURRENT POWER SUPPLY FOR CAPACITIVE LOAD

Claude Ragot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 5, 1979, Ser. No. 72,625

Claims priority, application France, Sep. 8, 1978, 78 25851

Int. Cl.<sup>3</sup> H01J 29/80

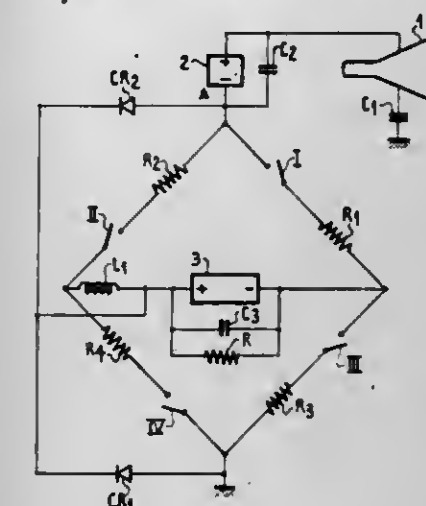
U.S. Cl. 315-375

12 Claims

1. A very-high-voltage direct-current power supply for a capacitive load, comprising:

- a bridge circuit with four resistance arms;
- a main direct-current source of high nominal voltage connected in series with said load across one diagonal of said bridge circuit;
- at least one auxiliary direct-current source of lower nominal voltage connected across the other diagonal of said bridge;
- and a set of four switches respectively inserted in said arms and operable in pairs for additively combining the voltages of

said main and auxiliary sources in a first position, subtractively combining the voltages of said main and auxiliary



sources in a second position, and disconnecting said auxiliary source from said load in a third position.

## 4,284,929

## AMBULATOR CONTROL CIRCUITRY

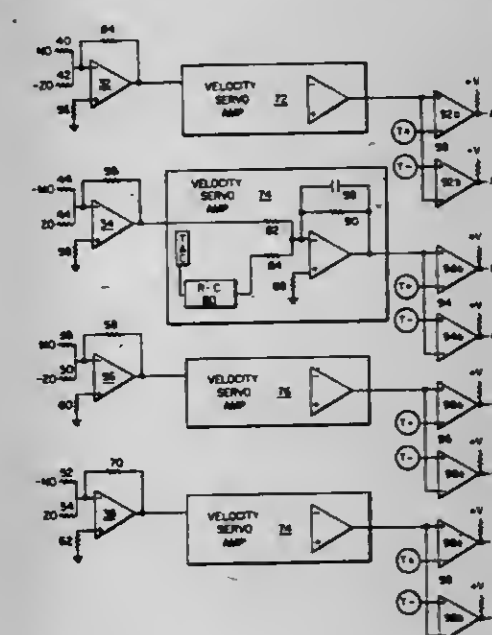
Robert A. Garrett, John Silva, and Craig R. Allen, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 27, 1978, Ser. No. 955,427

Int. Cl.<sup>3</sup> H02P 1/54

U.S. Cl. 318-51

20 Claims



1. A joy stick motor control device comprising: a plurality of electrical motor means for driving a plurality of loads; a plurality of pulse width modulated signal generators, each having its output connected to one of said plurality of electrical motor means; a plurality of velocity servo amplifiers, each having its output connected to one of said pulse width modulated signal generators; a plurality of differential amplifiers each having its output connected to one of said velocity servo amplifiers; first, second and third joy stick potentiometers operably connected to said plurality of differential amplifiers; and a three axis joy stick operably coupled to said first, second and third joy stick potentiometers; wherein said plurality of electric motor means comprises first, second, third and fourth DC motors.



4,284,930

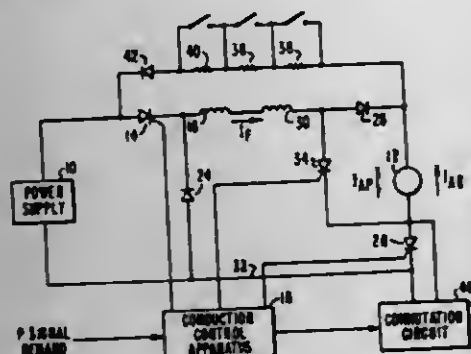
# MOTOR CONTROL APPARATUS AND METHOD

Thomas C. Matty, North Huntingdon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 19, 1979, Ser. No. 86,380  
Int. Cl.<sup>3</sup> H02P 3/08

U.S. Cl. 318-269

10 Claims



1. In control apparatus operative with a voltage source for determining one of a power mode of operation and a brake mode of operation for a motor coupled to a load and including a field winding and an armature, the combination of: first switch means connected with said voltage source to provide a first current circuit to establish said power mode by energizing said field winding and energizing said motor armature in a first direction in relation to said voltage source when the first switch means is conducting, second switch means connected with said voltage source to provide a second current circuit to establish said brake mode by energizing said field winding and energizing said motor armature in a second direction in relation to said voltage source when the second switch means is conducting, control means coupled with said first switch means to make the first switch means conductive to determine said power mode of operation for the motor and coupled with the second switch means to make the second switch means conductive to determining said brake mode of operation for the motor, with said control means coupled with each of said first switch means and said second switch means to make both the first switch means and the second switch means conductive for providing a third current circuit for energizing said field winding without energizing said armature in relation to said voltage source, and conduction determining means operative with the first switch means to determine the conductivity of the first switch means in relation to the second switch means for establishing said brake mode of operation for said motor.

4,284,931

# OVERSPEED SHUTDOWN SYSTEM FOR CENTRIFUGE APPARATUS

Robert J. Ehret, Los Altos, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

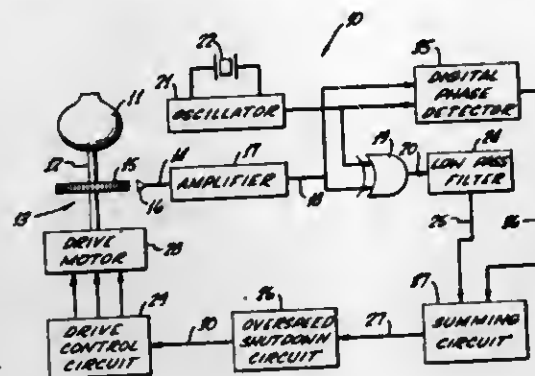
Filed Mar. 14, 1979, Ser. No. 20,390  
Int. Cl.<sup>3</sup> H02P 3/08, 3/18

U.S. Cl. 318-318

4 Claims

1. An overspeed protection system for a centrifuge apparatus including a rotor driven by a drive motor comprising: transducer means for providing a signal whose frequency is a function of the rotational speed of said centrifuge rotor; means for generating a reference signal having a predetermined frequency; means for mixing the rotational speed signal with the reference signal to provide a difference frequency signal; a filter coupled to the output of said mixing means for passing signals having frequencies below a predetermined frequency; means responsive to said rotational speed signal and said reference signal for generating an overspeed signal when

the frequency of said rotational speed signal exceeds the frequency of said reference signal; and means coupled to said overspeed signal generating means



and to said filter for disconnecting power to said drive motor in response to either an output signal from said filter or an overspeed signal from said overspeed signal generating means.

4,284,932

# SYSTEM FOR DRIVING DC MOTOR

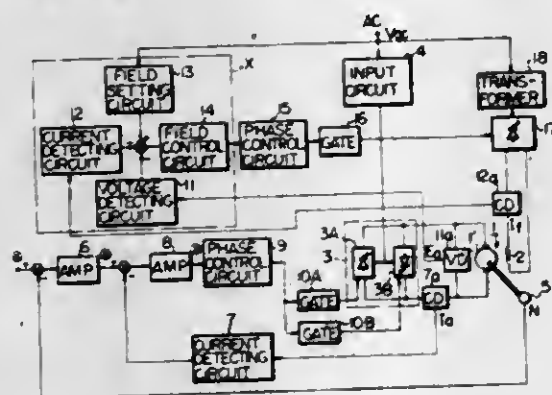
Shigeki Kawada, Yoshiaki Fujioke, and Naoto Ohta, all of Hino, Japan, assignors to Fujitsu Fanuc Limited, Hino, Japan

Filed Sep. 18, 1979, Ser. No. 76,615

Claims priority, application Japan, Oct. 2, 1978, 53/120374  
Int. Cl.<sup>3</sup> H02P 5/16

U.S. Cl. 318-338

4 Claims



1. A system for driving a DC motor having an armature and a field winding and driven by using a three-phase anti-parallel thyristor bridge circuit having a three-phase alternating voltage applied thereto, said system comprising: a first means for controlling an armature current  $I_a$  flowing through said armature of said DC motor; and a second means for controlling a field current  $I_f$  flowing through said field winding, said second controlling means including a first detecting circuit for detecting said armature voltage  $E_a$ , a second detecting circuit for detecting said field current  $I_f$ , a field setting circuit for setting the maximum level of said field current in response to said three-phase alternating voltage, said maximum level being constant when said three-phase alternating voltage is higher than a predetermined value and said field current being proportional to said three-phase alternating voltage when said three-phase alternating voltage is lower than said predetermined value, a field control circuit for integrating the sum of the output signals generated by said first and second detecting circuits and an output signal generated from said field setting circuit and field controller means for controlling said field current in response to the integrated signal such that, when said three-phase alternating voltage decreases to a value lower than said predetermined value, said field current  $I_f$  is decreased so that said armature voltage  $E_a$  is decreased, and when said three-phase alternating voltage is higher than said prede-

terminated value, said field current  $I_f$  is held constant wherein said armature voltage  $E_a$  is constant.

4,284,933

# CONTROL CIRCUIT FOR REDUCING FIELD VOLTAGE IN D.C. MOTORS

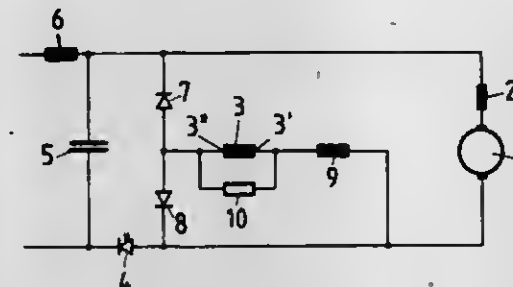
Franz Galliker, Winterthur, and Peter Knapp, Oberehrendingen, both of Switzerland, assignors to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Jul. 3, 1979, Ser. No. 54,465

Claims priority, application Switzerland, Jul. 5, 1978, 7322/78  
Int. Cl.<sup>3</sup> H02P 5/16

U.S. Cl. 318-345 C

6 Claims



1. In a direct current motor circuit provided with automatic field suppression and including an armature winding, a commutating pole winding connected to the armature winding, an exciter winding connected to the armature winding and the commutating pole winding by a pair of diodes, and an electronic direct current regulator, means for decreasing the field voltage peaks in the motor, comprising: a choke coil connected in series with the exciter winding, and a resistor connected in parallel with the exciter winding and operative to conduct current of either polarity during operation of the direct current regulator.

4,284,934

# MOTOR CONTROL APPARATUS WITH AN IMPROVED THYRISTOR CHOPPER CIRCUIT

Hiroshi Narita, Michimasa Horiuchi, Masahiko Ibamoto, and Hideaki Rokutan, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

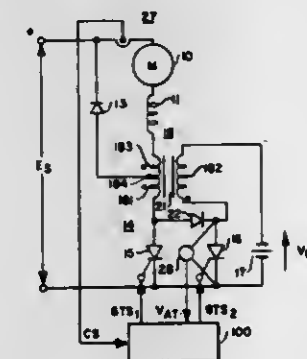
Filed Feb. 7, 1979, Ser. No. 10,304

Claims priority, application Japan, Feb. 8, 1978, 53/12482;  
Feb. 20, 1978, 53/17638

Int. Cl.<sup>3</sup> H02P 5/16

U.S. Cl. 318-345 C

11 Claims



1. A motor control apparatus to control the supply of current from a source to an electric motor comprising: a chopper circuit connected to said source in series with the electric motor and including main and auxiliary thyristors connected in parallel with each other and a capacitor connected to the thyristors in parallel; a freewheel diode connected in parallel to the electric motor, whereby motor current continues to flow there-through when said chopper circuit is blocked; chopper control means for controlling the duty factor of said

chopper circuit depending on a current instruction signal; and a saturable current transformer having a first winding connected to carry at least a part of the current flowing through said electric motor, a second winding connected within the closed circuit which is formed with the capacitor of said chopper circuit when the auxiliary thyristor of said chopper circuit is turned on, and a third winding magnetically coupled with said second winding and connected within the closed circuit which is formed with said freewheel diode when said chopper circuit is blocked for inducing current through the second winding to charge the capacitor of said chopper circuit in response to the current flowing therethrough.

4,284,935

# VEHICLE POWER SEAT ADJUSTER CONTROL SYSTEM

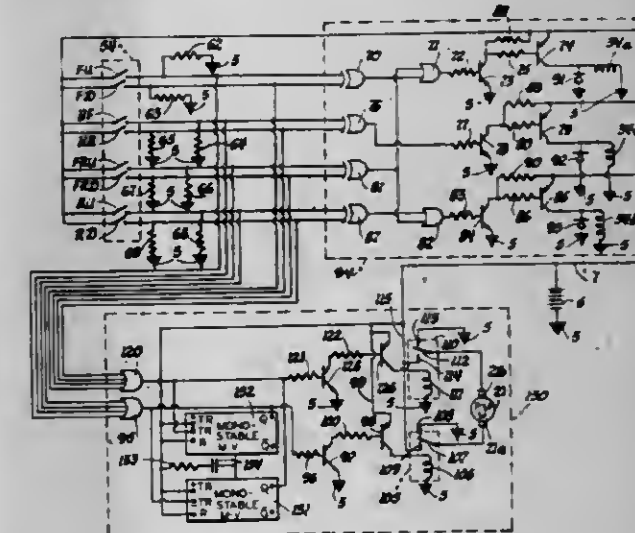
Anthony March, Rochester, and Thomas E. Horton, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 24, 1979, Ser. No. 42,097

Int. Cl.<sup>3</sup> H02P 1/22

U.S. Cl. 318-280

5 Claims



1. A power seat adjuster control system for use with power seat adjuster mechanisms of the type that are drivable through a plurality of selectable seat adjusting modes by respective operating devices that may be selectively coupled to a bi-directional electric operating motor through respective solenoid operated dog-type clutches that may become locked up should the seat be adjusted in any seat adjusting mode until motor stall thus preventing seat adjustment in another mode that requires motor armature rotation in the same direction as that until stall, comprising:

means for producing an electrical signal indication of each selected seat adjusting mode; first circuit means responsive to any one of said electrical signal indications for effecting the energization of the said solenoid operated clutch through which the said operating device that drives said seat adjuster mechanism through the selected seat adjusting mode is coupled to said operating motor; and second circuit means responsive to any one of said electrical signal indications for effecting the energization of said operating motor for armature rotation in the direction to effect seat adjustment in the selected mode and responsive to the termination of said electrical signal indication of the selected seat adjusting mode for effecting for a predetermined period of time the energization of said operating motor for armature rotation in the direction opposite to the direction of armature rotation during the period of said electrical signal indication whereby any lock-up of the solenoid operated clutch that may occur should the seat be adjusted in any seat adjusting mode until motor stall is relieved.



4,284,936

# CHOPPER TYPE PROPULSION SYSTEM WITH LOW SPEED ELECTRICAL BRAKING CAPABILITY FOR TRACTION VEHICLES

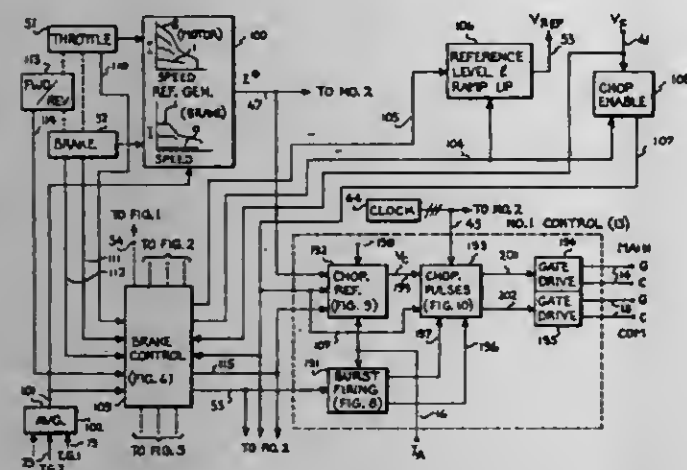
Ronald B. Bailey, and Thomas D. Stitt, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed May 2, 1979, Ser. No. 35,352

Int. Cl.<sup>3</sup> H02P 3/14

U.S. Cl. 318—381

26 Claims



1. Improved means for effecting electrical braking of a traction vehicle equipped with a propulsion system having motoring and braking modes of operation, said propulsion system comprising a d-c traction motor that behaves as a generator during said braking mode of operation, said motor having an armature and a series field winding and said propulsion system further comprising a filter capacitor adapted to be coupled to a source of d-c electric power, a chopper, means for connecting said chopper in series with said armature and field windings across said capacitor when the propulsion system is operating in its motoring mode, cyclically operative means for normally producing periodic gating signals of relatively short predetermined duration, means responsive to said gating signals for alternatively turning on and turning off said chopper, and free wheeling rectifier means connected in circuit with said armature and series field winding to conduct motor current during intervals when said chopper is turned off, wherein the improvement comprises:

- command means having alternative motoring and braking states;
- brake set up means operative in response to a motoring-to-braking state change of said command means for reconnecting the propulsion system to establish an armature current path comprising said field winding in series with first and second parallel branches, said first branch including said chopper and said second branch including said capacitor in series with said free wheeling rectifier means, and for reversing the polarity of the connection of said series field winding relative to said armature, said brake set up means being effective whenever said command means is in its braking state to maintain said armature current path and to maintain the reversed polarity connection of said field winding and armature; and
- burst firing means effective in response to the reconnecting operation of said brake set up means and the start of a braking state of said command means for supplying to said gating signal responsive means an extended chopper turn-on signal having a duration substantially longer than said predetermined duration of the gating signals normally produced by said cyclically operative means, thereby ensuring that said chopper turns on and conducts armature current to begin the braking mode of operation of the propulsion system.

4,284,937

# LOAD CURRENT DETECTING APPARATUS OF DIRECT CURRENT MOTORS

Kunio Sekiguchi, Kawagoe, and Masaharu Noguti, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

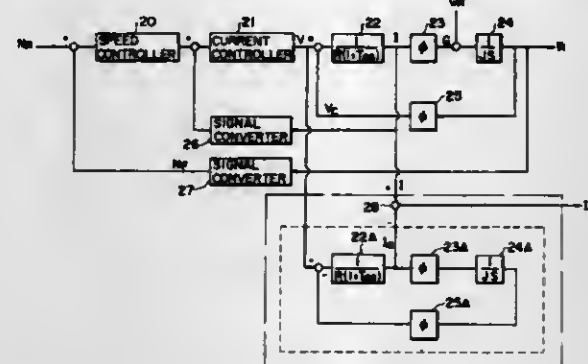
Filed Oct. 17, 1979, Ser. No. 85,672

Claims priority, application Japan, Oct. 25, 1978, 53-130420

Int. Cl.<sup>3</sup> H02P 1/02, 5/16

U.S. Cl. 318—388

4 Claims



1. Load current detecting apparatus of a direct current motor for driving a load comprising a load current detector including a simulation circuit representing a no load state of said motor, said simulation circuit including a first circuit element representing an armature circuit of said motor and a second circuit element connected to said first circuit element and representing a counter electromotive force coefficient of said motor; means for applying to said first circuit element a signal representing terminal voltage of said motor so as to produce an acceleration or deceleration current of said motor; a comparator for comparing actual armature current of said motor with said acceleration or deceleration current to obtain a load current signal; and means responsive to said load current signal for controlling speed of said motor.

4,284,938

# CHOPPER WITH ADAPTIVE ENERGY COMMUTATION

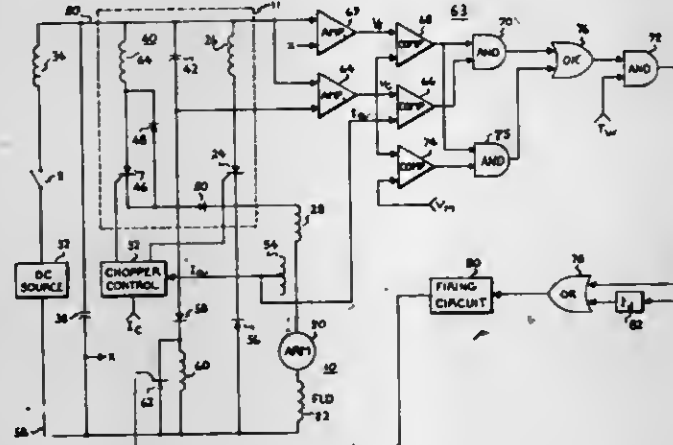
Ronald B. Bailey, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Dec. 28, 1978, Ser. No. 973,973

Int. Cl.<sup>3</sup> H02P 5/16

U.S. Cl. 318—432

7 Claims



1. In a power control system including a time ratio control electric power circuit connected between an electric load and a pair of d-c power busses of relatively positive and negative potential that are adapted to be connected to a source of d-c electric power, through an electric filter comprising at least a filter capacitor connected between the positive and negative busses, the power circuit including a cyclically turned-on main load current carrying thyristor and a commutation circuit

operative to periodically turn-off the main thyristor, the commutating circuit including a commutation capacitor that discharges during the turn-off process of the commutating circuit, the commutation capacitor being connected in a path that includes the d-c source and that conducts charging current during intervals when the main thyristor is turned-off, the improvement comprising:

- inductive means serially connected in said charging current path;
- controllable switch means connected in shunt with said inductive means and having a high resistance blocking state and a relatively low resistance conducting state;
- unidirectional conducting means connected in said charging current path and poled to conduct said charging current; and
- gating means coupled to said commutating capacitor and to said switch means for forcing said switch means to its conducting state in response to the voltage across said commutating capacitor attaining a predetermined variable magnitude, said gating means being coupled to monitor the magnitude of said main load current and to adjust said predetermined variable magnitude as a direct function of the magnitude of said main load current.

4,284,939

# DEVICE FOR DETECTING OPPOSITE PHASE AND OPEN PHASE

Shigeki Kawada; Yoshiaki Fujioka; Naoto Ohta, all of Hino, and Yutaka Kolwal, Tokyo, all of Japan, assignors to Fujitsu Fanuc Limited, Hino, Japan

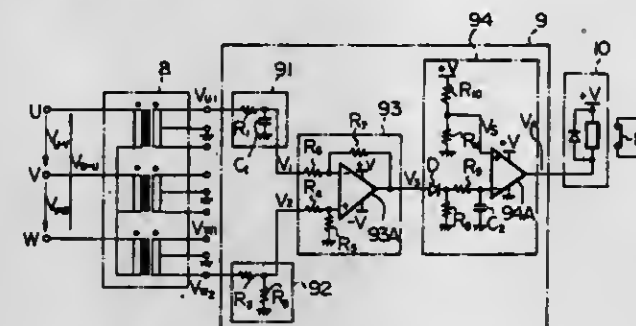
Filed Sep. 18, 1979, Ser. No. 76,548

Claims priority, application Japan, Sep. 30, 1978, 53-119899

Int. Cl.<sup>3</sup> G05B 5/00

U.S. Cl. 318—453

4 Claims



1. A device for detecting opposite phases and an open phase in an input three-phase voltage for driving a DC motor, wherein said input three-phase voltage is rectified by a three-phase bridge circuit having a DC output supplied to the armature of said DC motor, wherein said input three-phase voltage is supplied to a Δ-Y transformer and the outputs of said transformer are connected to a gate circuit for generating firing pulses to said three-phase bridge circuit, said device comprising:

- a first phase shifter connected to a first output of said Δ-Y transformer, for producing a first voltage which lags a first phase of said input three-phase voltage by a phase angle of 60°;
- a second phase shifter connected to a second output of said Δ-Y transformer, for producing a second voltage which lags a second phase of said input three-phase voltage by a phase angle of 180°, said second phase leading said first phase by a phase angle of 240°;
- a differential amplifier connected to outputs of said first phase shifter and said second phase shifter for producing a difference voltage therebetween;
- comparator means connected to said differential amplifier for comparing the maximum level of said difference voltage with a reference voltage; and
- controller means connected between said comparator means and the input side of said three-phase bridge circuit for controlling the application of said input three-phase voltage to said three-phase bridge circuit, such that said input

three-phase voltage is applied to said three-phase bridge circuit only when the maximum level of said difference voltage is equal to or smaller than said reference voltage.

4,284,940

# ELECTRICAL WAVE SYNTHESIZER FOR CONTROLLING AN ELECTRIC MOTOR

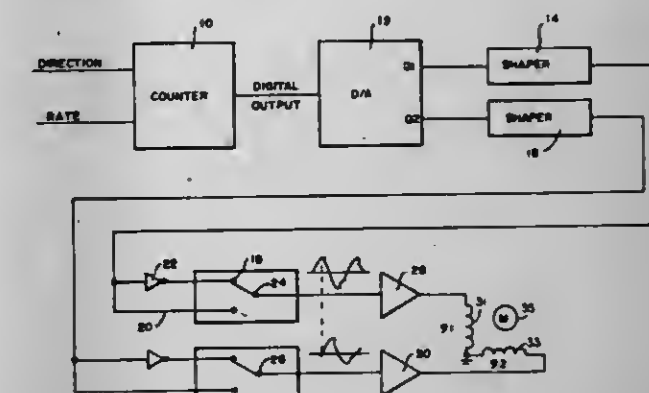
Ross Welburn, Santa Rosa, Calif., assignor to Compumotion Corporation, Santa Rosa, Calif.

Filed Aug. 17, 1979, Ser. No. 67,363

Int. Cl.<sup>3</sup> G05B 19/40; H02P 5/06

U.S. Cl. 318—696

8 Claims



1. An electrical wave synthesizer responsive to direction and speed input signals and providing an analog control signal for controlling an electric motor comprising counter means for receiving and counting electrical pulses indicative of speed, digital to analog conversion means for receiving count from said counter means and generating an analog signal in response thereto, non-linear amplifier means for receiving and distorting said analog signal, and multiplexer means for receiving the distorted analog signal from said nonlinear amplifier means and developing a full wave alternating polarity control signal.

4,284,941

# DATA COMMUNICATIONS BETWEEN FIXED AND MOVING TERMINALS

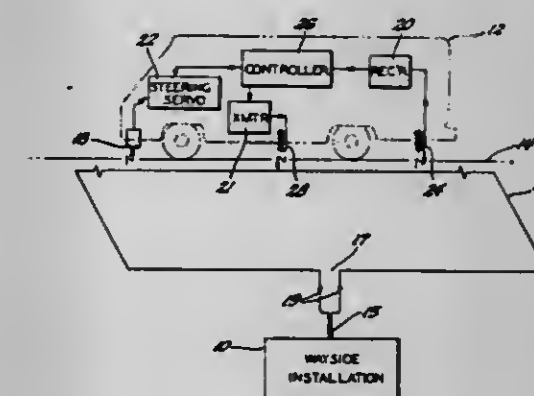
William R. Regueiro, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1979, Ser. No. 82,297

Int. Cl.<sup>3</sup> G05D 1/00; B64C 13/18

U.S. Cl. 318—587

3 Claims



1. A communications system for automated guidance transportation wherein a vehicle communicates status information to a wayside installation and the wayside installation communicates lateral guidance and control information to the vehicle comprising:

- a conductor defining a course over which said vehicle is to travel, said conductor having a loop closing portion whereat the ends of said conductor form loop terminals; first and second wayside transformers, each of said transformers having first, second, and third windings;



a first circuit comprising in series connection, said third windings of said first and second transformers and said loop terminals;

an electrical load having an impedance substantially matched with that of said conductor;

a second circuit comprising in series connection said load and the first windings of said first and second transformers;

means connecting said second winding of said first transformer to a wayside transmitter for applying a lateral guidance signal to said conductor and for modulating said guidance signal in accordance with control information for said vehicle;

means connecting said second winding of said second transformer to a wayside receiver for receiving information transmitted into said conductor by said vehicle, the turns ratio and relative winding polarity of said transformer windings being such that signals transmitted from a vehicle into said conductor are received in said wayside receiver, and signal transmitted by said wayside transmitter for reception by said vehicle induce substantially equal and opposite voltages in said second winding of said second transformer to thereby substantially isolate said wayside receiver from signals transmitted by said wayside transmitter.

4,284,942

## LOAD DRIVING APPARATUS

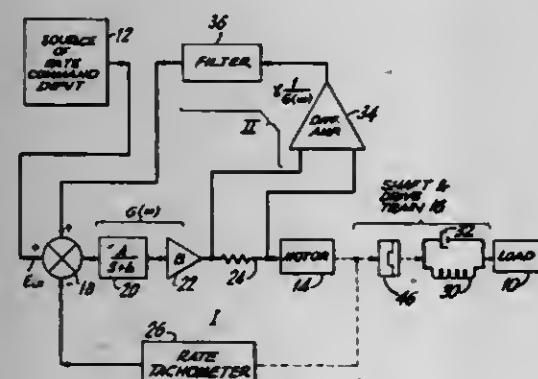
William J. Bigley, Scotch Plains, and Vincent J. Rizzo, Basking Ridge, both of N.J., assignors to Lockheed Electronics Co., Inc., Plainfield, N.J.

Continuation-in-part of Ser. No. 866,394, Jan. 6, 1978. This application Jun. 16, 1978, Ser. No. 916,138

Int. Cl.<sup>3</sup> G05B 5/01

U.S. Cl. 318—618

7 Claims



1. In combination in servomechanism apparatus for driving a load via coupling means characterized by a mechanical resonance at rates exceeding said resonance, summing means having first and second additive input ports, a subtractive input port and an output, a motor, a load, output coupling means characterized by a mechanical resonance connecting said motor and said load, first network means connecting said output of said summing means and said motor, first negative feedback means having an output connected to said subtractive input port of said summing means and an input responsive to said motor, drive monitoring means for monitoring the drive consumed by said motor, second network positive feedback means having an input connected to said drive monitoring means and an output connected to said first additive input port of said summing means for increasing the energization applied to said motor when said monitoring means senses an increasing drive consumed by said motor to thereby overcome said mechanical resonance of said coupling means, and slip clutch means serially connected with said output coupling means for obviating excessive loading of said motor.

# 4,284,943

## APPARATUS AND METHOD FOR CONTROLLING THE SPEED OF AN INDUCTION MOTOR IN A CLOSED-LOOP SYSTEM

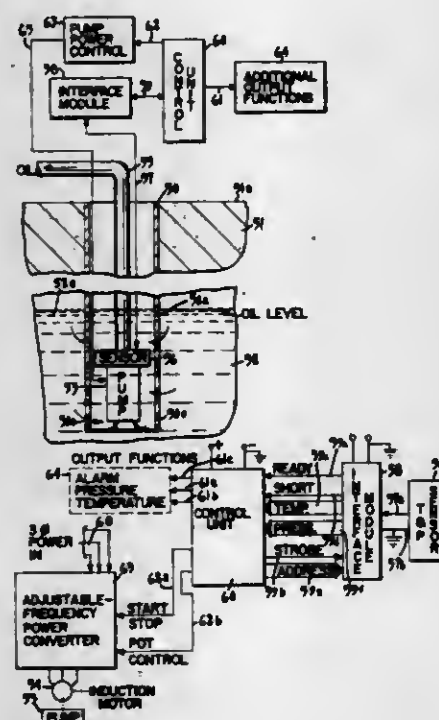
Denton C. Rowe, Coon Rapids, Minn., assignor to Electric Machinery Mfg. Company, Minneapolis, Minn.

Filed Feb. 13, 1979, Ser. No. 11,855

Int. Cl.<sup>3</sup> H02P 5/28; G06F 7/28; E21B 33/03; F16K 31/12

U.S. Cl. 318—806

11 Claims



1. In combination with:

- (a) an A.C. induction motor;
- (b) adjustable-frequency power converter means operatively connected with said induction motor for providing a variable frequency power signal to energize said induction motor, said frequency-converter being operable to provide an A.C. output signal having frequency determined by a received control signal;
- (c) means operated by said induction motor for performing a function which has an effect upon at least one external measurable parameter; and
- (d) sensor means disposed to sense said one measurable parameter for periodically providing a measurement signal responsive thereto, said measurement signal being accurate within a measurement error band based on the measurement accuracy of said sensor means;

wherein the invention comprises:

control means suitable for operative connection to receive said periodic measurement signals from said sensor means and to provide a control signal to said adjustable-frequency power converter means, for generating said control signal responsive to cumulative changes in said measurement signals received over a predetermined period of time, said control signal being of a nature whereby when applied to said power converter, said power converter energizes said motor so as to regulate said measurable parameter to an accuracy greater than the measurement accuracy of said sensor means.

4,284,944

# BATTERY CHARGING DEVICE HAVING BATTERY STATE INDICATING FUNCTION

Kouichi Iwanaga, and Hiromi Kakumoto, both of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

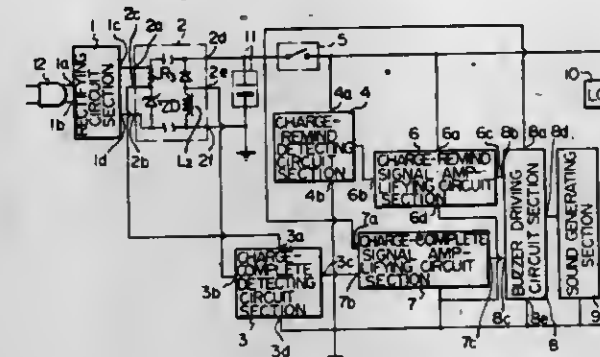
Filed Oct. 12, 1979, Ser. No. 84,058

Claims priority, application Japan, Oct. 12, 1978, 53/125491

Int. Cl.<sup>3</sup> H02J 7/04; G08B 21/00

U.S. Cl. 320—48

7 Claims



1. A battery charging device having a battery state indicating function comprising:
  - a rectifier for converting an AC source current into a direct current;
  - a high frequency charging circuit including a transistor, a transformer having windings respectively disposed in the collector, base and emitter circuits of said transistor, and a rectifying diode connected in series between said emitter circuit transformer winding and the emitter of said transistor, wherein a battery to be charged is connected in parallel with said series connected of said diode and said emitter circuit winding;
  - detecting means responsive to the charge level of a battery being charged, for producing an output signal when a predetermined level is reached;
  - a control circuit responsive to said detecting means for causing said charging circuit to produce an intermittent charging voltage when said predetermined charge level is reached; and
  - means responsive to said level detecting means for intermittently generating a sound when said predetermined level is reached, said sound generating means being responsive to the level of charge of the battery such that the length of the period between each generated sound, relative to the length of each generated sound, is varied in dependence upon the charge level.

4,284,945

# CURRENT DIVIDERS USING EMITTER-COUPLED TRANSISTOR PAIRS

Adel A. A. Ahmed, Clinton Township, Hunderdon County, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 973,457, Dec. 26, 1978, This application

Mar. 10, 1980, Ser. No. 128,872

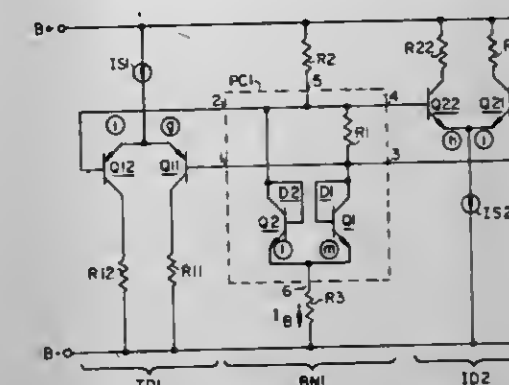
Int. Cl.<sup>3</sup> G05F 3/20

U.S. Cl. 323—315

9 Claims

1. A current divider comprising:
  - a first terminal for conducting the current to be divided;
  - second and third terminals for conducting respective portions of the divided current;
  - first and second transistors of a first conductivity type having respective emitter electrodes connected to said first terminal, having respective collector electrodes connected to said second terminal and to said third terminal, and having respective base electrodes;
  - a first resistance;
  - first and second semiconductor diode means, said first diode means exhibiting a smaller offset voltage thereacross for given flow of current therethrough than said second diode means, said first diode means and said first resistance being

in a first series connection, said second diode means in parallel connection with said first series connection; means for applying a bias current to said parallel connection for forward biasing said first and second diode means; and



means for applying voltage between the base electrodes of said first and second transistors that is directly related to the resulting voltage appearing across said first resistance.

4,284,946

# FAILURE MONITOR FOR CRYSTAL FILTERS

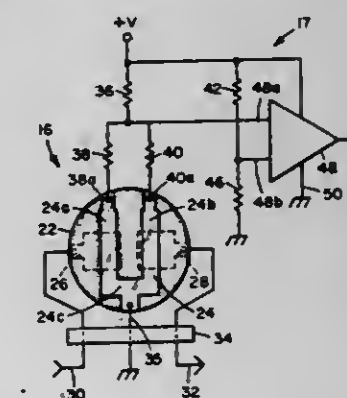
John A. Sharrow, Ft. Lauderdale, Fla., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 18, 1979, Ser. No. 50,009

Int. Cl.<sup>3</sup> G01R 29/22

U.S. Cl. 324—56

3 Claims



1. In a crystal filter comprising a piezoelectric means having a surface on which an electrically conductive resonator structure is plated and electrically connected to one terminal of a voltage source, said resonator structure being horseshoe shaped having parallel legs and a connecting segment, said resonator structure being connected to said one terminal at said connecting segment, means for monitoring the integrity of the resonator structure and of the electrical connection between said resonator structure and said one terminal comprising:
  - a comparator having first and second input terminals;
  - means for impressing a reference voltage on said first input terminal;
  - a resistive voltage divider network connected between the other terminal of said voltage source and said resonator structure and having an intermediate tap connected to said second input terminal, said resistive voltage divider network having parallel arms respectively connected to the parallel legs of said resonator structure.



4,284,947

## DETECTING THE SIZE AND SHAPE OF BODIES

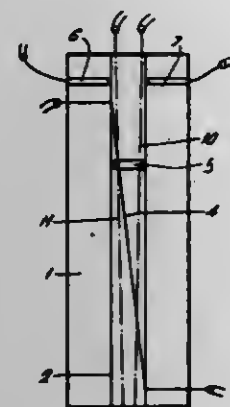
Hyman Walton, Beckermat, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jul. 10, 1979, Ser. No. 56,324

Claims priority, application United Kingdom, Aug. 8, 1978, 32600/78

Int. Cl.<sup>3</sup> G01R 27/26

U.S. Cl. 324-61 R



1. A method of detecting information as to the shape and size of a body comprising moving the body along a fixed path, arranging the plates of a capacitor so that the electric field of the capacitor cuts the path at different points across the breadth of the path along the length of said path, detecting changes in dielectric constant of the capacitor caused by movement of said body along said fixed path, comparing the changes so detected with changes caused by a reference body of known size and shape and deducing from the comparison information as to the size and shape of the body.

4,284,948

## IMAGING SYSTEMS

Ian R. Young, Sunbury on Thames, England, assignor to EMI Limited, Hayes, England

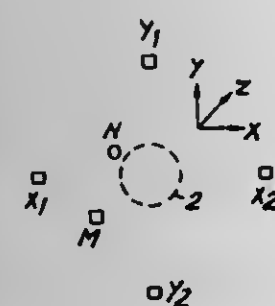
Filed May 18, 1979, Ser. No. 40,289

Claims priority, application United Kingdom, May 25, 1978, 22293/78

Int. Cl.<sup>3</sup> G01N 27/00

U.S. Cl. 324-309

19 Claims



1. A nuclear magnetic resonance apparatus, for examining at least one slice of a body, the apparatus including means for applying to the body a steady magnetic field along an axis therein, means for applying a gradient field which, in conjunction with said steady field gives a predetermined field in said slice, means for applying a pulsed periodic magnetic field at the Larmor frequency for said slice to cause resonance therein, means for applying a further pulsed magnetic field having a gradient across the slice in one direction and a second further pulsed magnetic field having a gradient in the same direction but of opposite sense to the first further field and means for sensing the resonance signal resulting from the slice during the said further pulsed fields, the apparatus further including

means for applying a pulsed correction magnetic field also having a gradient in said direction and chosen so that the total algebraic integral with respect to time over the two further fields and the correction field is less than the total field integral for the two further fields.

4,284,949

## NUCLEAR MAGNETIC RESONANCE SPECTROMETER AND METHOD

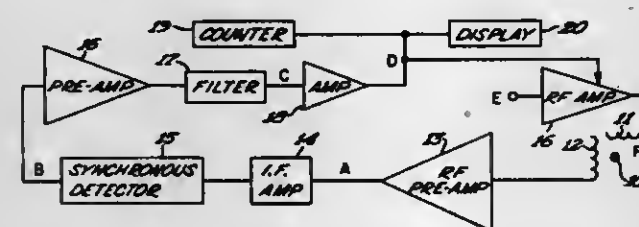
Drouet W. Vidrine, Madison, Wis., and Paul E. Peterson, Columbia, S.C., assignors to Nicolet Instrument Corporation, Madison, Wis.

Filed Feb. 21, 1979, Ser. No. 13,627

Int. Cl.<sup>3</sup> G01N 27/00

U.S. Cl. 324-315

12 Claims



1. In a nuclear magnetic resonance spectrometer of the type having transmitting means for exciting a first nucleus in a sample in a polarizing magnetic field at a frequency corresponding to its resonant peak, the improvement which comprises feedback means including means for detecting the frequency difference between the resonant peak of said first nucleus and the resonant peak of a second nucleus in said sample and means for modulating said transmitting means with a signal representative of said frequency difference.

4,284,950

## IMAGING SYSTEMS

Michael Burl, Iver; Hugh Clow, Reading; Colia G. Harrison, High Wycombe, and Ian R. Young, Sunbury-on-Thames, all of England, assignors to EMI Limited, Hayes, England

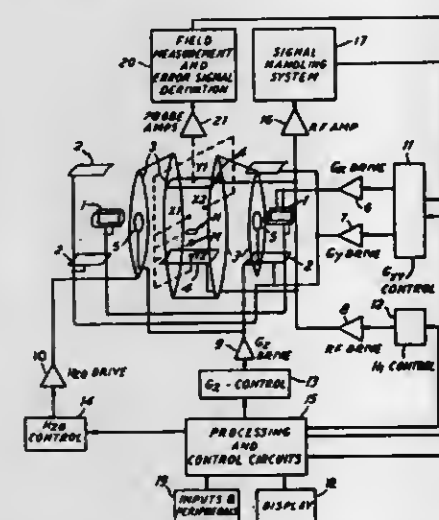
Filed Jun. 15, 1979, Ser. No. 48,777

Claims priority, application United Kingdom, Aug. 5, 1978, 32386/78

Int. Cl.<sup>3</sup> G01N 27/00

U.S. Cl. 324-320

10 Claims



1. A medical nuclear magnetic resonance imaging apparatus for providing a nuclear magnetic resonance image of a cross-sectional part of the body of a patient, the apparatus including a coil system arranged to provide a substantially uniform magnetic field in a direction parallel to a chosen axis in the patient's body, probe means for providing signals indicative of values of the magnetic field at a plurality of positions in a region including the part to be imaged, means for determining, from said

signals, deviations from uniformity of said magnetic field in the region and correction means responsive to said determinations for reducing said deviations from uniformity.

4,284,951

## BATTERY ELECTROLYTE LEVEL SENSOR

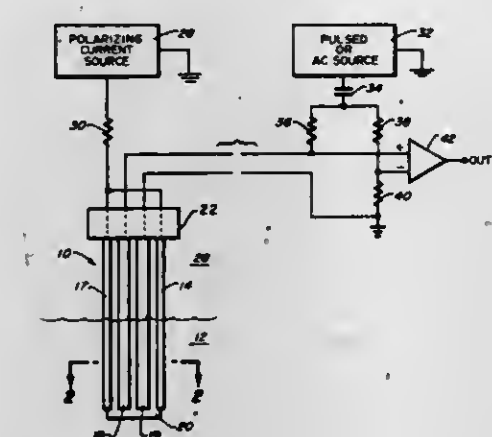
Ernest A. Dahl, 3247 Breaker Dr., Ventura, Calif. 93003, and George H. Barry, 21225 Saratoga Hills Rd., Saratoga, Calif. 95070

Filed Aug. 15, 1979, Ser. No. 66,755

Int. Cl.<sup>3</sup> G01F 23/10; G01N 27/06

U.S. Cl. 324-430

10 Claims



1. Apparatus for indicating the level of electrolyte in a battery cell comprising:

- a probe including: an elongated housing of an electrically insulating material which is chemically nonreactive with battery electrolyte; six elongated metal bars embedded longitudinally in said housing in a substantially parallel arrangement around the perimeter of said housing, the outer surface of each said bar protruding from said housing to expose each said protruding surface to the ambient environment, said bars being electrically coupled in pairs to form first, second and third electrodes; said first, second and third electrodes being spaced apart from each other and disposed vertically in a battery cell so that only a portion of the surface area of each electrode is in contact with battery electrolyte, the amount of the surface area of said second and third electrodes in contact with battery electrolyte varying as the level of electrolyte in the battery cell varies;
- a source of electric potential coupled between said second and third electrodes;
- a polarizing current source coupled to the first electrode; said polarizing current source providing a current which operates to prevent the buildup of a contaminating layer on the surface of the second and third electrodes due to said second and third electrodes functioning as a battery whenever said source of electric potential has a direct current component that produces a net charge on said second and third electrodes; and
- means for providing a signal proportional to the resistance between said second electrode and said third electrode through the electrolyte, said resistance varying inversely with the amount of surface area of said second and third electrodes which is in contact with the electrolyte.

4,284,952

## NEUTRAL BEAM MONITORING

Joel H. Fink, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 21, 1977, Ser. No. 853,371

Int. Cl.<sup>3</sup> G01R 27/00; G01N 27/78

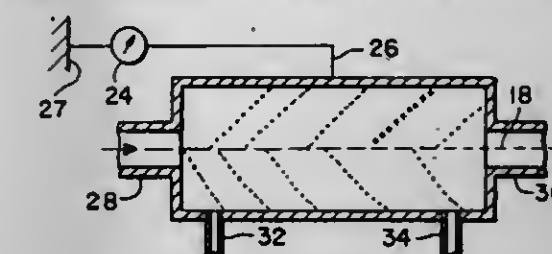
U.S. Cl. 324-464

4 Claims

1. Apparatus for monitoring selected characteristics of a

high energy neutral beam generated from an accelerated, focused, high energy ion beam, comprising:

an elongated cell having a longitudinal wall bounded by two lateral ends, the length dimension of said wall being several times greater than the dimension of said ends, one of said ends having an inlet for inletting said high energy ion beam, the other of said ends having an outlet for discharging said high energy neutral beam, said cell further having a central longitudinal axis, said inlet and outlet being aligned and disposed along said longitudinal axis;



means for inletting a neutralizing gas into said cell;  
means for maintaining a preselected pressure within said cell;  
means for detecting the current flowing through said wall of said cell produced by low energy ions which drift to said cell wall; and  
means for directing said current flowing through said wall of said cell from said wall to said current detecting means.

4,284,953

## CHARACTER FRAMING CIRCUIT

Edward C. Hepworth, Austin, Tex., and Rodney J. Means, Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

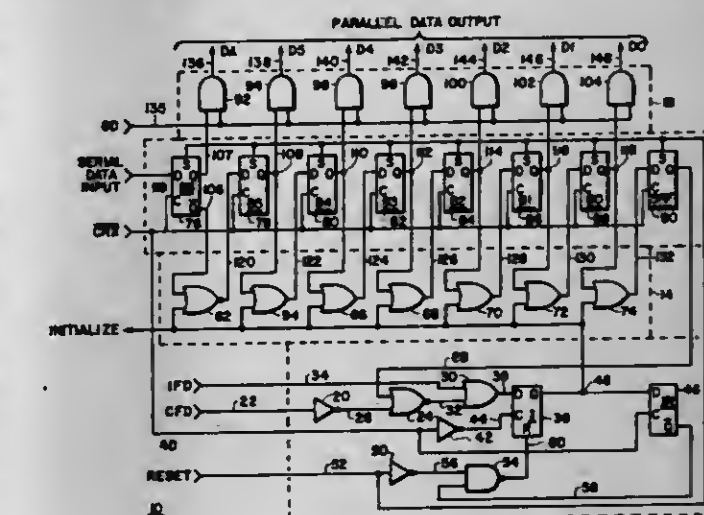
Continuation-in-part of Ser. No. 863,643, Dec. 23, 1977,

abandoned, which is a continuation of Ser. No. 640,981, Dec. 15, 1975, abandoned. This application Jun. 13, 1979, Ser. No. 48,193

Int. Cl.<sup>3</sup> H03K 19/28, 15/00

U.S. Cl. 328-37

5 Claims



1. A digital system for receiving successive data characters transmitted as contiguous characters forming synchronous serial data which is a continuous sequence of digital data bits, said system comprising:

- shift register means comprising a plurality of serially coupled shift register stages each, except for the last stage thereof, having an output connected to the input of the succeeding stage, and the first stage thereof being coupled to a source of said serial data, and each stage being coupled to a source of clock pulses, said clock pulses being synchronized with said digital data bits;
- logic means for generating a control code prefix and for loading said control code prefix into one of said shift register stages;
- means for shifting said control code prefix to a second



- one of said shift register stages and for coincidentally shifting serial data into said shift register means in synchronism with said source of clock pulses;
- (d) means for detecting said control code prefix in said second shift register stage and for generating a signal;
- (e) means responsive only to said signal for indicating that said serial data is occupying said shift register means as a received serial data character; and
- (f) control means coupled to said logic means and to said source of clock pulses and responsive to the occurrence of said signal for causing said logic means to generate and load said control code prefix.

4,284,954

## SEQUENTIAL LIGHT CIRCUIT

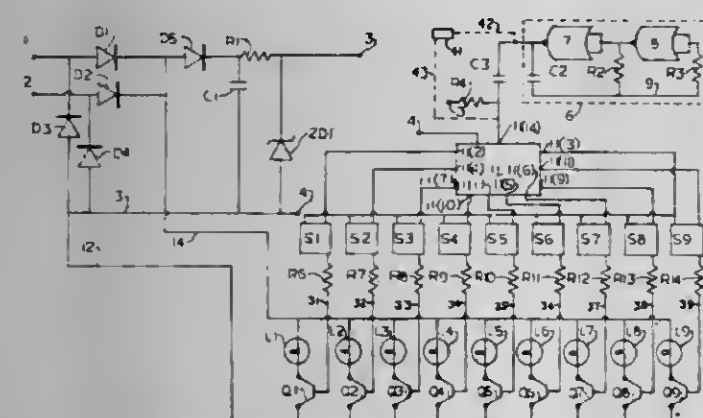
Earl L. Beyl, Jr., and William C. Cunningham, both of Louisville, Ky., assignors to Traintronics Inc.

Filed Apr. 20, 1979, Ser. No. 31,859

Int. Cl.<sup>3</sup> H03K 21/32, 3/42

U.S. Cl. 328—75

1 Claim



1. A sequential activation control for sequential activation and uniform deactivation of at least two power circuits including: clock means to provide regularly occurring uniform length timing pulses at selected intervals, counter means, with counter controller means to receive the clock pulses and having multiple electrical output signal means wherein each of said output signal means is sequentially activated by the counter controller in response to selected number of clock pulses received by said counter means until a selected number of said output signal means have been activated to provide a first activation cycle, multiple switch means, where at least one switch means is provided for each output signal means to be activated by its associated output signal means; reset end means to simultaneously deactivate all of the switch means and output signal means at selected time after the last output signal means has been activated and to cause said clock means to initiate a new activation cycle where the switch means are adapted to activate associated cooperative power circuits, including light means; and power supply means to supply uniform direct current electrical power to said clock means, said counter means and said switch means.

4,284,955

## PULSE REPETITION INTERVAL GENERATOR WITH STAGGER COMPENSATION

Lawrence A. Beno, Camarillo; Harrell, John T., Newbury Park; Albert B. Evans, Jr., Ventura, and Jay R. Gaudig, Camarillo, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C. Division of Ser. No. 875,831, Feb. 7, 1978, Pat. No. 4,163,234.

This application May 17, 1979, Ser. No. 39,917

Int. Cl.<sup>3</sup> H03K 5/22

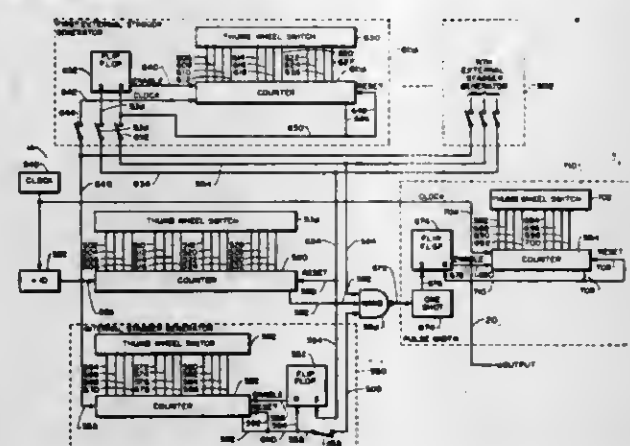
U.S. Cl. 328—111

8 Claims

1. A pulse repetition interval generator with stagger comprising:
- a. means for generating a series of pulses having a constant preset repetition interval;

- b. said constant repetition interval pulse generating means includes:

- a source of clock pulses;
- a counter circuit responsive to said clock pulses, said counter circuit generating a first output pulse when filled; said first output pulse resetting said counter; and
- means coupled to said counter for presetting said counter thereby setting the repetition interval between said output pulses;



- c. at least one pulse generator responsive to said constant repetition interval pulse generating means for generating at least one pulse between pulses generated by said constant repetition interval pulse generating means; and
- d. means responsive to said constant repetition interval pulse generating means and said at least one pulse generator for determining the width of the pulses generated therefrom.

4,284,956

## WIDE DYNAMIC RANGE PULSE TO PULSE RATE CONVERTER

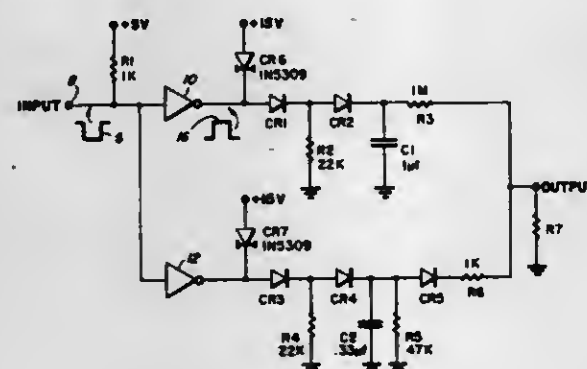
(Paul) Harry Leffmann, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed May 7, 1979, Ser. No. 36,897

Int. Cl.<sup>3</sup> H03K 13/02, 9/06

U.S. Cl. 328—140

2 Claims



1. A wide dynamic range pulse to pulse rate converter comprising in combination:
- first means for linearly converting an input pulse rate to a first linear analog output;
- second means for linearly converting said input pulse rate to a second linear analog output; and
- means for superpositioning said first and second analog outputs.

4,284,957

## CMOS OPERATIONAL AMPLIFIER WITH REDUCED POWER DISSIPATION

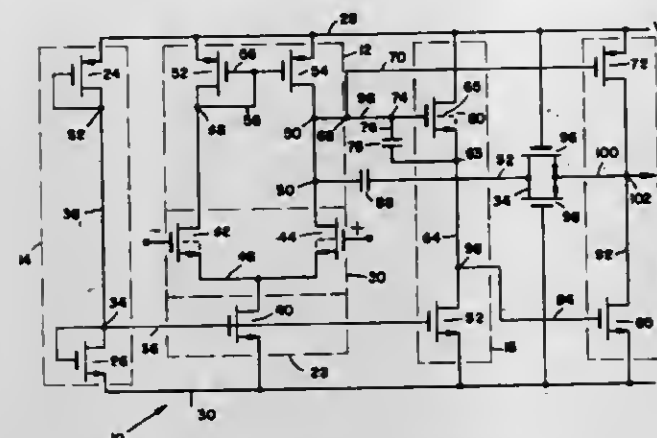
Yusuf A. Haque, Santa Clara, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Sep. 28, 1979, Ser. No. 80,153

Int. Cl.<sup>3</sup> H03F 3/45

U.S. Cl. 330—253

6 Claims



1. An operational amplifier comprising:
- a pair of conductors adapted for connection to potential sources at different voltage levels;
- a bias section connected between said pair of conductors, said bias section having an output terminal;
- a differential amplifier section, connected between said conductors including a constant current element connected to said output terminal of said bias section, said differential amplifier including an input section for receiving positive and negative signal inputs to said amplifier and having an output terminal;
- an output section connected between said conductors and comprised of a pair of complementary MOS transistors; first means for connecting said output terminal of said differential amplifier directly to one of said transistors of said output section;
- a level shift section connected between said conductors, said level shift section having an output terminal, where said level shift section comprises a pair of MOS transistors, one of which has its gate connected to said output terminal of said differential amplifier by a second means for connecting, and the second of which has its gate connected to said bias section; and
- third means for connecting said output terminal of said level shift section to the other transistor of said output section.

4,284,958

## FOLDED-CASCODE AMPLIFIER ARRANGEMENT WITH CURRENT MIRROR AMPLIFIER

Richard L. Pryor, Voorhees, N.J., and William F. Heagerty, Norristown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,233

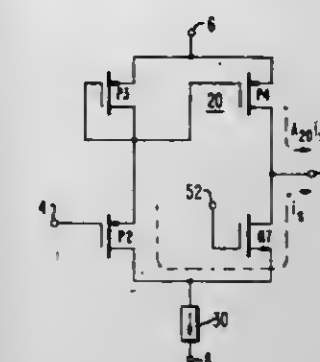
Int. Cl.<sup>3</sup> H03F 3/45, 3/16

U.S. Cl. 330—253

17 Claims

1. An amplifier arrangement comprising:
- a folded-cascode configuration including first and second transistors of complementary conductivity type each having a main conduction path;
- constant current generating means coupled for supplying quiescent current to said folded-cascode configuration;
- means for applying an input signal to said first transistor for causing signal current flows in the main conduction paths of said first and second transistors; and
- current mirror amplifying means having input circuit means to which at least the signal current flow in the main conduction path of said first transistor is coupled and having output circuit means coupled to the main conduction path of said second transistor for supplying an output current

flow responsive to the signal current flow in said input circuit means, said output current flow of said output



circuit means being poled for reinforcing the signal current flow of said second transistor.

4,284,959

## FOLDED-CASCODE AMPLIFIER ARRANGEMENT WITH CASCODE LOAD MEANS

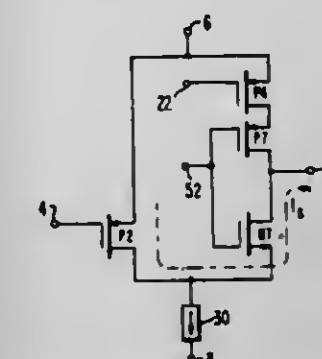
William F. Heagerty, Norristown, Pa., and Richard L. Pryor, Voorhees, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,234

Int. Cl.<sup>3</sup> H03F 3/45, 3/16

U.S. Cl. 330—253

21 Claims



1. An amplifier arrangement comprising:
- a folded-cascode configuration including first and second transistors of complementary conductivity type, each having a main conduction path;
- constant current generating means coupled for supplying quiescent current to said folded-cascode configuration;
- means for applying an input signal to said first transistor for causing signal current flows in the main conduction paths of said first and second transistors; and
- load means to which said folded-cascode configuration is coupled including
- circuit means for supplying load current,
- a third transistor of like conductivity type to that of said first transistor, having its input electrode coupled for receiving a control signal, and having its main-conduction path coupled in series with said circuit means; and
- means for applying said control signal to condition said third transistor for conducting said load current to the output electrode of said folded-cascode configuration substantially unaffected by said input signal.

4,284,960

## PHOTO-FEEDBACK PREAMPLIFIER CIRCUIT

John O. Ryan, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Nov. 23, 1979, Ser. No. 96,727

Int. Cl.<sup>3</sup> H03F 1/34, 3/16

U.S. Cl. 330—300

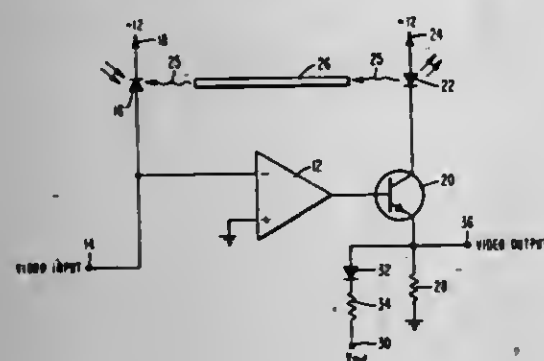
1 Claim

1. A video camera preamplifier circuit employing a low voltage supply, for generating an output video signal in re-



sponse to an input video signal, wherein the input video signal may experience large overload input signals due to excessive highlights, the circuit including a field effect transistor amplifier means coupled to receive the input video signal and optoelectronic feedback loop means operatively coupling the output video signal back to the input video signal, wherein the feedback loop means includes light emitting diode means, light detecting photodiode means and optical fiber means coupled between the latter two means, the circuit comprising the combination of;

an output transistor having base, emitter and collector electrodes, and coupled at its base to the output of the field effect transistor amplifier means;



a load resistor coupled from the emitter of the output transistor to ground;

wherein the light emitting diode means of the loop means is coupled directly to the collector of the output transistor at its cathode and to a positive voltage source at its anode such that the absence of an input signal provides no current flow in the light emitting diode means and no current flow thru the load resistor, to establish a zero output video voltage corresponding to a video black level; and clipping means including a diode coupled from the emitter of the output transistor to a reference voltage for selectively clipping the output video signal upon occurrence of the large overload input signals without breaking the continuity of the optoelectronic feedback loop.

4,284,961

#### DIGITAL POSITION TRANSDUCER INCLUDING VARIABLE TUNING ELEMENT OSCILLATOR

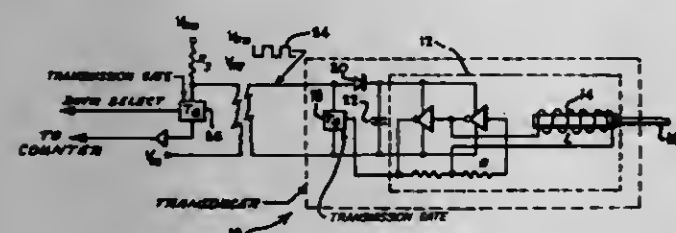
Darrell W. Landan, Garden Grove, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 19, 1979, Ser. No. 76,893

Int. Cl.<sup>3</sup> G01R 27/26; G03K 3/03; H03K 3/354

U.S. Cl. 331-65

8 Claims U.S. Cl. 331-94.5 H



1. A digital position transducer apparatus comprising in combination:

an oscillator means with a variable tuning element to control the output frequency of said oscillator means, said tuning element being connected to and varied by a position element which responds to the displacement of a control element, said output frequency varying as a function of said position element's displacement,

a transmission gate connected between a signal ground and a source voltage, said transmission gate receiving said output frequency from said oscillator means, said transmission gate being turned on and off respectively to provide a high logic level and a low logic level in response to

said output frequency, said transmission gate providing an output signal which is substantially a square wave comprising high and low logic levels, said output signal having a frequency corresponding to said output frequency, and, a low logic level sustaining means connected between said source voltage and said oscillator means, said low logic level sustaining means maintaining a predetermined voltage level across said oscillator means during the time said transmission gate is turned on.

4,284,962

#### EXCIMER-PUMPED FOUR LEVEL BLUE-GREEN SOLID STATE LASER

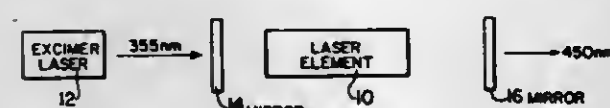
Leon Esterowitz, Springfield; Roger E. Allen, Alexandria, both of Va.; Melvin R. Kruer, Oxon Hill, and Filbert J. Bartoli, Upper Marlboro, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 11, 1979, Ser. No. 56,655

Int. Cl.<sup>3</sup> H01S 3/14

U.S. Cl. 331-94.5 F

5 Claims



1. A solid state laser element for four-level blue-green operation in a laser system and comprising: a host crystal of calcium tungstate; divalent sensitizer ions uniformly dispersed within said host crystal, wherein said divalent sensitizer ions are ytterbium and said divalent sensitizer ions of ytterbium have a concentration of from about 0.005% to about 0.20% by weight; and trivalent rare-earth activator ions uniformly dispersed within said host crystal.

4,284,963

#### ETALON LASER DIODE

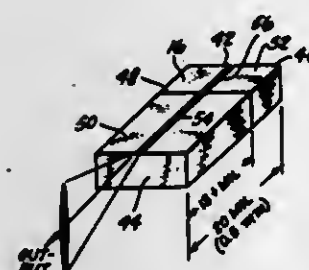
Louis B. Allen, Jr., Florissant; Herbert G. Koenig, Jr., St. Charles, and Robert R. Rice, Florissant, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Aug. 24, 1979, Ser. No. 69,388

Int. Cl.<sup>3</sup> H01S 3/19

U.S. Cl. 331-94.5 H

19 Claims



1. A stripe geometry semiconductor laser diode for producing a light output, said diode being comprised of a body of semiconductor material having:

first and second electrodes connected thereto; front and rear surfaces;

optical cavity means in the form of a stripe, extending between said front and rear surfaces, said output of said diode emitting from said front surface thereof; and

a first crack through said body generally parallel to said front and rear surfaces to form an etalon therein.

4,284,964

#### SELF-DETERMINATION OF LASER FREQUENCY

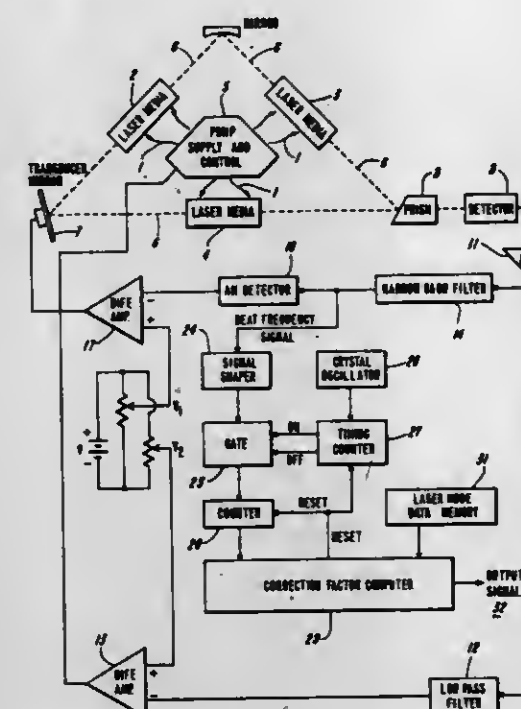
Roe J. Maier, Jr., Bosque Farms, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 4, 1979, Ser. No. 36,252

Int. Cl.<sup>3</sup> H01S 3/10

U.S. Cl. 331-94.5 S

2 Claims



1. An apparatus for determining the frequency of a ring laser when potential modes and the beat frequency of mode pairs is accurately known a priori, comprising:

- a laser resonant cavity including an active media;
- a means for introducing energy into said cavity in a sufficient quantity to pump said active media so as to sustain a pair of resonant modes distinguished by frequency, each having beams traveling in opposite directions;
- a means for detecting the beat frequency of said modes and generating a signal whose amplitude is proportional to a multiple of the mode intensities;
- a means for adjusting the pathlength of said laser cavity which is responsive to said signal;
- a means for counting beat frequency signals;
- a means for timing the count of said beat frequency signals, where the accuracy of said timing means is sufficiently precise to define the pair of modes on the basis of difference frequencies known a priori; and
- a means for comparing the count with the beat frequencies of known pairs of modes to select the most likely pair of modes actually present in the cavity.

4,284,965

#### TONE CONTROL DEVICE

Ryozi Higashi, and Hiroyuki Hirano, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 10, 1979, Ser. No. 74,026

Claims priority, application Japan, Sep. 11, 1978, 53/110614; Sep. 19, 1978, 53/114031; Sep. 22, 1978, 53/115987

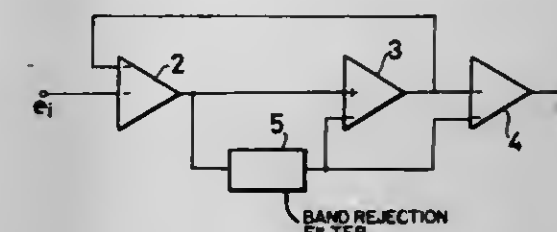
Int. Cl.<sup>3</sup> H03H 7/01

U.S. Cl. 333-28 T

7 Claims

1. A tone control device for audio equipment, comprising: a first mixer amplifier having a plurality of input terminals and an output terminal, one of said input terminals being fed with an input signal, a first band rejection filter having an output terminal and an input terminal connected to said output terminal of said first mixer amplifier for providing variable frequency characteristic of a signal channel assigned thereto; a second mixer amplifier having one input terminal connected to said output terminal of said first mixer amplifier, another input terminal connected to said output terminal of said first band

rejection filter, and an output terminal, a third mixer amplifier having a plurality of input terminals and an output terminal, one of said input terminals of said third mixer amplifier being connected to said output terminal of said first band rejection filter and another of said input terminals of said third mixer amplifier being connected to said output terminal of said sec-



ond mixer amplifier and to another input terminal of said first mixer, the ratio of said output of said second mixer amplifier to said input signal, and the ratio of the output of said second mixer to the output of said band rejection filter being variable at said first and third mixers, respectively, to control a gain of said tone control device at a desired frequency.

4,284,966

#### WIDE BANDWIDTH HELICAL RESONATOR FILTER

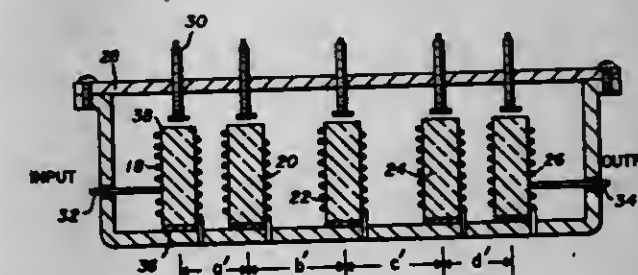
Ronald J. Wanat, Elgin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 21, 1979, Ser. No. 106,413

Int. Cl.<sup>3</sup> H01P 1/201, 7/00

U.S. Cl. 333-202

4 Claims



1. A wideband helical resonator device for use in a circuit responsive to applied high frequency signals comprising: an elongated enclosure of conductive material; at least three helical coils each connected at one end to the inner surface of said enclosure, and arranged so as to have predetermined, and fixed, non-uniform spacing, and with the second end of each coil maintained in a fixed spatial relationship to said enclosure, whereby a pre-selected resonant frequency and a pre-selected bandwidth is obtained; means for input of high frequency signals; and means for output of high frequency signals.

4,284,967

#### WAVEGUIDE DEVICE

Yoshikazu Yoshimura, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 18, 1979, Ser. No. 76,578

Claims priority, application Japan, Sep. 22, 1978, 53-117292

Int. Cl.<sup>3</sup> H01P 3/123, 1/00, 11/00

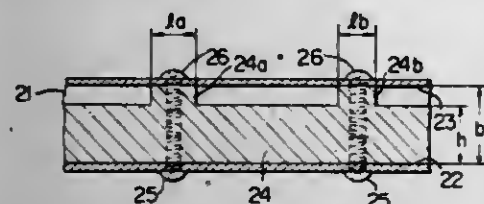
U.S. Cl. 333-248

8 Claims

1. A waveguide device comprising a rectangular waveguide including a pair of opposed H-plane inner walls and a pair of opposed E-plane inner walls, and a ridge conductor mounted on one of said H-plane inner walls, said ridge conductor being parallel to the electric field of the fundamental mode of said



waveguide and having at least one integral portion extending therefrom in contact with the other H-plane inner wall,



whereby said ridge conductor functions as a reactance element.

4,284,968

### ADJUSTABLE ELECTROMAGNETIC TRIPPING MECHANISM FOR A CIRCUIT-BREAKER

Serge Demoyelle, and Pierre Noisette, both of Saint-Quentin, France, assignors to Alstom-Usinelec, Paris, France

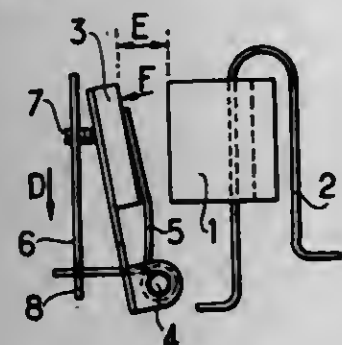
Filed Dec. 19, 1979, Ser. No. 105,170

Claims priority, application France, Jan. 4, 1979, 79 00150

Int. Cl.<sup>3</sup> H01H 71/74

U.S. Cl. 335-176

2 Claims



1. An adjustable electromagnetic tripping mechanism for a circuit-breaker having at least one pole, including in each pole: a fixed magnetic circuit element excited by the current passing through said pole; a movable magnetic member, a stop, and a return spring for holding said movable magnetic member by the force of said return spring, against said stop at a predetermined distance from the fixed magnetic circuit element; a movable adjusting element bearing said stop and including a point of attachment of said return spring, which enables the limiting operation current of the circuit-breaker to be varied, such that movement of said movable adjusting element modifies at the same time and in the same sense of variation, firstly the distance predetermined by said stop between the movable magnetic member and the fixed magnetic circuit element, and secondly the force exerted by said return spring upon the movable magnetic member, the improvement wherein said movable adjusting element consists of a small plate of generally plane form guided in translation in slides for movement in a direction parallel to the face of said plate.

4,284,969

### POTENTIOMETER

Victor Carbonneau, Exeter, N.H., assignor to Clarostat Mfg. Co., Inc., Dover, N.H.

Filed Nov. 9, 1979, Ser. No. 92,664

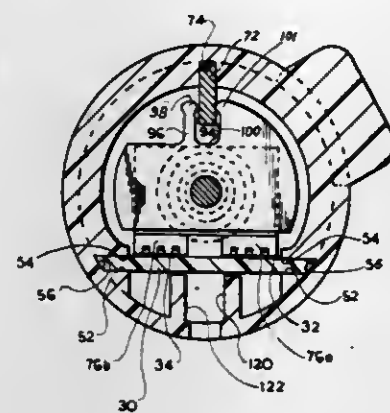
Int. Cl.<sup>3</sup> H01C 10/44

U.S. Cl. 338-183

6 Claims

1. A potentiometer having a plurality of voltage inputs comprising in combination a housing, a non-electric conducting substrate in said housing, layers of resistance and collector material disposed on the substrate and adapted to communicate electric current, a carrier supported by a shaft, a wiper fixedly mounted on said carrier providing a circuit between the resistance material and the collector material with said wiper being responsive to an axial force placed on said carrier, a spring-means capable of exerting a force on said carrier opposite to

said axial force, a guide-means which includes a rail fixedly positioned in said housing, said carrier includes a portion straddling said rail and slidably spring loaded thereagainst so that axial movement of the carrier is relatively uninhibited by the guide means while preventing the rotation of said carrier with



respect to said shaft, whereby an axial force on the carrier causes the wiper to change longitudinal position on the substrate resulting in a change in voltage output with the spring-means returning the wiper to a rest position when the axial force is discontinued.

4,284,970

### FABRICATION OF FILM RESISTOR CIRCUITS

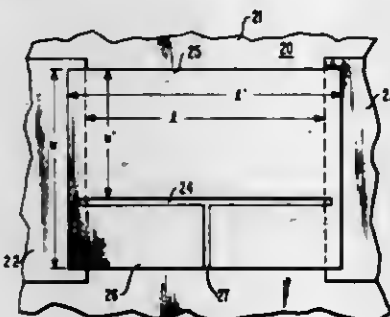
Lloyd Berrin; Howard M. Cohen, both of Allentown; William B. Gruben, Emmaus, and James D. McElroy, Allentown, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 9, 1979, Ser. No. 65,179

Int. Cl.<sup>3</sup> H01C 10/00

U.S. Cl. 338-195

21 Claims



1. A method for fabricating a resistor circuit comprising the steps of forming on an insulating substrate (21) a rectangular resistor film (20) and a conductive layer including electrodes (22 and 23) which provide electrical contact to said film so as to define a direction for current conduction through said film when a bias is supplied, characterized in that a first cut (24) is made in said film in a direction essentially parallel to the direction of current conduction and extending across the entire distance of the film between electrodes to define a rectangular current-carrying portion (25) with an essentially uniform width having a resistance near a predetermined desired resistance and to define a rectangular waste portion (26), and a second cut (27) is made in said waste portion in a direction essentially perpendicular to said first cut in order to prevent current flow therethrough between the electrodes.

4,284,971

### OVERHEIGHT VEHICLE DETECTION AND WARNING SYSTEM

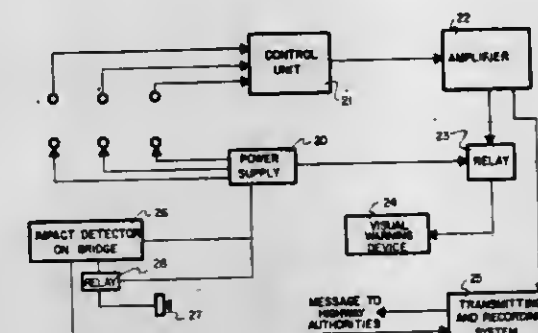
Elliot G. Lowry, 3141 S. 3075 East, Salt Lake City, Utah 84109, and Lloyd N. Forster, 443 Garfield, Salt Lake City, Utah 84115

Filed Apr. 2, 1979, Ser. No. 25,939

Int. Cl.<sup>3</sup> G08B 25/00; G08G 1/04

U.S. Cl. 340-52 R

9 Claims



1. A height clearance indicator and warning system for use on a thoroughfare in advance of overhead obstructions, such as overpasses, railroad trestles, overhead signs, and the like, which traverse the roadway and which become low clearance hazards for vehicles having a height greater than the clearance afforded by the obstruction, said indicator and warning system comprising:

at least two light sources located on either side of the thoroughfare in advance of the overhead obstruction, said light sources being spaced from each other along the thoroughfare so that a vehicle approaching said obstruction will pass the light sources one at a time in sequential order, each of said light sources also being mounted at a height above the thoroughfare no greater than the clearance of the impending overhead obstruction;

a number of light sensors equal to the number of light sources, each light sensor being paired with a respective light source and located across the thoroughfare in the vicinity of its respective light source, said light sensors being mounted at a height above the thoroughfare substantially equal to the height above the thoroughfare of said light sources;

detector means for detecting when the light beams from respective light sources to corresponding sensors paired therewith have been momentarily broken;

means for producing a signal when the detector means detects that the light beams from the respective light sources are, within a given, preset time period, broken in sequence starting from the light beam associated with the pair of light sources and sensors most remote from the overhead obstruction and ending with the light beam associated with the pair of light sources and sensors nearest said overhead obstruction;

control means adapted to receive said signal and activate a visible electric sign indicating that the vehicle approaching said overhead obstruction is too high to clear the obstruction and warning the driver of the approaching vehicle to stop; and

said means for producing a signal further operating to clear the detector means and thus reset the system to ready status when only a portion of and not all the light beams from the respective light sources are broken within the preset time period, and when the light beams are broken but not in proper sequence.

4,284,972

### VEHICLE MILEAGE INTERVAL DETECTOR

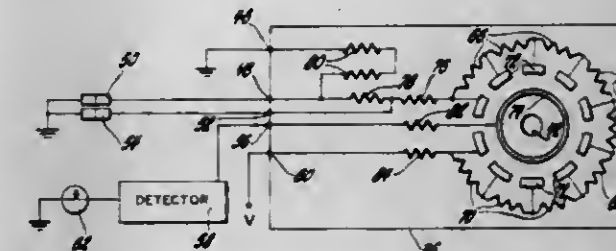
Randolph K. Chiu, Davison; Douglas A. Stiff, Burton, and Francis G. Cox, Grand Blanc, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1979, Ser. No. 92,745

Int. Cl.<sup>3</sup> B60Q 1/00; G01D 13/00; G08B 5/00

U.S. Cl. 340-52 D

3 Claims



1. In a vehicle having a mechanical odometer comprising a series of number wheels for indicating elapsed distance, a service reminder circuit for actuating a signal device when a preset distance has elapsed, comprising

a voltage source, a potentiometer connected to the voltage source including a resistor circuit, and a movable contact element in wiping engagement with the resistor circuit and carried by one of the odometer number wheels whereby an output voltage is produced which varies with movement of the one odometer wheel,

a voltage sensitive detector means responsive to the said output voltage for actuating the said signal device when the output voltage has a value within a preset voltage range representative of the said preset distance, and manually adjustable circuit means electrically connected with the resistor circuit for changing the potentiometer output voltage to a value outside the preset voltage range to manually deactivate the said signal device.

4,284,973

### VEHICLE ALARM SYSTEM

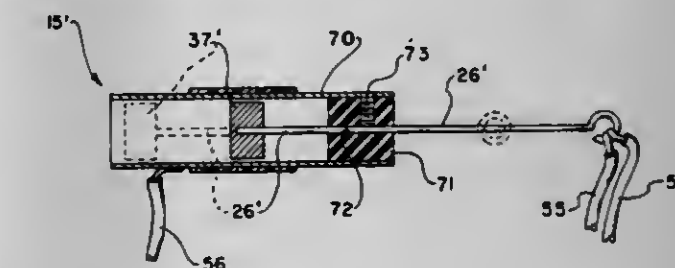
Steven G. Howell, Dogwood Ln., Oakwood Estate, Wake Forest, N.C. 27587, and Orville F. Harless, 2506 Briarwood Dr., Burlington, N.C. 27215

Continuation-in-part of Ser. No. 888,844, Mar. 22, 1978, Pat. No. 4,187,497. This application Sep. 20, 1979, Ser. No. 77,398

Int. Cl.<sup>3</sup> B60R 25/10

U.S. Cl. 340-65

10 Claims



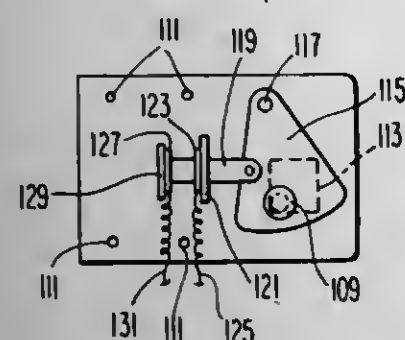
1. An alarm system comprising: a remote receiver component, alarm means operatively connected to said receiver component; a portable transmitter component; trip means operatively connected to said transmitter component whereby when said trip means is closed an alarm signal will be sent from said transmitter component to said receiver component; and an adjustable motion sensitive closure means in the form of a generally horizontally disposed, cylindrical shaped shroud means, at least a part of which is electrically conductive, with a weight means horizontally disposed interiorly thereof supported by a spring arm means operatively connected to said trip means, the length of said spring arm being longitudinally adjustable to adjust the sensitivity of said weight means relative to said cylindrical shroud whereby when said transmitter







of mounting to said door jamb and a swivel plate pivotally mounted to said base support bracket, said swivel plate being associated with said bolt; means, associated with said supporting means and said bolt for initiating an alarm signal as a function of the relative



position of said bolt with respect to said supporting means wherein said alarm signal initiating means, said supporting means and said bolt coacting with minimal friction; and means associated with said supporting means, for positively limiting the distance of travel of said bolt and therefore the travel of said door.

4,284,981

## SENSOR ALARM AND SUPPORT

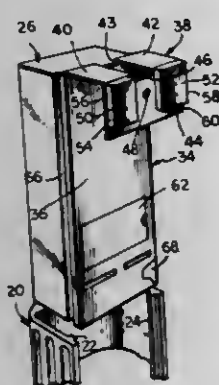
Robert B. Black, 5110 Berkley Ct., Fort Wayne, Ind. 46815

Filed May 19, 1980, Ser. No. 151,303

Int. Cl.<sup>3</sup> G08B 21/00; A47F 5/00

U.S. Cl. 340-545

8 Claims



1. A sensor alarm support for use with a door mounted in a door frame having a door head and two door jambs and hinged on one door jamb to swing closed and latched against the other door jamb comprising:

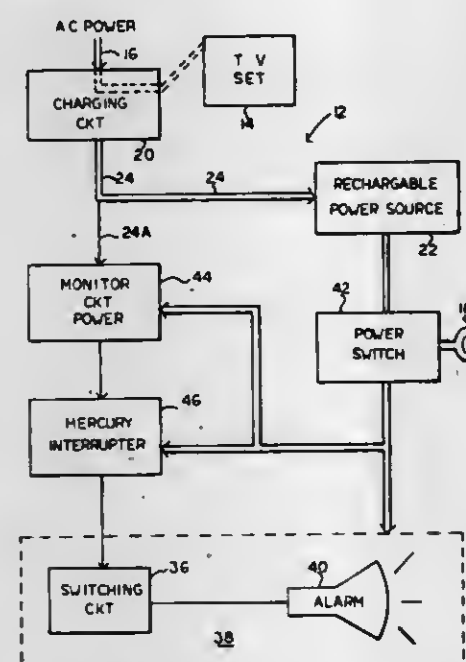
- a mounting plate;
- one side of said plate adapted to have mounted thereon a sensor and an alarm coupled to said sensor;
- an angle arm being affixed to the top edge of said plate and having a transverse portion extending transversely from the other side of said plate;
- a flange depending from said transverse portion and being transversely spaced from and substantially parallel to said plate whereby said plate and arm form an inverted channel snugly fittable over the top door edge;
- a stiffly resilient bumper pad being affixed to the outer side of said flange and being positioned on said flange so that the edges of said pad and an edge of said flange are substantially flush, whereby, when said door is in its latched position, a pad portion will be between a corresponding door edge and at least one of said door head and said other door jamb to forcibly cock said door open to provide a clearance for a gaseous path.

4,284,982  
BATTERY OPERATED PERSONAL ALARM  
John Downey, Attache Court North, Apt. 912, Shaughnessy Blvd., Don Mills, Ontario, Canada (M2J 1K2)  
Filed Apr. 12, 1979, Ser. No. 29,208  
Int. Cl.<sup>3</sup> G08B 13/08, 15/00  
U.S. Cl. 340-546 3 Claims



1. A battery operated personal alarm having a readily portable casing, hook shaped handle means secured to the casing, having a first extended position for engagement in use with a desired object such as a door handle, and a second retracted position relative to said casing to provide in cooperation therewith a passage to receive a strap in inserted relation therein, a withdrawable alarm actuating pin entered in said casing and withdrawable therefrom in order to activate horn means within the casing, and lanyard means secured to the pin for attachment to a relatively moveable object to effect actuation of said alarm on relative displacement being effected between the object and the alarm to produce withdrawal of the pin.

4,284,983  
APPLIANCE ANTI-THEFT AND PROTECTION CIRCUITRY  
Roger S. Lent, Rte. 2, Box 438, Candler, N.C. 28715  
Filed Feb. 19, 1980, Ser. No. 122,571  
Int. Cl.<sup>3</sup> G08B 13/14  
U.S. Cl. 340-568 11 Claims



1. Theft detection and prevention circuitry for use with an electrical appliance having means for connecting to a primary electrical power source, which primary electrical power source provides electrical power for operation of said electrical appliance, said anti-theft and protection circuitry comprising:

- a rechargeable electrical power source;
- charging circuitry connected between said means for connecting of said electrical appliance and said rechargeable electrical power source for receiving power from said

primary electrical power source and for providing suitable power for recharging said rechargeable electrical power source;

self-latching oscillation means connected to said rechargeable power source for providing a pulsating signal when activated;

alarm means responsive to said pulsating signal;

switching means responsive to a trigger signal for connecting said pulsating signal to said alarm means;

a motion sensor for determining when said electrical appliance is moved and for providing a motion signal;

monitoring means for determining when said charging circuit is providing suitable power for recharging said rechargeable power source, for determining when said motion signal is present, and for activating said oscillation means and initiating said trigger signal when said motion signal is present at the same time said charging circuitry is not providing suitable power such that said latching means connects said alarm means to said activated oscillation means when said appliance is disconnected from said primary electrical power source and moved.

4,284,984

## ATTITUDE CHANGE ALARM

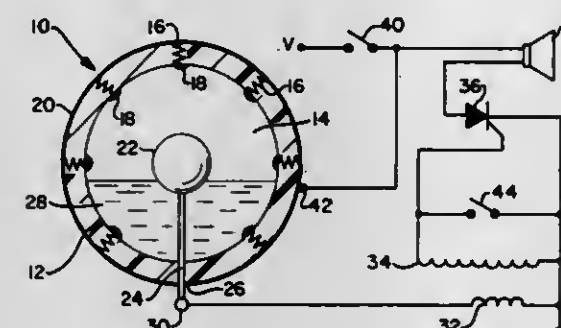
Joseph J. Scarpino, III, 748 Lakewood Blvd., Akron, Ohio 44314, and David A. Scarpino, 682 W. Paige Ave., Barberton, Ohio 44213

Filed Apr. 3, 1979, Ser. No. 26,531

Int. Cl.<sup>3</sup> B60R 25/10; G08B 13/00

U.S. Cl. 340-571

16 Claims



1. An attitude change alarm, comprising:

- a casing having a wall defining a hollow interior;
- a plurality of resistive elements received by said wall and in spaced relationship with each other and in common communication with said interior;
- a conductive fluid maintained within said hollow interior and in selective contacting engagement with certain of said resistive elements;
- circuit means interconnected between said fluid and said resistive elements for producing an output signal upon a change in said contacting engagement of said fluid with said resistive elements; and
- alarm means connected to said circuit means for actuation by said output signal.

4,284,985

## STOLEN EQUIPMENT RECOVERY DEVICE

Vernon G. Heger, 3517 Albatross, San Diego, Calif. 92103, and Henri J. A. Charmasson, San Diego, Calif., assignors to Vernon G. Heger, San Diego, Calif.

Filed Mar. 3, 1980, Ser. No. 126,307

Int. Cl.<sup>3</sup> G08B 13/22

U.S. Cl. 340-572

11 Claims

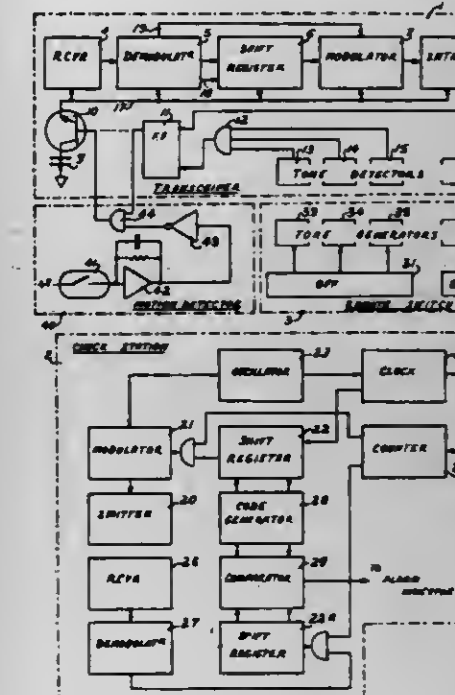
1. A device for detecting the unauthorized movement or asportation of a body which comprises:

- a check station having:
- means for transmitting a first pulse-coded signal;
- means for receiving a second pulse-coded signal;
- means for comparing the first signal to the second signal;

means, responsive to said means for comparing, for signaling the reception of the second signal;

on the body, a code-repeating transceiver having:

- means for receiving said first signal;
- means, responsive to said first signal, for transmitting said second signal, said means for receiving comprising:



a shift register receiving said first signal on its serial input and delivering said second signal on its serial output;

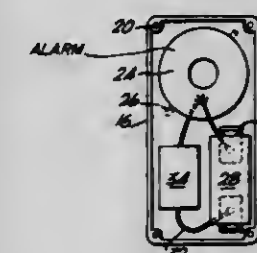
switchable means for selectively enabling the operation of the code-repeating transceiver.

4,284,986

SHIRT-POCKET MEDICAL ALERT DEVICE  
Carlos Amortegui, 1116 Wilmington St., Opa Locka, Fla. 33054  
Filed Jun. 23, 1980, Ser. No. 162,009Int. Cl.<sup>3</sup> G08B 21/00

U.S. Cl. 340-573

10 Claims



1. A shirt-pocket sized medical alert device comprising:

- a separable housing sized and shaped to be carried unobtrusively by a user in a shirt pocket, for example, and to have an original, predetermined orientation on the user, the housing including a cover and a receptacle;
- a tilt activated alarm within the receptacle comprising:
- alarm means,
- power source means,
- tilt actuated circuit means, and
- electrically conductive conduit means connecting the alarm, power and tilt activated switch means, defining a tilt actuated circuit,

whereby the alarm means is activated when the circuit is tilted and moved sufficiently from its original, predetermined position, for example when the user falls upon suffering a heart attack;

said tilt activated switch means comprising:

- a cylindrical carrier spanned by an electrically conductive plate defining a first conductor and including a cone-shaped second conductor having a leading edge contact-



ing the carrier and spaced a predetermined distance from the plate, a bottom end defining a tip and diverging electrically conductive side walls between the tip and leading edge,  
an insulator of predetermined thickness between the plate and the cone, and  
an electrically conductive flowable substance held in the cone tip when the housing is in the original predetermined orientation, the flowable substance of predetermined thickness sufficient to span the distance between the plate and the cone leading edge.

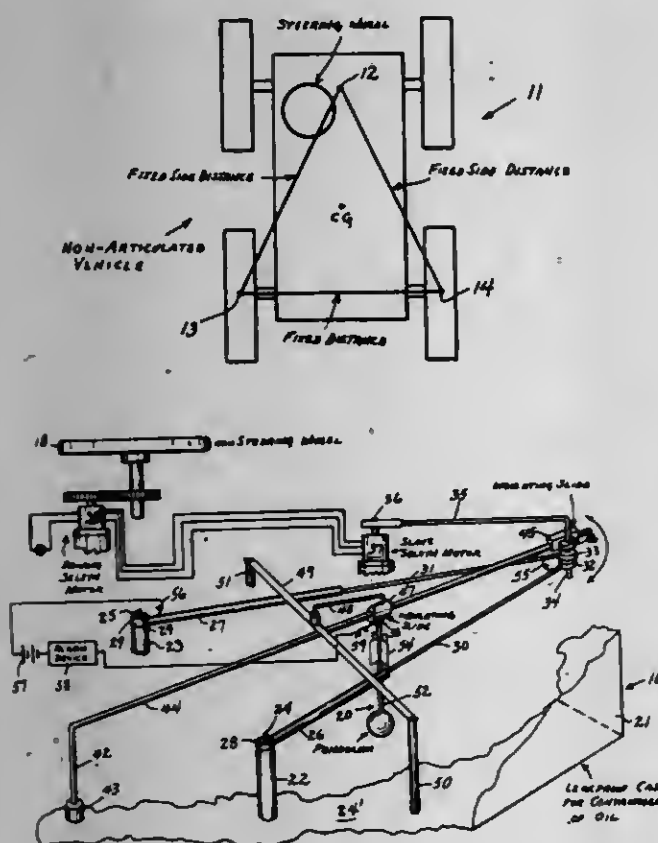
**4,284,987**  
**SLOPE STABILITY WARNING DEVICE FOR**  
**ARTICULATED TRACTORS**

Harry G. Gibson; Benjamin C. Thorne, both of Morgantown, W. Va., and Jack W. Thomas, LaGrande, Oreg., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 7, 1979, Ser. No. 73,474  
Int. Cl.<sup>3</sup> G06B 21/00

U.S. Cl. 340-689

## 20 Claims



1. A vehicle of the pinned front axle type having pivotally-connected front and rear frame sections and having a stability triangle with forwardly convergent lateral sides and a fixed transverse rear leg, and including a tip-over warning means mounted on said vehicle and having simulated stability triangle means with rotatable convergent pivotally connected lateral sides of changeable length and means defining a fixed transverse rear side extending substantially parallel to the fixed transverse rear leg of the vehicle stability triangle, pendulum means swingably mounted on said tip-over warning means at a suspension location relative to the simulated stability triangle means substantially corresponding to the location of the vehicle center of gravity with respect to its stability triangle, said pendulum means depending through said simulated triangle means, means to change the lengths of said convergent pivotally connected sides responsive to relative pivoting of said vehicle frame sections, an alarm device, and means to energize said alarm device responsive to contact of said pendulum means with one of said changeable-length sides.

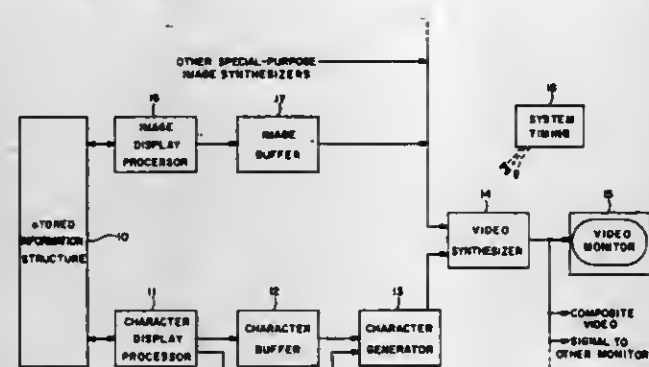
**4,284,988**  
**CONTROL MEANS TO PROVIDE SLOW SCROLLING**  
**POSITIONING AND SPACING IN A DIGITAL VIDEO**  
**DISPLAY SYSTEM**

**Charles L. Seltz, San Luis Rey; Paul Grunewald, Leucadia; Marshall M. Parker, San Diego, and Irvin G. Stafford, Carlsbad, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.**

Continuation of Ser. No. 836,747, Sep. 26, 1977. This application  
Sep. 28, 1979, Ser. No. 79,831  
Int. Cl.<sup>3</sup> G06F 3/14

U.S. CL. 340-726

## 10 Claims



1. In a digital video display system having a video monitor and a character generator, said video monitor being operated in a raster scan mode whereby a plurality of lines of characters are sequentially displayed during a complete scan period of said video monitor, said character generator including a font storage and control element, said control element comprising: an initial position register counter coupled to said font storage, said counter being adapted to receive a parameter code specifying the initial raster scan location of the initial scan line of a character line to be display and to increment to subsequent scan lines of said character line, each character line being formed of a plurality of scan lines, each scan line being formed by a row of picture elements; parameter code supplying means coupled to said register counter to supply a different parameter code for each new character line to be displayed so as to cause a character to be displayed starting at a different scan line of a particular character line during the next display of that character line; and timing means coupled to said counter and to said parameter code supplying means to generate timing signals representing picture elements to be displayed by said video monitor, said picture elements forming the respective scan lines that display various characters and other symbols.

4,284,989

**CHARACTER DISPLAY APPARATUS WITH FACILITY  
FOR SELECTIVELY EXPANDING THE HEIGHT OF  
DISPLAYED CHARACTERS**

**Robert Parsons, Cambridge, England, assignor to Texas Instruments Incorporated, Dallas, Tex.**

Continuation of Ser. No. 806,411, Jun. 14, 1977. This application  
Jan. 22, 1979, Ser. No. 5,416

Claims priority, application United Kingdom, Jun. 21, 1976,  
25660/76

U.S. Cl. 340-731

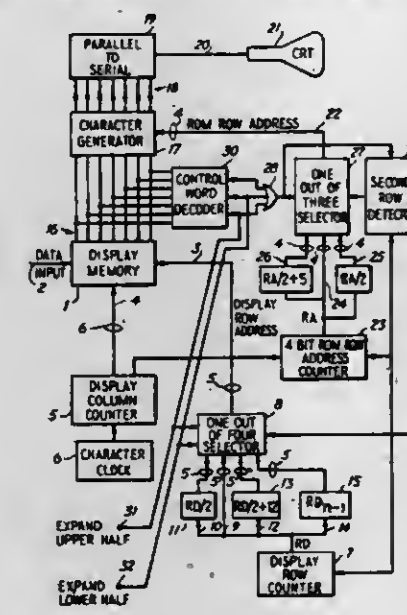
Int. Cl.<sup>3</sup> G06F 3/14

## 16 Claims

1. Data display apparatus having a display means, a clock signal generator, means for generating a raster scan on said display means synchronized with a clock signal generated by said clock signal generator, data storage means for storing a common set of character data for use in generating character displays in each of a plurality of modes, and means operable in conjunction with said data storage means for activating said display means comprising:

first counter means, connected to the clock signal generator,  
for interrogating the data storage means in synchronism

with the raster scan to produce coded signals representing data symbols to be displayed by the display means;  
second counter means, connected to the clock signal generator, for providing an output indicative of the scan currently being described on the display means;  
logic means, connected to the first and second counter means, for modifying, and synchronizing with the raster scan, the outputs of the first and second counter means; and  
signal generating means, connected to the logic means, operable to activate the display means to display elements of data symbols in lines of the raster scan which together



form a visible display of the data symbols, each data symbol being defined by activated elemental areas in a plurality of succeeding lines of the scan over a predetermined length in each of the plurality of lines, said signal generating means further operable to activate the display means in different modes to produce a display character of one height in one mode and a display character of a different height in another mode; and

said logic means providing for synchronization, selectively, at two different rates, of the signal generating means with the raster scan, so as to selectively produce displays of data symbols of different heights.

4,284,990

**POSITION SENSING TRANSDUCER**

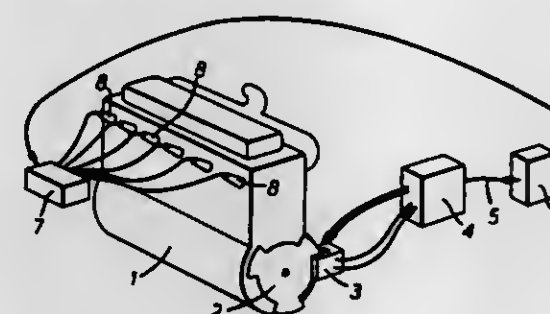
Albert L. Fowler; Alan G. Henderson; Alastair K. Stevenson,  
and David M. Walker, all of Fife, Scotland, assignors to  
Hughes Microelectronics Ltd., Glenrothes, Scotland

Continuation-in-part of Ser. No. 21,876, Mar. 19, 1979,  
abandoned. This application Mar. 3, 1980, Ser. No. 126,583

Claims priority, application United Kingdom, Mar. 29, 1978,  
12300/78

U.S. Cl. 340—870.32 Int. Cl.<sup>3</sup> G08C 9/04

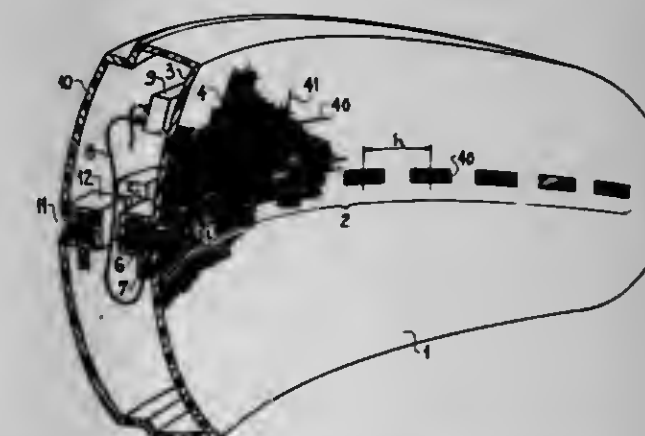
## 21 Claims



**1. An electrical displacement transducer comprising:**  
spaced apart transmitting and receiving means for respectively transmitting energy and receiving said energy;  
a member for being moved between said transmitting and

receiving means, said member interrupting repetitively the passage of said energy from the transmitting means to the receiving means as a function of the movement of the member between said means;  
said receiving means producing an electrical output signal which assumes a first magnitude during said repetitive interruptions and a second different magnitude for periods between said interruptions;  
means responsive to said output signal for producing a control signal of a magnitude which is representative of an average of said first and second magnitudes; and  
a comparator arranged to compare the magnitude of said output signal with the magnitude of said control signal and provide a signal indicative of the commencement and cessation of said interruptions.

**4,284,991**  
**COMMON ANTENNA FOR PRIMARY AND  
SECONDARY RADAR SYSTEM**  
Albert Dupressoir, Paris, France, assignor to Thomson-CSF,  
Paris, France  
Filed Dec. 20, 1979, Ser. No. 105,733  
Claims priority, application France, Dec. 27, 1978, 78 36484  
Int. Cl.<sup>3</sup> H01Q 13/18, 19/195, 21/28  
U.S. Cl. 343—725 16 Claims



1. A bifunctional antenna for a primary/secondary radar system, comprising:

- a reflector with a body of dielectric material having a concave front surface adapted to be illuminated by a primary source of outgoing radiation for detecting a remote target;
- a row of secondary radiation transceivers disposed along a generatrix of said front surface intersecting a boresight axis, said transceivers being formed by slots in said front surface backed by cavities having walls integral with said body, said cavities being provided with excitation means; and

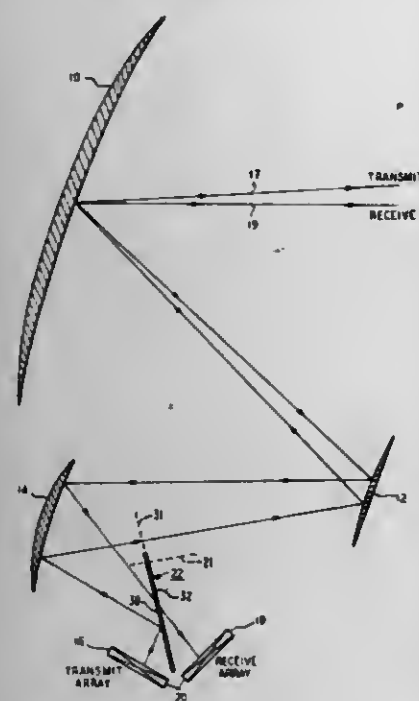
feed means connected to said excitation means for energizing said transceivers from a secondary source in a directive sum pattern to emit interrogation signals and superimposing upon said sum pattern a differential control pattern blanking minor lobes of said sum pattern.

4,284,992  
WIDE SCAN QUASI-OPTICAL FREQUENCY DIPLEXER  
Michael J. Gans, Monmouth Beach, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Dec. 26, 1979, Ser. No. 106,492  
Int. Cl.<sup>3</sup> H01Q 15/04, 15/06

**U.S. Cl. 343—309** **6 Claims**  
**1.** A quasi-optical frequency diplexer comprising:  
 an array of a plurality of stacked waveguide sections (22)  
 including a longitudinal axis (21) and a diplexer-free space  
 interface (31) associated in a mutually perpendicular rela-  
 tionship, each waveguide section comprising a first and a  
 second entrance port at each end thereof, and comprising



dimensions which permit the passage of predetermined frequency bands characterized in that the first and the second entrance ports of each waveguide



section of the plurality of waveguide sections are respectively aligned and parallel with one another and relatively displaced such that each waveguide section is tilted at a predetermined oblique angle ( $\tau$ ) to the longitudinal axis of the array.

4,284,993

# **MULTI-NOZZLE HEAD FOR INK JET PRINTER WITH INK SUPPLY PIPE IN INK CHAMBER**

Sadao Kakeno, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

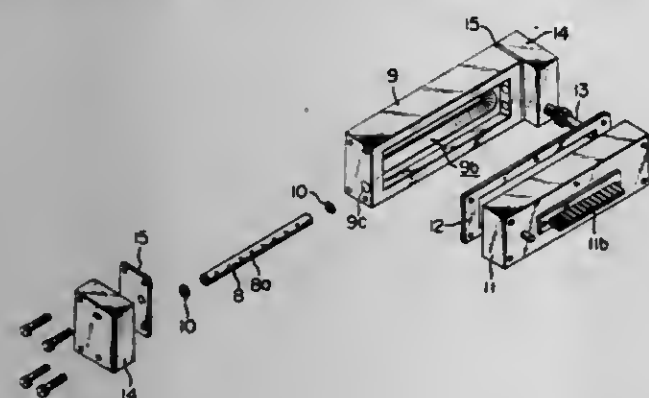
Filed Feb. 13, 1980, Ser. No. 120,991

Claims priority, application Japan, Feb. 23, 1979, 54-20473

Int. Cl.<sup>3</sup> G01D 15/18

U.S. Cl. 346—75

8 Claims



1. A multi-nozzle head for an ink jet printer comprising
  - (a) a nozzle unit provided with nozzles spaced in a line from each of which the ink is jetted,
  - (b) a vibration unit having a vibrating plate on which vibration elements are mounted opposite to said nozzles,
  - (c) a chamber forming between a front wall provided with said nozzles of the nozzle unit and said vibrating plate,
  - (d) at least one distributing pipe having a plurality of ink outlet ports arranged in parallel with the line of said nozzle in said chamber, said distributing pipe being connected to a supply pipe.

4,284,994

# **LASER BEAM RECORDER**

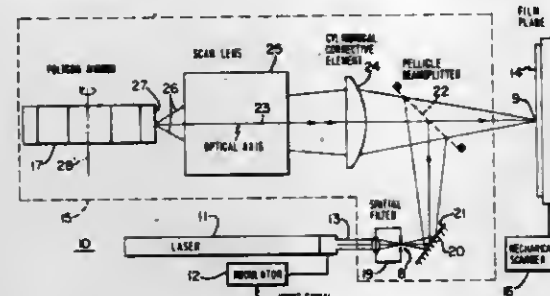
Bruce M. Radl, Billerica, Mass., assignor to Eikonix Corporation, Bedford, Mass.

Filed Jul. 30, 1979, Ser. No. 61,808

Int. Cl.<sup>3</sup> G01D 15/14; G02B 27/17

U.S. Cl. 346—108

10 Claims



1. Recording apparatus comprising:
  - photosensitive material;
  - a laser for providing a beam of coherent light;
  - modulator means being connected to said laser for modulating said laser beam in response to an electrical signal representative of an image;
  - filter means for spatially filtering said modulated laser beam, said filter means having a pinhole for providing an axial object point;
  - a rotatable polygonal mirror;
  - a cylindrical lens for imaging said object point as a line on said polygonal mirror;
  - a scan lens; and
  - beam splitting means for directing said filtered and modulated laser beam along an optical path through said cylindrical lens and scan lens for reflection by said mirror, said reflected beam being redirected in reverse along said optical path through said scan lens, cylindrical lens and beam splitting means to the photosensitive material for recording as an image point.

4,284,995

# **METHODS AND APPARATUS FOR RECORDING INFORMATION, SUPPLYING WOUND MATERIALS AND RETAINING TUBULAR OBJECTS**

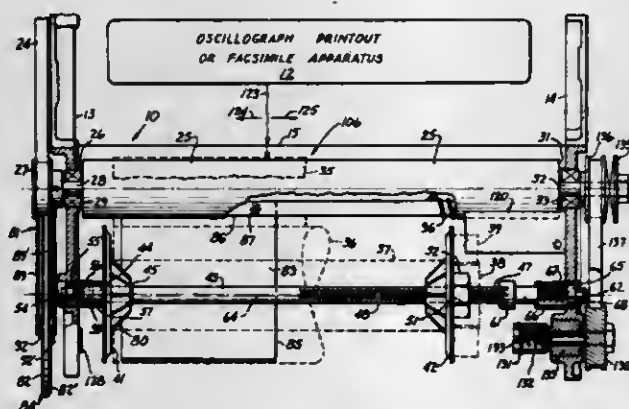
Gary G. Gordon, Newhall, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jun. 18, 1979, Ser. No. 49,537

Int. Cl.<sup>3</sup> G01D 15/24, 15/26, 15/34; B65H 17/02

U.S. Cl. 346—136

61 Claims



1. In a method of releasably retaining any one of several tubular objects of different lengths between a pair of mutually adjustable retention members, the improvement comprising in combination the steps of:
  - providing a supporting rod;
  - mounting one of said retention members on said supporting rod;

inserting said supporting rod into any one of said tubular objects;

moving the other of said retention members along said supporting rod to place said retention members against opposite ends of said one tubular object;

locking said placed retention members against movement away from each other;

mounting said supporting rod; and

resiliently biasing said supporting rod in an axial direction.

25. An apparatus for releasably retaining any one of several tubular objects of different lengths, comprising in combination:

- a supporting rod insertable into any one of said tubular objects;
- a pair of mutually adjustable retention members on said supporting rod for releasably retaining any one of said tubular objects therebetween;
- means connected between said retention members for selectively locking said retention members against movement away from each other;
- means coupled to said supporting rod for mounting said supporting rod; and
- means coupled to said supporting rod for resiliently biasing said supporting rod in an axial direction.

4,284,996

# **DRIVING INK JET RECORDING ELEMENTS**

Helmut Greve, Neumuenster, Fed. Rep. of Germany, assignor to Dr.-Ing Rudolf Hell GmbH, Kiel, Fed. Rep. of Germany

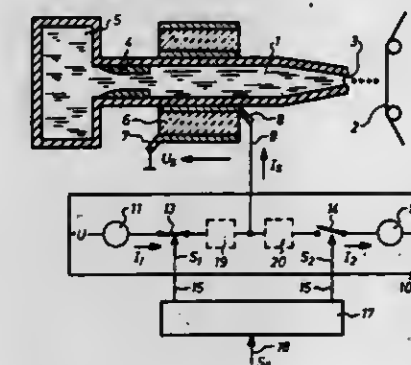
Filed Jul. 30, 1979, Ser. No. 62,001

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1978, 2835262

Int. Cl.<sup>3</sup> G01D 15/18

U.S. Cl. 346—140 R

7 Claims



1. In a method for driving an ink jet recording element of the kind comprising a compression chamber for containing the ink, and in which the volume of the compression chamber is altered by means of a piezo-electric transducer to which a control voltage can be applied and wherein the compression chamber will expand if a control voltage is applied in the direction of the polarisation voltage of the transducer and will contract if a control voltage is applied in the opposite direction, the method comprising the steps of

- (a) during a preparation phase, in a first defined time interval, applying to the piezo-electric transducer a control voltage in the polarisation direction to expand the compression chamber past its static condition,
  - (b) during a write phase in a second defined time interval immediately following the first time interval, applying to the piezo-electric transducer a control voltage in said opposite direction to constrict the compression chamber past said static condition, and
  - (c) during a subsequent regeneration stage in a third defined time interval immediately following said second time interval, applying to said transducer a control voltage in said polarising direction to again expand the compression chamber past its static condition,
- the currents of said voltages forcing said expansion and constriction during said phases and time intervals.

4,284,997

# **STATIC INDUCTION TRANSISTOR AND ITS APPLIED DEVICES**

Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

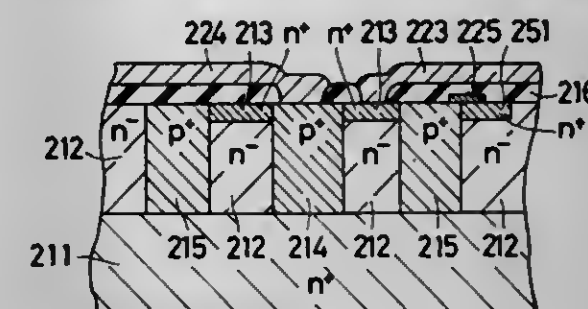
Filed Jun. 29, 1978, Ser. No. 920,542

Claims priority, application Japan, Jul. 7, 1977, 52-81796; Jul. 27, 1977, 52-90018; Jul. 29, 1977, 52-91699; Sep. 14, 1977, 52-110914; Sep. 22, 1977, 52-114316; Dec. 20, 1977, 52-154197

Int. Cl.<sup>3</sup> H01L 29/80

U.S. Cl. 357—22

82 Claims



1. A semiconductor device formed in a semiconductor body having first and second parallel principle surfaces and including at least one vertical current channel at which a main current is substantially controlled and at which charge carriers constituting said main current are allowed to flow substantially perpendicular to said principal surfaces, comprising:
    - at least one channel semiconductor region disposed in said semiconductor body to form said at least one current channel therein;
    - a source semiconductor region for supplying said charge carriers from said channel semiconductor region, disposed at the other end of said channel semiconductor region; and
    - at least one drain means for retrieving said charge carriers from said channel semiconductor region, disposed at the other end of said channel semiconductor region; and
    - means for controlling the potential profile in said channel semiconductor region to define said current channel, including a first gate means and a second gate means disposed adjacent to a same portion of said channel semiconductor region and separated from each other,
- said current channel being defined at said portion, in said channel semiconductor region partially by said first gate means and partially by said second gate means,
- said first gate means being adapted to be connected to a signal source for developing, in said channel semiconductor region, a depletion region with a width depending on a controlling signal supplied from said signal source,
- said second gate means being adapted to be connected to a dc bias source for developing, in said channel semiconductor region, a depletion region with a width depending on a dc bias supplied from said dc bias source.

4,284,998

# **JUNCTION TYPE FIELD EFFECT TRANSISTOR WITH SOURCE AT OXIDE-GATE INTERFACE DEPTH TO MAXIMIZE $\mu$**

Noboru Fuse, Kitakyushu; Kenichi Maramoto, Kawasaki; Keizo Tani, and Masaki Iwanishi, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 768,942, Feb. 15, 1977, abandoned.

This application Aug. 28, 1978, Ser. No. 937,570

Claims priority, application Japan, Feb. 18, 1976, 51-15844

Int. Cl.<sup>3</sup> H01L 29/80

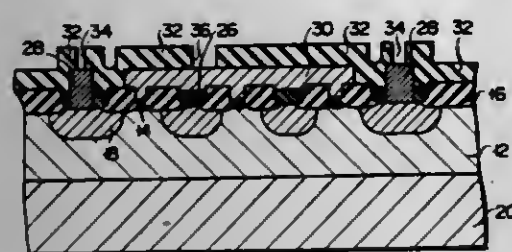
U.S. Cl. 357—22

13 Claims

1. A junction type field effect transistor comprising:
  - a drain region formed of a semiconductor layer of one conductivity type;
  - a source region constituted by a first layer of said one conductivity type which is formed to a prescribed depth from



the surface of the semiconductor layer at a high concentration of impurity;  
an insulation layer formed in the semiconductor layer closely around the source region, with said source region being sufficiently deep with respect to said insulation layer, at least from the surface of said semiconductor layer, to establish triode voltage-current characteristics, and said source region being formed sufficiently shallow



with respect to said insulation layer, at least from the surface of said semiconductor layer, to maximize voltage-amplifying degree  $\mu$ ; and  
a gate region constituted by a second layer of the opposite conductivity type to the semiconductor layer which is formed in the semiconductor layer to a prescribed depth from the underside of the insulation layer so as to extend from the proximity of the source region away from the source region.

4,284,999

## SEMICONDUCTOR DEVICE

Eiichi Iwanami, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosa, Tokyo, Japan

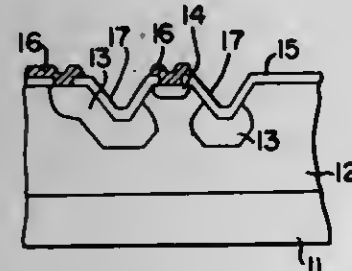
Filed Dec. 27, 1978, Ser. No. 973,589

Claims priority, application Japan, Dec. 28, 1977, 52/158389

Int. Cl.<sup>3</sup> H01L 29/80

U.S. Cl. 357-22

6 Claims



1. An integrated semiconductor junction field effect transistor logic device, comprising: a semiconductor substrate of one conductivity type having a high impurity concentration; a relatively low impurity concentration epitaxial semiconductor layer of the same conductivity type as said substrate formed on said substrate; a first region of the same conductivity type as the substrate formed in a surface portion of said epitaxial layer; at least one groove formed in a surface portion of said epitaxial layer along a length direction of said first region; a second region of opposite conductivity type formed by said groove and in a surface portion of said epitaxial layer around said first region, and having a high impurity concentration; said substrate, said first region, the portion of said epitaxial layer under said first region, and said second region forming respectively the source, drain, channel and gate regions of a vertical junction field effect transistor, whereby gate-drain capacity is reduced.

4,285,000  
BURIED CHANNEL CHARGE COUPLED DEVICE WITH SEMI-INSULATING SUBSTRATE

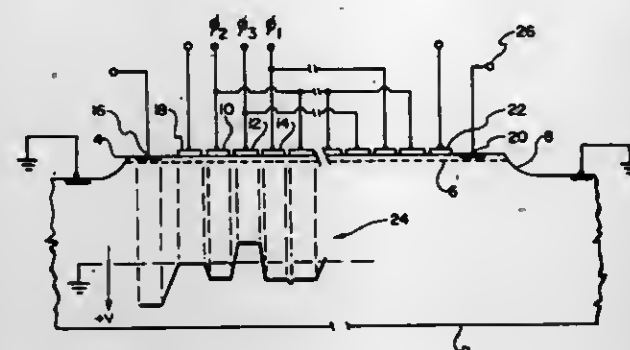
Ira Deyhimy; Richard C. Eden; James S. Harris, Jr., and Lucia O. Bubulac, all of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 12, 1979, Ser. No. 19,807

Int. Cl.<sup>3</sup> H01L 29/78, 29/56, 29/06; G1C 19/28

U.S. Cl. 357-24

5 Claims



1. A charge coupled device comprising:  
a substrate of a semi-insulating, semiconductor having a resistivity of at least  $10^6$  ohm centimeters;  
a doped layer of said substrate forming a semiconducting charge transport layer of a first conductivity type covering only a portion of a surface of said substrate so that there is an interface on the surface of said device between said charge transport layer and said substrate;  
a row of parallel, closely spaced p-n junction gates on said charge transport layer each of said gates overlapping said interface so that charges are confined within said charge transport layer without the need of a channel stop because of the resistivity of said substrate;  
input means for injecting a signal into said charge transport layer under one of said gates; and  
output means for detecting said signal from said charge transport layer.

4,285,001  
MONOLITHIC DISTRIBUTED RESISTOR-CAPACITOR DEVICE AND CIRCUIT UTILIZING POLYCRYSTALLINE SEMICONDUCTOR MATERIAL

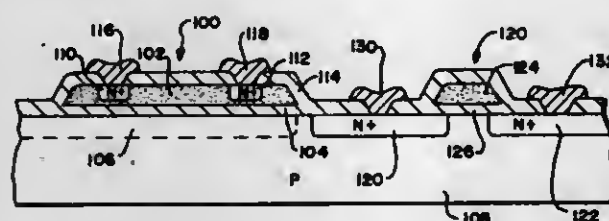
Levy Gerzberg, Palo Alto, and James D. Meindl, Los Altos, both of Calif., assignors to Board of Trustees of Leland Stanford Jr. University, Stanford, Calif.

Filed Dec. 26, 1978, Ser. No. 972,738

Int. Cl.<sup>3</sup> H01L 27/04, 27/13, 29/94

U.S. Cl. 357-51

12 Claims



9. A distributed resistor-capacitor device comprising a substrate, a doped polycrystalline semiconductor resistive material on said substrate, a dielectric layer over said resistive material, a conductive layer over said dielectric layer, first and second contacts to said resistive material, and a capacitor contact to said conductive layer.

4,285,002

## INTEGRATED CIRCUIT PACKAGE

William Campbell, Oldham, England, assignor to International Computers Limited, London, England

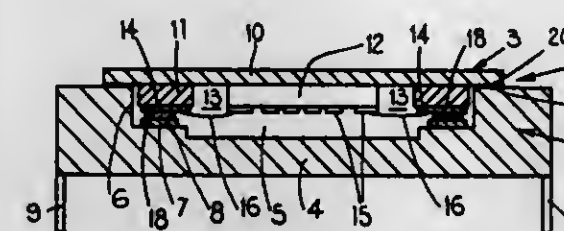
Filed Jan. 16, 1979, Ser. No. 3,954

Claims priority, application United Kingdom, Jan. 19, 1978, 2169/78

Int. Cl.<sup>3</sup> H01L 23/10; H01R 43/02

U.S. Cl. 357-74

5 Claims



1. A large scale integrated circuit package including:  
a main body structure having a plurality of external circuit connection pins, a recess bounded by a peripheral wall and a first pattern of conductive tracks positioned in the recess and being electrically connected to the circuit connection pins; and  
a lid structure of thermally conductive material closing the recess, the lid structure carrying a second pattern of conductive tracks complementary to said first pattern on an inner surface thereof, a large scale integrated circuit element having connection pads, the circuit element being attached to said inner surface of the lid structure and extending into the recess, electrical conductors providing connections between the connection pads of the large scale integrated circuit and the second pattern of conductive tracks and connector elements providing electrical connections between the first and second conductive patterns.  
3. A method of manufacturing a large scale integrated circuit package including the steps of:  
providing a main body structure having a plurality of external circuit connection pins, a recess bounded by a peripheral wall and a first pattern of outwardly facing conductive tracks positioned in the recess and being electrically connected to the connection pins;  
providing a lid structure of thermally conductive material, mounting on a surface thereof a large scale integrated circuit element having connection pads so that when the lid structure is secured to the main body structure the circuit element extends into the recess, providing a second pattern of conductive tracks complementary to said first pattern on said surface and electrically connecting the connection pads of the circuit element to the second pattern of conductive tracks;  
positioning the lid structure relative to the main body structure so that the first and second patterns of conductive tracks are aligned in face-to-face relationship;  
placing a deformable connector element between corresponding conductive tracks of the first and second patterns; and  
securing the lid structure to the main body structure so that a compression bond is formed between said corresponding conductive tracks by deformation of the connector elements.

4,285,003

LOWER COST SEMICONDUCTOR PACKAGE WITH GOOD THERMAL PROPERTIES

Stanley Gaicki, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 19, 1979, Ser. No. 21,865

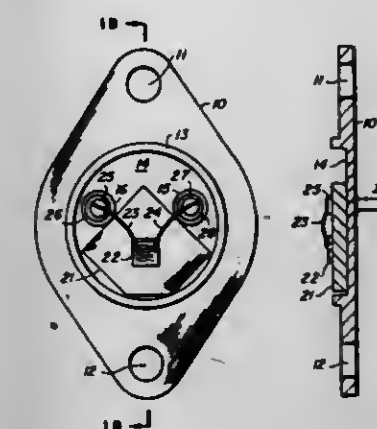
Int. Cl.<sup>3</sup> H01L 23/02, 23/12, 23/48

U.S. Cl. 357-81

8 Claims

1. In a case for semiconductor devices having a mounting base having at least one aperture through which a lead passes,

a pedestal to which semiconductor die are attached, and a cap for enclosing said die, the improvement comprising:  
a thinned region in said base for reducing the thickness of said base in a central area wherein said thinned region is



greater than 5 mils (0.13 mm) thickness, said pedestal being 15-60 mils (0.38-1.5 mm) thick and smaller in area than said thinned region and being attached to said base in said central area.

4,285,004

TOTAL RASTER ERROR CORRECTION APPARATUS AND METHOD FOR THE AUTOMATIC SET UP OF TELEVISION CAMERAS AND THE LIKE

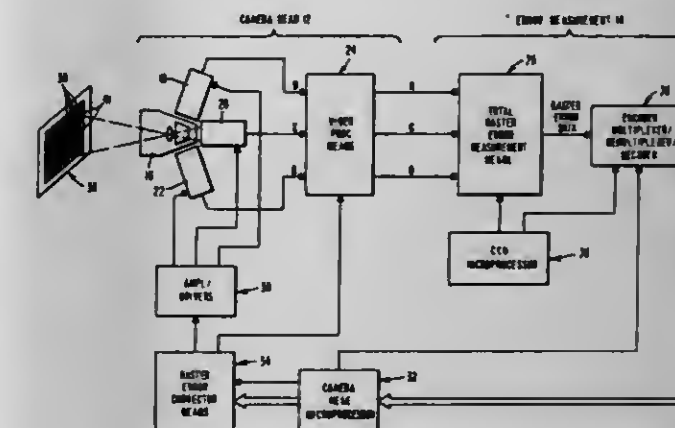
Eric F. Morrison, Redwood City, and Anthony E. Zank, Simi Valley, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Feb. 25, 1980, Ser. No. 124,370

Int. Cl.<sup>3</sup> H04N 9/04, 9/62

U.S. Cl. 358-10

39 Claims



1. A total raster error correction system for correcting all raster related errors in image pickup devices in a television camera, wherein the latter includes a central control unit and a remotely locatable camera head system each having respective microprocessor means and sync circuit means, wherein the camera head system includes scan control means integral with the image pickup devices, and video processing means coupled to the pickup devices for generating selected video signals corresponding to a video picture, comprising the combination of:

error measurement means disposed within the central control unit and coupled to the video processing means for automatically electronically measuring the total raster errors with respect to given electronic references, and for generating digital error data commensurate with the total raster errors for subsequent storage within the camera head system; and  
error correction means integral with the camera head system and operatively coupled to the error measurement means, for storing the digital total raster error data, for automatically and selectively retrieving in real time the total raster



errors, and for selectively supplying in real time to the scan control means and to the video processing means error correction signals indicative of the total raster errors independently of the central control unit.

4,285,005

### COLOR CORRECTION CIRCUIT FOR A COLOR TELEVISION RECEIVER

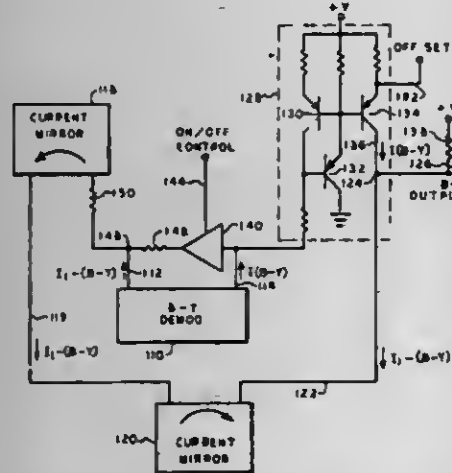
Gopal K. Srivastava, Buffalo Grove, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 970,700, Dec. 18, 1978, Pat. No. 4,219,840. This application Jul. 14, 1980, Ser. No. 167,989

Int. Cl.<sup>3</sup> H04N 9/535

U.S. Cl. 358—28

5 Claims



1. In a color television receiver having at least a B-Y demodulator for developing a pair of color-difference output signals of opposite polarity, and having a network for sensing color-difference signals representative of hues within a range of flesh tones, a color correction circuit comprising:

means coupled to opposite polarity outputs of the B-Y demodulator and responsive to the sensing of color-difference signals within said flesh tone range for combining a selected portion of one B-Y color-difference signal with the opposite polarity B-Y color-difference signal so as to develop a resultant B-Y signal of a reduced amplitude; and means responsive to the sensing of color-difference signals within said flesh tone range for adding an offset signal to the resultant B-Y signal such that demodulated color signals occurring within the flesh tone range are offset toward the flesh tone axis.

4,285,006

### GHOST CANCELLATION CIRCUIT SYSTEM

Koichiro Kurahashi, Yoshiro Nakajima, and Yoshiki Mizutani, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Amagasaki, Japan

Continuation-in-part of Ser. No. 903,737, May 8, 1978, abandoned. This application Jul. 26, 1979, Ser. No. 61,021

Claims priority, application Japan, Jul. 22, 1977, 52-88633; Feb. 8, 1978, 53-13951; Feb. 8, 1978, 53-13952

Int. Cl.<sup>3</sup> H04N 5/21

U.S. Cl. 358—35

9 Claims

1. A ghost cancellation system comprising:

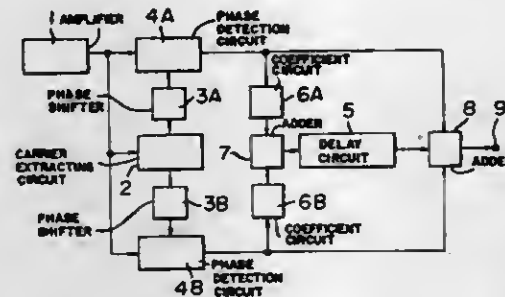
a carrier extracting circuit for generating a reference carrier having a reference phase out of a composite wave including a direct wave and a ghost wave; phase shifting means for generating detection axis signals having a phase independent of the relative phase difference between the reference phase of the reference carrier and the phase of the ghost wave; a pair of phase detecting circuits each coupled to the composite wave and a respective detection axis signal for detecting the phase of the composite wave relative to the detection axis signals and for producing output signals based thereon;

at least two coefficient circuits coupled to the output of

respective of said phase detecting circuits for producing respective output signals corresponding to coefficient multiples of the output signals of said phase detecting circuits;

at least one first adding circuit coupled to the output signals of the at least two coefficient circuits for producing at least one output signal based on the sum thereof;

delay circuit means coupled to the at least one output signal of said at least one first adding circuit for delaying said at least one output signal thereof a time substantially equal to



the delay time of the ghost wave to produce at least one compensation signal based on the delayed at least one output signal of said at least one first adder; a second adder circuit for combining the output signal of at least one of the phase detector circuits and the compensation signal of the delay signal means; and wherein the coefficients of the coefficient circuits are set in dependence on the phase detection of said phase detecting circuits and the amplitude and phase of the ghost wave, to thereby cancel the in-phase component and the orthogonal component of the ghost wave.

4,285,007

### COLOR SOLID-STATE IMAGER AND METHOD OF MAKING THE SAME

Toshio Nakano; Tadao Kaneko, both of Tokyo; Michiaki Hashimoto, Yono; Yoshio Hatano, Urawa; Haruo Matsumaru, Tokyo; Akira Sasano, Tokyo, and Eichi Maruyama, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

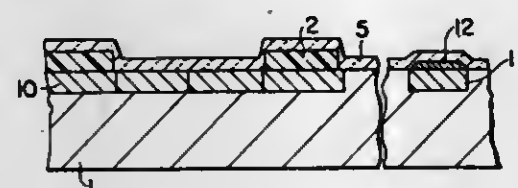
Filed Feb. 20, 1980, Ser. No. 123,085

Claims priority, application Japan, Feb. 26, 1979, 54-20801

Int. Cl.<sup>3</sup> H04N 9/04

U.S. Cl. 358—44

8 Claims



1. A color solid-state imager in which color-decomposing filters are formed, via layers of an organic, high molecular material, over a semiconductor body having at least a light detector portion in which are arrayed a plurality of light detector elements.

4. A method of making color solid-state imagers comprising: a step for forming a color-decomposing filter layer having a predetermined shape and predetermined spectral characteristics over a semiconductor body which has at least a light detector portion in which a plurality of light detector elements are arrayed; a step for forming a layer of a transparent radiation-sensitive organic high molecular material; a step for forming a color-decomposing filter layer having a predetermined shape and predetermined spectral characteristics; and a step for forming a layer of a transparent radiation-sensitive organic high molecular material; the above-mentioned steps being repetitively carried out to successively form filter layers of desired shapes which have been dyed, and the uppermost layer

being made of a transparent radiation-sensitive organic high molecular material, said method of making color solid-state imagers further comprising: a step for irradiating predetermined portions of said laminated filter layers with a predetermined radiant ray; and a step for processing said laminated filter layers.

4,285,008

### COLOR PICTURE REPRODUCING DEVICE

Michitaka Osawa; Syuzo Matsumoto, and Hitoshi Maekawa, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

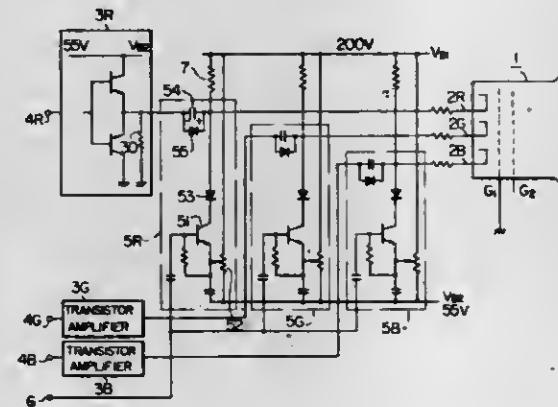
Filed Nov. 15, 1979, Ser. No. 94,735

Claims priority, application Japan, Nov. 15, 1978, 53-139895

Int. Cl.<sup>3</sup> H04N 5/68, 9/18

U.S. Cl. 358—65

7 Claims



1. A color picture reproducing device comprising:

- a three-electron gun color picture tube having first to third grids biased by the same potential and first to third cathodes;
- first to third transistor amplifiers for supplying first to third primary color signals to said first to third cathodes, respectively;
- first to third adjusting means connected to the first to third cathodes for independently adjusting the DC levels of the signals supplied to the respective cathodes;
- wherein each of said first to third adjusting means is a DC reproducing circuit having a capacitor inserted between a transistor amplifier and a respective cathode, a variable voltage source, and a switch connected between a junction point between the cathode and the capacitor, and the variable voltage source, which is turned on during the flyback period and is turned off for the scanning period.

4,285,009

### APPARATUS FOR PRODUCING CORRECTED COLOR CHROMATIC COMPONENTS

Siegfried Klopsch, Probstseierhagen, Fed. Rep. of Germany, assignor to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 770,192, Feb. 18, 1977, abandoned.

This application Oct. 11, 1979, Ser. No. 83,985

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1976, 2607623

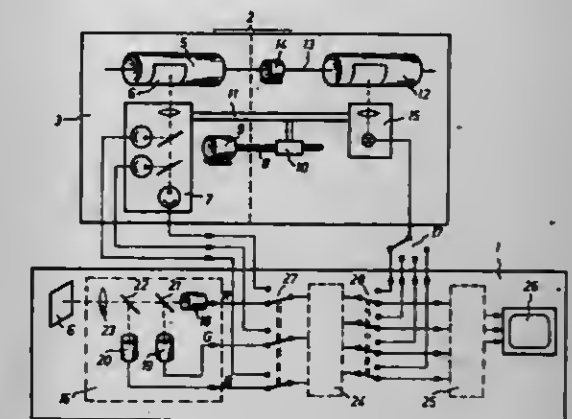
Int. Cl.<sup>3</sup> H04N 1/46

U.S. Cl. 358—76

6 Claims

1. Apparatus for producing corrected color chromatic component separations for multicolor printing, including line-wise scanning of an original picture and line-wise recording of a picture in the form of color chromatic component separations with interposed color correction, including a color correction means consisting of an electronic color camera for initially scanning an original picture which produces first three color signals, a color viewing monitor which receives second three color signals for monitoring the signal images, an adjustable analog color correction computer connected to the output of said camera to receive said first three color signals therefrom and said color correction computer correcting the trichro-

matic first three color signals supplied by said camera and producing four corrected color signals, a color converter connected between said color correction computer and said monitor and receiving said four color signals and producing said second three color signals for adjusting fixed parameters for the respective printing process and for adaptation to the colors of the screen luminescent materials of the monitor, a scanner for scanning of the original picture a second time and



producing third three color signals, a recording unit adapted to receive said four color signals for recording the color chromatic component separations, and switching means for switching said color correction computer after the correction adjustment has been completed from the color correction means to connect the computer between said scanner and said recording unit such that said color correction computer is connected in the signal path both during monitoring and recording.

4,285,010

### ULTRASONIC INTERROGATING SYSTEM AND EXCITER-DETECTOR CIRCUIT THEREFOR

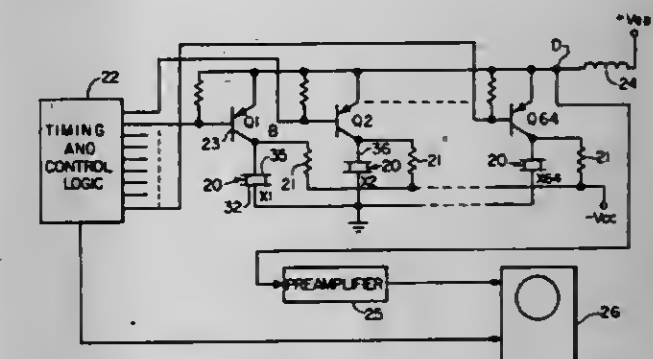
Martin H. Wilcox, Cave Creek, Ariz., assignor to Advanced Diagnostic Research Corporation, Tempe, Ariz.

Continuation-in-part of Ser. No. 576,874, May 12, 1975, which is a continuation-in-part of Ser. No. 410,437, Oct. 29, 1973, abandoned. This application Oct. 25, 1977, Ser. No. 845,223

Int. Cl.<sup>3</sup> H04N 5/30

U.S. Cl. 358—112

33 Claims



1. An ultrasonic interrogating system comprising:

- a plurality of ultrasonic transducers;
- means for selectively exciting the transducers electrically in a predetermined sequence to produce ultrasonic emission;
- raster scanned display means;
- a single preamplifier having an output connected to the display means and an input;
- means for coupling the respective excited transducers to the input of the preamplifier in the predetermined sequence to transmit to the display means echoes of the ultrasonic emission of the respective excited transducers returned to said respective excited transducers;
- a single tuning inductor effectively connected in parallel



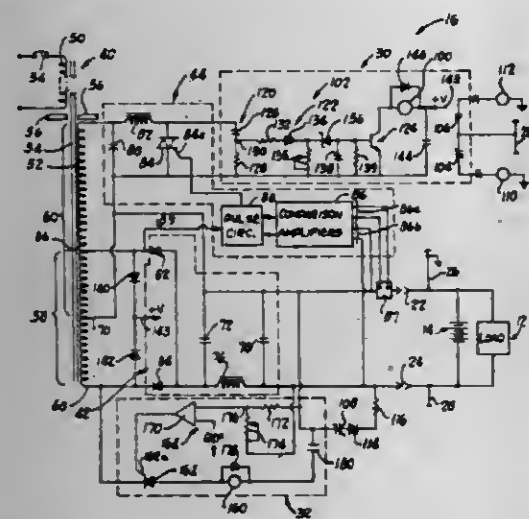








put, the ferroresonance control circuit comprising a transformer secondary section and circuit elements coacting with said transformer secondary section to simulate saturation of said transformer core, said circuit elements including an electronic controller element operable to alter the impedance of said ferroresonance control circuit and thereby govern the rectifier unit output;



- (a) a rectifier failure alarm element operable between a first condition wherein a failure alarm is produced and a second condition; and,
- (b) detector circuitry coupled between said ferroresonance control circuit and said failure alarm element, said detector circuitry effective to detect a ferroresonance control circuit condition wherein the rectifier output is minimized and to effect operation of said alarm producing element to its first condition for producing a failure alarm.

4,285,024

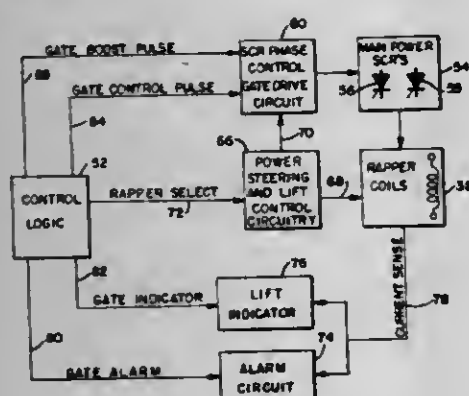
# **ELECTROSTATIC PRECIPITATOR RAPPER CONTROL SYSTEM RAPPER PLUNGER LIFT INDICATOR**

William W. Andrews, Cranford, N.J., assignor to Research-Cottrell, Inc., Somerville, N.J.

Filed May 29, 1979, Ser. No. 43,141  
Int. Cl.<sup>3</sup> B03C 3/76

U.S. Cl. 361-160

11 Claims



1. A rapper plunger displacement indicator for an electrostatic precipitator rapper control system of the type which supplies a pulse of controlled energy to a rapper generally having a movable plunger biased towards an impact and resting position and an electromagnetic means for displacing the plunger away from the impact and resting position in response to the controlled energy pulse and then releasing the plunger, said displacement indicator comprising:  
means for sensing current supplied to the rapper electromagnetic means; and  
means for integrating the sensed current with respect to time over the period of the pulse of controlled energy, the result of the integration being indicative of plunger displacement.

4,285,025

# **CORONA CHARGER**

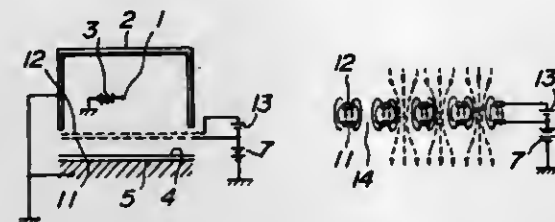
Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed May 25, 1979, Ser. No. 42,972

Claims priority, application Japan, May 31, 1978, 53-64378  
Int. Cl.<sup>3</sup> H01T 19/00

U.S. Cl. 361-230

7 Claims



1. A corona charger comprising a corona wire, a corona shield member having an opening facing to the objective surface to be charged, a grid electrode having a number of small openings and provided in said opening, a means for applying corona discharge voltage to said corona wire, and a means for applying a bias voltage to said grid electrode, wherein: a separate grid electrode is provided having substantially identical configuration with said grid electrode and arranged in parallel and adjacent to said grid electrode, so that the small openings of the two grid electrodes are aligned together with respect to corona ion stream, and a means for applying a bias voltage between the two grid electrodes is provided so that an electric field is formed therebetween to accelerate corona ion stream of desired polarity to easily pass through said grid electrodes.

4,285,026

# **PARALLEL PLANE SHUTTER FOR LK BREAKER**

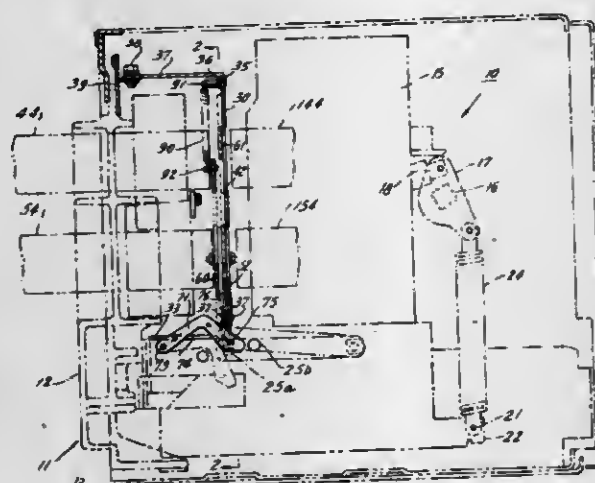
Challiss I. Clausing, Marlton, N.J., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Aug. 13, 1979, Ser. No. 66,189

Int. Cl.<sup>3</sup> H02B 1/04

U.S. Cl. 361-345

8 Claims



1. A circuit breaker cubicle having a rear wall and a plate positioned at said rear wall, said circuit breaker cubicle having stationary connector members accessible at said plate in said rear wall, said plate at said rear wall having a plurality of openings registering individually with said connector members, the plurality of openings corresponding in position and number to said stationary connectors;  
said stationary connectors being arranged in two horizontal rows one of said rows comprising a plurality of upper connectors the other of said rows comprising a plurality of lower connectors; said openings in said plate registering with said connectors comprising corresponding upper openings and lower openings;  
and a pair of shutters slidably positioned at said plate, said shutters comprising an upper shutter and a lower shutter;

said upper shutter having openings registrable with said upper openings in said plate for said upper connectors and said lower shutter having openings in said plate for said lower connectors; said shutters being positioned parallel to said plate and slidable with respect thereto;  
means for normally positioning said shutters in position where the openings therein are not in registry with the corresponding openings in said plate and therefore not in registry with said connector members;  
an actuator member carried within said cubicle located adjacent the position of said plate; said actuator member comprising a lever pivoted on a stationary portion of said cubicle; one end of said lever being connected to one of said shutters, the other end of said lever extending forwardly of said plate;  
a circuit breaker having an extension engageable with said actuator when said circuit breaker is moved toward the rear of said cubicle, said lever being rotated when said circuit breaker is moved into said cubicle toward the rear of said cubicle to move at least one of said shutters in a direction to register the openings in said shutter with the openings in said plate for said back connectors;  
and a link connection between said one shutter connected to said actuator and the other shutter;  
said link connection being pivotally mounted on stationary pivots on said plate with the opposite ends thereof being pivotally connected to said lower shutter and said upper shutter;  
the movement of said lower shutter in one direction causing the movement of the other shutter in the opposite direction thereby causing the shutters to move simultaneously when the actuator member is moved in one direction to expose the openings in said plate and make the connectors accessible; and movement of said shutters simultaneously toward each other blocking said openings in said plate.

4,285,027

# **COOLING SYSTEM**

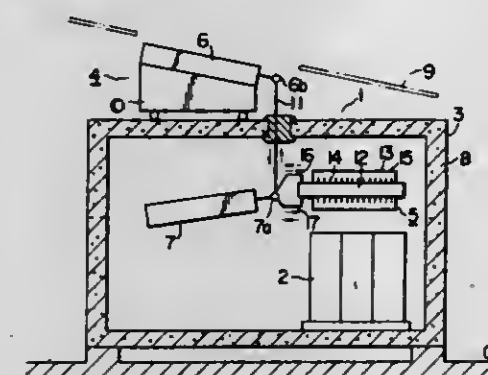
Shigeru Mori, Sakai, and Katsumi Sakitani, Kawachinagano, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka and Nippon Electric Company Limited, Tokyo, both of, Japan

Filed Jan. 12, 1979, Ser. No. 3,085

Int. Cl.<sup>3</sup> H02B 1/00; F28D 21/00

U.S. Cl. 361-385

9 Claims



1. A cooling system for cooling a finite space defined by a building structure for accommodating a heat-generating body, said building structure being adapted to be located in a geographical region where a large difference is observed between maximum daytime and minimum nighttime temperatures, said cooling system comprising:  
a first heat exchanger disposed outside said space;  
a second heat exchanger disposed inside said space at a level lower than said first heat exchanger;  
a heat storage means disposed inside said space at a level intermediate between said first and second heat exchangers;  
a conduit means for constituting a closed fluid path linking and extending into said first and second heat exchangers and said heat storage means;  
a condensable refrigerant filling and flowing through said

fluid path depending on the temperature difference between said space and outside thereof, said refrigerant being capable of evaporating through heat absorption at a temperature higher than a value preset for said space, and of being liquefied through heat discharge at a temperature lower than said maximum daytime temperature; and  
a heat storing agent charged in said heat storage means in contact with said fluid path, said heat storing agent being capable of being solidified through heat discharge when cooled during nighttime by said refrigerant flowing thereinto after being cooled at said first heat exchanger, and of being liquefied through heat absorption when heated during daytime by said refrigerant heated due to said heat generating body.

4,285,028

# **BEDROOM LAMP WITH CLOCK OPERATED LAMP SWITCH**

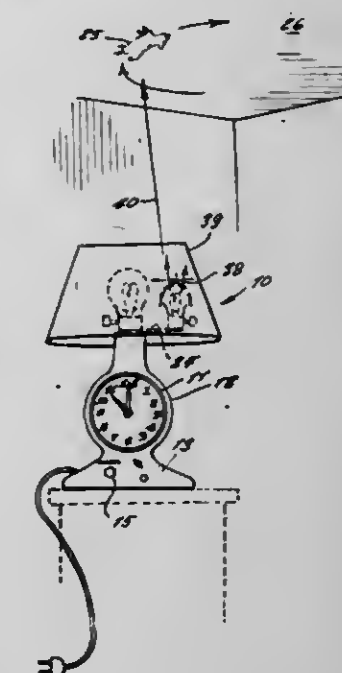
Glen Sundin, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of, New York, N.Y. 10007

Filed Jan. 15, 1979, Ser. No. 48,720

Int. Cl.<sup>3</sup> F21V 21/30

U.S. Cl. 362-35

3 Claims



1. A bedroom lamp with clock operated lamp switch, comprising in combination, an electric alarm clock having a clock mechanism said clock being in a case integral with a lamp base, a first lamp in a socket upon said lamp base, said first lamp being in a circuit interrupted by a first switch positioned for being automatically closed by a first lever of said mechanism when an alarm of said clock is sounded, and said bedroom lamp additionally including image producing means on a ceiling of a bedroom, said mechanism controlling operation of said means.

4,285,029

# **SELF-LUMINOUS LIGHTING SYSTEM**

Marshall W. McCoy, Tucson, Ariz., assignor to American Atomic Corporation, Tucson, Ariz.

Filed Apr. 18, 1979, Ser. No. 31,075

Int. Cl.<sup>3</sup> F21V 9/16

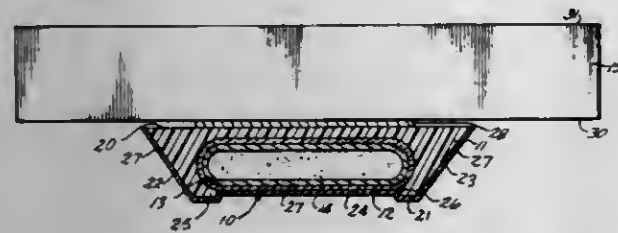
U.S. Cl. 362-84

16 Claims

1. A self-luminous lighting system comprising:  
an elongated sealed glass tube filled with a radioactive material;  
a phosphor in the tube, the phosphor emitting light from the tube responsive to the radioactive material;  
an elongated light diffusive body encapsulating the tube, one



portion of the side surface of the body forming a front face wider than the tube;  
a substantially total reflector extending around the entire



side surface of the body except for the front face to reflect the light emitted from the tube toward the front face; and means for changing the distribution of the light emitted from the tube as it leaves the front face.

4,285,030

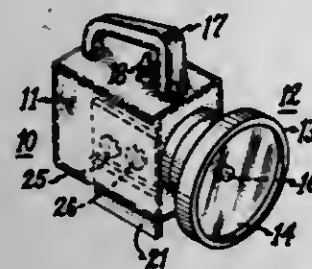
## FLASHLIGHT ASSEMBLY

Richard A. Menelly, 10798 4th Ave., Hesperia, Calif. 92345

Filed Nov. 26, 1979, Ser. No. 97,137

Int. Cl.<sup>3</sup> F21L 7/00

U.S. Cl. 362—200 Q



1. A flashlight comprising:  
a lamp assembly including means for mounting a bulb, reflector, and lens;  
a housing having a slotted portion for receiving a rectangular battery source;  
electrode means within said housing for contacting a pair of electrodes on said battery;  
a first electrical connector between one of said housing electrodes and said lamp mounting means and a second conductor connecting between the other of said electrodes on said housing and said lamp mounting means;  
a switch electrically connected in series with one of said first and second electrical connectors;  
said slotted portion extending through the interior of said housing from a bottom portion of said housing to a top portion;  
a guide member extending from an interior portion of said housing for centering said battery within said housing; and  
a retaining member attached to an interior portion of said housing for slidably engaging said battery.

4,285,031

## PORTABLE SEARCHLIGHT

Hans-Jürgen Reiss, Birkenallee 4, 2000 Schenefeld, Fed. Rep. of Germany

Filed Jan. 9, 1978, Ser. No. 867,929

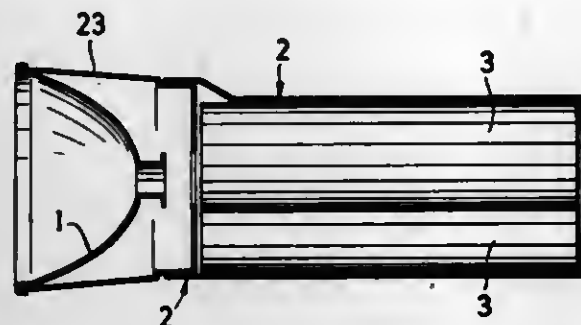
Int. Cl.<sup>3</sup> F21L 7/00

U.S. Cl. 362—205

14 Claims

1. A portable searchlight having a reflector housing, a casing which conforms substantially to at least three circular, cylindrical, batteries positioned adjacent one another along their generatrices so that said casing receiving said batteries has the same center of curvature as the battery surface, said casing having soft, elastic portions at least in the regions between the batteries to provide deformable hand holding areas in the casing, said casing serving to maintain said batteries in positions where the longitudinal axes lie, in cross-section, at the

apices of an equilateral triangle, said casing being hermetically sealed to said reflector housing and switch means for control-



ling actuation of said searchlight, said switch means being positioned internally of said casing and along the side thereof said batteries, so as to be operable through said casing.

4,285,032

## TUBULAR INCANDESCENT LAMP

Kiyokazu Honda, Zushi; Yoshiji Yoshiike, Yokosuka; Katsuo Muraki, Imabari, and Teruyoshi Kawamata, Touyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki and Harison Electric Co., Ltd., Imabari, both of Japan

Filed Jul. 30, 1979, Ser. No. 62,149

Claims priority, application Japan, Aug. 7, 1978, 53/107450[U]

Int. Cl.<sup>3</sup> F21S 3/00

U.S. Cl. 362—224

2 Claims



1. A tubular incandescent lamp for illuminating an adjacent surface which comprises:  
an elongate transparent envelope; and  
a plurality of small lamps linearly arranged and extending lengthwise through the envelope, each of said small lamps containing a helically coiled filament and lead lines for connecting the filament of each lamp to at least one adjacent lamp, said lead lines elongating in use so that said lamps incline in said envelope, and wherein the difference between the inner diameter of the envelope and the outer diameter of the respective small lamps is 2 mm or less to limit the inclination of said lamps and thus to limit variations in intensity of illumination from said lamps onto said surface.

4,285,033

## LAMPHOLDER—SWITCH MODULE

James A. Hart, Marshall, Mich., assignor to Progressive Dynamics, Inc., Marshall, Mich.

Filed Jul. 25, 1979, Ser. No. 60,666

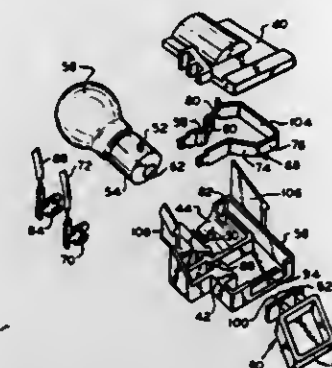
Int. Cl.<sup>3</sup> F21V 23/00

U.S. Cl. 362—295

10 Claims

1. A lamp assembly comprising, in combination, a base having a supporting surface, a pair of lampholder receiving openings defined in said base spaced from each other, a combination lampholder and switch assembly mounted on said base, said lampholder and switch assembly including a pair of resilient cantilever fingers each having a free end, an abutment surface defined on each finger free end, the normal spacing between said fingers' free ends slightly differing from the spacing between said openings whereby upon deflection of said fingers said free ends thereof may be received within said openings

and said abutment surfaces engage said base preventing withdrawal of said fingers from said openings wherein said lamp-



holder and switch assembly is mounted on said base with a snap-in movement.

4,285,034

## ENCLOSED INDUSTRIAL LUMINAIRE

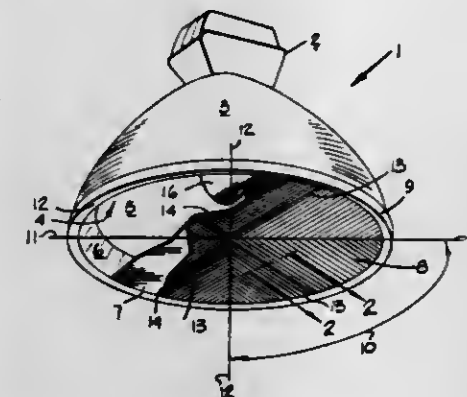
Daryl D. Sullivan, Newark, Ohio, assignor to Johns-Manville Corporation, Denver, Colo.

Filed Jun. 13, 1979, Ser. No. 48,287

Int. Cl.<sup>3</sup> F21V 7/00

U.S. Cl. 362—305

11 Claims



1. A luminaire for use as a downlight comprising a reflector including an inner reflective surface having a shape corresponding to a surface of revolution and including an opening in the bottom thereof; a lamp positioned within said reflector; a refractive lens positioned below said lamp and in said opening of said reflector; said inner reflective surface is divided into a first reflective portion and a second reflective portion, one of said reflective portions having a metallic specular finish, the remaining portion of said reflective portions having a white finish.

4,285,035

## APPARATUS AND METHOD FOR REWRITE DATA INSERTION IN A THREE DESCRIPTOR INSTRUCTION

Jerry L. Kindell, Glendale, and Richard T. Flynn, Peoria, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jan. 2, 1979, Ser. No. 221

Int. Cl.<sup>3</sup> G06F 9/30

U.S. Cl. 364—200

6 Claims

1. In a microprogrammed data processing unit wherein, in a three descriptor instruction, a first and a second operand identify locations in memory storing a first and a second operand utilized in said three descriptor instruction, wherein an operand resulting from execution of said instruction can be stored in a resulting memory location identified by a third descriptor of said three descriptor instruction, wherein a group of resulting operand words in said resulting memory location can include non-operand data in the boundary words, apparatus for preserving said non-operand data comprising:

first storage means for storing a first word of said resulting

memory location wherein most significant operand data is to be stored, said first word stored during execution of said instruction;

second storage means for storing a second word of said resulting memory location wherein least significant data is to be stored, said second word stored during execution of said instruction;

third storage means for temporarily storing words of said resulting operand; and

INSTRUCTION FORMAT									
ADD - ADD USING 2 DECIMAL OPERANDS									
INSTRUCTION	OP	OP2	OP1	OP0	OP3	OP4	OP5	OP6	OP7
DESCRIPTION 1	11	10	09	08	07	06	05	04	03
DESCRIPTION 2	12	11	10	09	08	07	06	05	04

INSTRUCTION FORMAT									
ADD - ADD USING 3 DECIMAL OPERANDS									
INSTRUCTION	OP	OP2	OP1	OP0	OP3	OP4	OP5	OP6	OP7
DESCRIPTION 1	11	10	09	08	07	06	05	04	03
DESCRIPTION 2	12	11	10	09	08	07	06	05	04

combining means coupled to said first storage means and said third storage means for combining non-resulting operand data in said first storage means with most significant data of said resulting operand when said most significant data of said resulting operand is in said third storage means; said combining means combining non-resulting operand data in said second storage means with least significant data of said resulting operand when said least significant data is in said third storage means.

4,285,036

## DATA PROCESSING DEVICE USING A SUBROUTINE CALL INSTRUCTION

Yukio Kitagawa, Yokohama, and Yoshiaki Moriya, Inagi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

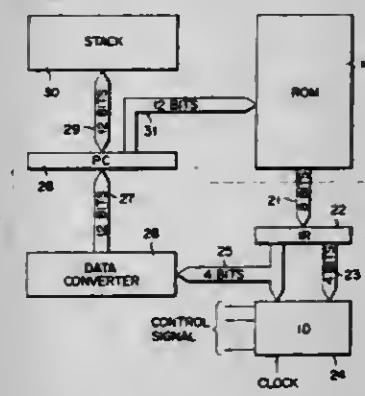
Filed Jan. 22, 1979, Ser. No. 5,212

Claims priority, application Japan, Feb. 2, 1978, 53/10930

Int. Cl.<sup>3</sup> G06F 9/40

U.S. Cl. 364—200

8 Claims



1. A data processing device for executing a subroutine CALL instruction to CALL a subroutine, the CALL instruction including an operation code and a memory address to alter the sequence of program execution by setting a program counter of predetermined bit length to the address included in the CALL instruction, said data processing device comprising:  
an assembler for converting said operation code and said memory address into object code;  
a read only memory for storing instructions or data, said read only memory for selectively outputting said stored instructions or data;  
an instruction register connected to said read only memory for storing one of said instructions outputted from said read only memory;



an instruction decoder connected to said instruction register for decoding said instruction stored in said instruction register to produce corresponding control signals;  
data converting means connected to said instruction register and said assembler for receiving said object code from said assembler and for converting said object code into an address with a bit length corresponding to said predetermined bit length of said program counter, said program counter being connected to said data converting means for storing said converted address; and  
a stack connected to said program counter for storing a return address of said called subroutine.

4,285,037

**CIRCUIT ARRANGEMENT FOR A SWITCHING SYSTEM**  
Hanns N. Von Stetten, Soecking, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

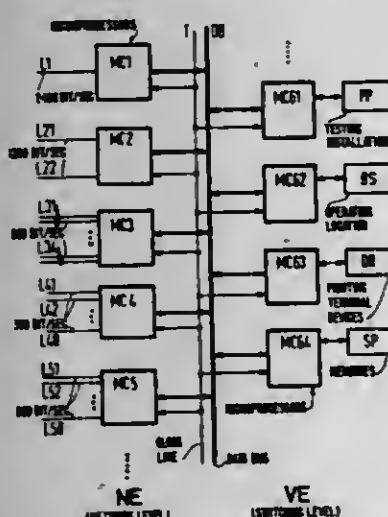
Filed May 9, 1979, Ser. No. 37,506

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1978, 2827270

Int. Cl.<sup>3</sup> G06F 15/16

U.S. Cl. 364-200

8 Claims



1. A circuit arrangement for a switching system having microprocessors operable in a transmitting mode to transmit data and in a receiving mode to receive data and communicating with each other over a data bus carrying information blocks including addresses, for decentralized execution of switch-oriented functions, comprising:

- a plurality of connection lines each having a respective address and each representing a data transmission speed and adapted for connection to data transmission/receiving devices;
- a plurality of processing devices each of which has a respective address and is operable to perform a predetermined function;
- a plurality of microprocessors each autonomously operable with respect to its own functions, first ones of said microprocessors being in a network level and each connected to at least one of said connection lines, and second ones of said microprocessors being in a switching level and connected to respective ones of said processing devices;
- a data bus connected to each of said microprocessors for carrying the information blocks including addresses identifying said connection lines and said processing devices; and
- a clock pulse bus connected to each of said microprocessors for carrying cyclically occurring clock pulses for rendering a respective microprocessor connected to said data bus and operable in a transmitting mode to transmit an information block and all other microprocessors simultaneously connected to said data bus and operable in a receiving mode to receive an information block, each of said microprocessors operable only in response to the address of the respective connection line or respective

processing device connected thereto for receiving the information block containing the relevant address.

4,285,038

**INFORMATION TRANSFER CONTROL SYSTEM**

Seigo Suzuki, Yokohama; Seiji Eguchi, Kawasaki, and Yoshiaki Moriya, Inagi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

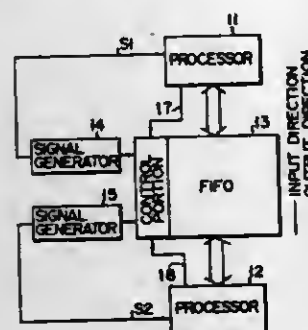
Continuation-in-part of Ser. No. 732,702, Oct. 15, 1976,

abandoned. This application Jun. 21, 1979, Ser. No. 50,593

Int. Cl.<sup>3</sup> G06F 13/00, 3/00

U.S. Cl. 364-200

4 Claims



1. An information transfer control system for controlling bidirectional transfer of information comprising:

- first and second information processors;
- a first-in first-out memory provided between said first and second information processors for temporarily storing information transferred from said first or second information processor;
- bus means interconnecting said first information processor and said first-in first-out memory and interconnecting said second information processor and said first-in first-out memory whereby information can be transferred from said first and second processors to said first-in first-out memory and from said first-in first-out memory to said first and second information processors;
- status signal generating means in said first-in first-out memory for producing a FULL signal when said memory is substantially full of information and an EMPTY signal when said memory has no stored information;
- first direction signal generating means for producing a first direction signal specifying that information is to be transferred from said first information processor to said first-in first-out memory and for producing a second direction signal specifying that information is to be transferred from said memory to said first information processor; and
- first control means having input terminals connected to said status signal generating means and said first direction signal generating means and an output terminal connected to said first information processor and applying a first data transfer inhibit signal to said first information processor when said FULL signal and said first direction signal are present at the same time and when said EMPTY signal and said second direction signal are present at the same time.

4,285,039

**MEMORY ARRAY SELECTION MECHANISM**

Garvin W. Patterson, Glendale, and Wolfgang G. Stehr, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 891,085, Mar. 28, 1978, abandoned.

This application Dec. 14, 1979, Ser. No. 103,646

Int. Cl.<sup>3</sup> G06F 13/00

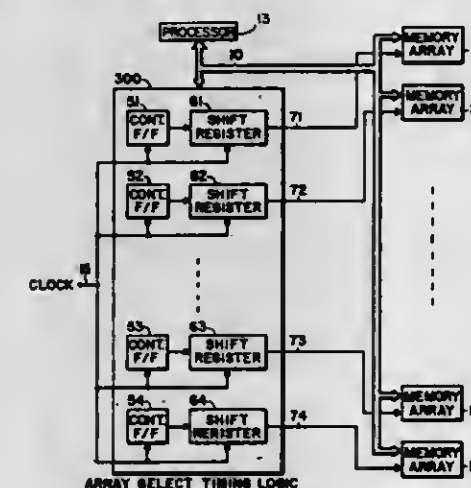
U.S. Cl. 364-200

7 Claims

1. An expanded memory system for use in a data processing system including a processor capable of generating a predetermined number of unique memory location addresses, and executing at least one program instruction for controlling the operation of said data processing system, said processor executing said at least one program instruction in one or more

instruction execution cycles, each of said cycles being synchronized with a clock signal generated by said processor, said expanded memory system comprising:

- first and second memory arrays, said memory arrays containing a combined total number of uniquely addressable memory locations exceeding said predetermined number, said first memory array storing said at least one program instruction and said second memory array storing data,
- a bus for communicating information and control signals between said data processing system and said memory arrays, said information comprising instructions, data, and memory location addresses, and
- memory array selection means responsive to said information and said control signals received over said bus for enabling either said first or second memory array to be addressed by said processor, said memory array selection means comprising:



shift register means, said shift register means having a number of stages equal to the number of instruction execution cycles required to execute said at least one program instruction, said shift register means being loadable by said processor with a pattern of data bits over said bus, said shift register means shifting its contents to an output thereof in response to control signals received over said bus, each of said control signals being synchronized with said clock signal, and

means responsive to said shift register means output for enabling either said first or second memory array to be addressed by said processor, said first memory array being enabled when said shift register means output is at a first logical level and said second memory array being enabled when said shift register means output is at a second logical level.

4,285,040

**DUAL MODE VIRTUAL-TO-REAL ADDRESS TRANSLATION MECHANISM**

Lewis R. Carlson, and Dennis C. Gassman, both of Salt Lake City, Utah, assignors to Sperry Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 848,535, Nov. 4, 1977. This

application Jan. 8, 1980, Ser. No. 110,511

Int. Cl.<sup>3</sup> G06F 13/00

U.S. Cl. 364-200

5 Claims

3. In a computer system including a first storage means responsive to real addresses; second storage means for storing a virtual address; and a translating mechanism for translating a virtual address to form a real address, said virtual address having first, second and third portions; the improvement comprising:

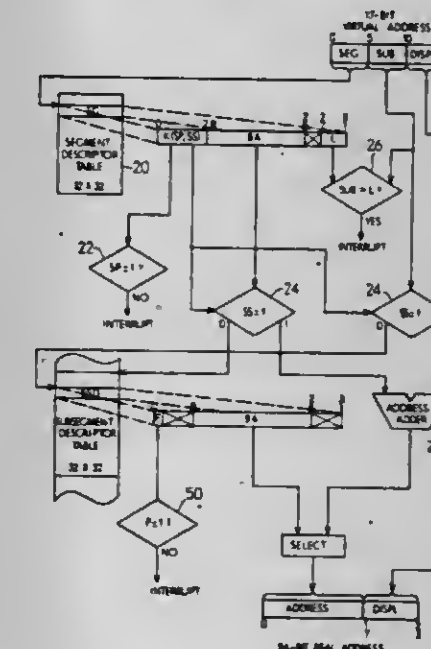
- first table storage means for storing a table comprised of a plurality of segment descriptors, each of said segment descriptors having a first field portion and a second field portion;
- second table storage means for storing a table comprised of

a plurality of subsegment descriptors, each of said subsegment descriptors having field portions;

selecting means responsive to the contents of said first portion of said virtual address stored in said second storage means for selecting a predetermined one of said plurality of segment descriptors from said table stored in said first table storage means;

control means responsive to the contents of said first field portion of said selected segment descriptor for controlling said translating mechanism to operate in either a first or a second mode of operation for translating said virtual address into said real address;

adder means responsive to said control means for adding said second portion of said virtual address to said second field portion of said selected segment descriptor to form a



sum when said translating mechanism is controlled to operate in said first mode;

concatenating means responsive to said control means for concatenating said third portion of said virtual address onto said sum to form said real address when said translating mechanism is controlled to operate in said first mode and responsive to said control means for concatenating said second portion of said virtual address onto said second field portion of said selected segment descriptor for selecting a predetermined one of said plurality of subsegment descriptors when said translating mechanism is controlled to operate in said second mode; and means for thereafter concatenating said third portion of said virtual address onto a field portion of said selected subsegment descriptor to form said real address in said second mode of operation.

4,285,041

**DIGITAL PACING TIMER**

Kent G. Smith, 51 W. 83rd St., New York, N.Y. 10024

Filed Jun. 22, 1979, Ser. No. 51,016

Int. Cl.<sup>3</sup> G06F 15/42; A63B 5/00

U.S. Cl. 364-415

32 Claims

1. A pacing timer for runners including:

- (a) a memory including means for storing information corresponding to
  - (i) a plurality of stride lengths with the stride lengths corresponding to various speeds of running,
  - (ii) at least one split distance to be run, and
  - (iii) at least one target time in which the runner is to complete said split distance;
- (b) means for determining the speed at which said split distance is to be run from said split distance and target time information stored in said memory;
- (c) means for identifying from said plurality of stride lengths















length, and has a thickness greater than about 10 nanometers; and  
a light absorptive layer overlying said transmissive layer of a material which is absorptive of light at said wavelength;



wherein said transmissive layer is comprised of a material which melts, decomposes or sublimates at a temperature at least 300° C. less than the melting temperature of the material which comprises said absorptive layer.

4,285,057

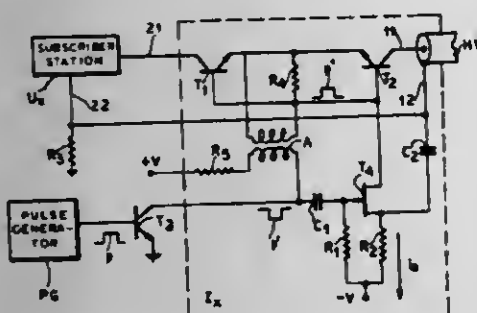
### SAMPLING GATE FOR TDM TELECOMMUNICATION SYSTEM

Amos Shueitz, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy  
Filed Dec. 21, 1979, Ser. No. 105,878

Claims priority, application Italy, Dec. 22, 1978, 31257 A/78  
Int. Cl.<sup>3</sup> H04J 3/02; H03K 17/00

U.S. Cl. 370-112

6 Claims



1. In a telecommunication system in which a plurality of subscriber lines each having a live wire and a reference wire are provided with individual sampling gates controlled by timing pulses enabling the exchange of message samples, during a time slot allocated to a given subscriber line, between the live wire thereof and a first conductor of a common trunk line having a second conductor connected to the reference wires of said subscriber lines,

the improvement wherein said sampling gate comprises:

a pair of junction transistors of like conductivity type serially inserted in bucking relationship between said first conductor and the live wire of the associated subscriber line, said junction transistors being provided with inter-connected bases and emitters forming part of an input circuit thereof coupled to a generator of said timing pulses;

electronic switch means normally connecting said bases to a supply of biasing potential cutting off said junction transistors, said electronic switch means being coupled to said generator for disconnecting said bases from said supply in the presence of timing pulses whereby said junction transistors conduct during an allocated time slot;

first resistance means in series with said electronic switch means;

second resistance means connecting said supply to said second conductor; and

capacitive means establishing a low-impedance path for incoming message samples between said second conductor and said bases via said electronic switch means in the absence of timing pulses.

4,285,058

### WAVEFORM CORRECTION BY SAMPLING

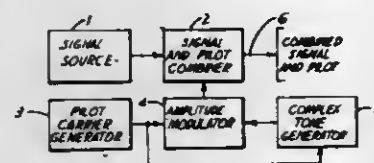
Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec H3H 1T1, Canada, and Sidney T. Fisher, 53 Morrison Ave., Mt. Royal, Montreal, Quebec H3R 1K3, Canada

Filed Feb. 26, 1980, Ser. No. 124,803

Int. Cl.<sup>3</sup> H04J 15/00; H04B 1/76

U.S. Cl. 370-119

2 Claims



1. A continuous automatic waveform correction system, comprising transmitting apparatus which combines a signal with a periodic pilot extending substantially across the frequency band of said signal, and receiving apparatus which requires said combined signal with waveform distortion, and substantially corrects said waveform distortion in variable gain means, adjusted in gain by comparison means which compares said pilot as received and separated by subtraction means from said signal, with a pilot generated in said receiving apparatus, and pilot elimination means which substantially eliminates said pilot from said signal after said waveform distortion correction in said signal after said waveform distortion correction in said variable gain means, and delivers said signal substantially free from said waveform distortion and from said pilot to an external circuit.

4,285,059

### CIRCUIT FOR TEST OF ULTRA HIGH SPEED DIGITAL ARITHMETIC UNITS

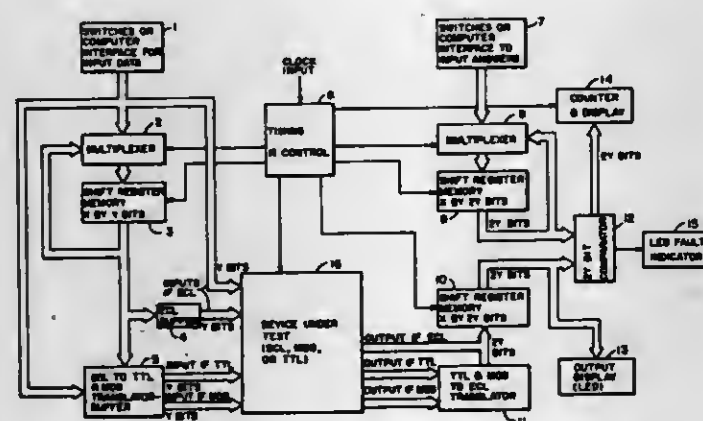
Donald W. Burlage, and James F. Lancaster, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 10, 1979, Ser. No. 101,927

Int. Cl.<sup>3</sup> G06F 11/22; G01R 15/12, 31/00

U.S. Cl. 371-25

2 Claims



1. A method for testing ultra high speed digital equipment comprising the steps of selecting an input signal to be fed through the digital equipment; storing this input signal in a first shift register; selecting an expected output signal which should be presented if the input signal was fed through said digital equipment; storing this expected output signal in a second shift register; feeding the input signal from the first shift register into the digital equipment; and comparing the output from the

digital equipment with the expected output signal stored in the second shift register to detect faults.

4,285,060

### SPREAD SPECTRUM CODE TRACKING LOOP

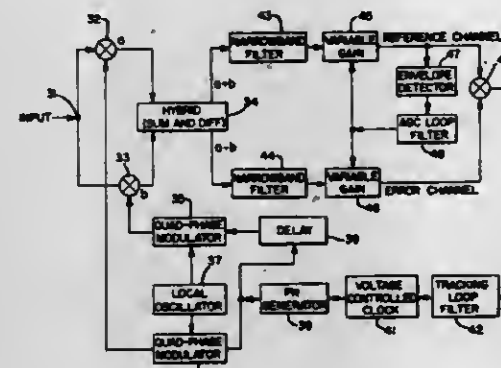
Raymond F. Cobb, Melbourne Beach, and M. Guy Palchat, Indianatic, both of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Feb. 28, 1978, Ser. No. 882,069

Int. Cl.<sup>3</sup> H04B 15/10

U.S. Cl. 375-1

15 Claims



1. A code timing recovery system for a spread spectrum receiver comprising:

first means for combining a received spread spectrum signal containing a transmitted random sequence of pulses with first and second locally generated random sequences of pulses having a prescribed phase difference therebetween, to thereby produce first and second output signals representative of correlations of the random sequence of pulses contained in said received spread spectrum signal with said first and second locally generated random sequences of pulses, respectively, and

second means, coupled to said first means, for controlling the timing of said first and second locally generated random sequence of pulses in accordance with the difference between the squares of said first and second output signals.

4,285,061

### EQUALIZER SAMPLE LOADING IN VOICEBAND DATA SETS

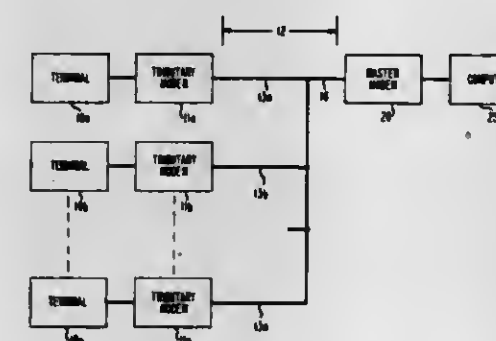
Edmond Y. Ho, Colts Neck Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 14, 1979, Ser. No. 75,647

Int. Cl.<sup>3</sup> H04B 3/14

U.S. Cl. 375-15

16 Claims



12. Apparatus for determining the Hilbert transform component values  $r(t)$  and  $i(t)$  of a received complex data signal at a plurality of time points spaced  $T/p$  seconds apart, the frequency spectrum of said signal being comprised of at least a first plurality of spectral lines spaced  $2\pi/NT$  radians/second apart, said apparatus comprising

first means (21, 23, 27, 28) for determining the Hilbert trans-

form component values of said signal at  $Np$  initial ones of said time points, and  
second means (301, 305, 308, 311) for determining the Hilbert transform component values of said signal at each remaining one of said plurality of time points as a function of the values thereof at a respective associated one of said initial time points.

4,285,062

### DIGITAL MULTI-LEVEL MULTI-PHASE MODULATION COMMUNICATION SYSTEM

Yasuharu Yoshida; Yoshimi Tagashira, and Seiji Yokoyama, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

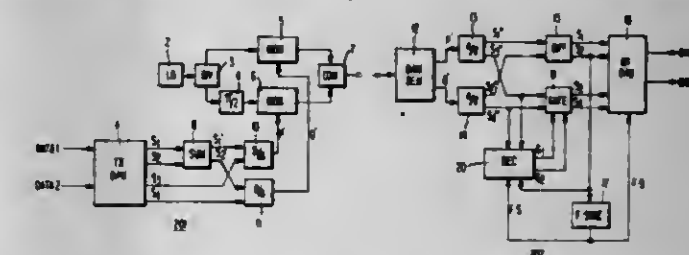
Filed Sep. 28, 1979, Ser. No. 79,725

Claims priority, application Japan, Oct. 3, 1978, 53-122235

Int. Cl.<sup>3</sup> H04L 3/00, 27/18

U.S. Cl. 375-20

8 Claims



1. A digital multi-level multi-phase modulation communication system having a transmitting section and a receiving section, wherein said transmitting section includes:

first means for performing quaternary differential encoding on the first two trains of  $N$  digital signal trains ( $N$  is an integer of 4 or more), a frame pulse being included in at least three of said  $N$  digital signal trains, to generate a first pair of digital signals; and

second means for generating a modulated wave by performing multi-level multi-phase modulation on a carrier with a first set of digital signals comprising the remaining  $(n-2)$  trains of said  $N$  digital signal trains and said first pair of digital signals; and wherein said receiving section includes:

third means for performing coherent detection and multi-level decision on said modulated wave to recover said carrier and generate a second set of digital signals and a second pair of digital signals corresponding to said remaining  $(N-2)$  trains of said  $N$  digital signal trains and said first pair of digital signals respectively;

fourth means for performing quaternary differential decoding on said second pair of digital signals to generate said first two trains of digital signal;

fifth means for generating a frame synchronization output signal and establishing frame synchronization by means of the output signal from said fourth means;

sixth means responsive to the output of said fifth means for extracting frame pulses corresponding to said frame pulses included in said remaining  $(N-2)$  trains of said  $N$  digital signal trains and in the output signal of said fourth means;

seventh means responsive to the output of said sixth means for generating a control signal representing the phase-locking state of the carrier recovered in said third means; and

eighth means responsive to said control signal for converting said second set of digital signals into the same trains as said remaining  $(N-2)$  trains of said  $N$  digital signal trains.



4,285,063

## APPARATUS FOR PROVIDING EVENLY DELAYED DIGITAL SIGNALS

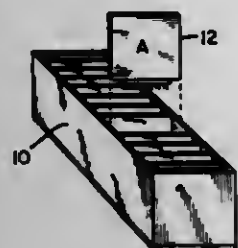
Terry B. Zhinda, Maple Grove, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 47,518

Int. Cl.<sup>3</sup> H04N 5/04; H04L 7/00

U.S. Cl. 375-106

4 Claims



1. In a digital computer system comprising a plurality of discrete modular assemblies that are located at various electrical distances from each other, a system for ensuring that a digital signal originating in one of said modular assemblies is delayed an equal amount at all modular assemblies receiving such digital signal comprising:

each of said receiving modular assemblies including substantially similar digital signal delay means for receiving a digital signal from an originating other one of said modular assemblies and generating a delayed digital signal, said digital signal delay means comprising:

delay line means for receiving a digital signal and generating in response thereto a plurality of delayed digital signals, each one of said delayed digital signals delayed incrementally increasing delay times and coupled to a corresponding separate one of a like plurality of delay line output lines;

a plurality of select lines; and

selector means responsively coupled to said select lines and to said delay line output lines for coupling to a single selector means output line a selected one of said delayed digital signals;

means for coupling said digital signal from the originating one of said modular assemblies to the delay line means of the receiving ones of said modular assemblies; and,

means coupling digital selection signals to each of the select lines of the receiving ones of said modular assemblies for selecting evenly delayed digital signals at all of said receiving modular assemblies, which evenly delayed digital signals are delayed an equal amount with respect to the digital signal originating at the originating modular assembly.

4,285,064

## TDMA SATELLITE COMMUNICATION SYSTEM

Gene D. Hodge, Germantown, Md., assignor to IBM Corporation, Armonk, N.Y.

Filed Sep. 28, 1979, Ser. No. 79,927

Int. Cl.<sup>3</sup> H04B 7/185

U.S. Cl. 455-13

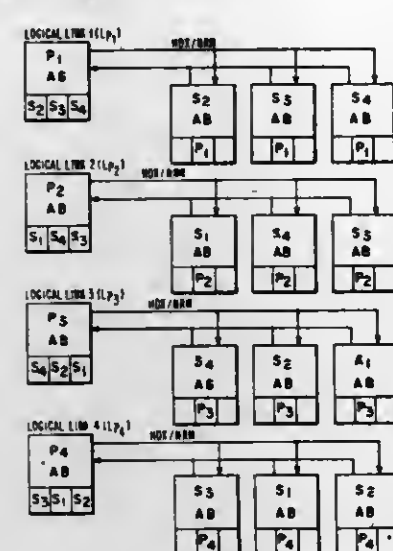
6 Claims

2. A satellite communications controller being one of a plurality of such controllers for operation in a network having a plurality of communication nodes over a satellite link, each node having one such controller, the local controller assuming a primary control status while the remaining remote controllers in said network assume a secondary control status during a first point-to-multipoint broadcast subnetwork operation between said local controller and said remaining remote controllers, said local controller transferring said primary control function from itself to one of said remaining remote controllers establishing point-to-multipoint data and control transmission from said one of said remaining controllers while said local controller assumes a secondary control status, comprising:

a first level control means in said controller for implement-

ing the point to multipoint subnetwork connection between said controller and said remaining controllers in said network;

ACK/ACK BUFFERS



a second level control means in said controller for passing the primary station status from one node to another over said satellite link; whereby time division multiple access communication between said nodes in said network is achieved.

4,285,065

## RADIO WITH AUDIO GRAPHIC EQUALIZER

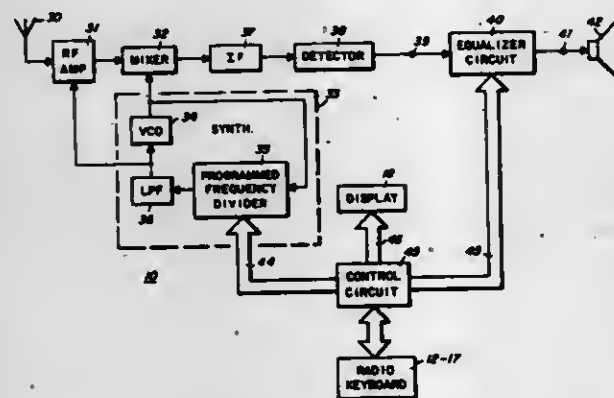
David J. Priniski, Lake-in-the-Hills, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 21, 1980, Ser. No. 114,018

Int. Cl.<sup>3</sup> H04B 1/16; H03G 3/02

U.S. Cl. 455-158

17 Claims



1. A multichannel entertainment device with an audio graphic equalizer, comprising:

multichannel entertainment means tunable to select any of a plurality of entertainment channels for providing corresponding audio signals in an audio band related to the selected entertainment channel;

equalizer means coupled to said entertainment means for independently adjusting the relative emphasis of said audio signals in each of a plurality of audio subbands within said audio band;

common visual display means for selectively providing either of two displays, in a tuning-mode of said entertainment device said display means displaying an indication of the entertainment channel to which the entertainment means is tuned, and in an equalizer mode of said entertainment device said display means displaying an electronic display indication of the relative emphasis provided by said equalizer means to the audio signals in said plurality of subbands; and

control means coupled to said entertainment means, said equalizer means and said display means for selectively

implementing said equalizer mode wherein said display means displays the relative emphasis of said audio subbands rather than said indication of the tuned entertainment channel, and for selectively implementing said tuning mode wherein said display means displays the indication of the entertainment channel rather than the relative emphasis of said audio subbands.

4,285,066

## RECEIVER HAVING A SEARCH TUNING CIRCUIT

Theodorus H. M. Van Deursen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 7, 1980, Ser. No. 110,290

Claims priority, application Netherlands, Jan. 17, 1979, 7900350

Int. Cl.<sup>3</sup> H03J 7/22

U.S. Cl. 455-166

5 Claims

1. A tuning circuit for a receiver comprising:

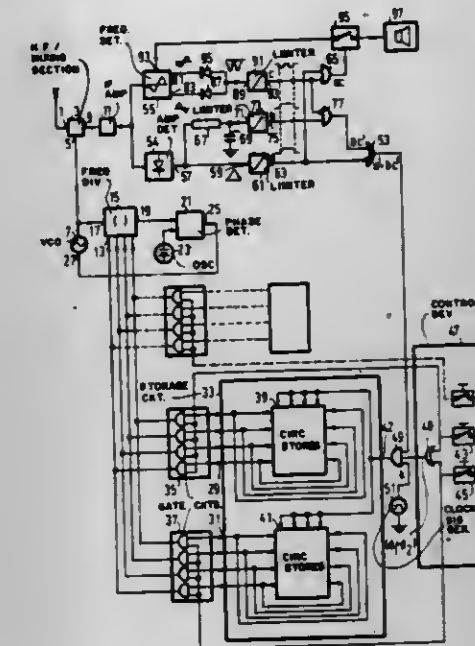
memory means which includes a plurality of scannable groups of tuning data, each tuning datum representing a frequency of a desired radio transmitter, said memory means further including a separate output for each of said groups;

search means coupled to said memory means for incrementally selecting a tuning datum of said tuning data in each of said scannable groups;

a scannable group selection means coupled to said separate outputs for selecting one of said scannable groups, said receiver then being tuned to said selected tuning datum in said selected scannable group;

means coupled to said search means for stopping the incre-

mental scanning upon the reception of a received signal having sufficient field strength; and



means for automatically restarting said search means if the frequency of the received signal does not correspond to said tuning datum selected by said search means from the tuning data in said selected scannable group.



# DESIGNS

AUGUST 18, 1981

260,195

## FROZEN CONFECTION

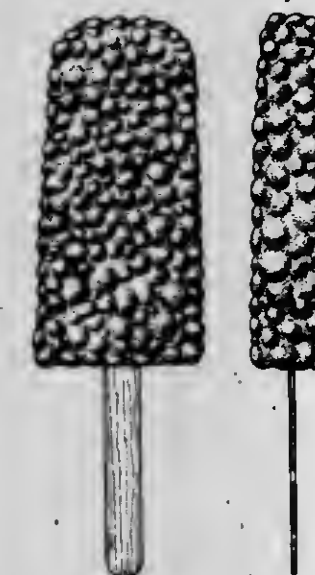
Thomas R. Kelly, Wellingborough, and Vijay A. Sawant, Stanwick, both of England, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Filed Feb. 26, 1979, Ser. No. 15,383

Claims priority, application United Kingdom, Aug. 30, 1978, 966145/78

Term of patent 14 years  
Int. Cl. D01—07

U.S. Cl. D1—22



260,197

## VIDEO CASSETTE STORAGE TRAY

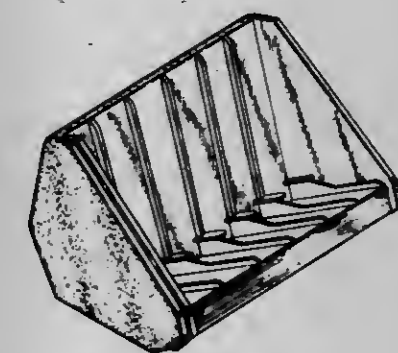
Jerry M. Long, Ben Lomond, and James A. Womack, Livermore, both of Calif., assignors to Innovative Concepts, Inc., San Jose, Calif.

Filed Jun. 1, 1979, Ser. No. 44,367

Term of patent 14 years

Int. Cl. D3—02

U.S. Cl. D3—35



260,198

## HANDBAG

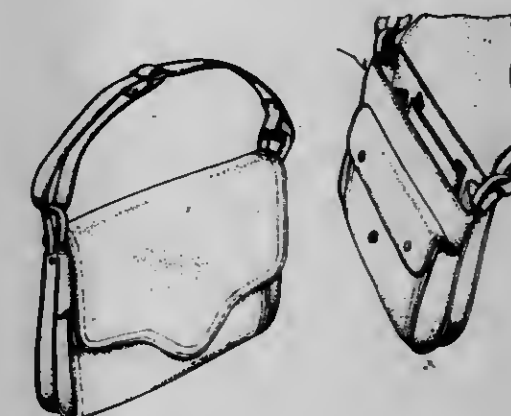
Milton I. Siegel, Martinsville, N.J., assignor to AMBA Marketing Systems, Inc., Tempe, Ariz.

Filed May 4, 1979, Ser. No. 35,925

Term of patent 14 years

Int. Cl. D3—01

U.S. Cl. D3—48



260,196

## ELASTOMERIC SHOESOLE

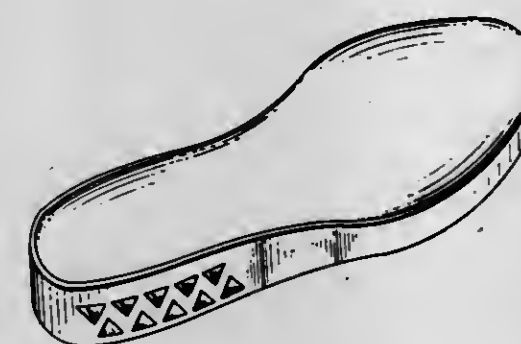
Stanley C. Plagenhoef, Amherst, Mass., assignor to Motion Analysis, Inc., Amherst, Mass.

Filed Jan. 2, 1979, Ser. No. 299

Term of patent 14 years

Int. Cl. D2—04

U.S. Cl. D2—319





260,199  
HANDBAG

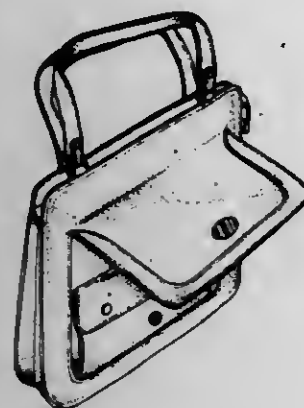
Milton I. Siegel, Martinsville, N.J., assignor to AMBA Marketing Systems, Inc., Tempe, Ariz.

Filed May 4, 1979, Ser. No. 35,922

Term of patent 14 years

Int. Cl. D3-01

U.S. Cl. D3-48



260,200  
HANDBAG

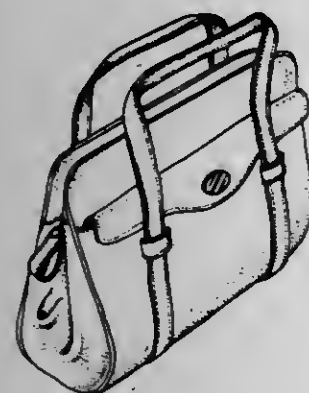
Milton I. Siegel, Martinsville, N.J., assignor to AMBA Marketing Systems, Inc., Tempe, Ariz.

Filed May 4, 1979, Ser. No. 35,924

Term of patent 14 years

Int. Cl. D3-01

U.S. Cl. D3-48



260,201  
HANDBAG

Milton I. Siegel, Martinsville, N.J., assignor to AMBA Marketing Systems, Inc., Tempe, Ariz.

Filed May 4, 1979, Ser. No. 35,923

Term of patent 14 years

Int. Cl. D3-01

U.S. Cl. D3-53



260,202  
COMPUTER TERMINAL CASE

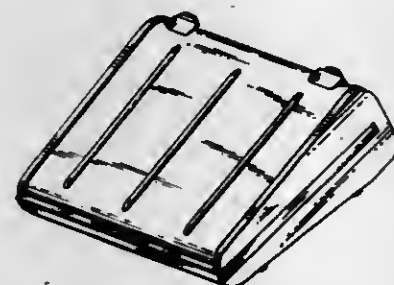
Charles F. Middleton, Jr., Sudbury, Mass., assignor to Computer Transceiver Systems, Inc., Paramus, N.J.

Filed Jun. 15, 1979, Ser. No. 48,819

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D3-72



260,203  
COMBINED SEAT AND EASEL

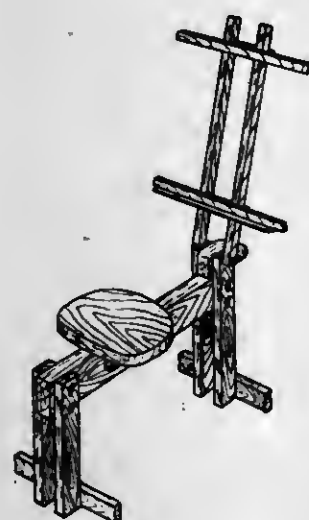
Peter K. Arnold, New Artist School of Fine Art, 8 Durham St. East, Auckland, New Zealand

Filed Dec. 21, 1978, Ser. No. 971,761

Term of patent 14 years

Int. Cl. D6-05

U.S. Cl. D6-17



260,204  
CHAIR

Richard Sapper, Stuttgart, Fed. Rep. of Germany, assignor to Knoll International, Inc., New York, N.Y.

Filed Mar. 1, 1978, Ser. No. 882,551

Claims priority, application Italy, Sep. 5, 1977, 22105 A/77

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-30



260,205  
ARMCHAIR

Randall P. Buhk, Wyoming, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed May 22, 1978, Ser. No. 908,143

The portion of the term of this patent subsequent to Oct. 23, 1993, has been disclaimed.

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D6-31



260,206  
PLATFORM USED PRIMARILY TO ELEVATE A CHILD'S AUTOMOBILE SEAT

Thomas G. Mulaar, McKinnon, Australia, assignor to Repco Limited, Melbourne, Australia

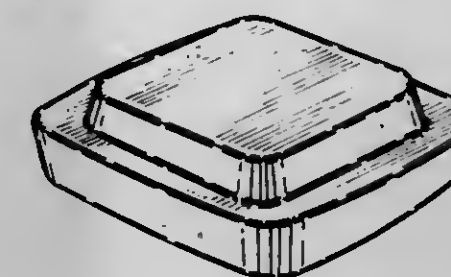
Filed Nov. 29, 1978, Ser. No. 964,639

Claims priority, application Australia, Aug. 14, 1978, 75570

Term of patent 14 years

Int. Cl. D6-99

U.S. Cl. D6-85



260,207  
PORTABLE BAR

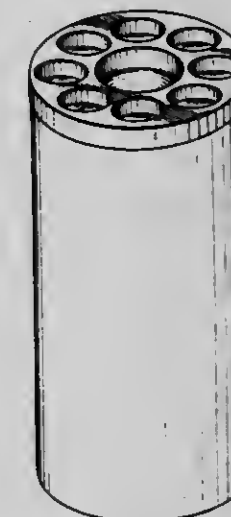
Adrian A. Whyte, Bardonia, N.Y., assignor to Schenley Industries, Inc., New York, N.Y.

Filed Aug. 31, 1978, Ser. No. 938,584

Term of patent 14 years

Int. Cl. D6-04

U.S. Cl. D6-144



260,208  
MULTIPLE MEDALLION DISPLAY RACK

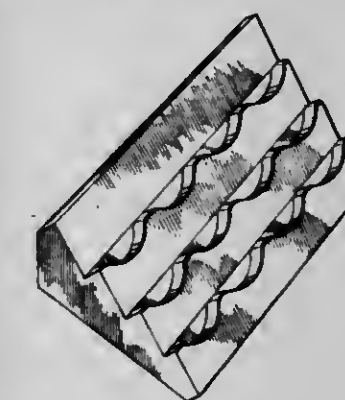
Donald Nutting, 1295 Ithica Dr., Boulder, Colo. 80303

Filed Aug. 6, 1979, Ser. No. 64,192

Term of patent 14 years

Int. Cl. D20-02

U.S. Cl. D6-157





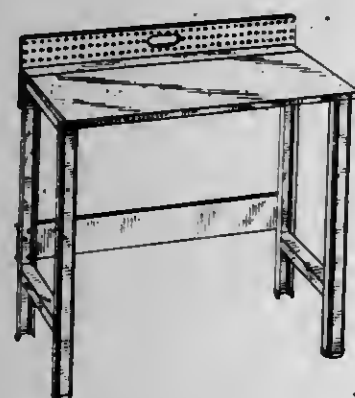
260,209

## WORKBENCH OR SIMILAR ARTICLE

Irwin J. Ferdinand, Glencoe; Richard Sylvan, Glenview, and Herbert Balach, Niles, all of Ill., assignors to Hirsh Company, Skokie, Ill.

Filed Jan. 29, 1979, Ser. No. 7,485  
Term of patent 14 years  
Int. Cl. D6-03

U.S. Cl. D6-177



260,211

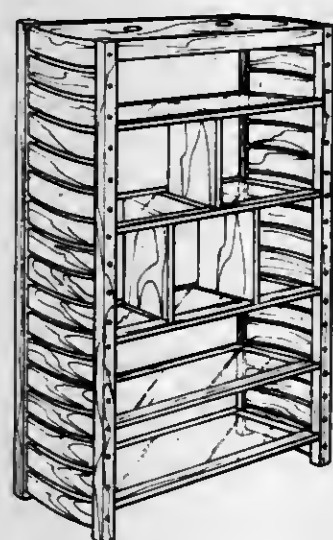
## BOOKCASE

Jobie G. Redmond, High Point, N.C., assignor to Jack Daniel Distillery, Lem Motlow, Prop., Inc., Lynchburg, Tenn.

Filed Nov. 8, 1978, Ser. No. 958,848

Term of patent 14 years  
Int. Cl. D06-04

U.S. Cl. D6-186



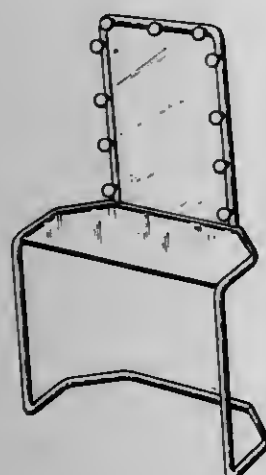
260,210

## DRESSING TABLE

Sidney Gibson, 229 Deloraine Ave., Toronto, Ontario, Canada (M5M 2B2)

Filed Apr. 24, 1979, Ser. No. 32,744  
Term of patent 14 years  
Int. Cl. D6-03

U.S. Cl. D6-180



260,212

## OPEN SHELF UNIT

Gabriella Crespi, Via Turati, 3, Milano, Italy

Filed Dec. 5, 1978, Ser. No. 966,729

Claims priority, application Italy, Sep. 21, 1978, 22830 A/78  
Term of patent 14 years  
Int. Cl. D06-04

U.S. Cl. D6-186



260,213

## COMBINED CABINET AND OPEN SHELF UNIT

Gabriella Crespi, Via Turati, 3, Milano, Italy

Filed Dec. 5, 1978, Ser. No. 966,730

Claims priority, application Italy, Sep. 21, 1978, 22830 A/78  
Term of patent 14 years  
Int. Cl. D06-04

U.S. Cl. D6-186



260,215

## LEG FOR AN INDUSTRIAL WORK TABLE

James P. O'Neill, Swansea, Mass., assignor to Automation Designs, Inc., Bristol, R.I.

Filed Apr. 9, 1979, Ser. No. 28,494

Term of patent 14 years  
Int. Cl. D6-06

U.S. Cl. D6-194



260,216

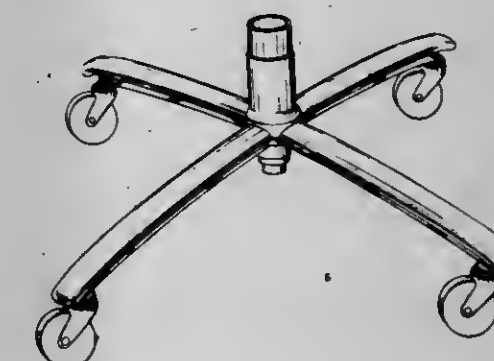
## CHAIR BASE

Randall P. Buhk, Wyoming, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed May 22, 1978, Ser. No. 908,146

Term of patent 14 years  
Int. Cl. D6-06

U.S. Cl. D6-196



260,214

## PEDESTAL

Marlan M. Lewis, Dallas, and Joe D. Carlock, Garland, both of Tex., assignors to Marlan M. Lewis, Inc.

Filed Jun. 23, 1978, Ser. No. 918,662

Term of patent 14 years  
Int. Cl. D6-06

U.S. Cl. D6-191



260,217

## STEPPED BACK REST CUSHION

Stanley A. Rhoe, 4770 N. 7th St., Unit 1180, Phoenix, Ariz. 85014

Filed Apr. 20, 1978, Ser. No. 898,406

Term of patent 14 years  
Int. Cl. D6-09

U.S. Cl. D6-201

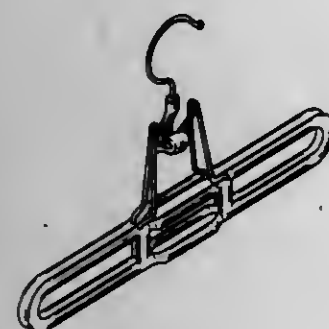




260,218

**COMBINED SKIRT AND TROUSER HANGER**  
 Leonard Bink, 7833 Spring Ave., Elkins Park, Pa. 19117  
 Filed Mar. 16, 1979, Ser. No. 20,900  
 Term of patent 14 years  
 Int. Cl. D6—08

U.S. Cl. D6—253

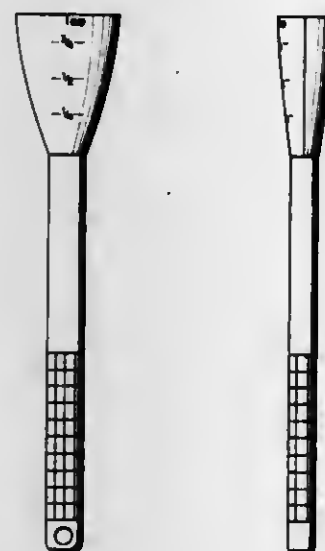


260,220

**MEASURING TOOL FOR LAUNDRY DETERGENT OR THE LIKE**  
 Arland R. Caffee, 556 Military Police Co., APO New York, N.Y. 09176

Filed Jun. 18, 1979, Ser. No. 49,202  
 Term of patent 14 years  
 Int. Cl. D10—04

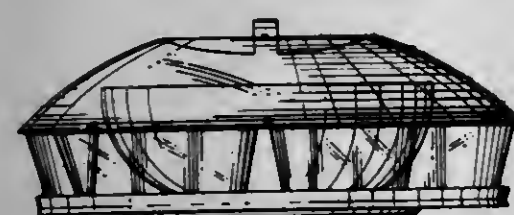
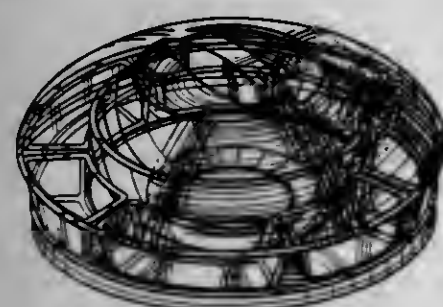
U.S. Cl. D7—50



260,219

**ROTATABLE FOOD SERVING ASSEMBLY**  
 Joseph W. Blake, South Salem, N.Y.; Richard H. Corbin, Westport, and Peggy P. Neale, Bridgeport, both of Conn., assignors to Dart Industries Inc., Los Angeles, Calif.  
 Filed Jun. 22, 1979, Ser. No. 51,259  
 Term of patent 14 years  
 Int. Cl. D07—01

U.S. Cl. D7—2



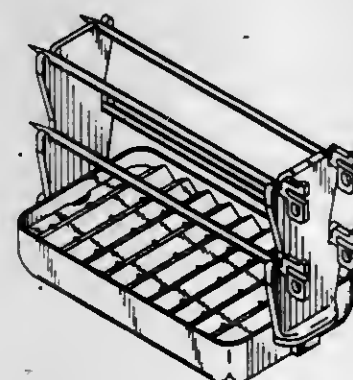
260,221

**COMBINED COOKING, ROASTING AND SHISHKEBOB PAN**

B. Paul Lee, deceased, late of Aurora, Colo., and by Esther M. Lee, personal representative, 1085 Dawson, Aurora, Colo. 80011

Filed Aug. 30, 1978, Ser. No. 938,319  
 Term of patent 14 years  
 Int. Cl. D07—02

U.S. Cl. D7—85

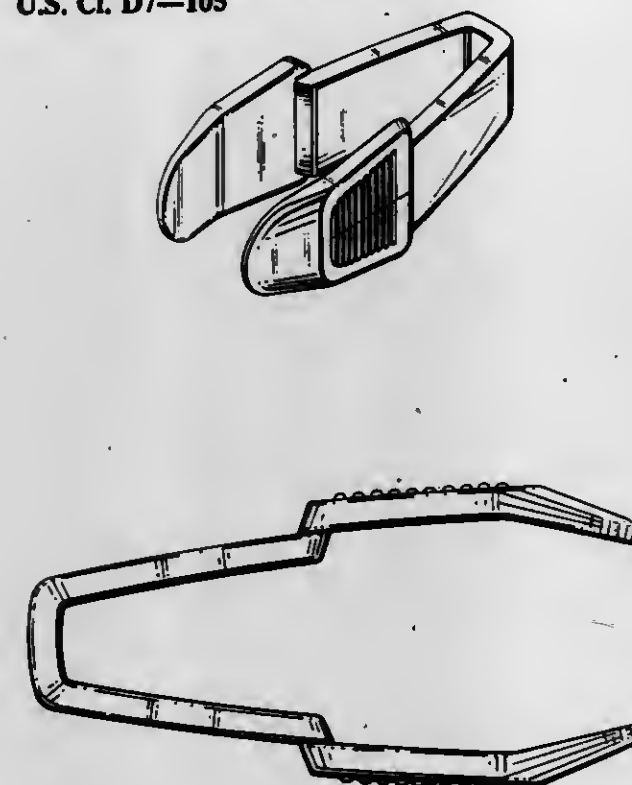


260,222

**STRAWBERRY HULLER OR THE LIKE**  
 Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Jul. 25, 1979, Ser. No. 60,556  
 Term of patent 14 years  
 Int. Cl. D07—04

U.S. Cl. D7—105



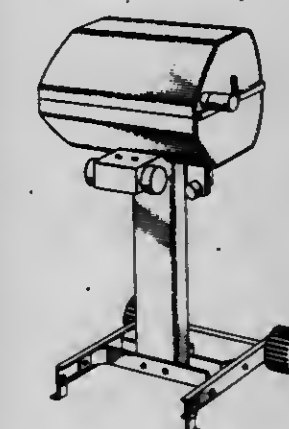
260,224

**BARBECUE GRILL**

Orville W. Larson, Elmhurst, Ill., assignor to Beatrice Foods Co., Bristol, Wis.

Filed Mar. 18, 1980, Ser. No. 131,472  
 Term of patent 14 years  
 Int. Cl. D7—02

U.S. Cl. D7—108



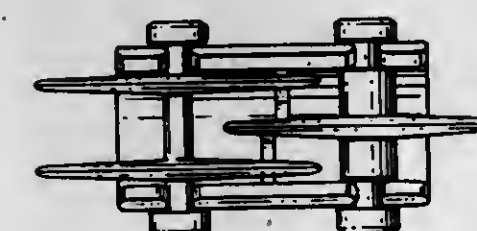
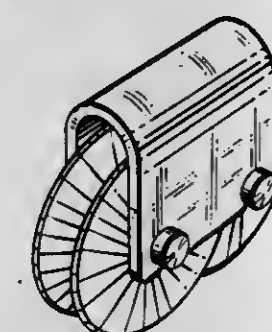
260,223

**PASTRY CUTTER OR THE LIKE**

Pieter K. J. De Coster, Aalst, Belgium, assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 16, 1979, Ser. No. 66,902  
 Term of patent 14 years  
 Int. Cl. D07—04

U.S. Cl. D7—106



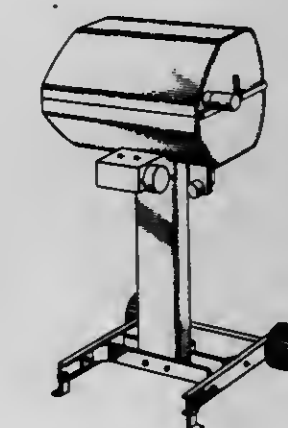
260,225

**BARBECUE GRILL**

Orville W. Larson, Elmhurst, Ill., assignor to Beatrice Foods Co., Bristol, Wis.

Filed Mar. 18, 1980, Ser. No. 131,473  
 Term of patent 14 years  
 Int. Cl. D7—02

U.S. Cl. D7—108





260,226

## WALL MOUNTABLE MICROWAVE OVEN

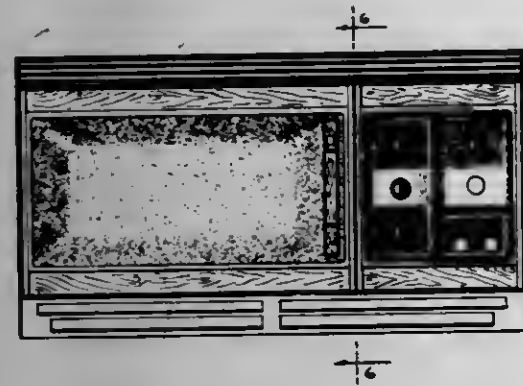
Charles H. Schmitt, and James J. Hoetker, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed May 18, 1979, Ser. No. 40,344

Term of patent 14 years

Int. Cl. D7-02

U.S. Cl. D7-128



260,228

## FORK OR SIMILAR ARTICLE OF FLATWARE

Clark L. Lofgren, Taunton, Mass., assignor to Reed & Barton Corporation, Taunton, Mass.

Filed Aug. 13, 1979, Ser. No. 65,950

Term of patent 14 years

Int. Cl. D07-03

U.S. Cl. D7-137



260,227

## COOKING RACK

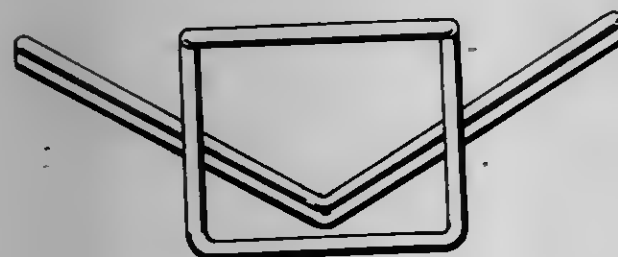
Wade Bentson, San Francisco, Calif., assignor to Amco Corporation, Chicago, Ill.

Filed Aug. 8, 1979, Ser. No. 64,846

Term of patent 14 years

Int. Cl. D07-02

U.S. Cl. D7-129



260,229

## REFUSE CONTAINER

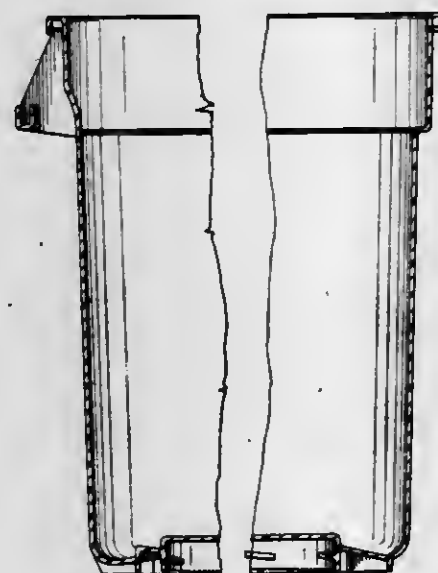
Dale T. Maza, and Glen E. Tomblin, both of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.

Filed Mar. 31, 1978, Ser. No. 893,143

Term of patent 14 years

Int. Cl. D7-07

U.S. Cl. D7-189



260,230

## FIRE GRATE FRET

Robert Hamilton, 5 The Rise, Elstree, Hertfordshire, England

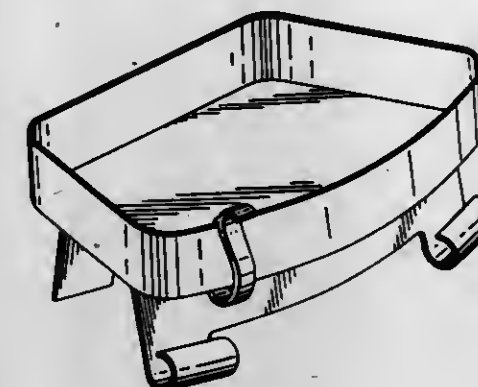
Filed Apr. 19, 1978, Ser. No. 897,920

Claims priority, application United Kingdom, Oct. 19, 1977, 981974

Term of patent 14 years

Int. Cl. D7-08

U.S. Cl. D7-207



260,231

## LOG HOLDER

Frank P. DeMuro, 336 Provincetown Rd., Cherry Hill, N.J. 08034

Filed Aug. 14, 1978, Ser. No. 933,722

Term of patent 14 years

Int. Cl. D7-08

U.S. Cl. D7-207



260,232

## TOGGLE SWITCH GUARD

Sanford L. Simons, 9188 S. Turkey Creek Rd., Morrison, Colo. 80465

Filed Aug. 27, 1979, Ser. No. 69,628

Term of patent 14 years

Int. Cl. D8-09; D13-03

U.S. Cl. D8-350



260,233

## ELECTRIC SWITCH PLATE

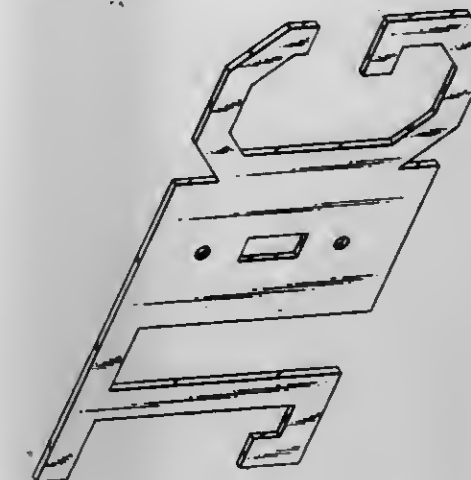
Mark Goldstein, and Judith A. Goldstein, both of 62 Southwoods Rd., Syosset, N.Y. 11791

Filed May 23, 1980, Ser. No. 152,786

Term of patent 14 years

Int. Cl. D8-09

U.S. Cl. D8-351



260,234

## RELEASABLE HOOK

Frank P. DeMuro, 336 Provincetown Rd., Cherry Hill, N.J. 08034

Filed Aug. 14, 1978, Ser. No. 933,722

Term of patent 14 years

Int. Cl. D7-08

U.S. Cl. D7-207

U.S. Cl. D8-370

Curtiss S. Johnson, Jr., Middle Haddam, Conn., assignor to C. Sherman Johnson Co., Inc., East Haddam, Conn.

Filed Aug. 23, 1979, Ser. No. 68,930

Term of patent 14 years

Int. Cl. D8-08



260,235

## CLAMP

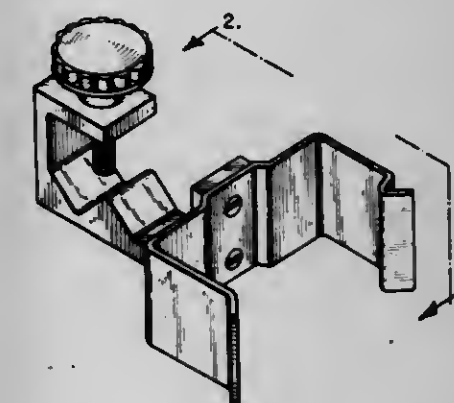
Lenart Anderson, Mt. Prospect, and Nicholas Zissimopoulos, Schaumburg, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 9, 1979, Ser. No. 65,385

Term of patent 14 years

Int. Cl. D8-08

U.S. Cl. D8-394





260,236

## LIQUID DISPENSING BOTTLE

J. Jay Anderson, Racine; Karl J. Bobinger, Union Grove, and Ronald G. Cramer, Racine, all of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Mar. 17, 1978, Ser. No. 887,408

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-338



260,237

## SEMICONDUCTOR WAFER CONTAINER

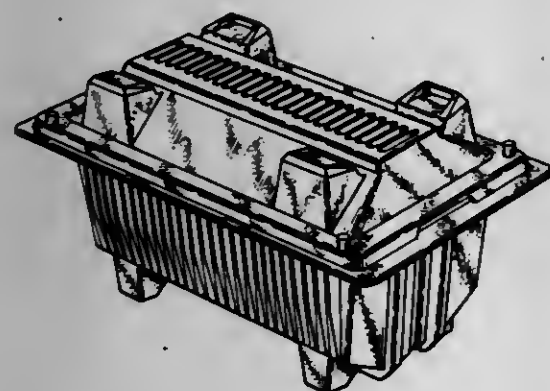
Robert J. Fuzere, Sunnyvale, Calif., assignor to Fuzere Manufacturing Co., Inc., Sunnyvale, Calif.

Filed Aug. 7, 1978, Ser. No. 931,823

Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D9-341



260,238

## BOTTLE

Allan Costa, 23 Horseshoe Rd., Old Westbury, N.Y. 11568

Filed Mar. 21, 1979, Ser. No. 22,449

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-389



260,239

## BOTTLE

Marshall J. Barrash, Atlanta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Jun. 11, 1979, Ser. No. 47,480

Term of patent 14 years

Int. Cl. D9-01

U.S. Cl. D9-395



260,240

## COSMETIC JAR

John F. Carluccio, 836 High Mountain Rd., Franklin Lakes, N.J. 07417

Filed Jul. 13, 1979, Ser. No. 57,294

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D9-399



260,241

## COSMETIC JAR

John F. Carluccio, 836 High Mountain Rd., Franklin Lakes, N.J. 07417

Filed Jul. 13, 1979, Ser. No. 57,296

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D9-399



260,242

## COSMETIC JAR

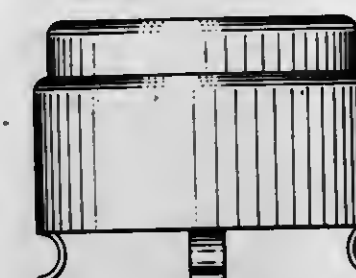
John F. Carluccio, 836 High Mountain Rd., Franklin Lakes, N.J. 07417

Filed Jul. 13, 1979, Ser. No. 57,297

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D9-399



260,243

## BEVERAGE CONTAINER

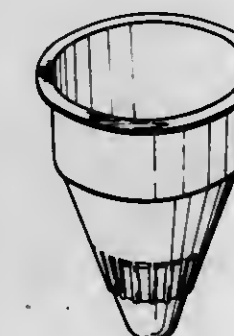
Amilcare Dogliotti, Alba, Italy, assignor to P. Ferrero & C. S.p.A., Alba, Italy

Filed Jan. 17, 1979, Ser. No. 4,116

Term of patent 14 years

Int. Cl. D9-03

U.S. Cl. D9-425



260,244

## SIMULATIVE ALARM CLOCK HOUSING

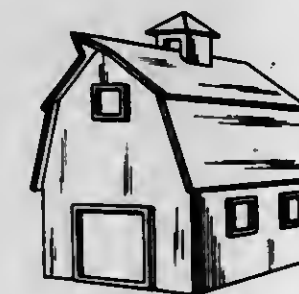
James R. Young, 11047 Moorpark, North Hollywood, Calif. 91601

Filed Sep. 21, 1979, Ser. No. 77,740

Term of patent 14 years

Int. Cl. D10-01

U.S. Cl. D10-1



260,245

## FAUCET SPOUT GAUGE

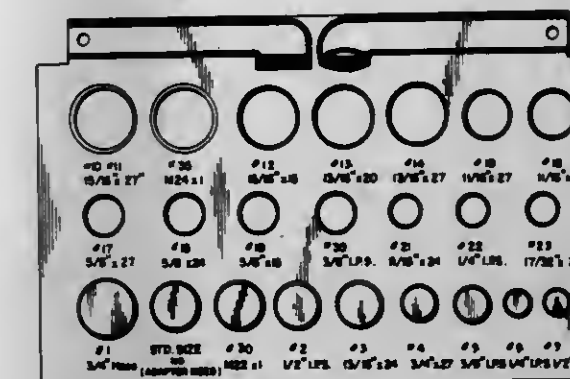
Var E. Lordahl, Chicago, Ill., assignor to T.S.G. Mfg. Co., Chicago, Ill.

Filed May 23, 1979, Ser. No. 41,689

Term of patent 14 years

Int. Cl. D10-04

U.S. Cl. D10-64



260,246

## CLOCK FACE

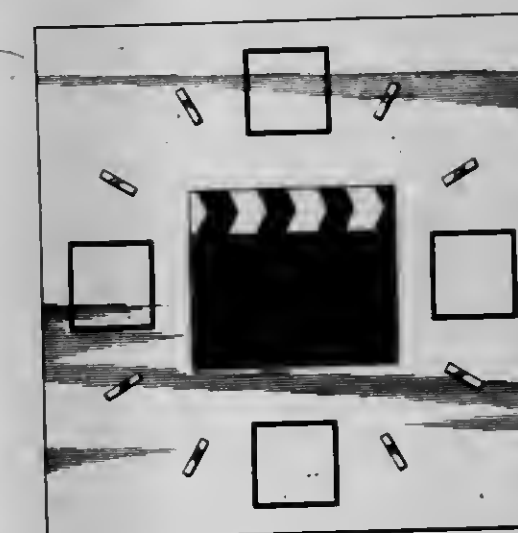
Marvin A. Stern, 5461 Amestoy Ave., Encino, Calif. 91316

Filed Aug. 17, 1979, Ser. No. 67,429

Term of patent 14 years

Int. Cl. D10-07

U.S. Cl. D10-125



260,247

## PEDAL VEHICLE

Stig Patriksson, Sötergarden 15, S-463 00 Lilla Edet, Sweden

Filed Sep. 8, 1978, Ser. No. 940,850

Term of patent 14 years

Int. Cl. D12-11

U.S. Cl. D12-112





260,248

**BICYCLE STORAGE RACK**

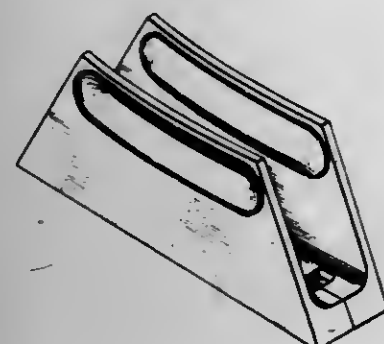
Dennis J. Gallagher, 6931 Vera Cruz Ct., Citrus Heights, Calif. 95610

Filed May 25, 1979, Ser. No. 42,518

Term of patent 14 years

Int. Cl. D12-11

U.S. Cl. D12-115

260,250  
TIRE

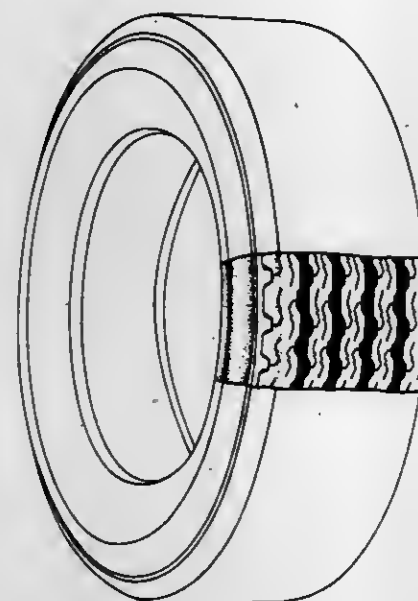
Christian Petitalot, Enezat, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Feb. 23, 1979, Ser. No. 14,350

Term of patent 14 years

Int. Cl. D12-15

U.S. Cl. D12-143



260,249

**BICYCLE PEDAL, OR THE LIKE**

Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Co., Inc., Maysville, Ky.

Filed Feb. 1, 1978, Ser. No. 874,097

Term of patent 14 years

Int. Cl. D12-11

U.S. Cl. D12-125



260,251

**COMBINED LUGGAGE CARRIER AND BACK REST FOR MOTORCYCLE**

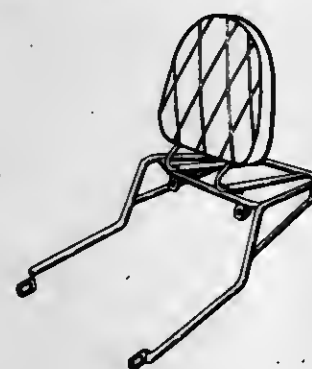
Claude Larose, Laval-Quebec, Canada, assignor to Triangle Accessoires de Motocyclettes LTEE, St-Léonard, Canada

Filed Dec. 10, 1979, Ser. No. 102,459

Term of patent 14 years

Int. Cl. D12-11

U.S. Cl. D12-158



260,252

**MODULE CARGO UNIT FOR A PICKUP VEHICLE**

Richard L. Groene, 1431 Frazier St., Des Moines, Iowa 50315

Filed Jul. 19, 1979, Ser. No. 58,853

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-156



260,254

**CANOE PADDLE**

Norman S. Heller, Loudonville, Ohio, assignor to Heller Products, Inc., Loudonville, Ohio

Filed Nov. 17, 1978, Ser. No. 961,538

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-215



260,253

**COMBINED VEHICLE RUNNING BOARD AND SPLASH GUARD**

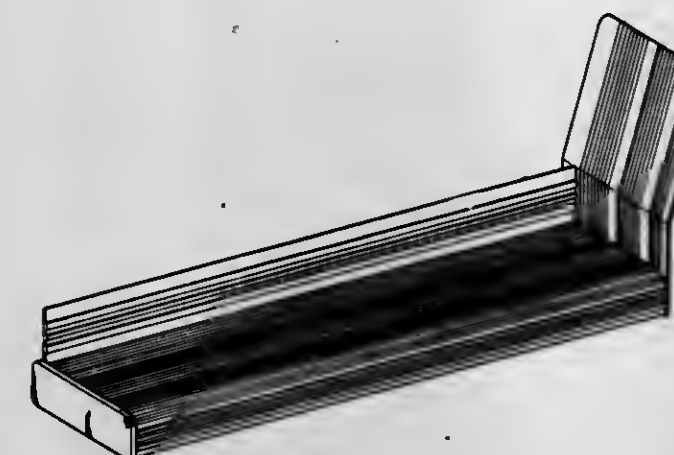
John E. Waters, Jr., 601 Willow Creek Dr., Waco, Tex. 76710

Filed Apr. 2, 1979, Ser. No. 26,203

Term of patent 14 years

Int. Cl. D12-16

U.S. Cl. D12-203



260,255

**DICTATING MACHINE**

Gerhard Dietrich, Nuremberg, Fed. Rep. of Germany, assignor to Grundig AG, Furth Bay, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,053

Term of patent 14 years

Int. Cl. D14-01

U.S. Cl. D14-3





260,256

## TAPE RECORDER AND PLAYER OR SIMILAR ARTICLE

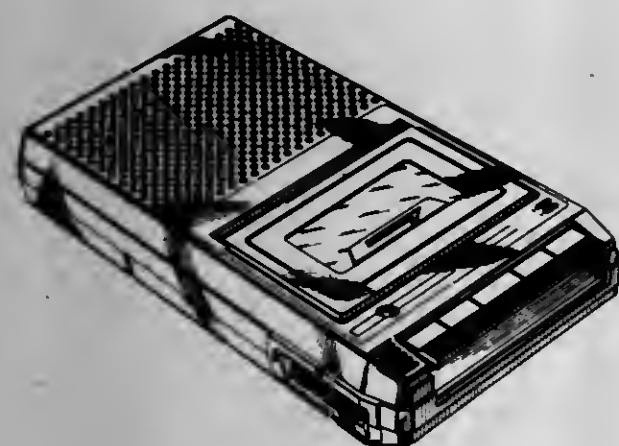
Paul J. Kinczalk, Manlius, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Apr. 25, 1979, Ser. No. 33,100

Term of patent 14 years

Int. Cl. D14-01

U.S. Cl. D14-6



260,258

## POWERED COLLATOR

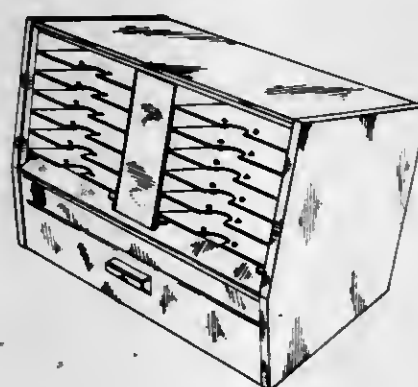
Elsio J. Loos, Elmhurst, N.Y.; Raymond H. Van Wagener, Darien, Conn.; Paul B. Sweeney, Jr., Syracuse, and Arthur J. Pulos, Fayetteville, both of N.Y., assignors to Swingline, Inc., Long Island City, N.Y.

Filed May 10, 1978, Ser. No. 904,633

Term of patent 14 years

Int. Cl. D14-02

U.S. Cl. D14-110



260,257

## COMBINED PHONOGRAPH, TAPE PLAYER AND LIGHTING CABINET

George P. Roegner, Jersey City, N.J.; Richard Hawley, Santa Claus, Ind.; Howard Steen, Santa Claus, Ind., and Sig Blener, Santa Claus, Ind., assignors to Soundesign Corporation, Jersey City, N.J.

Filed May 17, 1979, Ser. No. 39,803

Term of patent 14 years

Int. Cl. D14-01; D26-05

U.S. Cl. D14-17



260,259

## MAGNETIC CARD READER

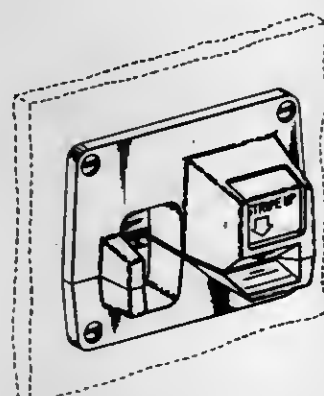
Daniel J. Crowley, Harrisburg, and Raymond V. Pass, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 31, 1978, Ser. No. 956,524

Term of patent 14 years

Int. Cl. D14-02

U.S. Cl. D14-107



260,260

## NOVELTY TELEPHONE

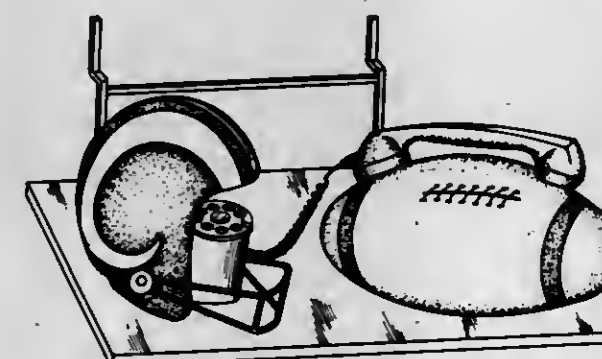
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004

Filed Jan. 29, 1979, Ser. No. 7,331

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-53



260,262

## PROJECTION TELEVISION CABINET

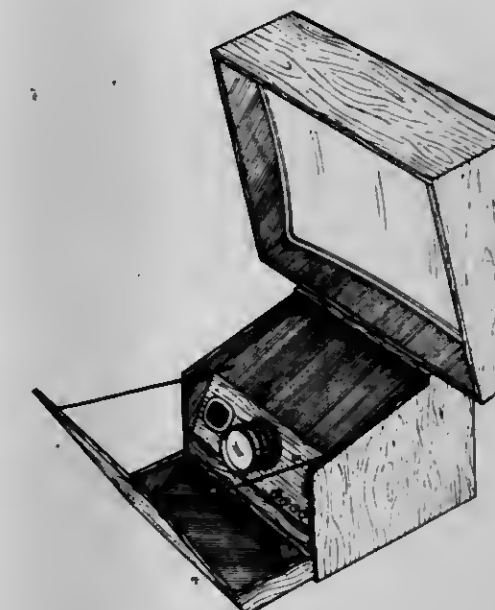
Eugene B. Sergio, Jr., 5391 Westerville Rd., Columbus, Ohio 43229

Filed Nov. 27, 1978, Ser. No. 963,971

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-79



260,261

## RADIO RECEIVER

Takao Okada; Takeyoshi Kawano, both of Kyoto; Shinza Murakami, Higashi-Osaka, and Kikuo Ohta, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 15, 1978, Ser. No. 942,906

Claims priority, application Japan, Apr. 4, 1978 53-13245

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-70



260,263

## TELEVISION RECEIVER OR SIMILAR ARTICLE

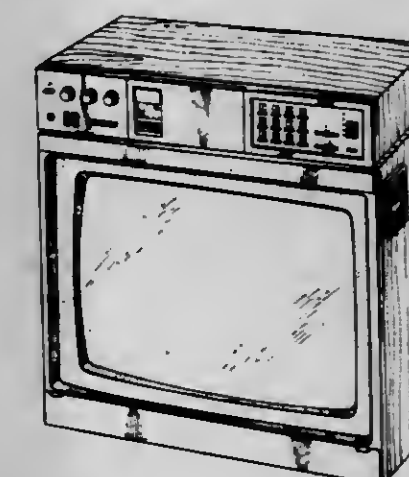
Shunichi Shoji, and Hideaki Suzuki, both of Kawasaki, Japan, assignors to The General Corporation, Japan

Filed Aug. 24, 1979, Ser. No. 69,370

Term of patent 7 years

Int. Cl. D14-03

U.S. Cl. D14-80





260,264

## COULTER

Erik H. Carlsson, Överum, and Rolf E. Lindqvist, Linköping, both of Sweden, assignors to Aktiebolaget Överums Bruk, Överum, Sweden

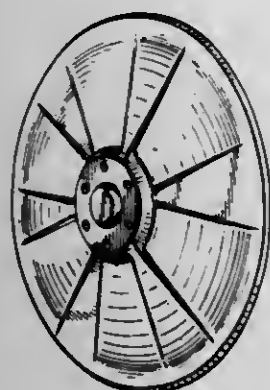
Filed Jul. 17, 1978, Ser. No. 924,986

Claims priority, application Sweden, Jan. 31, 1978, 78-254

Term of patent 14 years

Int. Cl. D15-03

U.S. Cl. D15-29



260,266

## PHOTOFLASH LAMP UNIT

Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,699

Term of patent 14 years

Int. Cl. D16-05

U.S. Cl. D16-42



260,267

## PHOTOFLASH LAMP UNIT

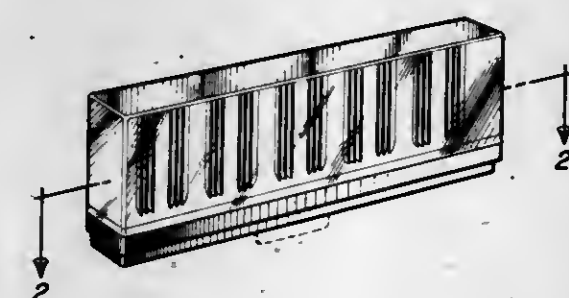
Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,700

Term of patent 14 years

Int. Cl. D16-05

U.S. Cl. D16-42



260,265

## MINIATURE SEWING MACHINE

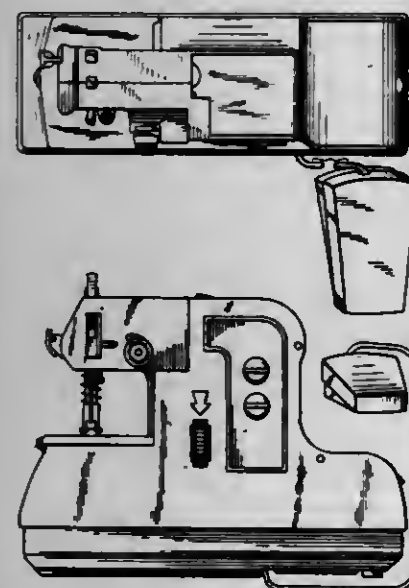
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Feb. 14, 1979, Ser. No. 12,228

Term of patent 14 years

Int. Cl. D15-06

U.S. Cl. D15-69



260,268

## PHOTOFLASH LAMP UNIT

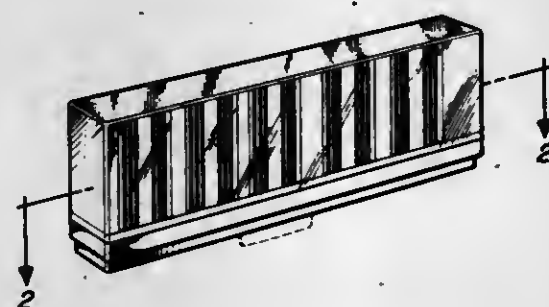
Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,860

Term of patent 14 years

Int. Cl. D16-05

U.S. Cl. D16-42



260,269

## PHOTOFLASH LAMP UNIT

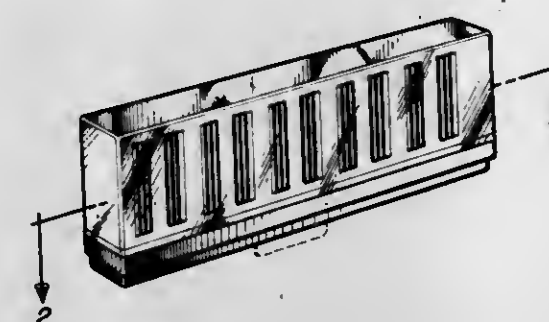
Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,877

Term of patent 14 years

Int. Cl. D16-05

U.S. Cl. D16-42



260,270

## PHOTOFLASH LAMP UNIT

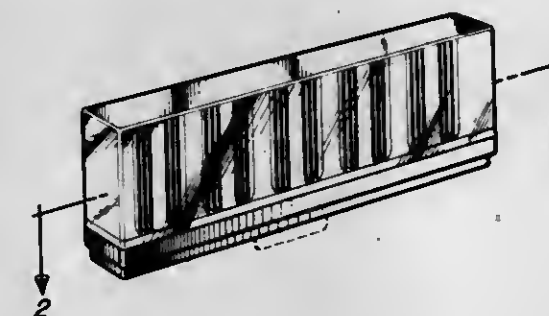
Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,878

Term of patent 14 years

Int. Cl. D16-05

U.S. Cl. D16-42



260,272

## MARKING INSTRUMENT

Günter Horntrich, Pforzheim, Fed. Rep. of Germany, assignor to Messrs. Kreuzer-Werk GmbH, Bonn-Duisdorf, Fed. Rep. of Germany

Filed Jan. 1, 1979, Ser. No. 44,416

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1978, MR1838

Term of patent 14 years

Int. Cl. D19-06

U.S. Cl. D19-43



260,273

## WALL MOUNTABLE TELEPHONE REGISTER

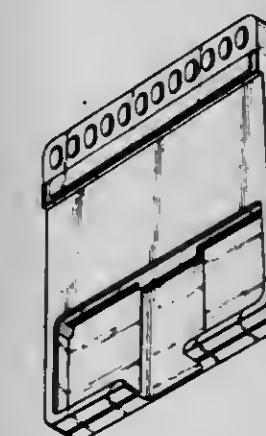
Hans Halm, Herne, Fed. Rep. of Germany, assignor to Arlac-Werk Heiko Ippen, Hamburg, Fed. Rep. of Germany

Filed May 2, 1979, Ser. No. 35,231

Term of patent 14 years

Int. Cl. D19-02

U.S. Cl. D19-76



260,271

## GUITAR BRIDGE PIN

Frank S. Smirne, 1240 Washington St., Whitehall, Pa. 18052

Filed Mar. 21, 1978, Ser. No. 888,544

Term of patent 14 years

Int. Cl. D17-03

U.S. Cl. D17-20





260,274

## TOY OVEN

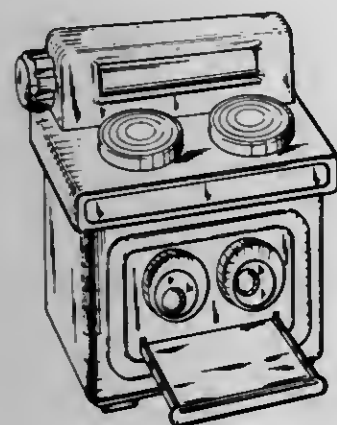
Mel Appel, Nine Nottingham Rd., Livingston, N.J. 07039; Paul B. Means, III, Basking Ridge; James J. Wilcox, Summit, both of N.J., and David W. Reina, Huntington, N.Y., assignors to Mel Appel, Livingston, N.J.

Filed Apr. 11, 1979, Ser. No. 29,113

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-122



260,275

## ACTION BALL TOY

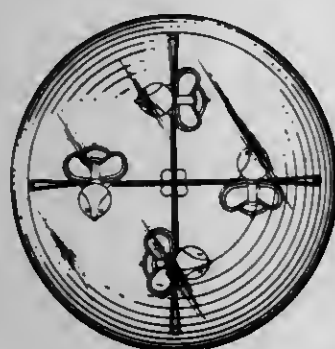
Manfred Strauss, Randolph, N.J., assignor to Shelcore, Inc., New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,556

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-150



260,276

## SLIDE WITH SIDE RAILS

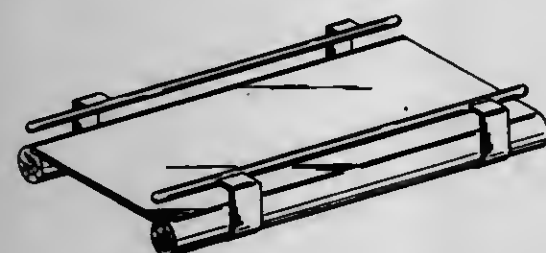
Roger D. Gehlbach, White Rock, and Zoltan Kitka, Surrey, both of Canada, assignors to Interplay Design Limited, Surrey, Canada

Filed Sep. 24, 1979, Ser. No. 78,614

Term of patent 14 years

Int. Cl. D21-03

U.S. Cl. D21-244



260,277

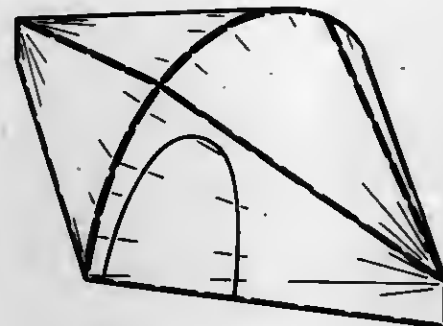
## TENT

Gilbert A. Davis, 1325 15th St., Sacramento, Calif. 95814  
Continuation-in-part of Ser. No. 794,640, May 6, 1977,  
abandoned. This application Feb. 28, 1979, Ser. No. 15,907

Term of patent 14 years

Int. Cl. D21-04

U.S. Cl. D21-253



260,278

## MINNOW BUCKET HOLDER

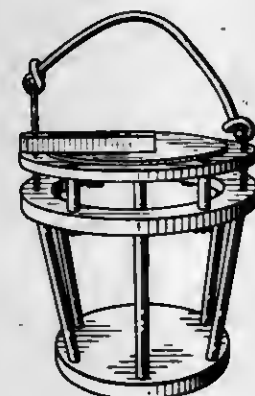
Harold R. Bradford, 805 Range St., Blue Springs, Mo. 64015

Filed Feb. 8, 1980, Ser. No. 119,672

Term of patent 14 years

Int. Cl. D22-05

U.S. Cl. D22-22



260,279

## CHILDREN'S PLAY SPRINKLER OR THE LIKE

Douglas A. Geller, Monrovia, and David C. McElroy, South Pasadena, both of Calif., assignors to Wham-O Mfg. Co., San Gabriel, Calif.

Filed Aug. 27, 1979, Ser. No. 70,339

Term of patent 14 years

Int. Cl. D23-01

U.S. Cl. D23-09



260,280

## CHECK VALVE CASING

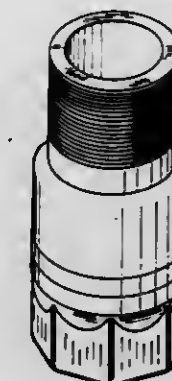
John F. Campbell, Guelph, Canada, assignor to GSW Limited/-  
Limitee, Toronto, Canada

Filed Jun. 5, 1978, Ser. No. 912,561

Term of patent 14 years

Int. Cl. D23-01

U.S. Cl. D23-22



260,281

## INFANT BATH PAD

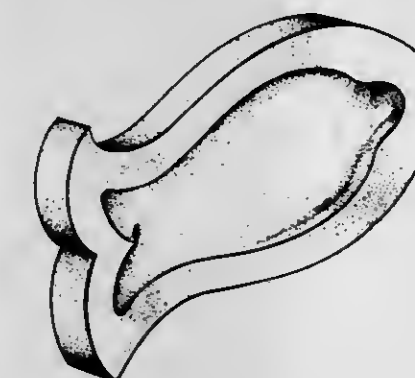
Judith A. Rist, Phoenix, Ariz., assignor to Judi's Orjinals,  
Phoenix, Ariz.

Filed Oct. 25, 1978, Ser. No. 954,417

Term of patent 14 years

Int. Cl. D23-02

U.S. Cl. D23-52



260,282

## CONCENTRATING SOLAR RADIATION COLLECTOR ASSEMBLY

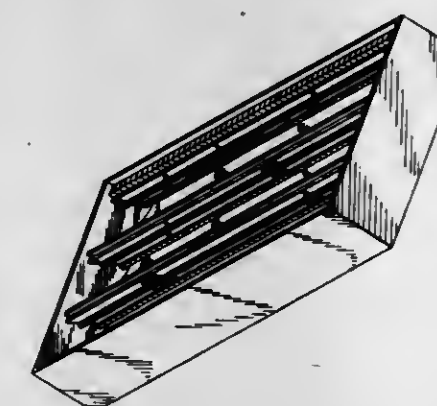
Arthur P. Fattor, 5380 S. Holly, Englewood, Colo. 80111

Filed Mar. 17, 1978, Ser. No. 887,636

Term of patent 14 years

Int. Cl. D23-03

U.S. Cl. D23-72



260,283

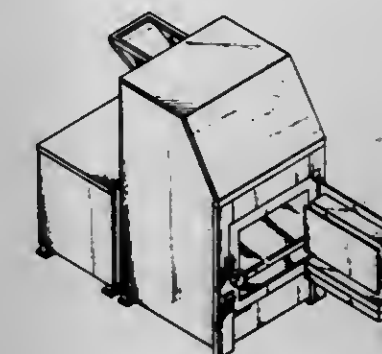
## SOLID FUEL FURNACE

Bunyan B. Cagle, 5711 Grand Ave., Fort Smith, Ark. 72901  
Filed Mar. 8, 1979, Ser. No. 18,659

Term of patent 14 years

Int. Cl. D23-03

U.S. Cl. D23-97



260,284

## SIDE PANEL FOR WOOD BURNING STOVE

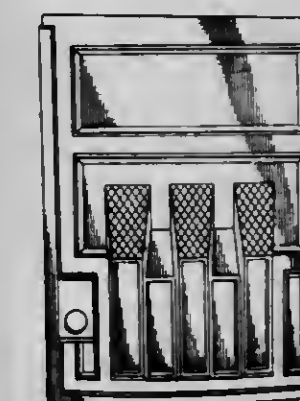
Duncan C. Syme, Chelsea, Vt., assignor to Vermont Castings,  
Inc., Randolph, Vt.

Filed Oct. 19, 1979, Ser. No. 86,514

Term of patent 14 years

Int. Cl. D23-03

U.S. Cl. D23-127



260,285

## BACK PANEL FOR WOOD BURNING STOVE

Duncan C. Syme, Chelsea, Vt., assignor to Vermont Castings,  
Inc., Randolph, Vt.

Filed Oct. 19, 1979, Ser. No. 86,515

Term of patent 14 years

Int. Cl. D23-03

U.S. Cl. D23-127





260,286

## TOP FOR A WOOD BURNING STOVE

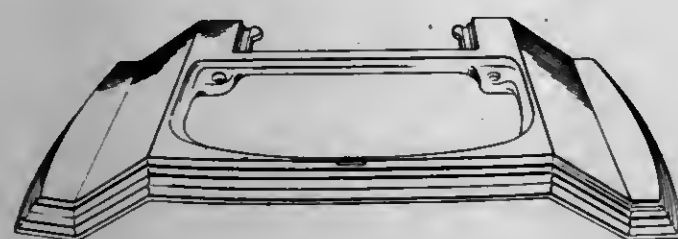
Duncan C. Syme, Chelsea, Vt., assignor to Vermont Castings, Inc., Randolph, Vt.

Filed Oct. 19, 1979, Ser. No. 86,516

Term of patent 14 years

Int. Cl. D23-03

U.S. Cl. D23-127



260,287

## DENTAL ARTICULATOR

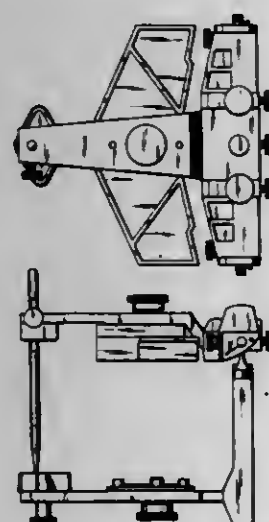
Robert L. Lee, 22937 Grand Ter., Colton, Calif. 92324

Filed Nov. 30, 1978, Ser. No. 964,978

Term of patent 14 years

Int. Cl. D24-02

U.S. Cl. D24-10



260,288

## HYDROTHERAPY SPA

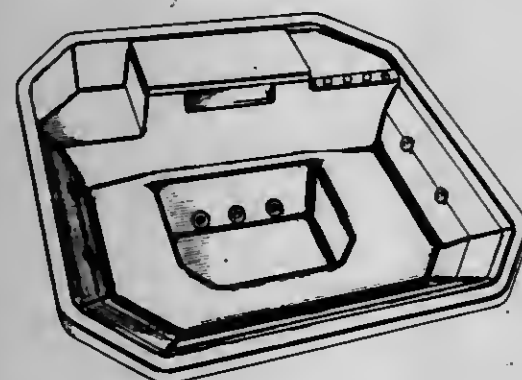
Ralph D'Innocente, Pleasant Hill, and Richard L. Janosko, Oakland, both of Calif., assignors to Jacuzzi Whirlpool Bath, Inc., Walnut Creek, Calif.

Filed Jan. 22, 1979, Ser. No. 5,403

Term of patent 14 years

Int. Cl. D24-01

U.S. Cl. D24-38



260,289

## BABY BOTTLE HOLDER

David Rubin, 900 Whitmore, Detroit, Mich. 48203

Filed Oct. 12, 1978, Ser. No. 950,606

Term of patent 14 years

Int. Cl. D24-04

U.S. Cl. D24-48



260,290

## DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A WINDOW

B. Jeremiah Shaffer, Worthington, and Larry Rasmussen, Mt. Gilead, both of Ohio, assignors to Pease Company, Fairfield, Ohio

Filed Oct. 22, 1979, Ser. No. 86,884

Term of patent 14 years

Int. Cl. D25-01

U.S. Cl. D25-72



260,291

## DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A DOOR OR WINDOW

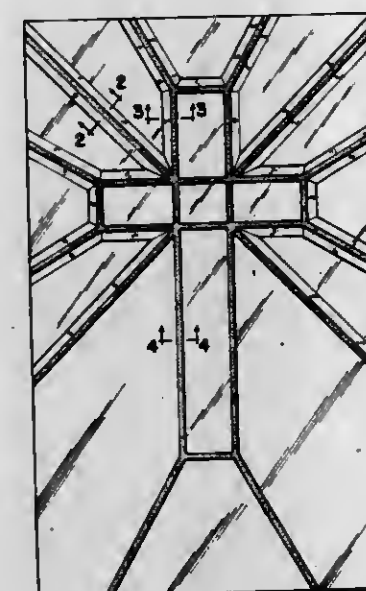
B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Company, Fairfield, Ohio

Filed Oct. 22, 1979, Ser. No. 86,885

Term of patent 14 years

Int. Cl. D25-01

U.S. Cl. D25-72



260,293

## DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A WINDOW

B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Company, Fairfield, Ohio

Filed Oct. 24, 1979, Ser. No. 87,920

Term of patent 14 years

Int. Cl. D25-01

U.S. Cl. D25-72



260,292

## DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A DOOR OR WINDOW

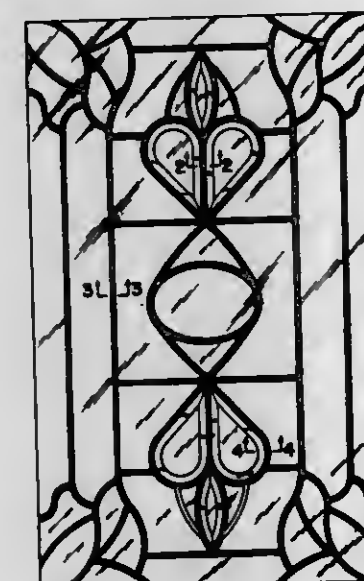
B. Jeremiah Shaffer, Worthington, and Larry Rasmussen, Mt. Gilead, both of Ohio, assignors to Pease Company, Fairfield, Ohio

Filed Oct. 22, 1979, Ser. No. 86,893

Term of patent 14 years

Int. Cl. D25-01

U.S. Cl. D25-72



260,294

## DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A DOOR OR WINDOW

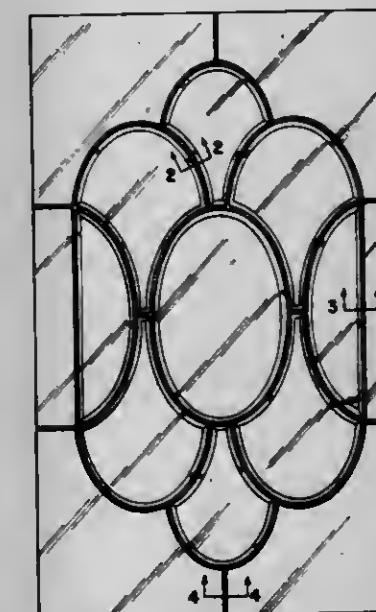
B. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease Company, Fairfield, Ohio

Filed Oct. 24, 1979, Ser. No. 88,202

Term of patent 14 years

Int. Cl. D25-01

U.S. Cl. D25-72





260,295

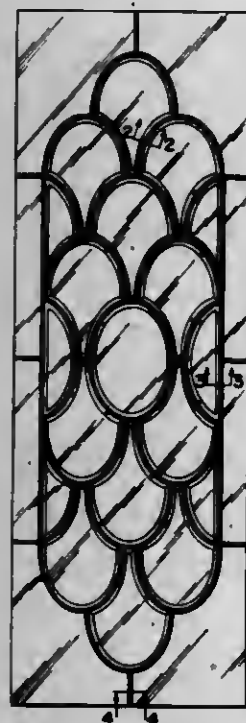
DECORATIVE COMPOSITE GLASS PANEL FOR  
INSTALLATION IN A DOOR OR WINDOWB. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease  
Company, Fairfield, Ohio

Filed Oct. 24, 1979, Ser. No. 88,209

Term of patent 14 years

Int. Cl. D25-01

U.S. Cl. D25-72



260,297

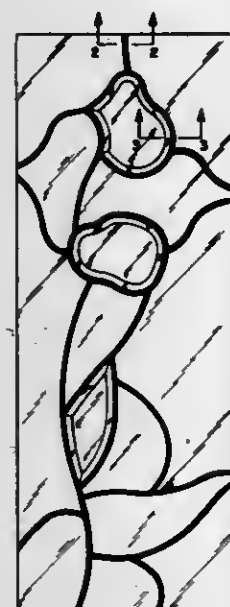
DECORATIVE COMPOSITE GLASS PANEL FOR  
INSTALLATION IN A DOOR OR WINDOWB. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease  
Company, Fairfield, Ohio

Filed Apr. 28, 1980, Ser. No. 144,801

Term of patent 14 years

Int. Cl. D25-01

U.S. Cl. D25-72



260,296

DECORATIVE COMPOSITE GLASS PANEL FOR  
INSTALLATION IN A WINDOWB. Jeremiah Shaffer, Worthington, Ohio, assignor to Pease  
Company, Fairfield, Ohio

Filed Oct. 24, 1979, Ser. No. 88,210

Term of patent 14 years

Int. Cl. D25-01

U.S. Cl. D25-72



260,298

## SPOTLIGHT

Giacinto C. D'Ercoli, Rolling Meadows, Ill., assignor to  
McGraw-Edison Company, Rolling Meadows, Ill.

Filed Jun. 19, 1978, Ser. No. 916,800

Term of patent 14 years

Int. Cl. D26-03

U.S. Cl. D26-63



260,299

## SPOTLIGHT

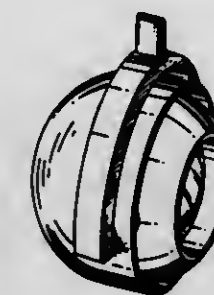
Giacinto C. D'Ercoli, Rolling Meadows, Ill., assignor to  
McGraw-Edison Company, Rolling Meadows, Ill.

Filed Jun. 19, 1978, Ser. No. 916,801

Term of patent 14 years

Int. Cl. D26-03

U.S. Cl. D26-63



260,302

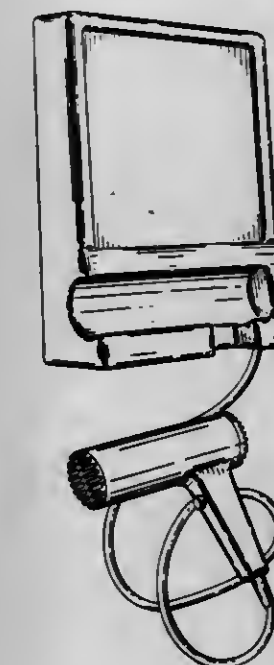
## COMBINED HAIR DRYER AND CABINET

Raymond P. Lacey, 6 Auburn St., Broadstone, Dublin 7, Ireland  
Filed Oct. 29, 1979, Ser. No. 88,878

Term of patent 14 years

Int. Cl. D28-03

U.S. Cl. D28-15



260,300

## SPOT LAMP

Daniel L. Aros, Northridge, Calif., assignor to Mole-Richardson  
Co., Hollywood, Calif.

Filed Nov. 20, 1978, Ser. No. 962,292

Term of patent 14 years

Int. Cl. D26-03

U.S. Cl. D26-63



260,303

## RAZOR

Jurgen E. Wordtmann, Solingen, Fed. Rep. of Germany, as-  
signor to Wilkinson Sword Limited, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,891

Claims priority, application United Kingdom, Apr. 24, 1979,  
989662/79

Term of patent 14 years

Int. Cl. D28-03

U.S. Cl. D28-46



260,301

## BAR OF SOAP

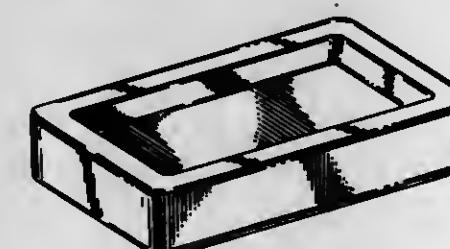
Russell A. O'Connor, 462 Penhale Ave., Campbell, Ohio 44405

Filed Jan. 8, 1979, Ser. No. 1,464

Term of patent 14 years

Int. Cl. D28-02

U.S. Cl. D28-8.1





260,304

**PEDICURE TOOL**

William F. Rosenberg, Westport, Conn., assignor to Revlon, Inc., New York, N.Y.

Filed Jan. 11, 1979, Ser. No. 47,297

Term of patent 14 years

Int. Cl. D28-03

U.S. Cl. D28-59



260,306

**COMBINED BIRD CAGE ROOF AND BOTTOM TRAY**

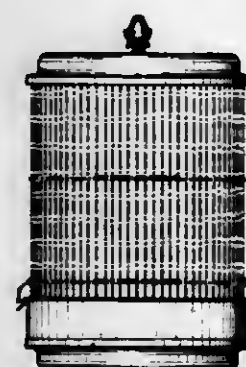
Michael Biro, and Hans Mackenfuss, both of Montreal, Canada, assignors to Rolf C. Hagen Ltd., Montreal, Canada

Filed Oct. 16, 1979, Ser. No. 85,197

Term of patent 14 years

Int. Cl. D30-02

U.S. Cl. D30-4



260,305

**LIGHTED TRAVELING MIRROR**

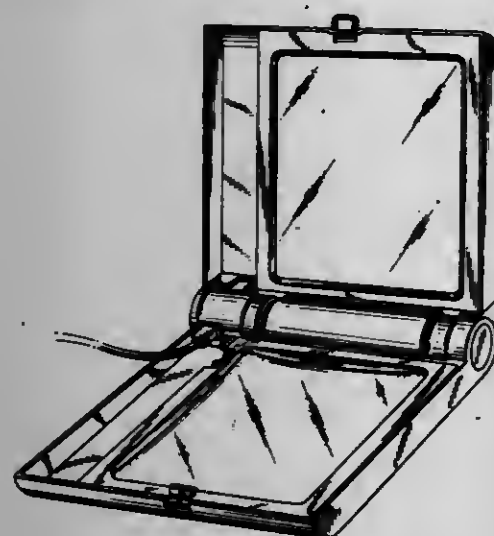
Francis W. MacGregor, New Britain, Conn., and Paul D. Burian, deceased late of Elmsford, N.Y., assignors to Clairol Incorporated, New York, N.Y.

Filed Mar. 28, 1979, Ser. No. 24,622

Term of patent 14 years

Int. Cl. D28-03

U.S. Cl. D28-67



260,307

**STIRRUP STRAP BUCKLE**

Thomas A. Horst, Lafayette, and Charles L. Welton, Golden, both of Colo., assignors to Thomas A. Horst, Lafayette, Colo., a part interest

Filed Jan. 2, 1979, Ser. No. 197

Term of patent 14 years

Int. Cl. D30-04

U.S. Cl. D30-25



260,308

**ANIMAL NAIL CLIPPER**

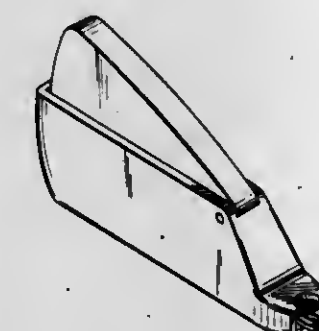
Bernard Suchowski, Marlboro, N.J., assignor to The Hartz Mountain Corporation, Harrison, N.J.

Filed Jun. 12, 1979, Ser. No. 47,770

Term of patent 7 years

Int. Cl. D30-99

U.S. Cl. D30-40



260,310

**LAMINATE SHEET**

William F. Yates, London, England, and Ichiro Saito, Tokyo, Japan, assignors to Formica Corporation, Cincinnati, Ohio

Filed Feb. 9, 1979, Ser. No. 10,770

Claims priority, application United Kingdom, Oct. 2, 1978, 986652/78

Term of patent 14 years

Int. Cl. D5-06

U.S. Cl. D92-1 AA



260,309

**CURTAIN MATERIAL**

Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Luzerne, Switzerland

Filed Aug. 30, 1979, Ser. No. 71,397

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1979, 305

Term of patent 14 years

Int. Cl. D5-05

U.S. Cl. D47-6 E



260,311

**LAMINATE SHEET**

Harry R. Ford, Parkdale, Ohio, and Yasuo Yoshihashi, Tokyo, Japan, assignors to Formica Corporation, Cincinnati, Ohio

Filed Jul. 11, 1978, Ser. No. 923,610

Term of patent 14 years

Int. Cl. D5-06

U.S. Cl. D92-1 R





260,312

## LAMINATE SHEET

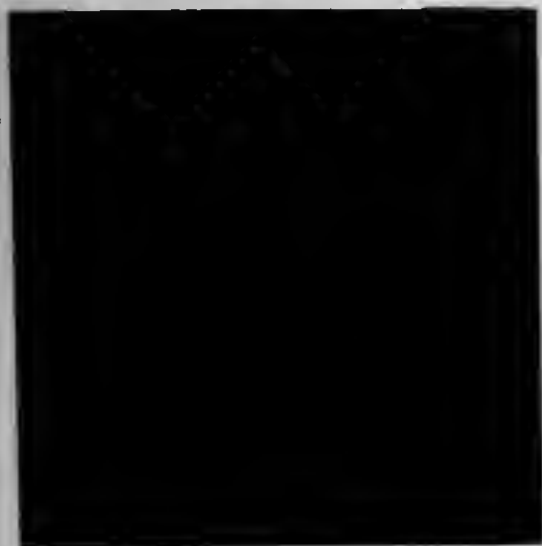
Harry R. Ford, Parkdale, Ohio, and Koichi Hirakawa, Chiba,  
Japan, assignors to Formica Corporation, Cincinnati, Ohio

Filed Jul. 11, 1978, Ser. No. 923,612

Term of patent 14 years

Int. Cl. D5-06

U.S. Cl. D92-1 R



260,314

## LAMINATE SHEET

William F. Yates, London, England, and Ichiro Saito, Tokyo,  
Japan, assignors to Formica Corporation, Cincinnati, Ohio

Filed Feb. 9, 1979, Ser. No. 10,771

Claims priority, application United Kingdom, Sep. 14, 1978,  
986361/78

Term of patent 14 years

Int. Cl. D5-06

U.S. Cl. D92-1 R



260,315

## LAMINATE SHEET

William F. Yates, London, England, and Ichiro Saito, Tokyo,  
Japan, assignors to Formica Corporation, Cincinnati, Ohio

Filed Feb. 9, 1979, Ser. No. 11,013

Claims priority, application United Kingdom, Oct. 11, 1978,  
986804/78

Term of patent 14 years

Int. Cl. D5-06

U.S. Cl. D92-1 R

260,313

## LAMINATE SHEET

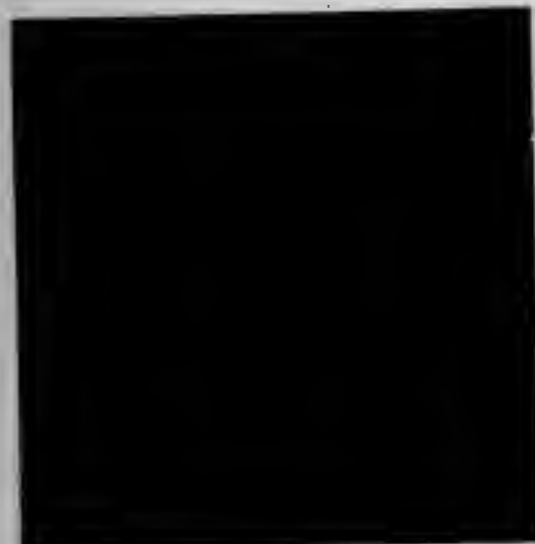
Harry R. Ford, Parkdale, Ohio, and Koichi Hirakawa, Chiba,  
Japan, assignors to Formica Corporation, Cincinnati, Ohio

Filed Jul. 11, 1978, Ser. No. 923,614

Term of patent 14 years

Int. Cl. D5-06

U.S. Cl. D92-1 R



260,316

## LAMINATE SHEET

William F. Yates, London, England, and Ichiro Saito, Tokyo,  
Japan, assignors to Formica Corporation, Cincinnati, Ohio

Filed Feb. 9, 1979, Ser. No. 11,014

Claims priority, application United Kingdom, Aug. 17, 1978,  
985963/78

Term of patent 14 years

Int. Cl. D5-06

U.S. Cl. D92-1 R



260,318

## TOY BANK

Sadayasu Miyazaki, Tokyo, Japan, assignor to Tomy Kogyo Co.,  
Inc., Tokyo, Japan

Filed Jan. 19, 1979, Ser. No. 4,663

Term of patent 14 years

Int. Cl. D99-00

U.S. Cl. D99-38



260,319

## MAIL BOX SIGNAL

William E. Kuntz, Jr., 2724 S. Range Rd., Columbiana, Ohio  
44408

Filed May 24, 1979, Ser. No. 42,205

Term of patent 14 years

Int. Cl. D99-00

U.S. Cl. D99-29

260,317

## LAMINATE SHEET

William F. Yates, London, England, and Ichiro Saito, Tokyo,  
Japan, assignors to Formica Corporation, Cincinnati, Ohio

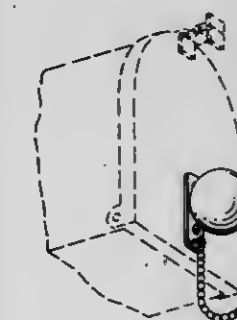
Filed Feb. 9, 1979, Ser. No. 11,015

Claims priority, application United Kingdom, Oct. 2, 1978,  
986649/78

Term of patent 14 years

Int. Cl. D5-06

U.S. Cl. D92-1 R





# LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF AUGUST, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Abbott, Jerry J.; Fuller, Sterritt R.; and Jachimiak, Paul D., to International Business Machines Corporation. Electrophotographic toner of specific size distribution. 4,284,701, Cl. 430-111.000.
- Abbott Laboratories: See—  
Korom, Gordon K., 4,284,603, Cl. 422-101.000.
- Abe, Michio: See—  
Kumagai, Seiichiro; Abe, Michio; and Maeda, Naoyuki, 4,284,054, Cl. 123-536.000.
- Matsuzaki, Osamu; Abe, Michio; Mitobe, Koichi; and Tanno, Seikichi, 4,284,662, Cl. 427-68.000.
- Abel, Oliver R. Tool for removing axle spindles. 4,283,827, Cl. 29-234.000.
- Abo, Toshimi, to Nissan Motor Company, Limited. Fuel control system. 4,283,910, Cl. 60-39.28R.
- Abura, Yoshinori; Ueda, Fumiya; Morihara, Nobuyuki; and Kami, Tomohiro, to Matsushita Electric Works, Ltd. Electrically heated hair curler. 4,284,877, Cl. 219-222.000.
- ACF Industries, Inc.: See—  
Basch, Walter E., 4,284,390, Cl. 417-313.000.
- Hrinsin, John A., 4,284,012, Cl. 105-362.000.
- Williamson, Raymond E., 4,284,391, Cl. 417-569.000.
- Winkley, Jerry H., 4,284,589, Cl. 261-39.00B.
- Adair, Edwin L. Method for applying a male incontinence device. 4,284,079, Cl. 128-295.000.
- Adams, Harold R. Packing pulverizer. 4,284,248, Cl. 241-278.00R.
- Adams, James B., Jr., to Otis Engineering Corporation. Pump in core breaker carrier. 4,284,152, Cl. 175-257.000.
- Adams, John O.: See—  
Moore, Sanders H.; and Adams, John O., 4,284,460, Cl. 156-306.600.
- Adams, William J.; Wernet, William F.; and Haskins, Steve W., to Northern Telecom, Inc. Base for telephone set, for alternative desk and wall mounting. 4,284,855, Cl. 179-100.00C.
- Adler, Hans, to H. Adler Associates, Inc. Combination stop and pressure reducing valve. 4,284,102, Cl. 137-543.210.
- Adolph Saurer Limited: See—  
Porter, Allan W. H.; and Lucian, Anton, 4,284,108, Cl. 139-448.000.
- Advanced Diagnostic Research Corporation: See—  
Wilcoia, Martin H., 4,285,010, Cl. 358-112.000.
- Aelony, David, to Makhteshim Chemical Works Ltd. Polyether polyols. 4,284,826, Cl. 568-614.000.
- Agency of Industrial Science & Technology: See—  
Satoh, Takehiko; Tsukahara, Sonoko; and Tsushima, Tachiro, 4,284,441, Cl. 148-120.000.
- Agerhem, Halina; and Nilsson, Hans J., to Kockums Chemical AB. Substrate composition and use thereof. 4,284,719, Cl. 435-18.000.
- Agfa-Gevaert AG: See—  
Bergthaller, Peter; Saleck, Wilhelm; and Helling, Gunter, 4,284,718, Cl. 430-629.000.
- AGFA-Gevaert Aktiengesellschaft: See—  
Borowski, Kurt; and Ganser, Josef, 4,284,339, Cl. 354-38.000.
- Helling, Gunter; Kraft, Werner; Findeisen, Kurt; and Himmelmann, Wolfgang, 4,284,708, Cl. 430-216.000.
- Nagel, Erich; Ziegler, Franz; and Schaner, Ferdinand, 4,284,221, Cl. 225-100.000.
- Schroder, Rolf; Engelsmann, Dieter; Lermann, Peter; and Spinnler, Rainer, 4,284,342, Cl. 354-60.00E.
- Ahmed, Adel A. A., to RCA Corporation. Current dividers using emitter-coupled transistor pairs. 4,284,945, Cl. 323-315.000.
- Aichi Steel Works Limited: See—  
Hasegawa, Yoshimichi; Furuta, Osamu; Shinta, Jouji; and Nakamura, Hideo, 4,283,930, Cl. 72-8.000.
- Aignesberger, Alois; Deppen, Jean-Pierre; and Rosenbauer, Hans-Gunter, to SKW Trostberg Aktiengesellschaft. Additives for water-hardening binding agents. 4,284,433, Cl. 106-90.000.
- Aihara, Mamoru: See—  
Sawamura, Ichiro; Aihara, Mamoru; Nakamura, Kazuhiko; and Kondo, Youichi, 4,284,897, Cl. 250-461.00B.
- Air Industrie: See—  
Remillieux, Jean, 4,284,419, Cl. 55-96.000.
- Air Preheater Company, Inc.: See—  
Stockman, Richard F., 4,284,125, Cl. 165-9.000.
- Air Products and Chemicals, Inc.: See—  
Longworth, Ralph C., 4,283,948, Cl. 73-863.110.
- Airhart, Tom P., to Atlantic Richfield Company. Acoustic pulse generator. 4,284,164, Cl. 181-117.000.
- Airhart, Tom P.; and Barta, Henry R., to Atlantic Richfield Company. Acoustic pulse generator. 4,284,165, Cl. 181-119.000.
- Ajinomoto Co., Inc.: See—  
Oyama, Kiyotaka; Nishimura, Shigeaki; Nonaka, Yuji; Hashimoto, Tsutomu; and Kihara, Keiichi, 4,284,721, Cl. 435-70.000.
- Akahira, Rokuro; and Someya, Shinzo, to Kanesho Company Limited. Herbicidal composition for paddy fields. 4,284,427, Cl. 71-93.000.
- Akkerman, James W., to United States of America, National Aeronautics and Space Administration. Reciprocating engines. 4,283,995, Cl. 91-410.000.
- Aktiebolaget SKF: See—  
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Kunkel, Heinrich; and Ernst, Horst M., 4,284,310, Cl. 308-8.200.
- Aktiebolaget Somas Ventilator: See—  
Hubertson, Folke H., 4,284,264, Cl. 251-305.000.
- Aktiebolaget Tudor: See—  
Borjesson, Anders, 4,284,185, Cl. 198-339.000.
- Akzona Incorporated: See—  
Franks, Neal E.; and Varga, Julianna K., 4,284,545, Cl. 260-29.6NR.
- Hoentjen, Gerrit; de Graaf, Stephanus A. G.; Bijkerk, Albert H.; and de Jonge, Cornelis R. H. I., 4,284,772, Cl. 544-218.000.
- Mijs, Willem J.; Dusseau, Charles H. V.; and Sinnige, Hermannus J. M., 4,284,769, Cl. 544-180.000.
- van der Burg, Willem J., 4,284,559, Cl. 260-243.300.
- Albert, Max: See—  
Rasch, Walter; Caspers, Karl-Heinz; Wiebecke, Klaus; and Albert, Max, 4,284,041, Cl. 123-193.00H.
- Albrecht, Harald; and Schnettler, Roland, to Maschinen- und Werkzeugbau GmbH. Roller electrode and process for making same. 4,284,179, Cl. 191-1.00A.
- Albright, Charles D., to FMC Corporation. Vehicle with dual drill booms and temporary roof support. 4,284,368, Cl. 405-291.000.
- Alexander, Frank N.: See—  
Jackson, Alan D.; Alexander, Frank N.; and Graber, Homer R., 4,283,996, Cl. 91-447.000.
- Alexander, Willis R.; and Shaltis, Robert J., to Hastings Manufacturing Company. Centrifugal spin-on filter or separator and method of making and assembling the same. 4,284,504, Cl. 210-168.000.
- Allan, Colin J.; Shields, Ross B.; Cutler, Jerry M.; and Lynch, Gerard F., to Canada, Atomic Energy of, Limited. Self-powered neutron and gamma-ray flux detector. 4,284,893, Cl. 250-390.000.
- Aldritt, Michael; Jones, Robin; Oliver, Christopher J.; and Vaughan, John M., to National Research Development Corporation. Processing of digital signals. 4,284,351, Cl. 356-28.500.
- Allen, Craig R.: See—  
Garrett, Robert A.; Silva, John; and Allen, Craig R., 4,284,929, Cl. 318-51.000.
- Allen & Garcia Company: See—  
Brumbaugh, Owen E., Jr.; Levin, Paul; and Reed, Alston L., 4,284,380, Cl. 414-21.000.
- Allen, Leonard W. Solar energy system. 4,283,914, Cl. 60-641.0AC.
- Allen, Louis B., Jr.; Koenig, Herbert G., Jr.; and Rice, Robert R., to McDonnell Douglas Corporation. Etalon laser diode. 4,284,963, Cl. 331-94.50H.
- Allen, Roger E.: See—  
Esterowitz, Leon; Allen, Roger E.; Kruer, Melvin R.; and Bartoli, Filbert J., 4,284,962, Cl. 331-94.50F.
- Allied Chemical Corporation: See—  
Gancy, Alan B.; and Wamser, Christian A., 4,284,611, Cl. 423-308.000.
- Allis-Chalmers Corporation: See—  
Hansen, Kenneth N., 4,283,965, Cl. 74-482.000.
- Allred, Richard E., to UOP Inc. Coated screen jacket and coated pipe base assembly and method of making same. 4,284,138, Cl. 166-233.000.
- Almashegyi, Lajos: See—  
Stefan, Mihaly; Almashegyi, Lajos; Horvath, Csaba; Madarasz nee Helesfai, Agnes; Arato, Peter; and Geiger, Jozsef, 4,284,436, Cl. 148-2.000.
- Almeda, Benjamin M., Jr. Material compacting apparatus. 4,284,000, Cl. 100-229.00A.
- Almqvist, Christer; and Lindahl, Lars, to ReHest AB. Device for mutually fixing plate elements of plate heat exchangers or plate filters. 4,284,135, Cl. 165-166.000.
- Alstom-Unelec: See—  
Denoyelle, Serge; and Noisette, Pierre, 4,284,968, Cl. 335-176.000.
- Alt, Gerhard H.; and Chupp, John P., to Monsanto Company. Process for the in-solvent, in-situ generation of haloalkyl alkyl ethers useful to produce N-substituted-2-haloacetanilides. 4,284,564, Cl. 260-333.000.
- Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. Hydroxyalkyl and oxoalkyl substituted phenols as analgesics and sedatives. 4,284,829, Cl. 568-764.000.
- Alton Box Board Company: See—  
McCaskill, Matt L., 4,284,259, Cl. 248-346.000.



Aluminum Company of America: See—  
Culleiton, Charles J.; Das, Subodh K.; and Schoener, Ronald C., 4,284,607, Cl. 423-137.000.  
Kole, Richard P., 4,284,670, Cl. 427-422.000.  
Alyabiev, Vitaly K.: See—  
Gau, Viktor A.; Belousov, Anatoly V.; Petukhov, Vadim D.; Suxov, Gennadiy I.; Belyaev, Nikolai A.; Alyabiev, Vitaly K.; and Rassomakhin, Klimenty E., 4,283,991, Cl. 91-299.000.  
Amada Company Ltd.: See—  
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Bailey, Ronald B., to General Electric Company. Chopper with adaptive energy commutation, 4,284,938, Cl. 318-432.000.  
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Cassent, David P.; and Psaltis, Demetri, to United States of America, Army. Space variant signal processor. 4,285,048, Cl. 364-822.000.

Cascade Corporation: See—  
Olson, John E., 4,284,384, Cl. 414-434.000.

Case, Barton C.: See—  
Tetenbaum, Marvin T.; and Case, Barton C., 4,284,506, Cl. 210-321.400.

Case, Leo L.; and Koltuniak, Michael A., to Elcoat Systems, Inc. Electrocoating apparatus. 4,284,493, Cl. 204-299.0EC.

Casio Computer Co., Ltd.: See—  
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Caspers, Karl-Heinz: See—  
Rasch, Walter; Caspers, Karl-Heinz; Wiebecke, Klaus; and Albert, Max, 4,284,041, Cl. 123-193.00H.

Cassella Aktiengesellschaft: See—  
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Caswell, Richard L., to Dresser Industries, Inc. Pilot actuated diaphragm valve. 4,284,212, Cl. 222-333.000.

Caterpillar Tractor Co.: See—  
Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., 4,284,182, Cl. 192-4.00A.

Hoefer, Wayne A., 4,284,309, Cl. 303-50.000.

Reinsma, Harold L., 4,284,281, Cl. 277-84.000.

Cederqvist, Gummar, to Rockwool Aktiebolaget. Method for the production of a fibrous mat. 4,284,471, Cl. 162-152.000.

Celotex Corporation, The: See—  
Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., 4,284,683, Cl. 428-285.000.

Centriflitt, Inc.: See—  
Tijunelis, Donatas; Boyd, Clinton A.; and Vandevier, Joseph E., 4,284,841, Cl. 174-103.000.

Centro Recherche Fiat S.p.A.: See—  
Gallizio, Gabriele; and Balestrino, Giovanni, 4,283,830, Cl. 29-407.000.

Ceron, Sergio. Folding-door comprised of wooden slats and hinges. 4,284,118, Cl. 160-229.00R.

Cesca, Sebastiano; Greco, Alberto; Bertolini, Uguilmo; and Bruzzone, Mario, to Snamprogetti S.p.A. Process for the polymerization of alpha-olefins, catalyst employed in said process and method for the preparation thereof. 4,284,526, Cl. 252-429.00C.

Cessna Aircraft Company, The: See—  
Jackson, Alan D.; Alexander, Frank N.; and Graber, Homer R., 4,283,996, Cl. 91-447.000.

Cetrelli, Renato, to Tetra Pak International AB. Packing containers of laminated material having venting means. 4,284,228, Cl. 229-48.00R.

Cetus Corporation: See—  
Neideman, Saul L.; Amon, William F., Jr.; and Gelgert, John, 4,284,723, Cl. 435-123.000.

CFE Air Cargo, Inc.: See—  
Davidson, Robert W., 4,284,013, Cl. 108-50.000.

CGEE Alstom: See—  
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Chaiko, Walter M., to Ingersoll-Rand Company. Earth structure stabilizer. 4,284,379, Cl. 411-61.000.

Champion International Corporation: See—  
Roccaforte, Harry L., 4,284,193, Cl. 206-45.310.

Stillman, Nathan, 4,284,672, Cl. 428-35.000.

Champion Spark Plug Company: See—  
Kearney, Thomas J., 4,283,999, Cl. 98-115.05B.

Champlin, Charles L., to Packaging Corporation of America. Carrier and handle. 4,284,195, Cl. 206-427.000.

Chaney, Clarence E., to Arco Polymers, Inc. Moldable blend of interpolymer of rubber, methacrylic acid and styrene with polyurethane. 4,284,734, Cl. 525-92.000.

Chang, Eugene Y. C., to American Cyanamid Co. Acrylate copolymers grafted onto a polar, water-soluble backbone polymer. 4,284,740, Cl. 525-292.000.

Chang, Wei K.: See—  
Gold, Elijah H.; and Chang, Wei K., 4,284,555, Cl. 260-239.0BB.

Chao, Tai S.: See—  
Sheets, Jesse E.; Vitchus, Bernard C.; Chao, Tai S.; and Zygowicz, Martin F., 4,284,402, Cl. 431-9.000.

Chapman, William L.: See—  
Coon, Julian B.; Thomas, Bobby J.; Chapman, William L.; and Fowler, James C., 4,284,350, Cl. 356-28.500.

Charlet, Egbert: See—  
Preuss, Reinhard; Charlet, Egbert; Finkel, Peter; and Rosenkranz, Hans J., 4,284,621, Cl. 424-59.000.

Charmasson, Henri J. A.: See—  
Heger, Vernon G.; and Charmasson, Henri J. A., 4,284,985, Cl. 340-572.000.

Chattha, Mohinder S.; and vanOene, Henk, to Ford Motor Company. Oligomeric phosphate/amino composition. 4,284,754, Cl. 528-107.000.

Chay, Dong M.; and Haack, David J., to Du Pont de Nemours, E. I., and Company. Surfactant foams and their use. 4,284,601, Cl. 422-40.000.

Chayka, George A.; and Schneider, Fred J., to Western Electric Co., Inc. Bonding head. 4,284,466, Cl. 156-583.100.

Chemetics International: See—  
Ikura, Michio; Jones, Frederick W. S.; Prime, Harley C.; and Rodger, Ian, 4,284,469, Cl. 159-28.00R.

Chemische Werke Huels, A.G.: See—  
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Chemplex Company: See—  
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Chen, Catherine S. H.; and Sheppard, Edward W., to Mobil Oil Corporation. Oil recovery by waterflooding employing anionic polymeric surfactants. 4,284,517, Cl. 252-8.55D.

Chenevard, Alexis: See—  
Kramer, Ulrich; and Chenevard, Alexis, 4,284,187, Cl. 198-435.000.

Cheney Company, Inc., The: See—  
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Chiba, Toshiyuki: See—  
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Chikugo, Kazuo: See—  
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Chisholm, Melvin D.: See—  
Underhill, Edward W.; Steck, Warren F.; Chisholm, Melvin D.; and Arthur, Alfred P., 4,284,622, Cl. 424-84.000.

Chisso Corporation: See—  
Sagara, Fumio; Kawabata, Hiroshi; and Shiiba, Kiyonori, 4,284,793, Cl. 560-78.000.

Chiu, Randolph K.; Stiff, Douglas A.; and Cox, Francis G., to General Motors Corporation. Vehicle mileage interval detector. 4,284,972, Cl. 340-52.00D.

Chmela, Franz, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Fuel injector valve needle lift control arrangement. 4,284,049, Cl. 123-467.000.

Choberka, John M.; and Rex, Donald K., to International Business Machines Corp. Data matrix print head. 4,284,363, Cl. 400-124.000.

Cholvin, Robert L., to Garrett Corporation, The. Turbocharger control. 4,283,912, Cl. 60-602.000.

Christensen, Edwin H., to Quaker Oats Company, The. Matrix, product therewith, and process. 4,284,652, Cl. 426-72.000.

Christian, Donald K. Drop shelf mechanism. 4,284,207, Cl. 221-90.000.

Chrysler Corporation: See—  
Patchett, David R.; Phipps, Warren J.; and Zaverzence, Harry, 4,284,312, Cl. 339-60.00R.

Chung, Jeremy K.: See—  
Pratt, George W., Jr.; Poss, Robert; and Chung, Jeremy K., 4,283,799, Cl. 3-1.913.

Chupp, John P.: See—  
Alt, Gerhard H.; and Chupp, John P., 4,284,564, Cl. 260-333.000.

Ciarico, Anthony J.: See—  
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,284,084, Cl. 128-748.000.

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Ciba-Geigy Corporation: See—  
Bagga, Madan M., 4,284,574, Cl. 260-348.430.

Berner, Godwin, 4,284,485, Cl. 204-159.150.

Bohner, Beat; and Rempfler, Hermann, 4,284,566, Cl. 260-343.600.

Furrer, Peter; and Beyeler, Harry, 4,284,797, Cl. 562-434.000.

Haug, Theobald, 4,284,752, Cl. 528-68.000.

Lohse, Friedrich; Stockinger, Friedrich; and Eldin, Sameer H., 4,284,755, Cl. 528-111.000.

Martin, Pierre; and Bellus, Daniel, 4,284,821, Cl. 568-381.000.

Tzikas, Athanasios, 4,284,770, Cl. 544-187.000.

Waldmeier, Peter; and Delioi-Stula, Aleksandra, 4,284,638, Cl. 424-267.000.

Weis, Claus D., 4,284,828, Cl. 568-637.000.

Clarke, Robert W.: See—  
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Clarostat Mfg. Co., Inc.: See—  
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Clausing, Challiss I., to Gould Inc. Parallel plane shutter for LK breaker. 4,285,026, Cl. 361-345.000.

Claver, Jorge C., to Qualitas Industrial, S.A. Wall panel clamping apparatus. 4,283,898, Cl. 52-584.000.

Cleak, Nicholas J.; Grant, Barbara D.; and Willson, Carlton G., to International Business Machines Corporation. Lithographic resist composition for a lift-off process. 4,284,706, Cl. 430-191.000.

Clingenpeel, Glenn R., to Storage Technology Corporation. Digital memory providing fixed and variable delays in a TASI system. 4,284,850, Cl. 370-81.000.

Clapay Corporation: See—  
Cancio, Leopoldo V.; Miller, Gerald W.; and Wu, Pai-Chuan, 4,284,671, Cl. 428-35.000.

Clow, Hugh: See—  
Burl, Michael; Clow, Hugh; Harrison, Colin G.; and Young, Ian R., 4,284,950, Cl. 324-320.000.

Clymer, Jack W.: See—  
Plachy, Ivo T.; Clymer, Jack W.; and Pembroke, Richard W., 4,284,250, Cl. 242-68.300.

Coal Industry (Patents) Limited: See—  
Randell, Arthur A., 4,284,242, Cl. 239-422.000.

Cobb, Raymond F.; and Pelchat, M. Guy, to Harris Corporation. Spread spectrum code tracking loop. 4,285,060, Cl. 375-1.000.

Coflexip: See—  
Legallasi, Lucien; Planquette, Guy; and Reynard, Remi, 4,284,249, Cl. 242-54.00R.

Cogelia, Nicholas J.: See—  
Arroyo, Candido J.; Cogelia, Nicholas J.; and Darsey, Ralph J., 4,284,842, Cl. 174-107.000.

Cohen, Howard M.: See—  
Berrin, Lloyd; Cohen, Howard M.; Grupen, William B.; and McElroy, James D., 4,284,970, Cl. 338-195.000.

Cohen, Solomon. Adjustable ladder extender assembly safety attachment. 4,284,172, Cl. 182-204.000.

Cole, Wilbur C., Sr. Endless track support tool. 4,283,828, Cl. 29-256.000.

Coleman, Richard D.: See—  
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Collier, David S.; and Muxworthy, Allan S., to Syd W. Collier Company Limited. Carpet cleaning systems. 4,284,127, Cl. 165-35.000.

Collier, John C., to BICC Limited. Electrical terminal crimping apparatus. 4,283,846, Cl. 29-753.000.

Combustion Engineering, Inc.: See—  
Anthony, Andrew J., 4,284,475, Cl. 176-78.000.

Commissariat a l'Energie Atomique: See—  
Helot, Michel; and Prigent, Raymond, 4,284,892, Cl. 250-388.000.

Lemercier, Guy, 4,284,474, Cl. 176-38.000.

Pottier, Jacques, 4,284,923, Cl. 315-5.510.

Commonwealth Scientific and Industrial Research Organization: See—  
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Compagnie Industrielle des Telecommunications Cit-Alcatel: See—  
Thomas, Luc; and Cardot, Claude, 4,285,044, Cl. 364-721.000.

Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): See—  
Sigel, Pierre L.; Delorme, Raymond L.; and Grosjean, Henri, 4,283,845, Cl. 29-739.000.

Computation Corporation: See—  
Welburn, Ross, 4,284,940, Cl. 318-696.000.

Comstock, Lowell R.; and Smith, Peroy L., to Union Carbide Corporation. Unsaturated polyester compositions. 4,284,736, Cl. 525-169.000.

Conceptual Factors, Inc.: See—  
Lutz, William R., 4,284,058, Cl. 126-9.00R.

Condon, Michael E.: See—  
Ondetti, Miguel A.; and Condon, Michael E., 4,284,779, Cl. 546-189.000.

Ondetti, Miguel A.; and Condon, Michael E., 4,284,780, Cl. 546-189.000.

Conley, Glenn R. Tire repair method and apparatus. 4,284,451, Cl. 156-97.000.

Connor, William R., Jr.; Hubele, Heinz; and Petry, Kurt, to Stahl-Urban Company. Thread monitor for textile machines. 4,284,020, Cl. 112-273.000.

Conoco, Inc.: See—  
Coon, Julian B.; Thomas, Bobby J.; Chapman, William L.; and Fowler, James C., 4,284,350, Cl. 356-28.500.

Echtler, J. Paul; and Scandrol, Roy O., 4,283,954, Cl. 73-706.000.

Lancet, Michael S.; and Curran, George P., 4,284,528, Cl. 252-443.000.

Sweeney, Glenn A., 4,284,139, Cl. 166-267.000.

Consolidated Papers, Inc.: See—  
Endrizzi, Gilbert D., 4,284,453, Cl. 156-154.000.

Coon, Julian B.; Thomas, Bobby J.; Chapman, William L.; and Fowler, James C., to Conoco, Inc. Laser geophone. 4,284,350, Cl. 356-28.500.

Cooper Industries, Inc.: See—  
Kilmer, Paul R.; and Bula, Roger M., 4,284,109, Cl. 140-122.000.

Cooper, Terence A.: See—  
Boyce, Richard J.; and Cooper, Terence A., 4,284,542, Cl. 260-27.00R.



- Coose, James P.: See—  
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,284,895, Cl. 250-445.00T.
- Cordiner, Frank S.: See—  
Sydansk, Robert D.; and Cordiner, Frank S., 4,284,140, Cl. 166-291.000.
- Corey, Joseph T., to Permclip Products Corporation. Expansion folder with accordian-pleat backbone. 4,284,227, Cl. 229-1.50R.
- Corning Glass Works: See—  
Wedding, Brent M., 4,284,686, Cl. 428-334.000.
- Corominas, Gumersindo P. Machine for making meat patties. 4,283,812, Cl. 17-32.000.
- Corry, John: See—  
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- Costantini, Giovanni: See—  
Genevois, Jean L.; Falohi, Roberto; Costantini, Giovanni; and Presti, Paolo, 4,284,404, Cl. 432-37.000.
- Cotic, Dennis J., to General Electric Company. Method for bonding electrode plates in a multicell x-ray detector. 4,283,817, Cl. 29-25.160.
- Coulter Systems Corporation: See—  
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Weber, Harold J., 4,284,490, Cl. 204-298.000.
- Courtright, Burr, Olson, Dale E.; and Smolkowski, Alvin H. Water propelled prime mover in agricultural irrigation systems. 4,284,240, Cl. 239-184.000.
- Coussement, Marc: See—  
van der Heyden, Andre; Coussement, Marc; and Van Peteghem, Antoine, 4,284,618, Cl. 423-605.000.
- Cox, Francis G.: See—  
Chiu, Randolph K.; Stiff, Douglas A.; and Cox, Francis G., 4,284,972, Cl. 340-52.00D.
- CPC International Inc.: See—  
Tamari, Masaki; Kanno, Mitsuo; and Ishii, Yoshiko, 4,284,722, Cl. 435-94.000.
- Craig, James P., Jr., to Monsanto Company. Method for making bicomponent filaments. 4,284,598, Cl. 264-171.000.
- Craighead, Harold G.; and Howard, Richard E., to Bell Telephone Laboratories, Incorporated. Light-absorbing materials. 4,284,689, Cl. 428-620.000.
- Crescent Roofing Company Limited: See—  
Brill-Edwards, Kenneth O. P., 4,284,065, Cl. 126-432.000.
- Cros, Jacques. Method and a covering for heat insulation and protection of a construction. 4,283,888, Cl. 52-3.000.
- Cross, John P.; and Britton, George H., Jr., to Milliken Research Corporation. Process for coloring thermosetting resins. 4,284,729, Cl. 521-158.000.
- Crow, William D.; and Lewis, John G., to Emerson Electric Co. Low actuating force switch. 4,284,864, Cl. 200-153.00V.
- Cualitas Industrial, S.A.: See—  
Claver, Jorge C., 4,283,898, Cl. 52-584.000.
- Culleiton, Charles J.; Das, Subodh K.; and Schoener, Ronald C., to Aluminum Company of America. Chlorination of aluminous materials using preselected solid reducing agents. 4,284,607, Cl. 423-137.000.
- Cummins Engine Company, Inc.: See—  
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- Cunningham, William C.: See—  
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- Cunnington, Ian J.: See—  
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- Curran, George P.: See—  
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- Cuttler, Jerry M.: See—  
Allan, Colin J.; Shields, Ross B.; Cuttler, Jerry M.; and Lynch, Gerard F., 4,284,893, Cl. 250-390.000.
- Cymbalisty, Lubomyr M. O.; and Shaw, Robert C., to Petro-Canada Exploration Inc.; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity; Pan-Canadian Petroleum Limited; Esso Resources Canada Ltd.; Canada-Cities Service, Ltd.; and Gulf Canada Resources Inc. Homogenizer/subsampler for tar sand process streams. 4,284,360, Cl. 366-140.000.
- Dabir, Andre: See—  
Bolle, Jean; and Dabir, Andre, 4,284,520, Cl. 252-45.000.
- Dahl, Ernest A.; and Barry, George H. Battery electrolyte level sensor. 4,284,951, Cl. 324-430.000.
- Daiichi Seiyaku Co., Ltd.: See—  
Ishikawa, Fumiyoshi; and Ashida, Shinichiro, 4,284,773, Cl. 544-247.000.
- Daijin Kogyo Co., Ltd.: See—  
Mori, Shigeru; and Sakitani, Katsumi, 4,285,027, Cl. 361-385.000.  
Ohmori, Akira, 4,284,746, Cl. 525-510.000.  
Tohzuca, Takashi; and Ohsaka, Yohnosuke, 4,284,822, Cl. 568-399.000.
- Daimler-Benz Aktiengesellschaft: See—  
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- Dainippon Ink and Chemicals Inc.: See—  
Mizuno, Shioji; Enokimoto, Norio; and Oji, Kazuyoshi, 4,284,550, Cl. 260-40.00R.
- Dana Corporation: See—  
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- Daniels, Dennis. Line retrieving and dispensing device. 4,283,875, Cl. 43-18.00R.
- Daniels, Peter J. L.; and Rane, Dinanath, to Schering Corporation. Process for the preparation of 5-fluoro-5-deoxy and 5-epi-fluoro-5-deoxy-4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitols and novel 5-fluoro-5-deoxy and 5-epi-fluoro-5-deoxy derivatives produced thereby. 4,284,764, Cl. 536-10.000.
- Danler, Richard W.; and Bilobran, William L. Air conveyor for bottles and bottle preforms. 4,284,370, Cl. 406-86.000.
- Danly Machine Corporation: See—  
Heiberger, Francis E., 4,283,929, Cl. 72-7.000.
- Darin, John K.; Partenheimer, Walter; and Figuly, Joseph D., to Standard Oil Company (Indiana). Minimizing oxygenated aromatic compound content of aqueous solution of reclaimed metal oxidation catalyst. 4,284,523, Cl. 252-420.000.
- Darsey, Ralph J.: See—  
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- Das, Subodh K.: See—  
Culleiton, Charles J.; Das, Subodh K.; and Schoener, Ronald C., 4,284,607, Cl. 423-137.000.
- Dassler, Adolf. Outsole for sport shoes. 4,283,865, Cl. 36-32.00R.
- Davidson, Robert W., to CFE Air Cargo, Inc. Pallet coupling apparatus. 4,284,013, Cl. 108-50.000.
- Davies, Lyn: See—  
Hill, Alistair C.; and Davies, Lyn, 4,283,878, Cl. 43-114.000.
- Davignon, Paul A.: See—  
Newcomb, Paul D.; Davignon, Paul A.; and Miller, Harold M., 4,284,399, Cl. 425-410.000.
- Davis, D. Lynn. Soil sampling device. 4,284,150, Cl. 175-84.000.
- Davis, Dallas R., to Davis Explosive Sources, Inc. Linear explosive charge with constant detonation velocity and synchronous booster charges. 4,284,006, Cl. 102-317.000.
- Davis Explosive Sources, Inc.: See—  
Davis, Dallas R., 4,284,006, Cl. 102-317.000.
- Davis, Leonard C.; Pacala, Theodore; and Sippel, George R., to General Motors Corporation. Regenerator seal. 4,284,658, Cl. 427-34.000.
- Dawson, N. Rick. Environmental control system for a multiple room structure. 4,284,126, Cl. 165-11.00A.
- De la Rue Giori, S.A.: See—  
Giori, Gualtiero, 4,283,902, Cl. 53-399.000.
- Debaigt, Jean, to CGEE Alsthom. Terminal block. 4,284,316, Cl. 339-98.000.
- DeBoer, Roy, Jr.; and Miller, Kenneth G., to Respiratory Care, Inc. Multiple aspirator for nebulizer. 4,284,590, Cl. 261-62.000.
- de Concini, Roberto: See—  
Bellicardi, Francesco; de Concini, Roberto; and Bolelli, Rino, 4,284,039, Cl. 123-463.000.
- Degner, Dieter; Barl, Manfred; and Siegel, Harido, to BASF Aktiengesellschaft. 4-Substituted benzaldehyde-dialkylacetal. 4,284,825, Cl. 568-592.000.
- de Graaf, Stephanus A. G.: See—  
Hoentjen, Gerrit; de Graaf, Stephanus A. G.; Bijkerk, Albert H.; and de Jonge, Cornelis R. H. I., 4,284,772, Cl. 544-218.000.
- DeJarlais, Edward: See—  
Marben, Ronald D., 4,284,267, Cl. 269-266.000.
- DeJarlais, Ralph: See—  
Marben, Ronald D., 4,284,267, Cl. 269-266.000.
- de Jonge, Cornelis R. H. I.: See—  
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- De Lathauwer, Rene; Van Opstal, Martin; and Dijkstra, Albert J., to Safinco. Process for the directed interesterification of a triglyceride oil or oil mixture. 4,284,578, Cl. 260-410.700.
- DeLaurentis, Angelo A.; Zola, Frank G., Jr.; and Specht, Theodore R., to Westinghouse Electric Corp. Method of making an electrical inductive apparatus. 4,283,842, Cl. 29-606.000.
- Delfosse, Pierre; and Strauch, Dieter, to Omya S. A. Coating substances with a high concentration of solids, for coated papers. 4,284,546, Cl. 260-29.00R.
- DeLiban, Robert; and Lieby, David G., to Barrett Electronics Corporation. Vehicle guidance system employing radio blocking. 4,284,160, Cl. 180-168.000.
- Delini-Stula, Aleksandra: See—  
Waldmeier, Peter; and Delini-Stula, Aleksandra, 4,284,638, Cl. 424-267.000.
- Dellinger, Eugene L. Orthodontic appliance method of treatment and manufacture. 4,284,405, Cl. 433-24.000.
- Delorme, Raymond L.: See—  
Sigel, Pierre L.; Delorme, Raymond L.; and Grosjean, Henri, 4,283,845, Cl. 29-739.000.
- del Rio, Eddy H., to RCA Corporation. Means to orbit and rotate target wafers supported on planet member. 4,284,033, Cl. 118-730.000.
- Demou, John G.; Pray, Edward R.; and McBrayer, Robert L., to BASF Wyandotte Corporation. HR foams made with reactive polyol compositions having improved stability. 4,284,728, Cl. 521-155.000.
- Demrick, Carl J., to Herder N.V. Dual wheel caster body structure. 4,283,810, Cl. 16-47.000.
- Dengel, Oltmar H.: See—  
Bowen, Richard E.; Robb, Robert A.; Dengel, Oltmar H.; Gotzmer, Carl; and Pisacane, Frank J., 4,284,617, Cl. 423-504.000.

- Denoyelle, Serge; and Noisette, Pierre, to Alsthom-Unelec. Adjustable electromagnetic tripping mechanism for a circuit-breaker. 4,284,968, Cl. 335-176.000.
- De Pas, Len: See—  
Applebaum, Melvin; De Pas, Len; and Little, William C., 4,283,871, Cl. 40-158.00R.
- Deppen, Jean-Pierre: See—  
Aignesberger, Alois; Deppen, Jean-Pierre; and Rosenbauer, Hans-Gunter, 4,284,433, Cl. 106-90.000.
- Deres Development Corporation: See—  
Lipfert, Donald E., 4,283,864, Cl. 36-28.000.
- De Simone, Robert S., to Hercules Incorporated. Propene trimer and propene tetramer and use thereof in perfumery. 4,284,814, Cl. 564-253.000.
- Detemple, Manfred; and Huebner, Horst, to Schott-Geraete GmbH. Electrode head. 4,284,321, Cl. 339-218.00M.
- Detweiler, Charles A.: See—  
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- Develop Dr. Eisbein GmbH & Co.: See—  
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- Deventer GmbH & Co.: See—  
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- de Vries, Egbert, to Quad Environmental Technologies Corp. Condensation cleaning of particulate laden gases. 4,284,609, Cl. 423-242.000.
- de Vries, Jochem J.: See—  
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- Deyhimi, Ira; Eden, Richard C.; Harris, James S., Jr.; and Bubulac, Lucia O., to Rockwell International Corporation. Buried channel charge coupled device with semi-insulating substrate. 4,285,000, Cl. 357-24.000.
- Dickens, Luther I.; and Nanny, William C. Method of manufacturing a composite panel. 4,284,447, Cl. 156-78.000.
- Dickinson, Norman L. Pollution-free coal combustion process. 4,284,015, Cl. 110-347.000.
- Didier Engineering GmbH: See—  
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- Wagener, Dietrich; Flockenhaus, Claus; and Meckel, Joachim F., 4,284,476, Cl. 201-39.000.
- Diermayer, Werner; and Kutzner, Luitpold. Vent control arrangement for combustion apparatus. 4,284,235, Cl. 236-1.00G.
- Dijkstra, Albert J.: See—  
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- Dinges, Frank. Decorative lighting control with a waveform generator. 4,284,926, Cl. 315-312.000.
- Disa, Ralph E.: See—  
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- Dittburner, Robert C.: See—  
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- Divelbiss, Carl D.; and Dock, Mortimer R., to Divelbiss, Frances K. Apparatus for transfer of fluent materials from one container to another. 4,284,110, Cl. 141-98.000.
- Divelbiss, Frances K.: See—  
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- Dock, Mortimer R.: See—  
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- Dr. Ing. h.c.F. Porsche Aktiengesellschaft: See—  
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- Dr. Ing Rudolf Hell GmbH: See—  
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- Dodonov, Jury I. Microwave magnetron-type device. 4,284,924, Cl. 315-39.510.
- Domek, John A., to Efdyn Corporation. Self-adjusting shock absorber having staged metering. 4,284,177, Cl. 188-280.000.
- Don Norton Manufacturing Co., Inc.: See—  
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- Donaghy, Robert E.; and Sherman, Anna H., to General Electric Company. Electroless deposition process for zirconium and zirconium alloys. 4,284,660, Cl. 427-57.000.
- Doorakian, George A.: See—  
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- Dorschner, Terry A.: See—  
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- Doswald, Paul, to Sandoz Ltd. Monocyclic compounds having a 6-(2'-N-alkylanilino)-4-chloro-1',3',5'-triazinyl-6'-amino or alkylamino)-1-hydroxy-3-sulfonaphthalene coupling component radical. 4,284,554, Cl. 260-153.000.
- Douglass, Paul W.; and Trotta, Robert A., to Gillette Company, The. Razor blade assembly with a removable blade cartridge. 4,283,850, Cl. 30-47.000.
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- Dow Corning Corporation: See—  
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- Dowbenko, Rostyslaw: See—  
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- Downey, John. Battery operated personal alarm. 4,284,982, Cl. 340-546.000.
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- Doyle, Richard C., to Slater Electric Inc. Electrical wiring connector. 4,284,317, Cl. 339-103.00R.
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- Dresser Industries, Inc.: See—  
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- Drews, Hilbert F. P. Driven craft having surface means for increasing propulsion efficiencies. 4,284,302, Cl. 296-1.00S.
- Drews, John W. Vehicle safety fender trim. 4,284,328, Cl. 350-97.000.
- Drews, Ulrich: See—  
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- Drexler, Jerome; and Bouldin, Eric W., to Drexler Technology Corporation. Broadband reflective laser recording and data storage medium with absorptive underlayer. 4,284,716, Cl. 430-510.000.
- Drexler Technology Corporation: See—  
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- Dreyer, Klaus; Grewe, Hans; Kolaska, Johannes; and Reiter, Norbert, to Fried Krupp Gesellschaft mit beschränkter Haftung. Compound body. 4,284,687, Cl. 428-336.000.
- Dreyfus, Gerard: See—  
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- Drosdzio, Hermann: See—  
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- Drysdale, William H.: See—  
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- DuBois, Chester G.: See—  
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- Duesterhoef, Donald A.: See—  
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- Dumenil, Claude G.; and Dumenil, Louis P. Automatic base seal. 4,283,884, Cl. 49-307.000.
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- Dunham-Bush, Inc.: See—  
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- Dunlap, Terry A.: See—  
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- Dunn, Michael D. Greenhouse construction. 4,283,889, Cl. 52-66.000.
- Du Pont de Nemours, E. I., and Company: See—  
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- Burg, Marion, 4,284,710, Cl. 430-271.000.
- Chay, Dong M.; and Haack, David J., 4,284,601, Cl. 422-40.000.
- Grant, John W., 4,284,497, Cl. 209-155.000.
- Grant, John W.; Kirkland, Joseph J.; and Yau, Wallace W., 4,284,498, Cl. 209-155.000.
- Lee, Kyu T., 4,284,777, Cl. 546-90.000.
- Dupressoir, Albert, to Thomson-CSF. Common antenna for primary and secondary radar system. 4,284,991, Cl. 343-725.000.
- Durant, Graham J.; Emmert, John C.; Ganellin, Charon R.; and Prain, Hunter D., to Smith Kline & French Laboratories Limited. Ethylene derivatives. 4,284,640, Cl. 424-270.000.
- Durckheimer, Walter: See—  
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- Durrer, Jorg; and Mayer, Cornelius, to Werkzeugmaschinenfabrik Oerlikon-Bührle AG. Apparatus for eliminating external weather effects from the objective lens system of an aiming periscope installed at an armed vehicle. 4,284,326, Cl. 350-63.000.
- Dursch, Walter: See—  
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- Dusseau, Charles H. V.: See—  
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- Dycem Limited: See—  
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- Dymont, John C.; Straus, Jozef; Kovats, Tibor F. I.; Sinclair, William J.; and Springthorpe, Anthony J., to Northern Telecom Limited. Electro-optic devices. 4,284,884, Cl. 250-205.000.



- Dynamit Nobel Aktiengesellschaft: See—  
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- Dynasciences Corporation: See—  
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- E M I Limited: See—  
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- E. R. Squibb & Sons, Inc.: See—  
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- Ondetti, Miguel A.; and Condon, Michael E., 4,284,779, Cl.  
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- Petrillo, Edward W., Jr.; and Ondetti, Miguel A., 4,284,561, Cl.  
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- E. Schluter Fachhandel fur Schweisstechnik: See—  
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- Eagle, Joseph, to Ortner Freight Car Company. Restraint assembly for  
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4,284,011, Cl. 105-310.000.
- Eakman, James M.; and Marshall, Harry A., to Exxon Research &  
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- Eastman Kodak Company: See—  
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- Fleming, James C.; Manthey, Joseph W.; and Brongo, Ralph T.,  
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- Ebara Corp.: See—  
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- Ebert, Michael: See—  
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- Reick, Franklin G., 4,284,519, Cl. 252-16.000.
- Echler, J. Paul; and Scandrol, Roy O., to Conoco Inc. High tempera-  
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- Eckhard, Klaus, to Howaldtswerke-Deutsche Werft Aktiengesellschaft  
Hamburg und Kiel. Rudder arrangement for ships. 4,284,025, Cl.  
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- Eden, Richard C.: See—  
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- Edmonds, Byron P.; and Porter, Selby W., to PPG Industries Canada  
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- Edoardo Weber S.p.A.: See—  
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- Edward, Robert M., Jr., to JB Development Corporation. Dial gauge  
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- Edwards, Kenneth M., to United States of America, Air Force. Tail  
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- Efdyn Corporation: See—  
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- Egawa, Mitsuo: See—  
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- Eguchi, Seiji: See—  
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- Eguchi, Wataru; Harada, Makoto; Tanigaki, Masataka; and Tada,  
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- Ehmann, Willy. Hair curler. 4,284,091, Cl. 132-40.000.
- Ehret, Robert J., to Beckman Instruments, Inc. Overspeed shutdown  
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- Ehrlich, Joseph R., to Wachtel, Jack S., a part interest. Aqueous bubble  
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- El Paso Polyolefins Company: See—  
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- Elcoat Systems, Inc.: See—  
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- Eldin, Sameer H.: See—  
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- Electric Machinery Mfg. Company: See—  
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- Electromedics, Inc.: See—  
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- Electronic Research Assoc., Inc.: See—  
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- Eli Lilly and Company: See—  
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- Elias, Jiri. Heating installation having a radiation- and convection floor  
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- Ellinger, Hunter D.: See—  
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Coose, James P.; Ellinger, Hunter D.; and Jagger, James W.,  
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- Eltra Corporation: See—  
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- Emerson Electric Co.: See—  
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- EMP AG: See—  
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- Emson Research, Inc.: See—  
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- Endrizzi, Gilbert D., to Consolidated Papers, Inc. Method of imparting  
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- Engelhard Minerals & Chemicals Corporation: See—  
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- Engelhardt, Manfred; Reinink, Jan; de Vries, Jochem J.; and Tietjens,  
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- Engelsmann, Dieter: See—  
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- Engineering Enterprises, Inc.: See—  
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- England, John R., to Inco Limited. Non-rotating spring loaded stabi-  
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- Engle, Carl E.; and Moldenhauer, Don, to Hydro Ag-Tech Inc. Honey  
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- Enokimoto, Norio: See—  
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- Enterprise d'Equipements Mecaniques et Hydrauliques: See—  
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- Envirotech Corporation: See—  
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- Erb, Edgar M.: See—  
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- Eriksson, Erik F. Apparatus for defibrating and conditioning nonflow-  
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- Ernst, Horst M.: See—  
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- Magel, Rolf, 4,284,334, Cl. 354-24.000.
- Esposito, Patsy. Telescoping handle for a small heavy duty hand truck.  
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- Essex Group, Inc.: See—  
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- Eso Resources Canada Ltd.: See—  
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- Esterowitz, Leon; Allen, Roger E.; Kruer, Melvin R.; and Bartoli,  
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- Ettinger, Donald H., to USM Corporation. Stud welding with fluid  
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- Etzold, Roland. Method and apparatus for flattening wood based pan-  
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- Evans, Albert B., Jr.: See—  
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- Evans, Geoffrey I.; and Gordon, Stuart, to Imperial Metal Industries  
(Kynoch) Limited. Combustion inhibitors. 4,284,592, Cl. 264-3.00R.
- Evans, Harold R.; and Cunningham, Ian J., to Tekron Licensing B.V.  
Exercise machines. 4,284,272, Cl. 272-72.000.
- Evans, Sara M. Fire resistant identification device. 4,284,296, Cl.  
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- Eveson, Geoffrey F.; and Scruby, Alan W., to Laporte Industries  
Limited. Methods of containing fluids deleterious to the container.  
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- Excellon Industries: See—  
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- Exxon Research & Engineering Co.: See—  
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- Nahas, Nicholas C., 4,284,416, Cl. 48-197.00R.
- Rao, Bhaskara M. L.; Eustace, Daniel J.; and Farcasiu, Dan,  
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- Rello, Michael J., 4,284,364, Cl. 400-234.000.
- Shaub, Harold; and Pecoraro, Joseph M., 4,283,940, Cl. 73-116.000.
- Fabrica de Aparatos de Aire Acondicionado: See—  
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- Fahey, Darryl R.: See—  
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- Fahey, Robert J.: See—  
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- Fahmy, Mohamed A., to Mobil Oil Corporation. O-aryl S-branched  
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- Falohi, Roberto: See—  
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- Farcasiu, Dan: See—  
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- Farr, Robert A.: See—  
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- Faulin, Antonio. Ski fastener structure. 4,284,292, Cl. 280-618.000.
- Faulkner, Alfred H. Capture system for an electronic musical instru-  
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- Fava, Ronald A., to Arco Polymers, Inc. Polyphenylene oxide blend  
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- Fayez, Abraham: See—  
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- Fayolle, Bernard, to Rhone Poulenc Industries. Thermotropic aromatic  
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- Fazzini, Daniel B. Cutting tool. 4,283,853, Cl. 30-265.000.
- Feldstein, Nathan. Process for metal deposition of a non-conductor  
substrate. 4,284,666, Cl. 427-304.000.
- Felkel, Gerfried; and Klann, Joerg, to Siemens Aktiengesellschaft. High  
voltage stable optical coupler. 4,284,898, Cl. 250-551.000.
- Fennel, Robert H., III; and McKinney, Robert W., to Dynasciences  
Corporation. Virus titration and identification system. 4,284,725, Cl.  
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- Ferland, Omer. Industrial vacuum cleaner. 4,284,422, Cl. 55-300.000.
- Ferris, Donald L., to United Technologies Corp. Blade fold restraint  
system. 4,284,387, Cl. 416-134.00A.
- Ferro Corporation: See—  
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Cl. 252-62.3BT.
- Ferrofluidics Corporation: See—  
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- Ferwerda, Jerry J.: See—  
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- Fiat-Allis Machine Movimento Terra S.p.A.: See—  
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- Fiber Associates, Inc.: See—  
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- Figuly, Joseph D.: See—  
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- Findeisen, Kurt: See—  
Helling, Gunter; Kraft, Werner; Findeisen, Kurt; and Himmel-  
mann, Wolfgang, 4,284,708, Cl. 430-216.000.
- Wegner, Christian; Findeisen, Kurt; and Weider, Franz, 4,284,544,  
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- Fink, Joel H., to United States of America, Energy. Neutral beam  
monitoring. 4,284,952, Cl. 324-464.000.
- Finkel, Peter: See—  
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Hans J., 4,284,621, Cl. 424-59.000.
- Fischer, Bruno, to International Standard Electric Corporation.  
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with two exposures. 4,284,695, Cl. 430-24.000.
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sampling. 4,285,058, Cl. 370-119.000.
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- Fishfader, Stanley S. Load measuring device. 4,283,942, Cl. 73-862.650.
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Martin, Donald M.; and Rowe, Peter A., 4,284,613, Cl. 423-310.000.
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- Flake, Duane W. Method and apparatus for forming a studless wall  
system. 4,283,893, Cl. 52-241.000.
- Flanders, Thomas E.; and Moore, Herbert E., to General Electric  
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- Fleming, James C.; Manthey, Joseph W.; and Brongo, Ralph T., to  
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hydrogen source photoreductant and tetrazolium salt. 4,284,704, Cl.  
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- Fletcher, Herbert E. Polyurethane gripping material. 4,284,275, Cl.  
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- Fliri, Anton: See—  
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- Flockenhaus, Claus: See—  
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- Flowers, Thad: See—  
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Navinchandra K., 4,283,909, Cl. 57-306.000.
- Flynn, Richard T.: See—  
Kindell, Jerry L.; and Flynn, Richard T., 4,285,035, Cl.  
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- FMC Corporation: See—  
Albright, Charles D., 4,284,368, Cl. 405-291.000.
- Scudder, Roy, 4,283,906, Cl. 56-330.000.
- Folser, Karl: See—  
Theurer, Josef; and Folser, Karl, 4,284,009, Cl. 104-7.00R.
- Ford Aerospace & Communications Corp.: See—  
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and apparatus for coiler head cleaning. 4,283,814, Cl. 19-159.00R.
- Ford Motor Company: See—  
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528-107.000.
- Gable, Melvin G.; and Sherman, Richard H., 4,284,976, Cl. 340-  
147.00R.
- Leonard, Allan S., 4,284,096, Cl. 137-48.000.
- Woodward, Gary F., 4,284,882, Cl. 235-96.000.
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Arnell, Claes G.; and Olsson, Erik G., 4,284,007, Cl. 102-477.000.
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corner joints of sealing profiles for windows, doors or the like.  
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- Forster, Franz H., to Linde Aktiengesellschaft. Spring return mecha-  
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- Forster, Lloyd N.: See—  
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Lapshin, Evgeny I.; Ostrovsky, Alexandr S.; and Savchenko,  
Alexandr I., 4,284,927, Cl. 315-340.000.
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Walker, David M., to Hughes Microelectronics Ltd. Position sensing  
transducer. 4,284,990, Cl. 340-870.320.
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Fowler, James C., 4,284,350, Cl. 356-28.500.
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- Fox, Fred K., to Engineering Enterprises, Inc. Well drilling tool.  
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Theurer, Josef; and Folser, Karl, 4,284,009, Cl. 104-7.00R.
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Dreyer, Klaus; Grewe, Hans; Kolaska, Johannes; and Reiter, Norbert, 4,284,687, Cl. 428-336.000.

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Gruber, Gerald W.; Friedlander, Charles B.; McDonald, William H.; and Dowbenko, Rostyslaw, 4,284,776, Cl. 544-400.000.

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Kraft, Winfried; Lisfeld, Robert; Hagner, Willi; Wieber, Karl; and Frimmel, Horst, 4,284,327, Cl. 350-87.000.

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Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Plempel, Manfred, 4,284,639, Cl. 424-269.000.

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Tschirch, Richard P.; Sidman, Kenneth R.; and Frosch, Robert A., 4,284,682, Cl. 428-263.000.

Frosch, Robert A. Administrator of the National Aeronautics and Space Administration, with respect to an invention of Anne K. St. Clair, Larry T. Taylor, Terry L. St. Clair; See—  
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Hayashi, Takashi, 4,284,093, Cl. 133-4.00A.

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Ito, Eiichi; and Nakayama, Takao, 4,284,703, Cl. 430-142.000.

Kato, Hisatoyo; Matsumoto, Seiji; and Miyahara, Junji, 4,284,889, Cl. 250-355.000.

Kudo, Hisashi, 4,284,357, Cl. 356-431.000.

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Ohara, Yuji; and Ohnishi, Masahiro, 4,285,012, Cl. 358-293.000.

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Sekine, Jiro, 4,284,332, Cl. 352-208.000.

Toya, Ichizo; and Fuseya, Yoshiharu, 4,284,717, Cl. 430-567.000.

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Sato, Masamichi; and Fujii, Itsuo, 4,284,713, Cl. 430-323.000.

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Kawada, Shigeki; Fujioka, Yoshiki; and Ohta, Naoto, 4,284,932, Cl. 318-338.000.

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Kaiouma, Hiroyuki; Okuda, Yukio; and Fujisawa, Yoshiaki, 4,283,920, Cl. 62-126.000.

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Fukami, Harukazu; See—  
Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; Ninomiya, Kunihiko; and Egawa, Mitsuo, 4,284,637, Cl. 424-267.000.

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Kusumoto, Sho; Fukuda, Yoshio; Nemoto, Sadao; and Sakurama, Naoki, 4,284,887, Cl. 250-272.000.

Fukui, Tsugushi; See—  
Sato, Norimoto; Miyaoka, Minoru; Yamasaki, Shin; Inoue, Kimio; Kuriyama, Akimasa; Fukui, Tsugushi; Asai, Toshihiro; Nakagawa, Kazuhiko; and Masaki, Tatuo, 4,284,358, Cl. 366-97.000.

Fukumoto, Teruhisa; See—  
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Namiki, Ryoichi; Higashi, Yuichiro; Kikuchi, Toshiyuki; Fukushima, Ichiro; Asahina, Yasuo; and Soga, Setsuo, 4,284,875, Cl. 219-216.000.

Fukutome, Akira; See—  
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Abbott, Jerry J.; Fuller, Sterritt R.; and Jachimiak, Paul D., 4,284,701, Cl. 430-111.000.

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Bush, Randall G.; and Gach, Peter P., 4,284,200, Cl. 215-215.000.

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Leikhim, John W.; Gajewski, James M.; and Kuzel, Maryann, 4,284,532, Cl. 252-528.000.

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Durant, Graham J.; Emmett, John C.; Ganellin, Charon R.; and Prain, Hunter D., 4,284,640, Cl. 424-270.000.

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Carlson, Lewis R.; and Gassman, Dennis C., 4,285,040, Cl. 364-200.000.

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Gaus, Harry, to Braun Aktiengesellschaft. Loudspeaker enclosure. 4,284,168, Cl. 181-199.000.

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Stefan, Mihaly; Almashegyi, Lajos; Horvath, Csaba; Madarasz nee Helesfai, Agnes; Arato, Peter; and Geiger, Jozsef, 4,284,436, Cl. 148-2.000.

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Muth, Myron C.; Schilling, William F.; Teaney, Edwin L.; and Willmott, Leo C., 4,283,822, Cl. 29-156.80H.

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Tiemann, Jerome J., 4,284,908, Cl. 307-221.00D.

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Regueiro, William R., 4,284,941, Cl. 318-587.000.

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Gilovich, Paul A., to Microcomputer Systems Corp. Disc, tape and hybrid disc-tape memory apparatus and drive assembly. 4,285,016, Cl. 360-84.000.

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Humber, David C.; Laing, Stuart B.; and Weingarten, Gordon G., 4,284,767, Cl. 544-22.000.

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Goebel, Franz; and McHugh, William T., to GTE Products Corporation. Electrochemical cell. 4,284,691, Cl. 429-105.000.

Goettler, Hans J.; See—  
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Kline, Richard H., 4,284,823, Cl. 568-433.000.

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Parker, Dane K.; and Steichen, Richard J., 4,284,516, Cl. 210-757.000.

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Evans, Geoffrey I.; and Gordon, Stuart, 4,284,592, Cl. 264-3.00R.

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Bowen, Richard E.; Robb, Robert A.; Dengel, Ottmar H.; Ootzmer, Carl; and Pisacane, Frank J., 4,284,617, Cl. 423-504.000.

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Scapes, John N.; and Soos, Joseph S., 4,284,100, Cl. 137-343.000.

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Simpson, Howard D.; Gowdy, Hugh W.; and Light, Steven D., 4,284,531, Cl. 252-465.000.

Grabe, Johan G., to Boart International Limited. Positioning deflection wedges. 4,284,136, Cl. 166-117.500.

Graber, Homer R.; See—  
Jackson, Alan D.; Alexander, Frank N.; and Graber, Homer R., 4,283,996, Cl. 91-447.000.

Graeme, Jerald G., to Burr-Brown Research Corporation. Method for thermal testing and compensation of integrated circuits. 4,284,872, Cl. 219-121.01J.

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Graham, Erwin W.; and Graham, Wayne B. Spindle-height gage and method of calibration. 4,283,857, Cl. 33-169.00R.



- Graham, Roy R., to PPG Industries, Inc. Sizing composition for glass fibers. 4,284,538, Cl. 260-17.4ST.
- Graham, Wayne B.: See—  
Graham, Erwin W.; and Graham, Wayne B., 4,283,857, Cl. 33-169.00R.
- Gram, Hans, to Brodrene Gram A/S. Apparatus for processing articles comprising elevator means for conveying carpet-formed carriers in the vertical direction. 4,284,188, Cl. 198-472.000.
- Granda, Edward J.: See—  
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,284,824, Cl. 568-445.000.
- Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,284,654, Cl. 426-538.000.
- Granges Myby AB: See—  
Gammel, Goran; and Aslund, Christer, 4,284,439, Cl. 148-12.0EA.
- Grant, Barbara D.: See—  
Ciecak, Nicholas J.; Grant, Barbara D.; and Willson, Carlton G., 4,284,706, Cl. 430-191.000.
- Grant, John W., to Du Pont de Nemours, E. I., and Company. Rotor for sedimentation field flow fractionation. 4,284,497, Cl. 209-155.000.
- Grant, John W.; Kirkland, Joseph J.; and Yau, Wallace W., to Du Pont de Nemours, E. I., and Company. Apparatus for field flow fractionation. 4,284,498, Cl. 209-155.000.
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- Grattapaglia, Giorgio, to Fiat-Allis Macchine Movimento Terra S.p.A. Control system for power shift transmission. 4,283,964, Cl. 74-471.0XY.
- Great Lakes Carbon Corporation: See—  
Horse, Otis J., Jr.; and Grindstaff, Lloyd I., 4,284,612, Cl. 423-345.000.
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- Greco, Alberto: See—  
Cesca, Sebastiano; Greco, Alberto; Bertolini, Guglielmo; and Bruzzzone, Mario, 4,284,526, Cl. 252-429.00C.
- Greene, Paul E.: See—  
Loebner, Egon E.; and Greene, Paul E., 4,284,467, Cl. 156-613.000.
- Greenlee, Fred S., III. Horizontal accumulating conveyor. 4,284,190, Cl. 198-783.000.
- Gregory, Peter: See—  
Pigott, Stanley W.; and Gregory, Peter, 4,283,931, Cl. 72-45.000.
- Greve, Heinz; Tolasch, Gerhard; Heitmann, Uwe; and Wahle, Gunter, to Hauni-Werke Korber & Co. KG. Method and machine for making a filter rod. 4,283,998, Cl. 493-4.000.
- Greve, Helmut, to Dr.-Ing Rudolf Hell GmbH. Driving ink jet recording elements. 4,284,996, Cl. 346-140.00R.
- Grewe, Hans: See—  
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- Grieco, Paul A., to University of Pittsburgh. Prostaglandin derivatives. 4,284,794, Cl. 560-121.000.
- Grieg, Donald D.: See—  
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- Griffin, Charles F.: See—  
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- Griffith, James R.; and O'Rear, Jacques G., to United States of America. Navy. Cis-trans fluoropolyol polyacrylate. 4,284,747, Cl. 525-530.000.
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- Grindstaff, Lloyd I.: See—  
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- Grobe, Klaus; Zeiler, Hans-Joachim; and Metzger, Karl G., to Bayer Aktiengesellschaft. Process for the preparation of 4-pyridone-3-carboxylic acids and/or derivatives thereof. 4,284,629, Cl. 424-246.000.
- Grose, Ronald D., to Internorth. Fracture arrestor for a pipeline. 4,284,107, Cl. 138-172.000.
- Grosjean, Henri: See—  
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- Gruber, Gerald W.; Friedlander, Charles B.; McDonald, William H.; and Dowbenko, Rostyslaw, to PPG Industries, Inc. Radiation curable Michael addition amine adducts of amide acrylate compounds. 4,284,776, Cl. 544-400.000.
- Gruda, Zbigniew; and Kurzeba, Wieslaw. Method of continuous freezing of food products in bulk, especially of fruits and vegetables, and an apparatus for application of the method. 4,283,923, Cl. 62-303.000.
- Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig: See—  
Rinkus, Hans-Georg, 4,285,021, Cl. 360-137.000.
- Gruner, Heiko; and Handtmann, Dieter, to Robert Bosch GmbH. Apparatus for measuring the mass of a fluid medium. 4,283,944, Cl. 73-204.000.
- Grunewald, Paul: See—  
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- Gruppen, William B.: See—  
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- Gspomer, Arnold; and Schnitzer, Hans, to Gebrueder Buehler AG. Take-up head for bulk material conveyor installation. 4,284,369, Cl. 406-52.000.
- GTE Laboratories Incorporated: See—  
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- GTE Products Corporation: See—  
Anderson, Richard W.; Fahey, Robert J.; McClellan, William R.; and Schlener, J. Edward, 4,284,849, Cl. 179-5.00R.
- Bessone, Carlo S.; and Roche, William J., 4,284,925, Cl. 315-240.000.
- Goebel, Franz; and McHugh, William T., 4,284,691, Cl. 429-105.000.
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- Gunderson, Charles F. Solar heat collector for gasses. 4,284,068, Cl. 126-438.000.
- Gursky, Michael T., to Western Electric Co., Inc. Method of bonding semiconductor devices to carrier tapes. 4,283,839, Cl. 29-589.000.
- H. Adler Associates, Inc.: See—  
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- H. C. Price Co.: See—  
Lively, Steven A.; and Madden, Stephen K., 4,284,385, Cl. 414-747.000.
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Levasseur, Joseph L., 4,284,208, Cl. 221-129.000.
- Haack, David J.: See—  
Chay, Dong M.; and Haack, David J., 4,284,601, Cl. 422-40.000.
- Haas, Karl-Heinz; and Lang, Werner, to Kraftwerk Union Aktiengesellschaft. Pipe or vessel with internal lining. 4,284,106, Cl. 138-147.000.
- Hacker, Fritz: See—  
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- Haack, Jacques R. G.: See—  
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- Hagan, Joseph R.: See—  
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- Hagenlocher, Walter; Hesse, Heinz; Kleebar, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohne, Rudiger, to Robert Bosch GmbH. Protective cover cap for an automotive-type alternator-rectifier combination. 4,284,914, Cl. 310-68.00D.
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- Hager Hinge Company: See—  
Senften, David A., 4,284,861, Cl. 200-61.700.
- Hagi, Chitoshi: See—  
Tokunaga, Masaaki; Hagi, Chitoshi; and Murayama, Hirokazu, 4,284,440, Cl. 148-31.570.
- Hagin, Faust, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Omnibus having a flywheel energy accumulator. 4,283,966, Cl. 74-572.000.
- Hagner, Willi: See—  
Kraft, Winfried; Lisfeld, Robert; Hagner, Willi; Wieber, Karl; and Frimmel, Horst, 4,284,327, Cl. 350-87.000.
- Hahn, Karl; and Biethan, Uwe, to Chemische Werke Huels, A.G. Process for the manufacture of reaction products of conjugated diolefins and aromatic hydrocarbons. 4,284,836, Cl. 585-438.000.
- Hajime Industries Ltd.: See—  
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- Hajos, Zoltan G., to Ortho Pharmaceutical Corporation. Total synthesis of 1RS,4SR,5RS-4-(4,8-dimethyl)-5-hydroxy-7-nonen-1-yl)-4-methyl-3,8-dioxabicyclo[3.2.1]octane-1-acetic acid and related compounds. 4,284,565, Cl. 260-340.600.
- Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., to Caterpillar Tractor Co. Vehicle steering brake and clutch control. 4,284,182, Cl. 192-4.00A.
- Halcon Research and Development Corp.: See—  
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- Hall, John B.: See—  
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- Hall & Myers: See—  
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- Hall, Richard, to Technalitics, Inc. Naso-gastric tube stabilizer. 4,284,076, Cl. 128-207.180.
- Hallberg, Irving H., to Borg-Warner Corporation. Fuel system. 4,284,588, Cl. 261-36.00A.
- Hamilton, Joel A. Rotary dispensing chambers with simultaneous size adjustment. 4,284,030, Cl. 118-406.000.
- Hamilton, Robert S., to Kennecott Corporation. BN Bonded BN fiber article and method of manufacture. 4,284,610, Cl. 423-290.000.
- Hamsch, Paul H., Jr., to Monarch Marking Systems, Inc. Method of making print head assembly. 4,283,832, Cl. 29-434.000.
- Hamman, Ingeborg: See—  
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- Handtmann, Dieter: See—  
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- Handwerk, Richard H.: See—  
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- Hanifin, John W., Jr.; and Ridge, David N., to American Cyanamid Company. Substituted phenyl esters of isoxazolecarboxylic acids. 4,284,785, Cl. 548-248.000.
- Hanisko, John C. P., to Bendix Corporation. The Sequential injector timing apparatus. 4,284,052, Cl. 123-490.000.
- Hank, Dietrich, to VEB Polygraph Druckmaschinenwerke Leipzig. Pressing roller for use in sheet-advancing arrangements. 4,284,222, Cl. 226-181.000.
- Hanley, Brian G.: See—  
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- Hansen, Carl C.; and Lauridsen, Ole M. Electrode for implantation into the cochlea (II). 4,284,085, Cl. 128-784.000.
- Hansen, Kenneth N., to Allis-Chalmers Corporation. Hand and foot throttle control. 4,283,965, Cl. 74-482.000.
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- Hansen, W. Peter; and Hoffman, Robert A., to Ortho Diagnostics, Inc. Method and apparatus for automated identification and enumeration of specified blood cell subclasses. 4,284,412, Cl. 21-230.00B.
- Happel, Robert, to Daimler-Benz Aktiengesellschaft. Method for operating an air-compressing auto-igniting internal combustion engine and injection valve suitable therefor. 4,284,043, Cl. 123-299.000.
- Haque, Yusuf A., to American Microsystems, Inc. CMOS Operational amplifier with reduced power dissipation. 4,284,957, Cl. 330-253.000.
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- Haraikawa, Tetsuo; and Tamura, Koichi, to Tokico Ltd. Mechanically operated disc brake. 4,284,176, Cl. 188-71.700.
- Harbert, Charles A.: See—  
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- Hardigg Industries, Inc.: See—  
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- Hare, Donald S. Method for transferring creative artwork onto fabric. 4,284,456, Cl. 156-234.000.
- Harrison Electric Co., Ltd.: See—  
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- Harless, Orville F.: See—  
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- Harper, Stanley A., to RCA Corporation. Method for improving the adherence of a phosphor-photobinder layer to a glass support. 4,284,694, Cl. 430-23.000.
- Harrell, John T.: See—  
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- Harris, Arthur M., to General Atomic Company. Helically coiled tube heat exchanger. 4,284,134, Cl. 165-163.000.
- Harris Corporation: See—  
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- Harris, James S., Jr.: See—  
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- Harris, William J.; and Waelender, William J., to Anemostat Products Div., Dynamics Corporation of America. Air conditioning control system with master and tracking controllers. 4,284,237, Cl. 236-49.000.
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- Harrison, Colin G.: See—  
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- Harrison, John: See—  
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- Hart, James A., to Progressive Dynamics, Inc. Lampholder-switch module. 4,285,033, Cl. 362-295.000.
- Hartman, Kenneth D.: See—  
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- Hascoc, Norman. Method of fabricating a metallic hermetic sealing cover for a container. 4,284,481, Cl. 204-27.000.
- Hasegawa, Wataru: See—  
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- Hasegawa, Yoshimichi; Furuta, Osamu; Shinta, Jouji; and Nakamura, Hideo, to Aichi Steel Works Limited. Roller-dies-processing method and apparatus. 4,283,930, Cl. 72-8.000.
- Hashimoto, Hideyuki; Kyogoku, Yoshito; and Katada, Hiroshi, to Hitachi, Ltd. Contactless ignition system for internal combustion engine. 4,284,046, Cl. 123-418.000.
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- Hashimoto, Tsutomu: See—  
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- Haskins, Steve W.: See—  
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- Hassig, Helmut: See—  
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- Hastings Manufacturing Company: See—  
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- Hatano, Yoshio: See—  
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- Hatfield, Ronald D.: See—  
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- Hather, Robert K., to Woolpert, Mark. Pickup truck cover and hinge construction. 4,284,303, Cl. 296-100.000.
- Hattori, Masaichi: See—  
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- Haug, Theobald, to Ciba-Geigy Corporation. Process for producing crosslinked unsaturated polymers by reaction of  $\beta$ -aminocrotonic acid esters, nitriles or amides with polyisocyanates. 4,284,752, Cl. 528-68.000.
- Hauke, Francis E.: See—  
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- Hauni-Werke Korber & Co. KG: See—  
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- Greve, Heinz; Tolasch, Gerhard; Heitmann, Uwe; and Wahle, Gunter, 4,283,998, Cl. 493-4.000.
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- Reuland, Joachim, 4,284,087, Cl. 131-84.00C.
- Haven, Duane A.; and Arneson, Robert L., to Tektronix, Inc. Process for making bistable storage cathode ray tube. 4,284,661, Cl. 427-64.000.
- Hawkins, Billy C.: See—  
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- Hayashida, Yoshihiro; Tateoka, Kiyoshi; and Ando, Hiromi, to Tokico Ltd. Servo booster. 4,283,993, Cl. 91-376.00R.
- Hayashida, Yoshihiro, to Tokico Ltd. Brake pressure control valve. 4,284,308, Cl. 303-6.00C.
- Hayes, Bobby L.: See—  
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- Hayes, Richard A.: See—  
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- Hayward, Richard; Bottrill, John; and Dittburner, Robert C., to Northern Telecom Limited. Universal signal generator for generating telephone system high level signals. 4,284,854, Cl. 179-84.0VF.
- Hazen, George G.: See—  
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- Hechtischer, Gustav: See—  
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- Heger, Vernon G.; and Charmasson, Henri J. A., to Heger, Vernon G. Stolen equipment recovery device. 4,284,985, Cl. 340-572.000.
- Heiberger, Francis E., to Danly Machine Corporation. Coded automatic counterbalance control. 4,283,929, Cl. 72-7.000.
- Heilman, Richard A., to PPG Industries, Inc. Method of and apparatus for comparing surface reflectivity. 4,284,356, Cl. 356-429.000.
- Heimala, Seppo O.; and Tuovinen, Frana H., to Outokumpu Oy. Process for coating an electrically nonconductive material with metal. 4,284,665, Cl. 427-203.000.
- Heine, Rolf, to Herbert Kannegiesser GmbH & Co. Automatic stacking apparatus for variable length textile fabrics. 4,284,462, Cl. 156-350.000.
- Heiniger, Wilfried; Kreienbuhl, Claude; and Millan, Manuel, to Boles International SA. Range finder for focusable photographic or cinematographic camera. 4,283,863, Cl. 354-25.000.
- Heinrich, John: See—  
Nia, Lothar H. W.; and Heinrich, John, 4,284,320, Cl. 339-200.00R.
- Heitmann, Uwe: See—  
Greve, Heinz; Tolasch, Gerhard; Heitmann, Uwe; and Wahle, Gunter, 4,283,998, Cl. 493-4.000.



Heller, Robert: See—  
Hill, Lawrence; Garbis, Dennis; and Heller, Robert, 4,284,867, Cl. 219-10.49R.

Helling, Gunter; Kraft, Werner; Findeisen, Kurt; and Himmelmann, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Photographic film unit for the production of colored transfer images. 4,284,708, Cl. 430-216.000.

Helling, Gunter: See—  
Bergthaller, Peter; Saleck, Wilhelm; and Helling, Gunter, 4,284,718, Cl. 430-629.000.

Henbest, Richard G. C.; and Harrison, John, to Imperial Chemical Industries Limited. Preparation of aminoplast resin particles. 4,284,759, Cl. 528-261.000.

Henderson, Alan G.: See—  
Fowler, Albert L.; Henderson, Alan G.; Stevenson, Alastair K.; and Walker, David M., 4,284,990, Cl. 340-870.320.

Henkel Kommanditgesellschaft auf Aktien: See—  
Lingmann, Herbert; Drosdzio, Hermann; and Peifer, Rudolf, 4,284,434, Cl. 134-2.000.

Henneuse, Paul R., to Precision Monolithics, Inc. Low glitch current switch. 4,285,051, Cl. 365-45.000.

Henry, Michael F., to General Electric Company. Cyclic oxidation resistant transverse ductile fiber reinforced eutectic nickel-base superalloy. 4,284,430, Cl. 75-170.000.

Henry, Robert M., to National Research Development Corporation. Correlation method. 4,285,046, Cl. 364-728.000.

Henshaw, Brian H. Button construction. 4,283,815, Cl. 24-90.00A.

Hepworth, Edward C.; and Means, Rodney J., to Motorola, Inc. Character framing circuit. 4,284,953, Cl. 328-37.000.

Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Synchrude Equity: See—  
Cymbalyst, Lubomyr M. O.; and Shaw, Robert C., 4,284,360, Cl. 366-140.000.

Herbert Kannegiesser GmbH & Co.: See—  
Heine, Rolf, 4,284,462, Cl. 156-350.000.

Herbst, David H., to Maryland Cup Corporation. Two-piece pleated foam cup. 4,284,226, Cl. 229-1.50B.

Hercofina: See—  
Millick, William H., 3rd; and Newburg, Norman R., 4,284,760, Cl. 528-306.000.

Hercules Incorporated: See—  
De Simone, Robert S., 4,284,814, Cl. 564-253.000.

Herculite Protective Fabrics Corporation: See—  
Bernstein, Bruce S.; Hyman, Seymour; and Kapoor, Ramesh C., 4,284,444, Cl. 156-60.000.

Herder N.V.: See—  
Demrick, Carl J., 4,283,810, Cl. 16-47.000.

Herticzek, Siegfried H., to Libbey-Owens-Ford Company. Glazing unit. 4,284,677, Cl. 428-192.000.

Hermann, Wilhelm: See—  
Horster, Horst; Hermann, Wilhelm; and Klinkenberg, Klaus, 4,284,069, Cl. 126-438.000.

Herpers, Lodewijk-Jozef: See—  
Funke, Hermann D.; and Herpers, Lodewijk-Jozef, 4,284,082, Cl. 128-419.0PG.

Herrera, Raymond: See—  
Scott, John C.; and Herrera, Raymond, 4,285,019, Cl. 360-103.000.

Herriau, Jean-Pierre: See—  
Huignard, Jean-Pierre; and Herriau, Jean-Pierre, 4,284,324, Cl. 350-3.640.

Herrmann, Manfred F.: See—  
Satzinger, Gerhard; Herrmann, Manfred F.; and Hechtischer, Gustav, 4,284,632, Cl. 424-246.000.

Hertzog, Russel C., to Schlumberger Technology Corporation. Random pulsing of neutron source for inelastic neutron scattering gamma ray spectroscopy. 4,284,886, Cl. 250-270.000.

Hess, Fritz, to EMP AG. Apparatus for soldering components mounted at printed wiring boards. 4,284,225, Cl. 228-180.00R.

Hesse, Heinz: See—  
Hagenlocher, Walter; Hesse, Heinz; Kleebaum, Karl; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Sohnle, Rudiger, 4,284,914, Cl. 310-68.00D.

Hagenlocher, Walter; Hesse, Heinz; Sohnle, Rudiger; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Kleebaum, Karl, 4,284,915, Cl. 310-68.00D.

Hesse, Robert H.: See—  
Barton, Derek H. R.; and Hesse, Robert H., 4,284,558, Cl. 260-239.55R.

Hetmanaki, James R., to Black & Decker Inc. Wire end locating device for a wire-working station. 4,283,971, Cl. 81-9.510.

Hewitt, Ralph W., Jr., to Shell Oil Company. Heat curable polyepoxide-unsaturated aromatic monomer resin compositions. 4,284,753, Cl. 528-89.000.

Hewlett-Packard Company: See—  
Knoll, Dieter B., 4,283,945, Cl. 73-269.000.

Loebner, Egon E.; and Greene, Paul E., 4,284,467, Cl. 156-613.000.

Hickey, John L.; and Wuest, Gerald A., to Dana Corporation. Bearing cap retainer for automotive differential unit. 4,283,963, Cl. 74-400.000.

Hickman, Andrew L.: See—  
Brittain, Robert; and Hickman, Andrew L., 4,284,488, Cl. 204-197.000.

Higashi, Ryozi; and Hirano, Hiroyuki, to Pioneer Electronic Corporation. Tone control device. 4,284,965, Cl. 333-28.00T.

Higashi, Yuichiro: See—  
Namiki, Ryoichi; Higashi, Yuichiro; Kikuchi, Toshiyuki; Fukushima, Ichiro; Asahina, Yasuo; and Soga, Setsuo, 4,284,875, Cl. 219-216.000.

Higo, Tsutomu: See—  
Aoki, Shinji; Kawamura, Keita; Higo, Tsutomu; Kimura, Hitoshi; Sawada, Yasuhiro; Katayama, Tsutomu; and Kengaku, Katsumi, 4,283,937, Cl. 73-49.300.

Hill, Alistair C.; and Davies, Lyn, to Shell Internationale Research Maatschappij B.V. Insect trap. 4,283,878, Cl. 43-114.000.

Hill, Lawrence; Garbis, Dennis; and Heller, Robert, to General Instrument Corporation. Chemical vapor deposition reactor with infrared reflector. 4,284,867, Cl. 219-10.49R.

Hilton, R. John, to Boeing Company, The. Single stage hot bonding method for producing composite honeycomb core structures. 4,284,443, Cl. 156-60.000.

Himmelmann, Wolfgang: See—  
Helling, Gunter; Kraft, Werner; Findeisen, Kurt; and Himmelmann, Wolfgang, 4,284,708, Cl. 430-216.000.

Hinsken, Hans; Mayerhoefer, Horst; and Mueller, Wolfgang, to Sandoz Ltd. 3-Hydroxybenzyl compounds useful as antioxidants. 4,284,790, Cl. 560-15.000.

Hipchen, Donald E.; Skowronski, Michael J.; and Hagan, Joseph R., to Celotex Corporation, The. Structural laminate. 4,284,683, Cl. 428-285.000.

Hirai, Shinichiro: See—  
Hussain, Anwar A.; Hirai, Shinichiro; and Bawarshi, Rima, 4,284,648, Cl. 424-330.000.

Hirano, Hiroyuki: See—  
Higashi, Ryozi; and Hirano, Hiroyuki, 4,284,965, Cl. 333-28.00T.

Hirata, Isao, to Tokai Metals Company, Limited. Foldable cup. 4,284,205, Cl. 220-418.000.

Hirschmann, Wilhelm: See—  
Maier, Erwin; Hirschmann, Wilhelm; and Willeitner, Eberhard, 4,284,231, Cl. 233-1.00R.

Hiruma, Masao: See—  
Tomita, Takao; and Hiruma, Masao, 4,284,178, Cl. 188-281.000.

Hitachi Denshi K.K.: See—  
Fujiaki, Hitoshi; Onodera, Hideo; and Toyomura, Yasuhiro, 4,284,912, Cl. 307-255.000.

Hitachi, Ltd.: See—  
Hashimoto, Hideyuki; Kyogoku, Yoshio; and Katada, Hiroshi, 4,284,046, Cl. 123-418.000.

Kusumoto, Sho; Fukuda, Yoshio; Nemoto, Sadao; and Sakurama, Naoki, 4,284,887, Cl. 250-272.000.

Matsuzaki, Osamu; Abe, Michio; Mitobe, Koichi; and Tanno, Seikichi, 4,284,662, Cl. 427-68.000.

Nakano, Toshio; Kaneko, Tadao; Hashimoto, Michiaki; Hatano, Yoshio; Matsumaru, Haruo; Sasano, Akira; and Maruyama, Eiichi, 4,285,007, Cl. 358-44.000.

Narita, Hiroshi; Horiuchi, Michimasa; Ibamoto, Masahiko; and Rokutan, Hideaki, 4,284,934, Cl. 318-345.00C.

Ohnishi, Makoto, 4,285,047, Cl. 364-785.000.

Osawa, Michitaka; Matsumoto, Syuzo; and Maekawa, Hitoshi, 4,285,008, Cl. 358-65.000.

Takami, Katsumi; and Matsuzawa, Takashi, 4,285,055, Cl. 368-226.000.

Hitachi Metals, Ltd.: See—  
Tokunaga, Masaaki; Hagi, Chitoshi; and Murayama, Hirokazu, 4,284,440, Cl. 148-31.570.

Hitco: See—  
Shaffer, Robert C., 4,284,744, Cl. 525-389.000.

Ho, Edmond Y., to Bell Telephone Laboratories, Incorporated. Equalizer sample loading in voiceband data sets. 4,285,061, Cl. 375-15.000.

Ho, Sa V., to Merck & Co., Inc. Process for the preparation of 4-methyl thiazole. 4,284,784, Cl. 348-202.000.

Hochmair, Erwin S.: See—  
Hochmair, Ingeborg J.; and Hochmair, Erwin S., 4,284,856, Cl. 179-107.00E.

Hochmair, Ingeborg J.; and Hochmair, Erwin S. Multi-frequency system and method for enhancing auditory stimulation and the like. 4,284,856, Cl. 179-107.00E.

Hodge, Gene D., to International Business Machines Corporation. TDMA Satellite communication system. 4,285,064, Cl. 455-13.000.

Hodgkin, Jonathan H., to Commonwealth Scientific and Industrial Research Organization. Iron selective resins prepared from a phenol, HCHO and a secondary amine. 4,284,512, Cl. 210-688.000.

Hodogaya Chemical Co., Ltd.: See—  
Ishida, Eisuke; Takashima, Yui; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Motohashi, Katsuichi, 4,284,696, Cl. 430-42.000.

Takematsu, Tetsuo; and Hoya, Masaaki, 4,284,813, Cl. 564-168.000.

Hoechst Aktiengesellschaft: See—  
Junghans, Martin, 4,284,343, Cl. 354-318.000.

Kammerer, Friedrich-Johannes; and Schleyerbach, Rudolf, 4,284,786, Cl. 548-248.000.

Nischwitz, Ehrenfried; and Dursch, Walter, 4,284,410, Cl. 8-471.000.

Raether, Wolfgang; Durckheimer, Walter; and Seidenath, Hans, 4,284,627, Cl. 424-229.000.

Spitschka, Ernst; and Urban, Manfred, 4,284,789, Cl. 549-52.000.

Hoefel, Wayne A., to Caterpillar Tractor Co. Brake control valve having operator feedback. 4,284,309, Cl. 303-30.000.

Hoentjen, Gerrit; de Graaf, Stephanus A. G.; Bijkerk, Albert H.; and de Jonge, Cornelis R. H. I., to Akzona Incorporated. Monochloro-s-triazine derivatives. 4,284,772, Cl. 544-218.000.

Hoffman, David, to Rowe International, Inc. Coin mechanism to merchandising machine interface. 4,284,184, Cl. 194-2.000.

Hoffman, Robert A.: See—  
Hansen, W. Peter; Hoffman, Robert A.; and Natale, Peter J., 4,284,355, Cl. 356-335.000.

Hansen, W. Peter; and Hoffman, Robert A., 4,284,412, Cl. 23-230.00B.

Hoffmann-La Roche Inc.: See—  
Baggiolini, Enrico G.; Lee, Hsi L.; and Uskokovic, Milan R., 4,284,557, Cl. 260-239.30B.

Hohenlohe-Oehringen, Kraft; and Fliri, Anton, 4,284,788, Cl. 548-303.000.

Hofmann, Friedrich: See—  
Scholl, Gerhardt; and Hofmann, Friedrich, 4,284,513, Cl. 210-699.000.

Hofmann, Ruediger; and von Basse, Paul W., to Siemens Aktiengesellschaft. Address buffer for a MOS-memory module. 4,284,910, Cl. 307-238.000.

Hofstetter, Ben H. Relief sculpture guidance method. 4,284,407, Cl. 434-82.000.

Hohenlohe-Oehringen, Kraft; and Fliri, Anton, to Hoffmann-La Roche Inc. Imidazolidone intermediates of biotin. 4,284,788, Cl. 548-303.000.

Holski, Walter W., to Power Systems Development Corporation. Door burglar alarm system. 4,284,980, Cl. 340-545.000.

Holdahl, Robert A.: See—  
Petersen, Paul S.; and Holdahl, Robert A., 4,284,111, Cl. 142-56.000.

Holden, Kenneth G.; Kaiser, Carl; and Weinstock, Joseph, to Smith-Kline Corporation. 7,8-Amino, hydroxy-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepines. 4,284,556, Cl. 260-239.00B.

Hollis, Samuel D., to Union Camp Corporation. Extending the molten stability of poly (ethylene-vinyl acetate) hot-melt adhesives by addition of lithium metal ion. 4,284,543, Cl. 260-27.0EV.

Holmes, Robert H.: See—  
Janisiewicz, Stanley; and Holmes, Robert H., 4,283,836, Cl. 29-564.100.

Homan, Gary R.; and Lee, Chi-Long, to Dow Corning Corporation. Compositions including mercaptoorganopolysiloxanes, aliphatically unsaturated polydiorganosiloxanes and carboxylic acid salts of metals. 4,284,539, Cl. 260-18.00S.

Homeyer, Bernhard: See—  
Fuchs, Rainer; Klauke, Erich; Hamann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, 4,284,643, Cl. 424-282.000.

Homma, Hiroshige: See—  
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,284,778, Cl. 546-115.000.

Hooda Giken Kogyo Kabushiki Kaisha: See—  
Ohmori, Taiji; and Sato, Makoto, 4,285,042, Cl. 364-426.000.

Tomita, Takao; and Hiruma, Masao, 4,284,178, Cl. 188-281.000.

Honda, Kiyokazu; Yoshiike, Yoshiji; Muraki, Katsuo; and Kawamata, Teruyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha; and Harrison Electric Co., Ltd. Tubular incandescent lamp. 4,285,032, Cl. 362-224.000.

Honeywell Inc.: See—  
Swensen, Eugene T., 4,284,885, Cl. 250-211.00K.

Honeywell Information Systems, Inc.: See—  
Kindell, Jerry L.; and Flynn, Richard T., 4,285,035, Cl. 364-200.000.

Hooke, John W., to General Electric Company. Method of making vibration resistant electrochemical cell having deformed casing. 4,283,843, Cl. 29-623.100.

Hooker Chemicals & Plastics Corp.: See—  
Salec, Gideon, 4,284,549, Cl. 260-40.00R.

Hooper, Orville D. Glass cutter with attachment. 4,283,852, Cl. 30-164.950.

Hoover, Maurice R.; Malhotra, Deepak; Bender, Fredrick N.; and Ronzio, Richard A., to Amalgam, Inc. Process for producing high grade molybdenum disulfide powder. 4,284,244, Cl. 241-24.000.

Horak, Vladimir. Static metering pump. 4,284,210, Cl. 222-14.000.

Horiuchi, Michimasa: See—  
Narita, Hiroshi; Horiuchi, Michimasa; Ibamoto, Masahiko; and Rokutan, Hideaki, 4,284,934, Cl. 318-345.00C.

Horne, Ottis J., Jr.; and Grindstaff, Lloyd I., to Great Lakes Carbon Corporation. Preparation of SiC whiskers. 4,284,612, Cl. 423-345.000.

Horner, Patrick J., to Imperial Chemical Industries Limited. Polyester compositions, shaped articles obtained from them and processes for preparing them. 4,284,756, Cl. 528-128.000.

Hornsey, Derek: See—  
Savard, Guy; Lee, Robert G. H.; and Hornsey, Derek, 4,284,510, Cl. 210-614.000.

Horst, William R., to NCR Corporation. Method and apparatus for fabricating a translucent graded density membrane. 4,284,715, Cl. 430-395.000.

Horster, Horst; Hermann, Wilhelm; and Klinkenberg, Klaus, to U.S. Philips Corporation. Wall element comprising a solar collector which is disposed between two transparent panes. 4,284,069, Cl. 126-438.000.

Horton, Horace R.: See—  
Brown, Rodney J.; Swaisgood, Harold E.; and Horton, Horace R., 4,284,553, Cl. 260-112.00R.

Horton, Richard H.; and Zdeb, John J., to General Electric Company. Solar heliostat enclosure, enclosure foundation and installation method and machine therefor. 4,283,887, Cl. 52-2.000.

Horton, Robert A., to Precision Metalsmiths, Inc. Process and materials for making refractory cores. 4,284,121, Cl. 164-520.000.

Horton, Thomas E.: See—  
March, Anthony; and Horton, Thomas E., 4,284,935, Cl. 318-280.000.

Horvath, Csaba: See—  
Stefan, Mihaly; Almashegyi, Lajos; Horvath, Csaba; Madarasz nee Helesfai, Agnes; Arato, Peter; and Geiger, Jozsef, 4,284,436, Cl. 148-2.000.

Hoskin, Charles E. Automatic wood cutting and splitting machine. 4,284,112, Cl. 144-3.00K.

Hostetter, Eldon, to Ziggity Systems, Inc. Watering system for fowl and small animals. 4,284,036, Cl. 119-72.500.

Hough, Leslie: See—  
Thelwall, Leslie A. W.; Hough, Leslie; and Richardson, Anthony C., 4,284,763, Cl. 536-4.000.

House, James B., to Stork Gamco, Inc. Poultry inspection apparatus and method. 4,283,813, Cl. 17-45.000.

Howaldtwerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel: See—  
Eckhard, Klaus, 4,284,025, Cl. 114-163.000.

Howard, Arthur G. Air-cleaning apparatus. 4,284,421, Cl. 55-222.000.

Howard, Richard E.: See—  
Craighead, Harold G.; and Howard, Richard E., 4,284,689, Cl. 428-620.000.

Howe, Robert K.; and Lee, Len F., to Monsanto Company. 2-Chloro-4,5-disubstituted-thiazoles useful as herbicidal safeners. 4,284,426, Cl. 71-90.000.

Howell, Steven G.; and Harless, Orville F. Vehicle alarm system. 4,284,973, Cl. 340-65.000.

Hoya Corporation: See—  
Ishibai, Isao; and Kobayashi, Kunimitsu, 4,284,325, Cl. 350-36.000.

Hoya, Masaaki: See—  
Takematsu, Tetsuo; and Hoya, Masaaki, 4,284,813, Cl. 564-168.000.

Hrnsin, John A., to ACF Industries, Inc. Railway tank car cradle support. 4,284,012, Cl. 105-362.000.

Hubbard, S. Eugene; Meisterheim, Richard A.; and Symon, Ernest B., to Kawneer Company, Inc. Safety flush bolt entrance door system. 4,283,882, Cl. 49-141.000.

Hubele, Heinz: See—  
Connor, William R., Jr.; Hubele, Heinz; and Petry, Kurt, 4,284,020, Cl. 112-273.000.

Hubertson, Folke H., to Aktiebolaget Somas Ventilator. Butterfly valves. 4,284,264, Cl. 251-305.000.

Hudson, James L. High pressure pump. 4,284,386, Cl. 415-209.000.

Huebner, Horst: See—  
Detemple, Manfred; and Huebner, Horst, 4,284,321, Cl. 339-218.00M.

Hughes Aircraft Company: See—  
Austin, William B.; and Bilow, Norman, 4,284,834, Cl. 585-25.000.

Milden, Martin J.; and Gordon, Stanley, 4,283,844, Cl. 29-623.500.

Hughes Microelectronics Ltd.: See—  
Fowler, Albert L.; Henderson, Alan G.; Stevenson, Alastair K.; and Walker, David M., 4,284,990, Cl. 340-870.320.

Hughes, Thomas E. Dental tooth bur. 4,284,406, Cl. 433-165.000.

Huignard, Jean-Pierre; and Herriau, Jean-Pierre, to Thomson-CSF. Acousto-optical imagery system based on coherent holographic detection in real time. 4,284,324, Cl. 350-3.640.

Hulme, Joseph M., to Polysar Limited. Dilute solution apparatus. 4,283,949, Cl. 73-864.340.

Hulot, Michel; and Prigent, Raymond, to Commissariat a l'Energie Atomique. Method and device for the automatic reading of the irradiation dose of a portable dosimeter. 4,284,892, Cl. 250-388.000.

Humber, David C.; Laing, Stuart B.; and Weingarten, Gordon G., to Glaxo Group Limited. Process for preparing 3-carbamoyloxymethyl cephalosporins. 4,284,767, Cl. 544-22.000.

Hussain, Anwar A.; Hirai, Shinichiro; and Bawarshi, Rima, to University of Kentucky Research Foundation, The. Nasal administration of propranolol. 4,284,648, Cl. 424-330.000.

Hutt, Jack W.; and Blanco, Fernando E., to Products Research & Chemical Corp. Polyurethane sealant system. 4,284,751, Cl. 528-45.000.

Hwa, Stephen C. P. Novel protein curd product and process of preparation. 4,284,656, Cl. 426-641.000.

Hydriol Company: See—  
Mott, James D., 4,284,141, Cl. 166-315.000.

Hydro Ag-Tech Inc.: See—  
Engle, Carl E.; and Moldenhauer, Don, 4,284,246, Cl. 241-222.000.

Hydrodynamic Energy Systems Corp.: See—  
Borgren, Peter M.; and Amatuzio, Albert J., 4,284,902, Cl. 290-53.000.

Hyman, Seymour: See—  
Bernstein, Bruce S.; Hyman, Seymour; and Kapoor, Ramesh C., 4,284,444, Cl. 156-60.000.

Ibamoto, Masahiko: See—  
Narita, Hiroshi; Horiuchi, Michimasa; Ibamoto, Masahiko; and Rokutan, Hideaki, 4,284,934, Cl. 318-345.00C.

Icaran, Andres A. Y., to Nacional de Ceramica, S.A. Toilet tanks with built-in water supply valve. 4,283,802, Cl. 4-353.000.

Ichige, Noriyuki: See—  
Joh, Yasushi; Niina, Akihiko; Kaneko, Noriaki; Sano, Toshio; Ichige, Noriyuki; Ichikawa, Koji; Fukutome, Akira; and Sonobe, Hisako, 4,284,594, Cl. 264-41.000.

Ichikawa, Koji: See—  
Joh, Yasushi; Niina, Akihiko; Kaneko, Noriaki; Sano, Toshio; Ichige, Noriyuki; Ichikawa, Koji; Fukutome, Akira; and Sonobe, Hisako, 4,284,594, Cl. 264-41.000.



Ichikawa Woolen Textile Co., Ltd.: See—  
Awano, Shunya; and Shitaka, Akio, 4,284,680, Cl. 428-234.000.

Iezuka, Isamu: See—  
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,284,044, Cl. 123-307.000.

Ignatiev, Vladimir, to Burroughs Corporation. Document feeder for document-handling machine. 4,284,269, Cl. 271-122.000.

Iida, Hiroshi; Kometani, Kiichi; and Yanagi, Masana, to Toray Industries, Inc. Polyethylene terephthalate molding compositions. 4,284,540, Cl. 260-22.00R.

Iizaka, Isao: See—  
Okamoto, Hiroshi; Yamada, Tetsuya; Atsumi, Fumitoshi; and Iizaka, Isao, 4,284,344, Cl. 355-14.00E.

Ikedo, Hiroshi; and Sakurai, Seiichi, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying machine. 4,284,346, Cl. 355-67.000.

Ikeuchi, Hiroshi. Atomizing unit of two-phase type. 4,284,239, Cl. 239-8.000.

Ikuno, Yuji, to Olympus Optical Co., Ltd. Photographing apparatus for an endoscope. 4,284,338, Cl. 354-32.000.

Ikura, Michio; Jones, Frederick W. S.; Prime, Harley C.; and Rodger, Ian, to Chemetics International. Method and apparatus for concentrating a liquid. 4,284,469, Cl. 159-28.00R.

Illinois Tool Works Inc.: See—  
Peterson, Francis C.; Barth, Gerald D.; and Slotten, Rodney O., 4,283,986, Cl. 411-340.000.

Imada, Isuke: See—  
Sugihara, Hirosada; Watanabe, Masazumi; Kawada, Mitsuru; and Imada, Isuke, 4,284,644, Cl. 424-285.000.

Imamura, Tetsuya; and Shiozaki, Ryozi, to Kao Soap Co., Ltd. Liquid abrasive-containing cleanser composition. 4,284,533, Cl. 252-542.000.

Imanaka, Kiyoji: See—  
Yamane, Masahiro; Watanabe, Toshimi; Itoga, Keiji; Ishibashi, Kiyoshi; Morita, Yutaka; Yamamoto, Isamu; and Imanaka, Kiyoji, 4,283,838, Cl. 29-588.000.

Immutron, Inc.: See—  
Kelton, Arden A.; Waters, William P.; Shunk, David G.; and Bell, Michael L., 4,284,602, Cl. 422-72.000.

Imperial Chemical Industries Limited: See—  
Henbest, Richard G. C.; and Harrison, John, 4,284,759, Cl. 528-261.000.

Horner, Patrick J., 4,284,756, Cl. 528-128.000.

Kaye, Albert E.; and Tucker, Alan C., 4,284,582, Cl. 260-464.000.

Whittaker, Graham; and O'Brien, Anne, 4,284,783, Cl. 546-345.000.

Imperial Metal Industries (Kynoch) Limited: See—  
Evans, Geoffrey I.; and Gordon, Stuart, 4,284,592, Cl. 264-3.00R.

Inco Limited: See—  
England, John R., 4,284,154, Cl. 175-325.000.

Indech, Robert B. Thermoelectric converter and method. 4,284,838, Cl. 136-202.000.

Iogersoll-Rand Company: See—  
Chaiko, Walter M., 4,284,379, Cl. 411-61.000.

Inokuchi, Norio; Fukumoto, Teruhisa; and Mori, Yoshio, to Teitin Limited. Process for producing foamed articles of aromatic polyesters. 4,284,596, Cl. 264-45.300.

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Abbott, Jerry J.; Fuller, Sterritt R.; and Jachimiak, Paul D., 4,284,701, Cl. 430-111.000.

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Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,284,824, Cl. 568-445.000.

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Kaspar, Peter D.; and Satterfield, Carroll D., 4,284,400, Cl. 425-444.000.

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November, Milton H., 4,283,936, Cl. 73-32.00A.

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Rey, Charles A., 4,284,403, Cl. 432-1.000.

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Loeb, Sidney, 4,283,913, Cl. 60-641.00A.

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Bowerman, Harold H., Jr.; and Ireland, Robert W., 4,284,742, Cl. 525-329.000.

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Ishibai, Isao; and Kobayashi, Kunimitsu, to Hoya Corporation. Eye span adjustment mechanism for binoculars. 4,284,325, Cl. 350-36.000.

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Ishibashi, Norio; and Nakano, Kazuo, to OKI Electric Industry Co., Ltd. Thermal printing system. 4,284,876, Cl. 219-216.000.

Ishida, Eisuke; Takashima, Yuji; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Motohashi, Katsuchi, to Hodogaya Chemical Co., Ltd.; and Matsushita Electric Industrial Co., Ltd. Light transmission particle for forming color image. 4,284,696, Cl. 430-42.000.

Ishida, Hideo; and Sukurai, Yasuhiko, to Nippondenso Co., Ltd. Flasher apparatus for vehicles. 4,284,974, Cl. 340-81.00R.

Ishida, Takashi, to Nissan Motor Company, Limited. Exhaust system of automotive vehicle. 4,284,162, Cl. 180-296.000.

Ishii, Toshiaki; and Watanabe, Eiki, to Mitsubishi Denki Kabushiki Kaisha. Emergency stop apparatus for electric elevators. 4,284,175, Cl. 187-29.00R.

Ishii, Yoshiko: See—  
Tamuri, Masaki; Kanno, Mitsuo; and Ishii, Yoshiko, 4,284,722, Cl. 435-94.000.

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Oguchi, Toshihiko; Ishizawa, Akio; and Yoshida, Hiromi, 4,284,700, Cl. 430-105.000.

Isomura, Yasuo: See—  
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,284,778, Cl. 546-115.000.

Ito, Fumio; and Yazaki, Mutsunobu, to Canon Kabushiki Kaisha. Photographic apparatus. 4,284,337, Cl. 354-25.000.

Ito, Kazuhiko: See—  
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,284,044, Cl. 123-307.000.

Ito, Noriki: See—  
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,284,778, Cl. 546-115.000.

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ITT Industries, Inc.: See—  
Belart, Juan, 4,283,994, Cl. 91-391.00R.

Mutschler, Erich; Prohaska, Hans; Schreiber, Franz; Schubert, Karl-Friedrich; and Weber, Adam, 4,284,903, Cl. 307-10.0LS.

Iwanaga, Kouichi; and Kakumoto, Hiromi, to Matsushita Electric Works, Ltd. Battery charging device having battery state indicating function. 4,284,944, Cl. 320-48.000.

Iwanami, Eiichi, to Kabushiki Kaisha Daini Seikosha. Semiconductor device. 4,284,999, Cl. 357-22.000.

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Fuse, Noboru; Muramoto, Kenichi; Tani, Keizo; and Iwanishi, Masaaki, 4,284,998, Cl. 357-22.000.

Iwata, Hiroshi; and Hasegawa, Wataru, to West Electric Co., Ltd. Automatic focusing camera. 4,284,336, Cl. 354-25.000.

J. Hengstler K.G.: See—  
Neher, Hans, 4,284,881, Cl. 235-1.00C.

Jaccodine, Ralph J.; and Kestenbaum, Ami, to Bell Telephone Laboratories; and Western Electric Co., Inc. Insulation layer reflow. 4,284,659, Cl. 427-53.100.

Jachimiak, Paul D.: See—  
Abbott, Jerry J.; Fuller, Sterritt R.; and Jachimiak, Paul D., 4,284,701, Cl. 430-111.000.

Jackson, Alan D.; Alexander, Frank N.; and Graber, Homer R., to Cessna Aircraft Company, The. Header height valve. 4,283,996, Cl. 91-447.000.

Jackson, Edward L. Combination portable and stationary, bench-mounted chain saw apparatus. 4,283,980, Cl. 83-798.000.

Jackson, Timothy; Malkemes, Charles D.; and Zipoy, William L., to International Business Machines Corp. Printer control logic. 4,284,362, Cl. 400-124.000.

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Knoll, Heiko, 4,283,975, Cl. 83-76.000.

Jagger, James W.: See—  
Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., 4,284,895, Cl. 250-445.00T.

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Lindorfer, Walter; Wagner, Fritz; Jahn-Held, Wilhelm; and Schulz, Walther, 4,284,509, Cl. 210-610.000.

Jahnke, Otto C.: See—  
Payne, David A.; Park, Sang M.; and Jahnke, Otto C., 4,284,521, Cl. 252-62.3BT.

James, Edward A., to RCA Corporation. Fabrication of video disc flyleads. 4,284,712, Cl. 430-312.000.

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Mawson, Maurice; and Jamieson, Alexander, 4,284,871, Cl. 219-121.0PV.

Janisiewicz, Stanley; and Holmes, Robert H., to Universal Instruments Corporation. Multi-module dip transfer and insertion machine. 4,283,836, Cl. 29-564.100.

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Shuto, Masamoto, 4,284,181, Cl. 191-22.0DM.

Japan Crown Cork Co., Ltd.: See—  
Murayama, Kashiwa, 4,284,023, Cl. 113-116.0QA.

Japan Exlan Company, Ltd.: See—  
Maruyama, Kunio, 4,284,615, Cl. 423-447.400.

Jatteau, Michel: See—  
Pergale, Jean; and Jatteau, Michel, 4,284,891, Cl. 250-363.00S.

JB Development Corporation: See—  
Edward, Robert M., Jr., 4,283,939, Cl. 73-81.000.

Jenne, Gustav. Control device for the forward movement and rearward movement of pneumatic ram boring devices. 4,284,147, Cl. 173-91.000.

Jewell, William J. Methane production by attached film. 4,284,308, Cl. 210-603.000.

Jhono, Shigeru, to Tempo G. Method of manufacturing and interlocking jewelry with precise preforms. 4,283,831, Cl. 29-423.000.

Joa, Curt G. Method and apparatus for applying elastic bands transversely to a diaper line. 4,284,454, Cl. 156-163.000.

Joh, Yasushi; Niina, Akihiko; Kaneko, Noriaki; Sano, Toshio; Ichige, Noriyuki; Ichikawa, Koji; Fukutome, Akira; and Sonobe, Hisako, to Nippon Zeon Co., Ltd. Method of manufacturing hollow fiber. 4,284,594, Cl. 264-41.000.

Johns Hopkins University, The: See—  
Brusilow, Saul W.; Batshaw, Mark L.; and Radin, Norman S., 4,284,647, Cl. 424-317.000.

Johns-Manville Corporation: See—  
Sullivan, Daryl D., 4,285,034, Cl. 362-305.000.

Johnson, Garland A.; and Peuler, Jacob D., to Upjohn Company, The. Radiocenzymatic assay of catecholamines. 4,284,587, Cl. 564-365.000.

Johnson, Michael R.: See—  
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,284,829, Cl. 568-764.000.

Johnson, Robert N.: See—  
Overman, David L.; and Johnson, Robert N., 4,284,862, Cl. 200-61.43R.

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Johnson, Steven A. Internal refractor focusing solar energy collector apparatus and method. 4,284,839, Cl. 136-246.000.

Johnston, James J.; and Clarke, Robert W. Ball carrier. 4,284,217, Cl. 224-30.00R.

Jolles, Georges, to Rhone-Poulenc S.A. Naphthalene pharmaceutical compositions and method of use. 4,284,625, Cl. 424-180.000.

Jones, Addison B., to Rockwell International Corporation. High resolution mask and method of fabrication thereof. 4,284,678, Cl. 428-195.000.

Jones, Frederick W. S.: See—  
Ikura, Michio; Jones, Frederick W. S.; Prime, Harley C.; and Rodger, Ian, 4,284,469, Cl. 159-28.00R.

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Aldritt, Michael; Jones, Robin; Oliver, Christopher J.; and Vaughan, John M., 4,284,351, Cl. 356-28.500.

Junghans, Martin, to Hoechst Aktiengesellschaft. Apparatus for the electric level control of a developing solution in a storage tank. 4,284,343, Cl. 354-318.000.

Junker, Arnold: See—  
Salvana, Frank; and Junker, Arnold, 4,284,174, Cl. 184-6.400.

Kabel-und Metallwerke Gutehoffnungshuette AG: See—  
Schatz, Friedrich; and Ziemeck, Gerhard, 4,283,824, Cl. 29-157.400.

Kabushiki Kaisha Daini Seikosha: See—  
Iwanami, Eiichi, 4,284,999, Cl. 357-22.000.

Kabushiki Kaisha Komatsu Seisakusho: See—  
Ohno, Eiji; and Chikugo, Kazuo, 4,284,431, Cl. 75-212.000.

Kabushiki Kaisha Sato Kenkyusho: See—  
Sato, Yo, 4,284,004, Cl. 101-111.000.

Kabushiki Kaisha Suwa Seikosha: See—  
Shimodaira, Tadayoshi; and Mitsui, Yoshihiro, 4,284,002, Cl. 101-99.000.

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Takeda, Nobuhiro; Hattori, Masaichi; and Mizuno, Shigeo, 4,284,295, Cl. 280-803.000.

Kainuma, Hiroyuki; Okuda, Yukio; and Fujisawa, Yoshiaki, to Sawafuji Electric Co., Ltd. Refrigerating device. 4,283,920, Cl. 62-126.000.

Kaiser, Carl: See—  
Holden, Kenneth G.; Kaiser, Carl; and Weinstock, Joseph, 4,284,556, Cl. 260-239.0BB.

Kakeno, Sadao, to Ricoh Co., Ltd. Multi-nozzle head for ink jet printer with ink supply pipe in ink chamber. 4,284,993, Cl. 346-75.000.

Kakumoto, Hiromi: See—  
Iwanaga, Kouichi; and Kakumoto, Hiromi, 4,284,944, Cl. 320-48.000.

Kalivas, Zissis, to Lorain Products Corporation. Rectifier system with failure alarm circuitry. 4,285,023, Cl. 361-91.000.

Kalns, Ilmars, to Eaton Corporation. Housing assembly for electric vehicle transaxle. 4,283,968, Cl. 74-701.000.

Kami, Tomohiro: See—  
Abura, Yoshinori; Ueda, Fumiya; Morihara, Nobuyuki; and Kami, Tomohiro, 4,284,877, Cl. 219-222.000.

Kaminow, Ivan P.: See—  
Carruthers, John R.; Kaminow, Ivan P.; and Schmidt, Ronald V., 4,284,663, Cl. 427-164.000.

Kamiya, Hideo: See—  
Shinohara, Hiroshi; Otsuka, Yasuhiro; Kamiya, Hideo; Wakizaka, Hiroshi; and Furutani, Toshinobu, 4,284,486, Cl. 204-195.00S.

Kamiyama, Akira, to Mitsubishi Electric Mfg. Co., Ltd. Method of manufacturing a commutator. 4,283,841, Cl. 29-597.000.

Kammerer, Friedrich-Johannes; and Schleyerbach, Rudolf, to Hoechst Aktiengesellschaft. 5-Methylisoxazole-4-carboxylic-(4-trifluoromethyl)-anilide. 4,284,786, Cl. 548-248.000.

Kamp, Heinz; and Rohner, Joachim, to W. Schlafhorst & Co. Method and apparatus for preparing the changing of coils in a ring spinning frame. 4,283,908, Cl. 57-276.000.

Kampe, Wolfgang: See—  
Friebe, Walter-Gunar; Thiel, Max; Kampe, Wolfgang; Wilhelms, Otto-Henning; and Roesch, Androniki, 4,284,633, Cl. 424-253.000.

Kan, Peter T.: See—  
Narayan, Thirumurti; and Kan, Peter T., 4,284,730, Cl. 521-160.000.

Kanai, Hiroyuki. Combing cylinder of comb. 4,284,090, Cl. 132-11.00R.

Kanazawa, Yukio. Bending apparatus. 4,284,022, Cl. 113-58.000.

Kane, John L., to Owens-Corning Fiberglass Corporation. Apparatus for forming filaments. 4,284,395, Cl. 425-66.000.

Kaneko, Katsumi: See—  
Okumura, Yoshiharu; and Kaneko, Katsumi, 4,284,831, Cl. 568-899.000.

Kaneko, Noriaki: See—  
Joh, Yasushi; Niina, Akihiko; Kaneko, Noriaki; Sano, Toshio; Ichige, Noriyuki; Ichikawa, Koji; Fukutome, Akira; and Sonobe, Hisako, 4,284,594, Cl. 264-41.000.

Kaneko, Tadao: See—  
Nakano, Toshio; Kaneko, Tadao; Hashimoto, Michiaki; Hatano, Yoshio; Matsumaru, Haruo; Sassano, Akira; and Maruyama, Eiichi, 4,285,007, Cl. 358-44.000.

Kaneko, Takushi: See—  
Schmitz, Henry; Kaneko, Takushi; Essery, John M.; and Doyle, Terrence W., 4,284,568, Cl. 260-345.200.

Kanesho Company Limited: See—  
Akahira, Rokuro; and Someya, Shinzo, 4,284,427, Cl. 71-93.000.

Kanno, Mitsuo: See—  
Tamuri, Masaki; Kanno, Mitsuo; and Ishii, Yoshiko, 4,284,722, Cl. 435-94.000.

Kanno, Tadaaki: See—  
Shimomura, Shozo; and Kanno, Tadaaki, 4,284,347, Cl. 355-71.000.

Kao Soap Co., Ltd.: See—  
Imamura, Tetsuya; and Shiozaki, Ryozi, 4,284,533, Cl. 252-542.000.

Kapoor, Ramesh C.: See—  
Bernstein, Bruce S.; Hyman, Seymour; and Kapoor, Ramesh C., 4,284,444, Cl. 156-60.000.

Karn, William S. Reverse osmosis electrodialysis combined means. 4,284,492, Cl. 204-299.00R.

Kasai, Shigeo; Nishiyama, Toshiaki; and Kawada, Kiju, to Amada Company Ltd. Notching machine. 4,283,978, Cl. 83-620.000.

Kasama, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Submerged ultrasonic viewer for a nuclear reactor. 4,284,473, Cl. 176-19.00R.

Kashio, Toshio, to Casio Computer Co., Ltd. Electronic musical instrument. 4,283,983, Cl. 84-1.190.

Kaspar, Peter D.; and Satterfield, Carroll D., to International Playtex, Inc. Positive extractor for cup molding machine. 4,284,400, Cl. 425-444.000.

Kasper, Richard F.; and Carvalco, Joseph R. Urinary retention catheter. 4,284,081, Cl. 128-349.00B.

Kasper, Robin: See—  
Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,284,654, Cl. 426-538.000.

Kasting, Edward W.; and Glasson, Richard E., to Cummins Engine Company, Inc. Internal combustion engine coolant system. 4,284,037, Cl. 123-41.720.



- Katada, Hiroshi: See—  
Hashimoto, Hideyuki; Kyogoku, Yoshito; and Katada, Hiroshi, 4,284,046, Cl. 123-418.000.
- Katayama, Tsutomu: See—  
Aoki, Shinji; Kawamura, Keita; Higo, Tsutomu; Kimura, Hitoshi; Sawada, Yasuhiro; Katayama, Tsutomu; and Kengaku, Katsumi, 4,283,937, Cl. 73-49.300.
- Kato, Hisatoyo; Matsumoto, Seiji; and Miyahara, Junji, to Fuji Photo Film Co., Ltd. Method for recording radiation image using stimutable phosphor, 4,284,889, Cl. 250-355.000.
- Kato, Tatsu: See—  
Kazami, Takeo; Enomoto, Takamichi; Kato, Tatsu; and Fukagai, Toshio, 4,284,698, Cl. 430-59.000.
- Kaufman, Lawrence G.; Merriam, Charles N.; and Pepe, Enrico J., to Union Carbide Corporation. Ambient temperature curable hydroxyl containing polymer/silicon compositions, 4,284,548, Cl. 260-38.000.
- Kaufmann, John, Jr., to Kaufmann, John, Jr. Pipe coupling, 4,284,298, Cl. 285-302.000.
- Kawabata, Hiroshi: See—  
Sagara, Fumio; Kawabata, Hiroshi; and Shiiba, Kiyonori, 4,284,793, Cl. 560-78.000.
- Kawada, Kiju: See—  
Kasai, Shigeo; Nishiyama, Toshiaki; and Kawada, Kiju, 4,283,978, Cl. 83-620.000.
- Kawada, Mitsuru: See—  
Sugihara, Hirotsada; Watanabe, Masazumi; Kawada, Mitsuru; and Imada, Isuke, 4,284,644, Cl. 424-285.000.
- Kawada, Shigeki; Fujioka, Yoshiki; and Ohta, Naoto, to Fujitsu Fanuc Limited. System for driving DC motor, 4,284,932, Cl. 318-338.000.
- Kawada, Shigeki; Fujioka, Yoshiki; Ohta, Naoto; and Koiwai, Yutaka, to Fujitsu Fanuc Limited. Device for detecting opposite phase and open phase, 4,284,939, Cl. 318-453.000.
- Kawamata, Teruyoshi: See—  
Honda, Kiyokazu; Yoshiike, Yoshiji; Muraki, Katsuo; and Kawamata, Teruyoshi, 4,285,032, Cl. 362-224.000.
- Kawamura, Keita: See—  
Aoki, Shinji; Kawamura, Keita; Higo, Tsutomu; Kimura, Hitoshi; Sawada, Yasuhiro; Katayama, Tsutomu; and Kengaku, Katsumi, 4,283,937, Cl. 73-49.300.
- Kawamura, Masaharu; Shigeta, Yoshihiro; Uchidoi, Masanori; Sugiura, Yoji; and Yamamoto, Hiroshi, to Canon Kabushiki Kaisha. Exposure control device for camera, 4,284,333, Cl. 354-23.00D.
- Kawasaki Jukogyo Kabushiki Kaisha: See—  
Tatebayashi, Jun; and Yano, Kazuaki, 4,284,401, Cl. 431-7.000.
- Kawasaki Motors Corp., U.S.A.: See—  
Blass, Jaroslav, 4,284,161, Cl. 180-184.000.
- Kawner Company, Inc.: See—  
Hubbard, S. Eugene; Meisterheim, Richard A.; and Symon, Ernest B., 4,283,882, Cl. 49-141.000.
- Kaye, Albert E.; and Tucker, Alan C., to Imperial Chemical Industries Limited. Process for the preparation of cyclopropane derivatives, intermediates in the synthesis of pyrethroid insecticides, 4,284,582, Cl. 260-464.000.
- Kaye, Dianne. Woven ground for embroidery, 4,284,021, Cl. 112-439.000.
- Kazami, Takeo; Enomoto, Takamichi; Kato, Tatsu; and Fukagai, Toshio, to Ricoh Company, Ltd. Layered electrophotographic photoconductor, 4,284,698, Cl. 430-59.000.
- Kearney, Thomas J., to Champion Spark Plug Company. Paint spray booth with water curtain, 4,283,999, Cl. 98-115.05B.
- Keck, David R., to Tenneco Chemicals, Inc. In-line pressurized wet screening apparatus, 4,284,500, Cl. 209-250.000.
- Keiser, William, to International Foodservice Equipment Systems, Inc. Heating well, 4,284,880, Cl. 219-415.000.
- Keller, Alex J.; Flowers, Thad; Williams, Joseph R.; and Patel, Navinchandra K., to Automatic Material Handling, Inc. Spindle cleaning apparatus, 4,283,909, Cl. 57-306.000.
- Keller, James M., to Eltra Corporation. Ignition cable terminal construction, 4,284,322, Cl. 339-223.00S.
- Kelly, Donald V. Integral handle stop and latch member for sliding screen closures, 4,284,299, Cl. 292-87.000.
- Kelton, Arden A.; Waters, William P.; Shunk, David G.; and Bell, Michael L., to Immutron, Inc. Integrated fluid manipulator, 4,284,602, Cl. 422-72.000.
- Kempen, Simoon J.: See—  
Philpot, Georges A.; Haecck, Jacques R. G.; and Kempen, Simone J., 4,284,705, Cl. 430-159.000.
- Kendall Company, The: See—  
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,284,084, Cl. 128-748.000.
- Patel, Bhupendra C.; Schweizer, Russell J.; and Smith, Jesse C., 4,284,459, Cl. 156-245.000.
- Kengaku, Katsumi: See—  
Aoki, Shinji; Kawamura, Keita; Higo, Tsutomu; Kimura, Hitoshi; Sawada, Yasuhiro; Katayama, Tsutomu; and Kengaku, Katsumi, 4,283,937, Cl. 73-49.300.
- Kennecott Copper Corporation: See—  
George, David B.; and Bailey, Leonard K., 4,283,947, Cl. 73-863.110.
- Kennecott Corporation: See—  
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- Kessler, Gunther: See—  
Grimmer, Eberhard; Kessler, Gunther; and Muller, Hartwig, 4,283,926, Cl. 66-75.200.
- Kestenbaum, Ami: See—  
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- Kihara, Keiichi: See—  
Oyama, Kiyotaka; Nishimura, Shigeaki; Nonaka, Yuji; Hashimoto, Tsutomu; and Kihara, Keiichi, 4,284,721, Cl. 435-70.000.
- Kikuchi, Toshiyuki: See—  
Namiki, Ryoichi; Higashi, Yuichiro; Kikuchi, Toshiyuki; Fukushima, Ichiro; Asahina, Yasuo; and Soga, Setsuo, 4,284,875, Cl. 219-216.000.
- Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; Ninomiya, Kunihiko; and Egawa, Mitsuo, to Mitsubishi Chemical Ind., Limited. Pharmaceutically active 2-(4-aminobutoxy)stilbenes, 4,284,637, Cl. 424-267.000.
- Kilar, Louise J. Portable solar heater, 4,284,067, Cl. 126-436.000.
- Kilmer, Paul R.; and Bula, Roger M., to Cooper Industries, Inc. Electric conductor wrapping tool, 4,284,109, Cl. 140-122.000.
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- Kimura, Hitoshi: See—  
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- Kimura, Shougo: See—  
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- Kinard, William C.; Carter, Donald F.; and Young, Cecil G., to Kinard, William C. Apparatus for reducing racket handles, 4,283,818, Cl. 29-76.00R.
- Kindell, Jerry L.; and Flynn, Richard T., to Honeywell Information Systems Inc. Apparatus and method for rewrite data insertion in a three descriptor instruction, 4,285,035, Cl. 364-200.000.
- King, Phillip W., to American Home Products Corporation. Cartridge for strip chart recorders and method of using same, 4,284,252, Cl. 242-198.000.
- King, Richard M.: See—  
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- Kinno, Bunji: See—  
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- Kirkendall, Richard D.; Drysdale, William H.; Kokinakis, Louise D.; and Burns, Bruce P., to United States of America, Army. Double ramp discarding sabot, 4,284,008, Cl. 102-521.000.
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- Kirkland, Kerry G., to Armco Inc. Method and apparatus for remote installation and servicing of underwater well apparatus, 4,284,142, Cl. 166-344.000.
- Kitagawa, Yukio; and Moriya, Yoshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Data processing device using a subroutine call instruction, 4,285,036, Cl. 364-200.000.
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- Klann, Joerg: See—  
Felkel, Gerfried; and Klann, Joerg, 4,284,898, Cl. 250-551.000.
- Klauke, Erich: See—  
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- Kleber, Heinrich: See—  
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- Kleebar, Karl: See—  
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- Hagenlocher, Walter; Hesse, Heinz; Sohnle, Rudiger; Kugel, Christoph; Kunz, Johann; Lemke, Werner; and Kleebar, Karl, 4,284,915, Cl. 310-68.00D.
- Kleiman, Stanley. Festoon support device, 4,284,258, Cl. 248-251.000.
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- Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., to International Flavors & Fragrances Inc. Methyl substituted norborane carboxaldehydes, 4,284,824, Cl. 568-445.000.
- Kline, Gaylen O., to National Machinery Company. The. Bar end dropper for forging machines or the like, 4,283,974, Cl. 83-42.000.
- Kline, Richard H., to Goodyear Tire & Rubber Company. The. Process for preparing 3-(3,5-di-tert-alkyl-4-hydroxy-phenyl)-2,2-di-substituted propionaldehydes, 4,284,823, Cl. 568-433.000.
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- Klinkenberg, Klaus: See—  
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- Klockner-Humboldt-Deutz AG: See—  
Epper, Wolfgang; and Graf, Rupprecht, 4,283,938, Cl. 73-59.000.
- Klockner-Humboldt-Deutz Aktiengesellschaft: See—  
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- Klopsch, Siegfried, to Dr. Ing. Rudolf Hell GmbH. Apparatus for producing corrected color chromatic components, 4,285,009, Cl. 358-76.000.

- Knapp, Peter: See—  
Galliker, Franz; and Knapp, Peter, 4,284,933, Cl. 318-345.00C.
- Knoll, Dieter B., to Hewlett-Packard Company. Volume measuring apparatus, 4,283,945, Cl. 73-269.000.
- Knoll, Heiko, to Jagenberg Werke AG. System for setting the sheet length on a crosscutter for webs of material, 4,283,975, Cl. 83-76.000.
- Knudsen, Ronald D.; and Fahey, Darryl R., to Phillips Petroleum Co. Monohalogenated substituted phenol, 4,284,830, Cl. 568-779.000.
- Knupfer, Hans; and Schellhammer, Carl-Wolfgang, to Bayer Aktiengesellschaft. Process for the preparation of 1,2,3-triazoles substituted in the 2-position, 4,284,787, Cl. 548-256.000.
- Kobatake, Tatsu: See—  
Tate, Masahisa; Yoshiwara, Tetsuya; and Kobatake, Tatsu, 4,284,214, Cl. 222-590.000.
- Kobayashi, Hideo: See—  
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- Kobayashi, Kunimitsu: See—  
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- Kobe Steel, Ltd.: See—  
Sato, Norimoto; Miyaoka, Minoru; Yamasaki, Shio; Inoue, Kimio; Kuriyama, Akimasa; Fukui, Tsugushi; Asai, Toshihiro; Nakagawa, Kazuhiko; and Masaki, Tatsu, 4,284,358, Cl. 366-97.000.
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Agerhem, Halina; and Nilsson, Hans J., 4,284,719, Cl. 435-18.000.
- Koehler, Charles W.; and Van Ommering, Gerrit, to Ford Aerospace & Communications Corp. Cylindrical tapered sleeve optimized for weight and heat conduction, 4,284,690, Cl. 429-26.000.
- Koenig, Franklin R.: See—  
Kren, George J.; and Koenig, Franklin R., 4,285,053, Cl. 367-99.000.
- Koenig, Herbert G., Jr.: See—  
Allen, Louis B., Jr.; Koenig, Herbert G., Jr.; and Rice, Robert R., 4,284,963, Cl. 331-94.50H.
- Koike, Kengo: See—  
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- Koiwai, Yutaka: See—  
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- Kokinakis, Louise D.: See—  
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- Kolaska, Johannes: See—  
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- Kole, Richard P., to Aluminum Company of America. Method for applying lubricants onto metal working surfaces, 4,284,670, Cl. 427-422.000.
- Kolling, Peter: See—  
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- Koltuniak, Michael A.: See—  
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- Komatsu, Michiyasu: See—  
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- Komatsu, Mikiya; Takashima, Syuichi; and Suzuki, Syunsuke, to Nissan Motor Co., Ltd. Die casting machine for manufacturing heat resistant impellers, 4,284,124, Cl. 164-314.000.
- Kometani, Kiichi: See—  
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- Kommanditgesellschaft Finnpiette Osmo A Suovanemi: See—  
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- Kommanditgesellschaft Finnpiette Osmo A. Suovanemi: See—  
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- Kondo, Youichi: See—  
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- Korenobu, Toshihiko. Locking member for a clamping bolt, 4,284,114, Cl. 411-119.000.
- Korom, Gordon K., to Abbott Laboratories. Test tube decanter rack, 4,284,603, Cl. 422-101.000.
- Kovats, Tibor F. I.: See—  
Dymont, John C.; Straus, Jozef; Kovats, Tibor F. I.; Sinclair, William J.; and Springthorpe, Anthony J., 4,284,884, Cl. 250-205.000.
- Kozak, James M.: See—  
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- Kozlov, Ronald R.; and Grieg, Donald D., to Electronic Research Assoc., Inc. Sound reproducing device, 4,284,167, Cl. 181-172.000.
- Kraf, Inc.: See—  
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- Krafft, Werner: See—  
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- Kraft, Winfried; Lisfeld, Robert; Hagner, Willi; Wieber, Karl; and Frimmel, Horst, to Ernst Leitz Wetzlar GmbH. Microscope with attachable illuminating devices, 4,284,327, Cl. 350-87.000.
- Kraftwerk Union Aktiengesellschaft: See—  
Haas, Karl-Heinz; and Lang, Werner, 4,284,106, Cl. 138-147.000.
- Schon, Friedrich, 4,284,501, Cl. 210-96.100.
- Kramer, Peter, to BASF Aktiengesellschaft. Apparatus for treating uremic patients, 4,284,502, Cl. 210-98.000.
- Kramer, Ulrich; and Chenevard, Alexis, to SAPAL, Societe Anonyme des Pleuxes Automatiques. Automatic packing line, 4,284,187, Cl. 198-435.000.
- Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; Frohberger, Paul-Ernst; and Pempel, Manfred, to Bayer Aktiengesellschaft. Combating fungi with 1-phenosy-2-(2,4-dichlorophenyl)-1-(1,2,4-triazol-1-yl)-ethan-2-ones and -ols, 4,284,639, Cl. 424-269.000.
- Krasberg, Alan. Diving headgear for use in return-line diving systems, 4,284,075, Cl. 128-201.270.
- Kraus, Peter: See—  
Lunkenheimer, Winfried; Brandes, Wilhelm; and Kraus, Peter, 4,284,791, Cl. 560-43.000.
- Krause, Horst E.; and Stanley, Edwin L. Method and apparatus for pumping blood within a vessel, 4,284,073, Cl. 128-1.00D.
- Kreienbuhl, Claude: See—  
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- Krekel, Jorg: See—  
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- Kren, George J.; and Koenig, Franklin R., to Tencor Instruments. Acoustic method and apparatus for measuring micron and submicron distances, 4,285,053, Cl. 367-99.000.
- Kruer, Melvin R.: See—  
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- Krumbeck, Keith, to Cheney Company, Inc., The. Process for immersing in a swimming pool disabled persons using a wheelchair, 4,283,803, Cl. 449-6.000.
- Kruschik, Julius, to Klinger AG. Valves for controlling or preventing fluid flow, 4,284,098, Cl. 137-219.000.
- Kruse, Robert L.; and Wu, Wan C., to Monsanto Company. Process for dewatering a grafted rubber latex, 4,284,737, Cl. 525-243.000.
- Ksienzyk, Klaus: See—  
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- Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, to Yamanouchi Pharmaceutical Co., Ltd. Nitrogen-containing heterocyclic ring derivatives, 4,284,778, Cl. 546-115.000.
- Kubota, Hitoshi; and Shimizu, Kazuaki, to Nissan Motor Company, Limited. Hydraulic pressure control valve assembly for automotive hydraulic brake system, 4,284,307, Cl. 303-6.00C.
- Kubota, Yuichi, to TDK Electronic Co., Ltd. Magnetic recording medium and method of manufacturing the same, 4,284,684, Cl. 428-328.000.
- Kudo, Hisashi, to Fuji Photo Film Co., Ltd. Device for continuously inspecting a surface, 4,284,357, Cl. 356-431.000.
- Kuehn, Lorne A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Attitude indicator for divers, 4,283,798, Cl. 242-6.000.
- Kugel, Christoph: See—  
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- Kuhn, Charles J. Floor safe, 4,284,014, Cl. 109-50.000.
- Kuhn, S.A.: See—  
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- Kuhnelt, Gert: See—  
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- Kulik, Alphonse C.; and Walter, Josef J., to USM Corporation. Shoe machine air blast mechanism and air blast safety device, 4,283,806, Cl. 12-142.00R.
- Kulker, Otto, to Westfalia Separator AG. Self-dumping centrifugal separator drum, 4,284,233, Cl. 233-20.00A.
- Kumagai, Seichiro; Abe, Michio; and Maeda, Naoyuki, to Tokai TRW & Co. Ltd. Lean air-fuel mixture attraction method and attraction electrode plug in engine, 4,284,054, Cl. 123-536.000.
- Kunkel, Heinrich: See—  
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Kunkel, Heinrich; and Ernst, Horst M., 4,284,310, Cl. 308-8.200.
- Kunz, Johann: See—  
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- Kurahashi, Koichiro; Nakajima, Yoshiro; and Mizutani, Yoshiki, to Mitsubishi Denki Kabushiki Kaisha. Ghost cancellation circuit system, 4,285,006, Cl. 358-35.000.



- Kuriyama, Akimasa: See—  
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- Kuroda, Masataka: See—  
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- Kurti, Mariann: See—  
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- Kurzeba, Wieslaw: See—  
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- Kusumoto, Sho; Fukuda, Yoshio; Nemoto, Sadao; and Sakurama, Naoki, to Hitachi, Ltd. Polychromatic X-ray source for diffraction apparatus using polychromatic X-rays, 4,284,887, Cl. 250-272.000.
- Kutsay, Ali U. Double shear beam strain gage load cell, 4,283,941, Cl. 73-862.660.
- Kutzner, Luitpold: See—  
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- Kuzel, Maryann: See—  
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- Kwak, Solim S. W., to United States of America, Army. Conversion of CS (tear gas) to o-chlorostyrene and ammonium sulfate, 4,284,832, Cl. 570-190.000.
- Kwong, Gary W. Y.; and Levy, Joseph, to UOP Inc. Additives for hydrocarbon oils, 4,284,415, Cl. 44-72.000.
- Kyogoku, Yoshito: See—  
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- Kyoto University, President of: See—  
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- Kyowa Chemical Industry Co., Ltd.: See—  
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- Lacote, Jean-Claude: See—  
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- Lagerkvist, Conny B., to Nitro Nobel AB. Tubular container for viscous, viscous-elastic, plastic products as well as for powder or granular products, 4,284,196, Cl. 206-528.000.
- Laing, Stuart B.; and Weingarten, Gordon G., to Glaxo Group Limited. Process for the preparation of cephalosporin compounds, 4,284,766, Cl. 544-22.000.
- Laing, Stuart B.: See—  
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- Lal, Joginder; and Sandstrom, Paul H., to Goodyear Tire & Rubber Company, The. Rubber composites suitable for tire sidewalls from hexadiene polymer, 4,284,535, Cl. 260-4.00R.
- Lan, Shih-jung: See—  
Natarajan, Sessa I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., 4,284,624, Cl. 424-177.000.
- Lancaster, James F.: See—  
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- Lancet, Michael S.; and Curran, George P., to Conoco Inc. Synthetic CO<sub>2</sub> acceptor, 4,284,528, Cl. 252-443.000.
- Landau, Darrell W., to United States of America, Air Force. Digital position transducer including variable tuning element oscillator, 4,284,961, Cl. 331-65.000.
- Lang, Werner: See—  
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- Lantisch, Reinhard: See—  
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- Lapeyre, Fernand S. Bicycle transmission, 4,283,969, Cl. 74-810.000.
- Laporte Industries Limited: See—  
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- Lapshin, Evgeny I.: See—  
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- Larson, Richard S.; and Peckman, Allan B., to United Technologies Corporation. Gas turbine noise suppressor, 4,284,170, Cl. 181-213.000.
- Larsson, Hans-Gunnar: See—  
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- Laser Technology, Inc.: See—  
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- Lauridsen, Ole M.: See—  
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- Lavau, Rene C. Endless conveyor with locally varying speeds, 4,284,191, Cl. 198-792.000.
- Lavigne, Maurice E.: See—  
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- Lay, Larry D. Vehicle for the physically handicapped, 4,284,157, Cl. 180-65.00R.
- Leach, W. Marshall, Jr.; and Schafer, Ronald W., to Georgia Tech Research Institute. Time domain measurement of moving coil loudspeaker driver parameters, 4,284,860, Cl. 179-175.10A.
- Lear Siegler, Inc.: See—  
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- May, Gordon M., 4,283,847, Cl. 29-832.000.
- Pareja, Ramon, 4,284,392, Cl. 418-225.000.
- Lechner, Karl; and Bosmiller, Erich, to Motoren-und Turbinen-Union. Method of detecting the onset of cracking in articles during dynamic testing, 4,283,956, Cl. 73-799.000.
- Lechner, Robert, to Siemens Aktiengesellschaft. Telecommunication subscriber line access circuit with ground key indication and a device for call signal generation, 4,284,853, Cl. 179-18.0HB.
- Lection Products, Inc.: See—  
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- Lee, Chi-Long: See—  
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- Lee, Headie O., to Dow Corning Corporation. Closure and nozzle system for container for air-curable material, 4,284,213, Cl. 222-541.000.
- Lee, Hsi L.: See—  
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- Lee, Kyu T., to Du Pont de Nemours, E. I., and Company. Antibacterials: 1-difluoromethyl-6,7-methylenedioxy-1,4-dihydro-4-oxo-3-quinolinecarboxylic acid and its esters, 4,284,777, Cl. 546-90.000.
- Lee, Len F.: See—  
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- Lee, Robert G. H.: See—  
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- Leffmann, (Paul) Harry, to Motorola Inc. Wide dynamic range pulse to pulse rate converter, 4,284,956, Cl. 328-140.000.
- Legallasi, Lucien; Planquette, Guy; and Reynard, Remi, to Coflexip. Device to unroll and to roll up elongated flexible articles such as conduits or cables, 4,284,249, Cl. 242-54.00R.
- Leikhim, John W.; Gajewski, James M.; and Kuzel, Maryann, to Procter & Gamble Company, The. Stable liquid detergent compositions, 4,284,532, Cl. 252-528.000.
- Leland, Ragnvald G. Sock donning assist device, 4,284,216, Cl. 223-111.000.
- Leland Stanford Jr. University, Board of Trustees of: See—  
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- Lemercier, Guy, to Commissariat a l'Energie Atomique. Structures for heat insulation of surfaces within a nuclear reactor, 4,284,474, Cl. 176-38.000.
- Lemke, Werner: See—  
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- Lent, Roger S. Appliance anti-theft and protection circuitry, 4,284,983, Cl. 340-568.000.
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- Lester, Victor E. Inhalation incentive device, 4,284,083, Cl. 128-725.000.
- Lesyk, Joseph N., to Western Electric Co., Inc. Test heads having contact pairs, 4,284,314, Cl. 339-75.00M.
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- Levasseur, Joseph L., to H. R. Electronics Company. Vend control system, 4,284,208, Cl. 221-129.000.
- Levefelt, Bert G., to Sandvik Aktiebolag. Lubricating device, 4,284,151, Cl. 175-227.000.
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- Levy, Joseph: See—  
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- Lewallen, Charles D. Combination handtruck and portable work table, 4,284,286, Cl. 280-30.000.
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- Lezard S.A.: See—  
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- Linde Aktiengesellschaft: See—  
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- Lindorfer, Walter; Wagner, Fritz; Jahn-Held, Wilhelm; and Schulz, Walther, to Gesellschaft fur Biotechnologische Forschung. Process for removing oils or petroleum from the surface of the sea, 4,284,509, Cl. 210-610.000.
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- Lipfert, Donald E., to Ders Development Corporation. Cushioning material construction, 4,283,864, Cl. 36-28.000.
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- Liu, Chong T., to Stauffer Chemical Company. Process for decreasing elemental phosphorus levels in an aqueous medium, 4,284,515, Cl. 210-724.000.
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- Loge, Olaf: See—  
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- Lonne, Klaus, to Goetze AG. Sealing gasket, 4,284,282, Cl. 277-235.00B.
- Lorain Products Corporation: See—  
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- Lorenz, Georg M.: See—  
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- Loux, Edwin E. Device for supporting bicycle security chains and cables, 4,284,289, Cl. 280-289.00L.
- Lowry, Elliot G.; and Forster, Lloyd N. Overheight vehicle detection and warning system, 4,284,971, Cl. 340-52.00R.
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- Lutz, Eugene F., to Shell Oil Company. Process for recovery of an aliphatic diol oligomerization solvent, 4,284,837, Cl. 585-523.000.
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- Lyoch, Gerard F.: See—  
Allan, Colin J.; Shields, Ross B.; Cuttler, Jerry M.; and Lynch, Gerard F., 4,284,893, Cl. 250-390.000.
- Lyon, Colin E.: See—  
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- Machner, Peter: See—  
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- Madarasz nee Helesfal, Agnes: See—  
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- Maddeo, Stephen K.: See—  
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- Maeda, Naoyuki: See—  
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- Maekawa, Hitoshi: See—  
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- Magel, Rolf, to Ernst Leitz Wetzlar GmbH. Circuit arrangement for the compensation of the temperature coefficient of semiconductor junctions, 4,284,334, Cl. 354-24.000.
- Magyar Aluminiumipari Troszt: See—  
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- Mahoney, Morgan D. Swimming pool structure, 4,283,804, Cl. 4-506.000.
- Maier, Erwin; Hirschmann, Wilhelm; and Willeitner, Eberhard, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Device for ducting gas in a centrifuge block, 4,284,231, Cl. 233-1.00R.
- Maier, Roe J., Jr., to United States of America, Air Force. Self-determination of laser frequency, 4,284,964, Cl. 331-94.50S.
- Maier, Thomas A., to Essex Group, Inc. Simplified electronic ignition timing and A/D conversion, 4,284,045, Cl. 123-416.000.
- Maisch, Wolfgang, to Robert Bosch GmbH. Switching control apparatus for electromagnetic control units, 4,284,051, Cl. 123-490.000.
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- Malkemes, Charles D.: See—  
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- Mallinckrodt, Inc.: See—  
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- Manfredi, Urbano, to United States of America, Navy. Constant amplitude variable frequency synchronized linear ramp generator, 4,284,906, Cl. 307-228.000.
- Manitowoc Company, Inc.: See—  
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- Mansfield Carbon Products, Inc.: See—  
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- Mansfield, Vaughn, to Mansfield Carbon Products, Inc. Coking apparatus for producing coke, 4,284,477, Cl. 202-110.000.
- Manthey, Joseph W.: See—  
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- Manyo Tool: See—  
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- Marathon Oil Co.: See—  
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- Marben, Ronald D., to Thayer, Dennis M.; Marben, Ronald D.; DeJarlais, Ralph; and DeJarlais, Edward. Variable contour vice jaw, 4,284,267, Cl. 269-266.000.
- March, Anthony; and Horton, Thomas E., to General Motors Corporation. Vehicle power seat adjuster control system, 4,284,935, Cl. 318-280.000.
- Marchesi, Franco. Lubricant sealing device for sewing machines, 4,284,019, Cl. 112-256.000.
- Margraf, Adolf. Cooler for hot smoke-laden gases, 4,284,131, Cl. 165-76.000.



- Marhold, Albrecht: See—  
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- Mark Products, Inc.: See—  
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- Marley, John: System and method for sound recognition, 4,284,846, Cl. 179-1.05E.
- Maromatic Co., Inc.: See—  
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- Marquis, Edward T.; Watts, Lewis W., Jr.; and Gipson, Robert M.: to Texaco Inc. Tungsten catalyzed aniline-formaldehyde condensation, 4,284,815, Cl. 564-332.000.
- Marquis, Edward T.; and Watts, Lewis W., Jr.: to Texaco Inc. Method of preparing polyaminopolyphenylmethanes, 4,284,816, Cl. 564-332.000.
- Marshall, Harry A.: See—  
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- Marshall, Rolf F.: to Port Authority of New York and New Jersey. The Conveyance system, 4,284,010, Cl. 104-292.000.
- Martin, David O.; and Martin, Lawrence G.: to Martin Overhead Door and Electronics Co. Overhead door and overhead door section system and method, 4,284,119, Cl. 160-232.000.
- Martin, Donald M.; and Rowe, Peter A.: to Fisons Limited. Process for ammoniating phosphoric acid, 4,284,613, Cl. 423-310.000.
- Martin, John K.: to Investigacion Fic Fideicomiso. Neck ring assembly for automatic blow molding machines, 4,284,424, Cl. 65-241.000.
- Martin, Lawrence G.: See—  
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- Martin Overhead Door and Electronics Co.: See—  
Martin, David O.; and Martin, Lawrence G., 4,284,119, Cl. 160-232.000.
- Martin, Pierre; and Bellus, Daniel: to Ciba-Geigy Corporation. Dichlorovinylcyclobutanones, processes for preparing them, and their use as intermediates for producing pesticidal compositions, 4,284,821, Cl. 568-381.000.
- Martinson, Charles M.; and Martinson, David J.: to Mar-Fam, Inc. Mooring device, 4,284,026, Cl. 114-230.000.
- Martinson, David J.: See—  
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- Maruyama, Eiichi: See—  
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- Maruyama, Keizo: See—  
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- Maruyama, Mineo: See—  
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- Maryland Cup Corporation: See—  
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- Masaki, Tatuo: See—  
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- Maschinen- und Werkzeugbau GmbH: See—  
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- Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft: See—  
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- Hagin, Faust, 4,283,966, Cl. 74-572.000.
- Maier, Erwin; Hirschmann, Wilhelm; and Willetoer, Eberhard, 4,284,231, Cl. 233-1.00R.
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- Masclet, Jean; and Veaux, Jacques, to Messier-Hispano-Bugatti (SA). Shock absorbers and shock absorber struts, notably for aerodynamic landing gear, 4,284,255, Cl. 244-102.00R.
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- Matsumoto, Seiji: See—  
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- Matsumoto, Syuzo: See—  
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- Matsuo, Koichi: See—  
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- Matsushita Electric Industrial Co., Ltd.: See—  
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- Matsushita Electric Works, Ltd.: See—  
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- Iwanaga, Kouichi; and Kakumoto, Hiromi, 4,284,944, Cl. 320-48.000.
- Matsuzaki, Osamu; Abe, Michio; Mitobe, Koichi; and Tanno, Seikichi, to Hitachi, Ltd. Method of manufacturing color picture tubes, 4,284,662, Cl. 427-68.000.
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- Matsumura, Nobuyoshi, to Maruzen Sewing Machine Co., Ltd. Multiple pattern sewing machine, 4,284,016, Cl. 112-158.00E.
- Mawson, Maurice; and Jamieson, Alexander, to Messer Griesheim. Automatic adjustment of the initial height of a flame cutter to a workpiece, 4,284,871, Cl. 219-121.0PV.
- May, Gordon M.: to Lear Siegler, Inc. Circuit board assembly, 4,283,847, Cl. 29-832.000.
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- Mayer, Ferdy P.: Antiparasitic ignition device for cars, 4,284,057, Cl. 123-633.000.
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- McCluskey, James E.: to Philadelphia Rivet Company. Floating solar pool heater, 4,284,060, Cl. 126-415.000.
- McConnell, David P.; and Tully, Louis E., to McConnell, David P. Hydraulic fluid generator, 4,283,915, Cl. 60-650.000.
- McCoy, Marshall W.: to American Atomics Corporation. Self-luminous lighting system, 4,285,029, Cl. 362-84.000.
- McDonald, William H.: See—  
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- McDonnell Douglas Corporation: See—  
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- McElroy, James D.: See—  
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- McIntyre, Jack: Breech loading shotgun or the like, 4,283,873, Cl. 42-45.000.
- McKaveney, James P.: to Occidental Research Corp. Solar collectors with solar panels having a particulate ferro-alloy surface, 4,284,072, Cl. 126-901.000.
- McKay, John; and Hawkins, Billy C. Heavy duty press, 4,283,825, Cl. 29-251.000.
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- McNeel, William O.: to Mark Products, Inc. Geophone, 4,285,054, Cl. 367-183.000.
- McNeilab, Inc.: See—  
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- Means, Rodney J.: See—  
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- Medi-Physics, Inc.: See—  
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- Medtronic B.V.Kerkade: See—  
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- Mehta, Gurmukh D.: to Intertechnology/Solar Corporation. Liquid phase separation in absorption refrigeration, 4,283,918, Cl. 62-112.000.
- Meindl, James D.: See—  
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- Meischen, Sandra J.; Gale, Glen R.; and Naff, Marion B.: to United States of America, Health & Human Services. (N-Phosphonacetyl-L-aspartato)(1,2-diaminocyclohexane)platinum(II) or alkali metal salt, 4,284,579, Cl. 260-429.00R.
- Meisterheim, Richard A.: See—  
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- Memorex Corporation: See—  
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- Ho, Sa V., 4,284,784, Cl. 548-202.000.
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- Merikallio, Erkki; and Paloniemi, Paavo, to Oy Stromberg AB. Method for manufacturing a support construction for the winding in an electrical machine, 4,283,840, Cl. 29-596.000.
- Merriam, Charles N.: See—  
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- Merrick, James W.: to Autotronic Controls Corp. Electronic engine control, 4,284,053, Cl. 123-497.000.
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- Metalfab Industries, Inc.: See—  
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- Metzler Schaudt GmbH: See—  
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- Metzger, Karl G.: See—  
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- Okamoto, Hiroshi; Yamada, Tetsuya; Atsumi, Fumitoshi; and Izaka, Isao, 4,284,344, Cl. 355-14.00E.
- Sugiyama, Takashi; Ogawa, Masaya; and Murasaki, Hiroshi, 4,284,345, Cl. 355-15.000.
- Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; Oka, Tateki; and Mizunoe, Hiroaki, 4,284,702, Cl. 430-122.000.
- Yamada, Seiji, 4,284,341, Cl. 354-51.000.
- Miraldi, Peter: See—  
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- Mitchell, Alvin L.: See—  
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- Mitobe, Koichi: See—  
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- Mitsuba Electric Mfg. Co., Ltd.: See—  
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- Mitsubishi Denki Kabushiki Kaisha: See—  
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- Yamane, Masahiro; Watanabe, Toshimi; Itoga, Keiji; Ishibashi, Kiyoshi; Morita, Yutaka; Yamamoto, Isamu; and Imanaka, Kiyoji, 4,283,838, Cl. 29-588.000.
- Mitsui Mining & Smelting Co., Ltd.: See—  
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- Mitsui Petrochemical Industries, Ltd.: See—  
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- Mitsui, Yoshihiro: See—  
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- Miyano, Tadashi: See—  
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- Miyata, Shigeo; and Kuroda, Masataka, to Kyowa Chemical-Industry Co., Ltd. Method for inhibiting corrosion-causing tendency and coloration of halogen-containing olefin resins with hydrotalcite, 4,284,762, Cl. 528-485.000.
- Miyazawa, Yoshihide: See—  
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- Mize, Erbie G.: to Astec Industries, Inc. Storage bin closure with liquid seal, 4,284,203, Cl. 220-345.000.
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- Mizuno, Shioji; Enokimoto, Norio; and Oji, Kazuyoshi, to Dainippon Ink and Chemicals Inc. Flame retarding resin composition, 4,284,550, Cl. 260-40.00R.
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- Mizutani, Yoshiki: See—  
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- Mobil Oil Corporation: See—  
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- Fahmy, Mohamed A., 4,284,626, Cl. 424-222.000.
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- Shihabi, David S., 4,284,529, Cl. 252-455.00Z.
- Mochizuki, Seiji: See—  
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- Moeller, Wolfgang W. Ceiling tile system, 4,283,891, Cl. 52-144.000.
- Moens, Joris, to N. V. Bekaert S. A. Reinforcing member for castable material and process of mixing reinforcing elements with said material, 4,284,667, Cl. 427-331.000.
- Mohrle, Werner: See—  
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- Moked, Isaac; Handwerk, Richard H.; and Goettler, Hans J., to Unio Carbide Corporation. Discrete spiral flow imparting device, 4,284,105, Cl. 138-42.000.
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- Monsanto Company: See—  
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- Craig, James P., Jr., 4,284,598, Cl. 264-171.000.
- Howe, Robert K.; and Lee, Len F., 4,284,426, Cl. 71-90.000.
- Kruse, Robert L.; and Wan, Wan C., 4,284,737, Cl. 525-243.000.
- Montez, Delfino C. Boat with canted wing fins, 4,284,027, Cl. 114-273.000.
- Montgomery, Jon A. Multi-hull boat, 4,284,024, Cl. 114-61.000.
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- Mookherjee, Braja D.: See—  
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- Moore, Charles E.; Moore, Donald K.; and Moore, James M. Casement window security guard, 4,283,881, Cl. 49-35.000.
- Moore, Donald K.: See—  
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- Moore, Herbert E.: See—  
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- Moore, James M.: See—  
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- Moore, Sanders H.; and Adams, John O., to Olin Corporation. Heat sealing untreated sulfonamide-type cation exchange membranes, 4,284,460, Cl. 156-306.600.
- Moos, Kurt; and Buschor, Karl, to Gema AG. Pneumatic conveyor of adjustable conveyance capacity for powdered to granular bulk material, 4,284,032, Cl. 118-684.000.
- Morey, Booker W.: See—  
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- Morgan, Ira L.; Sudarshan, E. C. George; Mitchell, Alvin L.; Coose, James P.; Ellinger, Hunter D.; and Jagger, James W., to Morgan, Ira L.; and Sudarshan, E. C. George. Method and apparatus for tomographic examination of an object by penetrating radiation, 4,284,895, Cl. 250-445.00T.
- Morgan, Ira L.: See—  
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- Mori, Shigeru; and Sakitani, Katsumi, to Daikin Kogyo Co., Ltd.; and Nippon Electric Company Limited. Cooling system, 4,285,027, Cl. 361-385.000.
- Mori, Yoshihisa, to Sony Corporation. Phonograph record player, 4,284,279, Cl. 369-63.000.
- Mori, Yoshio: See—  
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- Moriwaka, Nobuyuki: See—  
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- Morikubo, Kunio: See—  
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- Moriya, Yoshiaki: See—  
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- Suzuki, Seigo; Eguchi, Seiji; and Moriya, Yoshiaki, 4,285,038, Cl. 364-200.000.
- Morlok, Albrecht; Hacker, Fritz; and Kolling, Peter, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Vehicle, particularly motor driven utility vehicle, 4,284,291, Cl. 280-479.00R.
- Morris, Hugh C.: See—  
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- Morrison, Eric F.; and Zank, Anthony E., to Ampex Corporation. Total raster error correction apparatus and method for the automatic set up of television cameras and the like, 4,285,004, Cl. 358-10.000.
- Morrison, John C.: See—  
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- Morrison-Knudsen Forest Products Company, Inc.: See—  
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- Morrow, James G., Sr., to Manitowoc Company, Inc. The Dual drive system for dragline with power interlock, 4,284,265, Cl. 254-317.000.
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- Motohashi, Katsuichi: See—  
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- Motorola, Inc.: See—  
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- Hepworth, Edward C.; and Means, Rodney J., 4,284,953, Cl. 328-37.000.
- Leffmann, (Paul) Harry, 4,284,956, Cl. 328-140.000.
- Patterson, Garvin W.; and Stehr, Wolfgang G., 4,285,039, Cl. 364-200.000.
- Priniski, David J., 4,285,065, Cl. 455-158.000.
- Wanat, Ronald J., 4,284,966, Cl. 333-202.000.
- Mott, James D., to Hydriol Company. Subsurface well apparatus and method, 4,284,141, Cl. 166-315.000.
- Moudgil, Brij M.; and Morey, Booker W., to Occidental Research Corporation. Apparatus for the float concentration of ore, 4,284,499, Cl. 209-166.000.
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- Muhleisen, Bruno, to TBT Tiefbohrtechnik GmbH & Co. One-lip tool for deep drilling, 4,284,375, Cl. 408-226.000.
- Muller, Arno, to Pitney Bowes Inc. Electronic postage meter operating voltage variation sensing system, 4,285,050, Cl. 364-900.000.
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- Mulvany, Richard B.; and Patel, Tulsidas R., to International Business Machines Corporation. Disk file, 4,285,018, Cl. 360-98.000.
- Murakami, Masuo: See—  
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- Muramoto, Kenichi: See—  
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- Murayama, Hirokazu: See—  
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- Murayama, Kashiwa, to Japan Crown Cork Co., Ltd. Method of producing an easily openable container closure having a shell and a sealing member, 4,284,023, Cl. 113-116.00A.
- Murkens, David W. Precision surface gage, 4,284,257, Cl. 248-125.000.
- Muth, Myron C.; Schilling, William F.; Teaney, Edwin L.; and Willmott, Leo C., to General Electric Company. Method of fabricating composite nozzles for water cooled gas turbines, 4,283,822, Cl. 29-156.80H.
- Mutschler, Erich; Prohaska, Hans; Schreiber, Franz; Schubert, Karl-Friedrich; and Weber, Adam, to IIT Industries, Inc. Device for adjusting the inclination of motor vehicle headlamps, 4,284,903, Cl. 307-10.0LS.
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- N. V. Bekaert S. A.: See—  
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- Naff, Marion B.: See—  
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- Nagati, Rashed N., to Pennsylvania Engineering Corporation. Metallurgical vessel capable of receiving fluids in separate flow paths while pivoting, 4,284,266, Cl. 266-246.000.
- Nagel, Erich; Ziegler, Franz; and Schaner, Ferdinand, to Agfa-Gevaert Aktiengesellschaft. Apparatus for breaking weakened portions of running webs or the like, 4,284,221, Cl. 225-100.000.
- Nagy, Ferenc; Szabo, Ferenc; and Szucs, Zoltan, to Magyar Alumini-umipari Trósz. Method of and measuring apparatus for determining the standard tensile yield point under load conditions, 4,283,955, Cl. 73-772.000.
- Nahas, Nicholas C., to Exxon Research & Engineering Co. Integrated coal drying and steam gasification process, 4,284,416, Cl. 48-197.00R.
- Naito, Shozo: See—  
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- Nakagawa, Kazuhiko: See—  
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- Nakagawa, Taizo; Mochizuki, Seiji; Ohmori, Kaoru; Koike, Kengo; Maruyama, Mineo; and Tanaka, Eiichi, to Nippon Kayaku Kabushiki Kaisha. 2-Hydroxy benzamide derivatives and use thereof as a fungicide, 4,284,628, Cl. 424-230.000.
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- Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Combustion chamber of an internal combustion engine, 4,284,044, Cl. 123-307.000.
- Nakanishi, Yoshiyuki: See—  
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- Nakayama, Takao: See—  
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- Nalley, David J., to Singer Company, The. Sabre saw with rotatable saw bar, 4,283,855, Cl. 30-394.000.
- Namiki, Ryoichi; Higashi, Yuichi; Kikuchi, Toshiyuki; Fukushima, Ichiro; Asahina, Yasuo; and Soga, Setsuo, to Richo Company Ltd. Heat roller fixing apparatus, 4,284,875, Cl. 219-216.000.
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- Narayan, Thirumurti; and Kan, Peter T., to BASF Wyandotte Corporation. Liquid carbodiimide- and uretonimine-isocyanurate-containing polyisocyanate compositions and microcellular foams made therefrom, 4,284,730, Cl. 521-160.000.
- Narita, Hiroshi; Horiuchi, Michimasa; Ibamoto, Masahiko; and Rokutan, Hideaki, to Hitachi, Ltd. Motor control apparatus with an improved thyristor chopper circuit, 4,284,934, Cl. 318-345.00C.
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- Natarajan, Sessa I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., to E. R. Squibb & Sons, Inc. Mixed disulfides, 4,284,624, Cl. 424-177.000.
- National Machinery Company, The: See—  
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- National Research Development Corporation: See—  
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- Henry, Robert M., 4,285,046, Cl. 364-728.000.
- National Starch and Chemical Corporation: See—  
Stanley, Henry; and Ray-Chaudhuri, Dilip K., 4,284,572, Cl. 260-347.400.
- Nau, Walter: See—  
Carstensen, Jes-Ernst; and Nau, Walter, 4,284,156, Cl. 180-24.020.
- Nautical Interiors Corporation: See—  
Porter, Charles A.; and Kozak, James M., 4,284,305, Cl. 297-452.000.
- NCR Corporation: See—  
Hors, William R., 4,284,715, Cl. 430-395.000.
- Neeff, Charles W., to Neeff Optica Lab Inc. Injection molding of optical lenses and optical molds, 4,284,591, Cl. 264-1.100.
- Neeff, Charles W. Continuous wear hydratable, boilable methylmethacrylate copolymer contact lens, 4,284,749, Cl. 526-304.000.
- Neeff Optica Lab Inc.: See—  
Neeff, Charles W., 4,284,591, Cl. 264-1.100.
- Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, to Bayer Aktien-gesellschaft. Anthraquinone derivatives for pigmenting organic macromolecular substances, 4,284,411, Cl. 8-506.000.
- Neher, Hans, to J. Hengstler K.G. Digit wheel counter, 4,284,881, Cl. 235-1.00C.
- Neideman, Saul L.; Amon, William F., Jr.; and Geigert, John, to Cetus Corporation. Preparation of epoxides and glycols from gaseous alkenes, 4,284,723, Cl. 435-123.000.
- Nelson, Donald A. Air conditioner and heat dispenser, 4,284,128, Cl. 165-48.00R.
- Nelson, Donald A., to General Electric Co. Dynamoelectric machine stator assembly, 4,284,920, Cl. 310-217.000.
- Nemoto, Sadao: See—  
Kusumoto, Sho; Fukuda, Yoshio; Nemoto, Sadao; and Sakurama, Naoki, 4,284,887, Cl. 250-272.000.
- Neumann, Klaus: See—  
Sitt, Hellmuth; Neumann, Klaus; Kleber, Heinrich; and Hassig, Helmut, 4,284,894, Cl. 250-443.000.
- Newburg, Norman R.: See—  
Millick, William H., Jr.; and Newburg, Norman R., 4,284,760, Cl. 528-306.000.
- Newcomb, Paul D.; Davignon, Paul A.; and Miller, Harold M., to American Optical Corporation. Contact lens mold, 4,284,399, Cl. 425-410.000.
- Newcombe, Clive V., to U.S. Philips Corporation. Temperature-compensated control valve, 4,284,263, Cl. 251-129.000.
- Newman, John W., to Laser Technology, Inc. Flaw detecting device and method, 4,283,952, Cl. 73-579.000.
- Newtoul, William A. Coating apparatus and method, 4,284,495, Cl. 209-3.100.
- Newton, William A. Particle guiding apparatus and method, 4,284,496, Cl. 209-3.300.
- Niagara Bottle Washer Manufacturing Co., a division of The Salang-mack Company: See—  
Vamvakas, Michael, 4,284,189, Cl. 198-647.000.
- Nice, Gerald W. Belt-carried notebook and holster, 4,284,220, Cl. 224-242.000.
- Nicholas, Richard F., to Rockwell International Corporation. Apparatus and method for aligning fine wire for thermal bonding, 4,283,834, Cl. 29-468.000.
- Nicholson, Gordon E., to Rockwell International Corporation. Throt-tle force detector, 4,284,865, Cl. 200-157.000.
- Nicholson, Margie M., to Rockwell International Corporation. Di-chroic transducer, 4,284,858, Cl. 179-121.00R.
- Nicolet Instrument Corporation: See—  
Vidrine, Drouet W.; and Peterson, Paul E., 4,284,949, Cl. 324-315.000.
- Nifco Inc.: See—  
Mizusawa, Akira, 4,284,378, Cl. 411-21.000.
- Tanaka, Toshie, 4,283,816, Cl. 24-269.000.
- Nihon Electronic Industry Co., Ltd.: See—  
Shimizu, Tadayuki, 4,284,445, Cl. 156-64.000.
- Nihon Pillow Block Mfg. Co.: See—  
Yoshida, Hajime; Aoki, Takashi; and Nishida, Kei, 4,284,353, Cl. 356-240.000.
- Niina, Akihiko: See—  
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- Nill, Eberhard: See—  
Brunn, Otto; and Nill, Eberhard, 4,285,013, Cl. 358-248.000.
- Nilsson, Hans J.: See—  
Agerhem, Halina; and Nilsson, Hans J., 4,284,719, Cl. 435-18.000.
- Nilsson, Jan-Erik: See—  
Pupp, Herwig; Andersson, Otto B.; and Nilsson, Jan-Erik, 4,284,448, Cl. 156-86.000.
- Ninomiya, Kunihiko: See—  
Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; Ninomiya, Kunihiko; and Egawa, Mitsuo, 4,284,637, Cl. 424-267.000.
- Nippon Electric Company, Limited: See—  
Araseki, Takashi, 4,284,859, Cl. 179-170.00C.
- Mori, Shigeru; and Sakitani, Katsumi, 4,285,027, Cl. 361-385.000.
- Yoshida, Yasuharu; Tagashira, Yoshimi; and Yokoyama, Seiji, 4,285,062, Cl. 375-20.000.
- Nippon Kayaku Kabushiki Kaisha: See—  
Nakagawa, Taizo; Mochizuki, Seiji; Ohmori, Kaoru; Koike, Kengo; Maruyama, Mineo; and Tanaka, Eiichi, 4,284,628, Cl. 424-230.000.
- Nippon Kogaku K.K.: See—  
Ohtsubo, Yoshiaki; and Watanabe, Sakuji, 4,284,340, Cl. 354-50.000.
- Takemae, Mikio; and Tanaka, Hiroaki, 4,284,335, Cl. 354-25.000.
- Nippon Kokan Kabushiki Kaisha: See—  
Tate, Masahisa; Yoshiwara, Tetsuya; and Kobatake, Tatsuo, 4,284,214, Cl. 222-590.000.
- Nippon Shokubai Kagaku Kogyo Co. Ltd.: See—  
Sato, Takahisa; Nakanishi, Yoshiyuki; Maruyama, Keizo; and Suzuki, Takehiko, 4,284,571, Cl. 260-346.400.
- Nippon Suisan Kabushiki Kaisha: See—  
Shigeoka, Ritsuo; Nagahisa, Eizo; and Yamauchi, Takafumi, 4,284,653, Cl. 426-312.000.
- Nippon Telegraph & Telephone Public Corp.: See—  
Odaka, Kazumi, 4,284,975, Cl. 340-146.30J.



- Nippon Zeon Co., Ltd.: See—  
Joh, Yasushi; Niina, Akihiko; Kaneko, Noriaki; Sano, Toshio; Ichige, Noriyuki; Ichikawa, Koji; Fukutome, Akira; and Sonobe, Hisako, 4,284,594, Cl. 264-41.000.
- Nippondenso Co., Ltd.: See—  
Ishida, Hideo; and Sukurai, Yasuhiko, 4,284,974, Cl. 340-81.00R.
- Nischwitz, Ehrenfried; and Dursch, Walter, to Hoechst Aktiengesellschaft. Process for the pretreatment of cellulose fibers to be printed according to the thermotransfer printing method. 4,284,410, Cl. 8-471.000.
- Nishida, Katsutoshi; Komatsu, Michiyasu; and Miyano, Tadashi, to Tokyo Shibaura Electric Co. Ltd. Ceramic powder material and method for manufacturing the same. 4,284,432, Cl. 106-73.200.
- Nishida, Kei: See—  
Yoshida, Hajime; Aoki, Takashi; and Nishida, Kei, 4,284,353, Cl. 356-240.000.
- Nishiguchi, Hisanori: See—  
Ishida, Eisuke; Takashima, Yuji; Nishiguchi, Hisanori; Miyazawa, Yoshihide; and Motohashi, Katsuchi, 4,284,696, Cl. 430-42.000.
- Nishikawa, Masaji, to Olympus Optical Company Ltd. Corona charger. 4,285,025, Cl. 361-230.000.
- Nishimura, Shigeaki: See—  
Oyama, Kiyotaka; Nishimura, Shigeaki; Nonaka, Yuji; Hashimoto, Tsutomu; and Kihara, Keichi, 4,284,721, Cl. 435-70.000.
- Nishiyama, Toshiaki: See—  
Kasai, Shigeo; Nishiyama, Toshiaki; and Kawada, Kiju, 4,283,978, Cl. 83-620.000.
- Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Static induction transistor and its applied devices. 4,284,997, Cl. 357-22.000.
- Nissan Motor Company, Limited: See—  
Abo, Toshimi, 4,283,910, Cl. 60-39.28R.
- Ishida, Takashi, 4,284,162, Cl. 180-296.000.
- Komatsu, Mikiya; Takashima, Syuichi; and Suzuki, Syunsuke, 4,284,124, Cl. 164-314.000.
- Kubota, Hitoshi; and Shimizu, Kazuaki, 4,284,307, Cl. 303-6.00C.
- Nakamura, Yoshiharu, 4,284,304, Cl. 296-201.000.
- Sugawara, Fukashi, 4,284,056, Cl. 123-568.000.
- Nitro Nobel AB: See—  
Lagerkvist, Conny B., 4,284,196, Cl. 206-528.000.
- Nix, Lothar H. W.; and Heinrich, John, to AMP Inc. Electrical connector. 4,284,320, Cl. 339-200.00R.
- Nixco, Charles R., to Tough-Guard, Inc. Paint sealant with Teflon T.F.E., 4,284,668, Cl. 427-355.000.
- Nixon, Eric, to Anchor Cap & Closure Corporation of Canada Ltd. Child proof cap. 4,284,201, Cl. 215-220.000.
- NL Industries, Inc.: See—  
Tetenbaum, Marvin T.; and Case, Barton C., 4,284,506, Cl. 210-321.400.
- Noguti, Masaharu: See—  
Sekiguchi, Kunio; and Noguti, Masaharu, 4,284,937, Cl. 318-388.000.
- Noisette, Pierre: See—  
Denoyelle, Serge; and Noisette, Pierre, 4,284,968, Cl. 335-176.000.
- Nonaka, Yuji: See—  
Oyama, Kiyotaka; Nishimura, Shigeaki; Nonaka, Yuji; Hashimoto, Tsutomu; and Kihara, Keichi, 4,284,721, Cl. 435-70.000.
- Nordlin, William F., to Auto Specialties Manufacturing Company. Hydraulic log splitter. 4,284,113, Cl. 144-193.00A.
- North American Philips Corporation: See—  
Rakocy, William J.; and Bellotti, Silvio, 4,283,979, Cl. 83-666.000.
- North, Bernard F., to Sun Chemical Corp. Glyoxal/cyclic urea condensates. 4,284,758, Cl. 528-245.000.
- North Carolina State University at Raleigh: See—  
Brown, Rodney J.; Swaisgood, Harold E.; and Horton, Horace R., 4,284,553, Cl. 260-112.00R.
- Northern Telecom, Inc.: See—  
Adams, William J.; Wernet, William F.; and Haskins, Steve W., 4,284,855, Cl. 179-100.00C.
- Northern Telecom Limited: See—  
Dymont, John C.; Straus, Jozef; Kovats, Tibor F. I.; Sinclair, William J.; and Springthorpe, Anthony J., 4,284,884, Cl. 250-205.000.
- Hayward, Richard; Bottrill, John; and Dittburner, Robert C., 4,284,834, Cl. 179-84.0VF.
- Szybicki, Edmund; and Lavigne, Maurice E., 4,284,852, Cl. 179-18.0EA.
- Norton, David J., to Westinghouse Brake and Signal Company Limited. Sequential checking of railway control signals. 4,284,256, Cl. 246-5.000.
- Norton, Don S., to Don Norton Manufacturing Co., Inc. Top-erected umbrella with cantilevered support. 4,284,095, Cl. 135-21.000.
- November, Mituo H., to International Telephone and Telegraph Corporation. Vibration densitometer assembly. 4,283,936, Cl. 73-32.00A.
- Noyori, Ryoji, to Ono Pharmaceutical Co., Ltd. Lithiumaluminum hydride compounds. 4,284,581, Cl. 260-448.0AD.
- Nye, LaVonne, to B & B Miniatures The Whimsy. Apparatus for pleating cloth. 4,284,215, Cl. 223-33.000.
- O & K Orenstein & Koppel Aktiengesellschaft and Lorenz GmbH: See—  
Bertram, Claus; and Lorenz, Georg M., 4,284,280, Cl. 277-27.000.
- O. M. Edwards Company, Inc., The: See—  
Remick, David W.; and Stankivitz, Charles J., Sr., 4,283,885, Cl. 49-466.000.
- Obear, Robert F., to Western Gear Corporation. Workpiece conditioning grinder system. 4,283,886, Cl. 51-92.00R.
- O'Brien, Anne: See—  
Whittaker, Graham; and O'Brien, Anne, 4,284,783, Cl. 546-345.000.
- Obrochta, Frank T.; and Disa, Ralph E., to United Technologies Corporation. Cambered core positioning for injection molding. 4,283,835, Cl. 29-527.600.
- Occidental Petroleum Corp.: See—  
Ore, Fernando, 4,284,614, Cl. 423-321.00S.
- Occidental Research Corp.: See—  
McKaveney, James P., 4,284,072, Cl. 126-901.000.
- Moudgil, Brij M.; and Morey, Booker W., 4,284,499, Cl. 209-166.000.
- Oce-Nederland B.V.: See—  
Graswinckel, Julius V. C., 4,284,348, Cl. 355-75.000.
- Ockels, Egbert, to Markomark B.V. Method of manufacturing a panel, provided with a frame foamed of synthetic material at least at one lateral face thereof, as well as a panel obtained through the method. 4,284,673, Cl. 428-54.000.
- Odaka, Kazumi, to Nippon Telegraph & Telephone Public Corp. On-line pattern recognition system for hand-written characters. 4,284,975, Cl. 340-146.30J.
- Ogawa, Junji. Convertible bucket attachment capable of excavation and clamping. 4,283,866, Cl. 37-117.500.
- Ogawa, Junkichi; Tanaka, Mitsugu; and Yamada, Minoru, to Fuji Photo Film Co., Ltd. Method of forming a photographic image. 4,284,714, Cl. 430-364.000.
- Ogawa, Masaya: See—  
Sugiyama, Takashi; Ogawa, Masaya; and Murasaki, Hiroshi, 4,284,345, Cl. 355-15.000.
- Oguchi, Toshihiko; Ishizawa, Akio; and Yoshida, Hiromi, to Tokyo Shibaura Denki Kabushiki Kaisha. Polymer coated transition metal powder as electrostatic image toner. 4,284,700, Cl. 430-105.000.
- Oguri, Masato: See—  
Nakamura, Akira; and Oguri, Masato, 4,283,911, Cl. 60-547.00R.
- O'Hanlon, Peter J.: See—  
Rogers, Norman H.; and O'Hanlon, Peter J., 4,284,570, Cl. 260-345.70R.
- Ohara, Katsunobu: See—  
Ando, Yujiro; Shinohara, Yukimasa; and Ohara, Katsunobu, 4,284,697, Cl. 430-53.000.
- Ohara, Yuji; and Ohnishi, Masahiro, to Fuji Photo Film Co., Ltd. Light beam scanner. 4,285,012, Cl. 358-293.000.
- Ohmori, Akira, to Daikin Kogyo Co., Ltd. Perfluoroalkyl-substituted amines as epoxy resin curing agents. 4,284,746, Cl. 525-510.000.
- Ohmori, Kaoru: See—  
Nakagawa, Taizo; Mochizuki, Seiji; Ohmori, Kaoru; Koike, Kengo; Maruyama, Minco; and Tanaka, Eiichi, 4,284,628, Cl. 424-230.000.
- Ohmori, Masayuki: See—  
Yamada, Sachiko; Ohmori, Masayuki; and Takayama, Hiroaki, 4,284,577, Cl. 260-397.200.
- Ohmori, Taiji; and Sato, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Antiskid brake device. 4,285,042, Cl. 364-426.000.
- Ohnishi, Makoto, to Hitachi, Ltd. Digital adder circuit with a plurality of 1-bit adders and improved carry means. 4,285,047, Cl. 364-785.000.
- Ohnishi, Masahiro: See—  
Ohara, Yuji; and Ohnishi, Masahiro, 4,285,012, Cl. 358-293.000.
- Ohnishi, Shumio, to Toyo Rubber Industry Co., Ltd., The. Tire tread. 4,284,115, Cl. 152-209.00R.
- Ohno, Eiji; and Chikugo, Kazuo, to Kabushiki Kaisha Komatsu Seisakusho. Method for the production of sintered powder ferrous metal preform. 4,284,431, Cl. 75-212.000.
- Ohsaka, Yohnosuke: See—  
Tohzuika, Takashi; and Ohsaka, Yohnosuke, 4,284,822, Cl. 568-399.000.
- Ohta, Naoto: See—  
Kawada, Shigeaki; Fujioka, Yoshiki; and Ohta, Naoto, 4,284,932, Cl. 318-338.000.
- Kawada, Shigeaki; Fujioka, Yoshiki; Ohta, Naoto; and Koiwai, Yutaka, 4,284,939, Cl. 318-453.000.
- Ohtsubo, Yoshiaki; and Watanabe, Sakuji, to Nippon Kogaku K.K. Temperature-compensated signal transmitting device. 4,284,340, Cl. 354-50.000.
- Oji, Kazuyoshi: See—  
Mizuno, Shioji; Enokimoto, Norio; and Oji, Kazuyoshi, 4,284,550, Cl. 260-40.00R.
- Oka, Tateki: See—  
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- Okada, Wataru: See—  
Fukuda, Hideki; Shiotani, Takeshi; and Okada, Wataru, 4,284,724, Cl. 435-255.000.
- Okamoto, Hiroshi; Yamada, Tetsuya; Atsumi, Fumitoshi; and Izaka, Isao, to Minolta Camera Kabushiki Kaisha. Electrophotographic density control. 4,284,344, Cl. 355-14.00E.
- OKI Electric Industry Co., Ltd.: See—  
Ishibashi, Norio; and Nakano, Kazuo, 4,284,876, Cl. 219-216.000.
- Okuda, Yukio: See—  
Kaiyuma, Hiroyuki; Okuda, Yukio; and Fujisawa, Yoshiaki, 4,283,920, Cl. 62-126.000.
- Okumura, Takeshi: See—  
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Jezuka, Isamu; and Yasukawa, Masao, 4,284,044, Cl. 123-307.000.
- Okumura, Yoshiharu; and Kaneko, Katsumi, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the production of tertiary alcohols. 4,284,831, Cl. 568-899.000.

- Olin Corporation: See—  
Moore, Sanders H.; and Adams, John O., 4,284,460, Cl. 156-306.600.
- Oliver, Christopher J.: See—  
Aldritt, Michael; Jones, Robin; Oliver, Christopher J.; and Vaughan, John M., 4,284,351, Cl. 356-28.500.
- Olmsted, John H., to RTE Corporation. High fire point dielectric insulating fluid having a flat molecular weight distribution curve. 4,284,522, Cl. 585-6.600.
- Olshewski, Armin; Brandenstein, Manfred; Walter, Lothar; Kunkel, Heinrich; and Ernst, Horst M., to Sandvik AB; and Aktiebolaget SKF. Rotary drill bit. 4,284,310, Cl. 308-8.200.
- Olson, Dale E.: See—  
Courtright, Burr; Olson, Dale E.; and Smolkowski, Alvin H., 4,284,240, Cl. 239-184.000.
- Olson, Daniel R.; Orkin, Ona V.; and Webb, Karen K., to General Electric Company. Abrasion resistant silicone coated polycarbonate article. 4,284,685, Cl. 428-331.000.
- Olson, John E., to Cascade Corporation. Apparatus for automatically depositing a load in a predetermined position. 4,284,384, Cl. 414-434.000.
- Olson, Kenneth E.: See—  
Tien, Hsuan L.; and Olson, Kenneth E., 4,284,771, Cl. 544-200.000.
- Olsson, Erik G.: See—  
Arnell, Claes G.; and Olsson, Erik G., 4,284,007, Cl. 102-477.000.
- Olympus Optical Co., Ltd.: See—  
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- Nishikawa, Masaji, 4,285,025, Cl. 361-230.000.
- Sato, Masaaki, 4,285,020, Cl. 360-132.000.
- Satoh, Keo, 4,285,014, Cl. 360-22.000.
- Sawamura, Ichiro; Aihara, Mamoru; Nakamura, Kazuhiko; and Kondo, Youichi, 4,284,897, Cl. 250-461.00B.
- Omya S. A.: See—  
Delfosse, Pierre; and Strauch, Dieter, 4,284,546, Cl. 260-29.60R.
- Ondetti, Miguel A.; and Condon, Michael E., to E. R. Squibb & Sons, Inc. Amino acid derivatives. 4,284,779, Cl. 546-189.000.
- Ondetti, Miguel A.; and Condon, Michael E., to E. R. Squibb & Sons, Inc. Amino acid derivatives. 4,284,780, Cl. 546-189.000.
- Ondetti, Miguel A.: See—  
Natarajan, Sessa I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., 4,284,624, Cl. 424-177.000.
- Petrillo, Edward W., Jr.; and Ondetti, Miguel A., 4,284,561, Cl. 260-326.000.
- Ono Pharmaceutical Co., Ltd.: See—  
Noyori, Ryoji, 4,284,581, Cl. 260-448.0AD.
- Onodera, Hideo: See—  
Fujisaki, Hitoshi; Onodera, Hideo; and Toyomura, Yasuhiro, 4,284,912, Cl. 307-255.000.
- Onodera, Keichi; and Yamaura, Hiroshi, to Fuji Electric Co. Ltd. Rotary signal generator. 4,284,916, Cl. 310-70.00R.
- Onstott, Darrell C.; and Onstott, Velma L. Weedless multi-barb fish-hook. 4,283,877, Cl. 43-34.000.
- Onstott, Velma L.: See—  
Onstott, Darrell C.; and Onstott, Velma L., 4,283,877, Cl. 43-34.000.
- Operating Systems, Inc.: See—  
Bird, Richard M.; and Tu, Ju C., 4,285,049, Cl. 364-900.000.
- OPI Ltd.: See—  
Reaugh, Luther G., 4,284,153, Cl. 175-297.000.
- Ore, Fernando, to Occidental Petroleum Corp. Process for production of high purity phosphoric acid from high alumina phosphate pebble rock. 4,284,614, Cl. 423-321.00S.
- O'Rear, Jacques G.: See—  
Griffith, James R.; and O'Rear, Jacques G., 4,284,747, Cl. 525-530.000.
- Orkin, Ona V.: See—  
Olson, Daniel R.; Orkin, Ona V.; and Webb, Karen K., 4,284,685, Cl. 428-331.000.
- Ortho Diagnostics, Inc.: See—  
Hansen, W. Peter; Hoffman, Robert A.; and Natale, Peter J., 4,284,355, Cl. 356-335.000.
- Hansen, W. Peter; and Hoffman, Robert A., 4,284,412, Cl. 23-230.00B.
- Ortho Pharmaceutical Corporation: See—  
Hajos, Zoltan G., 4,284,565, Cl. 260-340.600.
- Orthoplast Orthopädische Implantate GmbH & Co. KG: See—  
Rehder, Gunther, 4,284,080, Cl. 128-305.000.
- Ortner Freight Car Company: See—  
Eagle, Joseph, 4,284,011, Cl. 105-310.000.
- Ory, Pierre: See—  
Scherrer, Norbert; and Ory, Pierre, 4,284,143, Cl. 166-350.000.
- Osawa, Michitaka; Matsumoto, Syuzo; and Maekawa, Hitoshi, to Hitachi, Ltd. Color picture reproducing device. 4,285,008, Cl. 358-65.000.
- Ostrovsky, Alexander S.: See—  
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- Otis Engineering Corporation: See—  
Adams, James B., Jr., 4,284,152, Cl. 175-257.000.
- Otsuka, Yasuhiro: See—  
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- Outboard Marine Corporation: See—  
Baltz, Gene F.; and DuBois, Chester G., 4,284,040, Cl. 123-187.50R.
- Outokumpu Oy: See—  
Heimala, Seppo O.; and Tuovinen, Frans H., 4,284,665, Cl. 427-203.000.
- Overman, David L.; and Johnson, Robert N., to United States of America, Army. Acceleration switch. 4,284,862, Cl. 200-61.45R.
- Owen, Graham. Convertible ladder. 4,284,171, Cl. 182-22.000.
- Owens-Corning Fiberglass Corporation: See—  
Kane, John L., 4,284,395, Cl. 425-66.000.
- Oxenreider, Terry; Duesterhoef, Donald A.; and Erb, Edgar M., to General Battery Corporation. Method and apparatus for casting lead into plastic for side terminal batteries. 4,284,122, Cl. 164-98.000.
- Oy Stromberg AB: See—  
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- Oy Wartsila AB: See—  
Paakkunainen, Eero, 4,283,821, Cl. 29-129.000.
- Oyama, Kiyotaka; Nishimura, Shigeaki; Nonaka, Yuji; Hashimoto, Tsutomu; and Kihara, Keichi, to Sagami Chemical Research Center; Ajinomoto Co., Inc.; and Toyo Soda Mfg. Co., Ltd. Method for manufacturing dipeptides. 4,284,721, Cl. 435-70.000.
- Paakkunainen, Eero, to Oy Wartsila AB. Method for producing fiber rolls. 4,283,821, Cl. 29-129.000.
- Pacala, Theodore: See—  
Davis, Leonard C.; Pacala, Theodore; and Sippel, George R., 4,284,658, Cl. 427-34.000.
- Pace, Paul D. Four in one water hygiene dispenser. 4,284,078, Cl. 128-229.000.
- Packaging Corporation of America: See—  
Champlin, Charles L., 4,284,195, Cl. 206-427.000.
- Packman, Allan B.: See—  
Larson, Richard S.; and Packman, Allan B., 4,284,170, Cl. 181-213.000.
- Paiella, Roberto: See—  
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- Paloniemi, Paavo: See—  
Merikallio, Erkki; and Paloniemi, Paavo, 4,283,840, Cl. 29-596.000.
- PanCanadian Petroleum Limited: See—  
Cymbalisty, Lubomyr M. O.; and Shaw, Robert C., 4,284,360, Cl. 366-140.000.
- Paper Converting Machine Company: See—  
Spencer, Harvey J., 4,283,973, Cl. 83-23.000.
- Papstok, Heinz; Reuter, Herbert; and Bachmann, Lothar, to Veb Werkzeugmaschinenkombinat "7. Oktober" Berlin. Spur gear hobbing machine. 4,284,376, Cl. 409-24.000.
- Pareja, Ramon, to Lear Siegler, Inc. Roller pump with radial members. 4,284,392, Cl. 418-225.000.
- Park, Sang M.: See—  
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- Parker, Dane K.; and Steichen, Richard J., to Goodyear Tire & Rubber Company. The. Process for the removal of low level (ppm) halogenated contaminants. 4,284,516, Cl. 210-757.000.
- Parker, Marshall M.: See—  
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- Parsons, Robert, to Texas Instruments Incorporated. Character display apparatus with facility for selectively expanding the height of displayed characters. 4,284,989, Cl. 340-731.000.
- Partenheimer, Walter: See—  
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- Patchett, David R.; Phipps, Warren J.; and Zaverence, Harry, to Chrysler Corporation. Sealing type electrical connector. 4,284,312, Cl. 339-60.00R.
- Patel, Bhupendra C.; Schweizer, Russell J.; and Smith, Jesse C., to Kendall Company. The. Method for making a molded catheter. 4,284,459, Cl. 156-245.000.
- Patel, Bhupendra C.: See—  
Binard, William J.; Clarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,284,084, Cl. 128-748.000.
- Patel, Navinchandra K.: See—  
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- Patel, Tulsidas R.: See—  
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- Patterson, Garvin W.; and Stehr, Wolfgang G., to Motorola, Inc. Memory array selection mechanism. 4,285,039, Cl. 364-200.000.
- Patterson, Paul C., to Pennzoil Company. Motor vehicle lubricating facility. 4,284,173, Cl. 184-1.500.
- Paulson, Jerome T.; and Zylka, Lawrence C., to Veda, Inc. Material handling system. 4,284,371, Cl. 406-99.000.
- Paxon, Timm E.: See—  
Kim, Leo; Paxson, Timm E.; and Tang, Sunny C., 4,284,835, Cl. 585-277.000.
- Payne, David A.; Park, Sang M.; and Jahnke, Otto C., to Ferro Corporation. Reduced alkaline earth metal powders and process for producing same. 4,284,521, Cl. 252-62.3BT.
- Peck, David W.: See—  
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- Pecoraro, Joseph M.: See—  
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- Peifer, Rudolf: See—  
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- Pelchat, M. Guy: See—  
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- Pelin, Marcel, to Verdol S.A. Double twist spindle including a drive without contact between its plate and its stabilizer. 4,283,907, Cl. 57-58.760.
- Pemberton, R. C. Random access valve. 4,284,103, Cl. 137-625.000.
- Pembroke, Richard W.: See—  
Plachy, Ivo T.; Clymer, Jack W.; and Pembroke, Richard W., 4,284,250, Cl. 242-68.300.
- Pennsylvania Engineering Corporation: See—  
Nagati, Rashed N., 4,284,266, Cl. 266-246.000.
- Peanzoli Company: See—  
Patterson, Paul C., 4,284,173, Cl. 184-1.500.
- Pepe, Enrico J.: See—  
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- Pergrale, Jean; and Jatteau, Michel, to U.S. Philips Corporation. Gamma camera. 4,284,891, Cl. 250-363.005.
- Perino, Didier: See—  
Lewiner, Jacques; Dreyfus, Gerard; and Perino, Didier, 4,285,022, Cl. 361-45.000.
- Peripheral Dynamics, Inc.: See—  
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- Pernclip Products Corporation: See—  
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- Perring, Dudley; Smith, Michael J.; and Randall, John P., to EMI-Varian Limited. Linear beam microwave amplifier having section comprising three resonant coupled circuits two of which are resonant cavities which interact with the beam. 4,284,922, Cl. 315-5.390.
- Pesmel, Leopold, to American Electronic Laboratories, Inc. Process for regenerating sulfur dioxide gas scrubbing solutions. 4,284,608, Cl. 423-242.000.
- Peters, Thomas E.; and Bleymaier, Joseph S., to Morrison-Knudsen Forest Products Company, Inc. Orientation and deposition of fibers in the manufacture of fiberboard. 4,284,595, Cl. 264-24.000.
- Petersen, Egon N.; Vollkommer, Norbert; Blumfeld, Georg; Richtzenhain, Hermann; and Vogt, Wilhelm, to Dynamit Nobel Aktiengesellschaft. Halogen-containing unsaturated bis-esters and polymers and copolymers based on these esters. 4,284,732, Cl. 252-609.000.
- Petersen, Paul S.; and Holdahl, Robert A., to Toolmark Co. Wood lathe tool. 4,284,111, Cl. 142-56.000.
- Peterson, Francis C.; Barth, Gerald D.; and Slotten, Rodney O., to Illinois Tool Works Inc. Self-penetrating wallboard anchor. 4,283,986, Cl. 411-340.000.
- Peterson, Paul E.: See—  
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- Petrillo, Edward W., Jr.; and Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Hydroxamic acid derivatives of mercaptoacyl amino acids. 4,284,561, Cl. 260-326.200.
- Petro-Canada Exploration Inc.: See—  
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- Petry, Kurt: See—  
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- Pettit, John E.; and Pettit, Thomas L. Hexagonal jogging platform. 4,284,271, Cl. 272-70.000.
- Pettit, Thomas L.: See—  
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- Petukhov, Vadim D.: See—  
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- Pfeil, Wolfgang: See—  
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- Pfizer Inc.: See—  
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- Philadelphia Rivet Company: See—  
McCluskey, James E., 4,284,060, Cl. 126-415.000.
- Phillips Petroleum Co.: See—  
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- Uranneck, Carl A.; and Burleigh, John E., 4,284,741, Cl. 525-297.000.
- Welch, Melvin B., 4,284,748, Cl. 526-119.000.
- Phipps, Warren J.: See—  
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- Philpot, Georges A.; Haack, Jacques R. G.; and Kempen, Simone J., to Eastman Kodak Company. Photosensitive diazo salt compositions and lithographic plate comprising same. 4,284,705, Cl. 430-159.000.
- Pierrat, Michel A., to Ferrofluidics Corporation. Linear drive shaft seal. 4,284,605, Cl. 422-249.000.
- Pigott, Stanley W.; and Gregory, Peter, to BICC Limited. Continuous extrusion of metals. 4,283,931, Cl. 72-45.000.
- Pinck, Peter: See—  
Brand, Peter; Pinck, Peter; and Baier, Anton, 4,284,088, Cl. 131-280.000.
- Pinkstaff, Leo W. Microwave water heater. 4,284,869, Cl. 219-10.55A.
- Pioneer Electronic Corporation: See—  
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- Piper, Bert W., to Piper, Bert William. Portable key seat cutter. 4,284,377, Cl. 409-239.000.
- Piper, Bert William: See—  
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- Piscane, Frank J.: See—  
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- Pitney Bowes Inc.: See—  
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- Plachy, Ivo T.; Clymer, Jack W.; and Pembroke, Richard W., to Telex Computer Products, Inc. Tape drive having an improved reel latch. 4,284,250, Cl. 242-68.300.
- Planquette, Guy: See—  
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- Platone, Edoardo: See—  
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- Plempel, Manfred: See—  
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- Plessey Australia Pty. Limited: See—  
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- Plessey Handel und Investments A.G.: See—  
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- Plocker, Erwin; Kuhnelt, Gert; and Machner, Peter, to Vereinigte Edeltahlwerke Aktiengesellschaft (VEW). Arrangement for producing ingots of unalloyed and alloyed steels. 4,284,123, Cl. 164-515.000.
- Plois, Thomas J., to Schlumberger Technology Corporation. Method and apparatus for determining a granularity property of a subsurface formation around a borehole. 4,283,953, Cl. 73-589.000.
- Pneumafil Corporation: See—  
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- Polska Akademia Nauk, Instytut Maszyn Przeplywowych: See—  
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- Polysar Limited: See—  
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- Pomares, Raul J.; Ruiz, Carl P.; and Simpson, Douglas H., to General Electric Company. Method for enhanced control of radioiodine in the production of fission product molybdenum 99. 4,284,472, Cl. 176-16.000.
- Pope, J. Lee, Jr.; and Scott, James W., to Baxter Travenol Laboratories, Inc. Flexible membrane filter assembly. 4,284,505, Cl. 210-236.000.
- Popendorf, William J., to University of California, The Regents of the. Cassette filter ejector. 4,284,383, Cl. 414-417.000.
- Poque, Dionysius J.; and Lorenz, Horst. Steel belted radial ply tires with cap plies employing single yarn reinforcing elements. 4,284,117, Cl. 152-361.00R.
- Port Authority of New York and New Jersey, The: See—  
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- Porter, Allan W. H.; and Lucian, Anton, to Adolph Seurer Limited. Thread gripper. 4,284,108, Cl. 139-448.000.
- Porter, Charles A.; and Kozak, James M., to Nautical Interiors Corporation. Apparatus for upholstering a vehicle chair. 4,284,305, Cl. 297-452.000.
- Porter, Selby W.: See—  
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- Poss, Robert: See—  
Pratt, George W., Jr.; Poss, Robert; and Chung, Jeremy K., 4,283,799, Cl. 3-1.913.
- Pottier, Jacques, to Commissariat a l'Energie Atomique. Ion beam huncher—debuncher. 4,284,923, Cl. 315-5.510.
- Power Systems Development Corporation: See—  
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- PPG Industries Canada Ltd.: See—  
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- Gruber, Gerald W.; Friedlander, Charles B.; McDonald, William H.; and Dowbenko, Rostyslaw, 4,284,776, Cl. 544-400.000.
- Heilman, Richard A., 4,284,356, Cl. 356-429.000.
- Prain, Hunter D.: See—  
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- Pray, Edward R.: See—  
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- Precision Metalsmiths, Inc.: See—  
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- Precision Monolithics, Inc.: See—  
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- Pressmaster A.B.: See—  
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- Presti, Paolo: See—  
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- Preuss, Reinhard; Charlet, Egbert; Finkel, Peter; and Rosenkranz, Hans J., to Bayer Aktiengesellschaft. Agents for protection against light. 4,284,621, Cl. 424-59.000.
- Prevedello, Aldo; Brunelli, Maurizio; and Platone, Edoardo, to Anic, S.p.A. Method for the cyclization of gamma-delta, or delta-epsilon unsaturated alcohols. 4,284,567, Cl. 260-345.100.
- Prichard, Arthur W.; and Sharp, Francis B., to USM Corporation. Clamp type heater for back-part molding shoe machines. 4,284,874, Cl. 219-215.000.
- Prigent, Raymond: See—  
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- Prime, Harley C.: See—  
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- Priniaki, David J., to Motorola, Inc. Radio with audio graphic equalizer. 4,285,065, Cl. 455-158.000.
- Pritchett, William C., to Atlantic Richfield Company. Coupling means for horizontal vibrator with tooth-like projections. 4,284,163, Cl. 181-113.000.
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- Procter & Gamble Company, The: See—  
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- Leikhim, John W.; Gajewski, James M.; and Kuzel, Maryann, 4,284,532, Cl. 252-528.000.
- Logan, Ted J.; and King, Richard M., 4,284,580, Cl. 260-428.500.
- Products Research & Chemical Corp.: See—  
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- Proffer, Charles L. Evaporative charge forming system incorporating air cooling means. 4,283,917, Cl. 62-7.000.
- Progressive Dynamics, Inc.: See—  
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- Prohaska, Hans: See—  
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- Prosky, Howard S., to Electromedics, Inc. Control and alarm system for freezer case temperature. 4,283,921, Cl. 62-126.000.
- Prost, Claude D. Swab holding tool. 4,283,809, Cl. 15-145.000.
- Prov & Verktyg AB: See—  
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- Pryor, Richard L.; and Heagerty, William F., to RCA Corporation. Folded-cascade amplifier arrangement with current mirror amplifier. 4,284,958, Cl. 330-253.000.
- Pryor, Richard L.: See—  
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- Psaltis, Demetri: See—  
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- Pugach, Joseph, to Halcon Research and Development Corp. Process for the preparation of acetic anhydride. 4,284,585, Cl. 260-549.000.
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- Pujado, Peter R., to UOP Inc. Ammonoxidation process with external catalyst regeneration zone. 4,284,583, Cl. 260-465.00C.
- Pullukat, Thomas J.; and Shida, Mitsuzo, to Chempex Company. Polymerization catalyst. 4,284,527, Cl. 232-430.000.
- Pupp, Herwig; Andersson, Otto B.; and Nilsson, Jan-Erik, to Tetra Pak International A.B. Method and an arrangement for the manufacture of casings. 4,284,448, Cl. 156-86.000.
- Purr, Horst: See—  
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- Putetti, Anthony M., to Textron, Inc. Toggle-actuated punch stripper. 4,283,932, Cl. 72-345.000.
- Pyles, Elliot T., to Bendix Corporation, The. Method of attaching a ball joint to a suspension member. 4,283,833, Cl. 29-441.00R.
- Quad Environmental Technologies Corp.: See—  
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- Quaker Oats Company, The: See—  
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- Quermann, Thomas R., to Sperry Corporation. Gyroscope indexing drive mechanism. 4,283,960, Cl. 74-5.410.
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- Rabago, Renato: See—  
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- Rabinow, Jacob, to Hall & Myers, a part interest. Reflective lane marker for roadways. 4,284,365, Cl. 404-9.000.
- Radin, Norman S.: See—  
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- Radi, Bruce M., to Eikonix Corporation. Laser beam recorder. 4,284,994, Cl. 346-108.000.
- Raether, Wolfgang; Durckheimer, Walter; and Seidenath, Hans, to Hoechst Aktiengesellschaft. Antimalarial compositions. 4,284,627, Cl. 424-229.000.
- Ragot, Claude, to Thomson-CSF. Switchable very-high-voltage direct-current power supply for capacitive load. 4,284,928, Cl. 315-375.000.
- Ragdale, Fred L. Bicycle lock. 4,284,290, Cl. 280-289.00L.
- Rakocy, William J.; and Bellotti, Silvio, to North American Philips Corporation. Adjustable slicing blade assembly. 4,283,979, Cl. 83-666.000.
- Ralph McKay Limited: See—  
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- Randall, Cyril A.: See—  
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- Randall, John P.: See—  
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- Randell, Arthur A., to Coal Industry (Patents) Limited. Spray head. 4,284,242, Cl. 239-422.000.
- Randron: See—  
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- Rane, Dinanath: See—  
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- Rao, Bhaskara M. L.; Eustace, Daniel J.; and Parcasius, Dan, to Exxon Research & Engineering Co. Compositions for stabilizing electrolytes in Li/TiS<sub>2</sub> systems. 4,284,692, Cl. 429-194.000.
- Rapolla, Theodore. Agglomeration system for intermixing edible ingredients. 4,284,359, Cl. 366-107.000.
- Rappa, Leonard F. Portable chartholder and table. 4,283,869, Cl. 40-10.00D.
- Rasch, Walter; Caspers, Karl-Heinz; Wiebecke, Klaus; and Albert, Max, to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft. Method of producing cylinder heads, and cylinder head produced thereby. 4,284,041, Cl. 123-193.00H.
- Rassomakhin, Klimenty E.: See—  
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- Raty, Gary L. Decorative arch form. 4,283,894, Cl. 52-311.000.
- Rauch, Harry W., Sr., to General Electric Company. Fiber reinforced ceramics produced without pressing or sintering using a slurry comprising a silicate and a powdered ceramic. 4,284,664, Cl. 427-180.000.
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- Ray, Jon P. Simulated smoking device. 4,284,089, Cl. 131-270.000.
- Raytheon Company: See—  
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- RCA Corporation: See—  
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- Bell, Alan E., 4,285,056, Cl. 369-100.000.
- del Rio, Eddy H., 4,284,033, Cl. 118-730.000.
- Harper, Stanley A., 4,284,694, Cl. 430-23.000.
- Heagerty, William F.; and Pryor, Richard L., 4,284,959, Cl. 330-253.000.
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- McKeon, Edward F., 4,284,911, Cl. 307-252.00C.
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- Rea, Irvin B.: See—  
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- Reese, Robert O.; Wieber, Karl R.; and Sholly, James A., to Envirotech Corporation. Method for controlling electric power supplied to corona generating electrodes in an electrostatic precipitator. 4,284,417, Cl. 55-2.000.
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- Regueiro, William R., to General Motors Corporation. Data communications between fixed and moving terminals. 4,284,941, Cl. 318-587.000.
- Rehder, Gunther, to Orthoplast Orthopadische Implantate GmbH & Co. KG. Apparatus for the working of a bone which is to be provided with a shell prosthesis. 4,284,080, Cl. 128-305.000.
- ReHeat AB: See—  
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- Reick, Franklin G., to Ebert, Michael. Stabilized hybrid lubricant. 4,284,518, Cl. 252-16.000.
- Reick, Franklin G., to Ebert, Michael, a part interest. Halocarbon oil composition. 4,284,519, Cl. 252-16.000.
- Reinink, Jan: See—  
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- Reinkensmeier, Horst: See—  
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- Reinsma, Harold L., to Caterpillar Tractor Co. Joint sealing structure. 4,284,281, Cl. 277-84.000.
- Reiss, Hans-Jurgen. Portable searchlight. 4,285,031, Cl. 362-205.000.
- Reiter, Norbert: See—  
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- Rekant, Uriel. Centrifuge. 4,284,234, Cl. 233-27.000.
- Rello, Michael J., to Exxon Research & Engineering Co. Ribbon tensioning for a cartridge with flexible guides. 4,284,364, Cl. 400-234.000.
- Remick, David W.; and Stankivitz, Charles J., Sr., to O. M. Edwards Company, Inc. The. Emergency release closure. 4,283,885, Cl. 49-466.000.
- Remilieux, Jean, to Air Industrie. Declogging process for filtration installation and improved filtration installation. 4,284,419, Cl. 55-96.000.



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- Rendell, John S.; and Cahalan, Maurice J., to RTL Contactor Holding S.A. Extraction, 4,284,606, Cl. 423-6.000.
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- Research Corporation: See—  
Andres, Ronald P., 4,284,418, Cl. 55-16.000.  
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- Reuter, Herbert: See—  
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- Reynard, Remi: See—  
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- Reynolds Metals Company: See—  
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- Rhone Poulenc Industries: See—  
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- Rhone-Poulenc S.A.: See—  
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- Rice, Robert R.: See—  
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- Richardson-Merrell Inc.: See—  
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- Richo Company Ltd.: See—  
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- Rieben, Ralph E., to United States of America, Air Force. Low profile precision actuator, 4,284,254, Cl. 244-75.00R.
- Riecke, Edgar E.: See—  
Berwick, Martin A.; and Riecke, Edgar E., 4,284,699, Cl. 430-96.000.
- Rifat, Sultan A. Frost-proof fire hydrant, 4,284,099, Cl. 137-296.000.
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- Rizzo, Vincent J.: See—  
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- Robb, Robert A.: See—  
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- Robert Bosch GmbH: See—  
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Maisch, Wolfgang, 4,284,051, Cl. 123-490.000.  
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- Roberts, Graham E. Take-off safety indicator for aircraft, 4,284,029, Cl. 116-300.000.
- Robinson, Edward A.: See—  
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- Robinson, John W., Jr.: See—  
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- Roccaforte, Harry I., to Champion International Corporation. Boutique carton and carton blank, 4,284,193, Cl. 206-45.310.
- Roche, William J.: See—  
Bessone, Carlo S.; and Roche, William J., 4,284,925, Cl. 315-240.000.
- Rockwell International Corporation: See—  
Deyhimy, Ira; Eden, Richard C.; Harris, James S., Jr.; and Bubulac, Lucia O., 4,285,000, Cl. 357-24.000.  
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Nicholson, Gordon E., 4,284,865, Cl. 200-157.000.  
Nicholson, Margie M., 4,284,858, Cl. 179-121.00R.
- Rockwool Aktiebolaget: See—  
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- Rodger, Ian: See—  
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- Roesch, Androniki: See—  
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- Rogalski, Lawrence D. Baseboard space heating, air conditioning and humidity control system, 4,284,129, Cl. 165-50.000.
- Rogers, Norman H.; and O'Hanlon, Peter J., to Beecham Group Limited. Antibacterial compounds, 4,284,570, Cl. 260-345.70R.
- Rohm and Haas: See—  
Moser, Vincent J.; and Slowik, Robert A., 4,284,731, Cl. 525-28.000.
- Rohner, Joachim: See—  
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- Rokutan, Hideaki: See—  
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- Roland, Max G., to Maromatic Co., Inc. Method and apparatus for reading a key, 4,283,859, Cl. 33-174.00F.
- Rolf, Meinhard: See—  
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- Ronzio, Richard A.: See—  
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- Rosenbauer, Hans-Gunter: See—  
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- Rosenkranz, Hans J.: See—  
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- Rowe International, Inc.: See—  
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- Rowe, Peter A.: See—  
Martin, Donald M.; and Rowe, Peter A., 4,284,613, Cl. 423-310.000.
- Roy, Guy W.: See—  
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- Rucker, John, to R. Ideas, Inc. Lens field of view simulator, 4,283,860, Cl. 33-277.000.
- Ruiz, Carl P.: See—  
Pomares, Raul J.; Ruiz, Carl P.; and Simpson, Douglas H., 4,284,472, Cl. 176-16.000.
- Russell, Richard H.: See—  
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- Russo, Robert V., to Mobil Oil Corporation. Thermoplastic composition containing a poly(methyl ethenyl benzene) resin and a poly(phenylene oxide) resin, 4,284,733, Cl. 525-68.000.
- Ruyak, Robert F., to Autoclave Engineers, Inc. Magnetically actuated stopper valve, 4,284,262, Cl. 251-65.000.
- Ryan, John O., to Ampex Corporation. Photo-feedback preamplifier circuit, 4,284,960, Cl. 330-300.000.
- Rygajlo, Izydor, to Stamness, Delmer M. Adjustable stand, 4,284,293, Cl. 280-766.000.

- S. C. Johnson & Son, Inc.: See—  
Fox, Derek J., 4,284,435, Cl. 134-2.000.
- S.E.G. Resistor AB: See—  
Soderholm, Arne O., 4,284,155, Cl. 177-211.000.
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Scholl, Gerhardt; and Hofmann, Friedrich, 4,284,513, Cl. 210-699.000.
- Safinco: See—  
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- St. Clair, Anne K.; Taylor, Larry T.; St. Clair, Terry L.; and Frosch, Robert A. Administrator or the National Aeronautics and Space Administration, with respect to an invention of Anne K. St. Clair, Larry T. Taylor, Terry L. St. Clair. Aluminum ion-containing polyimide adhesives, 4,284,461, Cl. 156-331.900.
- St. Clair, Terry L.: See—  
St. Clair, Anne K.; Taylor, Larry T.; St. Clair, Terry L.; and Frosch, Robert A. Administrator or the National Aeronautics and Space Administration, with respect to an invention of Anne K. St. Clair, Larry T. Taylor, Terry L. St. Clair, 4,284,461, Cl. 156-331.900.
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- Sakitani, Katsumi: See—  
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- Sakurai, Seiichi: See—  
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- Sakurama, Naoki: See—  
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- Salcido, Albert R.; and Rabago, Renato. Device for stapling material on ceilings, 4,284,223, Cl. 227-5.000.
- Saleck, Wilhelm: See—  
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- Salee, Oideon, to Hooker Chemicals & Plastics Corp. Polymer blends with improved hydrolytic stability, 4,284,549, Cl. 260-40.00R.
- Salvador Castillo, Carmen. Bearing for supporting rolls of paper, 4,284,251, Cl. 242-68.400.
- Salvana, Frank; and Junker, Arnold, to Avco Corporation. Emergency oil/mist system, 4,284,174, Cl. 184-6.400.
- Samborski, Bruce A.: See—  
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- Sanders, James M.: See—  
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- Sandoz Ltd.: See—  
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- Sandstrom, Paul H.: See—  
Lal, Joginder; and Sandstrom, Paul H., 4,284,535, Cl. 260-4.00R.
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- Sandvik Aktiebolag: See—  
Levefelt, Bert G., 4,284,151, Cl. 175-227.000.
- Sankyo Electric Company Limited: See—  
Takahashi, Haruo; and Kimura, Shougo, 4,283,997, Cl. 92-79.000.
- Sano, Toshio: See—  
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Kramer, Ulrich; and Chenevard, Alexis, 4,284,187, Cl. 198-435.000.
- Sasano, Akira: See—  
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- Sato, Hiroshi; Fujisawa, Koji; Tojima, Hideto; and Yasui, Seimei, to Sumitomo Chemical Company, Limited. Process for preparing hexamethyltetrahydrophthalenes, 4,284,818, Cl. 568-323.000.
- Sato, Ichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for producing an image of an object scanned by ultrasonic wave beams, 4,285,011, Cl. 358-112.000.
- Sato, Makoto: See—  
Ohmori, Taiji; and Sato, Makoto, 4,285,042, Cl. 364-426.000.
- Sato, Masaki, to Olympus Optical Company, Ltd. Tape cassette, 4,285,020, Cl. 360-132.000.
- Sato, Masamichi; and Fujii, Itsuo, to Fuji Photo Film Co., Ltd. Image forming method, 4,284,713, Cl. 430-323.000.
- Sato, Norimoto; Miyazaki, Minoru; Yamasaki, Shin; Inoue, Kimio; Kuriyama, Akimasa; Fukui, Taugushi; Asai, Toshihiro; Nakagawa, Kazuhiko; and Masaki, Tatuo, to Bridgestone Tire Co., Ltd.; and
- Kobe Steel, Ltd. Mixing and kneading machine, 4,284,358, Cl. 366-97.000.
- Sato, Takahisa; Nakanishi, Yoshiyuki; Maruyama, Keizo; and Suzuki, Takehiko, to Nippon Shokubai Kagaku Kogyo Co. Ltd. Process for producing phthalic anhydride and catalyst therefor, 4,284,571, Cl. 260-346.400.
- Sato, Takeshi; and Matsubara, Yoshinari, to Bridgestone Tire Co., Ltd. Pneumatic tire for motorcycles, 4,284,116, Cl. 152-360.000.
- Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Type character selecting mechanism for printing head, 4,284,004, Cl. 101-111.000.
- Sato, Ken, to Olympus Optical Co., Ltd. Channel division recording/reproducing apparatus, 4,285,014, Cl. 360-22.000.
- Sato, Takehiko; Tsukahara, Sonoko; and Tsushima, Tachiro, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method for improvement of magnetic property of thin strip of amorphous alloy, 4,284,441, Cl. 148-120.000.
- Sato, Tsutomu: See—  
Nagasawa, Kohtaro; Morikubo, Kunio; and Sato, Tsutomu, 4,284,707, Cl. 430-196.000.
- Satterfield, Carroll D.: See—  
Kaspar, Peter D.; and Satterfield, Carroll D., 4,284,400, Cl. 425-444.000.
- Satu, Yoshinari, to Fujisawa Pharmaceutical Co., Ltd. 1,4-Dihydropyridine derivatives, and pharmaceutical method of the same, 4,284,634, Cl. 424-266.000.
- Satzinger, Gerhard; Herrmann, Manfred F.; and Hechtischer, Gustav, to Warner-Lambert Company. 3-Pyrrolin-2-one derivatives and compositions, 4,284,632, Cl. 424-246.000.
- Saunders Archery Company: See—  
Saunders, Charles A., 4,283,829, Cl. 29-278.000.
- Saunders, Charles A., to Saunders Archery Company. Protective device for mounting blades on arrowhead, 4,283,829, Cl. 29-278.000.
- Savard, Guy; Lee, Robert G. H.; and Hornsey, Derek, to Canadian Liquid Air Ltd./Air Liquide Canada LTEE. Two zone process for biological treatment of waste water, 4,284,510, Cl. 210-614.000.
- Savas, John. Aluminum base casting alloy, 4,284,429, Cl. 75-141.000.
- Savchenko, Alexandr I.: See—  
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- Sawada, Yasuhiro: See—  
Aoki, Shinji; Kawamura, Keita; Higo, Tsutomu; Kimura, Hiroshi; Sawada, Yasuhiro; Katayama, Tsutomu; and Kengaku, Katsumi, 4,283,937, Cl. 73-49.300.
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- Sawamura, Ichiro; Aihara, Mamoru; Nakamura, Kazuhiko; and Kondo, Youichi, to Olympus Optical Company Ltd. Fluorescence determining microscope utilizing laser light, 4,284,897, Cl. 250-461.00B.
- Sbuelz, Anes, to Societa Italiana Telecomunicazioni Siemens S.p.A. Sampling gate for TDM telecommunication system, 4,285,057, Cl. 370-112.000.
- Scandrol, Roy O.: See—  
Echtler, J. Paul; and Scandrol, Roy O., 4,283,954, Cl. 73-706.000.
- Scapes, John N.; and Soos, Joseph S., to Gould Inc. Pipe mount manifold assembly, 4,284,100, Cl. 137-343.000.
- Scarpino, David A.: See—  
Scarpino, Joseph J., III; and Scarpino, David A., 4,284,984, Cl. 340-571.000.
- Scarpino, Joseph J., III; and Scarpino, David A. Attitude change alarm, 4,284,984, Cl. 340-571.000.
- Schafer, Inge: See—  
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- Schafer, Ronald W.: See—  
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- Schaner, Ferdinand: See—  
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- Scharfenbergkupplung GmbH: See—  
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- Schatz, Friedrich; and Ziemek, Gerhard, to Kabel-und Metallwerke Gutehoffnungshuette AG. Method for manufacturing heat exchanger tubing, 4,283,824, Cl. 29-157.400.
- Schelhas, Peter, to Robert Bosch GmbH. Pressure control valve for a fuel injection system, 4,284,048, Cl. 123-453.000.
- Schellhammer, Carl-Wolfgang: See—  
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- Schenk, Norbert; Krekel, Jorg; Losacker, Paul; and Swodenk, Wolfgang, to Bayer Aktiengesellschaft. Preparation of anthraquinone from tetrahydroanthraquinone, 4,284,576, Cl. 260-369.000.
- Schering, A.G.: See—  
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- Vorbruggen, Helmut; Schwarz, Norbert; Loge, Olaf; and Elger, Walter, 4,284,646, Cl. 424-305.000.
- Schering Corporation: See—  
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- Scherrer, Norbert; and Ory, Pierre, to Societe Europeenne de Propulsion. System for the remote control, the maintenance or the fluid injection for a submerged satellite well head, 4,284,143, Cl. 166-350.000.



- Schild, Vern L. Detachable differential for vehicle drive train. 4,284,158, Cl. 180-70.00R.
- Schiefer, Warren J.; and Vickers, Stanley E., to Liqui-Box Corporation. Continuous rotary machine for uncapping, filling and recapping flexible bags having separable caps. 4,283,901, Cl. 53-75.000.
- Schilling, William F.: See—  
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- Schirmer, Henry G., to W. R. Grace & Co. Method for producing laminated film. 4,284,458, Cl. 156-244.120.
- Schisselbauer, John C., to Peripheral Dynamics, Inc. Card reader with improved data processing timing control. 4,284,883, Cl. 235-474.00Q.
- Schlegel Corporation: See—  
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- Schlener, J. Edward: See—  
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- Schleyerbach, Rudolf: See—  
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- Schlumberger Technology Corporation: See—  
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Pons, Thomas J., 4,283,953, Cl. 73-589.000.
- Schluter, Jürgen, to E. Schluter Fachhandel für Schweissttechnik. Welding torch. 4,284,873, Cl. 219-136.000.
- Schmelzer Corporation: See—  
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- Schmidt, Frank, to Cassella Aktiengesellschaft. Process for the manufacture of 6-hydroxypyrid-2-ones. 4,284,782, Cl. 546-288.000.
- Schmidt, Horst; and Struck, Hans, to Windmoller & Holscher. Reclosable cross-bottom sack. 4,284,229, Cl. 229-57.000.
- Schmidt, Ronald V.: See—  
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- Schmitt, Frederick L.: See—  
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- Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,284,819, Cl. 568-327.000.
- Schmitz, Henry; Kaneko, Takashi; Essery, John M.; and Doyle, Terrence W., to Bristol-Myers Company. Antitumor agents. 4,284,568, Cl. 260-345.000.
- Schneckenburger, Donald R.: See—  
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- Schneider, Fred J.: See—  
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- Schnettler, Roland: See—  
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- Schnitzer, Hans: See—  
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- Schnurle, Hans: See—  
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- Stanness, Delmer M.: See—  
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- Standard Oil Company (Indiana): See—  
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- Standel, Richard R., Jr. Multiple clothes hangers carrying device. 4,284,219, Cl. 294-152.000.
- Stankivitz, Charles J., Sr.: See—  
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- Sherif, Fawzy G., 4,284,530, Cl. 252-455.000.
- Shim, Kyung S.; and Skrzec, Adam E., 4,284,817, Cl. 568-67.000.
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- Steelite, Inc.: See—  
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- Steelman, Melvin W.: See—  
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Patterson, Garvin W.; and Stehr, Wolfgang G., 4,285,039, Cl. 364-200.000.
- Steichen, Richard J.: See—  
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- Stein, Edward I., to General Electric Company. Apparatus for stripping a solid mass in a strip from a mill. 4,284,597, Cl. 264-130.000.
- Steinberg, Hy. Solar oven. 4,284,071, Cl. 126-451.000.
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- Sterner, Maurice E., Jr., to Schlegel Corporation. Window assembly having removable sash. 4,283,883, Cl. 49-194.000.
- Stetler, Peter J. Frame device. 4,283,870, Cl. 40-154.000.
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Cannell, Michael J.; Carr, Slade L., Jr.; Stevens, Howard O.; and Surosky, Harold, 4,284,918, Cl. 310-178.000.
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- Stiff, Douglas A.: See—  
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Bryce, James R.; and Stillie, Donald G., 4,284,866, Cl. 200-159.000.
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- Stitt, Thomas D.: See—  
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- Stockinger, Friedrich: See—  
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- Stockman, Richard F., to Air Preheater Company, Inc. The. Fail safe arrangement. 4,284,125, Cl. 165-9.000.
- Stone, Aidan M., to General Electric Company. Transmission for washing machine. 4,283,928, Cl. 68-23.700.
- Stone, Samuel M., to GTE Laboratories Incorporated. Method for producing an optical power sampling device. 4,284,449, Cl. 156-86.000.
- Stonestrom, James P., to General Electric Company. Computerized tomographic reconstruction method and system utilizing reflection. 4,284,896, Cl. 250-445.000.
- Stonier, Roger A.; and Hayes, Richard A., to Ford Aerospace & Communications Corp. Method for bonding a skin member to honeycomb core. 4,284,457, Cl. 156-237.000.
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- Stork Gamco, Inc.: See—  
House, James B., 4,283,813, Cl. 17-45.000.
- Strand, Charles A., Sr. Apparatus for conditioning air. 4,284,132, Cl. 165-103.000.
- Strauch, Dieter: See—  
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- Straus, Jozef: See—  
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- Stucheli, Albin; and Trindler, Walter, to BBC Brown, Boveri & Company Limited. Multi-layer, high-temperature corrosion protection coating. 4,284,688, Cl. 428-559.000.
- Stumpp, Gerhard, to Robert Bosch GmbH. Apparatus for controlling the air-fuel quantity ratio in internal combustion engines. 4,284,047, Cl. 123-449.000.
- Subera, Elmer J.; Steelman, Melvin W.; and Favez, Abraham, to Tyler Refrigeration Corporation. Air defrost system using secondary air band components. 4,283,922, Cl. 62-256.000.
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- Sugasawa, Fukashi, to Nissan Motor Company, Limited. Split-type internal combustion engine. 4,284,056, Cl. 123-568.000.
- Sugihara, Hirotsada; Watanabe, Masazumi; Kawada, Mitsuru; and Imada, Isuke, to Takeda Chemical Industries, Ltd. Spirobenzofuranone compounds. 4,284,644, Cl. 424-285.000.
- Sugiura, Yoji: See—  
Kawamura, Masaharu; Shigeta, Yoshihiro; Uchidoi, Masanori; Sugiura, Yoji; and Yamamoto, Hiroshi, 4,284,333, Cl. 354-23.000.
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- Sukolics, Ronald D., to Swiss Aluminium Ltd. Thermally improved expanded store front system. 4,283,895, Cl. 52-395.000.
- Sukurai, Yasuhiko: See—  
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- Sulick, Richard C. Water-in-resin emulsions containing polyester resins. 4,284,547, Cl. 260-29.6NR.
- Sullivan, Daryl D., to Johns-Manville Corporation. Enclosed industrial luminaire. 4,285,034, Cl. 362-305.000.
- Sumitomo Chemical Company Limited: See—  
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- Sato, Hiroshi; Fujisawa, Koiti; Tojima, Hideto; and Yasui, Seimei, 4,284,818, Cl. 568-323.000.
- Sumitomo Light Metal Industries, Ltd.: See—  
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- Sun Chemical Corp.: See—  
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- Sunbeam Plastics Corporation: See—  
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- Sundin, Glen; and Spector, George. Bedroom lamp with clock operated lamp switch. 4,285,028, Cl. 362-35.000.
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- Sweany, Glenn A., to Conoco, Inc. Process for stimulating and upgrading the oil production from a heavy oil reservoir. 4,284,139, Cl. 166-267.000.
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- Swindle, Elro M. Solar collector system. 4,284,062, Cl. 126-423.000.
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- Syrier, Johannes L. M., to Shell Oil Company. 3,6,6-Trimethylbicyclo[3.1.0]hexane derivatives as pyrethroid intermediates. 4,284,820, Cl. 568-374.000.
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- Sze, Morgan C., to Lummus Company, The. Supported vanadia catalyst and use thereof for nitrile production. 4,284,781, Cl. 546-286.000.
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- Takada, Juichiro. Passive vehicle passenger restraint belt system. 4,284,294, Cl. 280-803.000.
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- Taylor, William T. Anti-kick, anti-fall running tool and instrument hanger and tubing packoff tool. 4,284,137, Cl. 166-137.000.
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- Teaney, Edwin L.; See—  
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- Teitin Limited; See—  
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- Marquis, Edward T.; and Watts, Lewis W., Jr., 4,284,816, Cl. 564-332.000.
- Texas Instruments Incorporated; See—  
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- Testron Inc.; See—  
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- Putetti, Anthony M., 4,283,932, Cl. 72-345.000.
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- Thayer, Dennis M.; See—  
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- Thomson, Harry E. Heat storage and heat exchanger. 4,284,059, Cl. 126-415.000.
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- Thompson, Christopher J., to Montreal Neurological Institute. Coincidence analysis circuit for positron annihilation imaging device. 4,284,890, Cl. 250-363.00S.
- Thompson, LeRoy, to Steelite, Inc. Snap action panel wall construction. 4,283,897, Cl. 52-489.000.
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Dupressoir, Albert, 4,284,991, Cl. 343-725.000.
- Huignard, Jean-Pierre; and Herriau, Jean-Pierre, 4,284,324, Cl. 350-3.640.
- Lemonon, Claire; Micheron, Francois; and Wang, Pierre, 4,284,921, Cl. 310-328.000.
- Ragot, Claude, 4,284,928, Cl. 315-375.000.
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- Tobe, Akihiro; See—  
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- Tobler S.A. Mecanique de Precision Franco-Suisse; See—  
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- Todd, David B., to Baker Perkins Inc. Liquid-liquid centrifugal contacting machines and methods of constructing and operating them. 4,284,232, Cl. 233-15.000.
- Todd, George S.; See—  
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- Tokai Metals Company, Limited; See—  
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- Tokai TRW & Co. Ltd.; See—  
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- Tokico Ltd.; See—  
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- Hayashida, Yoshihiro; Tateoka, Kiyoshi; and Ando, Hiromi, 4,283,993, Cl. 91-376.00R.
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- Kasama, Kiyoshi, 4,284,473, Cl. 176-19.00R.
- Kitagawa, Yukio; and Moriwa, Yoshiaki, 4,285,036, Cl. 364-200.000.
- Oguchi, Toshihiko; Ishizawa, Aki; and Yoshida, Hiromi, 4,284,700, Cl. 430-105.000.
- Sato, Ichiro, 4,285,011, Cl. 358-112.000.
- Sekiguchi, Kunio; and Noguti, Masaharu, 4,284,937, Cl. 318-388.000.
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Fuse, Noboru; Muramoto, Kenichi; Tani, Keizo; and Iwanishi, Masaaki, 4,284,998, Cl. 357-22.000.
- Nishida, Katsutoshi; Komatsu, Michiyasu; and Miyano, Tadashi, 4,284,432, Cl. 106-73.200.
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- Tollet, Marcel, to Societe pour l'Affranchissement et le Timbrage Automatiques (S.A.T.A.S.). Printer with a plurality of electrically controlled print wheels. 4,284,003, Cl. 101-99.000.
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- Tomka, Ivan, to Ciba-Geigy Aktiengesellschaft. Process for incorporating photographic additives in hydrophilic colloid preparations. 4,284,709, Cl. 430-222.000.
- Tonparro Limited; See—  
Small, Peter S.; and Small, Peter W., 4,284,145, Cl. 171-18.000.
- Toolmark Co.; See—  
Petersen, Paul S.; and Holdahl, Robert A., 4,284,111, Cl. 142-56.000.
- Toray Industries, Inc.; See—  
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- Touclon, James J.; See—  
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- Tough-Guard, Inc.; See—  
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- Toulios, Peter P.; and Hartman, Kenneth D., to ARES, Inc. Doppler-type projectile velocity measurement and communication apparatus, and method. 4,283,989, Cl. 89-6.500.
- Toya, Ichizo; and Fuseya, Yoshiharu, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsion. 4,284,717, Cl. 430-567.000.
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- Toyo Rubber Industry Co., Ltd.; See—  
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- Toyo Soda Mfg. Co., Ltd.; See—  
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- Toyo Stauffer Chemical Co., Ltd.; See—  
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- Toyomura, Yasuhiro; See—  
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- Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,284,044, Cl. 123-307.000.
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- Takeda, Nobuhiro; Hattori, Masaichi; and Mizuno, Shigeo, 4,284,295, Cl. 280-803.000.
- Traintronics Inc.; See—  
Beyl, Earl L., Jr.; and Cunningham, William C., 4,284,954, Cl. 328-75.000.
- Transamerica DeLaval Inc.; See—  
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- Trautmann, Hugh M., to Bilco Manufacturing, Inc. Indexing mechanism for tool head. 4,283,981, Cl. 83-884.000.
- Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., to International Flavors & Fragrances Inc. Use of 1-hydroxy-1-ethynyl-2,2,6-trimethyl cyclohexane in augmenting or enhancing the aroma or taste of foodstuffs. 4,284,654, Cl. 426-538.000.
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- Trotta, Robert A.; See—  
Douglass, Paul W.; and Trotta, Robert A., 4,283,850, Cl. 30-47.000.
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- Tsuchida, Shin; See—  
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Yu, Ruey J.; and Van Scott, Eugene J., 4,284,630, Cl. 424-241.000.

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Varga, Julianna K.: See—  
Franks, Neal E.; and Varga, Julianna K., 4,284,545, Cl. 260-29.6NR.

Varpio, Leonid. Measuring cup with leveler. 4,283,951, Cl. 73-426.000.

Vaughan, John M.: See—  
Aldritt, Michael; Jones, Robin; Oliver, Christopher J.; and Vaughan, John M., 4,284,351, Cl. 356-28.500.

Vaughn, James C. Muzzle loading firearm. 4,283,874, Cl. 42-51.000.

Veaux, Jacques: See—  
Masclot, Jean; and Veaux, Jacques, 4,284,255, Cl. 244-102.00R.

Veb Kombinat Textima: See—  
Grimmer, Eberhard; Kessler, Gunther; and Muller, Hartwig, 4,283,926, Cl. 66-75.200.

VEB Polygraph Druckmaschinenwerke Leipzig: See—  
Hank, Dietrich, 4,284,222, Cl. 226-181.000.

Veb Werkzeugmaschinenkombinat "7. Oktober" Berlin: See—  
Papistok, Heinz; Reuter, Herbert; and Bachmann, Lothar, 4,284,376, Cl. 409-24.000.

Veda, Inc.: See—  
Paulson, Jerome T.; and Zylka, Lawrence C., 4,284,371, Cl. 406-99.000.

Veeder Industries Inc.: See—  
Smilgys, Bruno S., 4,283,967, Cl. 74-681.000.

Velsicol Chemical Corporation: See—  
Luteri, George F., 4,284,425, Cl. 71-27.000.

Verdol S.A.: See—  
Pelin, Marcel, 4,283,907, Cl. 57-58.760.

Vereinigte Edeltahlwerke Aktiengesellschaft (VEW): See—  
Plockinger, Erwin; Kuhnelt, Gert; and Machner, Peter, 4,284,123, Cl. 164-515.000.

Vereinigte Flugtechnische Werke-Fokker GmbH: See—  
Schutze, Horst, 4,283,924, Cl. 62-402.000.

Veroef, Hendrikus M., to Ralph McKay Limited. Rail fasteners. 4,284,238, Cl. 238-349.000.

Vesterberg, Olof, to C. Desaga GmbH Nachf. Erich Fecht. Apparatus for electrophoresis. 4,284,491, Cl. 204-299.00R.

Vickers, Stanley E.: See—  
Schieser, Warren J.; and Vickers, Stanley E., 4,283,901, Cl. 53-75.000.

Vidrine, Drouet W.; and Peterson, Paul E., to Nicolet Instrument Corporation. Nuclear magnetic resonance spectrometer and method. 4,284,949, Cl. 324-315.000.

Vinals, Joaquin F.: See—  
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,284,824, Cl. 568-445.000.

Sprecker, Mark A.; Vock, Manfred H.; Schmitt, Frederick L.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,284,819, Cl. 568-327.000.

Trenkle, Robert W.; Mookherjee, Braja D.; Hall, John B.; Kasper, Robin; Vock, Manfred H.; Schreck, Ronald; Granda, Edward J.; and Vinals, Joaquin F., 4,284,654, Cl. 426-538.000.

Vitchus, Bernard C.: See—  
Sheets, Jesse E.; Vitchus, Bernard C.; Chao, Tai S.; and Zygowicz, Martin F., 4,284,402, Cl. 431-9.000.

Vock, Manfred H.: See—  
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,284,824, Cl. 568-445.000.

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Voeltz, Richard F., to Renner Manufacturing. Mobile crane. 4,284,159, Cl. 180-140.000.

Vogelsong, Thomas L.; and Tiemann, Jerome J., to General Electric Company. Charge transfer filter. 4,284,907, Cl. 307-221.00D.

Vogt, Sybrand W.: See—  
Boer, Edo; and Vogt, Sybrand W., 4,284,408, Cl. 474-14.000.

Vogt, Wilhelm: See—  
Petersen, Egon N.; Vollkommer, Norbert; Blumfeld, Georg; Rich-tzenhain, Hermann; and Vogt, Wilhelm, 4,284,732, Cl. 252-609.000.

Voigt, H. William, Jr., to United States of America. Army. Castable TNT compositions containing a broad spectrum preformed thermoplastic polyurethane elastomer additive. 4,284,442, Cl. 149-19.400.

Volence, Donald C. Fishing plug with internal attracters. 4,283,876, Cl. 43-42.330.

Vollkommer, Norbert: See—  
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Volvo Car B.V.: See—  
Boer, Edo; and Vogt, Sybrand W., 4,284,408, Cl. 474-14.000.

von Basse, Paul W.: See—  
Hofmann, Ruediger; and von Basse, Paul W., 4,284,910, Cl. 307-238.400.

Von Stetten, Hanns N., to Siemens Aktiengesellschaft. Circuit arrangement for a switching system. 4,285,037, Cl. 364-200.000.

Vorbruggen, Helmut; Schwarz, Norbert; Loge, Olaf; and Elger, Walter, to Schering Aktiengesellschaft. Prostanoid acid derivatives and their preparation. 4,284,646, Cl. 424-305.000.

Vukovich, William J., to General Motors Corporation. Automatic transmission line pressure control. 4,283,970, Cl. 74-866.000.

W. R. Grace & Co.: See—  
Schirmer, Henry G., 4,284,458, Cl. 156-244.120.

W. Schlafhorst & Co.: See—  
Kamp, Heinz; and Rohner, Joachim, 4,283,908, Cl. 57-276.000.

Wachtel, Jack S.: See—  
Ehrlich, Joseph R., 4,284,534, Cl. 252-342.000.

Wada, Kenichi: See—  
Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; Oka, Tateki; and Mizunoe, Hiroaki, 4,284,702, Cl. 430-122.000.

Waldner, William J.: See—  
Harris, William J.; and Waldner, William J., 4,284,237, Cl. 236-49.000.

Wagener, Dietrich; Flockenhaus, Claus; and Meckel, Joachim F., to Didier Engineering GmbH. Process and apparatus for utilization of the sensible heat of hot coke for drying and preheating coking coal. 4,284,476, Cl. 201-39.000.

Wagner, Fritz: See—  
Lindorfer, Walter; Wagner, Fritz; Jahn-Held, Wilhelm; and Schulz, Walther, 4,284,509, Cl. 210-610.000.

Wagner, Wolfgang. Suction injector having an adjustable dosing device. 4,284,077, Cl. 128-215.000.

Wahle, Gunter: See—  
Greve, Heinz; Tolasch, Gerhard; Heitmann, Uwe; and Wahle, Gunter, 4,283,998, Cl. 493-4.000.

Wakamiya, Masatoshi, to Bridgestone Tire Co., Ltd. Anchor bolt embedded in concrete. 4,283,899, Cl. 52-699.000.

Wakeman, Anthony C., to Lucas Industries, Limited. Reciprocating piston internal combustion engine. 4,284,055, Cl. 123-556.000.

Wakizaka, Hiroshi: See—  
Shinohara, Hiroshi; Otsuka, Yasuhiro; Kamiya, Hideo; Wakizaka, Hiroshi; and Furutani, Toshinobu, 4,284,486, Cl. 204-195.00S.

Walbrun, Lawrence A., to American Can Company. Apparatus for the manufacture of fibrous sheet structure. 4,284,465, Cl. 156-513.000.

Waldmeier, Peter; and Delini-Stula, Aleksandra, to Ciba-Geigy Corporation. Pharmaceutical compositions with central depressant and antipsychotic activity having a butyropenone derivative which is substituted in the 4-position and a C-(2-benzofuran-yl)-piperidine or C-(2-benzofuran-yl)-tetrahydro-pyridine. 4,284,638, Cl. 424-267.000.

Walker, David M.: See—  
Fowler, Albert L.; Henderson, Alan G.; Stevenson, Alastair K.; and Walker, David M., 4,284,990, Cl. 340-870.320.

Walker, Jerry A., to Upjohn Company. The process to prepare metalated olefins. 4,284,827, Cl. 568-686.000.

Walker Process Corporation: See—  
Thissen, Christopher P.; Ferwerda, Jerry J.; Tweet, Milford J.; and Hatfield, Ronald D., 4,284,396, Cl. 425-342.100.

Walter, Josef J.: See—  
Kulik, Alphonse C.; and Walter, Josef J., 4,283,806, Cl. 12-142.00R.

Walter, Lothar: See—  
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Kun- kel, Heinrich; and Ernst, Horst M., 4,284,310, Cl. 308-8.200.

Walton, Hyman, to United Kingdom Atomic Energy Authority. De- tecting the size and shape of bodies. 4,284,947, Cl. 324-61.00R.

Wamser, Christian A.: See—  
Gancy, Alan B.; and Wamser, Christian A., 4,284,611, Cl. 423-308.000.

Wanat, Ronald J., to Motorola, Inc. Wide bandwidth helical resonator filter. 4,284,966, Cl. 333-202.000.



Wang, Pierre: See—  
Lemonon, Claire; Micheron, Francois; and Wang, Pierre, 4,284,921, Cl. 310-328.000.

Wanner, Karl; and Bleicher, Manfred, to Robert Bosch GmbH. Portable hammer drill with rotating tool. 4,284,148, Cl. 173-109.000.

Warner-Lambert Company: See—  
Satzinger, Gerhard; Herrmann, Manfred F.; and Hechtischer, Gustav, 4,284,632, Cl. 424-246.000.

Washizuka, Isamu: See—  
Hashimoto, Shintaro; Hashimoto, Sadakatsu; and Washizuka, Isamu, 4,285,043, Cl. 364-707.000.

Watanabe, Eiki: See—  
Ishii, Toshiaki; and Watanabe, Eiki, 4,284,175, Cl. 187-29.00R.

Watanabe, Masazumi: See—  
Sugihara, Hirotsada; Watanabe, Masazumi; Kawada, Mitsuru; and Imada, Isuke, 4,284,644, Cl. 424-285.000.

Watanabe, Sakuji: See—  
Ohtsubo, Yoshiaki; and Watanabe, Sakuji, 4,284,340, Cl. 354-50.000.

Watanabe, Toshimi: See—  
Yamane, Masahiro; Watanabe, Toshimi; Itoga, Keiji; Ishibashi, Kiyoshi; Morita, Yutaka; Yamamoto, Isamu; and Imanaka, Kiyoji, 4,283,838, Cl. 29-588.000.

Waters Associates, Inc.: See—  
Carson, William W.; and Roe, John S., 4,284,352, Cl. 356-134.000.

Waters, William P.: See—  
Kelton, Arden A.; Waters, William P.; Shrunken, David G.; and Bell, Michael L., 4,284,602, Cl. 422-72.000.

Watson, John C. Solar power generating system. 4,284,063, Cl. 126-425.000.

Watts, Lewis W., Jr.: See—  
Marquis, Edward T.; Watts, Lewis W., Jr.; and Gipson, Robert M., 4,284,815, Cl. 564-332.000.

Marquis, Edward T.; and Watts, Lewis W., Jr., 4,284,816, Cl. 564-332.000.

Webb, Karen K.: See—  
Olson, Daniel R.; Orkin, Ona V.; and Webb, Karen K., 4,284,685, Cl. 428-331.000.

Weber, Adam: See—  
Mutschler, Erich; Prohaska, Hans; Schreiber, Franz; Schubert, Karl-Friedrich; and Weber, Adam, 4,284,903, Cl. 307-10.0LS.

Weber, Harold J., to Coulter Systems Corporation. Power transfer network. 4,284,489, Cl. 204-298.000.

Weber, Harold J., to Coulter Systems Corporation. R.F. Sputtering apparatus including multi-network power supply. 4,284,490, Cl. 204-298.000.

Weber, Jesse A.: See—  
Arter, Nelson K.; Hauke, Francis E.; and Weber, Jesse A., 4,285,017, Cl. 360-77.000.

Wedding, Brent M., to Corning Glass Works. Spectacle lenses to reduce discomfort from aphakia and certain eye diseases. 4,284,686, Cl. 428-334.000.

Wegner, Christian; Findeisen, Kurt; and Weider, Franz, to Bayer Aktiengesellschaft. Process for the preparation of water-dispersible or water-soluble blocked polyisocyanates, the blocked polyisocyanates obtainable by this process and lacquer binders containing these blocked polyisocyanates as isocyanate component. 4,284,544, Cl. 260-29.2TN.

Weider, Franz: See—  
Wegner, Christian; Findeisen, Kurt; and Weider, Franz, 4,284,544, Cl. 260-29.2TN.

Weigle, Reinhold; Pfeil, Wolfgang; and Purr, Horst, to Develop Dr. Eisbein GmbH & Co. Apparatus for the metered feeding of ink to a ductor roll of an offset printing device. 4,284,005, Cl. 101-363.000.

Weingarten, Gordon G.: See—  
Humber, David C.; Laing, Stuart B.; and Weingarten, Gordon G., 4,284,767, Cl. 544-22.000.

Laing, Stuart B.; and Weingarten, Gordon G., 4,284,766, Cl. 544-22.000.

Weinstock, Joseph: See—  
Holden, Kenneth G.; Kaiser, Carl; and Weinstock, Joseph, 4,284,556, Cl. 260-239.0BB.

Weirich, Walter, to Gewerkschaft Eisenhütte Westfalen. Pressure-relief valve devices. 4,284,101, Cl. 137-538.000.

Weis, Claus D., to Ciba-Geigy Corporation. Process for the manufacture of 4,5-dichloro-2-(4-chlorophenoxy)phenol. 4,284,828, Cl. 568-637.000.

Weitz, Hans-Martin: See—  
Fischer, Rolf; and Weitz, Hans-Martin, 4,284,796, Cl. 560-262.000.

Weitzen, William; and Trippe, Jerry C., to General Technology Applications, Inc. Process for using magnetically ballasted sorbents. 4,284,511, Cl. 210-661.000.

Weiburn, Ross, to Compumotion Corporation. Electrical wave synthesizer for controlling an electric motor. 4,284,940, Cl. 318-696.000.

Welch, Melvin B., to Phillips Petroleum Company. Olefin polymerization. 4,284,748, Cl. 526-119.000.

Weanerstrom, Karl F., to Prov & Verktyg AB. Apparatus for pre-cutting metal strip in the manufacture of spiral strip pipes, e.g. ventilation ducts. 4,283,976, Cl. 83-301.000.

Werber, Fred W. K. R. Garment designing aid. 4,283,856, Cl. 33-14.000.

Werkzeugmaschinenfabrik Oerlikon-Bührle AG: See—  
Durrer, Jorg; and Mayer, Cornelius, 4,284,326, Cl. 350-63.000.

Werner, Peter: See—  
Sachowsky, Wadym; Werner, Peter; Schnurle, Hans; Mohrle, Werner; and Drews, Ulrich, 4,284,050, Cl. 123-483.000.

Wernet, William F.: See—  
Adams, William J.; Wernet, William F.; and Haskins, Steve W., 4,284,855, Cl. 179-100.00C.

West Electric Co., Ltd.: See—  
Iwata, Hiroshi; and Hasegawa, Wataru, 4,284,336, Cl. 354-25.000.

West, Frank E., to Baron Hire Limited; and West, Frank Edward. Reciprocating drive means. 4,284,038, Cl. 123-46.00A.

West, Frank Edward: See—  
West, Frank E., 4,284,038, Cl. 123-46.00A.

Western Electric Company, Inc.: See—  
Arroyo, Candido J.; Cogelia, Nicholas J.; and Darsey, Ralph J., 4,284,842, Cl. 174-107.000.

Canning, Everett J., Jr., 4,284,428, Cl. 75-64.000.

Chayka, George A.; and Schneider, Fred J., 4,284,466, Cl. 156-583.100.

Gursky, Michael T., 4,283,839, Cl. 29-589.000.

Jaccodine, Ralph J.; and Kestenbaum, Ami, 4,284,659, Cl. 427-53.100.

Lesyk, Joseph N., 4,284,314, Cl. 339-75.00M.

Western Gear Corporation: See—  
Obear, Robert F., 4,283,886, Cl. 51-92.00R.

Western Thomson Controls, Limited: See—  
Buswell, Robert E., 4,283,823, Cl. 29-157.10R.

Westfalia Separator AG: See—  
Kulker, Otto, 4,284,233, Cl. 233-20.00A.

Westinghouse Brake and Signal Company Limited: See—  
Norton, David J., 4,284,256, Cl. 246-5.000.

Westinghouse Electric Corp.: See—  
Barnhardt, Scott B., 4,284,913, Cl. 310-54.000.

DeLaurentis, Angelo A.; Zola, Frank G., Jr.; and Specht, Theodore R., 4,283,842, Cl. 29-606.000.

Matty, Thomas C., 4,284,930, Cl. 318-269.000.

Wiley, Roy O.; and Samborski, Bruce A., 4,284,318, Cl. 339-103.00C.

Westman, Erik: See—  
Brunsson, Gunnar; Larsson, Hans-Gunnar; and Westman, Erik, 4,284,393, Cl. 425-7.000.

White, Ben E.: See—  
Geyer, Charles J., Jr.; and White, Ben E., 4,284,765, Cl. 536-60.000.

White, Emory A., to General Electric Company. Repeating station for use in digital data communications link. 4,284,843, Cl. 178-69.00G.

White, Wallace E. Automatic livestock feeder. 4,284,035, Cl. 119-51.110.

Whittaker, Graham; and O'Brien, Anne, to Imperial Chemical Industries Limited. Liquid phase preparation of 2-chloro-5-trifluoromethylpyridine and 2-chloro-5-perchlorofluoromethylpyridine. 4,284,783, Cl. 546-345.000.

Whybrew, Walter D.: See—  
Bucovaz, Edsel T.; Morrison, John C.; Whybrew, Walter D.; and Tarnowski, Stanley J., Jr., 4,284,552, Cl. 260-112.00R.

Wiczor, Sol B. Thickened gelatinous edible alcoholic medicated carrier. 4,284,649, Cl. 424-362.000.

Wiebecke, Klaus: See—  
Rasch, Walter; Caspers, Karl-Heinz; Wiebecke, Klaus; and Albert, Max, 4,284,041, Cl. 123-193.00H.

Wieber, Karl: See—  
Kraft, Winfried; Lisfeld, Robert; Hagner, Willi; Wieber, Karl; and Frimmel, Horst, 4,284,327, Cl. 350-87.000.

Wieber, Karl R.: See—  
Reese, Robert O.; Wieber, Karl R.; and Sholly, James A., 4,284,417, Cl. 55-2.000.

Wiener, Hans, to Pressmaster A.B. Gripping or pressing tool. 4,283,933, Cl. 72-409.000.

Wilcoas, Martin H., to Advanced Diagnostic Research Corporation. Ultrasonic interrogating system and exciter-detector circuit therefor. 4,285,010, Cl. 358-112.000.

Wildenrotter, Karl, to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft. Apparatus for collecting solar energy. 4,284,061, Cl. 126-418.000.

Wildfeuer, Robert. System for cooling. 4,283,925, Cl. 62-434.000.

Wiley, Roy O.; and Samborski, Bruce A., to Westinghouse Electric Corp. Electric plug. 4,284,318, Cl. 339-103.00C.

Wilhelms, Otto-Henning: See—  
Friebe, Walter-Gunar; Thiel, Max; Kampe, Wolfgang; Wilhelms, Otto-Henning; and Roesch, Androniki, 4,284,633, Cl. 424-253.000.

Wilke, Douglas A. Solar energy air roof. 4,284,070, Cl. 126-450.000.

Willeitner, Eberhard: See—  
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Williams, Dennis W. Threshing and separating apparatus. 4,284,086, Cl. 130-27.00M.

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Williams, Robert A. Chaff-flare test adapter connecting and disconnecting apparatus. 4,284,315, Cl. 339-89.00M.

Williamson, Raymond E., to ACF Industries, Inc. Crashworthy fuel pump improvement. 4,284,391, Cl. 417-569.000.

Willingner, Karl, to Miba Sintermetall Aktiengesellschaft. Segment-shaped blade. 4,283,819, Cl. 29-79.000.

Willingner, Karl, to Miba Sintermetall Aktiengesellschaft. Segment-shaped blade. 4,283,820, Cl. 29-79.000.

Willmott, Leo C.: See—  
Muth, Myron C.; Schilling, William F.; Teaney, Edwin L.; and Willmott, Leo C., 4,283,822, Cl. 29-156.80H.

Willson, Carlton G.: See—  
Cleck, Nicholas J.; Grant, Barbara D.; and Willson, Carlton G., 4,284,706, Cl. 430-191.000.

Wilson, Alexander J., to Girling Limited. Servo boosters. 4,283,992, Cl. 91-369.00B.

Wilson, Michael T. Adjustable prosthetic element. 4,283,800, Cl. 3-21.000.

Windmoller & Holscher: See—  
Schmidt, Horst; and Struck, Hans, 4,284,229, Cl. 229-57.000.

Winkley, Jerry H., to ACF Industries, Inc. Tamper resistant choke pull-off. 4,284,589, Cl. 261-39.00B.

Wiremold Company, The: See—  
Baker, Charles T., 4,284,840, Cl. 174-48.000.

Wittern, Francis A. Carousel dispensing apparatus. 4,284,206, Cl. 221-90.000.

Wolber, See—  
Duttlinger, Jean, 4,284,450, Cl. 156-97.000.

Wolff, Robert. Working stand for neckless electrical home worker machines. 4,284,373, Cl. 408-87.000.

Wolter, Eckhard, to Baudat E. Wolter KG. Scissor-type shear, especially a cable cutter. 4,283,851, Cl. 30-134.000.

Wong, John L., to Research Corporation. 9,10,11,12,12-Pentachloro 4,6-dioxo-5-thia-1-aza-tricyclo[7.2.1.0<sup>2,8</sup>]dodec-11-ene. 4,284,563, Cl. 260-330.300.

Wong, Keith K.: See—  
Natarajan, Sessa I.; Ondetti, Miguel A.; Lan, Shih-jung; and Wong, Keith K., 4,284,624, Cl. 424-177.000.

Woodward, Gary F., to Ford Motor Company. Tamper resistive odometer. 4,284,882, Cl. 235-96.000.

Woolpert, Mark: See—  
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Worst, Joseph C. Grooved golf ball. 4,284,276, Cl. 273-232.000.

Wright, Albert L. H., to Butler Greenwich Inc. Web preparation apparatus. 4,284,463, Cl. 156-502.000.

Wright, David R., to Stables A.G. Treatment of hazardous waste. 4,284,514, Cl. 210-721.000.

Wu, Pai-Chuan: See—  
Cancio, Leopoldo V.; Miller, Gerald W.; and Wu, Pai-Chuan, 4,284,671, Cl. 428-35.000.

Wu, Wan C.: See—  
Kruse, Robert L.; and Wu, Wan C., 4,284,737, Cl. 525-243.000.

Wuest, Gerald A.: See—  
Hickey, John L.; and Wuest, Gerald A., 4,283,963, Cl. 74-400.000.

Xerox Corporation: See—  
Silverberg, Morton, 4,284,270, Cl. 271-166.000.

Yahalom, Joseph, to Bell Telephone Laboratories, Incorporated. Palladium treatment procedure. 4,284,482, Cl. 204-140.000.

Yamada, Minoru: See—  
Ogawa, Junkichi; Tanaka, Mitsugu; and Yamada, Minoru, 4,284,714, Cl. 430-364.000.

Yamada, Sachiko; Ohmori, Masayuki; and Takayama, Hiroaki, to Yamada, Sachiko; and Takayama, Hiroaki. Novel vitamin D<sub>3</sub> derivative and process for preparing the same. 4,284,577, Cl. 260-397.200.

Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Exposure control system for single lens reflex cameras. 4,284,341, Cl. 354-51.000.

Yamada, Tetsuya: See—  
Okamoto, Hiroshi; Yamada, Tetsuya; Atsumi, Fumitoshi; and Iizaka, Isao, 4,284,344, Cl. 355-14.00E.

Yamaguchi, Yutaka: See—  
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Yamamoto, Hiroshi: See—  
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Yamane, Masahiro; Watanabe, Toshimi; Itoga, Keiji; Ishibashi, Kiyoshi; Morita, Yutaka; Yamamoto, Isamu; and Imanaka, Kiyoji, to Mitsubishi Denki Kabushiki Kaisha. Method of making plastic encapsulated semiconductor devices. 4,283,838, Cl. 29-588.000.

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Yamasaki, Shin: See—  
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Yamauchi, Takafumi: See—  
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Yamaura, Hiroshi: See—  
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Yanagi, Masana: See—  
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Yanagidaira, Hidetaka: See—  
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Yano, Kazuaki: See—  
Tatebayashi, June; and Yano, Kazuaki, 4,284,401, Cl. 431-7.000.

Yassemi, Mark, to Excellon Industries. Electric motor construction. 4,284,917, Cl. 310-89.000.

Yasui, Seimei: See—  
Sato, Hiroshi; Fujisawa, Koiti; Tojima, Hideto; and Yasui, Seimei, 4,284,818, Cl. 568-323.000.

Yasukawa, Masao: See—  
Nakanishi, Kiyoshi; Ito, Kazuhiko; Okumura, Takeshi; Iezuka, Isamu; and Yasukawa, Masao, 4,284,044, Cl. 123-307.000.

Yau, Wallace W.: See—  
Grant, John W.; Kirkland, Joseph J.; and Yau, Wallace W., 4,284,498, Cl. 209-155.000.

Yazaki, Mutsunobu: See—  
Ito, Fumio; and Yazaki, Mutsunobu, 4,284,337, Cl. 354-25.000.

Yokoyama, Nobuaki, to Silver Seiko, Ltd. Hand-operated knitting machine with loop transfer functions. 4,283,927, Cl. 66-78.000.

Yokoyama, Seiji: See—  
Yoshida, Yasuharu; Tagashira, Yoshimi; and Yokoyama, Seiji, 4,285,062, Cl. 375-20.000.

Yoshida, Hajime; Aoki, Takashi; and Nishida, Kei, to Hajime Industries Ltd.; and Nihon Pillow Block Mfg. Co. Flaw detecting apparatus. 4,284,353, Cl. 356-240.000.

Yoshida, Hiromi: See—  
Oguchi, Toshihiko; Ishizawa, Akio; and Yoshida, Hiromi, 4,284,700, Cl. 430-105.000.

Yoshida, Yasuharu; Tagashira, Yoshimi; and Yokoyama, Seiji, to Nippon Electric Co., Ltd. Digital multi-level multi-phase modulation communication system. 4,285,062, Cl. 375-20.000.

Yoshiike, Yoshiji: See—  
Honda, Kiyokazu; Yoshiike, Yoshiji; Muraki, Katsuo; and Kawamata, Teruyoshi, 4,285,032, Cl. 362-224.000.

Yoshimura, Yoshikazu, to Matsushita Electric Industrial Co., Ltd. Waveguide device. 4,284,967, Cl. 333-248.000.

Yoshiwara, Tetsuya: See—  
Tate, Masahisa; Yoshiwara, Tetsuya; and Kobatake, Tatsu, 4,284,214, Cl. 222-590.000.

Young, Cecil G.: See—  
Kinard, William C.; Carter, Donald F.; and Young, Cecil G., 4,283,818, Cl. 29-76.00R.

Young, Ian R., to EMI Limited. Imaging systems. 4,284,948, Cl. 324-309.000.

Young, Ian R.: See—  
Burl, Michael; Clow, Hugh; Harrison, Colin G.; and Young, Ian R., 4,284,950, Cl. 324-320.000.

Young, John E. G.; and Schneckenburger, Donald R., to General Signal Corporation. Input torque control system for a variable displacement pump. 4,284,389, Cl. 417-218.000.

Yu, Ruey J.; and Van Scott, Eugene J. Stabilized water-in-oil emulsions. 4,284,630, Cl. 424-241.000.

Yucius, Albert C.; and Brother, Michael D., to Systems Engineering & Mfg. Corp. Data acquisition technique for hoist and conveying systems. 4,284,977, Cl. 340-147.00P.

Yucius, Albert C., to Systems Engineering & Manufacturing Corp. Conveying system control. 4,284,978, Cl. 340-147.00P.

Zaidan Hojin Handotai Kenkyu Shinkokai: See—  
Nishizawa, Jun-ichi, 4,284,997, Cl. 357-22.000.

Zaner, Clifford: See—  
Andersen, Harold W.; Andersen, Shirley R.; Zaner, Clifford; and Harrison, Charles H., 4,284,599, Cl. 422-18.000.

Zank, Anthony E.: See—  
Morrison, Eric F.; and Zank, Anthony E., 4,285,004, Cl. 358-10.000.

Zaverzenec, Harry: See—  
Patchett, David R.; Phipps, Warren J.; and Zaverzenec, Harry, 4,284,312, Cl. 339-60.00R.

Zbinden, Terry B., to Sperry Corporation. Apparatus for providing evenly delayed digital signals. 4,285,063, Cl. 375-106.000.

Zdeb, John J.: See—  
Horton, Richard H.; and Zdeb, John J., 4,283,887, Cl. 52-2.000.

Zeiler, Hans-Joachim: See—  
Grohe, Klaus; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,284,629, Cl. 424-246.000.

Zenith Radio Corporation: See—  
Srivastava, Gopal K., 4,285,005, Cl. 358-28.000.

Ziegler, Franz: See—  
Nagel, Erich; Ziegler, Franz; and Schaner, Ferdinand, 4,284,221, Cl. 225-100.000.

Ziemek, Gerhard: See—  
Schatz, Friedrich; and Ziemek, Gerhard, 4,283,824, Cl. 29-157.400.

Ziggity Systems, Inc.: See—  
Hostettler, Eldon, 4,284,036, Cl. 119-72.500.

Zimmerman, Dennis M., to Eli Lilly and Company. Analgesic 1,2,4,5-tetra-alkyl-4-aryl piperidines. 4,284,635, Cl. 424-267.000.

Zipoy, William L.: See—  
Jackson, Timothy; Malkemes, Charles D.; and Zipoy, William L., 4,284,362, Cl. 400-124.000.

Zobrist, Gerald S.; Dunlap, Terry A.; and Russell, Richard H., to Zonic Corporation. Torsional exciter for a rotating structure. 4,283,957, Cl. 73-814.000.

Zola, Frank G., Jr.: See—  
DeLaurentis, Angelo A.; Zola, Frank G., Jr.; and Specht, Theodore R., 4,283,842, Cl. 29-606.000.

Zonic Corporation: See—  
Zobrist, Gerald S.; Dunlap, Terry A.; and Russell, Richard H., 4,283,957, Cl. 73-814.000.

Zubovics, Zoltan: See—  
Toldy, Lajos; Zubovics, Zoltan; Kurti, Mariann; and Schafer, Inge, 4,284,642, Cl. 424-273.00R.



Zudal, Andrew: See—

Mayhall, Riley H.; and Zudal, Andrew, 4,283,903, Cl. 53-587.000.

Zukowski, Edward A., to El Paso Polyolefins Company, Ethylene-propylene block copolymerization process and product, 4,284,738, Cl. 525-247.000.

Zukowski, Edward A., to El Paso Polyolefins Company, Block copolymerization process, 4,284,739, Cl. 525-268.000.

Zygowicz, Martin F.: See—

Sheets, Jesse E.; Vitichus, Bernard C.; Chao, Tai S.; and Zygowicz, Martin F., 4,284,402, Cl. 431-9.000.

Zylka, Lawrence C.: See—

Paulson, Jerome T.; and Zylka, Lawrence C., 4,284,371, Cl. 406-99.000.

## LIST OF REISSUE PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF AUGUST, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Baxter Travenol Laboratories, Inc.: See—

Macemon, James H., Re. 30,712, Cl. 356-318.000.

Brozek, Bohumir: See—

Kabele, Stanislav; Doudlebsky, Ctibor; Jaros, Frantisek; Svec, Zdenek; and Brozek, Bohumir, Re. 30,709, Cl. 57-58.950.

Doudlebsky, Ctibor: See—

Kabele, Stanislav; Doudlebsky, Ctibor; Jaros, Frantisek; Svec, Zdenek; and Brozek, Bohumir, Re. 30,709, Cl. 57-58.950.

Dow Chemical Company, The: See—

Harriman, Lester W.; Muehlberg, Paul E.; and Teumac, Fred N., Re. 30,714, Cl. 134-2.000.

Ferris, Donald L.; and Krauss, Timothy A., to United Technologies Corp. Cross beam rotor, Re. 30,713, Cl. 416-141.000.

Harriman, Lester W.; Muehlberg, Paul E.; and Teumac, Fred N., to Dow Chemical Company, The. Removal of copper containing incrustations from ferrous surfaces, Re. 30,714, Cl. 134-2.000.

Jaros, Frantisek: See—

Kabele, Stanislav; Doudlebsky, Ctibor; Jaros, Frantisek; Svec, Zdenek; and Brozek, Bohumir, Re. 30,709, Cl. 57-58.950.

Johnson, Robert C., to Reynolds Leasing Corporation. Tiered container with flow distribution system, Re. 30,710, Cl. 131-302.000.

Kabele, Stanislav; Doudlebsky, Ctibor; Jaros, Frantisek; Svec, Zdenek; and Brozek, Bohumir, to Vyzkumny Ustav Bavlnarsky. Method of removing impurities and similar matter from staple fibres in ringless spinning and device for performing said method, Re. 30,709, Cl. 57-58.950.

Krauss, Timothy A.: See—

Ferris, Donald L.; and Krauss, Timothy A., Re. 30,713, Cl. 416-141.000.

Macemon, James H., to Baxter Travenol Laboratories, Inc. System and apparatus for contour plotting the total luminescence spectrum of a sample, Re. 30,712, Cl. 356-318.000.

Muehlberg, Paul E.: See—

Harriman, Lester W.; Muehlberg, Paul E.; and Teumac, Fred N., Re. 30,714, Cl. 134-2.000.

Northern Telecom Limited: See—

Woytiuk, Leo V., Re. 30,715, Cl. 174-23.00C.

Reynolds Leasing Corporation: See—

Johnson, Robert C., Re. 30,710, Cl. 131-302.000.

Stanley Works, The: See—

Suska, Charles R., Re. 30,716, Cl. 200-61.700.

Suman, George O., Jr. Well completion method and system, Re. 30,711, Cl. 166-285.000.

Suska, Charles R., to Stanley Works, The. Switch activating hinge having reciprocating cam follower switch actuator, Re. 30,716, Cl. 200-61.700.

Svec, Zdenek: See—

Kabele, Stanislav; Doudlebsky, Ctibor; Jaros, Frantisek; Svec, Zdenek; and Brozek, Bohumir, Re. 30,709, Cl. 57-58.950.

Teumac, Fred N.: See—

Harriman, Lester W.; Muehlberg, Paul E.; and Teumac, Fred N., Re. 30,714, Cl. 134-2.000.

United Technologies Corp.: See—

Ferris, Donald L.; and Krauss, Timothy A., Re. 30,713, Cl. 416-141.000.

Vyzkumny Ustav Bavlnarsky: See—

Kabele, Stanislav; Doudlebsky, Ctibor; Jaros, Frantisek; Svec, Zdenek; and Brozek, Bohumir, Re. 30,709, Cl. 57-58.950.

Woytiuk, Leo V., to Northern Telecom Limited. Water blocked electric cables, Re. 30,715, Cl. 174-23.00C.

## LIST OF DESIGN PATENTEEES

Aktiebolaget Overums Bruk: See—

Carlsson, Erik H.; and Lindqvist, Rolf E., 260,264, Cl. D15-29.000.

AMBA Marketing Systems, Inc.: See—

Siegel, Milton I., 260,198, Cl. D3-48.000.

Siegel, Milton I., 260,199, Cl. D3-48.000.

Siegel, Milton I., 260,200, Cl. D3-48.000.

Siegel, Milton I., 260,201, Cl. D3-53.000.

Amco Corporation: See—

Bentson, Wade, 260,227, Cl. D7-129.000.

AMP Incorporated: See—

Crowley, Daniel J.; and Pass, Raymond V., 260,259, Cl. D14-107.000.

Anderson, J. Jay; Bobinger, Karl J.; and Cramer, Ronald G., to S. C. Johnson & Son, Inc. Liquid dispensing bottle, 260,236, 8-18-81, Cl. D9-338.000.

Anderson, Lenart; and Zissimopoulos, Nicholas, to Baxter Travenol Laboratories, Inc. Clamp, 260,235, 8-18-81, Cl. D8-394.000.

Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., to Appel, Mel. Toy oven, 260,274, 8-18-81, Cl. D21-122.000.

Arlac-Werk Heiko Ippen: See—

Halm, Hans, 260,273, Cl. D19-76.000.

Arnold, Peter K. Combined seat and easel, 260,203, 8-18-81, Cl. D6-17.000.

Aron, Daniel L., to Mole-Richardson Co. Spot lamp, 260,300, 8-18-81, Cl. D26-63.000.

Automation Designs, Inc.: See—

O'Neil, James P., 260,215, Cl. D6-194.000.

Baisch, Herbert: See—

Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 260,209, Cl. D6-177.000.

Barrash, Marshall J., to Coca-Cola Company, The. Bottle, 260,239, 8-18-81, Cl. D9-395.000.

Baxter Travenol Laboratories, Inc.: See—

Anderson, Lenart; and Zissimopoulos, Nicholas, 260,235, Cl. D8-394.000.

Beatrice Foods Co.: See—

Larson, Orville W., 260,224, Cl. D7-108.000.

Larson, Orville W., 260,225, Cl. D7-108.000.

Bentson, Wade, to Amco Corporation. Cooking rack, 260,227, 8-18-81, Cl. D7-129.000.

Biener, Sig: See—

Roegner, George P.; Hawley, Richard; Steen, Howard; and Biener, Sig, 260,257, Cl. D14-17.000.

Biro, Michael; and Muckenfuss, Hans, to Rolf C. Hagen Ltd. Combined bird cage roof and bottom tray, 260,306, 8-18-81, Cl. D30-4.000.

Bisk, Leonard. Combined skirt and trouser hanger, 260,218, 8-18-81, Cl. D6-253.000.

Blake, Joseph W.; Corbin, Richard H.; and Neale, Peggy P., to Dart Industries Inc. Rotatable food serving assembly, 260,219, 8-18-81, Cl. D7-2.000.

Bobinger, Karl J.: See—

Anderson, J. Jay; Bobinger, Karl J.; and Cramer, Ronald G., 260,236, Cl. D9-338.000.

Bradford, Harold R. Minnow bucket holder, 260,278, 8-18-81, Cl. D22-22.000.

Buhk, Randall P., to Steelcase Inc. Armchair, 260,205, 8-18-81, Cl. D6-31.000.

Buhk, Randall P., to Steelcase Inc. Chair base, 260,216, 8-18-81, Cl. D6-196.000.

Burian, Paul D.: See—

MacGregor, Francis W.; and Burian, Paul D., 260,305, Cl. D28-67.000.

C. Sherman Johnson Co., Inc.: See—

Johnson, Curtiss S., Jr., 260,234, Cl. D8-370.000.

Caffee, Arland R. Measuring tool for laundry detergent or the like, 260,220, 8-18-81, Cl. D7-50.000.

Cagle, Bunyan B. Solid fuel furnace, 260,283, 8-18-81, Cl. D23-97.000.

Campbell, John F., to GSW Limited/Limitee. Check valve casing, 260,280, 8-18-81, Cl. D23-22.000.

Carlock, Joe D.: See—

Lewis, Marian M.; and Carlock, Joe D., 260,214, Cl. D6-191.000.

Carlsson, Erik H.; and Lindqvist, Rolf E., to Aktiebolaget Overums Bruk. Coulter, 260,264, 8-18-81, Cl. D15-29.000.

Carluccio, John F. Cosmetic jar, 260,240, 8-18-81, Cl. D9-399.000.

Carluccio, John F. Cosmetic jar, 260,241, 8-18-81, Cl. D9-399.000.

Carluccio, John F. Cosmetic jar, 260,242, 8-18-81, Cl. D9-399.000.

Clairol Incorporated: See—

MacGregor, Francis W.; and Burian, Paul D., 260,305, Cl. D28-67.000.

Coca-Cola Company, The: See—

Barrash, Marshall J., 260,239, Cl. D9-395.000.



Compagnie Generale des Etablissements Michelin: See—  
Petitalot, Christian, 260,250, Cl. D12-143.000.

Computer Transceiver Systems, Inc.: See—  
Middleton, Charles F., Jr., 260,202, Cl. D3-72.000.

Conti, Rino, to Dart Industries Inc. Strawberry huller or the like. 260,222, 8-18-81, Cl. D7-105.000.

Corbin, Richard H.: See—  
Blake, Joseph W.; Corbin, Richard H.; and Neale, Peggy P., 260,219, Cl. D7-2.000.

Costa, Allan. Bottle. 260,238, 8-18-81, Cl. D9-389.000.

Cramer, Ronald G.: See—  
Anderson, J. Jay; Bobinger, Karl J.; and Cramer, Ronald G., 260,236, Cl. D9-338.000.

Crespi, Gabriella. Open shelf unit. 260,212, 8-18-81, Cl. D6-186.000.

Crespi, Gabriella. Combined cabinet and open shelf unit. 260,213, 8-18-81, Cl. D6-186.000.

Crowley, Daniel J.; and Pass, Raymond V., to AMP Incorporated. Magnetic card reader. 260,259, 8-18-81, Cl. D14-107.000.

Dart Industries Inc.: See—  
Blake, Joseph W.; Corbin, Richard H.; and Neale, Peggy P., 260,219, Cl. D7-2.000.

Conti, Rino, 260,222, Cl. D7-105.000.

De Coster, Pieter K. J., 260,223, Cl. D7-106.000.

Davis, Gilbert A. Tent. 260,277, 8-18-81, Cl. D21-253.000.

De Coster, Pieter K. J., to Dart Industries Inc. Pastry cutter or the like. 260,223, 8-18-81, Cl. D7-106.000.

DeMuro, Frank P. Log holder. 260,231, 8-18-81, Cl. D7-207.000.

D'Ercoli, Giacinto C., to McGraw-Edison Company. Spotlight. 260,298, 8-18-81, Cl. D26-63.000.

D'Ercoli, Giacinto C., to McGraw-Edison Company. Spotlight. 260,299, 8-18-81, Cl. D26-63.000.

Dietrich, Gerhard, to Grundig AG. Dictating machine. 260,255, 8-18-81, Cl. D14-3.000.

D'Innocente, Ralph; and Janosko, Richard L., to Jacuzzi Whirlpool Bath, Inc. Hydrotherapy spa. 260,288, 8-18-81, Cl. D24-38.000.

Dogliotti, Amilcare, to P. Ferrero & C. S.p.A. Beverage container. 260,243, 8-18-81, Cl. D9-425.000.

Doyel, John S. Miniature sewing machine. 260,265, 8-18-81, Cl. D15-69.000.

Fattor, Arthur P. Concentrating solar radiation collector assembly. 260,282, 8-18-81, Cl. D23-72.000.

Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, to Hirsh Company. Workbench or similar article. 260,209, 8-18-81, Cl. D6-177.000.

Ford, Harry R.; and Yoshihashi, Yasuo, to Formica Corporation. Laminate sheet. 260,311, 8-18-81, Cl. D92-1.00R.

Ford, Harry R.; and Hirakawa, Koichi, to Formica Corporation. Laminate sheet. 260,312, 8-18-81, Cl. D92-1.00R.

Ford, Harry R.; and Hirakawa, Koichi, to Formica Corporation. Laminate sheet. 260,313, 8-18-81, Cl. D92-1.00R.

Formica Corporation: See—  
Ford, Harry R.; and Yoshihashi, Yasuo, 260,311, Cl. D92-1.00R.

Ford, Harry R.; and Hirakawa, Koichi, 260,312, Cl. D92-1.00R.

Ford, Harry R.; and Hirakawa, Koichi, 260,313, Cl. D92-1.00R.

Yates, William F.; and Saito, Ichiro, 260,310, Cl. D92-1.00A.

Yates, William F.; and Saito, Ichiro, 260,314, Cl. D92-1.00R.

Yates, William F.; and Saito, Ichiro, 260,315, Cl. D92-1.00R.

Yates, William F.; and Saito, Ichiro, 260,316, Cl. D92-1.00R.

Yates, William F.; and Saito, Ichiro, 260,317, Cl. D92-1.00R.

Fuzere Manufacturing Co., Inc.: See—  
Fuzere, Robert J., 260,237, Cl. D9-341.000.

Fuzere, Robert J., to Fuzere Manufacturing Co., Inc. Semiconductor wafer container. 260,237, 8-18-81, Cl. D9-341.000.

Gallagher, Dennis J. Bicycle storage rack. 260,248, 8-18-81, Cl. D12-115.000.

Gardisette International AG: See—  
Stocker, Hans, 260,309, Cl. D47-6.00E.

Gehlbach, Roger D.; and Kitka, Zoltan, to Interplay Design Limited. Slide with side rails. 260,276, 8-18-81, Cl. D21-244.000.

Geller, Douglas A.; and McElroy, David C., to Wham-O Mfg. Co. Children's play sprinkler or the like. 260,279, 8-18-81, Cl. D23-09.000.

General Cororation, The: See—  
Shoji, Shunichi; and Suzuki, Hideaki, 260,263, Cl. D14-80.000.

General Electric Company: See—  
Klucznik, Paul J., 260,256, Cl. D14-6.000.

Schindler, Donald R.; and Soules, Thomas F., 260,266, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., 260,267, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., 260,268, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., 260,269, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., 260,270, Cl. D16-42.000.

Schmitt, Charles H.; and Hoetker, James J., 260,226, Cl. D7-128.000.

Gibson, Sidney. Dressing table. 260,210, 8-18-81, Cl. D6-180.000.

Goldstein, Judith A.: See—  
Goldstein, Mark; and Goldstein, Judith A., 260,233, Cl. D8-351.000.

Goldstein, Mark; and Goldstein, Judith A. Electric switch plate. 260,233, 8-18-81, Cl. D8-351.000.

Groene, Richard L. Mndule cargo unit for a pickup vehicle. 260,252, 8-18-81, Cl. D12-156.000.

Grundig AG: See—  
Dietrich, Gerhard, 260,255, Cl. D14-3.000.

GSW Limited/Limitec: See—  
Campbell, John F., 260,280, Cl. D23-22.000.

Halm, Hans, to Arlac-Werk Heiko Ippen. Wall mountable telephone register. 260,273, 8-18-81, Cl. D19-76.000.

Hamilton, Robert. Fire grate fret. 260,230, 8-18-81, Cl. D7-207.000.

Hartz Mountain Corporation, The: See—  
Suchowski, Bernard, 260,308, Cl. D30-40.000.

Hawley, Richard: See—  
Roegner, George P.; Hawley, Richard; Steen, Howard; and Biener, Sig., 260,257, Cl. D14-17.000.

Heller, Norman S., to Heller Products, Inc. Canoe paddle. 260,254, 8-18-81, Cl. D12-215.000.

Heller Products, Inc.: See—  
Heller, Norman S., 260,254, Cl. D12-215.000.

Hirakawa, Koichi: See—  
Ford, Harry R.; and Hirakawa, Koichi, 260,312, Cl. D92-1.00R.

Ford, Harry R.; and Hirakawa, Koichi, 260,313, Cl. D92-1.00R.

Hirsh Company: See—  
Ferdinand, Irwin J.; Sylvan, Richard; and Baisch, Herbert, 260,209, Cl. D6-177.000.

Hoetker, James J.: See—  
Schmitt, Charles H.; and Hoetker, James J., 260,226, Cl. D7-128.000.

Horntrich, Gunter, to Messrs. Kreuzer-Werk GmbH. Marking instrument. 260,272, 8-18-81, Cl. D19-43.000.

Horst, Thomas A.; and Welton, Charles L., to Horst, Thomas A., a part interest. Stirrup strap buckle. 260,307, 8-18-81, Cl. D30-25.000.

Humlong, Robert F., to Wald Manufacturing Co., Inc. Bicycle pedal, or the like. 260,249, 8-18-81, Cl. D12-125.000.

Innovative Concepts, Inc.: See—  
Long, Jerry M.; and Womack, James A., 260,197, Cl. D3-35.000.

Interplay Design Limited: See—  
Gehlbach, Roger D.; and Kitka, Zoltan, 260,276, Cl. D21-244.000.

Jack Daniel Distillery, Lem Motlow, Prop., Inc.: See—  
Redmond, Jobie G., 260,211, Cl. D6-186.000.

Jacuzzi Whirlpool Bath, Inc.: See—  
D'Innocente, Ralph; and Janosko, Richard L., 260,288, Cl. D24-38.000.

Janosko, Richard L.: See—  
D'Innocente, Ralph; and Janosko, Richard L., 260,288, Cl. D24-38.000.

Johnson, Curtiss S., Jr., to C. Sherman Johnson Co., Inc. Releasable hook. 260,234, 8-18-81, Cl. D8-370.000.

Judi's Originals: See—  
Rist, Judith A., 260,281, Cl. D23-52.000.

Kawano, Takeyoshi: See—  
Okada, Takao; Kawano, Takeyoshi; Murakami, Shinza; and Ohta, Kikuo, 260,261, Cl. D14-70.000.

Kelly, Thomas R.; and Sawant, Vijay A., to Thomas J. Lipton, Inc. Frozen confection. 260,195, 8-18-81, Cl. D1-22.000.

Kitka, Zoltan: See—  
Gehlbach, Roger D.; and Kitka, Zoltan, 260,276, Cl. D21-244.000.

Klucznik, Paul J., to General Electric Company. Tape recorder and player or similar article. 260,256, 8-18-81, Cl. D14-6.000.

Knoll International, Inc.: See—  
Sapper, Richard, 260,204, Cl. D6-30.000.

Kuntz, William E., Jr. Mail box signal. 260,319, 8-18-81, Cl. D99-29.000.

Lacey, Raymond P. Combined hair dryer and cabinet. 260,302, 8-18-81, Cl. D28-15.000.

Larose, Claude, to Triangle Accessoires de Motocyclettes LTEE. Combined luggage carrier and back rest for motorcycle. 260,251, 8-18-81, Cl. D12-158.000.

Larson, Orville W., to Beatrice Foods Co. Barbecue grill. 260,224, 8-18-81, Cl. D7-108.000.

Larson, Orville W., to Beatrice Foods Co. Barbecue grill. 260,225, 8-18-81, Cl. D7-108.000.

Lee, B. Paul, deceased; and by Lee, Esther M., personal representative. Combined cooking, roasting and shishkebob pan. 260,221, 8-18-81, Cl. D7-85.000.

Lee, Esther M., personal representative: See—  
Lee, B. Paul, deceased; and Lee, Esther M., personal representative, 260,221, Cl. D7-85.000.

Lee, Robert L. Dental articulator. 260,287, 8-18-81, Cl. D24-10.000.

Lewis, Marlan M.; and Carlock, Joe D., to Marlan M. Lewis, Inc. Pedestal. 260,214, 8-18-81, Cl. D6-191.000.

Lindqvist, Rolf E.: See—  
Carlsson, Erik H.; and Lindqvist, Rolf E., 260,264, Cl. D15-29.000.

Lofgren, Clark L., to Reed & Barton Corporation. Fork or similar article of flatware. 260,228, 8-18-81, Cl. D7-137.000.

Long, Jerry M.; and Womack, James A., to Innovative Concepts, Inc. Video cassette storage tray. 260,197, 8-18-81, Cl. D3-35.000.

Loos, Elsie J.; Van Wagener, Raymond H.; Sweeney, Paul B., Jr.; and Pulos, Arthur J., to Swingline, Inc. Powered collator. 260,258, 8-18-81, Cl. D14-110.000.

Lordahl, Var E., to T.S.G. Mfg. Co. Faucet spout gauge. 260,245, 8-18-81, Cl. D10-64.000.

MacGregor, Francis W.; and Burian, Paul D., to Clairor Incorporated. Lighted traveling mirror. 260,305, 8-18-81, Cl. D28-67.000.

Marlan M. Lewis, Inc.: See—  
Lewis, Marlan M.; and Carlock, Joe D., 260,214, Cl. D6-191.000.

Matsumita Electric Industrial Co., Ltd.: See—  
Okada, Takao; Kawano, Takeyoshi; Murakami, Shinza; and Ohta, Kikuo, 260,261, Cl. D14-70.000.

Maza, Dale T.; and Tomblin, Glen E., to Rubbermaid Commercial Products Inc. Refuse container. 260,229, 8-18-81, Cl. D7-189.000.

McElroy, David C.: See—  
Geller, Douglas A.; and McElroy, David C., 260,279, Cl. D23-09.000.

McGraw-Edison Company: See—  
D'Ercoli, Giacinto C., 260,298, Cl. D26-63.000.

D'Ercoli, Giacinto C., 260,299, Cl. D26-63.000.

Means, Paul B., III: See—  
Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., 260,274, Cl. D21-122.000.

Messrs. Kreuzer-Werk GmbH: See—  
Horntrich, Gunter, 260,272, Cl. D19-43.000.

Middleton, Charles F., Jr., to Computer Transceiver Systems, Inc. Computer terminal case. 260,202, 8-18-81, Cl. D3-72.000.

Miyazaki, Sadayasu, to Tomy Kogyo Co., Inc. Toy bank. 260,318, 8-18-81, Cl. D99-38.000.

Mole-Richardson Co.: See—  
Aron, Daniel L., 260,300, Cl. D26-63.000.

Molnar, Thomas G., to Repco Limited. Platform used primarily to elevate a child's automobile seat. 260,206, 8-18-81, Cl. D6-85.000.

Motion Analysis, Inc.: See—  
Plagenhof, Stanley C., 260,196, Cl. D2-319.000.

Muckenfuss, Hans: See—  
Biro, Michael; and Muckenfuss, Hans, 260,306, Cl. D30-4.000.

Murakami, Shinza: See—  
Okada, Takao; Kawano, Takeyoshi; Murakami, Shinza; and Ohta, Kikuo, 260,261, Cl. D14-70.000.

Neale, Peggy P.: See—  
Blake, Joseph W.; Corbin, Richard H.; and Neale, Peggy P., 260,219, Cl. D7-2.000.

Nutting, Donald. Multiple medallion display rack. 260,208, 8-18-81, Cl. D6-157.000.

O'Connor, Russell A. Bar of soap. 260,301, 8-18-81, Cl. D28-8.100.

Ohta, Kikuo: See—  
Okada, Takao; Kawano, Takeyoshi; Murakami, Shinza; and Ohta, Kikuo, 260,261, Cl. D14-70.000.

Okada, Takao; Kawano, Takeyoshi; Murakami, Shinza; and Ohta, Kikuo, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 260,261, 8-18-81, Cl. D14-70.000.

O'Neil, James P., to Automation Designs, Inc. Leg for an industrial work table. 260,215, 8-18-81, Cl. D6-194.000.

P. Ferrero & C. S.p.A.: See—  
Dogliotti, Amilcare, 260,243, Cl. D9-425.000.

Pass, Raymond V.: See—  
Crowley, Daniel J.; and Pass, Raymond V., 260,259, Cl. D14-107.000.

Patriksson, Stig. Pedal vehicle. 260,247, 8-18-81, Cl. D12-112.000.

Pease Company: See—  
Shaffer, B. Jeremiah; and Rasmussen, Larry, 260,290, Cl. D25-72.000.

Shaffer, B. Jeremiah, 260,291, Cl. D25-72.000.

Shaffer, B. Jeremiah; and Rasmussen, Larry, 260,292, Cl. D25-72.000.

Shaffer, B. Jeremiah, 260,293, Cl. D25-72.000.

Shaffer, B. Jeremiah, 260,294, Cl. D25-72.000.

Shaffer, B. Jeremiah, 260,295, Cl. D25-72.000.

Shaffer, B. Jeremiah, 260,296, Cl. D25-72.000.

Shaffer, B. Jeremiah, 260,297, Cl. D25-72.000.

Petitalot, Christian, to Compagnie Generale des Etablissements Michelin. Tire. 260,250, 8-18-81, Cl. D12-143.000.

Plagenhof, Stanley C., to Motion Analysis, Inc. Elastomeric shoesole. 260,196, 8-18-81, Cl. D2-319.000.

Pulos, Arthur J.: See—  
Loos, Elsie J.; Van Wagener, Raymond H.; Sweeney, Paul B., Jr.; and Pulos, Arthur J., 260,258, Cl. D14-110.000.

Rasmussen, Larry: See—  
Shaffer, B. Jeremiah; and Rasmussen, Larry, 260,290, Cl. D25-72.000.

Shaffer, B. Jeremiah; and Rasmussen, Larry, 260,292, Cl. D25-72.000.

Redmond, Jobie G., to Jack Daniel Distillery, Lem Motlow, Prop., Inc. Bookcase. 260,211, 8-18-81, Cl. D6-186.000.

Reed & Barton Corporation: See—  
Lofgren, Clark L., 260,228, Cl. D7-137.000.

Reina, David W.: See—  
Appel, Mel; Means, Paul B., III; Wilcox, James J.; and Reina, David W., 260,274, Cl. D21-122.000.

Repro Limited: See—  
Molnar, Thomas G., 260,206, Cl. D6-85.000.

Revlon, Inc.: See—  
Rosenberg, William F., 260,304, Cl. D28-59.000.

Rhoe, Stanley A. Stepped back rest cushion. 260,217, 8-18-81, Cl. D6-201.000.

Rist, Judith A., to Judi's Originals. Infant bath pad. 260,281, 8-18-81, Cl. D23-52.000.

Roegner, George P.; Hawley, Richard; Steen, Howard; and Biener, Sig., to Soundesign Corporation. Combined phonograph, tape player and lighting cabinet. 260,257, 8-18-81, Cl. D14-17.000.

Rolf C. Hagen Ltd.: See—  
Biro, Michael; and Muckenfuss, Hans, 260,306, Cl. D30-4.000.

Rosenberg, William F., to Revlon, Inc. Pedicure tool. 260,304, 8-18-81, Cl. D28-59.000.

Rubbermaid Commercial Products Inc.: See—  
Maza, Dale T.; and Tomblin, Glen E., 260,229, Cl. D7-189.000.

Rubin, David. Baby bottle holder. 260,289, 8-18-81, Cl. D24-48.000.

S. C. Johnson & Son, Inc.: See—  
Anderson, J. Jay; Bobinger, Karl J.; and Cramer, Ronald G., 260,236, Cl. D9-338.000.

Saito, Ichiro: See—  
Yates, William F.; and Saito, Ichiro, 260,310, Cl. D92-1.00A.

Yates, William F.; and Saito, Ichiro, 260,314, Cl. D92-1.00R.

Yates, William F.; and Saito, Ichiro, 260,315, Cl. D92-1.00R.

Yates, William F.; and Saito, Ichiro, 260,316, Cl. D92-1.00R.

Yates, William F.; and Saito, Ichiro, 260,317, Cl. D92-1.00R.

Sapper, Richard, to Knoll International, Inc. Chair. 260,204, 8-18-81, Cl. D6-30.000.

Sawant, Vijay A.: See—  
Kelly, Thomas R.; and Sawant, Vijay A., 260,195, Cl. D1-22.000.

Schenley Industries, Inc.: See—  
Whyte, Adrian A., 260,207, Cl. D6-144.000.

Schindler, Donald R.; and Soules, Thomas F., to General Electric Company. Photoflash lamp unit. 260,266, 8-18-81, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., to General Electric Company. Photoflash lamp unit. 260,267, 8-18-81, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., to General Electric Company. Photoflash lamp unit. 260,268, 8-18-81, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., to General Electric Company. Photoflash lamp unit. 260,269, 8-18-81, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., to General Electric Company. Photoflash lamp unit. 260,270, 8-18-81, Cl. D16-42.000.

Schmitt, Charles H.; and Hoetker, James J., to General Electric Company. Wall mountable microwave oven. 260,226, 8-18-81, Cl. D7-128.000.

Sergio, Eugene B., Jr. Projection television cabinet. 260,262, 8-18-81, Cl. D14-79.000.

Shaffer, B. Jeremiah; and Rasmussen, Larry, to Pease Company. Decorative composite glass panel for installation in a window. 260,290, 8-18-81, Cl. D25-72.000.

Shaffer, B. Jeremiah, to Pease Company. Decorative composite glass panel for installation in a door or window. 260,291, 8-18-81, Cl. D25-72.000.

Shaffer, B. Jeremiah; and Rasmussen, Larry, to Pease Company. Decorative composite glass panel for installation in a door or window. 260,292, 8-18-81, Cl. D25-72.000.

Shaffer, B. Jeremiah, to Pease Company. Decorative composite glass panel for installation in a window. 260,293, 8-18-81, Cl. D25-72.000.

Shaffer, B. Jeremiah, to Pease Company. Decorative composite glass panel for installation in a door or window. 260,294, 8-18-81, Cl. D25-72.000.

Shaffer, B. Jeremiah, to Pease Company. Decorative composite glass panel for installation in a door or window. 260,295, 8-18-81, Cl. D25-72.000.

Shaffer, B. Jeremiah, to Pease Company. Decorative composite glass panel for installation in a window. 260,296, 8-18-81, Cl. D25-72.000.

Shaffer, B. Jeremiah, to Pease Company. Decorative composite glass panel for installation in a door or window. 260,297, 8-18-81, Cl. D25-72.000.

Shelcore, Inc.: See—  
Strauss, Manfred, 260,275, Cl. D21-150.000.

Shoji, Shunichi; and Suzuki, Hideaki, to General Cororation, The. Television receiver or similar article. 260,263, 8-18-81, Cl. D14-80.000.

Siegel, Milton I., to AMBA Marketing Systems, Inc. Handbag. 260,198, 8-18-81, Cl. D3-48.000.

Siegel, Milton I., to AMBA Marketing Systems, Inc. Handbag. 260,199, 8-18-81, Cl. D3-48.000.

Siegel, Milton I., to AMBA Marketing Systems, Inc. Handbag. 260,200, 8-18-81, Cl. D3-48.000.

Siegel, Milton I., to AMBA Marketing Systems, Inc. Handbag. 260,201, 8-18-81, Cl. D3-53.000.

Simons, Sanford L. Toggle switch guard. 260,232, 8-18-81, Cl. D8-350.000.

Smirne, Frank S. Ouitar bridge pin. 260,271, 8-18-81, Cl. D17-20.000.

Soules, Thomas F.: See—  
Schindler, Donald R.; and Soules, Thomas F., 260,266, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., 260,267, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., 260,268, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., 260,269, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., 260,270, Cl. D16-42.000.

Soundesign Corporation: See—  
Roegner, George P.; Hawley, Richard; Steen, Howard; and Biener, Sig., 260,257, Cl. D14-17.000.

Steelcase Inc.: See—  
Buhk, Randall P., 260,205, Cl. D6-31.000.

Buhk, Randall P., 260,216, Cl. D6-196.000.

Steen, Howard: See—  
Roegner, George P.; Hawley, Richard; Steen, Howard; and Biener, Sig., 260,257, Cl. D14-17.000.

Stern, Marvin A. Clock face. 260,246, 8-18-81, Cl. D10-125.000.

Stocker, Hans, to Gardisette International AG. Curtain material. 260,309, 8-18-81, Cl. D47-6.00E.

Strauss, Manfred, to Shelcore, Inc. Action ball toy. 260,275, 8-18-81, Cl. D21-150.000.

Suchowski, Bernard, to Hartz Mountain Corporation, The. Animal nail clipper. 260,308, 8-18-81, Cl. D30-40.000.



American Garden Cole, Inc.: See—  
Collins, William H., 4,758, Cl. 34.000.

Collins, William H., to American Garden Cole, Inc. Flowering crabapple tree. 4,758, 8-18-81, Cl. 34,000.  
Pollock, Steven H. Camote plant. 4,759, 8-18-81, Cl. 89,000.

**ISSUED AUGUST 18, 1981**

NOTE.—First number, class; second number, subclass; third number, patent number

151	CLASS 2	277	4,283,860	306	4,283,909	5	CLASS 82	300	4,284,029	202	CLASS 136
426	4,283,797	449	4,283,861	59.28 R	4,283,910	23	4,283,972	406	CLASS 118	246	4,284,838
	4,283,798		CLASS 34	507	4,283,911	42	CLASS 83	657	4,284,030		4,284,839
1.913	CLASS 3	1	4,283,862	602	4,283,912	76	4,283,973	684	4,284,031		CLASS 137
21	4,283,799		CLASS 36	641 A	4,283,913	301	4,283,974	730	4,284,032	48	4,284,096
	4,283,800	28	4,283,864	641 AC	4,283,914	453	4,283,975		4,284,033	218	4,284,097
	CLASS 4	32 R	4,283,865	650	4,283,915	620	4,283,976		CLASS 119	219	4,284,098
353	4,283,802		CLASS 37			666	4,283,977	17	4,284,034	296	4,284,099
496	4,283,801	117.5	4,283,866	5	4,283,916	798	4,283,978	51.11	4,284,035	343	4,284,100
506 Q	4,283,803	142.5	4,283,867	7	4,283,917	884	4,283,979	72.5	4,284,036	538	4,284,101
	4,283,804		CLASS 38	28	4,284,423		4,283,981		CLASS 123	543.21	4,284,102
127	CLASS 7		4,283,868	112	4,283,918		CLASS 84	41.72	4,284,037	625	4,284,103
	4,283,805	56		114	4,283,919	1.15	4,283,982	46 A	4,284,038	859	4,284,104
	CLASS 8		CLASS 40	126	4,283,920	1.19	4,283,983	187.5 R	4,284,040		CLASS 138
471	4,284,410	10 D	4,283,869	256	4,283,921	1.24	4,283,984	193 H	4,284,041	42	4,284,105
506	4,284,411	154	4,283,870	303	4,283,922	411 R	4,283,985	198 F	4,284,042	147	4,284,106
	CLASS 12	158 R	4,283,871	402	4,283,924		CLASS 89	299	4,284,043	172	4,284,107
142 R	4,283,806	491	4,283,872	434	4,283,925		1 B	307	4,284,044		CLASS 139
	CLASS 15		CLASS 42			1.5 R	4,283,987	416	4,284,045	448	4,284,108
3.51	4,283,807	45	4,283,873	241	4,284,424	6.5	4,283,988	418	4,284,046		CLASS 140
145	4,283,808	51	4,283,874		CLASS 66		4,283,989	449	4,284,047	122	4,284,109
	4,283,809		CLASS 43	75.2	4,283,926		CLASS 91	453	4,284,048		CLASS 141
	CLASS 16	18 R	4,283,875	78	4,283,927	47	4,283,990	463	4,284,049	98	4,284,110
47	4,283,810	44.33	4,283,877		CLASS 68	299	4,283,991	467	4,284,050		CLASS 142
128 R	4,283,811	32	4,283,876	23.7	4,283,928	369 B	4,283,992	483	4,284,051	56	4,284,111
	CLASS 17	47	4,283,878		CLASS 71	376 R	4,283,993	490	4,284,052		CLASS 144
32	4,283,812	114				391 R	4,283,994	497	4,284,053	3 K	4,284,112
45	4,283,813	51	4,284,413	27	4,284,425	410	4,283,995	536	4,284,054	193 A	4,284,113
	CLASS 19	62	4,284,414	90	4,284,426	447	4,283,996	556	4,284,055		CLASS 146
159 R	4,283,814	72	4,284,415	93	4,284,427		CLASS 92	568	4,284,056	2	4,284,436
	CLASS 23		CLASS 46		CLASS 72	79	4,283,997	633	4,284,057	11.5 A	4,284,437
230 B	4,284,412	209	4,283,879	7	4,283,929	115 SB	4,283,999		CLASS 126	12 B	4,284,438
	CLASS 24		CLASS 47	8	4,283,930	229 A	4,284,000	415	4,284,058	12 EA	4,284,439
90 A	4,283,815	56	4,283,880	45	4,283,931		CLASS 101	418	4,284,061	31.57	4,284,440
269	4,283,816		CLASS 48	345	4,283,932	93.05	4,284,001	423	4,284,062	120	4,284,441
	CLASS 29	197 R	4,284,416	409	4,283,933	99	4,284,002	425	4,284,063		CLASS 149
25.16	4,283,817		CLASS 49		CLASS 73	111	4,284,003	429	4,284,064	19.4	4,284,442
76 R	4,283,818	35	4,283,881	1 F	4,283,934	363	4,284,004	432	4,284,065		CLASS 152
79	4,283,819	15 A	4,283,882	15 A	4,283,935		4,284,005	435	4,284,066	209 R	4,284,115
	4,283,820	32 A	4,283,883	32 A	4,283,936		4,284,006	436	4,284,067	360	4,284,116
129	4,283,821	49.3	4,283,884	49.3	4,283,937	317	4,284,006	438	4,284,068	361 R	4,284,117
156.8 H	4,283,822	59	4,283,885	59	4,283,938		4,284,007		4,284,069		CLASS 156
157.1 R	4,283,823	81		81	4,283,939	477	4,284,007	450	4,284,070	60	4,284,443
157.4	4,283,824	116		116	4,283,940	521	4,284,008	451	4,284,071	64	4,284,444
251	4,283,825	188		188	4,283,943		CLASS 104	452	4,284,072	69	4,284,445
252	4,283,826	204	4,283,886	204	4,283,944		CLASS 105	453	4,284,073	76	4,284,446
254	4,283,827	269		269	4,283,945	7 R	4,284,009	454	4,284,074	78	4,284,447
256	4,283,828	426		426	4,283,951	292	4,284,010	455	4,284,075	86	4,284,448
278	4,283,829	579		579	4,283,952		CLASS 106	456	4,284,076	97	4,284,449
407	4,283,830	589		589	4,283,953	310	4,284,011	457	4,284,077		4,284,450
423	4,283,831	706		706	4,283,954	362	4,284,012	458	4,284,078	99	4,284,451
441 R	4,283,832	772		772	4,283,955		CLASS 107	459	4,284,079	154	4,284,452
468	4,283,833	799		799	4,283,956	73.2	4,284,013	460	4,284,080	163	4,284,453
527.6	4,283,834	814		814	4,283,957	90	4,284,014	461	4,284,081	194	4,284,454
564.1	4,283,835	861.12		861.12	4,283,958		CLASS 108	462	4,284,082	230	4,284,455
578	4,283,836	862.65		862.65	4,283,959	50	4,284,015	463	4,284,083	244.12	4,284,456
588	4,283,837	863.11		863.11	4,283,960		CLASS 109	464	4,284,084	245	4,284,457
589	4,283,838	864.14		864.14	4,283,961		CLASS 110	465	4,284,085	306.6	4,284,458
596	4,283,839	864.34		864.34	4,283,962	347	4,284,015	466	4,284,086	311.5	4,284,459
597	4,283,840		CLASS 53		CLASS 74		CLASS 111	467	4,284,087	350	4,284,460
606	4,283,841	5.41	4,283,901	5.41	4,283,960	158 E	4,284,016	468	4,284,088	502	4,284,461
623.1	4,283,842	5.7	4,283,902	5.7	4,283,961		CLASS 112	469	4,284,089	510	4,284,462
623.5	4,283,843	6	4,283,903	6	4,283,962		CLASS 113	470	4,284,090	512	4,284,463
739	4,283,844	400		400	4,283,963	217.4	4,284,017	471	4,284,091	513	4,284,464
753	4,283,845	471 XY		471 XY	4,283,964	256	4,284,018	472	4,284,092	583.1	4,284,465
832	4,283,847	482		482	4,283,965	439	4,284,019	473	4,284,093	613	4,284,466
	CLASS 30	572		572	4,283,966		CLASS 114	474	4,284,094	661.1	4,284,467
34.1	4,283,848	681		681	4,283,967		CLASS 115	475	4,284,095		CLASS 159
43.6	4,283,849	701		701	4,283,968	58	4,284,022	476	4,284,096	28 R	4,284,469
47	4,283,850	866		866	4,283,970	116 QA	4,284,023	477	4,284,097		CLASS 160
134	4,283,851		CLASS 55		CLASS 75		CLASS 116	478	4,284,098	229 R	4,284,118
164.95	4,283,852	64	4,284,417	64	4,284,428	61	4,284,024	479	4,284,099	232	4,284,119
265	4,283,853	141	4,284,418	141	4,284,429	163	4,284,025	480	4,284,100		CLASS 162
314	4,283,854	170	4,284,419	170	4,284,430	230	4,284,026	481	4,284,101	19	4,284,120
394	4,283,855	212	4,284,420	212	4,284,431	273	4,284,027	482	4,284,102	123	4,284,470
	CLASS 33		CLASS 57		CLASS 81		CLASS 117	483	4,284,103	152	4,284,471
14	4,283,856	58.76	4,283,907	58.76	4,283,971	62.2	4,284,028	484	4,284,104		CLASS 164
169 R	4,283,857	38.95	4,283,908	38.95	4,283,972		CLASS 118	485	4,284,105		CLASS 165
174 F	4,283,858		4,283,909		4,283,973		CLASS 119	486	4,284,106		CLASS 166
174 R	4,283,859		4,283,910		4,283,974		CLASS 120	487	4,284,107		CLASS 167
	4,283,860		4,283,911		4,283,975		CLASS 121	488	4,284,108		CLASS 168
			4,283,912		4,283,976		CLASS 122	489	4,284,109		CLASS 169
			4,283,913		4,283,977		CLASS 123	490	4,284,110		CLASS 170
			4,283,914		4,283,978		CLASS 124	491	4,284,111		CLASS 171
			4,283,915		4,283,979		CLASS 125	492	4,284,112		CLASS 172
			4,283,916		4,283,980		CLASS 126	493	4,284,113		CLASS 173
			4,283,917		4,283,981		CLASS 127	494	4,284,114		CLASS 174
			4,283,918		4,283,982		CLASS 128	495	4,284,115		CLASS 175
			4,283,919		4,283,983		CLASS 129	496	4,284,116		CLASS 176
			4,283,920		4,283,984		CLASS 130	497	4,284,117		CLASS 177
			4,283,921		4,283,985		CLASS 131	498	4,284,118		CLASS 178
			4,283,922		4,283,986		CLASS 132	499	4,284,119		CLASS 179
			4,283,923		4,283,987		CLASS 133	500	4,284,120		CLASS 180
			4,283,924		4,283,988		CLASS 134	501	4,284,121		CLASS 181
			4,283,925		4,283,989		CLASS 135	502	4,284,122		CLASS 182
			4,283,926		4,283,990		CLASS 136	503	4,284,123		CLASS 183
			4,283,927		4,283,991		CLASS 137	504	4,284,124		CLASS 184
			4,283,928		4,283,992		CLASS 138	505	4,284,125		CLASS 185
			4,283,929		4,283,993		CLASS 139	506	4,284,126		CLASS 186
			4,283,930		4,283,994		CLASS 140	507	4,284,127		CLASS 187
			4,283,931		4,283,995		CLASS 141	508	4,284,128		CLASS 188
			4,283,932		4,283,996		CLASS 142	509	4,284,129		CLASS 189
			4,283,933		4,283,997		CLASS 143	510	4,284,130		CLASS 190
			4,283,934		4,283,998		CLASS 144	511	4,284,131		CLASS 191
			4,283,935		4,283,999		CLASS 145	512	4,284,132		CLASS 192
			4,283,936		4,284,000						



## CLASSIFICATION OF PATENTS

314	4,284,124	6.4	4,284,174	220	4,284,201	CLASS 246	349	4,284,585	255	4,284,912
515	4,284,123	CLASS 187		CLASS 219		CLASS 246		4,284,586	482	4,284,905
520	4,284,121	29 R	4,284,175	10.49 R	4,284,867	CLASS 248	36 A	4,284,588	8.2	4,284,310
		CLASS 188		10.55 A	4,284,869	125	39 B	4,284,589	CLASS 308	
9	4,284,125	71.7	4,284,176	10.55 F	4,284,868	231	62	4,284,590	CLASS 310	
11 A	4,284,126	280	4,284,177	121 LJ	4,284,872	346	0.5	4,284,593	68 D	4,284,913
35	4,284,127	281	4,284,178	121 PV	4,284,871	CLASS 250	1.1	4,284,591	70 R	4,284,914
48 R	4,284,128	CLASS 191		136	4,284,873	205	3 R	4,284,592	89	4,284,916
50	4,284,129	1 A	4,284,179	215	4,284,874	211 K	24	4,284,595	178	4,284,918
53	4,284,130	12.2 R	4,284,180	216	4,284,875	270	41	4,284,594	198	4,284,919
76	4,284,131	22 DM	4,284,181	222	4,284,877	338	45.3	4,284,596	217	4,284,920
103	4,284,132	CLASS 192		272	4,284,878	355	130	4,284,597	328	4,284,921
133	4,284,133	4 A	4,284,182	383	4,284,879	363 S	171	4,284,598	CLASS 315	
163	4,284,134	48.92	4,284,183	415	4,284,880	388	5.39	4,284,922	725	4,284,991
166	4,284,135	CLASS 194		CLASS 220		390	5.51	4,284,923	909	4,284,992
		2	4,284,184	4 B	4,284,202	443	39.51	4,284,924		
117.5	4,284,136	CLASS 198		345	4,284,203	445 T	240	4,284,925	75	4,284,993
137	4,284,137	339	4,284,185	346	4,284,204	461 B	312	4,284,926	108	4,284,994
233	4,284,138	415	4,284,186	418	4,284,205	551	340	4,284,927	136	4,284,995
267	4,284,139	435	4,284,187	CLASS 221		CLASS 251	375	4,284,928	140 R	4,284,996
285	Re.30,711	472	4,284,188	90	4,284,206	45	122	4,284,929		
291	4,284,140	647	4,284,189	129	4,284,208	60	166	4,284,930	1.6	4,284,323
315	4,284,141	783	4,284,190	CLASS 222		65	70	4,284,931	3.64	4,284,324
344	4,284,142	792	4,284,191	1	4,284,209	129	72	4,284,932	63	4,284,326
350	4,284,143	813	4,284,192	14	4,284,210	305	101	4,284,933	87	4,284,327
		CLASS 169		182	4,284,211	CLASS 252	116	4,284,934	97	4,284,328
64	4,284,144	CLASS 171		333	4,284,212	8.55 D	381	4,284,935	255	4,284,330
18	4,284,145	61.45 R	4,284,862	341	4,284,213	16	388	4,284,937	375	4,284,332
47	4,284,146	61.53	4,284,863	590	4,284,214	45	432	4,284,938	427	4,284,331
		61.7	Re.30,716	CLASS 223		62.3 BT	453	4,284,939	CLASS 352	
91	4,284,147	153 V	4,284,864	33	4,284,215	99	587	4,284,941	208	4,284,332
109	4,284,148	159 B	4,284,866	111	4,284,216	420	618	4,284,942		
		CLASS 174		CLASS 224		429 B	696	4,284,940	23 D	4,284,333
23 C	Re.30,715	39	4,284,476	30 R	4,284,217	429 C	806	4,284,943	24	4,284,334
48	4,284,840	42.06	4,284,478	242	4,284,218	430	48	4,284,944	25	4,283,863
103	4,284,841	110	4,284,477	CLASS 225		435 R	315	4,284,945		
107	4,284,842	227	4,284,478	100	4,284,221	455 Z	56	4,284,946	32	4,284,337
		248	4,284,479	CLASS 226		465	61 R	4,284,947	38	4,284,338
40	4,284,149	CLASS 203		181	4,284,222	528	309	4,284,948	50	4,284,339
84	4,284,150	24	4,284,480	CLASS 227		542	479 R	4,284,949	51	4,284,341
227	4,284,151	27	4,284,481	5	4,284,223	CLASS 254	618	4,284,951	60 E	4,284,342
257	4,284,152	140	4,284,482	9	4,284,224	271	278	4,284,952	318	4,284,343
297	4,284,153	158 R	4,284,483	CLASS 228		317	289 L	4,284,953		
325	4,284,154	159.15	4,284,484	180 R	4,284,225	CLASS 260	479 R	4,284,954	14 E	4,284,344
		195 S	4,284,485	CLASS 229		4 A R	618	4,284,955	15	4,284,345
16	4,284,472	197	4,284,487	1.5 B	4,284,226	4 R	803	4,284,956	67	4,284,346
19 R	4,284,473	298	4,284,488	1.5 R	4,284,227	17.4 ST	43	4,284,957	71	4,284,347
38	4,284,474	4,284,489	4,284,489	48 R	4,284,228	18 S	75	4,284,958	79	4,284,348
78	4,284,475	299 EC	4,284,491	CLASS 230		22 R	111	4,284,959		
		299 R	4,284,493	57	4,284,229	27 EV	140	4,284,956	CLASS 354	
211	4,284,155	299 R	4,284,492	73	4,284,230	27 R	253	4,284,957	28.5	4,284,350
		CLASS 179		CLASS 233		29.2 TN	300	4,284,958	134	4,284,351
69 G	4,284,843	1 E	4,284,844	1 R	4,284,231	29.6 NR	309	4,284,959	240	4,284,352
		1 N	4,284,847	45.31	4,284,193	29.6 R	315	4,284,960	301	4,284,353
100 C	4,284,855	1 SE	4,284,846	63.3	4,284,194	38	318	4,284,961	318	Re.30,712
107 E	4,284,856	2 EB	4,284,848	427	4,284,195	40 R	335	4,284,962	335	4,284,355
115 R	4,284,857	5 R	4,284,849	528	4,284,196	42.43	429	4,284,963	429	4,284,356
121 R	4,284,858	18 DA	4,284,851	626	4,284,197	112 R	431	4,284,964	431	4,284,357
170 NC	4,284,859	18 EA	4,284,852	CLASS 208		153	CLASS 283			
175.1 A	4,284,860	18 HB	4,284,853	164	4,284,494	239 BB	251	4,284,965	22	4,284,997
		64 VF	4,284,854	CLASS 209		239.3 B	284	4,284,966		
		100 C	4,284,855	1 G	4,284,235	239.55 R	176	4,284,968	24	4,285,000
		107 E	4,284,856	CLASS 236		243.3	183	4,284,969	51	4,285,001
		115 R	4,284,857	1 G	4,284,236	243.5	195	4,284,970	74	4,285,002
		121 R	4,284,858	CLASS 238		243.5	CLASS 296		81	4,285,003
		170 NC	4,284,859	349	4,284,238	243.5	1 S	4,284,302		
		175.1 A	4,284,860	CLASS 239		243.5	100	4,284,303	10	4,285,004
		CLASS 180		8	4,284,239	243.5	201	4,284,304	28	4,285,005
		24.02	4,284,156	CLASS 240		243.5	CLASS 297		35	4,285,006
		65 R	4,284,157	184	4,284,240	243.5	10	4,284,311	44	4,285,007
		70 R	4,284,158	272	4,284,241	243.5	60 R	4,284,312	65	4,285,008
		140	4,284,159	422	4,284,242	243.5	61 M	4,284,313	76	4,285,009
		168	4,284,160	469	4,284,243	243.5	75 M	4,284,314	112	4,285,010
		184	4,284,161	CLASS 241		243.5	89 M	4,284,315	248	4,285,013
		296	4,284,162	24	4,284,244	243.5	103 C	4,284,316		
		CLASS 181		40	4,284,245	243.5	103 R	4,284,317		
		113	4,284,163	222	4,284,246	243.5	147 P	4,284,320		
		117	4,284,164	260.1	4,284,247	243.5	200 R	4,284,321		
		119	4,284,165	278 R	4,284,248	243.5	218 M	4,284,322		
		156	4,284,166	CLASS 242		243.5	223 S	4,284,322		
		172	4,284,167	34 R	4,284,249	243.5	CLASS 340			
		199	4,284,168	54 R	4,284,250	243.5	52 D	4,284,972		
		211	4,284,169	68.3	4,284,251	243.5	52 R	4,284,971		
		213	4,284,170	68.4	4,284,252	243.5	65	4,284,974		
		CLASS 182		724	4,284,253	243.5	81 R	4,284,975		
		22	4,284,171	757	4,284,254	243.5	146.3	4,284,975		
		204	4,284,172	CLASS 215		243.5				
		CLASS 184		32	4,284,199	243.5				
		1.5	4,284,173	215	4,284,200	243.5				

## CLASSIFICATION OF PATENTS

147 P	4,284,977	293	4,285,012	291	4,284,368	270	4,284,640	312	4,284,712	CLASS 544	
	4,284,978					273 R	4,284,641	323	4,284,713		
	4,284,976	CLASS 360		CLASS 406			4,284,642	364	4,284,714	22	4,284,766
147 R	4,284,979	22	4,285,014	52	4,284,369	282	4,284,643	395	4,284,715		4,284,767
345	4,284,980	77	4,285,017	66	4,284,370	285	4,284,644	510	4,284,716	128	4,284,768
	4,284,981	78	4,285,015	99	4,284,371	304	4,284,645	567	4,284,717	180	4,284,769
346	4,284,982	84	4,285,016	106	4,284,372	305	4,284,646	629	4,284,718	187	4,284,770
568	4,284,983	98	4,285,018			317	4,284,647			200	4,284,771
571	4,284,984	103	4,285,019	CLASS 408		330	4,284,648	CLASS 431		218	4,284,772
572	4,284,985	132	4,285,020	87	4,284,373	362	4,284,649	7	4,284,401	247	4,284,773
573	4,284,986	137	4,285,021	139	4,284,374			9	4,284,402	348	4,284,774
689	4,284,987			226	4,284,375	CLASS 425				351	4,284,775
726	4,284,988	CLASS 361		CLASS 409		7	4,284,393	CLASS 432		400	4,284,776
731	4,284,989	45	4,285,022	24	4,284,376	8	4,284,394	1	4,284,403	CLASS 546	
870.32	4,284,990	91	4,285,023	239	4,284,377	66	4,284,395	37	4,284,404	90	4,284,777
		160	4,285,024			342.1	4,284,396			115	4,284,778
CLASS 343		230	4,285,025	CLASS 411		392	4,284,397	CLASS 433		189	4,284,779
725	4,284,991	345	4,285,026	21	4,284,378	394	4,284,398	24	4,284,405	286	4,284,780
909	4,284,992	385	4,285,027	61	4,284,379	410	4,284,399	165	4,284,406	288	4,284,781
		CLASS 346		119	4,284,114	444	4,284,400	CLASS 434		345	4,284,782
		35	4,285,028	340	4,283,986	CLASS 426		82	4,284,407	345	4,284,783
75	4,284,993	84	4,285,029	CLASS 414		5	4,284,650	CLASS 435		CLASS 548	
108	4,284,994	200 Q	4,285,030	21	4,284,380	50	4,284,651	18	4,284,719	202	4,284,784
136	4,284,995	205	4,285,031	61	4,284,381	72	4,284,652	58	4,284,720	248	4,284,785
140 R	4,284,996	224	4,285,032	76	4,284,382	312	4,284,653	70	4,284,721	253	4,284,786
		295	4,285,033	417	4,284,383	602	4,284,655	94	4,284,722	256	4,284,787
CLASS 350		305	4,285,034	434	4,284,384	641	4,284,656	123	4,284,723	303	4,284,788
1.6	4,284,323			747	4,284,385	651	4,284,657	255	4,284,724	CLASS 549	
3.64	4,284,324	CLASS 364		CLASS 415				301	4,284,725	52	4,284,789
36	4,284,325	200	4,285,035	209	4,284,386	CLASS 427		CLASS 438		CLASS 540	
63	4,284,326		4,285,036	CLASS 416		34	4,284,658	13	4,285,064	15	4,284,790
87	4,284,327		4,285,037	134 A	4,284,387	53.1	4,284,659	158	4,285,065	43	4,284,791
97	4,284,328		4,285,038	141	Re. 30,715	64	4,284,661	166	4,285,066	55	4,284,792
255	4,284,330		4,285,039	223 A	4,284,388	68	4,284,662			78	4,284,793
375	4,284,329	415	4,285,040	CLASS 417		164	4,284,663	CLASS 474		121	4,284,794
427	4,284,331	426	4,285,041	218	4,284,389	180	4,284,664	14	4,284,408	121	4,284,795
		707	4,285,043	313	4,284,390	203	4,284,665	185	4,284,409	262	4,284,796
208	4,284,332	721	4,285,044	569	4,284,391	304	4,284,666			CLASS 562	
CLASS 354		724	4,285,045	CLASS 418		331	4,284,667	CLASS 493		434	4,284,797
23 D	4,284,333	728	4,285,046	223	4,284,392	355	4,284,668	4	4,283,998	503	4,284,798
24	4,284,334	785	4,285,047	CLASS 422		357	4,284,669	28	4,284,726		4,284,799
25	4,283,863	822	4,285,048	18	4,284,599	422	4,284,670	155	4,284,727		4,284,800
	4,284,335	900	4,285,049	26	4,284,600	35	4,284,671	158	4,284,728		4,284,802
	4,284,336		4,285,050	40	4,284,601	34	4,284,672	160	4,284,729		4,284,803
32	4,284,337	CLASS 365		72	4,284,602	69	4,284,674		4,284,730		4,284,804
38	4,284,338	45	4,285,051	100	4,284,604	116	4,284,675	CLASS 525			4,284,805
50	4,284,340	CLASS 366		101	4,284,605	167	4,284,676	28	4,284,731		4,284,806
51	4,284,341	97	4,284,358	249	4,284,605	192	4,284,677	68	4,284,733		4,284,807
60 E	4,284,342	107	4,284,359	CLASS 423		195	4,284,678	92	4,284,734		4,284,808
318	4,284,343	140	4,284,360	6	4,284,606	218	4,284,679	93	4,284,735		4,284,809
CLASS 355		343	4,284,361	137	4,284,607	234	4,284,680	169	4,284,736		4,284,810
14 E	4,284,344			242	4,284,608	246	4,284,681	243	4,284,737		4,284,811
15	4,284,345	79	4,285,052	290	4,284,609	263	4,284,682	268	4,284,738		4,284,812
67	4,284,346	99	4,285,053	308	4,284,610	285	4,284,683	288	4,284,739	CLASS 566	
71	4,284,347	183	4,285,054	310	4,284,611	328	4,284,684	292	4,284,740	168	4,284,813
75	4,284,348	CLASS 368		308	4,284,612	331	4,284,685	297	4,284,741	253	4,284,814
79	4,284,349	226	4,285,055	310	4,284,613	334	4,284,686	329	4,284,742	332	4,284,815
CLASS 356		CLASS 369		345	4,284,614	336	4,284,687	349	4,284,743	365	4,284,816
28.5	4,284,350			447.4	4,284,615	559	4,284,688	389	4,284,744		4,284,817
134	4,284,351	63	4,284,279	461	4,284,616	620	4,284,689	408	4,284,745	CLASS 568	
240	4,284,352	100	4,285,056	605	4,284,618			510	4,284,746	67	4,284,817
301	4,284,353			CLASS 424		26	4,284,690	530	4,284,747	323	4,284,818
318	4,284,354			1.5	4,284,619	105	4,284,691			327	4,284,819
318	Re. 30,712	81	4,284,850	5	4,284,620	194	4,284,692	119	4,284,748	374	4,284,820
335	4,284,355	112	4,285,057	9	4,284,621	211	4,284,693	304	4,284,749	381	4,284,821
429	4,284,356	119	4,285,058	59	4,284,622			CLASS 429		399	4,284,822
431	4,284,357			84	4,284,623	CLASS 430		45	4,284,751	433	4,284,823
CLASS 357		25	4,285,059	85	4,284,624	23	4,284,694	68	4,284,752	445	4,284,824
22	4,284,997			177	4,284,625	24	4,284,695	79	4,284,753	592	4,284,825
	4,284,998	1	4,285,060	180	4,284,626	53	4,284,696	89	4,284,754	614	4,284,826
	4,284,999	15	4,285,061	222	4,284,627	59	4,284,697	107	4,284,755	637	4,284,827
24	4,285,000	20	4,285,062	229	4,284,628	96	4,284,698	111	4,284,756	686	4,284,828
51	4,285,001	106	4,285,063	230	4,284,629	105	4,284,699	128	4,284,757	764	4,284,829
74	4,285,002			241	4,284,630	111	4,284,701	191	4,284,758	779	4,284,830
81	4,285,003	CLASS 400		246	4,284,631	122	4,284,702	245	4,284,759	899	4,284,831
		124	4,284,362	253	4,284,632	142	4,284,703	261	4,284,760	CLASS 570	
10	4,285,004	234	4,284,363	266	4,284,633	154	4,284,704	306	4,284,761	190	4,284,832
28	4,285,005			267	4,284,634	159	4,284,705	373	4,284,762	224	4,284,833
35	4,285,006	CLASS 404		CLASS 425		191	4,284,706	485	4,284,762		
44	4,285,007	9	4,284,365	CLASS 426		196	4,284,707			6.6	4,284,522
65	4,285,008	44	4,284,366	CLASS 427		216	4,284,708	CLASS 536		25	4,284,834
76	4,285,009			CLASS 428		222	4,284,709	4	4,284,763	277	4,284,835
112	4,285,010			CLASS 429		271	4,284,710	10	4,284,764	438	4,284,836
	4,285,011			CLASS 430		276	4,284,711	60	4,284,765	523	4,284,837
248	4,285,013	202	4,284,367	269	4,284,637						



## CLASSIFICATION OF DESIGNS

D1—	22	260,195		196	260,216	341	260,237	53	260,260	D23—	09	260,279			260,300
D2—	319	260,196		201	260,217	389	260,238	70	260,261		22	260,280	D28—	8.1	260,301
D3—	35	260,197		253	260,218	395	260,239	79	260,262		52	260,281		15	260,302
	48	260,198	D7—	2	260,219	399	260,240	80	260,263		92	260,282		46	260,303
		260,199		50	260,220		260,241	107	260,259		77	260,283		59	260,304
		260,200		85	260,221		260,242	110	260,258		127	260,284		67	260,305
	53	260,201		105	260,222	425	260,243	D15—	29	260,264		260,285	D30—	4	260,306
	72	260,202		106	260,223	1	260,244	69	260,265		260,286		25	260,307	
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27 :	4,283,946		4,284,515		4,285,034	4,284,838	4,284,447
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	4,284,885		4,284,611		4,284,830	4,283,809	4,284,000
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	4,284,943		4,284,685	41 :	4,284,286	4,284,203	4,284,110
	4,285,028		4,284,686		4,284,384	4,284,254	4,284,112
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	4,284,784		4,284,824		4,283,981	4,283,939	4,283,973
	4,284,861		4,284,851		4,284,045	4,283,990	4,284,159
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### Patent Cooperation Treaty Information

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RENE D. TEGTMEYER,  
Assistant Commissioner  
for Patents

### REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,841,509, Re. S.N. 263,560, Filed May 14, 1981, Cl. 414/477, APPARATUS FOR TRANSPORTING ONE VEHICLE BY ANOTHER, Finis Lavell Chisum, Owner of Record: *Inventor*, Attorney or Agent: William R. Laney, et al., Ex. Gp.: 314

4,074,822, Re. S.N. 263,561, Filed May 14, 1981, Cl. 414/475, METHOD AND APPARATUS FOR TRANSPORTING ONE VEHICLE BY ANOTHER, Finis Lavell Chisum, Owner of Record: *Inventor*, Attorney or Agent: William R. Laney, et al., Ex. Gp.: 314

4,191,129, Re. S.N. 226,921, Filed Jan. 21, 1981, Cl. 119/005, ART OF EXHIBITING FISH, Arthur B. Renny, Owner of Record: *Inventor*, Attorney or Agent: William L. Fisher, Ex. Gp.: 333

4,230,615, Re. S.N. 252,248, Filed Apr. 8, 1981, Cl. 260/034.2, PROCESS FOR CONTROLLED MIXING IN A HIGH INTENSITY MIXER, Zenas Crocker, Owner of Record: *Carlew Chemicals Ltd., Quebec, Canada*, Attorney or Agent: Roberts B. Larson, Ex. Gp.: 144

4,236,735, Re. S.N. 263,490, Filed May 14, 1981, Cl. 285/114, FITMENT FOR A VESSEL, John D. Allen, Owner of Record: *Inventor*, Attorney or Agent: Lloyd A. Heneveld, et al., Ex. Gp.: 353

### REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 28,176, Reexam. No. 90/000,034, Requested: July 27, 1981, Cl. 248/642, BRACKET FOR MOUNTING

BOAT ACCESSORY, George F. Horton, Owner of Record: *Inventor*, Attorney or Agent: Wofford, Fails & Zabal, Ex. Gp.: 355, Requester: Anderson-Needham Sales Co., Fort. Worth, Tex.

3,395,434, Reexam. No. 90/000,024, Requested: July 10, 1981, Cl. 407/114, CUTTING INSERT FOR CHIP CUTTING MACHINE, Sven Axel Olof Wirfelt, Owner of Record: *Sandvikens Jernverks AB*, Attorney or Agent: Burns, Doane, et al., Ex. Gp.: 324, Requester: Sandvik Aktiebolag, Sandviken, Sweden

3,614,368, Reexam. No. 90/000,039, Requested: July 29, 1981, Cl. 219/69C, ELECTRICAL DISCHARGE MACHINING SHORT CIRCUIT PROTECTION SYSTEM OF THE KEYED TYPE, Walter Lobur, Owner of Record: *Colt Industries Operating Corp.*, Attorney or Agent: Radford W. Luther, Ex. Gp.: 213, Requester: Colt Industries Operating Corp., Chicago, Ill.

3,708,779, Reexam. No. 90/000,032, Requested: July 23, 1981, Cl. 339/99R, WIRE-SPLICING APPARATUS AND METHOD, Dennis J. Enright, et al., Owner of Record: *Minnesota Mining & Mfg. Co.*, Attorney or Agent: Kinney, Alexander, et al., Ex. Gp.: 322, Requester: Minnesota Mining & Mfg. Co., St. Paul, Minn.

4,016,395, Reexam. No. 90/000,040, Requested: July 29, 1981, Cl. 219/69W, WIRE ELECTRODE FEED FOR ELECTRICAL DISCHARGE MACHINING, Frank P. Rietveld, Owner of Record: *Colt Industries Operating Corp.*, Attorney or Agent: Harry R. Dumont, Ex. Gp.: 213, Requester: Colt Industries Operating Corp., Chicago, Ill.

4,052,229, Reexam. No. 90/000,036, Requested: July 28, 1981, Cl. 148/1.5, PROCESS FOR PREPARING A SUBSTRATE FOR MOS DEVICES OF DIFFERENT THRESHOLDS, Richard D. Pashley, Owner of Record: *Intel Corp.*, Attorney or Agent: Blakely, Sokoloff, et al., Ex. Gp.: 111, Requester: Lyon & Lyon, Washington, D.C.

4,129,021, Reexam. No. 90/000,035, Requested: July 27, 1981, Cl. 70/456, CLOSURE DEVICE, Attilio Brentini, Owner of Record: *Inventor*, Attorney or Agent: Groff & Groff, Ex. Gp.: 350, Requester: John P. Snyder, Washington, D.C.

4,148,414, Reexam. No. 90/000,033, Requested: July 23, 1981, Cl. 212/278, ROW CROP PLANTER, Earl R. Parks, Jr., Owner of Record: *Inventor*, Attorney or Agent: Oltsch, Knoblock & Hall, Ex. Gp.: 310, Requester: International Harvester Co., Chicago, Ill.

4,162,351, Reexam. No. 90/000,037, Requested: July 29, 1981, Cl. 429/15, METAL-HALOGEN CELL OPERATION WITH STORAGE OF HALOGEN VIA ORGANIC COMPLEXATION EXTERNAL TO THE ELECTROCHEMICAL CELL, Ronald A. Putt, et al., Owner of Record: *Gould, Inc.*, Attorney or Agent: Leydig, Voit, Osann, Mayer & Holt Ltd., Ex. Gp.: 111, Requester: Exxon Research & Engineering Co., Florham Park, N.J.

### Vacancy Announcement Chairman, Trademark Trial and Appeal Board

In accordance with the Senior Executive Service, the position of Chairman of the Trademark Trial and Appeal Board is being advertised. This appointment will be made at a salary of \$90,113 per annum, which is the cur-

rent statutory limit before awards and bonuses are distributed.

Persons interested in being considered for the vacancy, PTO-81-112, are invited to submit their applications to the address given below, on or before Sept. 30, 1981. Applications must be in the Office of Personnel by Sept. 30, 1981. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

**Duties:** Serves as Chairman, Trademark Trial and Appeal Board. Manages the administrative functions of the Board and supervises the technical work of the Board. As a member of the TTAB, exercises original jurisdiction in *inter partes* proceedings and appellate jurisdiction of *ex parte* appeals. Renders written decisions representing the position of the PTO.

**Qualifications:** Evaluation of qualified candidates will be on the basis of education (self-development), awards, supervisory performance appraisals, managerial/executive qualifications and technical/professional qualifications. Candidates should address all these qualifications in their supplemental statements. Copies of the Qualification Standard are available in Crystal Plaza 2, Room 9C05.

### Factors Which Will be Considered in Evaluating Qualified Candidates:

The six managerial/executive factors for SES positions are:

1. Integration of internal and external program policy issues;
2. Organization representation and liaison;
3. Direction and guidance of program, projects or policy development;
4. Resource acquisition and administration;
5. Utilization of human resources;
6. Review of implementation and results.

The technical/professional qualifications are:

1. Law degree and bar membership;
2. Professional legal experience which has provided a comprehensive knowledge of Appellate matters in Trademark law, rules of evidence, the Federal Rules of Civil Procedures, and general principles of ancillary legal subjects;
3. Demonstrated ability to express thoroughly, clearly and accurately the material facts, legal principles and reasons for arriving at a stated conclusion by the application of law to the facts.

Employees of the Department of Commerce may apply by submitting a Merit Program Interest Statement (CD-261), OPM Form 1386, current performance appraisal, updated Personal Qualifications Statement (SF-171) and supplemental statement showing how the

qualifications are met. Persons who are not employees of the Department of Commerce should submit a current performance appraisal, Personal Qualifications Statement (SF-171), OPM Form 1386, and supplemental statement. The completed forms should be sent to:

U.S. Patent and Trademark Office  
Office of Personnel  
Crystal Plaza 2, Room 9C05  
2011 Jefferson Davis Hwy.  
Arlington, Va. 22202

Questions concerning this notice should be directed to Ms. Marilyn Gannon, Office of Personnel, Room 2-9C05, Telephone (703) 557-3631.

July 27, 1981  
MARGARET M. LAURENCE  
Assistant Commissioner  
for Trademarks

### Consolidated Certificates Under Trademark Rule 2.88

Trademark Rule 2.88 provides as follows:

Applications may be consolidated.

- a. When several applications have been filed by the same applicant for registration on the same register of a mark shown in identical form on the drawings for goods and/or services in different classes and each of the applications has been allowed, a single certificate based on such applications may be issued. A request for the issuance of a consolidated certificate must be made of record in each of the applications involved prior to the allowance of any of the applications.
- b. The issuance of any original certificate may be suspended upon request of the applicant for a period not exceeding 6 months, to permit such consolidation.

The resulting certificate of registration is known as a consolidated certificate.

Because Rule 2.88 is seldom invoked and because the issuance of consolidated certificates entails undue administrative effort, the Patent and Trademark Office will soon be publishing for comment a proposal to eliminate the rule.

In the meantime, any applicant seeking registration of a single mark for more than one class of goods and/or services is encouraged to use the multiple-class application procedure set forth in Trademark Rule 2.87, rather than the consolidated application procedure set forth in Trademark Rule 2.88.

July 29, 1981  
MARGARET M. LAURENCE  
Assistant Commissioner  
for Trademarks



# PATENT NOTICES

Certificates of Correction for the Week of Aug. 25, 1981

Re. 30,053	4,250,673	4,264,003	4,270,380
Re. 30,497	4,250,689	4,264,166	4,270,501
Re. 30,622	4,250,796	4,264,268	4,270,529
D. 259,373	4,251,835	4,264,325	4,270,622
3,798,670	4,251,978	4,264,398	4,270,635
3,830,306	4,251,999	4,264,681	4,270,675
3,900,943	4,252,069	4,264,754	4,270,693
3,954,833	4,252,558	4,264,867	4,270,712
4,074,413	4,252,644	4,264,953	4,270,759
4,099,015	4,252,961	4,265,091	4,270,762
4,112,224	4,253,369	4,265,106	4,270,811
4,113,729	4,253,394	4,265,122	4,271,120
4,145,359	4,253,598	4,265,211	4,271,201
4,157,621	4,253,877	4,265,581	4,271,208
4,164,358	4,254,057	4,265,609	4,271,244
4,205,007	4,254,760	4,265,646	4,271,258
4,217,356	4,255,137	4,265,887	4,271,357
4,217,588	4,255,617	4,266,197	4,271,376
4,221,728	4,255,623	4,266,223	4,271,597
4,224,214	4,256,709	4,266,458	4,271,643
4,224,215	4,256,751	4,266,547	4,271,864
4,225,700	4,256,821	4,266,904	4,272,099
4,227,418	4,256,926	4,266,925	4,272,168
4,230,372	4,257,003	4,267,065	4,272,270
4,235,763	4,257,146	4,267,135	4,272,271
4,236,320	4,257,942	4,267,196	4,272,381
4,238,093	4,258,135	4,267,297	4,272,565
4,239,183	4,258,449	4,267,372	4,272,686
4,239,673	4,258,908	4,267,631	4,272,761
4,239,726	4,259,044	4,267,767	4,272,778
4,240,581	4,259,176	4,267,784	4,272,797
4,241,136	4,259,245	4,267,876	4,272,807
4,241,330	4,259,862	4,267,984	4,273,050
4,241,542	4,259,961	4,267,987	4,273,080
4,242,473	4,260,586	4,268,033	4,273,280
4,242,682	4,260,728	4,268,038	4,273,293
4,243,221	4,260,811	4,268,098	4,273,318
4,243,511	4,260,825	4,268,216	4,273,457
4,243,586	4,260,826	4,268,579	4,273,510
4,243,639	4,261,008	4,268,672	4,273,519
4,243,904	4,262,317	4,268,697	4,273,651
4,243,948	4,262,497	4,268,742	4,273,670
4,244,959	4,262,723	4,268,804	4,273,684
4,245,001	4,262,791	4,268,828	4,273,879
4,245,202	4,262,853	4,269,115	4,273,978
4,246,350	4,263,024	4,269,188	4,273,997
4,246,538	4,263,128	4,269,226	4,274,017
4,246,710	4,263,166	4,269,560	4,274,067
4,247,545	4,263,230	4,269,662	4,274,121
4,247,551	4,263,278	4,269,721	4,274,215
4,248,241	4,263,538	4,269,753	4,274,738
4,248,762	4,263,582	4,269,777	4,274,842
4,248,935	4,263,792	4,270,072	4,274,912
4,250,148	4,263,803	4,270,371	4,275,318

## Patent Suits

Notices under 35 U.S.C 290; Patent Act of 1952

2,918,934, Charles Wheatley Co., CHECK VALVE, filed Apr. 30, 1981, D.C., N.D. Okla. (Tulsa), Doc. 81-C-195-E, *J. Duncan McNeill, et al. v. Geosource, Inc.*

3,031,450, Boehringer Ingelheim, G.m.b.H., SUBSTITUTED PYRIMIDO-[5,4-D]-PYRIMIDINES, filed Dec. 18, 1980, D.C.N.J. (Newark), Doc. 80-4049, *Boehringer Ingelheim G.m.b.H. v. Bolar Pharmaceutical*

Ca. Order dismissing action without costs filed Apr. 28, 1981.

3,365,800, Richard F. Carella, ARCHERY BOW SIGHT ASSEMBLY, filed May 6, 1981, D.C., E.D. Mich. (Bay City), Doc. 81-30037, *Richard F. Carella v. Starlight Archery.*

3,394,941, W. S. Shamban & Co., SEALING RING ASSEMBLY, filed Dec. 22, 1980, D.C.N.J. (Newark), Doc. 80-4089, *W. S. Shamban & Co. v. C. E. Conover & Co.* Stipulation and order dismissing action filed May 5, 1981.

3,463,889, Shure Brothers, Inc., MOVING MAGNET STEREOGRAPHIC PICKUP, filed Apr. 30, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 2454, *Shure Brothers, Inc. v. Pickering & Co., Inc., et al.*

3,465,441, Oratronics, Inc., RING-TYPE IMPLANT FOR ARTIFICIAL TEETH; 3,729,825, same, ORAL IMPLANT; 3,905,108, same, INTRAMUCOSAL DENTURE SYSTEM, filed May 8, 1981, D.C., S.D.N.Y., Doc. 81-Civ-2794, *Oratronics, Inc. v. Park Dental Research Corp.*

3,483,782, Vamco Machine and Tool, Inc., SELF-CONTAINED FEED ROLL FOR POWER PUNCH PRESSES; Re. 29,795, same, filed Apr. 24, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 2302, *Vamco Machine and Tool, Inc. v. F. J. Littell Machine Co.*

3,588,917, Anthony J. Antonious, GOLF GLOVE, filed Mar. 5, 1980, D.C., E.D. Tenn. (Chattanooga), Doc. 1-80-51, *Anthony J. Antonious v. Progroup, Inc.* Judgment entered in favor of plaintiff on May 4, 1981.

3,675,891, Le Voy's, Inc., CONTINUOUS CATETER FLUSHING APPARATUS, filed Apr. 1, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 1599, *Sorenson Research Co. v. Gould Inc.*

3,729,825. (See 3,465,441.)

3,732,808, Polychrome Corp., APPARATUS FOR DEVELOPING OFFSET PRINTING PLATES, filed June 18, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 3161, *Polychrome Corp. v. Freundorfer, Inc.* Stipulation to dismiss without prejudice filed Oct. 15, 1980.

3,780,502, National Foundry Equipment Co., Inc., COLLECTOR APPARATUS, filed Apr. 16, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 2154, *NFE International Ltd. v. Pneu-Con Corp., Inc.*

3,842,457, Elliott C. Johnson, BEE FEEDER, filed Mar. 23, 1981 D.C., M.D. Ga. (Macon), Doc. CA-81-16-VAL, *Valley Honey Association v. Dadant & Sons, Inc.*

3,854,470, Lynn L. Augspurger, REPRODUCTION PROCESSES FOR CELLULAR BODIES, filed Feb. 17, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 818, *Lynn L. Augspurger v. Robert Miller.* Same, filed Feb. 23, 1981, D.C., W.D. Mich. (Grand Rapids), Doc. G81-80 ca(1), *Lynn L. Augspurger v. American Embryos, Inc.*

3,890,655, Cleo D. Mathis, WHIRLPOOL JET FOR BATHTUBS; 3,890,656, same, 3,946,449, same; D. 244,462, same, WHIRLPOOL JET NOZZLE FOR BATHTUBS AND THE LIKE, filed Apr. 3, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 1631Kn(Mx), *Cleo D. Mathis, et al. v. Philip E. Chalberg, et al.*

3,890,656. (See 3,890,655.)

3,905,108. (See 3,465,441.)

3,912,083, Jarke Corp., MODULAR STORAGE

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FRAME FOR FLAT SHEET MATERIALS, filed June 4, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 2831, *Jarke Corp. v. Myers Trucking & Castor Co.* Cause transferred to Middle District of Tennessee on Dec. 15, 1980.

3,921,356, Oakwood Manufacturing, Inc., SYSTEM AND APPARATUS FOR INTERCONNECTING STRUCTURAL MEMBERS, AND METHOD OF UTILIZING SAME; 4,081,940, same, filed Feb. 22, 1979, D.C., N.D. Ohio (Cleveland), Doc. C79-348, *Cardinal American Corp. v. Oakwood Manufacturing, Inc.*

3,946,449. (See 3,890,655.)

3,968,879, George A. Lucas & Sons, SHIPPING CONTAINER AND ASSEMBLY THEREOF, filed May 19, 1978, D.C., E.D. Calif. (Fresno), Doc. F-78-107, *George A. Lucas & Sons v. Styra Tek Inc.* Decision filed Mar. 27, 1981 that Pat. No. 3,968,879 is invalid and unenforceable.

4,023,227, Fernand L. O. J. Chauvier, APPARATUS FOR CLEANING SUBMERGED SURFACES, filed Dec. 9, 1980, D.C., E.D. Calif. (Fresno), Doc. F-80-286-MDC, *Fernand L. O. J. Chauvier, et al. v. Ewell Peden, et al.*

4,027,624, Freund Industrial Co., Ltd., FLUID GRANULATING/COATING APPARATUS UTILIZING SUCTION AIR CURRENT, filed Jan. 4, 1980, D.C. Dist. of Columbia (Wash. D.C.), Doc. 80-0023, *Glatt Air Techniques, Inc. v. Freund Industrial Co., Ltd.* Stipulation of dismissal without prejudice filed Apr. 7, 1981.

4,070,022, Precision Shaft Corp., MATCHED GOLF SHAFTS AND CLUBS, filed Mar. 31, 1981, D.C., N.D. Ohio (Cleveland), Doc. C81-587, *Precision Shaft Corp. v. True Temper Sports.*

4,081,940. (See 3,921,356.)

4,095,679, Robert W. Walker, STOP MEANS FOR SELF-PROPELLED SPRINKLER, filed Mar. 24, 1981, D.C. Neb. (Omaha), Doc. 81-0-150, *Robert W. Walker v. Jahn Kreger, doing business as Plains Manufacturing, et al.*

4,102,383, Clopay Corp., WINDOW SHADE; 4,102,384, same, filed Mar. 26, 1981, D.C. Del. (Wilmington), Doc. 81-124, *Clopay Corp. v. Graber Industries, Inc.* Same, filed Mar. 18, 1981, D.C.S.C. (Columbia), Doc. 81-515-5, *Clopay Corp. v. Springs Mills, Inc.* Voluntary Dismissal filed Apr. 2, 1981.

4,102,384, Clopay Corp., WINDOW SHADE, filed Mar. 18, 1981, D.C. Del. (Wilmington), Doc. 81-110, *Clopay Corp. v. Newell Companies, Inc.*

4,102,384. (See 4,102,383.)

4,115,940, A. & E. Warbern, Inc., GARMENT HANGER WITH SIZE INDICATOR, filed Apr. 29, 1981, D.C., S.D.N.Y., Doc. 81-Civ-2588 HFW, *A & E Products Group Inc. v. M & F Hangers, Inc.*

4,124,201, Robert E. Burton, KNOCKDOWN SPRING UNIT, filed Mar. 31, 1981, D.C., N.D.N.Y. (Utica), Doc. 81-Civ-292, *Futorian Corp. v. Robert E. Burton.*

4,128,198, Investment Technology, Inc., ENDLESS TAPE LOOP STORAGE APPARATUS, filed Mar. 20, 1980, D.C., N.D. Calif. (San Francisco), Doc. 80-0867RHS, *Investment Technology, Inc. v. Accurate Sound Corp.* Stipulation and order dismissing action with prejudice filed May 7, 1981.

4,141,070, Cornell-Dubilier Electric Corp., ELECTROLYTIC CAPACITORS, filed Apr. 24, 1981, D.C., W.D. Kentucky (Bowling Green), Doc. 81-0056 BG (J), *Cornell-Dubilier Electric Corp. v. Emhart Industries, Inc.*

4,167,251, Canica Crushers, Ltd., LIFTER FOR ROCK CRUSHER LID, filed Mar. 26, 1981, D.C., E.D. Wash. (Spokane), Doc. C-81-151-RJM, *Canica Crushers, Ltd. v. Spokane Crushers Manufacturing Co.*

4,171,026, Wirth, Gallo & Co., SCALE WITH A COMPUTING DEVICE AND A DIGITAL DISPLAY, IN PARTICULAR FOR COMMERCIAL APPLICATIONS, filed Mar. 31, 1981, D.C., E.D. Pa. (Philadelphia), Doc. 81-1252, *Wirth, Gallo & Co. v. Pennsylvania Scale Co.*

4,173,910, Lineberry, Buckner, and Harris, METHOD AND APPARATUS FOR HANDLING BRICK, filed Apr. 20, 1981, D.C., M.D.N.C. (Greensboro), Doc. C-81-172-G, *Auto-Systems and Service, Inc. v. Clarksville Machine Works, Inc.*

4,175,601, Gustave C. Meyer, III, HAND-HELD WEDGE TOOL FOR SPLITTING WOOD, filed Aug. 5, 1980, D.C.N.J. (Newark), Doc. 80-2499, *Gustave C. Meyer, III v. Colonial Tool Co., Inc., et al.* Stipulation and Order for permanent injunction filed Apr. 7, 1981.

4,179,152, James K. Kent, Jr., METHOD AND APPARATUS FOR SECURING FABRIC TOPS TO A VEHICLE, filed Sept. 26, 1980, D.C. Colo. (Denver), Doc. 80-K-1289, *James K. Kent, Jr. v. Bestop Manufacturing, Inc.* Order of default judgment and dismissal filed Jan. 5, 1981.

4,179,753, Aronberg and Fein, HEADGEAR WITH EYEGLASS SUPPORT, filed June 13, 1980, D.C., S.D.N.Y., Doc. 80-Civ-3372 CBM, *Sport Eyes, Inc. v. Commodore Corp., et al.* Action discontinued with prejudice to both parties on Apr. 15, 1981.

4,184,429, Max Widner, CONSTANT BEVEL DOCTOR BLADE AND METHOD AND APPARATUS USING SAME, filed Mar. 24, 1981, D.C., E.D. Pa. (Philadelphia), Doc. 81-1140, *Max Daetwyler Corp. v. Input Graphics, Inc.*

4,186,821, McNeill Corp., LUBRICATING APPARATUS, filed Mar. 26, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 1481, *Houdaille Industries, Inc. v. McNeill Corp.* Dismissal order by consent without prejudice filed Sept. 19, 1980.

4,199,606, Bobby J. Bland, PROPIONIC ACID ON A CARRIER MATERIAL AS A PRESERVATIVE, filed May 22, 1980, D.C., N.D. Ga. (Atlanta), Doc. C80-886A, *Anitox Corp. and Bobby J. Bland v. New South Manufacturing Co., et al.* Defendants are enjoined and restrained from infringing Pat. No. 4,199,606. Filed Apr. 23, 1981.

4,218,107, Anton/Bauer, Inc., BATTERY PACK CONNECTION, filed Nov. 3, 1980, D.C.N.J. (Newark), Doc. 80-3557, *Anton/Bauer, Inc. v. Frezzolini Electronics, Inc.* Stipulation and Order of dismissal of action, without costs filed Apr. 30, 1981.

4,227,340, Adolph E. Goldfarb, PLAY SET, filed Apr. 17, 1981, D.C., S.D.N.Y., Doc. 81-Civ-2371 (WK), *Knickerbocker Toy Co., Inc. v. Nasta Industries, Inc.*

4,236,529, Daig Corp., TINED LEAD, filed Dec. 16, 1980, D.C. Minn. (Minneapolis), Doc. 4-80 Civil 611, *Daig Corp. v. Medtronic, Inc.*

Re. 29,050, Louise Z. Hakim, TOY WITH SOUND PRODUCING MEANS, filed May 6, 1981, D.C., S.D.N.Y., Doc. 81-Civ-2711, *Louise Z. Hakim v. Sanitoy Inc.*

Re. 29,795. (See 3,483,782.)

Re. 30,159, Barmer Maschinenfabrik Aktiengesellschaft, FALSE TWIST-CRIMPING MACHINE, filed Apr. 10, 1981, D.C., W.D.N.C. (Charlotte), Doc. C-81-0151, *Barmag Barmer Maschinenfabrik AG v. Murata Machinery, Ltd., et al.*

D. 216,209, Louis Marx & Co., Inc., TRICYCLE, filed Apr. 8, 1981, D.C.N.J. (Newark), Doc. 81-1019, *Marx Toys, Ltd. v. Coleco Industries, Inc., et al.*

D. 226,451, National Air Vibrator Co., Inc., VIBRATOR FOR MATERIAL HANDLING OR THE LIKE, filed Apr. 28, 1981, D.C., N.D. Ohio (Cleveland),



Doc. C81-882, *National Air Vibrator Co., Inc. v. Don B. Lash*.

D. 227,722, *Bunk Truck Distributors, COMBINED BED AND STORAGE UNIT*, filed Feb. 13, 1981, D.C., W.D.N.C. (Asheville), Doc. SH-C-81-47, *Drexel Heritage Furnishings, Inc. v. Theodore Shapiro & Michael A. Mendlin doing business as Bunk Trunk Distributors*.

D. 230,476, *Delbar Products, Inc., REAR VIEW MIRROR FOR VEHICLES*; D. 230,477, same, filed Apr. 10, 1981, D.C. E.D. Mich. (Detroit), Doc. 81-71134, *Delbar Products, Inc. v. K-Mart Corp.*

D. 230,477. (See D. 230,476.)

D. 244,462. (See 3,890,655.)

#### Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decisions having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,767,884, J. M. Osepchuk, J. E. Simpson, *ENERGY SEAL FOR HIGH FREQUENCY ENERGY APPARATUS* Interference No. 98,951, decided Feb. 4, 1981, claims 13, 14, 16, 17, 19-26, 28-32, 34, 35 and 44.

Patent No. 3,876,587, K. Matsui, M. Kamimura, *POWDER COATING COMPOSITIONS*, Interference No. 99,694, decided Mar. 3, 1981, claims 1-8.

Patent No. 3,980,791, H. P. Schulz, H. Voegel, *TETRAMISOLE AND LEVAMISOL POUR-ON ANTHELMINTIC COMPOSITIONS AND METHODS OF USE*, Interference No. 99,912, decided Feb. 13, 1981, claims 1-3, 11-13, 21-33, 36-44 and 47.

Patent No. 3,986,423, D. P. Rossum, *POLYPHONIC MUSIC SYNTHESIZER*, Interference No. 99,905, decided Oct. 27, 1980, claims 1-9, 11-15, 18 and 19.

Patent No. 4,062,993, W. W. Seward, *TEXTILE AND METHOD OF MAKING SAME*, Interference No. 100,316, decided Feb. 25, 1981, claims 1 and 5.

Patent No. 4,093,405, W. S. Brian, *FUEL-OPERATED DEVICE*, Interference No. 100,519, decided Apr. 6, 1981, claim 1.

Patent No. 4,136,905, H. R. Morgan, *TAILGATE CONSTRUCTION*, Interference No. 100,226, decided Apr. 23, 1981, claims 1-4.

Patent No. 4,150,666, D. C. Brush, *TUBE HOLDER FOR BLOOD COLLECTION TUBES OF DIFFERENT SIZES*, Interference No. 100,455, decided June 22, 1981, claims 4-6 and 8-9.

NANNIE B. HENRY,  
Deputy Clerk,  
Board of Patent Interferences.

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	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
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	Milwaukee Public Library	(414) 278-3043

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**PATENT EXAMINING CORPS**  
**RENE D. TEGMEYER, Assistant Commissioner**  
**WILLIAM FELDMAN, Deputy Assistant Commissioner**  
**CONDITION OF PATENT APPLICATIONS AS OF July 25, 1981**

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal- lurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	4-29-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	6-25-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-11-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170— R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufac- ture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-03-80
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Acoustics; Recorders; Weighing Scales.	1-07-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Opti- tics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Composi- tions; Thermal and Photoelectric Batteries.	1-03-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-31-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240— A. L. SMITH, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	6-08-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-28-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	11-01-79
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprin- kling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding; Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-06-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330— R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Infor- mation Dissemination.	7-30-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Genera- tion and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350— G. M. FORLENZA, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscel- laneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

**Expiration of patents:** The patents within the range of numbers indicated below expire during July 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,139,622 to 3,142,840, inclusive  
Plant Patents ..... Numbers 2,416 to 2,430, inclusive

## REISSUES

AUGUST 25, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

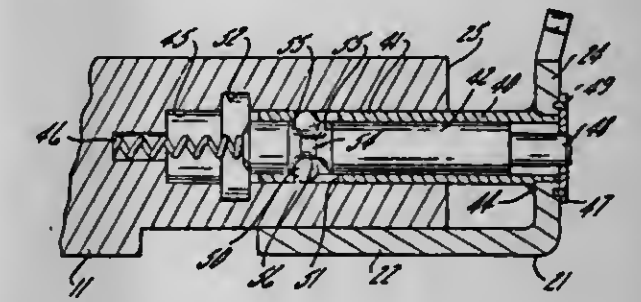
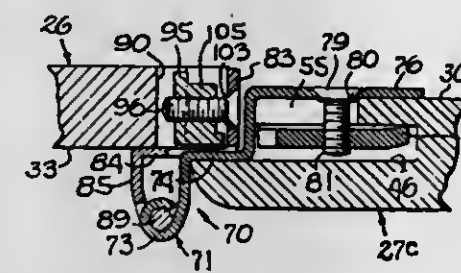
### Re. 30,717 QUICKLY ATTACHABLE AND DETACHABLE HINGE ASSEMBLY

Carl J. Dargene, Rockford, Ill., assignor to Amerock Corpora-  
tion, Rockford, Ill.  
Original No. 3,590,419, dated Jul. 6, 1971, Ser. No. 735,127,  
Jun. 6, 1968. Application for reissue Dec. 13, 1979, Ser. No.  
103,515

Int. Cl.<sup>3</sup> E05D 5/06

U.S. Cl. 16—135

14 Claims



2. A hinge assembly for use in pivotally connecting first and second relatively swingable members with at least the second member having an edge portion defined in part by a [first] vertical edge surface formed with an open-ended slot and by a [generally perpendicular second] flat vertical face surface perpendicular to said edge surface and having an opening communicating with said slot, said hinge assembly comprising first and second wings swingably connected together with the first wing being mountable on said first member and with the second wing having an opening and being positionable along one side of said [second] face surface of said second member with such opening aligned with the opening in the [second] face surface, a retainer insertable into said slot from said [first] edge surface for placement in the slot along the other side of said [second] face surface and being restricted against turning within the slot, and a threaded bolt sized to extend through said openings in said [second] face surface and said second wing for interconnecting said second wing and said retainer and for clamping said second wing to said second member, said bolt being releasable to permit removal of said second wing from said second member.

### Re. 30,718 SADDLE LOCKUP FOR FLEXIBLE PRINTING PLATE

Gordon Etchell, Downers Grove, Ill., assignor to Rockwell Inter-  
national Corporation, Pittsburgh, Pa.  
Original No. 3,696,744, dated Oct. 10, 1972, Ser. No. 80,426,  
Oct. 13, 1970. Application for reissue Dec. 14, 1978, Ser. No.  
969,312

Int. Cl.<sup>3</sup> B41F 27/12

U.S. Cl. 101—415.1

15 Claims

11. A device for mounting a flexible printing plate to a press plate cylinder comprising a curved saddle adapted to be conformably mounted on said cylinder and having the general shape of a sector of a hollow cylinder and having side edges and circumferentially spaced opposite end edges extending radially of said cylinder, means at one end edge of said saddle for securing one end portion of said printing plate, a bar extending along the other end edge of said saddle between said side edges of said saddle and having means for attachment thereto of the other end of said plate, said bar having a portion accessible for manual actuation, combined mounting and locking means positioned between said side edges of said saddle and substantially wholly within said other end edge of said saddle for mounting said bar for movement in a direction substantially circumferentially of said saddle between an

inner plate release position adjacent said other end edge of said saddle and an outer plate tensioning position displaced from said other end edge of said saddle and for selectively locking said bar in said plate release position, and spring means carried by said other end edge of said saddle biasing said bar toward said plate tensioning position; said combined mounting and locking means comprising a sleeve rigid with said bar and slidably received in a bore in said other end edge of said saddle and locking means carried by said sleeve effective upon manual displacement of said

bar inwardly to said plate release position for locking said bar in said plate release position, said locking means including a plunger slidably mounted in said sleeve and having an externally manually accessible operating portion extending through said bar, said plunger being effective, upon manual displacement axially inwardly of said sleeve, to release said locking means to permit the bar to be moved outwardly away from said other end edge of said saddle under the influence of said spring means to said plate tensioning position, and means for positively limiting movement of said bar away from said other end edge of said saddle.

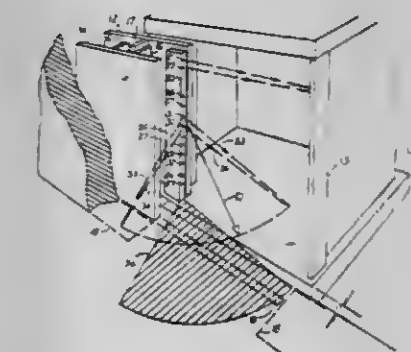
### Re. 30,719 DOORWAY SAFETY DEVICE

Gerald W. Mills, 163 Arch St., Ramsey, N.J. 07446  
Original No. 4,029,176, dated Jun. 14, 1977, Ser. No. 619,731,  
Oct. 6, 1975. Application for reissue Aug. 2, 1978, Ser. No.  
930,656

Int. Cl.<sup>3</sup> B66B 13/26

U.S. Cl. 187—52 R

45 Claims



15. A safety system for preventing the full closure of an automatically operated sliding door, the door being movable from an open position to a closed position against a strike post and having a leading edge, said safety system comprising:  
electrical means for sensing and being responsive to objects in a predetermined zone at any position of the door, whereby upon detecting an object in said zone said electrical means generates a signal for preventing further closure of the door, said electrical means comprising:  
locating means for locating a leading edge of the door relative to the strike post; and



first transmitting and receiving means positioned at a predetermined angle on the leading edge of the door in cooperation with said locating means for detecting objects in said predetermined zone.

Re. 30,720

## CONTOURED SUPERSONIC NOZZLE

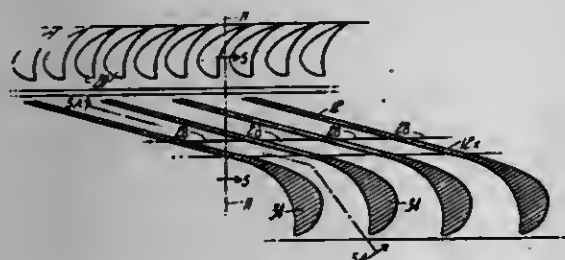
John S. Solre, 1 Lake View Cir., Beaver Lake, Ware, Mass. 01082

Original No. 3,968,935, dated Jul. 13, 1976, Ser. No. 491,392, Jul. 24, 1974. Continuation-in-part of Ser. No. 362,402, May 21, 1973, abandoned. Application for reissue Jul. 12, 1978, Ser. No. 923,921

Int. Cl.<sup>2</sup> B05B 15/00, 17/00

U.S. Cl. 239—289

31 Claims



1. A convergent-divergent nozzle including: a pair of opposed spaced apart side walls; a top wall extending between said side walls; and a bottom wall spaced from said top wall and extending between said side walls; said top and bottom walls and said side walls cooperating to define a flow passageway; and said top and bottom walls being contoured to cooperate with each other to define at least the throat of the nozzle and a divergent section downstream of the throat, said contouring of said top and bottom walls defining a symmetric flow passage therebetween in the direction of flow downstream of said throat.

Re. 30,721

## STABILIZED THERMOPLASTIC POLYESTERURETHANES

Herbert L. Heiss, New Martinsville; Robert P. Yeater, Moundsville, and Russell P. Carter, Jr., New Martinsville, all of W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

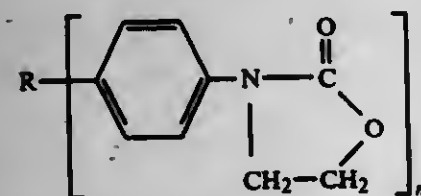
Original No. 4,123,419, dated Oct. 31, 1978, Ser. No. 828,120, Aug. 26, 1977. Application for reissue Jun. 6, 1980, Ser. No. 156,952

Int. Cl.<sup>3</sup> C08K 5/35; C08G 18/82

U.S. Cl. 260—45.8 NZ

4 Claims

10. A polyesterurethane stabilized against hydrolysis and/or processing discoloration by the addition of a stabilizing amount of a 2-oxazolidone-based compound of the formula:



wherein R represents hydrogen or an organic radical which is free of epoxide reactable groups and n represents an integer of from 1 to 3.

Re. 30,722

## TOPPING FOR FROZEN DESSERTS AND METHOD OF MANUFACTURE

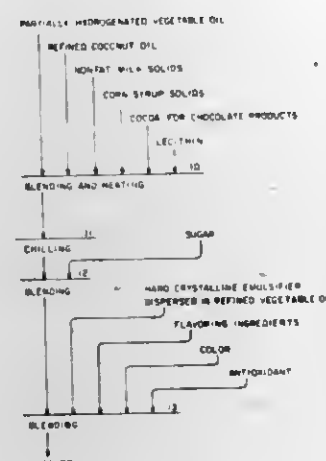
Dale F. Olds, Dublin; Arnold M. Allan, San Francisco, and Charles H. Warren, S. San Francisco, all of Calif., assignors to Patent Technology, Inc., San Francisco, Calif.

Original No. 4,086,370, dated Apr. 25, 1978, Ser. No. 767,291, Feb. 3, 1977. Application for reissue Jan. 2, 1979, Ser. No. 542

Int. Cl.<sup>3</sup> A23G 9/34

U.S. Cl. 426—613

13 Claims



12. An edible coating composition which is a homogeneous blend that is fluid at room temperature and which hardens as a brittle edible shell when applied to a frozen dessert consisting of from 44 to 53% refined edible oil that is substantially entirely liquid at 70° F., from 28 to 38% sugar, from 0 to 9% milk solids, from 4 to 10% corn syrup solids, from 1.8 to 2.4% of a material consisting of crystallized stearine having a melting point of 135°–155° F. and hard crystalline emulsifier selected from the group consisting of monoglycerides, diglycerides and mixtures thereof, from 0.5 to 1.2% moisture, and the remainder flavoring additives.

Re. 30,723

## DISC PHONOGRAPH RECORD PLAYBACK BY LASER GENERATED DIFFRACTION PATTERN

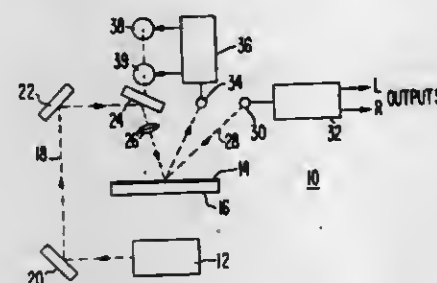
William K. Heine, 100 N. Whisman Rd., Apt. 86, Mountain View, Calif. 94043

Original No. 3,992,593, dated Nov. 16, 1976, Ser. No. 499,771, Aug. 22, 1974. Application for reissue Nov. 13, 1978, Ser. No. 960,257

Int. Cl.<sup>2</sup> H04N 5/76; G11B 7/00

U.S. Cl. 369—18

14 Claims



13. Apparatus for the playback of conventional disc phonograph records comprising a spiral recording groove having intersecting groove walls engraved in the disc surface and where flat land separates adjacent portions of the spiral groove, comprising: (a) a laser for providing a laser beam of light; (b) means for rotating a disc phonograph record to be played at the required rotational velocity; (c) means for directing said laser beam to illuminate the record groove to create an interference-diffraction pattern comprising an arc of light defined by the groove wall which is positionally related to a vector, above and below a middle unmodulated position, and whose maximum-to-minimum positional variation relative to its unmodulated position is proportional to the actual groove wall displacement relative to its unmodulated position and represents the amplitude of the recorded signal; and wherein the rate of change of the positional variation of the arc of light corresponds to the frequency of the recorded signal;

lated position, and whose maximum-to-minimum positional variation relative to its unmodulated position is proportional to the actual groove wall displacement relative to its unmodulated position and represents the amplitude of the recorded signal; and wherein the rate of change of the positional variation of the arc of light corresponds to the frequency of the recorded signal;

(d) tracking means for maintaining said laser beam directed within the record groove as the disc phonograph record rotates;

(e) means positioned to intercept the interference-diffraction pattern for detecting the positional variations in the interference-diffraction pattern created by the reflected laser beam; and

(f) means responsive to said detecting means for converting said positional variations of the interference-diffraction pattern into an electrical sound reproduction of the recording.

Re. 30,724

## LINE PROTECTOR HAVING ARRESTER AND FAIL-SAFE CIRCUIT BYPASSING THE ARRESTER

Milton A. Klayum, Itasca, and Richard H. Greischar, Oak Park, both of Ill., assignors to Reliable Electric Company, Franklin Park, Ill.

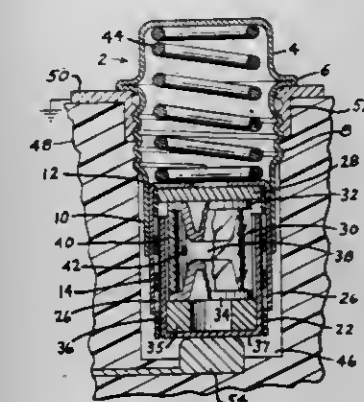
Original No. 3,755,715, dated Aug. 28, 1973, Ser. No. 296,578, Oct. 11, 1972. Application for reissue Jul. 16, 1979, Ser. No. 58,011

Int. Cl.<sup>3</sup> H02H 9/06

U.S. Cl. 361—124

16 Claims

1. A line protector comprising means forming a circuit that comprises in series a fusible solder pellet, spaced electrodes forming an arc gap, first conductor means for connection to a line to be protected, and second conductor means for connection to ground such that an overvoltage surge of short duration at said line will pass current through said series circuit for discharge to ground; said arc gap being sealed in a cold cathode gas tube of which said electrodes form a part; means including said solder pellet normally preventing said first and second conductor means being in contact, and spring means for bringing said first and second conductor means into contact



exteriorly of said tube to bypass said arc gap upon melting of said solder pellet due to an overvoltage surge of longer duration across said series circuit and thereby provide a direct metallic path from said line to ground, said gas tube having a central axis, means forming a secondary arc gap between said first and second conductor means comprising members that are radially outwardly of said axis, and a perforated insulating member between said members and in close contact with each.



## PLANT PATENTS

GRANTED AUGUST 25, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,760

### MINIATURE ROSE PLANT

Verlie W. Wells, Jr., P.O. Box 157, Brighton, Tenn. 18011  
Filed Oct. 2, 1979, Ser. No. 81,135

Int. Cl.<sup>3</sup> A01H 5/00

U.S. Cl. Plt.—7

1 Claim

1. A new and distinct variety of miniature rose plant which is hardy, dwarf, medium-compact, well-branched and bushy, essentially as illustrated and described, characterized by buds and flowers which are double with from sixty to seventy petals arranged very symmetrically in a full, tightly rolled outwardly form with points at the center and remaining tightly rolled outwardly form with points at the center and remaining tight at maturity, being of medium red on upper edge of inside petal with an inside base of white to creamy white; and further characterized by the plant being hardy, reasonably tall for a miniature, and having good growth habits and disease-resistant foliage.

4,761

### EUPHORBIA PLANT

Alfred Stirnadel, Schwarzwaldstr. 80, 6660 Zweibrücken 15,  
Fed. Rep. of Germany

Filed Oct. 16, 1979, Ser. No. 85,426

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1978, 2845840

Int. Cl.<sup>3</sup> A01H 5/00

U.S. Cl. Plt.—68

1 Claim

1. A hybrid plant of the genus *Euphorbia*, substantially as herein shown and described and particularly characterized in that it is the result of crossbreeding between a plant of the *Euphorbia lophogona* species, as the mother plant, and a plant of the *Euphorbia milii* species, as the father plant, and exhibits the following characteristics: succulent stem with 4 to 5 ridges on which small nodes occur at 2 cm intervals bearing up to 10 red-brown thorns 2 cm in length; blossom clusters up to 15 cm in length form at each new leaf axis and bear up to 32 single blossoms each having two salmon pink to luminous salmon red bracts on light green stalks up to 3 mm in thickness; layered configuration of each blossom cluster whereby, as a rule, two new blossoms develop from each single blossom; the alternately arranged spatulate leaves are slightly pulpy, about 15 cm in length and up to 5 cm in width with a short stalk, said plant being further characterized in that, in the appropriate environment, the plant will bloom uninterruptedly.



# PATENTS

GRANTED AUG. 25, 1981

## ERRATA

For	See
CLASS	PATENT NO.
411-508.....	4,285,103
411-345.....	4,285,264
411-501.....	4,285,265
411-190.....	4,285,377
411-258.....	4,285,378
411-085.....	4,285,379
411-103.....	4,285,380
294-032.....	4,285,449
369-071.....	4,285,524
260-809.....	4,285,530
426-327.....	4,285,654
126-438.....	4,285,667
568-422.....	4,285,811



# PATENTS

GRANTED AUGUST 25, 1981

## GENERAL AND MECHANICAL

4,285,067

### SHOULDER PROTECTOR

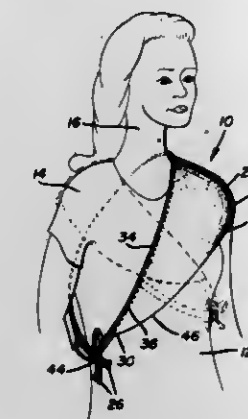
Nel E. David, 924 Lincoln Rd., Miami Beach, Fla. 33139

Filed Mar. 7, 1980, Ser. No. 128,097

Int. Cl.<sup>3</sup> A41D 27/12

U.S. Cl. 2-46

1 Claim



1. A shoulder protector for positioning over either shoulder of a person when engaged in holding or burping an infant, said protector comprising an upwardly exposed layer of liquid absorbing material of paper or cloth and an underlying layer of liquid impervious plastic material with the layers being coextensive and defining an elongated flexible member having a shallow concavely curved inner edge adapted to be disposed adjacent the neck region of a person using the protector and an arcuately curved outer edge depending around the juncture between the shoulder and upper arm area of the person using the protector, means at the ends of the protector for securing the ends thereof around the waist region of the person using the protector opposite to the shoulder region engaged by the protector, said plastic material being thermoplastic, said layers being joined together on one or more edges by a continuous laminated heat seam, said arcuate outer edge including end portions arcuately curved at a much smaller radius than the central portion with the end portions terminating in spaced relation to the ends of the protector thereby defining elongated narrow tie straps integral with the ends of the protector and forming a continuation of the inner edge portion of the flexible member, said means securing the protector adjacent the waist region opposite to the shoulder engaged by the protector including a knot securing the ends of the straps together.

4,285,068

### CAMOUFLAGE HEADWEAR

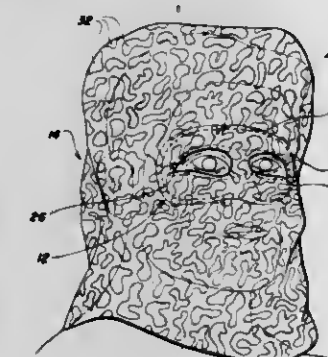
Daniel L. Ross, 3370 Highway A, Festus, Mo. 63028

Filed Mar. 6, 1980, Ser. No. 127,975

Int. Cl.<sup>3</sup> A42B 1/04

U.S. Cl. 2-202

5 Claims



1. Camouflage headwear for use while hunting wild game or for use while observing or photographing them, said headwear comprising a mask having a pair of eyeholes and a band for

encircling the wearer's head and attaching said mask thereto and for holding the eyeholes in said mask in registry with the wearer's eyes, said eyeholes leaving only the wearer's eyes uncovered whereby the area around the wearer's eyes which is left uncamouflaged is minimized so that game is less likely to perceive the wearer, said mask being a plate preshaped to conform to the wearer's face and fit snugly against his face so that said eyeholes do not interfere with the wearer's peripheral vision, a bag with a rounded bottom formed of netting having patches of preselected colors and having a pair of eyeholes, said bag adapted to fit loosely over the wearer's head and drape down over his neck, and means for attaching said mask on the inside of said bag such that the eyeholes in the mask are aligned with the eyeholes in the bag.

4,285,069

### GARTER BELT

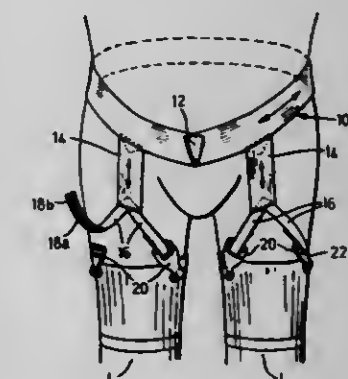
Gwendolyn L. Hall, 60 Redcar Ave., Islington, Ontario, Canada (M9B 1K1)

Filed Jan. 6, 1979, Ser. No. 46,035

Int. Cl.<sup>3</sup> A41F 9/00

U.S. Cl. 2-314

6 Claims



1. Garter belt for athletes, comprising: a band of material designed to extend about the body of the wearer, above the hips and around the back of the waist and comprising a forward portion and a rearward portion, to be worn, respectively, at the front and rear of the body; said band having free ends sewn together in overlapping relationship substantially at the centre of the forward portion, said ends, in said overlapping relationship being sewn so that they define for the band, at such overlap, a shallow upwardly directed V, whereby the forward portion of the band rides lower on the body than the rearward portion, the material of said band being stretchable in at least the direction extending about the body, an upper strap attached at its upper end to the forward portion of each band on each side of and spaced from said V, each said upper strap being also spaced from the adjacent rearward portion, said upper strap being so attached at its upper end to depend downwardly from said band, two lower straps attached to and depending from the lower end of each upper strap, means for adjusting the length of each of said lower straps, a fastener designed to be located at the lower end of the adjusted length of each of said lower straps.







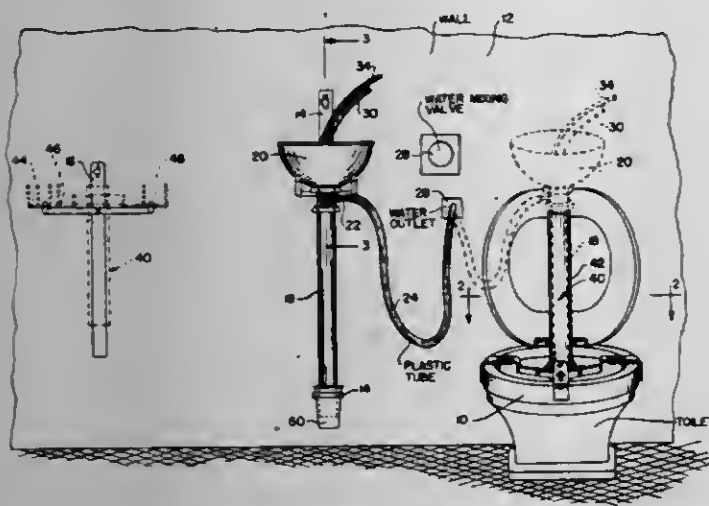
said moisture absorbent pad is disposed between said open grille work and said solid base of said mat cover.

4,285,076

**FLUSHING APPARATUS FOR ILEOSTOMY BAG**  
Samuel R. Dickstein, 705 S. Elk St., Hemet, Calif. 92343  
Filed Aug. 1, 1977, Ser. No. 820,427  
Int. Cl.<sup>3</sup> E03D 11/00

U.S. Cl. 4-341

6 Claims



1. Apparatus for flushing the contents of an ileostomy bag into a toilet, said apparatus including in combination: an elongated tubular member; an open-topped funnel member attached to the upper end of said tubular member; first conduit means extending into the funnel member and upwardly through the open top thereof to be inserted into the mouth of an ileostomy bag held over the top of said funnel member; a second conduit means for introducing pressurized liquid from a pressurized liquid source through said first conduit means and into the interior of the ileostomy bag held over said funnel member to flush the contents of the ileostomy bag into the funnel member and through the tubular member; and bracket means for supporting the elongated tubular member and the attached funnel member over a toilet.

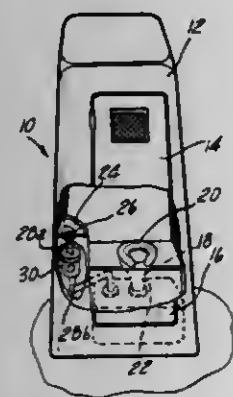
4,285,077

**APPARATUS FOR EXTRACTING PROTEINS FROM URINE**

Earl J. Braxton, 46731 Shelby Rd., Utica, Mich. 48067  
Continuation-in-part of Ser. No. 901,248, Apr. 28, 1978, abandoned. This application Sep. 19, 1979, Ser. No. 76,894  
Int. Cl.<sup>3</sup> A47K 4/00

U.S. Cl. 4-462

8 Claims



1. In a flushless toilet of the type having a urinal, a holding tank containing an odor preventing chemical solution, and a gravity flow conduit connecting the urinal to the holding tank, a filter body containing an adsorbent for at least certain trace constituents of urine removably supported in the conduit intermediate the urinal and the holding tank so that urine flowing from the urinal to the holding tank contacts the adsorbent allowing urine voided into the urinal to pass through the con-

duit and the filter body to the holding tank under the force of gravity, the urine thereby contacting the adsorbent so that at least a portion of the trace constituents adhere to the adsorbent from which they may be extracted upon removal of the filter body from the toilet.

6. A flushless portable toilet incorporating means for extracting commercially useful constituents from the urine voided into the toilet comprising: a unitary enclosed shelter having a door; a urinal supported within said shelter; a holding tank supported in said shelter at a level below the urinal, said holding tank being adapted to retain a deodorizing chemical solution for the urine; a conduit connecting the urinal to the holding tank; container means formed as part of the conduit intermediate the urinal and the holding tank for retaining a filter body; and a filter body removably disposed in the container means, the filter body constituting an adsorbent for at least certain trace constituents of urine allowing urine voided into the urinal to pass through the conduit and the filter body to the holding tank under the force of gravity, the urine thereby contacting the adsorbent so that at least a portion of the trace constituents adhere to the adsorbent from which they may be extracted upon removal of the filter body from said container means.

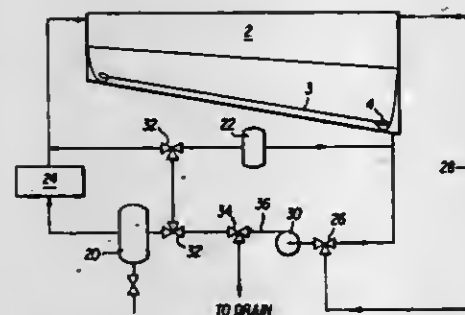
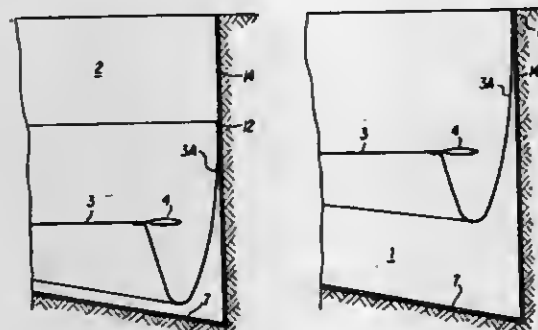
4,285,078

**AUTOMATIC SWIMMING POOL COVER**

Roger J. Batstone, Germantown, Md., assignor to French Masterpieces, Inc., Germantown, Md.  
Division of Ser. No. 30,915, Apr. 17, 1979, Pat. No. 4,236,258.  
This application May 7, 1980, Ser. No. 147,387  
Int. Cl.<sup>3</sup> A47K 3/164; E04H 3/18, 3/16

U.S. Cl. 4-661

2 Claims



1. A method for containing and controlling the hydrostatic pressure on a liquid storage container having a cover, a membrane connected to a portion of said storage container, and a control member interconnecting said cover and said membrane which comprises:

feeding liquid to and discharging liquid from opposite sides of said cover and membrane which form a liquid storage compartment and a liquid balancing compartment; pressurizing said control member interconnecting said cover and said membrane so as to control the shape and dimension of said cover; and controlling the feeding of liquid to and discharge of liquid from said liquid balancing compartment so as to maintain hydrostatic pressure on said storage container within a predetermined range of values.

4,285,079

**APPARATUS FOR RAISING AND LOWERING THE MATTRESS OF A CRIB**

Ernest C. Hillman, 1277 S. Adams St., Glendale, Calif. 91205  
Filed Jun. 18, 1979, Ser. No. 49,543  
Int. Cl.<sup>3</sup> A61G 7/00; A47C 31/00; A47D 7/01  
U.S. Cl. 5-84

12 Claims



1. An attachment for use with a crib having a main frame including a pair of opposing ends and a pair of sides connecting said ends, a mattress support including a spring frame and a plurality of springs, and a mattress carried by said mattress support, said attachment comprising:

a plurality of brackets in which said spring frame can be received, each of said brackets including a bottom plate and inner and outer walls that define a channel so that it has two sections at right angles, to each other to receive a corner of said spring frame, said inner wall having two separate parts that each terminate at a distance from the intersection of said channel sections, whereby said brackets can accommodate a spring frame having round corners;

a plurality of flexible hoist members for connection to said brackets; and winding means connected to said hoist members for raising and lowering said mattress support.

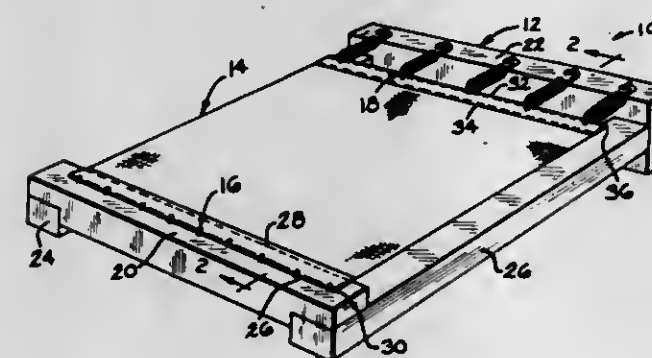
4,285,080

**SPRING DECK FOR SEATING STRUCTURES**

John P. Kitchen, Georgetown, and Neville L. Riddle, Lexington, both of Ky., assignors to Hoover Universal, Inc., Saline, Mich.  
Filed Nov. 19, 1979, Ser. No. 95,459  
Int. Cl.<sup>3</sup> A47C 17/13

U.S. Cl. 5-186 R

3 Claims



1. A spring deck for supporting padding material in seating structures, said deck comprising an open rigid frame having generally front and rear rails, a sheet substantially covering said frame and having opposite front and rear edges, said sheet being constructed principally of woven, heat treated polypropylene fibers, and first means fixing one edge of said sheet to one rail along the length thereof and second means movably connecting the opposite edge of said sheet to the other rail along the length thereof so as to maintain said sheet in a substantially taut position as it substantially covers said frame.

4,285,081

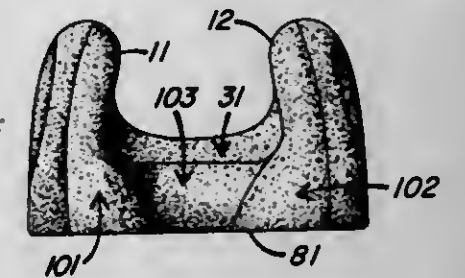
**DEVICE FOR RECUMBENCY OF THE HEAD AND NECK**  
George W. E. Price, 4 Longfellow Pl., 06008, Boston, Mass. 02114

Filed Oct. 22, 1979, Ser. No. 86,652

Int. Cl.<sup>3</sup> A47G 9/00

U.S. Cl. 5-434

9 Claims



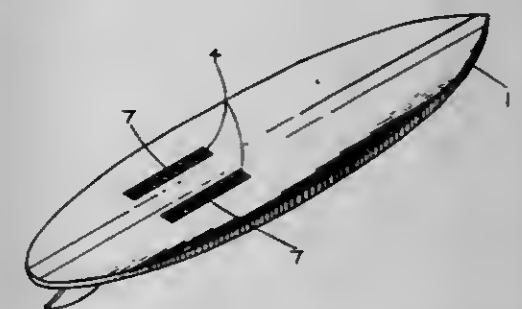
1. A device for recumbency of the head and neck, such device comprising a supporting surface having a generally concave shape with respect to a vertical axis of curvature that corresponds approximately to the central vertebral axis of the neck so that (a) the generally concave shape has left and right halves that are symmetrical about the line of their junction and also so that (b) symmetrically opposed areas in the vicinity of non-adjacent edges of each half exert gentle pressure in the vicinity of the mastoid processes of the head, wherein the surface also has a generally convex shape with respect to a horizontal axis, such axis intersecting the vertical axis of curvature, so that the generally convex shape conforms generally to at least the upper portion of the nape of the neck and the lower portion of the occipital bone of the head.

4,285,082

**SURFBOARD SAFETY AND CONTROL ACCESSORY**

William G. Cox, 5638 Montezuma Rd., San Diego, Calif. 92115  
Filed Aug. 27, 1979, Ser. No. 69,817  
Int. Cl.<sup>3</sup> A63C 5/00, 9/00, 11/00, 15/00  
U.S. Cl. 9-310 E

9 Claims

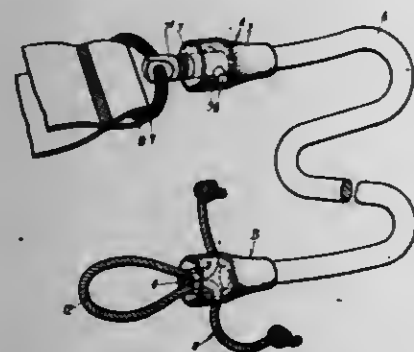


1. In combination with a water craft, or the like, designed for supporting a rider, a safety device which comprises: a first element of a releasable fastening means permanently installed on the riding surface of the craft; a second element of said releasable fastening means permanently installed on the outside surface of a garment worn by said rider; and said fastening means comprising cooperating strips of woven fabric having interconnecting surfaces, said first element comprising a mesh made of the same material as the top portion of the craft and including means for fastening said mesh to the undersurface of said strip such that said mesh is imbedded in the top surface of said craft.



# 4,285,083 LEG ROPE

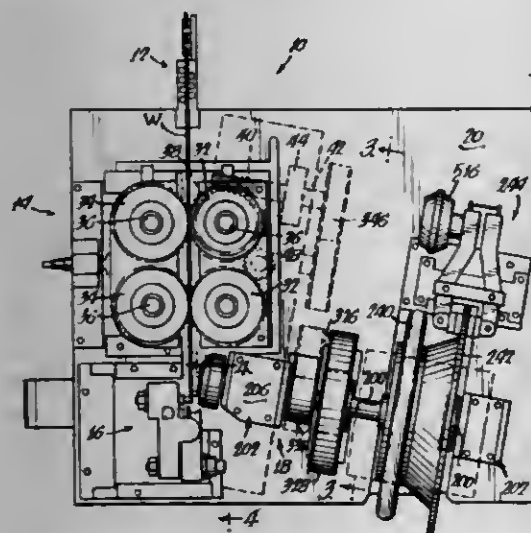
Jonathan H. Wilson, Flinders, Australia, assignor to Flinders Surfing Co. Pty. Ltd., Flinders, Australia  
Filed Dec. 20, 1979, Ser. No. 105,616  
Claims priority, application Australia, Jan. 3, 1979, PD7264  
Int. Cl.<sup>3</sup> A63C 15/05  
U.S. Cl. 9—310 E 9 Claims



1. A leg rope for connecting a surfboard to a surfer comprising: a flexible cord provided at each end with an end piece, each one said end pieces having a body connected to said cord and provided with an axial inwardly extending opening and a transverse opening passing through said body substantially at right angles to the axial opening and connecting with the axial opening, a swivel having an inner portion accommodated in the axial opening in one of the end pieces and an outer portion projecting beyond the said one of the end pieces whereby the leg rope can be connected to a surfer's ankle band by means of a swivel connection, a pin inserted through the transverse opening in the said one of the end pieces and through a transverse opening in the said inner portion of the swivel in alignment with the said transverse opening in the said one of the end pieces the thereby retain the swivel in position in the end piece, and connecting means associated with the other end piece to adjustably connect the leg rope to the surfboard, the transverse openings in the end pieces being located beyond the respective ends of the cord, said one of the end pieces being connected to the cord otherwise than by means of the said pin and the said other end piece being connected to the cord otherwise than by means of the said connecting means.

# 4,285,084 METHOD AND APPARATUS FOR MAKING LOCK WASHERS

Joseph M. Brady, Pennsauken, and Harold S. Peterson, Medford Lakes, both of N.J., assignors to MSL Industries, Inc., Lincolnwood, Ill.  
Filed Mar. 23, 1979, Ser. No. 22,958  
Int. Cl.<sup>3</sup> B21D 53/20  
U.S. Cl. 10—73 17 Claims

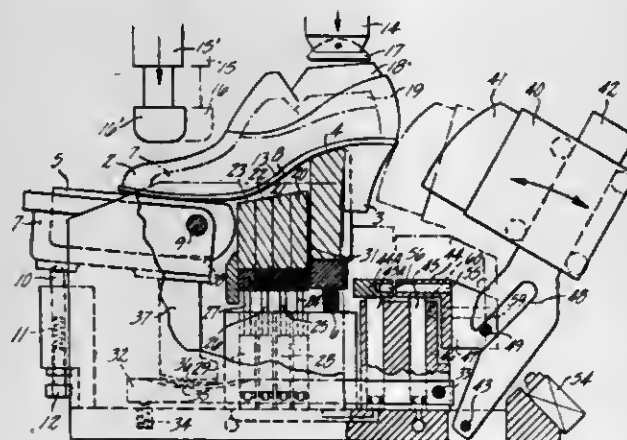


1. A method of producing split ring lock washers from an

endless supply of wire which includes continuously feeding said wire towards a coiling device to transform said wire into a helical coil and separating successive end convolutions of said coil by a continuously rotating cutter, the improvement of coordinating the feed speed of said wire with the rotational speed of said cutter for a given lock washer diameter, varying the rotational speed of said cutter while maintaining a synchronized relation between said feed speed and said cutter speed to maintain said given lock washer diameter, said cutter being rotated by a variable speed motor, said feed speed of said wire being varied by a transmission unit driven by said motor, said cutter being rotated about a fixed axis which is angularly offset from an axis of said helical coil by an angle less than 90 degrees, said coiling device including a coil forming roll and a fixed arbor defining the axis for said helical coil with the cutter axis being angularly offset less than 45 degrees, and moving the axis of said arbor axially and transversely to adjust the position of said arbor with respect to the fixed axis of said cutter while maintaining the angular offset.

# 4,285,085 CEMENTING PRESS

Werner Bergstrasser, Rodermark, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.  
Filed Apr. 10, 1980, Ser. No. 138,760  
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916308  
Int. Cl.<sup>3</sup> A43D 63/00  
U.S. Cl. 12—16.4 5 Claims

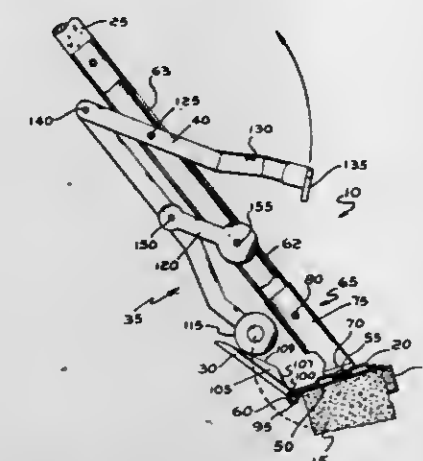


1. A cementing press for cement attaching of outsoles to lasted footwear from their toe to the lower end of the heel breast by using a counter support for applying pressure in the waist region whereby a heel support is arranged to take pressure exerted on the heel breast during cement attaching, said heel support being arranged on a lever pivoted around a fulcrum located transversely to the longitudinal direction of the shoe and the side of the heel, said heel support being further provided with a lifting mechanism for a heel abutment receivable of a catch, said catch being engagable of an inclined slot in said lever so that the lever and the heel support are drawn up against the heel by the lifting motion of the heel abutment, the improvement which comprises;

said heel abutment being divided into a front portion facing the waist and rear portion facing the heel support whereby the rear heel abutment portion facilitates the fitting of said catch and the front abutment portion and the rear abutment portion are provided with lifting mechanisms suitable for separate coupling.

# 4,285,086 SELF-WRINGING MOP

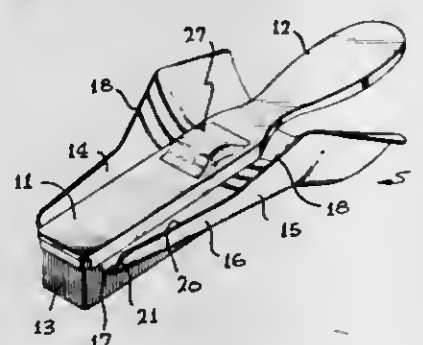
Albert J. Whyte, West Springfield, Mass., assignor to Standex Corporation, Salem, N.H.  
Filed Nov. 5, 1979, Ser. No. 91,420  
Int. Cl.<sup>3</sup> A47L 13/146  
U.S. Cl. 15—119 A 12 Claims



1. Self-wringing mop comprising a compressible mop head fixed on the end of an elongated handle, a pressure plate pivotally into compressive engagement with said mop head, an operating lever pivotally mounted on said handle, a cam arm pivotally attached at an end thereof to said operating lever such that pivoting of said operating lever drives said cam arm toward said mop head, and a roller cam carried by said cam arm and movable reciprocally over a raised follower on the outer surface of said pressure plate while pivotally urging said pressure plate into compressive engagement with said mop head.

# 4,285,087 HAIRBRUSH SHIELD

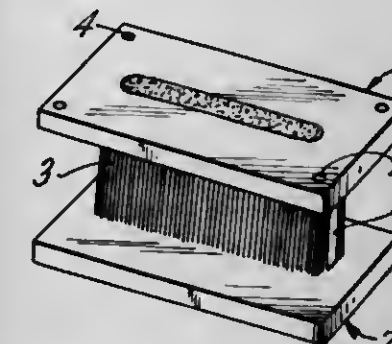
Giuseppe Saponetti, 12731 Victory Blvd., North Hollywood, Calif. 91606  
Filed Jan. 21, 1980, Ser. No. 114,107  
Int. Cl.<sup>3</sup> A46B 17/00  
U.S. Cl. 15—159 R 7 Claims



1. A hairbrush shield comprising: an elongated hairbrush having a handle at one end and body at the other end incorporating downwardly depending bristles; and a contained shield outwardly projecting from opposite sides of said body and having a fore-and-aft trough provided immediately adjacent each side of said body so as to develop an upwardly sweep terminating in an outer edge which diverges upwardly and outwardly from the forward end of said hairbrush rearwardly towards said handle.

# 4,285,088 BRUSH AND PROCESS FOR ITS MANUFACTURE

Jorge V. Ripstein, Av. Cuauhtemoc 60 Desp. 304, Mexico City, Mexico (7)  
Filed Dec. 4, 1978, Ser. No. 966,024  
Int. Cl.<sup>3</sup> A46B 1/00 9 Claims



1. A process for manufacturing a body of fibers for use in a brush for applying a coating liquid to a surface, which process comprises

- inserting lengthwise a plurality of fibers into the elongated opening of a plate such that said fibers are tightly held within said opening;
- separating said fibers into a plurality of curtains by inserting separation means into the end of said fibers, said end being opposite from the end which is inserted in said plate, said separation means causing said body of fibers to be separated by at least one space or passage between said curtains of fibers, said separation distance being such that substantial dripping of said coating liquid does not take place;
- maintaining said separation means within said fibers while applying to the ends of said fibers which are at the base of said plate means for adhering substantially all of said fibers into a body of fibers;
- removing said separation means from said body of fibers, and
- removing said body of fibers from said plate, such that said body of fibers contains at least one space or passage between said curtains of fibers.

# 4,285,089 WINDSHIELD WASHER OF MOTOR VEHICLE

Kotchi Takahashi, Yokohama, and Yoshiaki Kato, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan  
Filed May 18, 1979, Ser. No. 40,307  
Claims priority, application Japan, May 24, 1978, 53-60921  
Int. Cl.<sup>3</sup> B60S 1/48 11 Claims

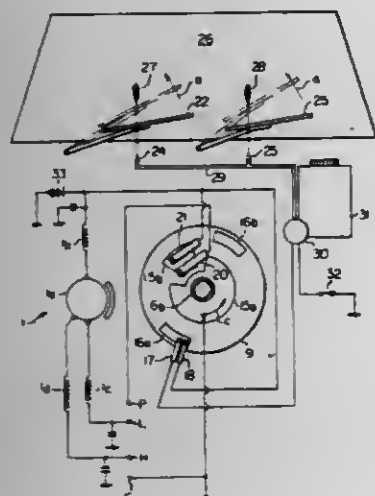
U.S. Cl. 15—250.02 11 Claims

1. A system for use in a motor vehicle having a windshield, comprising:
- a first windshield wiper having a first wiper blade mounted for oscillation between first and second end positions in first and second opposite directions;
  - a first windshield washer having a first nozzle which is fluidly connected to an electrically operated first washer pump for ejecting washer liquid through the first nozzle when supplied with electric current;
  - a first contact base member rotatable in accordance with the oscillation movement of said wiper blade;
  - a first stationary contact electrically connected to said first washer pump;
  - first and second movable contacts formed on said first contact base member, each of said movable contacts being contactable with said first stationary contact to supply electric current to said first washer pump through said first stationary contact;
  - said first movable contact being formed to be contactable with said stationary contact within a first range in which



said wiper blade moves in the first direction from the first position to a third position which is immediately in front of the position in which said first wiper blade is in the path of washer liquid being ejected from said first nozzle, and said second movable contact being formed to be contactable with said stationary contact within a second range in which said wiper blade moves in the second direction from the second position to a fourth position which is immediately in front of the position in which said first washer blade is in the path of the washer liquid being ejected from said nozzle;

- a second windshield wiper having a second wiper blade mounted for oscillation between first and second positions in first and second opposite directions, said second wiper blade being different from said first wiper blade in wiping range over the windshield and moving speed;
- a second windshield washer having a second nozzle which is fluidly connected to an electrically operated second washer pump for ejecting washer liquid through a second nozzle when supplied with electric current;
- a second contact base member rotatable with said first contact base member;
- a second stationary contact electrically connected to said second washer pump;



third and fourth movable contacts formed on said second contact base member, each of said third and fourth movable contacts being contactable with said second stationary contact to supply electric current to said second washer pump through said stationary contact, said third movable contact being different in size from said first stationary contact, said fourth contact being different in size from said second movable contact;

said third movable contact being formed to be contactable with said second stationary contact within a third range in which said second wiper blade moves in the first direction from the first position to a third position which is immediately in front of the position in which said second wiper blade is in the path of washer liquid being ejected from said second nozzle, and said fourth movable contact being formed to be contactable with said second stationary contact within a fourth range in which said second wiper blade moves in the second direction from the second position to a fourth position which is immediately in front of the position in which said second washer blade is in the path of washer liquid being ejected from said second nozzle.

#### 4,285,090 CLEANING DEVICE FOR COLD PRESSURE FUSING ROLLER

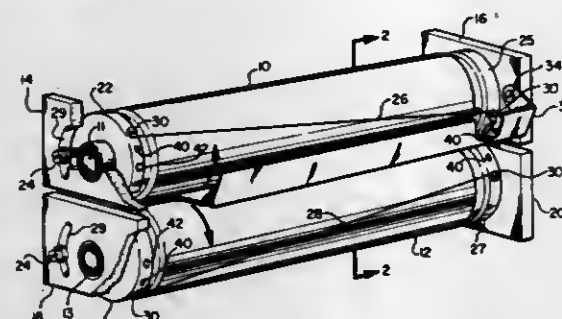
Walter J. Jurkowski, Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 21, 1979, Ser. No. 96,702

Int. Cl.<sup>3</sup> G03G 21/00

U.S. Cl. 15—256.51

10 Claims



1. In combination, a cylindrical roller, a section of wire helically strung across the cylindrical surface of said roller for removing particles from the cylindrical surface of said roller, and a pair of discs flanking the ends of said roller for providing continuous linear contact between the section of wire and said rollers, said discs having a diameter less than the diameter of said roller, and wherein said section of wire is fixedly secured to the peripheral surfaces of said discs.

#### 4,285,091 DESOLDERING SYSTEM FOR USE WITH A SOLDERING INSTRUMENT

William S. Fortune, 14250 Dearborn St., Panorama City, Calif. 91402

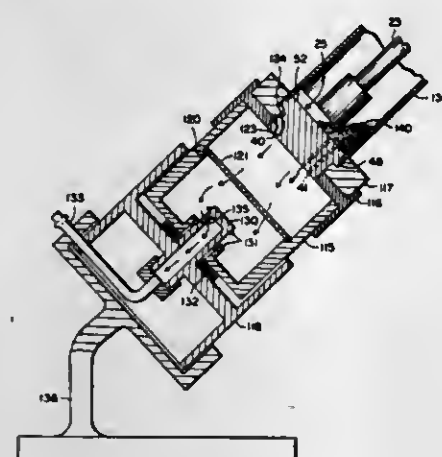
Division of Ser. No. 875,569, Feb. 2, 1978, Pat. No. 4,187,973.

This application Feb. 11, 1980, Ser. No. 120,568

Int. Cl.<sup>3</sup> A47L 5/38

U.S. Cl. 15—310

3 Claims



1. A solder extractor for a desoldering attachment of the type having at least one solder removing aperture in a desoldering tip, said extractor comprising:

- (a) a base;
- (b) a cylinder slidable in said base;
- (c) a filter screen disposed in the interior of said cylinder;
- (d) said base having a vacuum line extending therethrough having an opening;
- (e) said cylinder having a centrally extending boss surrounding said opening of said vacuum line;
- (f) means normally sealing said vacuum line against said boss of said cylinder;
- (g) detent means between said base and said cylinder for maintaining said cylinder in a position sealing off the opening in said vacuum line;

- (h) spring means biasing said cylinder against said base towards said detent means; and
- (i) an insert for said cylinder for receiving a particular type of desoldering tip, whereby when said insert is closed by said tip and when said tip is pushed against the spring means, said vacuum line is uncovered, thereby to pull said cylinder inwardly against the action of said spring means.

#### 4,285,092 BOTTOM PLATE FOR A CARPET POWER CLEANER

Hans Schmitz, Wuppertal, Fed. Rep. of Germany, assignor to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

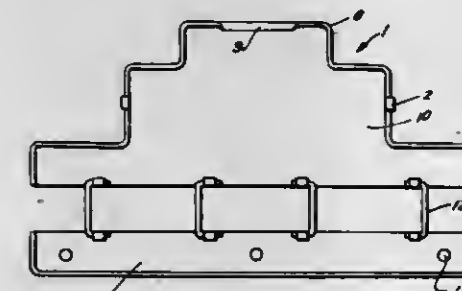
Filed Oct. 17, 1979, Ser. No. 85,514

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1978, 7831493[U]

Int. Cl.<sup>3</sup> A47L 9/06

U.S. Cl. 15—378

9 Claims



9. A carpet power cleaner, comprising a housing; a brush arranged in the housing; and bottom plate having a body part including two portions which are spaced from one another, one of said portions being attached to said housing, whereas the other of said portions is provided with a detent which is detachably engageable in said housing, said body part also including a plurality of transverse bar members extending between and connecting said two portions of said body part with one another and guiding the brush, said transverse members being pivotally connected to said body part, so that said other portion of said body part after being disengaged from said housing can be turned together with said transverse member relative to said one portion of said body part to allow removal of said brush without detachment of said one portion and thereby without detachment of the whole body part from said housing.

#### 4,285,093 CARPET HOLDER BASEBOARD

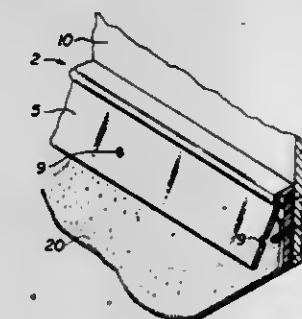
Jane I. Kandin, 1288 Laurel Hill Dr., San Mateo, Calif. 94402

Filed Mar. 19, 1979, Ser. No. 21,849

Int. Cl.<sup>3</sup> A47G 27/04

U.S. Cl. 16—17

6 Claims



1. A fabric fastener for securing a piece of fabric about an area of a room comprising:  
a fixed support member to be attached to an area of the wall;  
a freely detachable arm hingedly connected to the upper portion of said fixed support member;  
means extending outwardly through the surface of said fixed support member for securely connecting said freely de-

tachable arm of said fastener to said fixed support member to securely position said detachable arm longitudinally adjacent the front surface of said fixed support member

#### 4,285,094 DOOR CLOSING APPARATUS

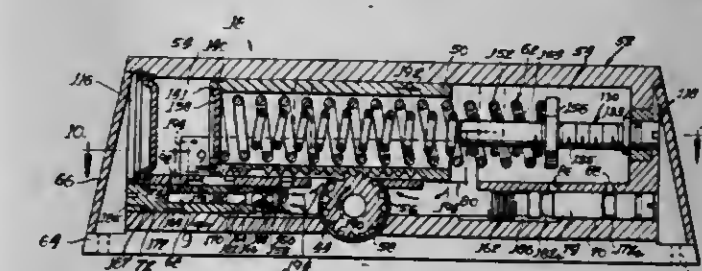
Nelson Levings, Jr., 8101 Willow Dr., Palos Hills, Ill. 60465

Filed Aug. 11, 1978, Ser. No. 932,773

Int. Cl.<sup>3</sup> E05F 3/10

U.S. Cl. 16—52

13 Claims



13. A door closing apparatus comprising in combination: a housing comprising a casting member having a cylinder cored therein and a bore cored therethrough substantially perpendicular with said cylinder and intersecting said cylinder over a predetermined fractional portion of the volume thereof, a cylindrical piston mounted for reciprocal motion in said cylinder, a pinion rotatably mounted in said bore, cooperating teeth on said piston and said pinion engaged through said intersecting portions of said bore and cylinder for effecting reciprocation and rotation of said piston and pinion in unison, a bushing member interposed between said pinion and said bore and having a window disposed for permitting said engagement between said cooperating teeth, linkage means for joining said door closing apparatus between a door and a door frame and including first and second elongate arm members, said first arm member having driveshaft engaging said pinion and said second arm member having first and second ends, means in said first end defining substantially a ball joint for pivotally engaging an end of said first arm member opposite said drive shaft means, means defining a second ball joint in said second end for pivotal engagement with a mounting bracket to complete said joining between said door and door frame, means defining a closed end of said piston for dividing said cylinder into portions of varying volume in accordance with the reciprocation of said piston, and biasing means for urging said piston in a predetermined direction and comprising a pair of coaxially disposed compression spring members disposed in said cylinder and an axially movable stop member abutting one end of said pair of spring members, an opposite end of said pair of spring members abutting said closed end of said piston, said stop member effecting a desired amount of compression of first and second spring members in accordance with the axial position thereof, said housing being adapted for retaining a predetermined amount of fluid such as hydraulic oil therein, said door closing apparatus further including fluid flow control means comprising a plurality of port means and channel means in said housing, and valve means cooperating with said port means and channel means for selectively controlling fluid flow between opposite sides of said piston in response to opening and closing of said door, respectively.



4,285,095

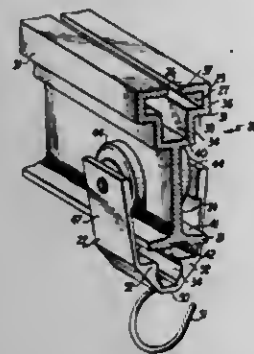
**CHANNEL STRUT FOR STAGE EQUIPMENT SUPPORT SYSTEM**

Richard W. Janson, Box 6090, Canton, Ohio 44706

Continuation-in-part of Ser. No. 855,256, Nov. 28, 1977, Pat. No. 4,166,306, which is a continuation of Ser. No. 734,106, Oct. 20, 1976, which is a division of Ser. No. 617,508, Sep. 29, 1975, Pat. No. 4,014,071. This application Aug. 31, 1979, Ser. No. 71,586

Int. Cl.<sup>3</sup> A47M 15/00

U.S. Cl. 16—94 R



1. A traverse rod support strut in combination with a support member, said strut comprising an upper support portion which defines a cruciform-shaped groove and a lower portion which defines a like cruciform-shaped groove, said strut being symmetrically disposed on either side of a vertically disposed plane parallel to its length and of a horizontally disposed plane parallel to its length and having a substantially uniform cross-section within a further vertical plane perpendicular to the first-mentioned plane, said support member comprising a cruciform-shaped part adapted to mate with and be slidably received in either said groove and a connection part integral with and extending from said cruciform-shaped part parallel to said horizontally disposed plane and closely adjacent the outer surface of said support portion in which it is received, a ceiling above said strut, hanger means depending from said ceiling received by said support member providing support for said strut.

4,285,096

**INDESTRUCTIBLE HANDLE FOR MOP OR BROOM AND METHOD OF MAKING SAME**

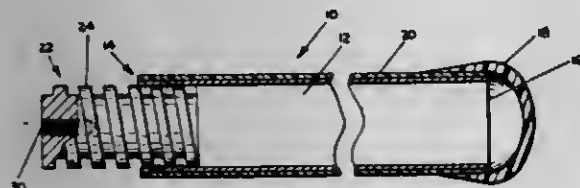
Martin H. Swain, Wyoming, Mich., assignor to Theron A. Van Putten, Grand Rapids, Mich.

Filed Oct. 2, 1978, Ser. No. 947,617

Int. Cl.<sup>3</sup> A47B 95/02

U.S. Cl. 16—114 R

9 Claims



1. A durable handle for a push broom or mop or the like comprising:  
an elongated tubular handle member formed of weldable metal having an open outer end; and  
a cylindrical plug formed of weldable metal mounted rigidly in the open outer end of the handle member, the metal plug including external threads that are shaped so as to fit the internal threads of a standard push broom head, the metal plug further having a threaded internal opening in the outer end thereof such that the internally threaded opening fits an externally threaded mounting stud on a standard mop head, the plug being spot welded in the end of the tube.

4,285,097

**STRUCTURE FOR FIXING A KNOB TO A PART TO BE OPERATED THROUGH THE KNOB**

Shiro Kondo, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 877,092, Feb. 13, 1978, abandoned.

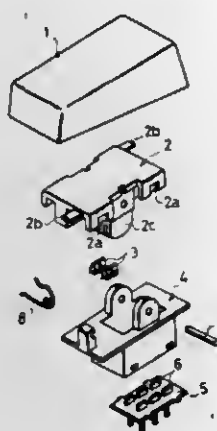
This application Oct. 11, 1979, Ser. No. 83,678

Claims priority, application Japan, Feb. 15, 1977, 52/17075

Int. Cl.<sup>3</sup> E05B 1/00

U.S. Cl. 16—121

2 Claims



1. In a structure for fixing a generally cap-shaped knob over a part to be operated by said knob, including at least one set of co-engaging structures formed respectively on said knob and said part, each said set of co-engaging structures being constituted by a concavity and a corresponding convexity formed on the inner surface of said knob and a facing outer surface of said part, respectively, at locations thereon spaced downwardly from the upper surface thereof, the improvement comprising two elastic tabs respectively extending oppositely from opposing outer surfaces of said part, said tabs each extending to a height slightly above the upper surface of said part and extending to the inner surface of said knob whereby said knob can be fitted over said part with said co-engaging structures properly aligned by said tabs engaging said inner surfaces of said knob and, when said structures are co-engaged, said tabs will urge said structures into firm engagement.

4,285,098

**DOOR HINGE HAVING TORSION BAR HOLD-OPEN STRUCTURE**

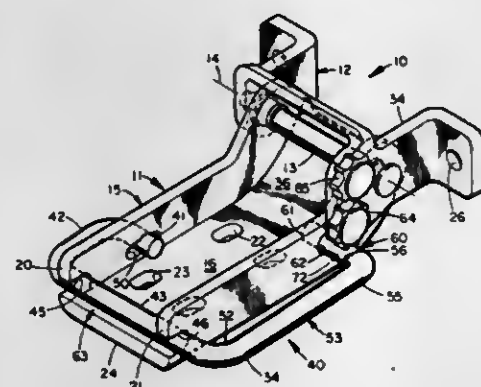
Ralph R. Hicks, Grand Prairie, and Guadalupe J. Martinez, Fort Worth, both of Tex., assignors to Vnught Corporation, Dallas, Tex.

Filed Apr. 30, 1979, Ser. No. 34,873

Int. Cl.<sup>3</sup> E05D 11/10

U.S. Cl. 16—145

20 Claims



1. A door hinge and check structure, comprising:  
first and second hinge members;  
means interconnecting the members for permitting mutual pivotal movement of the members about a hinge axis, the first hinge member being adapted to be secured to a sup-

porting structure, the second hinge member being adapted to be secured to a door which is swingable about the hinge axis relative to the supporting structure;

a torsion bar structure including an elongated torsional section having first and second end portions;

means anchoring the first end portion of the torsional section to the first hinge member at a portion of the first hinge member spaced from the hinge axis;

the torsion bar structure further comprising a lever arm extending from the second end portion of the torsional section and laterally of the torsional section toward a portion of the first hinge member spaced along the first hinge member from the anchoring means in a direction toward the hinge axis, the lever arm having a distal end portion and having a detent portion spaced between the lever arm distal end portion and the second end portion of the torsional section;

the first hinge member further having means for receiving said lever arm distal end portion, for preventing substantial lateral displacement of the distal end portion of the lever arm and constraining the lever arm against lateral displacement at its distal end portion beyond a predetermined position relative to the first hinge member, and for permitting pivotal movement of the lever arm about its distal end portion in a direction in which torsional stress is imparted to the torsional section;

striker means carried by the second hinge member in alignment with the detent portion of the lever arm and at a radial distance from the hinge axis at which the striker means is in engagement with said detent portion upon the second hinge member being pivoted upon the hinge axis through a predetermined positional range relative to the first hinge member.

4,285,099

**SQUID PROCESSING MACHINE**

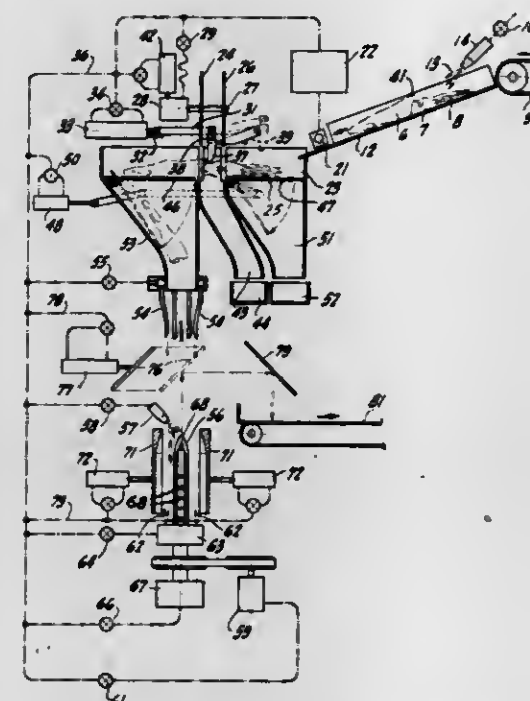
Rajinder P. Singh, and Daniel E. Brown, both of Davis, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 10, 1979, Ser. No. 65,538

Int. Cl.<sup>3</sup> A22C 25/14

U.S. Cl. 17—53

18 Claims



1. A squid processing machine for a squid having a body with an intermediate eye portion, an end tentacle portion and an end envelope portion having a skin with a circumferential rim comprising a frame; a substantially horizontal alignment trough on said frame and having a movable side wall; a feeding table on said frame directing a squid thereon into said alignment trough; means on said frame for engaging said circumferential rim on a squid in said alignment trough and moving said

squid rim into a predetermined longitudinal position in said trough; a pair of knives on said frame movable across said trough on opposite sides of said predetermined longitudinal position to sever a squid therein into a separate intermediate eye portion, an end tentacle portion and an end envelope portion; means for moving said side wall to release said separate squid portions from said trough; means for conducting said tentacle portion from said trough; a hollow peg; means for mounting said peg on said frame for rotation about an upright axis; means for directing said end envelope portion from said alignment trough into a substantially upright position with the severed end thereof down and in alignment with said peg; means for urging said substantially upright end envelope portion into impalement on said peg; means for rotating said peg and said end envelope portion therewith; means for projecting a water jet against said rotating end envelope portion to remove said skin therefrom; means for discharging said skinless end envelope portion from impalement on said peg.

4,285,100

**APPARATUS FOR STRETCHING A NON-WOVEN WEB OR AN ORIENTABLE POLYMERIC MATERIAL**

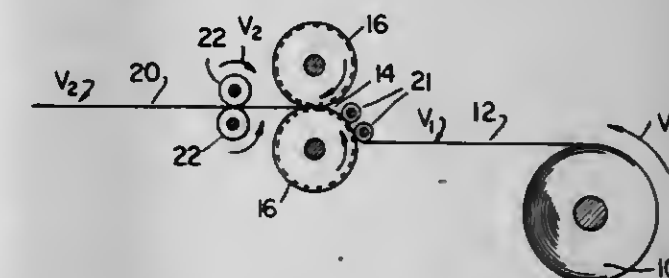
Eckhard C. A. Schwarz, Neenah, Wis., assignor to Blax Fiber-film Corporation, Neenah, Wis.

Division of Ser. No. 900,720, Apr. 27, 1978, Pat. No. 4,223,059, which is a continuation of Ser. No. 563,623, Mar. 31, 1975, abandoned. This application Jan. 11, 1980, Ser. No. 111,365

Int. Cl.<sup>3</sup> B29D 7/24

U.S. Cl. 19—161.1

4 Claims



1. An apparatus for bi-axially stretching a non-woven web of orientable polymeric material which comprises:

- a first station means for stretching said web in a first direction and including a first set of interdigitating rollers formed with grooves having a distance therebetween of less than one millimeter times the web basis weight in grams per square meter, said first set of interdigitating rollers stretching incremental portions of said web in a first direction;
- first regulator means for controllably introducing said web into said first set of interdigitating rollers;
- a first take-up means for elongating said web in said first direction upon withdrawal of said web from said first set of interdigitating rollers;
- a second station means for stretching said web in a second direction and including a second set of interdigitating rollers formed with grooves having a distance therebetween of less than one millimeter times the web basis weight in grams per square meter, said second set of interdigitating rollers stretching incremental portions of said web in a second direction;
- a second regulator means for controllably introducing said web into said second set of interdigitating rollers;
- a second take-up means for elongating said web in said second direction upon withdrawal of said web from said second set of interdigitating rollers; and
- collecting means for receiving said web of bi-axially oriented material.



4,285,101

## ELONGATED IMPLEMENT CLIP

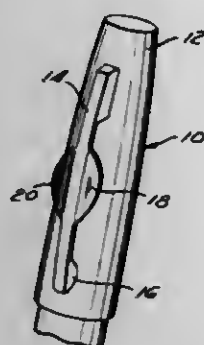
Arthur W. Hanna, 9706 Whetland Ave., Sanland, Calif. 91040

Filed Mar. 21, 1980, Ser. No. 132,676

Int. Cl.<sup>3</sup> A44B 21/00; A45F 5/02; B43K 25/00

U.S. Cl. 24—3 L

2 Claims



1. In combination with an elongated implement, said implement having a clip one end of which is attached to said implement and an opposite end being detached from said implement, said opposite end being continuously biased into contact with said implement, said clip having a narrow elongated body, said body to be capable of being manually grasped and said opposite end moved out of contact with said implement permitting a section of sheet material to be located between said implement and said body, the improvement comprising:

means connected to said clip facilitating one handed movement of said opposite end, said means comprising an enlarged section attached to said body, said enlarged section substantially increasing the width of said body, said enlarged section being located intermediate said one end and said opposite end of said clip, whereby a person is to locate a thumb on one side of said enlarged section and a finger on the opposite side of said enlarged section and exert a slight wedging action between said implement and said enlarged section which results in movement of said opposite end out of contact with said implement thereby permitting insertion of said sheet material between said clip and said implement.

4,285,102

## DOCUMENT CLAMPING DEVICES

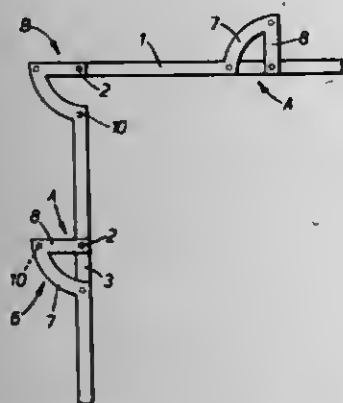
Raymond K. James, 10, Dylan Close, Llandough, Penarth, Glamorgan, Wales

Filed Mar. 8, 1979, Ser. No. 18,791

Claims priority, application United Kingdom, Mar. 11, 1978, 9706/78

Int. Cl.<sup>3</sup> B65D 67/02

U.S. Cl. 24—17 R



1. A document clamping device comprising a series of generally elongate links pivotally interconnected so that each adjacent pair of links is movable between a first position where they at least approach mutual alignment and a second position where they are substantially at right angles to one another, first locking means effective to hold the links in the first position,

second locking means effective to hold the links in the second position, and an arcuate portion carried by one of the links, the centre of radius of the arcuate portion being at the pivot point of the link, end portions of the arcuate portions carrying separate parts of the respective first and second locking means for holding the links in the respective first and second positions.

4,285,103

## ELEMENT MOUNTING STRUCTURE

Hiroshi Inamoto, Yokohama, Japan, assignor to Kato Hatsujo Kaisha, Ltd. and Nissan Motor Co., Ltd., both of Yokohama, Japan

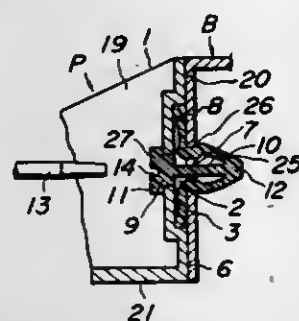
Filed Jan. 15, 1980, Ser. No. 112,282

Claims priority, application Japan, Jan. 17, 1979, 54-2911

Int. Cl.<sup>3</sup> F16L 33/12; F16B 19/00

U.S. Cl. 411—508

5 Claims



1. An element mounting structure comprising a body, and an element mounted onto the body, one of the body and the element having a through hole with a guide means; a mounting hole provided on the other one of the body and the element; and a clip having a resilient connecting rod, a holding portion formed at one end of the resilient connecting rod, an engaging portion formed at the opposite end of the connecting rod so as to be fitted in said mounting hole, and base plate means formed of an extension of said engaging portion to an intermediate portion of said connecting rod so as to clip peripheral wall surrounding said through hole by cooperation of said base plate means and said holding portion, whereby as the holding portion is inserted into said through hole by twisting the resilient connecting rod, while when the holding portion completely passes through the through hole, said twist of the connecting rod is released and the holding portion is held by the peripheral wall surrounding said through hole.

4,285,104

## FASTENER DEVICE

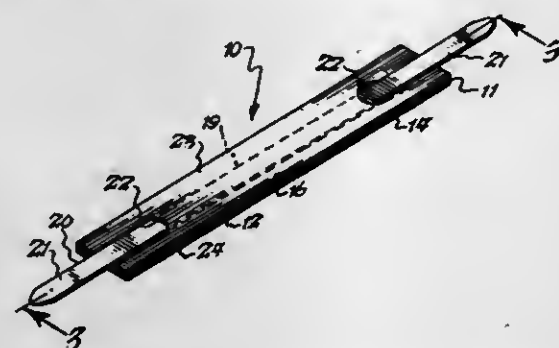
Joseph T. Corey, and Thomas J. Corey, both of Williamsville, N.Y., assignors to Permclip Products Corporation, Buffalo, N.Y.

Filed Jan. 21, 1979, Ser. No. 50,889

Int. Cl.<sup>3</sup> A44B 9/00

U.S. Cl. 24—153

11 Claims



1. A fastener device for holding papers on the leaf of a file folder comprising base means for attachment to the leaf of a file folder and having an upper side and a lower side, a prong

member having a central portion and outer end portions on which said papers are mounted and demounted, securing means on said upper side for securing said central portion to said base means, and pressure-sensitive adhesive on said lower side for securing said base means to said leaf of said file folder, said base means being flexible and resilient so as to be capable of being stretched by forces applied to said prong member during mounting and demounting of said papers to thereby absorb said forces while retaining adhesive engagement with said leaf to tend to prevent said base means from being pulled away from said leaf.

4,285,105

## COLORED INTERLOCKING CLOSURE STRIPS

George F. Kirkpatrick, Downers Grove, Ill., assignor to Union Carbide Corporation, New York, N.Y.

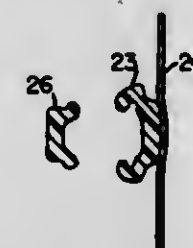
Division of Ser. No. 947,040, Sep. 29, 1978, This application Sep.

4, 1979, Ser. No. 72,287

Int. Cl.<sup>3</sup> B65D 17/20

U.S. Cl. 24—201 C

11 Claims



1. An interlocking closure device comprising two closure profiles operable for being interlocked continuously over a predetermined length, wherein the improvement comprises each of said closure profiles being completely colored in different colors, said closure profiles being interlocking so as to visually contrast said closure profiles relative to one another when occluded without visual disappearance of either closure profile color, whereby the position of the closure profiles on a container can be easily identified visually to simplify the closing and opening of the container.

4,285,106

## METHOD FOR PRODUCING COLOR CATHODE RAY TUBE APERTURE MASKS

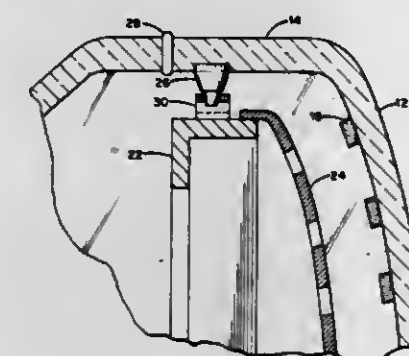
Ralph P. I. Adler, Wellesley, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 13, 1979, Ser. No. 103,311

Int. Cl.<sup>3</sup> H01J 29/07

U.S. Cl. 29—25.15

5 Claims



1. In a process for fabricating an aperture mask assembly for a color cathode ray tube including the steps of:

- attaching bimetallic mounting members to the periphery of the metal frame of said aperture mask assembly;
  - attaching a pre-formed aperture mask to said metal frame; and
  - forming a protective oxide coating on said bimetallic mounting members, frame, and mask;
- the improvement comprising the step of mechanically rough-

ening the surface of said bimetallic mounting members prior to the step of forming said protective oxide coating therein whereby said oxide coating is adherent to said surface.

4,285,107

## COOLABLE ROLLER

Eduard Küsters, Gustav-Fünders-Weg 18, 4150 Krefeld, Fed. Rep. of Germany; Werner Hartmann, Krefeld, Fed. Rep. of Germany, and Valentin Appenzeller, Kempen, Fed. Rep. of Germany, assignors to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Aug. 9, 1978, Ser. No. 932,188

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1977, 2756745

Int. Cl.<sup>3</sup> B21B 31/08

U.S. Cl. 29—129.5

5 Claims



1. A method for fabricating a coolable roller having an inner supporting cylinder which consists of metal on which a tubular roller jacket is firmly disposed, the roller jacket consisting of plastic and having slots on its inner circumference, the inner cylinder including means for cooling and a pressure resistant heat conductor which is in heat conducting contact with the walls of the slots being disposed in said slots comprising:

- constructing the roller jacket separately from the inner cylinder, the roller jacket being constructed with slots;
- heating the roller jacket and cooling the inner cylinder with the roller jacket disposed over the inner cylinder;
- placing metal powder which is in a cooled condition into the slots;
- densifying said metal powder; and
- permitting the temperature of the jacket and inner cylinder to equalize.

4,285,108

## APPARATUS AND METHOD FOR REFINISHING TURBINE BLADE AIRSEALS

John P. Arrigoni, Wallingford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 23, 1979, Ser. No. 14,781

Int. Cl.<sup>3</sup> B23P 15/04, 6/00; B24B 21/14, 21/16

U.S. Cl. 29—156.8 B

6 Claims

1. The method of repairing and restoring a gas turbine airfoil component having a circumferential airseal at its top shroud, comprising:

- grinding the airseal portion of the component to produce an airseal stub having a substantially planar surface;
- providing a piece of metal having a surface which is capable of faying with the airseal stub surface and the length of which is at least equal to the length L of the surface of the airseal stub;
- aligning the surfaces of the piece and the airseal stub so they lay with their lengths aligned;
- metallurgically joining the piece to the airseal stub to create an airseal weldment having a length L;
- providing a grinding surface having a fixed contour, the contour being substantially that circumferential radius contour required on the airseal of a restored airfoil;
- grinding the airseal weldment at the free outer surface opposite the joined faying surface by moving the component toward the contoured grinding surface so the grind-



ing motion at the point of contact with the said free outer surface is substantially perpendicular to the airseal weldment length L;

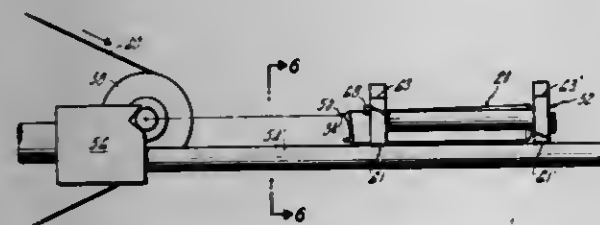
(g) positively producing the desired airseal contour and height H irrespective of time or rate of engagement with the grinding surface by moving the airfoil toward the grinding surface to a stop position; and

(h) removing any other surplus airseal weldment material by grinding and polishing to finish the airseal restoration.

5. Apparatus for grinding the finished circumferential contour of a first airseal and a second airseal of a gas turbine airfoil component, the airseals having different design radii, comprising:

(a) a movable abrasive belt having, in a plane perpendicular to the belt travel direction, a contact surface contour formed on a contact roller, for grinding airseals;

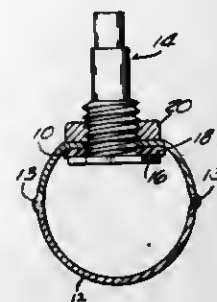
(b) means for supporting a grinding fixture, mounted in proximity to the abrasive belt;



ous joining line which forms a closed annular curve that encloses the fluid passage means;

(D) Introducing a fluid under pressure into the fluid passage means without any enclosing shape forming means, and

(E) Removing the fluid from the interior of the resulting hollow three dimensional article; and



characterized by the step of terminating the input of fluid when a predetermined pressure is reached, and further including the steps of (F) removing both ends of said article; and (G) attaching a collar to the portion of said article adjacent to each cut-off end.

4,285,110

#### PALLET DISASSEMBLING DEVICE

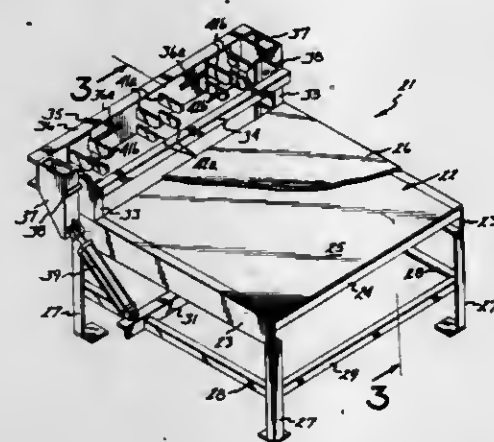
Raymond C. Fagre, Jr., Minneapolis, Minn., assignor to Pallet Service Corporation, Minneapolis, Minn.

Filed May 29, 1979, Ser. No. 43,507

Int. Cl.<sup>3</sup> B23P 19/04

U.S. Cl. 29—252

27 Claims



(c) a grinding fixture movably mounted on the supporting means, the fixture adapted to hold a component in a manner which enables grinding of the airseals by the moving abrasive belt on the contact roller, the fixture having two positions with respect to the said contact roller, a first position such that the location of the length of a first airseal of the component holdable in the fixture is parallel with the centerline of the roller and the location of the first airseal height lies within a plane taken through a diameter of the roller, and a sequential second position wherein the location of the second airseal of the component is disposed similarly to that described for the first, so that the grinding motion of the belt at the point of contact with the airseals is substantially perpendicular to the airseal lengths; and

(d) means for guiding the grinding fixture toward the abrasive belt to predetermined stop positions, to remove surplus material and form the airseals to a finish contour.

4,285,109

#### METHOD OF HYDRODYNAMIC FORMING

Ronald E. Kautzer, Malone, and Donald M. Mueller, Fond du Lac, both of Wis., assignors to D. Mueller Welding, Inc., Oakfield, Wis.

Filed Apr. 5, 1976, Ser. No. 683,502

Int. Cl.<sup>3</sup> B23P 15/00

U.S. Cl. 29—157 R

8 Claims

1. A method of producing a hollow three-dimensional article having ends from flat ductile material comprising the steps of:

(A) Forming two blanks from said flat ductile material;

(B) Forming fluid passage means in one of the blanks;

(C) Joining the blanks together face to face along a continu-

1. Apparatus for disassembling a wooden pallet having a plurality of longitudinal stringers and a plurality of transversely secured slats defining top and bottom planar support surfaces, the apparatus comprising:

(a) a table defining a support surface for a pallet;

(b) slat removing means comprising

(i) frame means carried by the table about a predetermined fixed axis of rotation and pivotally movable through approximately 90° from a first position to a second position;

(ii) means carried by the frame means defining a slot corre-

sponding generally in size to one of the slats of the pallet;

(iii) the slot being disposed in general alignment with the support surface with the frame means in said first position so that it receives one of the end slots of the pallet;

(iv) the slot defining means being constructed to remove the slot from the stringers when the frame means moves from the first position to the second position;

(c) actuating means for moving the frame means between the first and second positions;

(d) and means for retaining the pallet as the frame means is moved by the actuating means from the first position to the second position.

4,285,111

#### BEARING PULLER ALIGNMENT TOOL

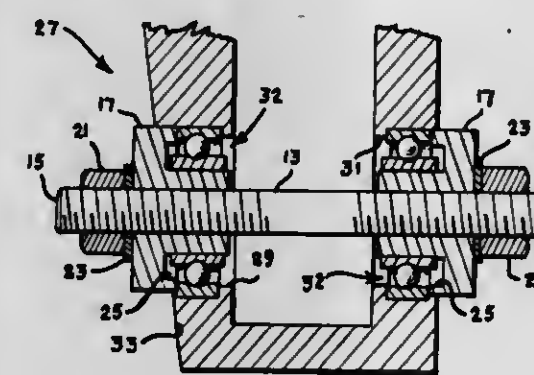
Harry Dubach, 314 N. 700 E., Kayville, Utah 84037

Filed Jan. 26, 1980, Ser. No. 163,136

Int. Cl.<sup>3</sup> B23P 19/04

U.S. Cl. 29—263

1 Claim



1. A bearing puller alignment tool for installing ball bearings in an aircraft part having one opening in an angularly oriented wall surface, said tool comprising a shaft with threads on each end thereof, a pair of flanges slidable along said shaft, a lip disposed on the inner face of each of said flanges at its outer circumference to cause pressure to be applied only to the outer ring of the ball bearings when the bearings are pulled into position, a thrust washer positioned on each end of said shaft adjacent the outer faces of said flanges to minimize the effect of friction when the bearings are pulled into position, a collar on the inner face of each of said flanges for holding said bearing, the inside diameter of said bearings fitting over the outside diameter of said collars, and a nut on each end of said shaft in engagement with the threads thereon whereby the tightening of said nuts produces a corresponding inward movement of said flanges and bearings causing said bearings to be pulled into position in the aircraft part along a straight line regardless of the angularly oriented wall in the aircraft part.

4,285,112

#### TENSION CONTROL OF FASTENERS

Slavash Esigby, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jan. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, and Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570. This application Apr. 19, 1979, Ser. No. 31,353

Int. Cl.<sup>3</sup> B23P 19/06

U.S. Cl. 29—407

10 Claims

1. A method of tightening a joint including at least a pair of parts and at least one threaded fastener for clamping the parts together, comprising

applying torque to the fastener and threadably advancing the same;

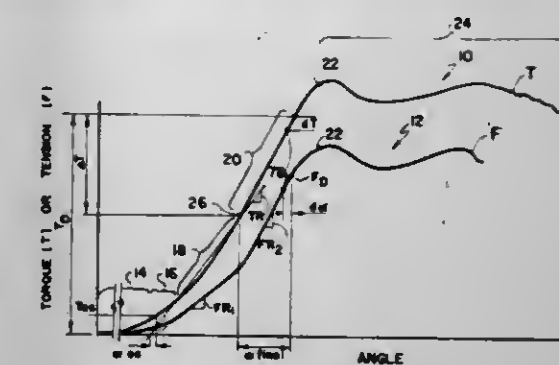
sensing the torque applied to the fastener and the angle of threading advance;

monitoring a condition of the joint including

determining a rejection parameter from the torque and angle sensings in a time frame commencing with the

onset of threading advance of a particular fastener and ending with the termination of tightening of the particular fastener;

finally terminating tightening of the fastener in response to a tightening parameter in a region of fastener stress; and



rejecting and finally terminating tightening of the fastener prior to the attainment of the tightening parameter in response to the rejection parameter.

4,285,113

#### METHOD OF FORMING BRASSIERE WIRES

Ross F. Rowell, 5361 Belmont, Montreal, Quebec, Canada

Division of Ser. No. 897,850, Apr. 19, 1978, Pat. No. 4,201,220.

This application Oct. 29, 1979, Ser. No. 89,091

Int. Cl.<sup>3</sup> B23P 17/00; B22D 11/126; A41C 1/14

U.S. Cl. 29—413

7 Claims



1. A method of forming a flexible end in a wire member for use in a garment, the method comprising the steps of supplying an elongated wire member, forming a line of weakening proximate one end of said member, forming a sheath of a flexible material about said one end, and breaking said end of said wire member at said line of weakening.

4,285,114

#### METHOD FOR TRANSFERRING CIRCULAR PAPER FILTERS FROM A STACK OF SUCH FILTERS INTO A COFFEE MAKER BASKET

Alfred J. Underdahl, 402 Pleasant Dr., Hastings, Minn. 55033

Filed Nov. 15, 1979, Ser. No. 94,447

Int. Cl.<sup>3</sup> B23P 11/02

U.S. Cl. 29—451

3 Claims

1. A method of transferring circular coffee maker filters of fibrous material from a stack of such filters into a coffee maker basket comprising the steps of rotatively oscillating a dielectric



disc against the uppermost filter of said stack to induce electrostatic charges on said filter to cause said filter to cling to said



disc, and inserting said disc into the basket with said filter attracted thereto to deposit said filter in said basket.

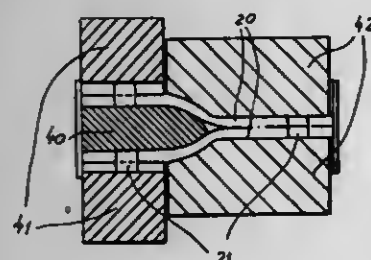
4,285,115

# METHOD OF MANUFACTURING RAILWAY SLEEPERS

Jürgen Frenzel, Frede, Fed. Rep. of Germany, assignor to ARBED, Luxembourg, Luxembourg  
Continuation-in-part of Ser. No. 870,883, Jan. 20, 1978, abandoned. This application Jan. 1, 1979, Ser. No. 44,476  
Claims priority, application Austria, Jan. 20, 1977, 321/77;  
Fed. Rep. of Germany, Nov. 18, 1977, 2751531  
Int. Cl.<sup>3</sup> B23P 3/00, 19/04

U.S. Cl. 29-460

3 Claims



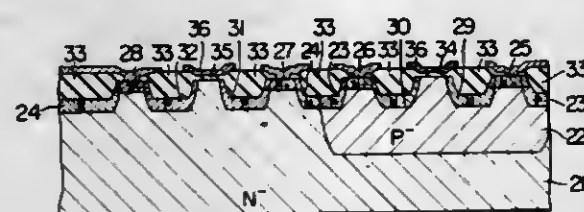
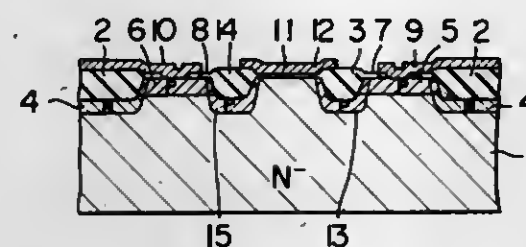
1. A method of forming a railway sleeper comprising the steps of:
  - rolling a pair of steel profiles in the form of I-beams having upper and lower flanges and webs connecting said flanges; heating said I-beams;
  - placing said I-beams in spaced-apart parallel positions so that said profiles have corresponding flanges in coplanar relationship and oppositely juxtaposed end portions in mutually parallel relationship;
  - pressing corresponding end portions together in a heated condition thereof to permanently deform the end portions which are pressed together, thereby causing flanges of the I-beams to abut, while maintaining the separation of the other two end portions of said profiles; and
  - welding the end portions which have been pressed together to one another along the abutting flanges at least in part by welding a plate to two abutting flanges of the pressed-together end portions.

## METHOD OF MANUFACTURING HIGH VOLTAGE MIS TYPE SEMICONDUCTOR DEVICE

Satoshi Meguro, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan  
Division of Ser. No. 791,184, Apr. 27, 1977, abandoned. This application Jan. 5, 1979, Ser. No. 1,312  
Claims priority, application Japan, Apr. 28, 1976, 51-47698  
Int. Cl.<sup>3</sup> H01L 21/265, 29/78

U.S. Cl. 29-571

20 Claims



1. A method of manufacturing an MIS type semiconductor device, comprising steps of:
  - (a) forming a thermally oxidized film on a surface of a semiconductor substrate of one conduction type;
  - (b) forming a nitride film on said oxide film;
  - (c) etching selectively said oxide film and nitride film to expose first and second surface portions of said surface spaced from each other;
  - (d) introducing impurities of the other conduction type opposite to said one conduction type into said substrate through said exposed first and second surface portions to form first and second semiconductor regions spaced apart from each other by a predetermined distance;
  - (e) thermally oxidizing the surfaces of said first and second semiconductor regions by using said oxide film and said nitride film as masking means to form first and second buried oxide films immediately above said first and second semiconductor regions, said buried oxide films having a thickness greater than that of said oxide film;
  - (f) removing said nitride film;
  - (g) forming a polycrystalline silicon layer on said semiconductor substrate between said first and second buried oxide films, said polycrystalline layer having peripheral portions extending over said first and second buried oxide films;
  - (h) removing said oxide film in which said buried oxide films and said polycrystalline silicon layer are not located to expose third and fourth surface portions of said surface; and
  - (i) introducing impurities of the other conduction type into said substrate through said exposed third and fourth surface portions to form third and fourth semiconductor regions of which parts are contacted with said first and second semiconductor region, respectively, said third and fourth semiconductor regions having a higher impurity concentration than that of said first and second semiconductor regions.

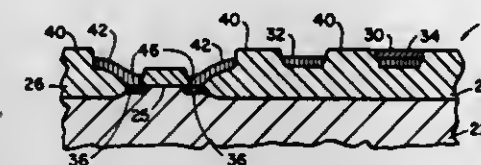
4,285,117

## METHOD OF MANUFACTURING A DEVICE IN A SILICON WAFER

Richard H. Heeren, Palatine, Ill., assignor to Teletype Corporation, Skokie, Ill.  
Filed Sep. 6, 1979, Ser. No. 73,042  
Int. Cl.<sup>3</sup> H01L 21/285

U.S. Cl. 29-571

5 Claims



1. A method of manufacturing devices in a semiconductor wafer 20 of a first conductivity type having formed on a portion of the body 22 an oxide dielectric 26 exposing active areas of the semiconductor body 22 whereat transistors are to be formed,

characterized by:

- A. forming a polysilicon layer 28 having a predetermined resistance characteristic over the entire surface of the wafer 20;
- B. forming a silicon nitride masking layer 30 over the polysilicon layer 28;
- C. removing selected portions of the silicon nitride layer so that the silicon nitride layer will only remain over the source/drain regions 36 of the active areas and the locations of first level conductor runs 32;
- D. converting the exposed polysilicon 28 to an oxide dielectric;
- E. removing the silicon nitride covering the source/drain regions 36 and first level conductor runs 32;
- F. doping the exposed polysilicon to a second conductivity type thus increasing the conductivity of the exposed polysilicon and forming source/drain regions 46 in the semiconductor body of a second conductivity type;
- G. forming an oxide dielectric coating 52 over the entire surface of the wafer;
- H. removing the oxide dielectric coating from the gate areas 54 of the transistor being formed;
- I. forming a thin gate oxide 56 over the active surface of the wafer 20;
- J. removing the oxide dielectric coating from the interconnect work sites of the first level conductor runs 32; and
- K. placing electrical conductors 58 at selected locations on the wafer surface to provide electrical contact with the gate oxide 56 and contact sites of the first level conductive runs 32.

4,285,118

## CABLE HARNESS ASSEMBLY AND ELECTRICAL TESTING MACHINE

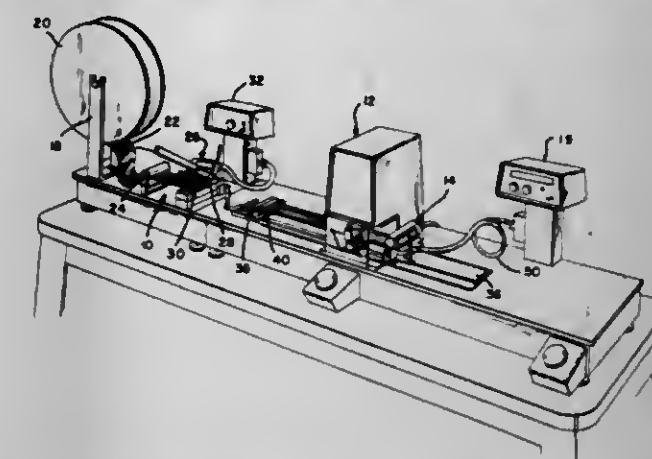
Michael S. Pepler, Lancaster, and Johannes C. W. Bakermans, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.  
Division of Ser. No. 772,204, Feb. 25, 1977, Pat. No. 4,110,880.  
This application May 17, 1978, Ser. No. 906,536  
Int. Cl.<sup>3</sup> G01R 31/08; H01R 43/00

U.S. Cl. 29-593

5 Claims

1. A method of fabricating cable harnesses of multi-conductor flexible cable terminated with at least two electrical connectors while simultaneously testing each connection for electrical continuity as the connection is effected, comprising the steps of:
  - feeding a first end of a multi-conductor flat flexible cable to a terminating station;
  - terminating said first end of said multi-conductor flat flexible cable with a first electrical connector having therein a plurality of contact terminals, each said terminal having

an insulation piercing portion adapted to engage a respective conductor of the cable; indexing said cable to engage said terminated first connector in a test fixture having therein terminals contacting each terminal of said first connector while presenting a subsequent portion of said cable to said terminating station; and



terminating said subsequent portion of said cable with a next successive electrical connector while electrically testing each connection of each said successive electrical connector simultaneously with termination of each said successive electrical connector on said cable.

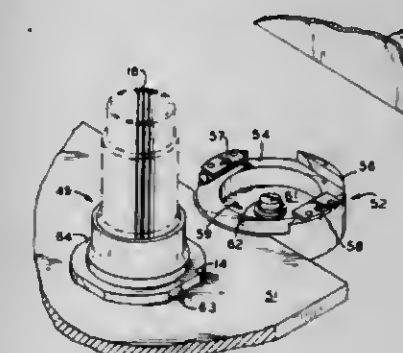
4,285,119

## METHODS AND APPARATUS FOR USE IN PRODUCING WOUND COILS AND PLACING SUCH COILS ON MAGNETIC CORES

Richard J. Habegger, Woodburn, Ind., assignor to General Electric Company, Fort Wayne, Ind.  
Filed Apr. 30, 1979, Ser. No. 34,492  
Int. Cl.<sup>3</sup> H02K 15/06

U.S. Cl. 29-596

28 Claims



1. A method of utilizing a coil injection tool pack at least involving placing the tool pack in winding turn receiving relationship with coil winding apparatus having a tool pack nest, wherein the tool pack includes a plurality of elongate elements that mutually define a plurality of axially extending gaps spaced apart about the periphery of the tool pack and a base supporting the elongate elements; said method further comprising: moving the tool pack laterally, relative to the longitudinal extent of the elongate elements, toward the tool pack nest; disposing a portion of the base adjacent to tool pack retainer means, and disposing the tool pack in overlying relationship with respect to aligning means for assuring mutual alignment of the tool pack and the tool pack nest while also disposing the tool pack in overlying relationship with respect to a movable support located at the tool pack nest; moving both the aligning means and the movable support axially, relative to the longitudinal extent of the elongate elements, and thereby causing the aligning means to assure mutual alignment of the tool pack and tool pack nest, and thereby also clamping at least a portion of the base against the tool pack retainer means.







- chamber, said body being provided with at least one groove in the exterior thereof;
- (b) a cylindrically shaped piston reciprocally movable within said piston chamber, said piston being provided with an annular groove and including:
- (i) a first surface extending beyond said hollow body; and
- (ii) a second, spaced apart opposing surface having an area which is in even multiples of one square inch and defining, in cooperation with said internal walls of said hollow body, a pressure chamber;
- (c) an elastomeric ring receivable in said annular groove;
- (d) an hydraulic pressure sensing means connected to said hollow body for sensing hydraulic pressure within said pressure chamber and for displaying said pressure in pounds per square inch;
- (e) hydraulic means connected to said hollow body for introducing fluid under pressure into said pressure chamber to move said piston in a first direction;
- (f) a substantially U-shaped member removably affixed to said hollow body, said member having spaced apart arms interconnected by a bight portion said arms having inturned end portions adapted to be removably received in said groove provided in said body; and
- (g) a cutter element operably associated with said piston whereby movement of said piston in a first direction will cause said cutter element to move toward said bight portion of said U-shaped member.

4,285,127

## APPARATUS FOR TRIMMING PLANTS

Gerhard Zerrer, Korb, and Roland Beier, Esalingen, both of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

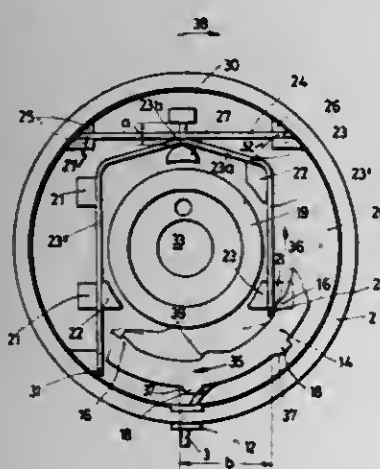
Filed Jun. 28, 1979, Ser. No. 52,910

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2828425

Int. Cl.<sup>3</sup> A01D 50/00

U.S. Cl. 30—276

25 Claims



1. An apparatus for trimming plants, comprising:
- a trimming head and guide means therewith;
- means operatively connected to said trimming head for rotating same;
- a spool received in said trimming head, said spool containing for unwinding thereof a flexible thread-like trimming element, said trimming element being unwindable from said spool along said guide means so as to extend beyond said trimming head for providing an effective cutting length, said spool and said trimming element being adapted to be rotated along with said trimming head; and
- a coupling element arranged as an asymmetrical bracket member spaced as well as resiliently supported in said trimming head and operatively associated with said spool, said coupling element being movable by centrifugal force from a lock position in which said trimming element is prevented from being unwound from said spool to a release position in which said trimming element can be

unwound by movement of said spool relative to said trimming head in response to wear of said trimming element to restore said effective cutting length;

said coupling element including at least first and second lock members, and said spool including means pertaining to at least one of said lock members for effecting said lock position and said release position of said coupling element, with pertaining means being operatively engageable by said at least one lock member, said coupling element including a single coupling member having a first leg and a second leg longer than said first leg formed as a bracket with said first and second legs being substantially parallel to each other with an extension of each leg being one of said first and second lock members.

4,285,128

## SPOOL FEED MECHANISM FOR LINE FED GRASS TRIMMER

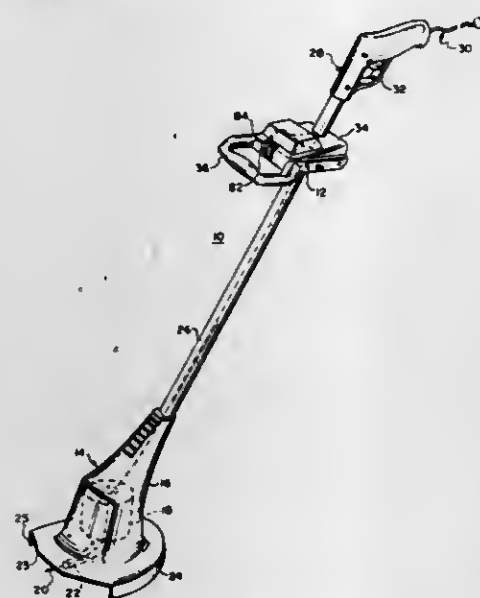
John W. Schnell, and Max K. Haesel, both of Columbia, Mo., assignors to Benchmark Tool Company, Vandalia, Ohio

Filed Nov. 16, 1979, Ser. No. 95,604

Int. Cl.<sup>3</sup> A01D 50/00

U.S. Cl. 30—276

10 Claims



1. In apparatus for cutting vegetation with the free end of a flexible, non-metallic line played out from a spool, including a rotatably driven cutting head for spinning the free end of the line, a spool feed mechanism mounted on said apparatus for incrementally feeding a predetermined length of line from said spool, said mechanism including in combination; a spool about which said flexible cutting line is wound, said spool being mounted for rotation about the central axis thereof at a position remote from said rotatably driven cutting head and including first and second ends with first and second spool indexing means, respectively, actuating means including first and second engagement means positioned for cooperative engagement with said first and second spool indexing means, respectively, one of said spool and actuating means being mounted for movement relative to the other for alternate engagement of said first spool indexing means and said first engagement means and said second spool indexing means and said second engagement means, respectively, one of said first and second engagement means and said first and second indexing means being displaced with respect to the other of said first and second engagement means and the other of said first and second indexing means, respectively, to provide successive incremental rotation of said spool in response to the alternate engagement of said corresponding engagement means and indexing means whereby successive predetermined lengths of cutting line are fed from said spool, and means for biasing one of said spool and actuating means to a first position whereby said first engagement means and first indexing means are normally engaged.

4,285,129

## HOLDER FOR SABER SAW BLADE

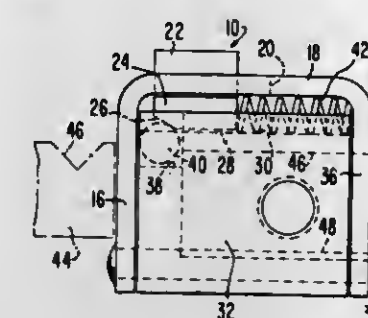
Simon J. Hoffman, P.O. Box 75821, Los Angeles, Calif. 90075

Filed Aug. 1, 1979, Ser. No. 62,606

Int. Cl.<sup>3</sup> B27B 19/00

U.S. Cl. 30—392

1 Claim



1. A holder for a saber saw blade having a notch in one side thereof comprising: a support having a pair of adjacent, relatively angularly disposed faces and a slot extending into the support from each face, respectively, there being a hollow region in the support for receiving a saber saw blade when the blade is in an operative position extending through the portion of the slot in one of the faces; a cam member having an inclined surface and a tab projecting laterally therefrom, said support having a first, hollow interior space adjacent to other face of the support, the cam member being slidably mounted in said first space for movement along a rectilinear path and said tab extending through the portion of the slot in said other face and projecting laterally from the support; a roller for engaging said inclined surface of the cam member, the support having a second, hollow, interior space adjacent to and communicating with the first space and said region, said roller being moveable into the notch of the blade when the blade is in said operative position, there being opposed surfaces within the support at the opposed boundaries of said region for engaging the side margins of the blade to prevent rotation thereof relative to the support when the roller is in the notch; and a spring in the first space for biasing the cam member toward the second space.

4,285,130

## CONTROL DEVICES FOR WEB-FEEDING MACHINES

Kenneth Chandler, Bristol, England, assignor to Masson Scott Thriamel Engineering Limited, Bristol, England

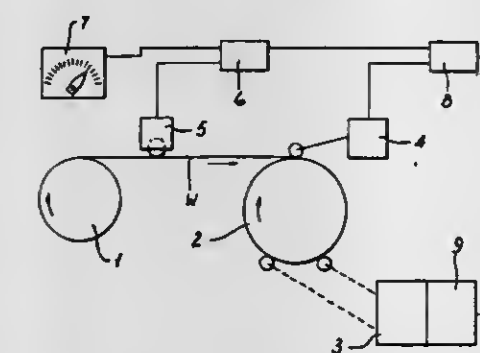
Filed Feb. 1, 1980, Ser. No. 117,676

Claims priority, application United Kingdom, Feb. 10, 1979, 04793/79

Int. Cl.<sup>3</sup> G01B 5/04

U.S. Cl. 33—132 A

11 Claims



1. A control device for a machine for feeding continuous web material (e.g. a paper winder) comprising means for pre-setting a desired length of web to be fed; means for sensing the web speed during feeding and producing a signal representing said speed; means for producing a length signal representing the length of web already fed; data processing means connected to said presetting means, to said speed sensing means and to said means for producing a length signal; and braking control means operable in response to a brake control signal to

produce controlled deceleration of the web; said data processing means being adapted in response to said speed signal to produce a run-out signal representing the length of web fed during said controlled deceleration of the web from the speed represented by the speed signal and then to compare said run-out signal, said length of signal, and a signal from the presetting means representing said desired length, and to deliver said brake control signal to the braking control means when said comparison indicates that the desired length of web minus the length already fed is not greater than that represented by the run-out signal.

4,285,131

## FISHING LINE METER

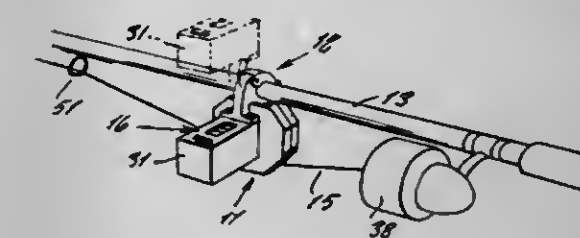
Steve Demchak, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Oct. 11, 1979, Ser. No. 83,606

Int. Cl.<sup>3</sup> G01B 3/12

U.S. Cl. 33—134 R

3 Claims



1. A fishing line, comprising in combination, a housing with pulley wheel rotatably mounted inside said housing, a counter mechanism secured to said housing driven by said pulley wheel, and a mounting bracket secured to said housing on a side of a fishing pole having a fishing line which is looped around said pulley wheel, wherein said housing comprises a case and pivotable cover for access to said pulley wheel and line including spaced notches through said housing for said line to move through said housing when closed wherein said counter mechanism is driven by a shaft on which said pulley wheel is affixed, said shaft extending through said housing including a follower wheel in said housing retaining said line on said pulley wheel wherein said counter mechanism includes a bell and means driven by said counter mechanism striking the bell at predetermined intervals.

4,285,132

## PISTON ROD RUNOUT GAUGE

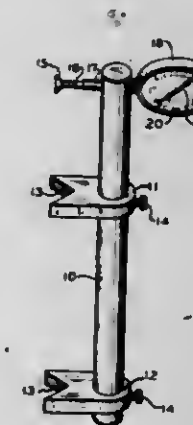
Kenneth D. Kloster, 6649 Millridge, Maumee, Ohio 43537

Filed Oct. 22, 1979, Ser. No. 86,788

Int. Cl.<sup>3</sup> G01B 3/22, 5/24

U.S. Cl. 33—172 R

4 Claims



1. A piston rod runout gauge for determining the concentricity of the rod with respect to its cylinder comprising:
- a. an elongate support providing a handle for manipulating the gauge, said support having a longitudinal axis;
- b. cylinder engaging means for holding said support in paral-



lel relation to the cylinder, said engaging means including a pair of spaced apart brackets shiftable along said support, said brackets extending generally normal to the longitudinal axis of said support and including V-shaped notches in the outer ends of said brackets for engaging the cylinder;

- c. an actuating device in the end of said support to engage the piston rod, said device spaced from said brackets and including a feeler probe extending normal to the longitudinal axis of said support in parallel relation to said brackets; and
- d. means responsive to said actuating device to indicate the degree of concentricity of the piston rod relative to its cylinder.

4,285,133

# TOOTH FLANK TESTING APPARATUS AND METHOD OF TESTING TOOTH FLANKS OF GEARS

Armin Sterki, Uetikon, and Gerd R. Sommer, Dietikon, both of Switzerland, assignors to Maag Gear-Wheel & Machine Co. Ltd., Zürich, Switzerland

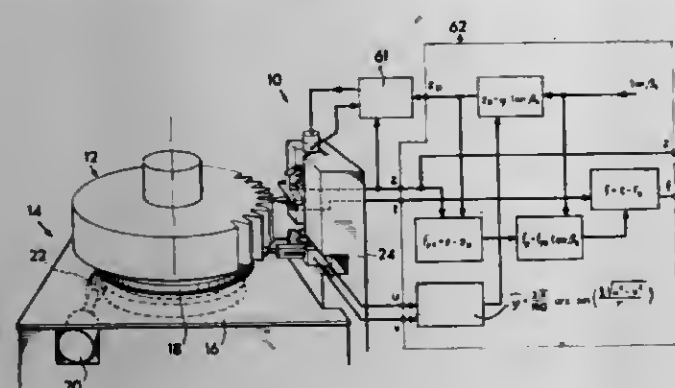
Filed Jul. 25, 1980, Ser. No. 172,291

Claims priority, application Switzerland, Aug. 13, 1979, 7417/79

Int. Cl.<sup>3</sup> G01B 5/20, 7/28

U.S. Cl. 33—179.5 R

4 Claims



1. A gear tooth flank testing apparatus comprising:
- a gear cutting machine containing a bed;
  - a housing erectable upon said bed;
  - two cross-wise arranged carriages;
  - drive means provided for said two cross-wise arranged carriages;
  - displacement path measuring means provided for said two cross-wise arranged carriages;
  - a feeler mounted at said housing by means of said two cross-wise arranged carriages and moveable along two coordinate axes intersecting the lengthwise axis of the gear to be tested;
  - control and evaluation circuit means for guiding said measuring feeler along a tooth flank of the gear to be tested and for comparison of an actual position of the measuring feeler with a predetermined reference position;
  - a feeler element arranged at said housing in spaced relationship from said measuring feeler;
  - said feeler element being capable of being placed into contact with two mutually neighboring tooth flanks of the gear to be tested;
  - two additional cross-wise arranged carriages for freely moveably guiding said feeler element essentially parallel to both of said coordinate axes;
  - a displacement path measuring device operatively associated with each of said additional cross-wise arranged carriages; and
  - said displacement path measuring device being connected with a control and evaluation circuit.

4,285,134

# SHINGLE LOCATING GAUGE

Thomas G. Schmanaki, 25925 Mackinac, Roseville, Mich. 48066

Filed Jul. 7, 1980, Ser. No. 166,759

Int. Cl.<sup>3</sup> G01B 3/30, 5/16

U.S. Cl. 33—188

7 Claims



1. A shingle locating gauge for use in aligning and applying roofing or siding shingles comprising:
- an elongated alignment guide adapted to support the lower edges of shingles being applied;
  - a pair of generally parallel, elongated side supports attached to said alignment guide and extending therefrom;
  - a load spreading bar extending generally parallel to said alignment guide and connected to each of said side supports; and
  - an elongated support member extending generally parallel to said alignment guide and rotatably connected to each of said side supports, said elongated support member having a clamp mounted thereon for applying force against said load spreading bar and further having a pair of spaced apart alignment stops mounted thereon for aligning said member with respect to a course of previously applied shingles, each of said alignment stops including a U-shaped portion adapted to receive an edge portion of a previously applied shingle and an upwardly extending portion in opposition to a portion of said load spreading bar.

4,285,135

# PANEL CUTTING GUIDE

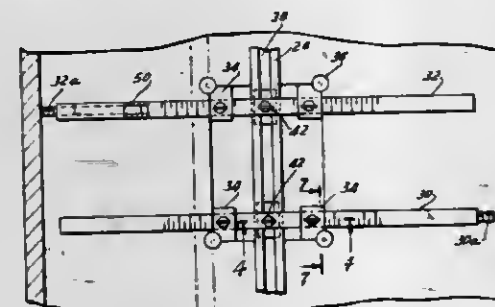
Michael F. Minozzi, Jr., 10 Mein Dr., New City, N.Y. 10956

Filed Aug. 13, 1979, Ser. No. 66,165

Int. Cl.<sup>3</sup> B27C 1/00; G01B 3/00

U.S. Cl. 33—189

17 Claims



1. A panel cutting guide comprising, a primary elongated measuring rod; a pair of secondary measuring arms, means for releasably locking said secondary measuring arms on said primary measuring arm in any of a plurality of selected positions normal to said primary measuring arm; a pair of marker elements slidably mounted on said secondary measuring arms, on opposite sides of said primary measuring arm and means for releasably locking said marker elements in any of a plurality of selected positions on said secondary measuring arms; said marker elements being generally rectangular in plan, having straight side guide edges and selectively operable means for forming a mark on a panel; said means for forming a mark being located at one corner of said rectangular marker elements to form a mark at the intersection of two sides of said rectangular marker elements.

4,285,136

# WHEEL CLAMP

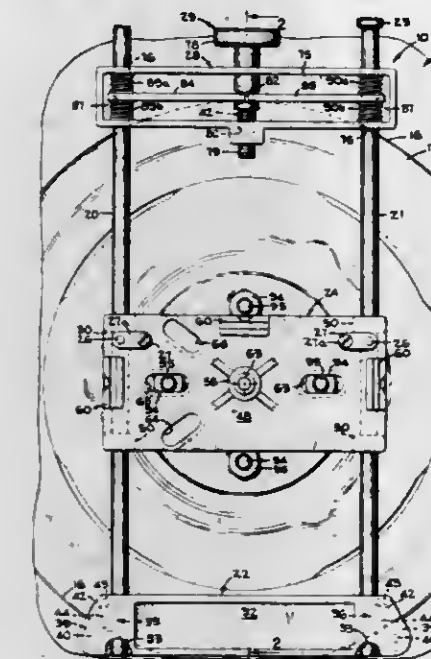
Marshall P. Ragan, Mayflower, Ark., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 17, 1980, Ser. No. 112,764

Int. Cl.<sup>3</sup> G01B 5/255, 11/275

U.S. Cl. 33—203.18

12 Claims



1. A wheel clamp for supporting a wheel aligning tool in a plane parallel to the plane of a wheel rim, comprising:
- a frame;
  - a lower bracket attached to one end of the frame;
  - means mounted on the lower bracket for engaging a peripheral lip extending outward from the wheel rim by which the one end of the frame is removably attached to the wheel rim;
  - an upper bracket slidably mounted on the other end of the frame, the distance between the upper and lower brackets being adjustable to correspond to the diameter of the wheel rim;
  - means mounted on the upper bracket for engaging the peripheral lip on the wheel rim by which the other end of the frame is removably attached to the wheel rim;
  - means mounted on the upper bracket for selectively urging the upper bracket toward or away from the lower bracket;
  - a center bracket slidably mounted on the frame between the upper bracket and the lower bracket, having two or more slots therein located and sized to correspond to lug bolt patterns commonly found on automobile wheels;
  - a spindle projecting from the center bracket in a direction perpendicular to the plane of the wheel rim and adapted to support the wheel aligning tool;
  - two or more spacers, each adapted to engage a vehicle wheel at one end and to be received within one slot located on the center bracket and affixed thereto at the opposite end, whereby the frame may be attached to the wheel rim in a parallel manner.

4,285,137

# TRAJECTORY COMPENSATING DEVICE

Fred L. Jennie, 112 Promontory Dr. West, Newport Beach, Calif. 92660

Filed Jan. 15, 1980, Ser. No. 112,369

Int. Cl.<sup>3</sup> G01C 3/20

U.S. Cl. 33—246

8 Claims

1. A trajectory compensating device for use in combination with a rifle scope of the type having a reticle and a turret controlled elevational correction system including a turret which comprises:

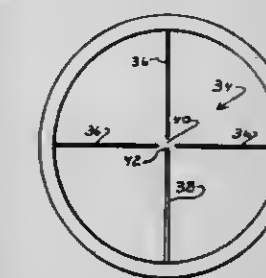
- said reticle having a primary sighting plane and a secondary sighting plane;
- said turret including an indexing mark located on said turret;
- said turret including a turret cap operatively connected to

said turret controlled elevational correction system so that said turret controlled elevational correction system is controlled by rotation of said turret cap about said turret; said turret cap including an indicia carrying means, said indicia carrying means including at least two individual indicia;

said indicia carrying means located on said turret cap such that each of said individual indicia can be independently aligned with said indexing mark by rotating said turret cap;

the first of said indicia on said indicia carrying means corresponding to a distance calibration mark wherein when said distance calibration mark is aligned with said indexing mark the line of sight through said rifle scope using said primary sighting plane of said reticle will be aligned with the center of impact on a target of a bullet of a fixed size expelled from a cartridge containing a fixed load down the muzzle of a firearm on which said rifle scope is mounted when said firearm is located at a distance from said target corresponding to the same distance being represented by said distance calibration mark;

the second of said indicia corresponding to an indicator mark wherein when said indicator mark is aligned with said indexing mark and said bullet of said fixed size is expelled from said cartridge containing said fixed load



down said muzzle of said firearm on which said rifle scope is mounted the trajectory of said bullet will first cross the line of sight through said rifle scope using said primary sighting plane of said reticle and next cross the line of sight through said rifle scope using the secondary sighting plane of said reticle and before said trajectory crosses said line of sight of said rifle scope using said primary sighting plane of said reticle the distance between said trajectory and said line of sight of said rifle scope using said primary sighting plane of said reticle as measured perpendicular from said line of sight of said rifle scope using said primary sighting plane of said reticle to said trajectory is not greater than a predetermined deviation distance and after said trajectory crosses said line of sight of said rifle scope using said primary sighting plane of said reticle but before said trajectory crosses said line of sight of said rifle scope using said secondary sighting plane of said reticle the distance between said trajectory and one of said lines of sight of said rifle scope using either said primary sighting plane of said reticle or said secondary sighting plane of said reticle as measured perpendicular from both said line of sight of said rifle scope using said primary sighting plane and said line of sight of said rifle scope using said secondary sighting plane of said reticle to said trajectory is not greater than said predetermined deviation distance.

4,285,138

# TRAILER HITCH VISUAL ALIGNMENT DEVICE

James L. Berry, #29 Hilton Head Ter., Hilton Head, S.C. 29928

Filed Mar. 13, 1980, Ser. No. 130,139

Int. Cl.<sup>3</sup> G01C 5/00; B60D 1/06

U.S. Cl. 33—264

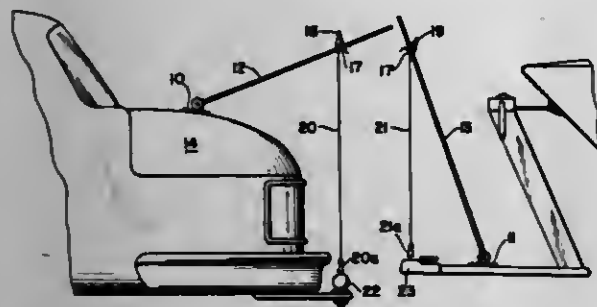
4 Claims

1. For use with a ball carrying hitch arm secured to the rear of a towing vehicle centrally thereof and a trailer having a socket carrying arm to arrange a hookup coupling between



said ball and said socket; a trailer hitch visual alignment device comprising

- (a) a pair of magnetic bases one of which is attachable to the body of the towing vehicle and the other of which is attachable to the socket carrying arm of the trailer,
- (b) alignment wands carried by said magnetic bases,
- (c) a elastic gromet on each alignment wand,
- (d) a pair of alignment flags each having a foot extending off its base and adapted to be retained between said elastic gromet and each wand,



- (e) and a plumb line having a plumb bob carried by at least one of said wands and being adjustable through the contact point of the gromet and wand until the line is plumb over the towing ball whereby upon backing the towing vehicle toward the trailer when the alignment flags cross the hitch between the ball on the hitch arm and socket on the trailer arm may be coupled for towing the trailer.

4,285,139

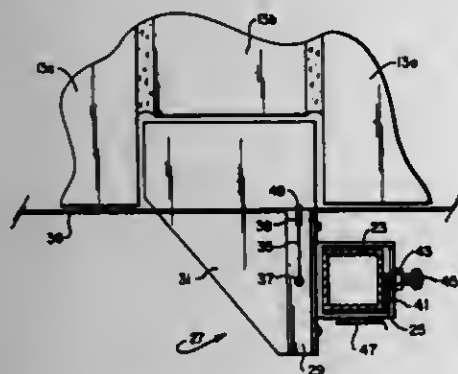
**TRIG POLE FOR MASONRY CONSTRUCTION**  
Charles W. Huston, 6931 Waterloo Rd., NW., Canal Winchester, Ohio 43111

Filed Sep. 28, 1979, Ser. No. 79,817

Int. Cl.<sup>3</sup> G01C 15/10

U.S. Cl. 33—407

4 Claims



1. In a system of poles for aligning courses of brick of a brick wall being constructed as a facing for a building structure construction wall, wherein there is a pole disposed at each corner of said wall, each corner pole including adjustable means for securing said pole at said corners, a mason's rule carried adjustably by each corner pole, and a corner line block adjustably carried by each corner pole wherein a line is tensioned between each corner line block of each corner pole, the improvement which comprises:

at least one pole disposed intermediate between said corner poles, said intermediate pole having adjustable means for securing said pole to said brick wall and/or said construction wall, a mason's rule adjustably carried by said intermediate pole, and an intermediate line block for ensuring that said line remains tensioned between said corner line blocks, all of said line blocks being synchronously adjusted in vertical height so that said tensioned line defines the horizontal component of each course of brick, said intermediate line block has attached thereto a template having a rectangular portion which extends inside the outer vertical plane of said brick wall when said interme-

diate pole is in an operable position, said rectangular portion defining the position for a brick recessed from said vertical plane of said brick wall.

4,285,140

**DEWATERING AND UPGRADING LOW RANK COAL BY A TWO-STEP HYDROTHERMAL TREATMENT**  
Leopold van Raam; Herman P. Ruyter, and Josefus W. van Brengel, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

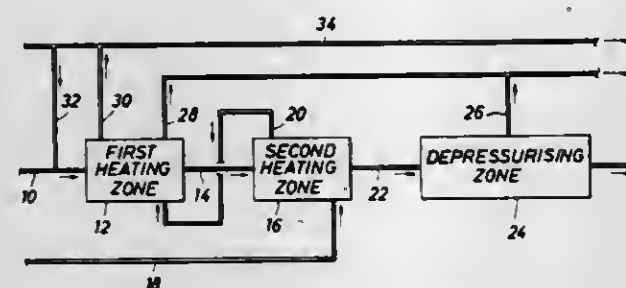
Filed Dec. 10, 1979, Ser. No. 102,073

Claims priority, application Netherlands, Dec. 18, 1978, 7812248

Int. Cl.<sup>3</sup> F26B 5/04

U.S. Cl. 34—15

4 Claims



1. A process for dewatering and upgrading low rank coal or other carbonaceous material comprising:  
heating a mixture of the coal and a substantially equal weight of free water to a temperature of from about 150° to 300° C. while maintaining a pressure which substantially prevents the vaporization of water;  
mechanically separating substantially all of the water from the mixture; and  
heating the so-separated coal for from about 5 minutes to 5 hours at a temperature of from about 300° to 400° C., which temperature exceeds the temperature used in the prior heating step, is applied at a pressure which at least substantially equals the pressure used in the prior heating step and is a pressure at which water is vaporized so that the water content of the coal is reduced to less than about 10% by weight and the coal is significantly upgraded by decarboxylation without significant gasification.

4,285,141

**METHOD AND APPARATUS FOR DRYING ARTICLES OF CERAMIC WARE**

Sidney Wedgwood, Newcastle-under-Lyme, England, assignor to Interdri Limited, Stoke-on-Trent, England

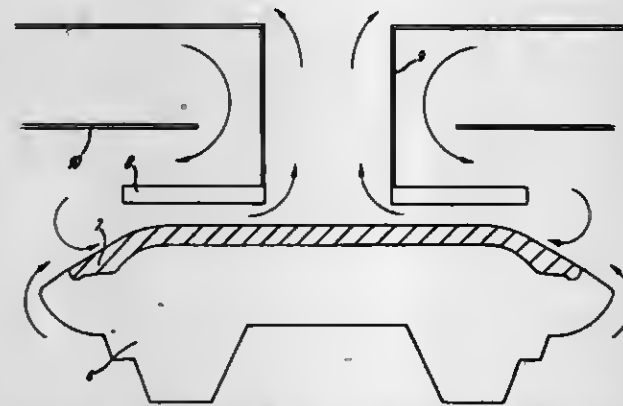
Filed Sep. 11, 1978, Ser. No. 941,183

Claims priority, application United Kingdom, Sep. 13, 1977, 38076/77; May 6, 1978, 18127/78

Int. Cl.<sup>3</sup> F26B 3/04

U.S. Cl. 34—21

15 Claims



1. A method of drying articles of ceramic ware, said method comprising supporting a mould and an article to be dried on a

4,285,143

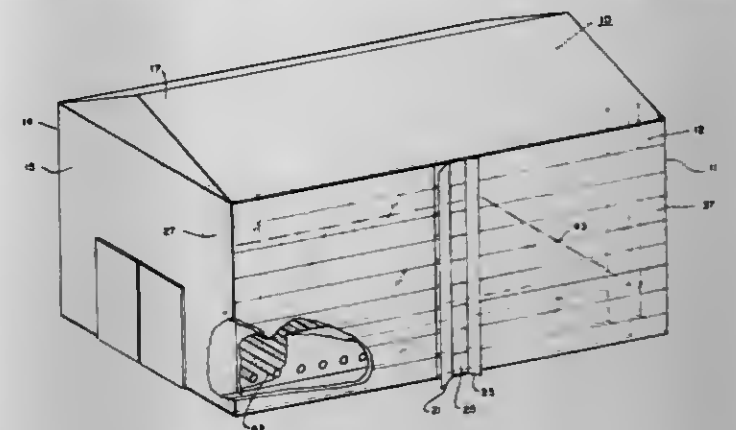
**SOLAR GRAIN DRYING/STORAGE BUILDING**  
Jack E. Hufford, and William E. Moormeier, both c/o Iron Horse Bldgs., Circleville, Ohio 43113

Filed Apr. 18, 1979, Ser. No. 31,324

Int. Cl.<sup>3</sup> F26B 3/28

U.S. Cl. 34—93

10 Claims



mould support such that the article has an exposed surface, locating the mould support and a member in a spaced apart relation such that the member has a surface extending in close relation over at least a substantial part of the exposed surface of the article and defines a gap between the exposed surface and said member, introducing a drying agent into said gap substantially at the periphery of the article, inducing a flow of the drying agent in the gap with the maximum velocity of the flow at said surface of said member by extracting the drying agent at a location substantially centrally of the article to be dried, and arranging the close relation of said member to the exposed surface so as to substantially confine the exposed surface to the effect of the maximum velocity of the flow of the drying agent.

4,285,142

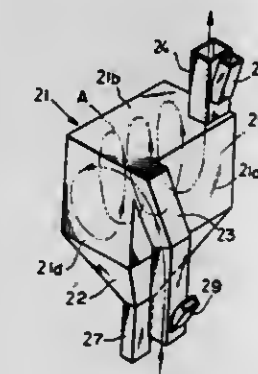
**SUSPENSION TYPE HEAT EXCHANGER**  
Takeshi Suzuki, Kobe; Takashi Hatamori, Miki; Mikio Murao, Kobe; Minoru Nezuoka, Kobe; Chikanori Kumagai, Kobe, and Masaharu Takagishi, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Aug. 27, 1979, Ser. No. 70,199

Int. Cl.<sup>3</sup> F26B 17/10

U.S. Cl. 34—57 E

12 Claims



1. A suspension type heat exchanger including means for separating solid particulate matter from a gas stream in which said particulate matter is suspended comprising:

an essentially unobstructed separating chamber defined by stationary walls in the form of a prism having a substantially horizontal center axis and being axially elongated; a collecting chamber located beneath said separating chamber, the collecting chamber and the separating chamber being in unobstructed direct communication with each other; and

an inlet duct and an outlet duct each connected to a wall of the separating chamber and each duct communicating with the separating chamber at a location substantially spaced from the location of the other duct along the length of the chamber, the inlet duct and the outlet duct each being oriented non-radially with respect to the axis of the separating chamber and transverse to said axis;

said inlet duct comprising means for introducing into the separating chamber a linearly flowing gas stream in which is suspended solid particulate matter, the orientation of the inlet duct relative to the separating chamber is such as to cause said gas stream to flow spirally about the axis of the separating chamber to the outlet duct, centrifugal force caused by said spiral flow propels the particulate matter outwardly away from the spiral flow thereby allowing the particulate matter to drop into the collecting chamber while the gas stream continues to flow to the outlet duct through which it flows linearly, the separation of the particulate matter from the gas thereby being efficient, the pressure loss in the separating chamber being low and the height of the particulate matter separating means being relatively small due to the horizontal orientation of the separating chamber axis.

4,285,144

**INNER SOLE FOR FOOT WEAR**

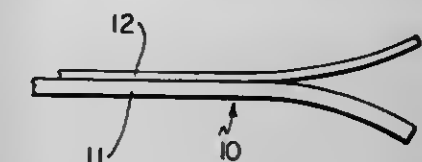
Roy J. Power, 2125 Ivy Square, No. 8, Charlottesville, Va. 22901

Filed Aug. 16, 1978, Ser. No. 934,017

Int. Cl.<sup>3</sup> A43B 13/40

U.S. Cl. 36—44

5 Claims



1. An inner sole for foot wear which comprises a base layer and an upper layer adhesively joined to form a laminate, each of said layers comprising a foamed elastomeric rubber, said base layer having a compression deflection in the range of 5 to 9 psi, a minimum elongation of 200% and a resilience as measured by the Bayshore Rebound method of at least 50% and said upper layer having a minimum elongation of 100% and a resilience as measured by the Bayshore Rebound method of less than 30%; the resiliency and thickness of said upper layer being selected to prevent the laminate from bottoming out during use and the base layer being substantially thicker than the upper layer.

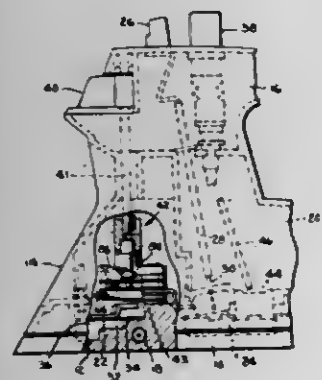


4,285,145

## THERMOSTAT AND IRON ASSEMBLY

Charles A. Balchunas, Bethany, Conn., assignor to General Electric Company, New York, N.Y.  
 Division of Ser. No. 51,831, Jan. 25, 1979, Pat. No. 4,259,655.  
 This application Aug. 25, 1980, Ser. No. 180,520  
 Int. Cl.<sup>3</sup> D06F 75/06; H01H 37/26  
 U.S. Cl. 38—77.7

3 Claims



1. In an electric steam iron having an enclosed water tank in a shell under connected handle structure and a steam generating soleplate with ports for distribution of steam on demand, a pump connected to the tank with a button on the handle for manual pump actuation to deliver water to the soleplate generating means and a mount on the soleplate for close support of a heat-responsive thermostat means to control the temperature of the soleplate, the improvement in said thermostat means comprising,

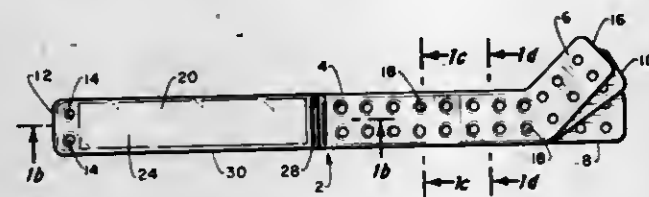
- a substantially vertical control rod in the forward handle portion having manual temperature adjustment means external to the shell and high on the front thereof,
- a stacked thermostat assembly of a lower heat deformable blade secured to said soleplate mount,
- a conductive intermediate stiff spring blade,
- a conductive upper less stiff spring blade,
- all blades being supported, secured, and spaced apart at one end by interposed insulators and,
- electrical contacts on said conductive blades with means transmitting heat deformable blade movement to said upper blade to make and break the electric circuit controlling said soleplate temperature,
- a single structural bracket extending parallel over said blades and cantilever-mounted on and above said one end, said bracket having an enlarged integral portion on its free end,
- a vertical bore through the enlarged portion forming an elongated bearing guide between the ends of and over said blades,
- a control shaft rotatably supported in said bore and extending through an opening in the upper blade to contact and position said intermediate blade,
- means connecting said shaft and control rod to rotate the shaft by the external adjustment means,
- an arcuate cam surface with end stops formed as part of the integral portion and facing said upper blade,
- a cam follower extending from said shaft and biased by said intermediate blade against said cam surface,
- whereby the single integral bracket performs multiple functions of shaft bearing, cam surface and stops, and fixed locator of all structural parts between the stacked assembly components and control rod and connected means.

4,285,146

## TAMPER-RESISTANT IDENTIFICATION DEVICE

Stanley E. Charles, La Canada; Donald A. Long, Burbank, and Arthur H. Schimmelman, Agura, all of Calif., assignors to Precision Dynamics Corporation, Burbank, Calif.  
 Division of Ser. No. 702,335, Jul. 6, 1976, Pat. No. 4,221,063.  
 This application May 29, 1979, Ser. No. 42,971  
 Int. Cl.<sup>3</sup> G09F 3/14  
 U.S. Cl. 40—21 C

7 Claims



1. A plurality of separable identification devices in sheet form, each device comprising a flexible band of sufficient length for encircling engagement of an object to be identified, said flexible band having a first end portion, an intermediate portion and an opposed second end portion, said first end portion having at least two spaced apertures adjacent the terminus thereof, said second end portion having at least two spaced apertures adapted to be placed in aligned coincidence with said at least two spaced apertures in said first end portion when separated from the remainder of said sheet form and said first and second ends being adapted to receive securement means for securely fastening and retaining said ends in an encircling configuration.

4,285,147

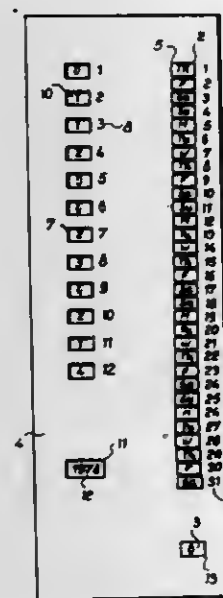
## UNIVERSAL APPARATUS FOR EVALUATING CALENDAR DATA

Karel Kolar, Praha, Czechoslovakia, assignor to Racionalizacni a experimentalni laborator, Praha, Czechoslovakia  
 Filed Nov. 20, 1979, Ser. No. 96,057  
 Claims priority, application Czechoslovakia, Nov. 20, 1978, 7554/78

Int. Cl.<sup>3</sup> G09D 03/04

U.S. Cl. 40—109

4 Claims



1. A universal apparatus for evaluating calendar data comprising two relatively slidable, linearly arranged members, the first member being a main body provided on the reading surface with a scale of names of days and with a scale of seven members of a calendar code, and the second movable member is provided both with view slits at which there are members of a scale of digital calendar data, and with a view slit for the calendar code, an indication mechanism for indicating actual months consisting of view slits, at which there are arranged members of a scale of calendar months, a view slit for reading

the actual year, and a movable plate carrying code digits of actual months and a scale of years and being provided with members corresponding with other calendar systems, said calendar code includes the names of days M, Tu, W, Th, F, Sa, Su with a sequence of corresponding members of the calendar code 5, 3, 1, 6, 4, 2, 0.

by 4, Saturday by 2, Sunday by 0, such digits being disposed on the lower disk.

4,285,148

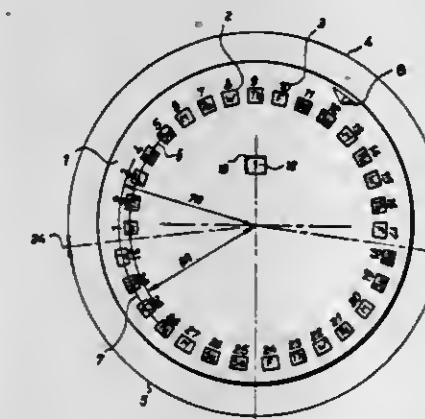
## UNIVERSAL ROUND CLOCK CALENDAR

Karel Kolar, Prague, Czechoslovakia, assignor to Racionalizacni a experimentalni laborator, Prague, Czechoslovakia  
 Filed Nov. 20, 1979, Ser. No. 95,998  
 Claims priority, application Czechoslovakia, Nov. 20, 1978, 7555-78

Int. Cl.<sup>3</sup> G09D 3/08, 3/00

U.S. Cl. 40—115

11 Claims



1. A universal calendar comprising two superimposed members with rows of scales of digital calendar data and names of days comprising an upper member on which there is arranged a row of 31 view slits with respective members of a row of digital calendar data divided into two parts, the first part of which comprises 17 members in a row on one circle, and the other part of which comprises 14 members disposed in a row on a second circle, the other of said two members being a lower member on which there is arranged a scale of names of days divided into two parts having different numbers of members, respectively, disposed in a row on the same circles as the view slits on the upper member; the upper and lower members are concentric disks the view slits and digital calendar data being disposed on the circumference of the upper disk and being circumferentially divided into two parts, the first part comprising an odd number of members being situated on a first circle having a first diameter, and the other part comprising an even number of the remaining view slits and calendar data up to 31, situated on a second circle having a diameter different from that of the first circle, the other of said two disks being a lower disk on which there is arranged a scale of names of days, said scale of names of days being circumferentially divided into two parts each part having six members more than the respective part of the scale of digital calendar data and view slits on identical circles of the same diameter as the view slits and digital calendar data on the upper disk, the view slits for names of days are disposed on the circumference of the upper disk in a system of 31 orientation divisions, and on the upper disk there are also disposed view slits for members of a calendar code, the value of which for the desired month and year is disposed in a tabular manner on a visible surface of the calendar, and on the lower disk there is arranged a scale of names of days, such scale being circumferentially divided in two parts having 23 and 20 members, respectively on identical circles of the same diameter as the view slits on the upper disk and being disposed in a system of 31 orientation divisions, and on the lower disk there are disposed seven members of the calendar code, in the upper disk there is arranged a view slit for reading the definite member of the calendar code in which Monday is represented by a digit 5, Tuesday by 3, Wednesday by 1, Thursday by 6, Friday

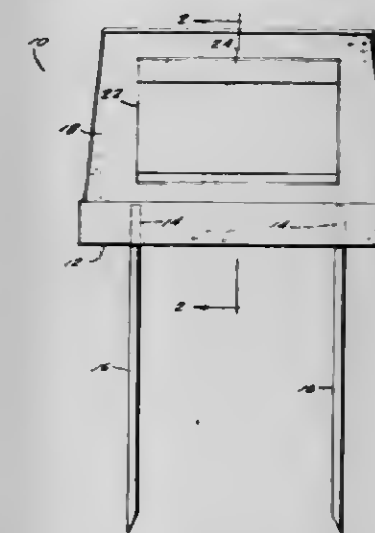
4,285,149

## GRAVE MARKER

A. J. Berryhill, 1319 W. 3rd St., Taylor, Tex. 76574  
 Filed Feb. 21, 1980, Ser. No. 123,427  
 Int. Cl.<sup>3</sup> G09F 19/00

U.S. Cl. 40—124.5

6 Claims



1. A marker comprising a body having a face portion, a recess formed in said face portion, identification holder means disposed in said recess, said holder means including a plate having two opposite sides with edges extending toward each other to define parallel extending channels along said two opposite sides, transparent shield means for an identification sheet, said shield means having two opposite edges each disposed in one of said channels, said channels being of different depths, said edge of said plate of said channel of greater depth extending outwardly from said transparent shield means at an angle relative to said transparent shield means, spring means disposed in said channel of greater depth, said spring means being a curved segment of resilient metal having one end thereof bent to engage the bottom of said channel of greater depth whereby said spring means is held in position in said channel of greater depth, said spring means acting between said channel and said edge of said shield means disposed in said channel to urge said shield means toward and into said channel of said opposite side.

4,285,150

## DISPLAY BOX

William C. Richardson, Sparta, N.J., and Mario Isoldi, Staten Island, N.Y., assignors to Album Graphics, Incorporated, New York, N.Y.

Filed Oct. 15, 1980, Ser. No. 197,018

Int. Cl.<sup>3</sup> G09F 1/12

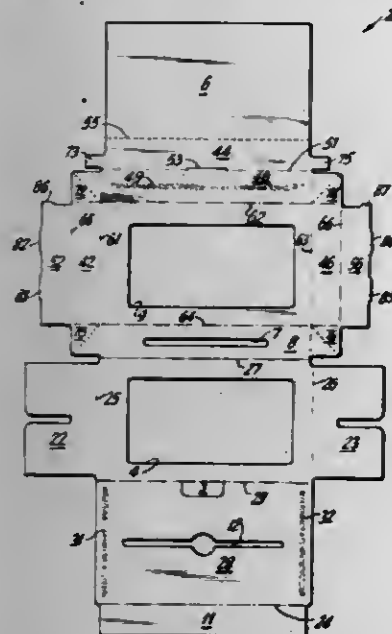
U.S. Cl. 40—312

4 Claims

1. A box formed from a unitary blank having a primary face and a secondary face, said box having an integral hinged lid; the lid being a fold of a first panel over a second panel of the blank, the first panel constituting the interior lid panel and the second panel constituting the exterior lid panel to present the primary face of the blank outwardly on both faces of the lid, and inwardly folded flaps on each end of one of said first and second panels adhered to the secondary face of the other of said panels to form a pocket in the lid for receipt of a label insert; the body of the box being formed from four side panels folded upwardly, one on each edge of an exterior floor panel, a first one of said side panels being integral with the exterior lid panel, the fourth side panel being integral with an interior floor panel, the interior floor panel being folded over the exterior floor panel and the fourth side panel with the secondary faces confronting, a portion of



the interior floor panel being folded upwardly with the fourth side panel and the remainder overlying the exterior floor panel, the second and third side panels having inwardly and downwardly folded flaps captured between the edges of the interior floor panel and the second and



third side panels, whereby all exterior and interior surfaces of the box are the primary face of the blank; apertures in the exterior panels of at least the lid through which a label insert is visible, the interior panels overlying the label insert apertures.

4,285,151

## PERSONAL HYGIENE APPARATUS

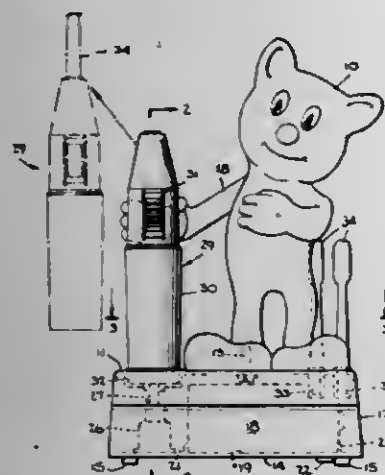
Robert Gertler, 23-10A CPL Kennedy St., Bayside, N.Y. 11360

Filed Mar. 19, 1979, Ser. No. 21,468

Int. Cl.<sup>3</sup> G09F 27/00

U.S. Cl. 40—455

2 Claims



1. A personal hygiene apparatus comprising, in combination, a non-animated character figure having a substantially three dimensional configuration with non-movable character features, the character figure having an extend-appendage; an electrically operated toothbrush having a housing removably supported at substantially one end thereof by the appendage; a base means for vertically supporting the character figure and the toothbrush housing; a cavity means in the base means for receiving the housing and removably supporting the housing at another end thereof; an exposed depressable upstanding button within the cavity means for engagement with the another end of the housing; an audio producing means disposed within the base means

for producing an audio production of a melody or message, the depressable button completing a circuit for operating the audio producing means;

whereby upon removal of the toothbrush housing from the cavity means the depressable button is released initiating the operation of the audio producing means and when the button is depressed the audio producing means will continue to operate only to the end of the melody or message then in progress.

4,285,152

## SEMI-AUTOMATIC DOUBLE ACTION REVOLVER

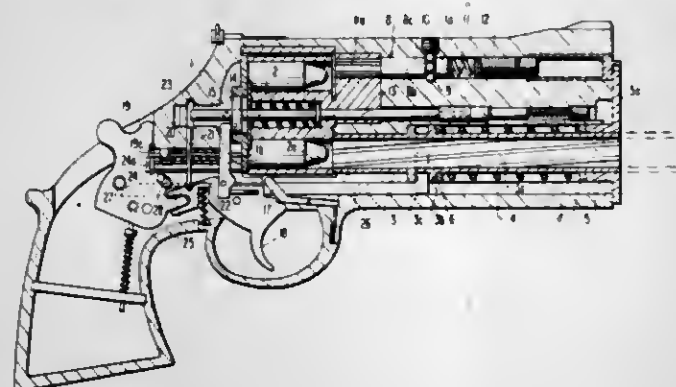
Joe O. Dean, 5841 NE. 22nd Ave., Fort Lauderdale, Fla. 33308

Filed Mar. 23, 1979, Ser. No. 23,317

Int. Cl.<sup>3</sup> F41C 1/00

U.S. Cl. 42—59

8 Claims



1. In a semi-automatic, double action revolver having a frame, a rotatable cylinder including a plurality of circumferentially disposed, axially extending chambers containing bullets, a trigger mechanism including a trigger and a hammer mechanism including a hammer and a firing pin, a cylinder latch including a latch pin, the improvement comprising, a barrel aligned with the lowermost chamber of the cylinder, said barrel having a rifled bore adapted to be engaged by a bullet when travelling therethrough, said barrel being slidably and rotatably mounted in said frame, spring means mounted between said frame and said barrel for biasing said barrel in a direction toward said cylinder, whereby upon firing the revolver the thrust of the bullet engaging the rifled bore causes the barrel to rotate and slide forwardly compressing the spring to thereby absorb the initial shock and thrust imparted to the barrel.

4,285,153

## WEAPON

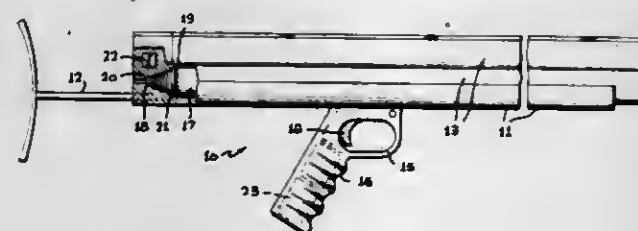
Alfred H. Crouch, 2502 Arizona Ave., #3, Santa Monica, Calif. 90404

Filed May 7, 1979, Ser. No. 36,414

Int. Cl.<sup>3</sup> F41C 19/12

U.S. Cl. 42—84

6 Claims



1. A hand held weapon comprising the combination of: a stock; at least one barrel carried on said stock; an ammunition load insertably carried in said barrel; said ammunition load having a plurality of firing chambers, each holding a quantity of a powder charge, wadding and missile respectively;

a detonation plate separating each firing chamber from its adjacent firing chamber; said ammunition load further includes recoil means adjacent each of said detonation plates for absorbing recoil shocks upon ignition of powder immediately ahead thereof; electronic means cooperatively carried on said stock and said ammunition load for selectively firing or igniting each of said powder charges in each of the firing chambers; said electronic means includes a plurality of conductors embedded in said ammunition load and in registry with a second plurality of conductors embedded in said stock; a sequence control means coupled to said second plurality of conductors for selectively igniting said firing chamber powder charges; a trigger mechanism and power source operably coupled together in series with said conductors to energize said sequence control means; and said recoil means includes a plurality of tabs extending into each of said firing chambers of said ammunition load to terminate immediately behind said detonation plate in an adjacent firing chamber.

4,285,154

## TIP-UP FLAG DEVICE FOR ICE FISHING

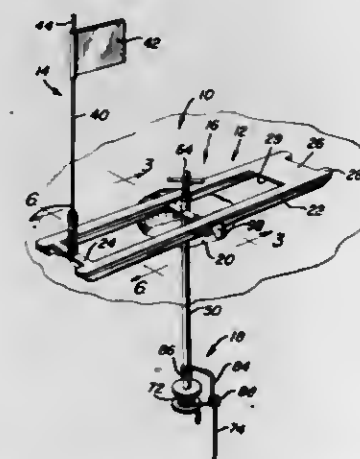
Paul F. Grahl, Rte. 1, Eden, Wis. 53019

Filed Sep. 24, 1979, Ser. No. 77,935

Int. Cl.<sup>3</sup> A01K 97/01

U.S. Cl. 43—17

4 Claims



1. An ice fishing signalling device comprising an elongated base frame adapted to rest on an ice surface in transverse relation to a hole therein, an upwardly extending signalling device mounted on said frame for movement between an upstanding signalling position and a position adjacent the upper surface of the frame, and means mounted on said frame releasably retaining said signal device in its position adjacent the upper surface of the frame, said retaining means comprising a generally vertically disposed drive shaft rotatably supported from the frame, a spool on the lower end of the drive shaft having a fishing line wound thereon, a guide associated with the spool and receiving the line so that a fish moving the fishing line outwardly will rotate the drive shaft, means vertically adjustably supporting the drive shaft from the frame for pivotal movement about a transverse axis, and a transverse tripping member on the upper end of the shaft and adapted to receive the signalling device thereunder when the signalling device is disposed in its position adjacent the upper surface of the frame and releasing the signalling device upon rotation of the drive shaft, said guide for the fishing line including a loop having an extent greater than one convolution and having a free end enabling the fishing line to be placed therein but preventing the fishing line from floating out of the loop, said means supporting the drive shaft including a vertical tube, a transverse center shaft on said frame and receiving said tube to enable the tube, drive shaft, tripping member and spool to pivot to a collapsed position generally coextensive with the elongated frame to enable the device to be transported and stored in a compact condition, said frame being provided with

a hollow central portion defined by a pair of frame rails with the shaft supporting the tube extending between the rails and adjustably secured therebetween, said frame rails being of substantially V-shaped configuration to enable the frame to be lifted from the ice even though the lower edges thereof may be frozen into the ice.

4,285,155

## TOY SHAVING SET FOR A DOLL

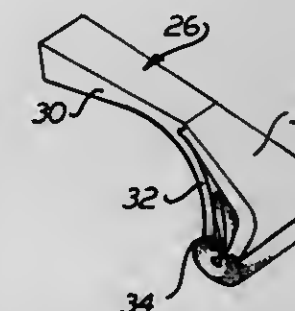
J. Stephen Lewis, Pacific Palisades, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 22, 1979, Ser. No. 87,591

Int. Cl.<sup>3</sup> A63H 33/00

U.S. Cl. 46—1 R

1 Claim



1. A toy razor comprising a handle, a first arcuate member connected to the handle, a second member adapted to mate with the first arcuate member to provide a holder, means adapted to rotate one end of the second member about the end of the first arcuate member opposite the handle, means for latching the second member to the first member, and a cellular sponge held between the first and second members to project therefrom.

4,285,156

## TOY TOILET

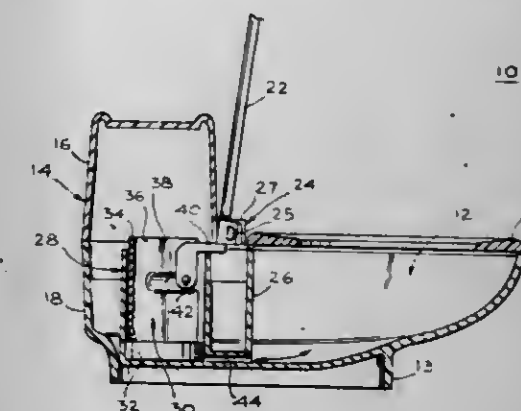
Gerard K. Leistikow, San Pedro, and Henry R. Hales, Hawthorne, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 1, 1980, Ser. No. 117,694

Int. Cl.<sup>3</sup> A63H 33/52, 33/00

U.S. Cl. 46—14

2 Claims



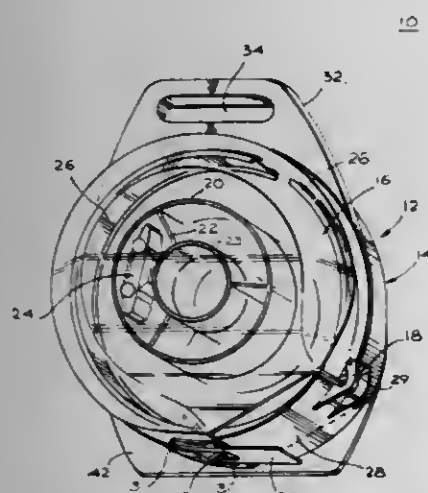
1. A toy toilet comprising: a bowl formed to simulate the bowl of a working toilet; a seat mounted to the upper surface of the bowl; a cover for the seat; means rotatably connecting the cover above the seat, including means for hinging the cover to the bowl; a reservoir mounted to the rear surface of the bowl and including upper and lower chambers wherein the upper chamber extends behind and above the upper surface of the bowl to simulate the water tank of a working toilet; a cylinder positioned in the lower chamber of the reservoir; a liquid conduit from one end of the cylinder to the bowl; a piston adapted to fit in the cylinder to form a liquid tight



seal therewith; and means for moving the piston including a linkage from the cover to the piston which moves when the cover is rotated and which forces liquid from the chambers of the reservoir into the bowl to simulate the flushing action of a working toilet when the cover is opened, and which returns liquid from the bowl to the chambers of the reservoir when the cover is closed.

#### 4,285,157 TOY RACING SET

Gerard L. Lambert, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.  
Filed Jan. 10, 1980, Ser. No. 110,974  
Int. Cl.<sup>3</sup> A63H 33/00, 11/10; E01B 23/00; B65D 69/00  
U.S. Cl. 46—202 3 Claims



1. A track layout for toy vehicles, comprising: two halves hinged together, each of the halves formed having an open end, a closed end, a wall having a cylindrical inner surface which surrounds the inner surface of the closed end, a segment of the wall being interrupted to form a gap in the wall; and means for hinging together the two halves which permits the halves to be folded together so that the open ends abut each other to cause the walls to form a cylindrical enclosure, and the gaps align with each other to form an opening into the enclosure, whereby the inner surfaces of the walls provide a first track, enclosed by the closed ends of each of the halves, for racing toy vehicles which are admitted into the interior of the enclosure via the opening, the means for hinging further permitting the halves to be unfolded so that their closed ends are coplanar and their walls abut such that the gaps in each are adjacent, whereby the inner surfaces of the closed ends provide a second track, totally surrounded by the walls of each of the halves, for racing toy vehicles between the two halves via the adjacent gaps.

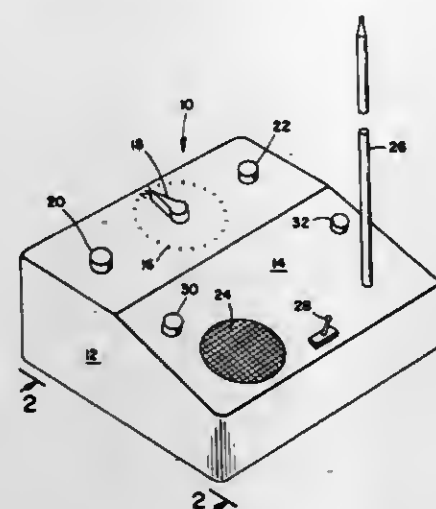
#### 4,285,158 TOY FOR DETECTING MAGNETIC FIELDS WITH ELECTRICAL COMPASS CONTACTS

Randall L. Courts, 18802 Dundee Ave., Saratoga, Calif. 95070, and Joseph R. Wilfong, San Jose, Calif., assignors to Randall L. Courts, Saratoga, Calif.

Filed Jul. 30, 1979, Ser. No. 62,245  
Int. Cl.<sup>3</sup> A63H 33/26; G01C 17/02  
U.S. Cl. 46—227 6 Claims

1. A toy, comprising:
  - (a) a housing;
  - (b) a compass having a magnetic pivotal needle and being mounted on said housing;
  - (c) first and second energizable means for generating first signals, and third energizable means for generating a second signal different from said first signals, each of said first, second and third energizable means being mounted on said housing; and
  - (d) electronic circuit means having a first contact and a

second contact for energizing, respectively, said first energizable means and second energizable means in response to said needle being pivoted in one or another direction to close said first contact or said second contact, means for energizing said third energizable means in re-

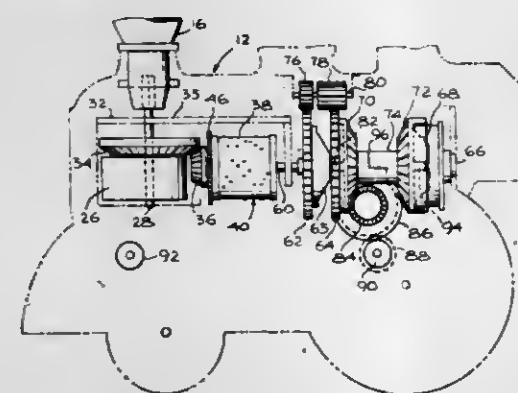


sponse to energization of said first energizable means or said second energizable means, testing means for energizing said first, said second and said third energizable means without said needle closing said first contact or said second contact, and reset means for deenergizing said first, said second and said third energizable means.

#### 4,285,159 DIRECTION REVERSING CRIB TOY

Sidney Bass, Los Angeles; John S. Cook, Redondo Beach, and Herbert May, Torrance, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 25, 1980, Ser. No. 124,372  
Int. Cl.<sup>3</sup> A63H 17/36, 5/00; F16D 19/00, 11/06  
U.S. Cl. 46—262 4 Claims



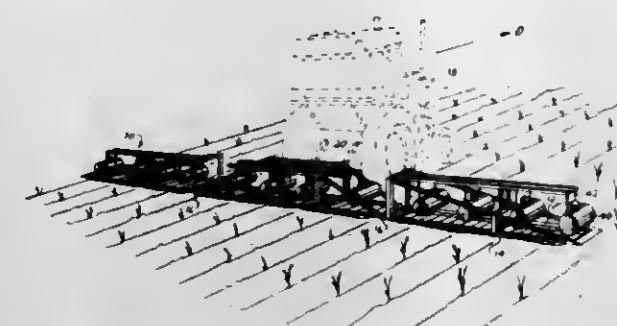
1. A crib toy comprising an outer shell, a reversing mechanism housed in the shell, and means driven by the mechanism for moving the toy along a crib rail, wherein the reversing mechanism comprises a motor, a first cam surface rotated by the motor, a second cam surface rotated by the motor, a shaft, first and second gears positioned to rotate with the shaft, a first cam follower positioned adjacent the first cam surface and adapted to move the shaft, a second cam follower positioned adjacent the second cam surface and adapted to move the shaft, an output gear adapted to engage the second and third gears in different positions of the shaft, the output gear being connected to drive the means for moving the toy along a crib rail, and means for rotating the first and second cam surfaces at a different speed than the first and second cam followers.

#### 4,285,160

##### ANGLE ROPE WEED KILLER

Joseph J. Barton, and Bobby G. Boyd, both of P.O. Box 341, Hale Center, Tex. 79041

Filed Sep. 4, 1979, Ser. No. 72,301  
Int. Cl.<sup>3</sup> A01M 21/00; A01N 5/00  
U.S. Cl. 47—1.5 9 Claims

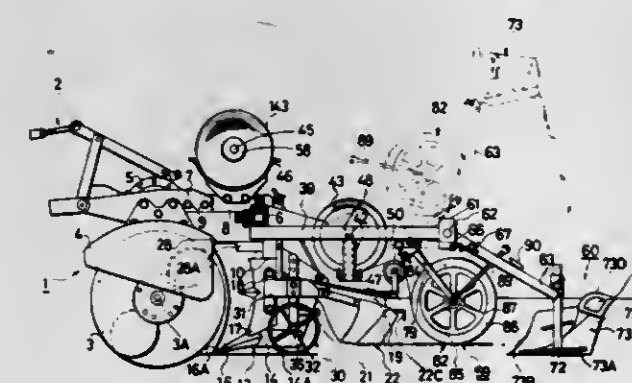


1. In a wet rope applicator for applying herbicides to weeds comprising in combination:
  - a. a loose woven synthetic rope having two ends,
  - b. one end of the rope telescoped in one tube and
  - c. the other end of the rope telescoped in another tube,
  - d. seal means on each of the tubes and rope for sealing the rope and tubes,
  - e. supply means connected to each tube for supplying liquid herbicide under pressure to said tubes and thus pressure feeding said rope,
  - f. a frame having
    - (i) a front horizontal bar and
    - (ii) a back horizontal bar,
  - g. vehicle means on the frame for supporting and moving in an application direction said frame along the land to which the herbicide is to be applied,
  - h. a series of pairs of first and second headers on the frame for carrying herbicide,
  - i. a parallel group of said ropes, each of said ropes extending from one of said tubes in the first header to one of said tubes in said second header, of each pair,
  - j. a series of double outlet reservoirs of liquid herbicide
  - k. each of said double outlet reservoirs fluidly connected to a first and a second header of one of said pairs;
  - l. mounting means on each of the reservoirs for mounting the reservoir at an adjustable distance above the headers to which it is connected.

#### 4,285,161 MULCHER

Masami Kawasaki; Toshimi Ohtori, both of Sakai; Kunisuke Sukigara, and Mitsuo Sato, both of Okazaki, all of Japan, assignors to Kabota Ltd., Osaka, Japan

Filed Mar. 20, 1980, Ser. No. 132,122  
Claims priority, application Japan, Apr. 3, 1979, 54-40742  
Int. Cl.<sup>3</sup> A01G 7/00  
U.S. Cl. 47—9 16 Claims



1. A mulcher for laying down a strip of film over a ridge

longitudinally thereof and covering the laid-down strip with soil comprising:

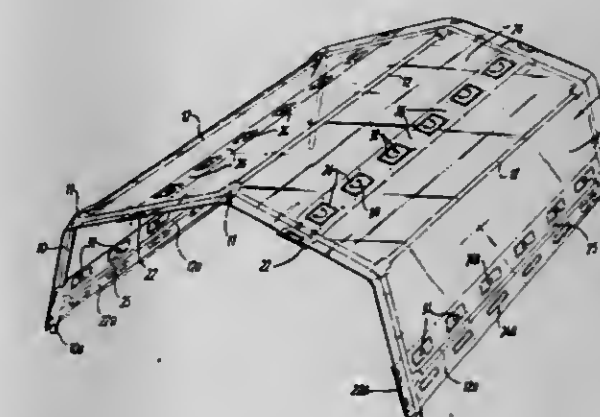
means for rollably horizontally supporting a roll of the strip transversely of the direction of advance of the mulcher, at least one pair of strip pressing means for pressing the strip longitudinally thereof on its opposite side portions, pulling out the strip from the roll and laying down the strip over the ridge, and at least one pair of soil applying means for covering the laid-down strip with soil on its opposite sides longitudinally thereof, the strip roll supporting means comprising a support portion for rollably supporting the strip roll and restraining portions for restraining the strip roll from moving forward or backward while the strip roll is rolling to permit the strip to be pulled out from a definite position.

#### 4,285,162 HORTICULTURAL ENCLOSURES

William J. Hilton, Ashby-de-la-Zouch, England, assignor to Bonas Brothers Limited, Staffordshire, England

Filed Apr. 7, 1980, Ser. No. 137,575  
Claims priority, application United Kingdom, Apr. 7, 1979, 12307/79; Oct. 20, 1979, 36472/79  
Int. Cl.<sup>3</sup> A01G 13/04 17 Claims

U.S. Cl. 47—29



1. A horticultural enclosure comprising a tubular frame, a cover of plastics material fitted on the frame, a plurality of slits in the cover, each slit defining a flap, the cover being tensioned by the frame such that the flaps are normally closed but such that they will be opened by the weight of rain on the cover to admit rain within the enclosure and opened when the enclosure is heated to admit air within the enclosure.

#### 4,285,163 COLLAPSIBLE GROWING PLANT ENCLOSURE

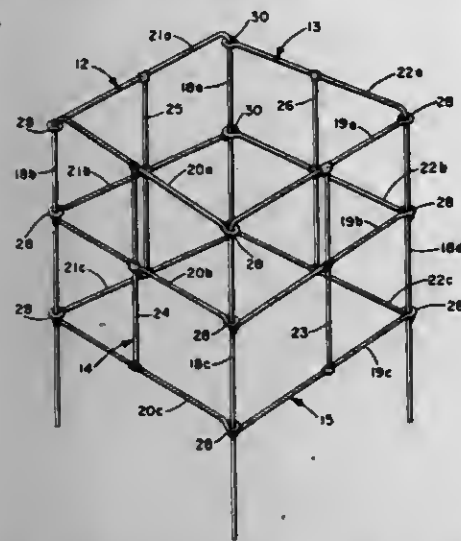
William G. Booker, Jr., 217 - 4th Ave., Pleasant Grove, Ala. 35127

Filed Apr. 8, 1980, Ser. No. 138,561  
Int. Cl.<sup>3</sup> A01G 9/12 4 Claims

- U.S. Cl. 47—45 4 Claims
1. A collapsible protective enclosure for growing plants comprising:
  - four adjacent hinge-connected screens forming a four sided enclosure, each of said screens comprising at least two vertical members rigidly fastened to at least three horizontal members, said horizontal members terminating in hinges formed of a hook around a vertical member of an adjacent screen;
  - a first pair of adjacent screens of said enclosure having a



width less than the width of the remaining pair of adjacent screens, whereby said first pair of screens may be folded



towards the interior surface of said remaining pair of screens permitting the collapse of said enclosure.

4,285,164

## SELF-WATERING PLANTER

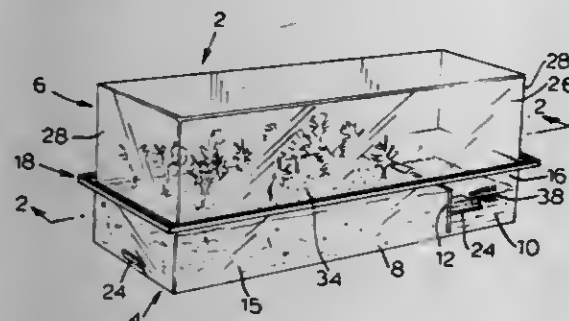
William A. Moore, Brandon, Canada, assignor to A. E. McKenzie Co. Ltd., Brandon, Canada

Filed Jul. 30, 1979, Ser. No. 62,215

Int. Cl.<sup>3</sup> A01G 9/16, 9/24

U.S. Cl. 47-69

3 Claims



1. A self-watering portable planter of a thin plastics material comprising: a base having a first watertight compartment for holding growing medium and a second watertight compartment for holding water, each compartment comprising a side wall and a bottom, said side wall of each base compartment sloping upwardly and outwardly from said bottom, said compartments being located side by side and being separated by a divider wall therebetween, said divider wall extending the entire length of the junction between said compartments, said divider wall being of inverted V-shaped construction and comprising a portion of said side wall of each base compartment, said portions being joined together at their upper edges, said base having a continuous upper outer rim encircling said first and second compartments, a wicking material extending from the bottom of the second base compartment over the divider wall and substantially along the length of the bottom of the first base compartment, said second watertight compartment comprising a water level marking, said water level marking being located above the bottom of said second base compartment but substantially below the top thereof, a cover substantially identical with said base and thereby also having first and second watertight compartments each having a top and a side wall sloping downwardly and outwardly from said top, said first and second compartments of said cover being side by side and separated by a V-shaped divider wall therebetween, said cover having a continuous lower rim, said cover being sealable on said base with said rims in substantially airtight contact and with said first compartment of said cover located over said first compartment of said base and with said second compartment of said cover located over said second compartment

ment of said base, said divider walls of said base and cover defining a space between them when said rims of said cover and base are seated on each other so that the space between said first compartments communicates with the space between said second compartment, said cover and base being nestable one within the other.

4,285,165

## ARRANGEMENT IN A GATE

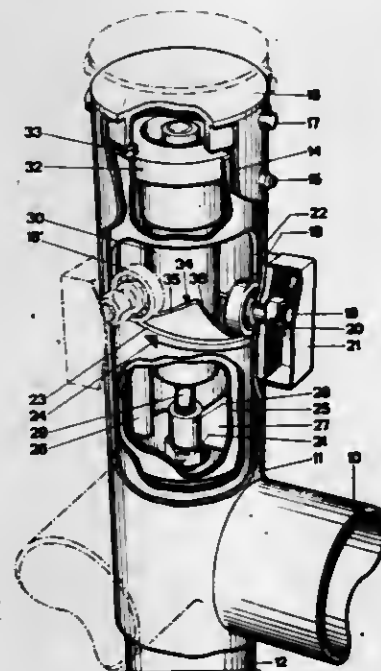
Torsten H. Persson, Froarpavägen 36, S-290 72 Asarum, Sweden

Filed Jun. 21, 1979, Ser. No. 80,118

Int. Cl.<sup>3</sup> E05F 15/20, 1/04

U.S. Cl. 49-30

5 Claims



1. A combination of (a) a swingable gate which has a normally closed or rest position and an open position and (b) a supporting post on which the gate is operably mounted for both pivoting and vertical displacement which is characterized by:

a roller attached to the gate and supported by a stationary cam track on the post; the cam track having a slope from a lowermost point, which determines and thus coincides with a rest position of the gate corresponding to the closed position, to continuously higher points on at least one side of the lowermost point and along a path which the roller follows when the gate is moved from the open position to the closed or rest position; the slope being of sufficient magnitude so that the roller rolls down the cam track by gravity to return the gate from the open position to the closed position;

an abutment which is movable from a normal position in the path which the roller follows along the cam track to another position in which it is sufficiently removed from said path to allow the roller to return by gravity to the rest position, the normal position permitting movement of the roller in a direction away from the rest position to the open position of the gate but preventing the roller from returning under gravity from the open position of the gate to the rest position and;

damper means actuated by pressure of the roller on the abutment to move the abutment against a spring bias from the normal position to the other position, the spring bias being sufficient to return the abutment rapidly to the normal position after the roller passes thereover to the rest position.

4,285,166

## DUAL WINDOW ASSEMBLY

Kinji Ishida, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

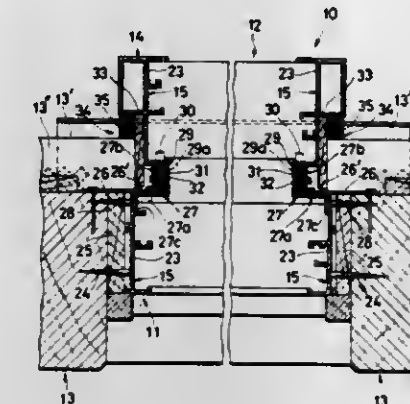
Filed Aug. 17, 1979, Ser. No. 67,408

Claims priority, application Japan, Sep. 4, 1978, 53-121418[U]; Sep. 6, 1978, 53-122353[U]

Int. Cl.<sup>3</sup> E06B 7/00

U.S. Cl. 49-63

21 Claims



1. A dual window assembly for covering an opening in a building wall having an exterior siding, said dual window assembly comprising, in combination:

- (a) an interior window unit including a first rectangular frame supporting a first pair of sashes, said frame being adapted to be disposed in the wall opening and having means by which it may, by a first set of fasteners, be secured to and supported by the wall, and further having a first mounting flange composed of vertical portions integral with the four sides of said first frame;
- (b) an exterior window unit including a second rectangular frame supporting a second pair of sashes, said second frame being adapted to project into the wall opening from the exterior while extending outwardly beyond the siding, the inner portion of such inward projection comprising a second mounting flange composed of port integral with the four sides of said second frame, and disposed adjacent to but spaced from said first mounting flange; and
- (c) a connector having a first section held against said first mounting flange by said first set of fasteners, and a second section secured to said second mounting flange by a second set of fasteners, whereby said exterior window unit is supported by said interior window unit.

4,285,167

## ARBOR FOR MOUNTING TOOLS IN A CHUCK

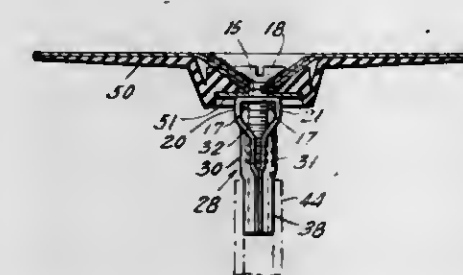
Robert B. Roth, New York, N.Y., assignor to Sandvik Coastal Inc., Fair Lawn, N.J.

Filed Dec. 7, 1979, Ser. No. 101,281

Int. Cl.<sup>3</sup> B24B 23/02; B24D 13/20

U.S. Cl. 51-168

17 Claims



1. An arbor for supporting a tool to itself and for being received by a chuck of another object, said arbor comprising an upper wall for supporting a tool to said arbor and a pair of side wings bent substantially normally to said upper wall; said wings being substantially parallel to each other; said wings each having opposite lateral edges, respectively; said wings

having respective end portions remote from said upper wall; said wings at said end portions being shaped so that each said lateral edge on each said wing extends toward a cooperating said lateral edge on the other said wing; at said end portions, said wings being further shaped so as together to form a structure of a profiled cross-section, which said structure is engageable by a chuck.

4,285,168

## FIBER LUBRICATED BEARINGS

Howard A. Scheetz, Lancaster, Pa., assignor to The Polymer Corporation, Reading, Pa.

Filed Nov. 13, 1979, Ser. No. 93,695

Int. Cl.<sup>3</sup> E05F 11/02

U.S. Cl. 51-281 R

1 Claim

1. A method of preparing a bearing surface comprising the steps of:

- (1) dispersing about 0.5% to 10% by weight of oriented polytetrafluoroethylene fibers in a liquid monomer or precursor of a rigid polyurethane polymer;
  - a. the oriented fibers being characterized by tensile strengths in excess of 25,000 psi, elongations of at least  $\frac{1}{4}$  inch, and aspect ratios (L/D) of at least 25 to 1;
  - b. the liquid monomer or precursor of a rigid polyurethane polymer being characterized in that the polymerization product will have a tensile strength between about 7,500 and 10,000 psi, and an elongation at break of less than about 15%;
- (2) polymerizing the dispersion to form a rigid polymeric matrix holding the oriented fibers;
- (3) cutting into the polymeric matrix, as by turning, sawing, drilling or sanding to remove matrix material and expose a bearing surface having a plurality of fibers partially imbedded in the matrix with free ends extending out of and beyond the cut surface of the matrix.

4,285,169

## METHOD OF USING VACUUM LIFTED BLADE

## SHARPENER FOR ROTARY MOWERS

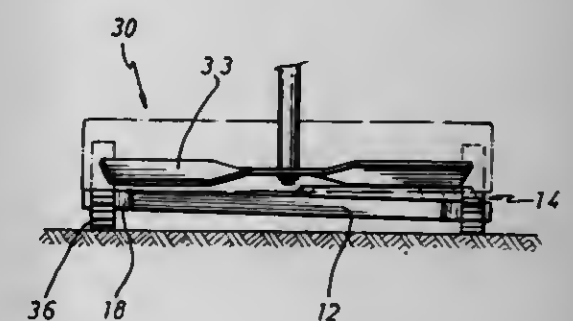
Reginald T. Franklin, 714 Sherrill, Orange, Tex. 77630

Filed Mar. 19, 1979, Ser. No. 21,889

Int. Cl.<sup>3</sup> B24B 1/00

U.S. Cl. 51-288

4 Claims



1. A method of sharpening a blade of a rotary mower, comprising the steps of:

- (a) placing a sharpening device on a level surface;
- (b) positioning the rotary mower over the sharpening device;
- (c) operating the mower at a sufficient speed to raise the sharpening device by vacuum force to sharpen the blade; and
- (d) decreasing the speed of the mower to lower the sharpening device.



4,285,170

## GRINDING OF KNIVES

Harold B. Bardsley, Euxton, Near Chorley, England, assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Apr. 4, 1980, Ser. No. 137,559

Claims priority, application United Kingdom, Apr. 11, 1979, 12827/79

Int. Cl.<sup>3</sup> B24B 1/00

U.S. Cl. 51—288



1. A method of grinding the cutting edges of a plurality of spaced substantially parallel elongated tufting machine knife blades having a mounting portion carried in cantilever fashion in a common knife block, the cutting edges being on the free end of the blades oppositely disposed to the mounting portion, said method comprising locating the individual knife blades in a predetermined spaced relative disposition, collectively deflecting the blades laterally while maintaining the spaced disposition to bring the free ends substantially into a common plane, grinding the free ends into conformity with said common plane, and releasing the deflection from the blades.

4,285,171

## ABRASIVE FLAP DRUM

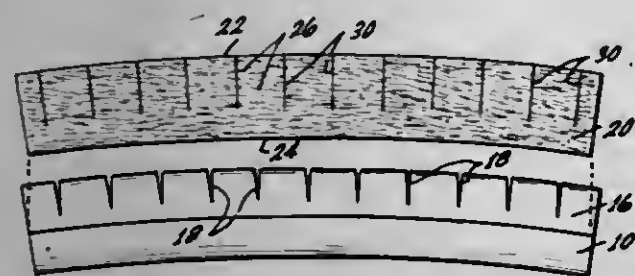
Aleck Block, Los Angeles, and Hiroshi Hasegawa, Whittier, both of Calif., assignors to Merit Abrasive Products, Inc., Compton, Calif.

Filed Apr. 16, 1979, Ser. No. 30,331

Int. Cl.<sup>3</sup> B24D 13/04

U.S. Cl. 51—337

23 Claims



1. An abrasive pack for use with an elongated hub having a plurality of spaced slots each extending along the length of the drum and with a plurality of the abrasive packs each extending outwardly from the drum and each positioned adjacent an individual one of the slots, each pack including:

- a plurality of abrasive flaps of abrasive material stacked together to form a pack;
- an attachment member means having an end portion and a loop portion;
- a supporting strip positioned adjacent the sides of the end portion of the attachment member to support and retain the end portion;
- the supporting strip including a plurality of slits located periodically along the length of the strip and with each slit extending partially along the height of the strip for increasing the flexibility of the strip to bending and twisting, and
- the supporting strip and the end portion disposed between individual flaps in the pack and with the loop portion

without the pack for reception within an individual one of the slots for locking the loop portion within the slot.

4,285,172

## POWER DRIVE APPARATUS FOR TELESCOPIC SEATING SYSTEM

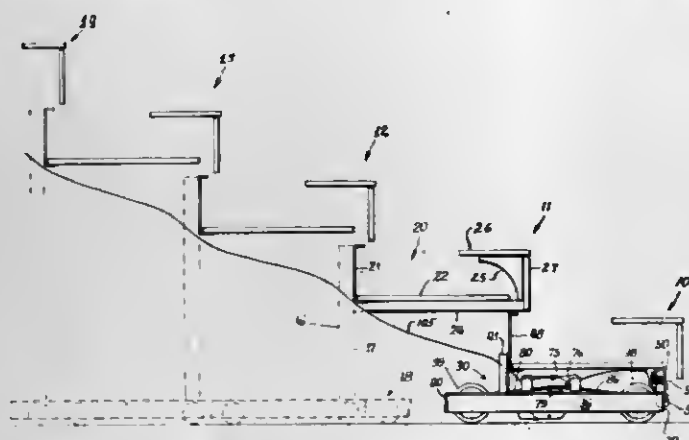
Robert E. Quigley, Seymour, Ill., assignor to American Seating Company, Grand Rapids, Mich.

Filed Sep. 4, 1979, Ser. No. 71,925

Int. Cl.<sup>3</sup> E04H 3/12

U.S. Cl. 52—10

8 Claims



1. Friction drive apparatus for a telescopic seating system having a plurality of rows adapted for movement between an extended position in which the rows are in stepped relation and a retracted position in which the rows are substantially vertically aligned, comprising: a frame; a motor carried by said frame; means for mounting said frame to one row of said system; first and second rollers mounted to said frame for rotation about respective forward and rear horizontal axes extending transverse of the direction of movement of said rows between said positions, each roller having an axial extension greater than its radius and an outer surface of resilient friction material; and positive drive means for connecting said rollers to said motor for being driven thereby.

4,285,173

## BUILDING DECK STRUCTURE

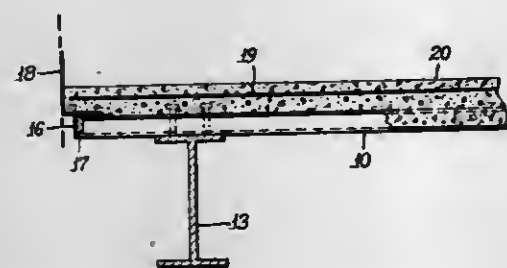
Kenneth R. Grearson, Park Ridge, and Robert Watson, Jr., Woodstock, both of Ill., assignors to Multiloc Corporation, Chicago, Ill.

Filed Dec. 26, 1979, Ser. No. 107,033

Int. Cl.<sup>3</sup> E04C 2/26, 2/32

U.S. Cl. 52—73

18 Claims



1. In a poured concrete building deck structure of the type having a corrugated sheet metal form deck supported by structural girders and spandrels an improved edge construction along edges parallel to the corrugations of said form deck comprising:

- an edge open trough of said corrugated sheet metal form deck being spaced from the desired building line or opening, a beam support between said edge open trough and said desired building line or opening;
- a corrugated sheet metal form having corrugations at about 90° to the major portion of said corrugated sheet metal form deck having its inner end supported by said edge

open trough of said corrugated sheet metal form deck and extending over said beam support in cantilever fashion and having its outer end which is perpendicular to its corrugations spaced a distance corresponding to the adjustability of an edge bracket from the desired building line or opening; and

an edge bracket fastened to said outer end extending outwardly to the desired relationship to the building or opening and providing means to retain poured concrete.

4,285,174

## BUILDING STRUCTURE

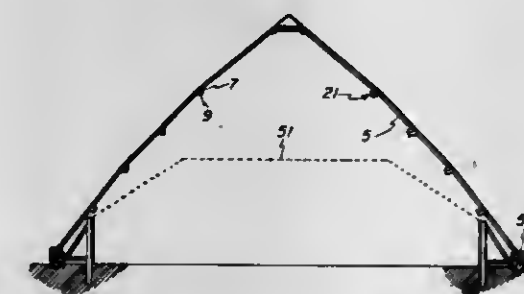
Brian V. Knight, 8 Pleasantview Ave., New Hartford, N.Y. 13413

Filed Nov. 23, 1979, Ser. No. 97,713

Int. Cl.<sup>3</sup> F04B 1/32

U.S. Cl. 52—81

9 Claims



1. A trapezoidal-shaped panel for use with a frustum of a free-standing building structure of variable profile, said frustum being, in and of itself, an independent and self-supporting structure, said building structure having a plurality of frustums, each of said frustums having a plurality of said trapezoidal-shaped panels joined together, each of the panels of a lower disposed frustum having a greater external surface area than a panel of the next succeeding upper disposed frustum, each panel having a flat, outer or exterior skin and a superstructure of a bottom plate, top plate and lateral plates, said superstructure carrying said skin, each of said frustums having its panels joined together along and at their common lateral plates, said top plates of said panels of a lower disposed frustum being joined to corresponding bottom plates of mating panels of such next succeeding upper disposed frustum, and each of said top plates forming with its respective outer or exterior skin an interior angle greater than 90 degrees and with the interface plane of each of such joined-together top and bottom plates being disposed lying below and outside the horizontal plane of the building structure.

4,285,175

## THERMALIZED AWNING

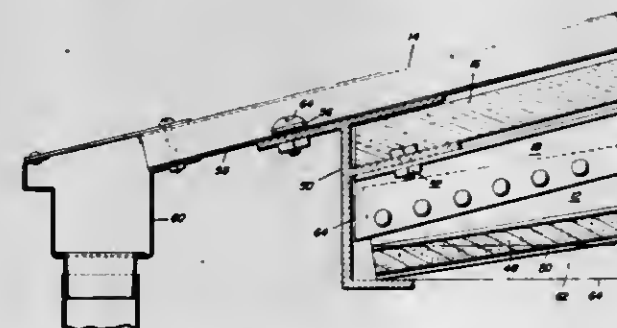
Francis L. Struben, and Jean C. Struben, both of 3870 Jarrettsville Pike, Jarrettsville, Md. 21084

Filed Aug. 17, 1979, Ser. No. 67,403

Int. Cl.<sup>3</sup> E04D 3/24, 3/35; E04F 10/00

U.S. Cl. 52—90

3 Claims



1. A thermalized awning, comprising: a framework, said framework consisting of a plurality of roof truss structures, said roof truss structures being

spaced apart and set in an array, each said roof truss structure having a curved top chord and a straight bottom chord with struts and ties connecting said top and bottom chords together in a truss configuration, each said roof truss structure having a first end and a second end;

a support means for said framework, said support means consisting of a first support system and a second support system, said first support system consisting of a double "U" shaped channel means, said double "U" shaped channel means being affixed to said first end of each said roof truss structure along a first side of said array, said double "U" shaped channel means being affixed to and supported by an adjacent structure means at an elevation above the elevation of said second end of each said roof truss structure, said second support system consisting of an "E" shaped beam means, said "E" shaped beam means being affixed to said second end of each said roof truss structure along a second side of said array, said "E" shaped beam means being affixed to and supported by a plurality of post-like columns, the elevation of said "E" shaped beam being lower than said elevation of said double "U" shaped channel means, thereby causing said top chords of said plurality of roof truss structures to have a continuous descending slope toward said "E" shaped beam means;

a cover means over said framework, said cover means consisting of a plurality of panels configured in a flattened hill and valley contour, said panels having a first end and a second end, said first end of said panels being inserted in an uppermost "U" of said double "U" shaped channel means and being affixed therein, said second end of said panels being affixed to the uppermost surface of said "E" shaped beam with a short overhang;

an insulating means, said insulating means being rigid and of a flat sheet-like configuration, said insulating means having a first end and a second end, said insulating means being inserted between said cover means and said framework, said first end of said insulating means being inserted in the lowermost "U" of said double "U" shaped channel means, said second end of said insulating means being inserted in the uppermost opening of said "E" shaped beam means, said insulating means having a continuous air space between the upper surface thereof and the underside of said cover means, and a continuous air space between the underside of said insulating means and the topmost side of each said roof truss structure, said air spaces providing a blocking means to the transmission of heat and cold by conduction.

4,285,176

## SHELTER TRUSS

Paul S. Runkle, 323 - 90th Ave. West, Duluth, Minn. 55806

Filed Aug. 6, 1979, Ser. No. 63,788

Int. Cl.<sup>3</sup> E04B 7/02

U.S. Cl. 52—93

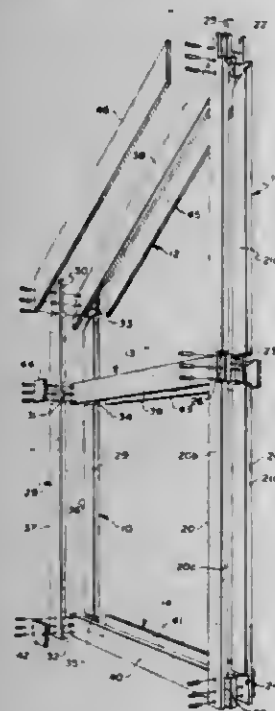
14 Claims

1. A unitary structural skeleton for a building which defines the entire shape of that building consisting in:

- (a) a plurality of upright trapezoidal shelter trusses of the same dimensions and constructed and arranged in spaced parallel relation, each of said trusses comprising:
  - (1) a pair of spaced parallel rigid upright members of different lengths, each having upper and lower end portions, intermediate portions, and outer edge portions;
  - (2) each of said upright members being comprised of a pair of elongated laminates having inner and outer surfaces and being of equal widths at their upper and lower ends;
  - (3) said inner surfaces of each of said laminates being recessed at each of the upper ends of said laminates to accommodate a rafter therebetween;
  - (4) a rafter extending between said members and being glued at each of its ends within said recesses and to said laminates and extending flush with the ends of said laminates;



- (5) said inner surfaces of each of said laminates also being recessed in juxtaposed position at a point intermediate the ends of said members to accommodate a joist therebetween;
- (6) a joist extending horizontally between said members and being glued at each of its ends within said second mentioned recesses and to said laminates;
- (7) each of said pairs of said laminates having their outer edge portions recessed at their upper ends and directly opposite the associated end of said rafter to accommodate and receive a horizontal tie member therein in order to tie said shelter truss to other and similar shelter trusses;
- (8) the ends of said rafter being flush with its said associated recessed surfaces of said laminates;
- (9) each of said pairs of laminates having their inner surfaces glued only to each other and having only their



outer edge portions recessed at a point opposite the ends of said joist to accommodate and receive a horizontal tie member therein in order to tie said shelter truss to other and similar shelter trusses;

- (10) the ends of said joist being flush with its said associated recessed surfaces of said laminates;
- (b) a pair of horizontal tie plates, one each of which is connected to and positioned within the corresponding recessed edge portions of said upper ends of each of said pairs of laminates and extending flush with said edge portions and tying said shelter trusses together; and
- (c) a second pair of horizontal tie plates, one each of which is positioned within and connected to the corresponding recessed portions of each of said pairs of laminates opposite the ends of said joists and extending flush with said edge portions of said laminates and cooperatively tying said shelter trusses together into a structural skeleton.

4,285,177

**REINFORCED TREAD ASSEMBLY**

Glen A. Seegers, Wheaton, Ill., assignor to American Stair Corporation, Inc., Willow Springs, Ill.

Filed Jan. 7, 1980, Ser. No. 110,345

Int. Cl.<sup>3</sup> E04F 11/12; B44D 5/08

U.S. Cl. 52—179

10 Claims

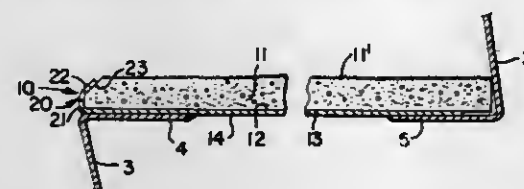
1. A lightweight, reinforced concrete tread assembly for a stairway, comprising
- a tread member formed of a glass reinforced concrete material,
- said tread member having an upper face forming an upper tread surface, a front surface and an underside face,
- base means having a base member coupled in a laminated

relationship to at least a portion of the underside of said tread member,

said base member acting to reinforce said tread member and to render said tread member more impermeable and resistant to impact and forming a composite strengthened tread assembly in conjunction with said tread member,

means for bonding said base member to said tread member to form said composite strengthened tread assembly,

said base means including a nose section integrally coupled to said base member in a continuous relationship,



said nose section extending upward in close proximity to said front surface to a location adjacent said upper surface to protect said tread member,

a pair of risers forming at least a part of a stairway structure, said risers having respective flanges forming aligned spaced horizontal surfaces, and

said laminated tread member and base member being carried on said horizontal surfaces with said base member being disposed between said reinforced tread and at least one of said horizontal surfaces.

4,285,178

**SELF-SUPPORTING STAIRCASE WITH CENTER POST CONSISTING OF INDIVIDUAL STRUCTURAL ELEMENTS**

Günter Holzkampfer, Sachsehain 8, 3000 Hannover 51/BRD, and Hans-Reiner Eilers, Mozartstrasse 5, 3000 Hannover 1/BRD, both of Fed. Rep. of Germany

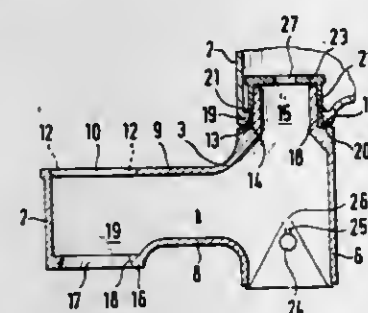
Filed Mar. 22, 1979, Ser. No. 22,996

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813199

Int. Cl.<sup>3</sup> E04F 11/00

U.S. Cl. 52—187

9 Claims



1. In a self-supporting staircase having a center post consisting of a plurality of individual interconnected structural elements, each structural element having a tread, an interior and means for tightly securing said structural elements relative to one another, the improvement comprising, in combination:
- said structural elements being provided, at one end, with an integrally formed projected portion that extends away from said one end of said structural element, has an externally threaded segment thereon and defines an upper horizontal annular surface, and, at the other end, with an integrally formed opening that defines a lower horizontal annular surface;
- said securing means including an internally threaded member and being characterized in that, when a first structural element is assembled in conjunction with an adjacent structural element, said integrally formed projecting portion of the first structural element is positioned such that said externally threaded segment thereon extends through

the opening of the adjacent structural element and the upper horizontal annular surface of the first structural element about the lower horizontal annular surface of the adjacent structural element defining an interface therebetween, said internally threaded member screwing onto said externally threaded segment and thereby securing the individual structural elements and their respective upper and lower horizontal annular surfaces relative to one another, and directing substantially all stress forces between adjacent structural members to be transmitted through the interface defined by said upper and said lower horizontal annular surfaces.

4,285,179

**PLATE SHAPED PREFABRICATED BUILDING ELEMENT AND A PROCESS FOR THE PRODUCTION OF WALLS BY USING THESE ELEMENTS**

Johann Goldinger, A-6511 Zams, Hinterfeldweg 8, Austria

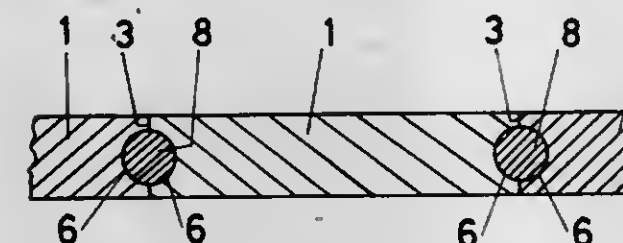
Continuation-in-part of Ser. No. 892,875, Mar. 31, 1978, abandoned, which is a continuation of Ser. No. 621,045, Oct. 9, 1975, abandoned. This application Nov. 1, 1979, Ser. No. 90,256

Claims priority, application Austria, Mar. 10, 1975, NoA1850/75

Int. Cl.<sup>3</sup> E04B 2/24, 2/26

U.S. Cl. 52—309.12

22 Claims



10. A substantially crack-free load-bearing wall, comprising a plurality of substantially rectangular pre-fabricated building elements of light-weight concrete having a modulus of elasticity less than 8000 kg/cm<sup>2</sup> which have been previously shrunk by steam-hardening or storage, said elements having a lengthwise groove formed in each of their longitudinal side edges, said elements further being arranged side-by-side so that the longitudinal side edges of adjacent elements are in abutting relationship and said grooves form vertical channels between adjacent elements, said channels being filled with heavy concrete to provide a tensile-resistant bond between adjacent elements and to form pillars in said channels which carry the major part of a load applied to said wall, said previous shrinkage of said pre-fabricated elements being such that the residual shrinkage of the elements is accommodated by creep occurring in the elements and by elastic expansion thereof.

4,285,180

**WATERSTOPS**

Kevin Hinton, Hitchin, England, and Martin S. Barnes, Pittsford, N.Y., assignors to Schlegel (UK) Ltd., England

Filed Mar. 27, 1979, Ser. No. 24,494

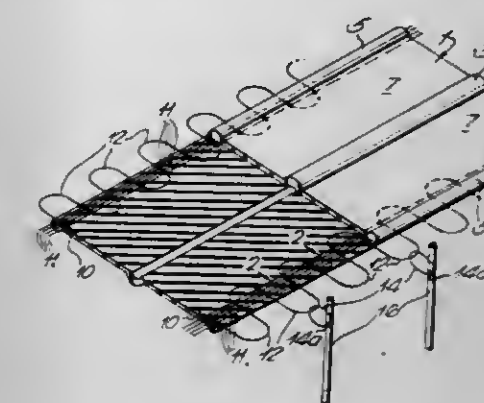
Int. Cl.<sup>3</sup> E01C 11/04

U.S. Cl. 52—396

12 Claims

1. A waterstop, comprising:
- a body of resilient material;
- integral supporting members which have inner portions embedded in the body of said waterstop and outer portions extending laterally from both longitudinal side edges of the waterstop, said outer portions being in the form of spaced loops lying substantially in the plane of the waterstop; and,

a plurality of longitudinal stiffening strands embedded in and extending lengthwise of the waterstop adjacent each of



the side edges, said stiffening strands being in contact with said inner portions of said loops.

4,285,181

**BUILDING PLANKS AND/OR METHODS AND/OR APPARATUS FOR MAKING THE SAME**

Johannes J. Van Loghem, and Johannes La Gronw, both of Russell Rd., Rotorua, New Zealand

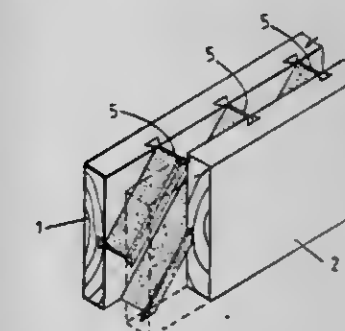
Filed Dec. 7, 1978, Ser. No. 967,117

Claims priority, application New Zealand, Dec. 15, 1977, 185995

Int. Cl.<sup>3</sup> E04B 1/74

U.S. Cl. 52—404

1 Claim



1. In a building plank comprised of two spaced apart substantially parallel timber facing members, a plurality of transverse web members between said facing members connected to said timber members by said web members having dovetail edges engaging within cooperating dovetail slots on the interior faces of said timber members, and insulating material between said timber members, the improvement comprising said web members being arranged at an angle with the ends of adjacent web members overlapping so that web contact with the facing members is substantially continuous over the length of the plank, said web members are made of a plastic material and comprise opposite longitudinal members having said dovetail edges and a plurality of spaced transverse members between said longitudinal members, said insulating material being in situ foamed material.

4,285,182

**CONCEALED FASTENER PANEL CONSTRUCTION AND METHOD OF INSTALLATION**

Kenneth N. Dinges, Tulsa, Okla., assignor to Braden Steel Corporation, Tulsa, Okla.

Filed Apr. 5, 1979, Ser. No. 27,289

Int. Cl.<sup>3</sup> E04B 1/40; E04D 3/361

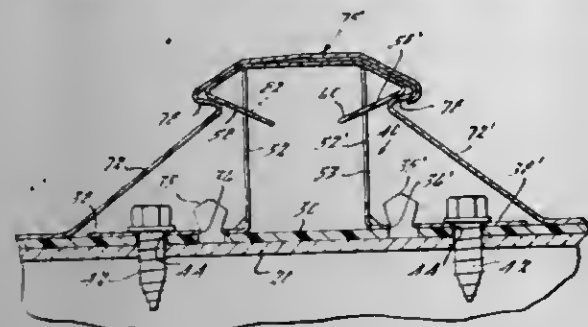
U.S. Cl. 52—478

16 Claims

1. Securing means for the panels of a building panel structure comprising elongated relatively thin flat locating strips having coupling portions at their ends for assembling a plurality of such strips to a desired length, said strips being adapted to be installed in end to end relation lengthwise upon an elongated



building frame member, clip locating portions on surface portions of said strips which remain exposed when the strips are so installed, said clip locating portions being arranged at standardized longitudinally spaced distances, panel holding clips having base portions for attaching the same to supporting structure, additional locating portions on said base portions adapted to interfit with said clip locating portions on the locat-



ing strips, fastener-receiving portions on the base portions adapted for securement to an underlying building frame member by fastening means extending through such base portions and through the underlying locating strips and into the building frame member, and flexible latching means on said clips adapted for interengagement with coacting latching means on overlying panels.

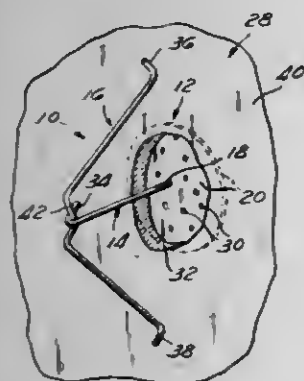
4,285,183

## WALLBOARD PATCHING APPARATUS

Ernest M. Condit, 5210 Reedley Pl., Castro Valley, Calif. 94546  
Filed Nov. 1, 1979, Ser. No. 90,413.  
Int. Cl.<sup>3</sup> E04G 23/02

U.S. Cl. 52—514

5 Claims



## 1. A wallboard patching apparatus comprising:

- a sheet material base having a front operating face, said base being bendable to assume a substantially smaller size, when at rest said base assuming a substantially planar configuration, said front operating face of said base to receive a quantity of an adhesive adjacent the peripheral edge of said front operating face;
- a lock pin removably attached to said base at said front operating face, said lock pin extending outwardly from said front operating face, the free end of said lock pin having a connecting means in the form of a hook;
- a bridge member to connect with said connecting means, said bridge member comprising a substantially triangularly shaped wire rod, the apex of said wire rod including means to facilitate connecting to said hook, the outer ends of said bridge member to press against the wallboard which causes an outward force being applied to said lock pin which tightly holds said sheet material base in contact with the wallboard; and

whereby said base with said adhesive applied and with the lock pin connected is to be deformed and inserted entirely through a hole in the wallboard, the base is then to be released and pressed against the inside wall surface of the wallboard with the adhesive located therebetween, the bridge member is then located between the outside surface of the wallboard and the connecting means to fix the

location of the base, this situation is maintained until the adhesive dries, then the bridge member and lock pin are removed, the hole in the wallboard is now readily patchable with plaster or the like.

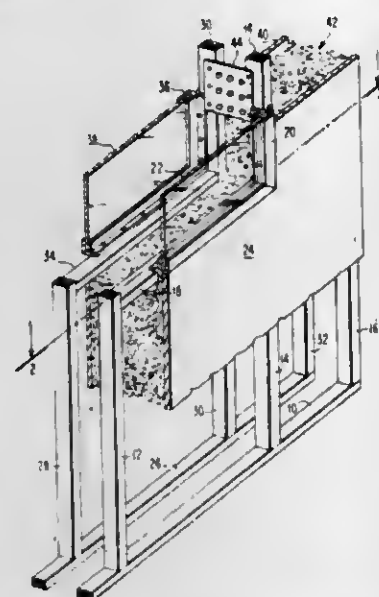
4,285,184

## METHOD OF SOUND-PROOF WINDOW CONSTRUCTION FOR BUILDING STRUCTURES

Ralph L. Turner, Jr., 1235 Regency Pl., San Jose, Calif. 95129  
Filed Sep. 4, 1979, Ser. No. 72,409  
Int. Cl.<sup>3</sup> E06B 1/04

U.S. Cl. 52—741

4 Claims



1. The method of constructing a building structure with a window therein, wherein said structure provides noise reduction, comprising the steps of:

- (a) constructing a double-skinned wall comprised of outer sheathing supported by first vertical studs and inner sheathing supported by second vertical studs, which second studs are separate from said first studs supporting said outer sheathing, such that outer and inner structures are created of separate elements with a space therebetween;
- (b) glazing a first window in an opening in said outer structure;
- (c) glazing a second window in an opening in said inner structure, such that said second window is in tandem with said first window, and
- (d) insulating said space between said inner and said outer structures with a sound-absorbing insulating material, such that said space provides a sound-absorbing cavity to sound waves impinging upon said first window.

4,285,185

## ARTICLE CARRIER FEEDING AND CONTROL APPARATUS

Peter C. Collura, Los Altos, and Chester J. Pierce, Jr., Pioneer, both of Calif., assignors to Certipak Corporation, Greenwich, Conn.

Filed Aug. 29, 1979, Ser. No. 70,668  
Int. Cl.<sup>3</sup> B65B 21/24, 27/04

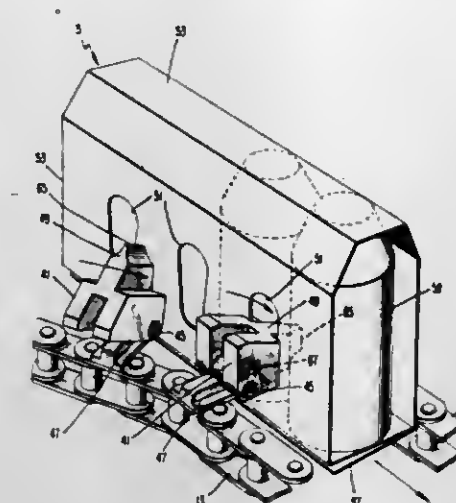
U.S. Cl. 53—48

14 Claims

1. Apparatus for applying a wraparound carrier to a plurality of containers or the like, said carrier being initially partially wrapped around said containers, said carrier including at least two opposed openings formed on opposite sides thereof, comprising:

- means for conveying said carrier and said containers;
- a plurality of lug means, pivotally attached to and spaced apart along said conveyor means, said lug means including tongue portions adapted for insertion into said openings formed in said carrier; and
- means for pivoting said lug means into contact with said carrier openings,

whereby said carrier is tightened and secured about said containers by said pivoting lug means while being conveyed;



said tongue portions of said lug means extending through said carrier openings sufficiently to separate and position said containers within said carrier.

4,285,186

## DEVICE FOR POSITIONING PRINTED CAPS

Albert Desom, 5, Route de Stadthredimus, Remich sur Moselle-Luxemburg, Luxembourg

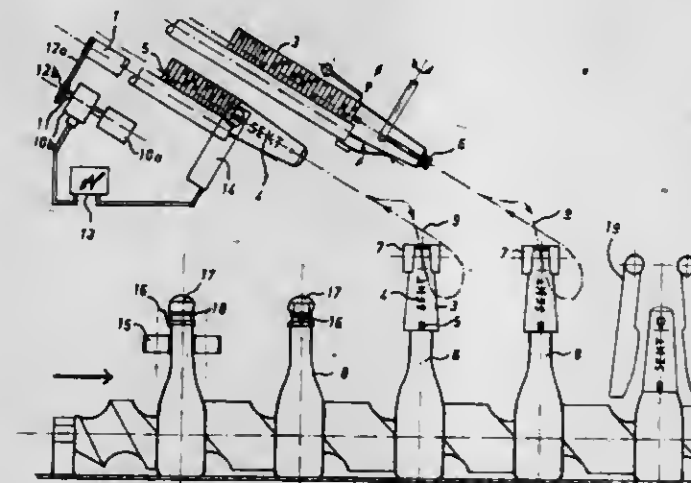
Filed Nov. 27, 1979, Ser. No. 97,636

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852192

Int. Cl.<sup>3</sup> B65B 57/02, 7/28

U.S. Cl. 53—64

7 Claims



1. A device for orientating and positioning printed container caps to be placed upon containers, said caps being provided with optical marks, said device comprising a cap gripping means, a pair of separated guide rod means extending parallel to each other at an angle to a horizontal plane for slidably forwarding a stack of interengaged bottle caps supported thereon toward said cap gripping means arranged adjacent the lower end portions of said guide rod means for successively gripping the lowermost cap in the stack and placing same on said container, at least said lower end portions of said guide rod means being mounted for synchronous rotation around their longitudinal axes; a mark reading means arranged adjacent said lower end portions of said guide rod means for sensing the marks provided on the lowermost cap of the stack supported onto said guide rod means; a driving means for selectively rotating said portions of said guide rod means, and a switching means connected to said mark reading means and to said driving means for controlling selective rotation of said portions of said guide rod means, said switching means interrupting said rotation when a lowermost cap of the stack is in a predetermined rotational position as sensed by said mark reading means.

4,285,187

## INTERMITTENT FEED MECHANISM FOR STACKED CONTAINERS

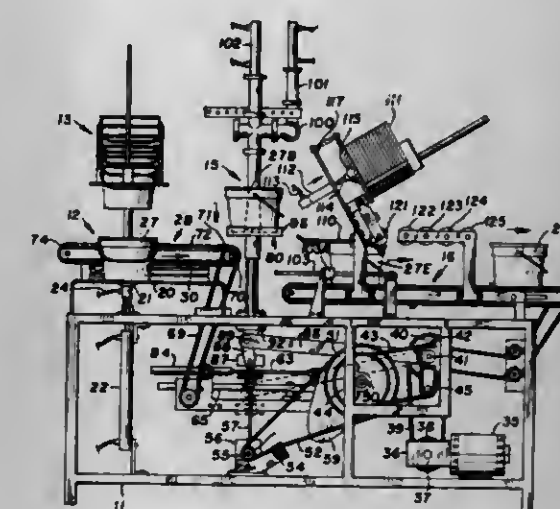
Gilmore T. Schjeldahl, 4436 Marlborough Ct., Minnetonka, Minn. 55343

Filed Oct. 31, 1979, Ser. No. 89,728

Int. Cl.<sup>3</sup> B65B 3/04, 7/28

U.S. Cl. 53—282

8 Claims



1. In a container handling and filling system for sequentially selecting, filling, and capping individual containers stored in a nested stack, with said containers each having upstanding walls, a base, and an upper rim, with said system including stacking means for retaining a generally vertical column of said containers in nested relationship therein, and means for intermittently delivering the lowermost container in said column onto a first, second, and third sequentially arranged container handling sub-systems for moving individual containers through portions of said handling and filling system;

- (a) said first container handling sub-system including means for sequentially delivering individual containers from said nested stack and into a container filling station for filling thereof, and comprising a first endless web having a container gripping member secured thereto and being arranged for reciprocatory to-and-fro motion to transport individual containers upon removal from said nested stack to said second container handling sub-system at and along a base plane;
- (b) said second container handling sub-system including vertically reciprocable pad means for intermittently raising individual containers from said base plane to an elevated disposition adjacent a filling spout for filling and for rotating said container while in said elevated disposition for a finite period from said spout and for returning said filled container to said base plane;
- (c) said third container handling sub-system including second endless web means for receiving said filled container from said reciprocating pad and for removing said filled container through a capping station for applying and sealing a cap onto said filled container.

4,285,188

## METHOD OF FILLING AND SEALING CONTAINERS

Clifton G. Morton, 4 Stella St., Holland, Queensland, Australia (4121)

Division of Ser. No. 963,610, Nov. 24, 1978, Pat. No. 4,220,254.

This application Nov. 30, 1979, Ser. No. 98,872

Claims priority, application Australia, Nov. 25, 1977, PD2561

Int. Cl.<sup>3</sup> B67B 1/04; B65B 7/28

U.S. Cl. 53—420

8 Claims

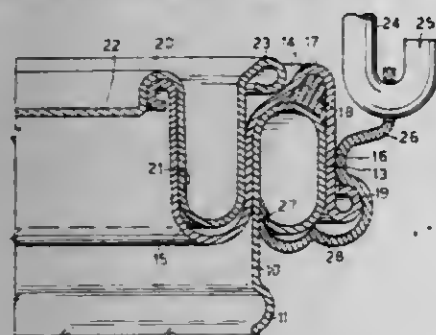
1. A method of handling, filling and sealing container assemblies for paint and other material, comprising the steps of:

- (a) providing a container of substantially frusto-conical shape having a continuous side wall, a closed bottom and an outer annular bead formed at the top of said side wall,



the outer face of said bead being spaced substantially from the plane of said side wall, the frusto-conical shape of said container permitting interfitting of a plurality of containers;

- (b) providing a top ring which can be shipped separately from said container and applied thereto after the container is filled, said top ring having an outer inverted channel, adapted to extend around the bead of the container but spaced from the top thereof to form a space into which sealing compound can be placed before the top ring is secured to the container, and an inner annular channel open at its top, the respective side walls of said inner channel being substantially spaced from one another;
- (c) providing a friction-fit lid having an annular down-



wardly turned peripheral channel adapted to extend into and be frictionally retained by said inner channel of the top ring;

- (d) separately stacking a plurality of containers provided by step (a) for storage and transportation purposes wherein each respective frusto-conical container is interfitted one with another;
- (e) transporting the stacked containers to a material filling station;
- (f) transporting said top rings and lids to said filling station;
- (g) unstacking the containers and filling each container with paint or other material and;
- (h) applying said top ring and lid to each filled container whereby the top ring is secured and sealed to the bead of said container.

4,285,189

## TOBACCO HARVESTER

Anatoly P. Mikhailov, ulitsa Moskovskaya, 52, kv. 40, Krasnodar; Petr F. Tomarovsky, sovkhos "Alma-Atinsky", ulitsa Dokuchaeva, 7, Alma-Atinskaya oblast; Arstan S. Mukanov, ulitsa Kalinina, 77, kv. 11, Alma-Ata; Alexandr N. Soloviev, ulitsa Proletarskaya, 94, kv. 67, Alma-Ata; Evgeny A. Kono-  
nov, ulitsa M. Gorkogo, 149, kv. 117, Alma-Ata; Alexandr P. Zhukov, ulitsa Kosmonavtov, 96/1, kv. 31, Alma-Ata; Ivan P. Leonov, ulitsa Kirova, 60, kv. 12, Krasnodar; Shavarsh M. Grigorian, ulitsa 4 Gastello, 6/40, Yerevan; Vladislav K. Novinsky, Rostovskoe shosse, 8/67, Krasnodar; Jury I. Rabotkin, proezd Stroitelny, 37, Krasnodar; Igor B. Poyarkov, ulitsa Voroshilova, 39, kv. 20, Krasnodar; Viktor P. Fedoseev, ulitsa Pushkina, 5/13, Krasnodarsky krai, poselok Oktyabrsky; Nikolai N. Shelukha, Abinsky pereulok, 12, Krasnodar; Amangeldy Utinchiev, ulitsa Saina, 94, kv. 14, Alma-Ata; Boris V. Chursin, ulitsa Kosmonavtov, 17, kv. 29, Alma-Ata; Dostan Kaliev, ulitsa Furmanova, 126, kv. 14, Alma-Ata; and Vladimir A. Ustich, ulitsa Krasnaya, 204, kv. 3, Krasnodar

Filed May 6, 1980, Ser. No. 147,246

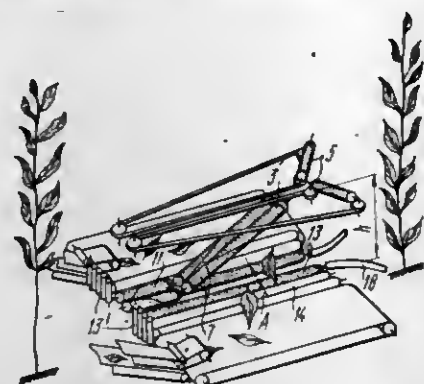
Int. Cl.<sup>3</sup> A01D 45/16

U.S. Cl. 56—27.5

5 Claims

1. A tobacco harvester comprising: a self-propelled chassis; a conveyer adapted for holding the tobacco stalk in a vertical position and mounted on said chassis, said conveyer being essentially made as two adjacent strands provided with elastic oppositely directed projections, said projections being spaced equidistantly over said conveyer strands, and the projections on one of the strands are offset by half the pitch with respect to the projections on the adjacent strand, the height of said projections, when in a free state, exceeding the distance be-

tween said conveyer strands; a means for lifting the drooping tobacco leaves mounted on said conveyer; a leaf stripper situated on said chassis under said conveyer, said stripper being made in the form of parallel drums provided with augers and



brushes set on the shafts of said drums, the diameter of each of said drums complete with the brushes exceeding the diameter of said auger of the drum; a means for withdrawing the severed tobacco leaves mounted on said chassis below said leaf stripper.

4,285,190  
ROTOBALER

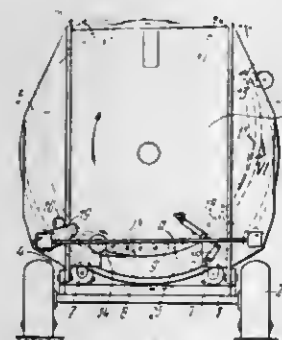
Vladimir G. Ermachkov, 8 mikroraiion, 31, kv. 59, and Vladimir G. Zhavoronkin, 6 mikroraiion, 1, kv. 69, both of Frunze, U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,123

Int. Cl.<sup>3</sup> A01D 39/00

U.S. Cl. 56—341

6 Claims



1. A rotobaler comprising: a frame with end walls; a means for picking up hay and straw material from swaths secured on said frame; a baling chamber having an opening in a front wall for loading the picked-up material and an opening in a rear wall for unloading a finished roll, and including a tube installed between the end walls of said frame in a direction parallel to the movement of the machine and rotatably secured on said frame for rotating about its own axis, an inside surface of said tube being provided with flutes; and a roller table movably installed inside of said tube relative to said baling chamber, outer surfaces of rollers of said roller table being provided with flutes.

4,285,191

## QUICK STRANDING MACHINE

Günther Paulsen, Gingenstr. 22, 7000 Stuttgart 60, Fed. Rep. of Germany

PCT No. PCT/DE78/00041, § 371 Date Aug. 21, 1979, § 102(e) Date Aug. 20, 1979, PCT Pub. No. WO79/00414, PCT Pub. Date Jul. 12, 1979.

This PCT application filed Dec. 16, 1978, Ser. No. 129,281 Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2756933

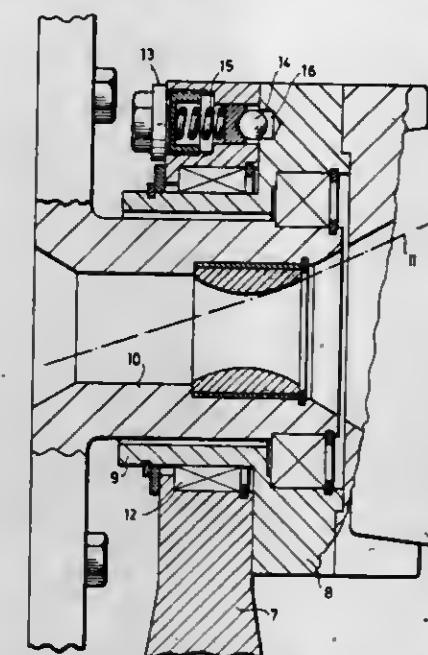
Int. Cl.<sup>3</sup> D07B 7/06, 3/02, 3/04

U.S. Cl. 57—58.34

9 Claims

1. A high-speed stranding machine, comprising a hollow

rotor rotatable about an axis of rotation; at least one spool carrier arranged in said rotor independently of the rotation of said rotor; an unbalanced mass arranged to prevent rotation of said spool carrier together with the rotation of said rotor and formed as a counterweight, said spool carrier with a spool carried thereby having a center of gravity substantially coin-



ciding with said axis of rotation of said rotor; and means for connecting said counterweight with said spool carrier so that said counterweight can independently rotate about said axis of rotation of said rotor, and can be disconnected from said spool carrier upon exceeding a predetermined torque value in said connecting means.

4,285,192

## TWISTING MEMBER FOR RINGLESS SPINNING APPARATUS

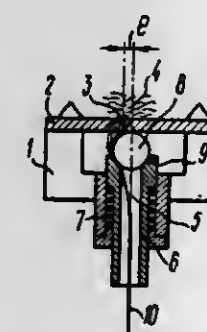
Alexandr I. Savelliev, ulitsa Dybenko, 34, kv. 71, and Elizaveta A. Brezulova, 2 Donskoi proezd, 6, kv. 36, both of Moscow, U.S.S.R.

Filed Oct. 1, 1979, Ser. No. 80,447

Int. Cl.<sup>3</sup> D01H 7/882

U.S. Cl. 57—58.89

5 Claims



1. In a twisting member for use in connection with a ringless spinning apparatus, comprising:

a rotor adapted to be rotated about an axis of rotation; a disc mounted on said rotor and having a duct formed therethrough through which fibres are adapted to pass exiting from an outlet thereof; a sleeve arranged coaxially along the axis of rotation of said rotor underlying a surface of said disc onto which the outlet of the duct opens, said sleeve being resiliently urged towards the disc surface; a ball accommodated between said disc and an end of said sleeve, said ball defining with said sleeve a means for resiliently clamping the thread being formed therebetween,

the improvement comprising: that the outlet of the duct of said disc is arranged eccentrically with respect to the axis of rotation of said rotor such that the outlet of the duct is laterally displaced from the region of the ball whereby no

clamping action can be effected on the fibres between the disc and the ball.

4,285,193

MINIMIZING NO<sub>x</sub> PRODUCTION IN OPERATION OF GAS TURBINE COMBUSTORS

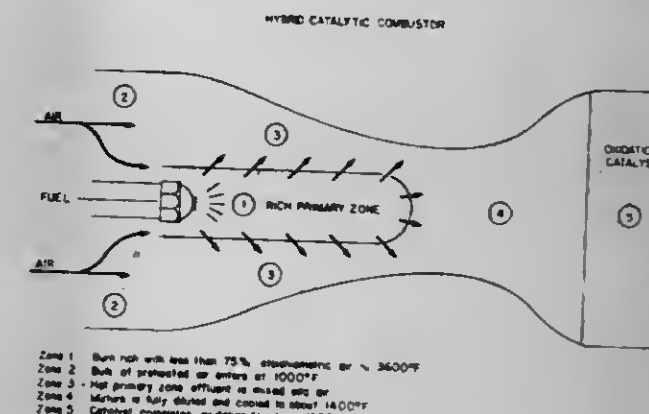
Henry Shaw, Scotch Plains, and Alvin Skopp, Clark, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 825,030, Aug. 16, 1977, abandoned, which is a division of Ser. No. 664,621, Mar. 8, 1976, abandoned. This application Oct. 24, 1978, Ser. No. 954,187

Int. Cl.<sup>3</sup> F02C 7/00, 7/264

U.S. Cl. 60—39.06

2 Claims



1. A method for combusting fuels in a gas turbine which comprises:

- (a) partially combusting fuel with air within an open cannular combustor located within a primary, non-catalytic section of the combustor of said gas turbine to form a hot, partially burned effluent which emanates from an opening in said cannular combustor, the amount of air present within said cannular combustor varying from 50 to 70% of the stoichiometric requirements for complete combustion of said fuel;
- (b) quenching said hot, partially burned effluent with additional air within said combustor without continued high temperature combustion, the amount of such additional air being sufficient to support the subsequent combustion of the partially burned fuel contained in said effluent; and
- (c) passing said quenched effluent over an oxidation catalyst at a temperature above the catalyst light-off temperature to complete the combustion of said fuel.

4,285,194

## APPARATUS AND METHOD FOR CONTROLLING FAN DUCT FLOW IN A GAS TURBINE ENGINE

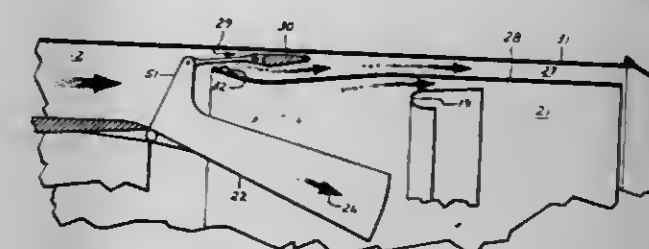
Dudley O. Nash, Forest Park, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Apr. 23, 1979, Ser. No. 32,329

Int. Cl.<sup>3</sup> F02K 3/06, 3/08

U.S. Cl. 60—261

3 Claims



1. In a gas turbofan engine, with a variable area bypass injector comprising pivotally mounted chutes for injecting bypass airflow radially inward into an exhaust duct of the aircraft engine when said chutes are pivoted radially inward, an apparatus for controlling fan bypass duct airflow into an



exhaust duct cooling annulus that is downstream and in direct flow communication with a bypass duct, wherein said apparatus comprises:

- inner and outer coaxial surfaces defining therebetween an annular inlet to said exhaust duct cooling annulus;
- a sealing lip on one of said coaxial surfaces, said lip extending into said annular inlet; and
- an annular translating member movable into and out of said annular inlet at the region of said sealing lip thereby providing a flow control for at least partially blocking airflow into said exhaust duct cooling annulus;
- link arms extending from said annular translating member and pivotally connected to said chutes whereby translation of said translating member for restricting airflow into the annular inlet additionally pivots said chutes radially outward to restrict injection of bypass air into the exhaust duct.

4,285,195

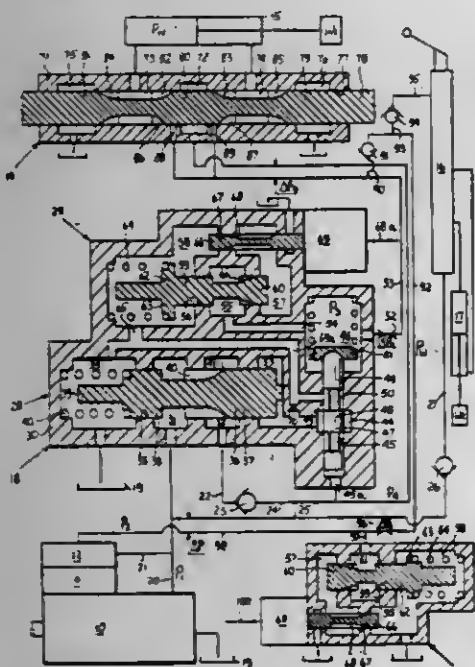
## LOAD RESPONSIVE CONTROL SYSTEM

Tadeusz Badzich, 80 Marwood Dr., Moreland Hills, Ohio 44022  
Continuation-in-part of Ser. No. 109,053, Jan. 2, 1980, and a continuation-in-part of Ser. No. 111,194, Jan. 11, 1980. This application Jan. 16, 1980, Ser. No. 159,864

Int. Cl.<sup>3</sup> F15B 13/08

U.S. Cl. 60—450

20 Claims



1. A load responsive fluid control system comprising a fluid pump having an output flow control and an outlet, a fluid motor subjected to load pressure, exhaust means, and a direction control valve interposed between said outlet of said pump, said fluid motor and said exhaust means, said direction control valve having first valve means for selectively interconnecting said fluid motor with said pump and said exhaust means and for providing variable orifice means between said outlet of said pump and said fluid motor, load pressure sensing port means in said direction control valve selectively communicable with said fluid motor and with duct means connected to said output flow control of said pump, second valve means responsive to pressure in said load pressure sensing port means in said direction control valve having control means and fluid throttling means operable to throttle fluid flow from said fluid pump to said fluid motor to maintain a constant pressure differential at a preselected constant level across said control means of said second valve means and to maintain a constant pressure differential across said variable orifice means, third valve means having means operable through said fluid throttling means of said second valve means to vary level of said constant pressure differential across said variable orifice means while said pressure differential across said control means of said second valve means remains constant at said constant predetermined level, and fourth valve means operable through said output flow

control of said pump to control the pressure differential between pressure in said pump outlet and pressure in said load pressure sensing port means.

4,285,196

## WAVE POWER GENERATOR

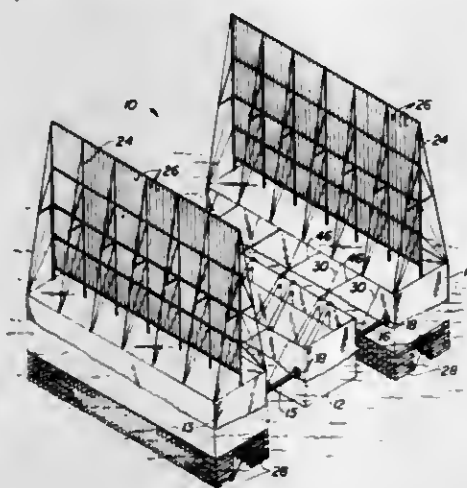
James R. Ekstrom, 5537 Blossom Vista Ave., San Jose, Calif. 95124, and Howard B. Ekstrom, 7 Francisco Dr., Pompton Plains, N.J. 07444

Filed Nov. 16, 1979, Ser. No. 95,016

Int. Cl.<sup>3</sup> F03B 13/12

U.S. Cl. 60—499

20 Claims



1. Apparatus for deriving power output from wave action comprising:  
a rotatable member capable of rotating only in one direction;  
a float which rises and falls in response to wave action and thereby moves relative to the rotatable member;  
means mounted on said float for rocking the float in the presence of wind; and  
means for coupling the float to the rotatable member so that movement of and rocking of the float both rotate the rotatable member in said one direction.

4,285,197

ISOTHERMAL CHAMBER AND HEAT ENGINES  
CONSTRUCTED USING SAID CHAMBER

Jean Clopp, Chateau Beauegy, Carignan, 33360 Latresne, France

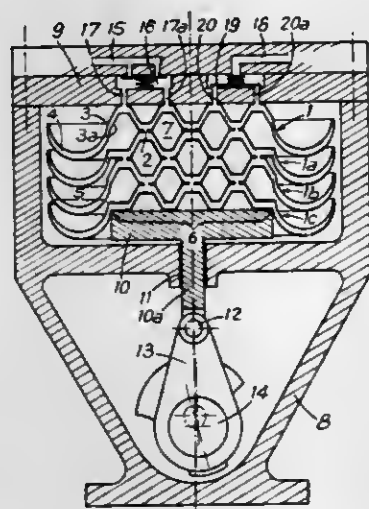
Filed Feb. 12, 1979, Ser. No. 11,361

Claims priority, application France, Feb. 15, 1978, 78 04308

Int. Cl.<sup>3</sup> F02G 1/04

U.S. Cl. 60—525

8 Claims



1. An isothermal chamber constituted by two walls of complementary shapes connected at their peripheries to define between them an enclosure containing a gas, the said walls

having a deformable circumferential zone and a central rigid zone providing a variable capacity, means for passing an auxiliary fluid in heat exchange relation with said rigid zone, whereby the gas contained in the enclosure will undergo substantially isothermal transformations, the walls of the chamber being shaped to provide in the deformable circumferential zone the shape of a half torus, and in the central rigid zone grooves constituting the means for the passage of the auxiliary fluid.

4,285,198

## ACCUMULATOR CHARGING VALVE

Ludwig Budecker, Frankfurt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

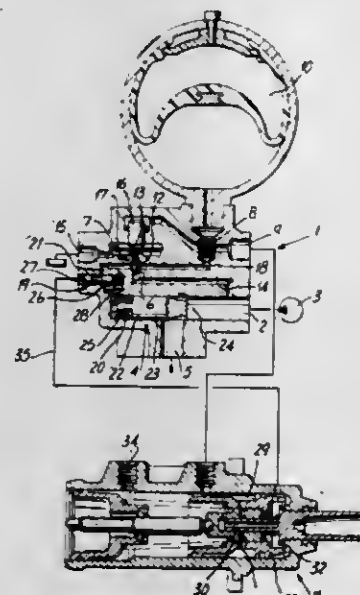
Filed Oct. 26, 1979, Ser. No. 88,693

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1978, 2849877

Int. Cl.<sup>3</sup> G05D 15/00

U.S. Cl. 60—547 A

15 Claims



1. An accumulator charging valve comprising:  
a pressure port connected to a source of pressure-transmitting fluid;  
a first user port connectible to a first user component;  
a second user port connectible to a pressure accumulator and to a second closed-center user component;  
a valve device operative in response to pressure in said accumulator to connect said pressure port to said second user port via a throttle below a predetermined accumulator pressure; and to disconnect said pressure port from said second user port when said accumulator pressure is above said predetermined pressure; and  
a non-return valve having an open position to connect said pressure port to said first user port and a closed position to shut off the connection between said pressure port and said first user port, said non-return valve moving from said closed position to said open position when said valve device disconnects said pressure port from said second user port responsive to increase of accumulator pressure above said predetermined pressure, and said non-return valve being moved from said open position to said closed position by a control pressure when said accumulator pressure falls below said predetermined pressure to thereby move said valve device to said connecting position and said second user component is concurrently activated to enable said non-return valve to supply said fluid to said second user component and to charge said accumulator with said fluid, said control pressure being coupled to said non-return valve by a supply line containing therein a control valve having a first position connecting said supply line to said non-return valve when said second user component is activated and a second position

connecting an unpressurized return line to said non-return valve when said second user component is inoperative.

4,285,199

## HYDRAULIC BRAKE BOOSTER

Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany  
Filed Nov. 17, 1978, Ser. No. 961,809

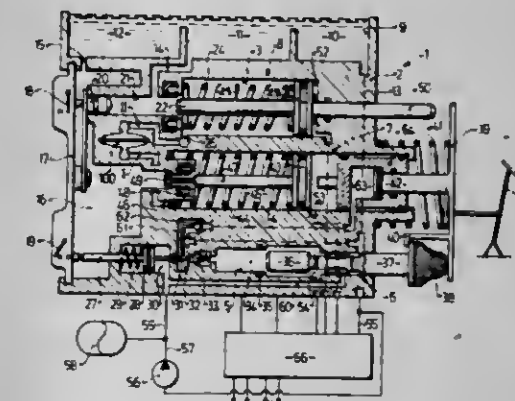
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753585

The portion of the term of this patent subsequent to Apr. 15, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> B60T 13/20

U.S. Cl. 60—550

18 Claims



1. A hydraulic brake booster for a vehicle brake apparatus comprising pressurizing apparatus with a pump and a pressurized reservoir, a reservoir-switchover piston adapted to be subjected to the pressure in the pressurized reservoir and engageable with a control valve, said control valve being associated with a pair of hydraulic main cylinders and each having connection means adapted to control both said pressurizing apparatus connected with the said main cylinders and said main cylinders connected with a relief means, at least one of said main cylinders including piston cooperating means cooperating with pedal-operated means and said piston cooperating means adapted to be operated by said pedal-operated means on pressure failure, said piston cooperating means having at least one main cylinder including an auxiliary pressure means, said auxiliary pressure means including an auxiliary cylinder, piston means being coextensive with said at least one main cylinder, said pressurizing apparatus including a refill container comprising a container relief means, said auxiliary pressure means communicating with said container relief means through a valve means and said valve means being coupled with said reservoir switchover piston.

4,285,200

## HYDRAULIC ASSIST TURBOCHARGER SYSTEM

Joe L. Byrne, Torrance; Robert J. Kobayashi, Rancho Palos Verdes, and James H. Nancarrow, Torrance, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Jul. 16, 1979, Ser. No. 57,790

Int. Cl.<sup>3</sup> F02B 37/10

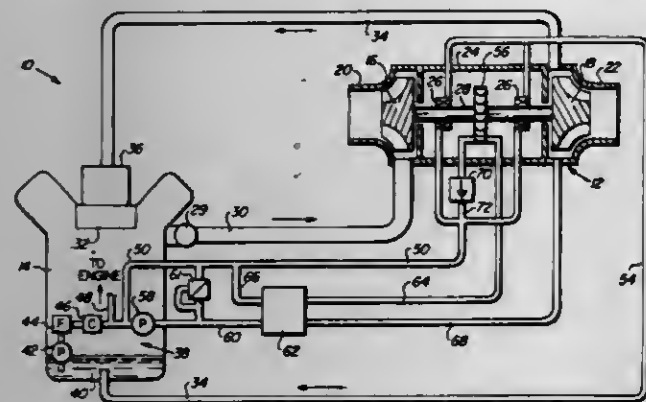
U.S. Cl. 60—607

88 Claims

1. A turbocharger system for supplying charge air to a combustion engine, comprising a turbocharger including a turbine rotatably driven by engine exhaust gases, and a compressor rotatably driven by said turbine for supplying charge air to said engine; an engine hydraulic system including means for supplying hydraulic fluid to said turbocharger for lubrication thereof; an hydraulic turbine coupled directly to said turbocharger; and means for selectively supplying a portion of the fluid from said engine hydraulic system to said hydraulic turbine at a relatively high pressure for rotatably driving said



hydraulic turbine for supplementally driving said compressor, said means for supplying fluid to said hydraulic turbine includ-



ing means to fully submerge said hydraulic turbine during operation thereof.

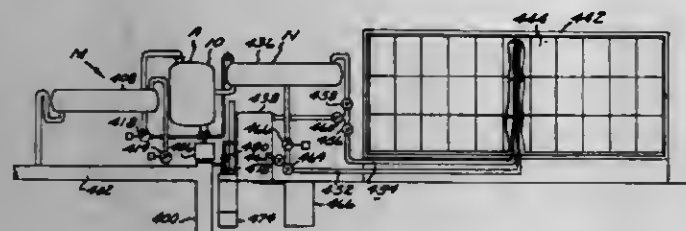
4,285,201

## VAPOR POWERED ENGINE ASSEMBLY

Robert C. Stewart, 739 Appleway, Coeur D'Alene, Id. 83814  
Continuation-in-part of Ser. No. 848,873, Nov. 7, 1977, Pat. No. 4,156,343. This application Apr. 2, 1979, Ser. No. 26,022  
Int. Cl.<sup>3</sup> F03G 7/02

U.S. Cl. 60-641 A

20 Claims



1. An engine capable of receiving high pressure vapor from a heated source thereof and transforming a portion of the pressure energy thereof to rotational power prior to discharging said vapor at a lower pressure from said engine, said engine including:

- a confined space defining pressure vessel that includes a top and bottom, said confined space in communication with said high pressure source;
- a crankshaft that includes a plurality of throws and axially aligned straight end portions;
- first means for rotatably supporting said end portions in fixed positions in said confined space, said crankshaft extending between said top and bottom;
- a power generating assembly in said confined space for imparting rotary motion to said crankshaft, said assembly including a frame that occupies a fixed position relative to said pressure vessel; a plurality of parallel cylinders supported by said frame in axial alignment with said throws, each of said cylinders having a first closed end and a second open end adjacent said crankshaft, with each of said cylinders having a first high pressure vapor inlet port and second low pressure vapor discharge port therein adjacent said first end; a plurality of pistons slidably mounted in said cylinders, each of said pistons having first and second ends; and a plurality of piston rods pivotally connected to said second ends of said pistons and to said throws most adjacent thereto;
- conduit means for receiving low pressure vapor from said cylinders and directing said low pressure vapor to a location remote from the exterior of said pressure vessel;
- first rotatable valve means for sequentially establishing communication between each of said second ports and said conduit means;
- second rotatable valve means for sequentially establishing communication between each of said first ports and high pressure vapor in said confined space;
- second means actuated by the rotation of said crankshaft

for so sequentially rotating said first and second valve means that as each of said pistons moves in a power stroke from said second end of said cylinder in which it is disposed towards said first end of said cylinder, due to the force exerted by said high pressure vapor on said first end of said piston, said first valve means maintains communication between said second port and said conduit means during the major portion of said power stroke, with said second valve means obstructing communication between said first port and high pressure vapor in said confined space during at least the major portion of said power stroke, said second valve means during at least the major portion of the return stroke of said piston maintaining communication between said high pressure vapor in said confined space and said first port for said piston to have said high pressure vapor exert equal and opposite forces on said first and second ends thereof and minimize the energy required to move said piston through said return stroke, and said first valve means obstructing communication between said second port and said conduit means during said return stroke;

- power take-off means operatively associated with said crankshaft for utilizing the rotational power of the latter due to the reciprocation of said pistons; and
- third means for lubricating said assembly and crankshaft as said pistons reciprocate and said crankshaft rotates.

4,285,202

## METHOD OF ENERGY CONVERSION AND A DEVICE FOR THE APPLICATION OF SAID METHOD

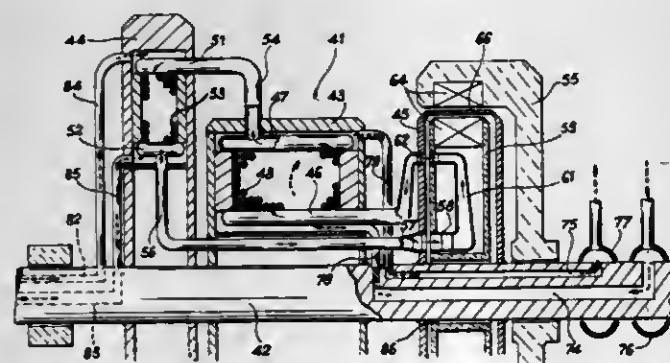
Bernard Bailly du Bois, 58 rue de Maubeuge, 75000 Paris, France

Filed Oct. 16, 1978, Ser. No. 951,943

Int. Cl.<sup>3</sup> F01K 25/06; F02C 1/04

U.S. Cl. 60-650

13 Claims



1. A method of energy conversion involving at least one step of compression or expansion of a working fluid within a rotor, wherein said method comprises: circulating the working fluid within a duct which is rigidly fixed to the rotor and follows a circuit having the shape of a spiral, said spiral being oriented in such a manner as to draw nearer to the axis of rotation of the rotor as it is followed around said axis in the direction of rotation of the rotor and wherein the geometrical characteristics of the duct are determined in conjunction with the operating conditions in such a manner as to ensure that the ratio of the azimuthal projection of the friction force exerted on the fluid by the duct walls and the azimuthal projection of the Coriolis force to which the fluid is subjected are in the range of 0.2 to 2.

4,285,203

## MEANS AND METHOD FOR SIMULTANEOUSLY INCREASING THE DELIVERED PEAK POWER AND REDUCING THE RATE OF PEAK HEAT REJECTION OF A POWER PLANT

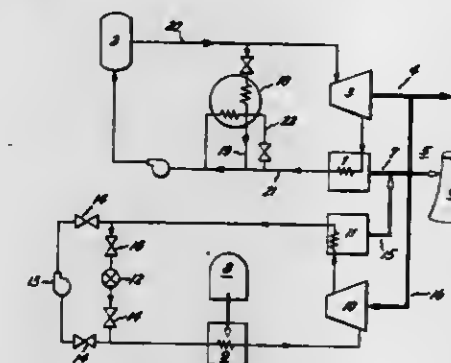
Himanshu B. Vakil, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 25, 1979, Ser. No. 87,972

Int. Cl.<sup>3</sup> F01K 23/04

U.S. Cl. 60-652

10 Claims



1. A method for simultaneously increasing the delivered peak power and reducing the peak heat rejection rate of a power plant which plant produces power cyclically over time including a period of peak power production and a period of decreased power production, said power plant having a primary power cycle and a secondary power cycle, said method comprising the steps of:

generating thermal energy in said primary power cycle and rejecting a portion of said thermal energy from said primary power cycle during the production of power therein;

providing a thermal reservoir in said secondary power cycle capable of accepting thermal energy at a temperature below that of said thermal energy rejected from said primary cycle;

transferring at least a portion of said thermal energy rejected from said primary cycle during said period of peak power production to said thermal reservoir of said secondary cycle, and producing power in said secondary power cycle during said transfer; and

withdrawing heat energy from said thermal reservoir during at least a portion of said period of decreased power production.

4,285,204

## DEFROSTING PROBLEM AREAS OF REFRIGERATED DISPLAY CASES

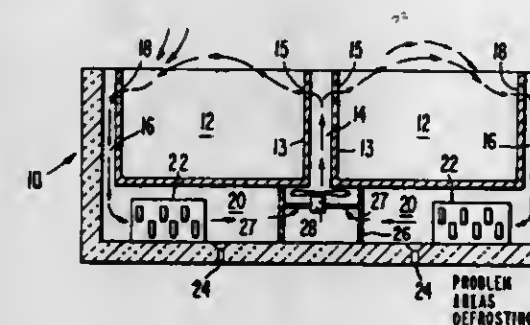
John H. Vana, Allentown, N.J., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Feb. 28, 1980, Ser. No. 125,712

Int. Cl.<sup>3</sup> F25B 41/00; A47F 3/04; F25B 47/00

U.S. Cl. 62-81

16 Claims



12. The method of defrosting a refrigerated display case that comprises the steps of circulating hot gas through an evaporator coil of said case while maintaining operation of an air circulating fan to circulate air through the coil in the direction

in which the air is circulated during normal refrigeration modes of the case; thereafter reversing the direction of air circulation during the continued circulation of hot gas through the evaporator coil to defrost areas within the case normally upstream from the evaporator in the sense of the direction of air during the refrigerating mode; and thereafter again reversing the direction of air circulation to cause the same to revert to the direction in which air flows within the case during the refrigerating modes thereof.

4,285,205

## REFRIGERANT SUB-COOLING

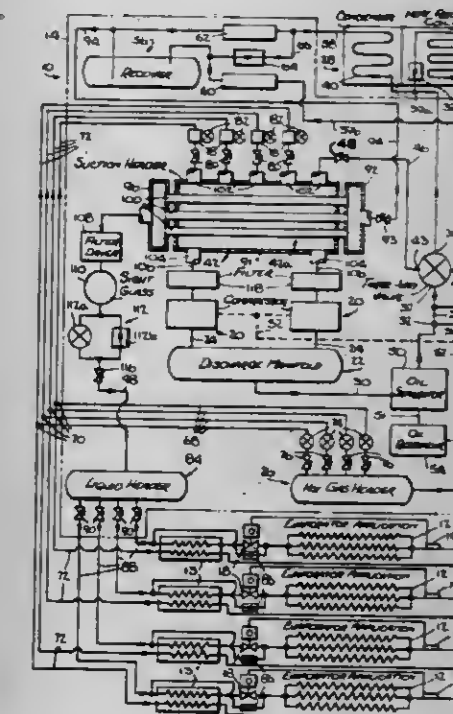
Leonard I. Martin, 913 Melvin Dr., N. Bellmore, N.Y. 11710, and Robert H. Harms, 129 Clinton St., Malverne, N.Y. 11565

Filed Dec. 20, 1979, Ser. No. 105,728

Int. Cl.<sup>3</sup> F25B 41/00

U.S. Cl. 62-113

9 Claims



1. In a refrigeration system of a type having at least one compressor at a central location, a condenser, a plurality of remotely located evaporators, liquid-side conduit means interconnecting the output of said condenser with the inputs of said evaporators for conducting relatively warm refrigerant liquid from said condenser to the inputs of said evaporators, and suction-side conduit means interconnecting the outputs of said evaporators with the input of said compressor for conducting relatively cool gaseous refrigerant from said evaporator outputs to the input of said compressor, the improvement comprising a liquid-to-suction heat exchanger, said heat exchanger being located at said central location, and the respective conduit means being connected to said heat exchanger so as to allow substantially all of the relatively cool gaseous refrigerant returning to said compressor input from said evaporators to be maintained in heat exchange contact at said central location with substantially all of the relatively warm liquid refrigerant being conducted from said condenser to said evaporator inputs.

4,285,206

## AUTOMATIC REFRIGERANT RECOVERY, PURIFICATION AND RECHARGE APPARATUS

Richard Koser, Croton Falls, N.Y., assignor to Draif Tool Co., Inc., Bedford Hills, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,555

Int. Cl.<sup>3</sup> F25B 45/00

U.S. Cl. 62-126

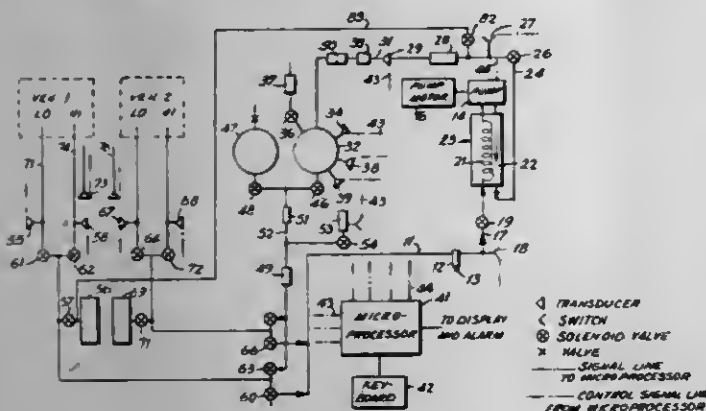
45 Claims

1. Apparatus for recovery of refrigerant from an air-conditioning system, comprising means for connection to the refrigerant-containing portion of said air-conditioning system; first

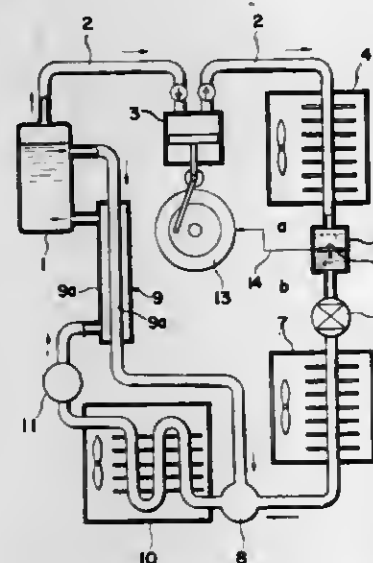


pump means coupled at its inlet side to said connection means for producing a vacuum level at said connection means for effecting essentially complete recovery of said refrigerant and for producing a pressure at said first pump means outlet side for liquifying said refrigerant; evaporator means coupled intermediate said connection means and said pump means for vaporizing refrigerant in transit towards said pump means; condenser means coupled to the outlet side of said first pump means for liquifying said refrigerant under the pressure of said first pump means and at essentially ambient temperature; first tank means for receiving liquified condensate from said con-

delay means connected between the level sensor means and the level switch means for delaying the electrical signal for a predetermined length of time; and temperature sensor means for controlling the compressor to be motor driven only when a sensed temperature is above a predetermined value; the temperature sensor means comprising means for inhibiting the level sensor means from producing the electrical signal when the sensed temperature is below the predetermined value.

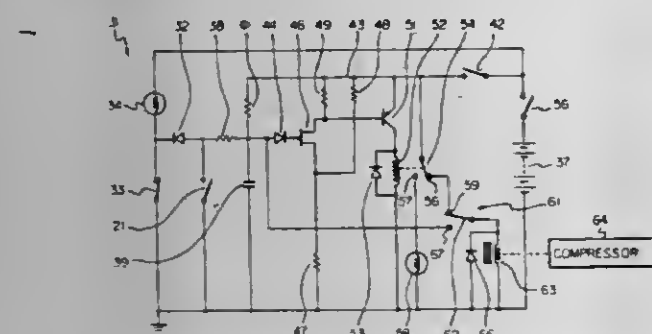


**4,285,208**  
**ABSORPTION TYPE REFRIGERATING MACHINE OF HYBRID CONSTRUCTIONS**  
Isao Takeshita, Neyagawa; Shiro Hozumi, Sakai, and Nobuhiko Wakamatsu, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan  
Filed Apr. 16, 1980, Ser. No. 140,863  
Int. Cl.<sup>3</sup> F25B 15/00, 27/00, 1/00  
U.S. Cl. 62-141 **3 Claims**



denser means; first powered valve means movable between open and shut conditions and disposed intermediate said evaporator means and said connection means; second powered valve means movable between open and shut conditions and disposed intermediate said condenser means and said first tank means; and first pressure switch means disposed intermediate said evaporator means and said connection means for sensing the pressure thereat and operatively connected to said first and second powered valve means for automatically shutting said first and second powered valve means when the sensed pressure drops to a pre-determined level representative of conclusion of refrigerant recovery.

**4,285,207**  
**AIR CONDITIONING APPARATUS COMPRISING REFRIGERANT SHORTAGE SENSOR**  
Hiroyuki Sugita, Ryota Hasegawa, and Tetsuo Nakamura, all of Konan, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan  
Filed Jul. 23, 1979, Ser. No. 59,723  
Claims priority, application Japan, Jul. 31, 1978, 53/105097[U]; Aug. 4, 1978, 53/107649[U]; Sep. 9, 1978, 53/124175[U]  
Int. Cl.<sup>3</sup> B60H 3/04; G05D 23/32  
U.S. Cl. 62-133 **14 Claims**



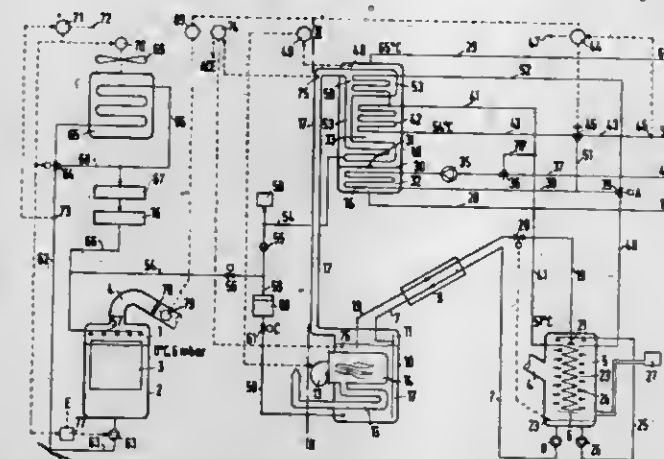
1. An air conditioning apparatus including a motor driven compressor and a refrigerant reservoir connected to the compressor, characterized by comprising:  
level sensor means for producing an electrical signal when a refrigerant level in the reservoir is below a predetermined value;  
level switch means for normally controlling the compressor to be motor driven and for controlling the compressor to be not motor driven in response to the electrical signal;

1. In an absorption type refrigerating cycle having a refrigerant vapor generator for evaporating, by the application of thermal input from outside, the refrigerant absorbed in the solution in an adsorber which is provided to absorb into the solution the refrigerant evaporated by an evaporator connected through a condenser and an expansion valve to the generator in a refrigerant circuit, a hybrid type refrigerating machine comprising a compressor for compressing the refrigerant vapor and connected between said generator and condenser, a refrigerant reservoir for storing the condensed refrigerant liquid connected between said condenser and expansion valve, and a means for controlling the operation of said compressor in response to the liquid level in said refrigerant reservoir.

**4,285,209**  
**ABSORPTION HEAT PUMP INSTALLATION**  
Johannes Luthi, Neftenbach, and George Ziegler, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland  
Filed Sep. 10, 1979, Ser. No. 73,874  
Claims priority, application Switzerland, Sep. 13, 1978, 9588/78  
Int. Cl.<sup>3</sup> F25B 27/02, 15/00, 13/00  
U.S. Cl. 62-238.3 **17 Claims**

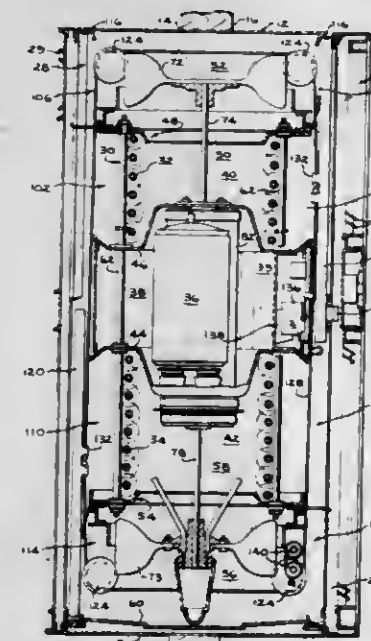
1. An absorption heat pump installation comprising  
an absorber receiving a hygroscopic absorption medium;  
an expeller for receiving said hygroscopic absorption medium with water;  
a condenser connected to said expeller to receive a flow of steam therefrom and to condense the stream;

a pump for pumping the absorption medium at high concentration through said expeller and absorber;  
means for circulating water through said absorber, expeller and condenser;  
an energy accumulator receiving a part of the water;  
a vapor line communicating an exposed water surface in said accumulator with said absorber to deliver water vapor to said absorber; and



a water loop being connected to said accumulator and having at least one low-temperature heat source to receive and heat a flow of water from said accumulator; said hygroscopic absorption medium and its concentration being selected so that the absorption temperature at the pressure prevailing at the triple point of the water is higher than the temperature of the water flowing through said absorber in order to remove absorption heat.

**4,285,210**  
**SELF-CONTAINED HEATING AND COOLING APPARATUS**  
William J. McCarty, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.  
Filed Apr. 28, 1980, Ser. No. 144,795  
Int. Cl.<sup>3</sup> F25B 29/00, 13/00  
U.S. Cl. 62-325 **4 Claims**



1. An air conditioning apparatus for conditioning air in an enclosure having a wall opening comprising:  
a housing having openings on opposed sides thereof adapted to be positioned in said wall opening with the opening on one side of said housing facing the outdoors and the opening on the other side of said housing facing said enclosure;  
a central chamber defined by spaced partition means dividing said housing into an evaporator compartment and a condenser compartment;  
a refrigerator system of the type having a refrigerant capable

of boiling under relatively low pressure to absorb heat and condensing under relatively high pressure to expel heat, a compressor for compressing a refrigerant fluid in gaseous phase having a high pressure outlet port and a low pressure inlet port, a condenser in said condenser compartment having a high pressure inlet port and a high pressure liquid refrigerant outlet port, means connecting said inlet port to said compressor outlet, an evaporator in said evaporator compartment having a low pressure liquid inlet port in fluid communication with said high pressure liquid refrigerant outlet port of said condenser by a fluid line, and having a low pressure outlet port at its upper portion, means connecting said outlet port with said inlet port of said compressor, and a flow control means in said fluid line;

a fan shroud partition means in each of said compartments substantially dividing said compartments into inlet and outlet sections, each of said sections having an opening in both the indoor and outdoor facing side of said housing; a fan within each of said shrouds for circulating air through each of said compartments in a direction from said inlet section to said outlet section;

a first damper slidably arranged in the indoor facing side of said housing being associated with the indoor facing openings of said compartments; a second damper slidably arranged in the outdoor facing side of said housing being associated with the outdoor facing opening of said compartments; and

means for selectively positioning said dampers to a first cooling position wherein the indoor facing openings of said evaporator compartment communicate with the enclosure and the outdoor facing openings of said condenser compartment communicate with said outdoors for cooling the air in said enclosure and to a second heating position wherein the indoor facing openings of said condenser compartment communicate with the enclosure and the outdoor facing openings of said evaporator compartment communicate with said outdoors for heating the air in said enclosure.

defrost means including a first defrost flow passage connected between said low pressure outlet port of said evaporator and said high pressure inlet of said condenser; a second defrost flow passage connected between said high pressure outlet of said condenser and said low pressure inlet of said evaporator, a first valve in said first defrost flow passage and a second valve in said second defrost flow passage;

said first and second valves being operable to a closed position when a refrigerant pressure differential is present in said system and being operable to an open position when said pressure differential is bled down through said flow control means after said compressor operation terminates, so that a nonrestrictive refrigerant defrost flow path circuit is established through said first defrost flow passage between the upper portions of said condenser and said evaporator and through said second defrost flow passage between the lower portion of said condenser and said evaporator, thereby allowing liquid refrigerant when present in the lower portion of said evaporator to flow through said second defrost flow passage into the lower portion of said condenser, while the warmer gaseous refrigerant when present in the condenser will flow through said first defrost flow passage into the upper portion of said evaporator to lower the temperature of said evaporator and melt frost when present.



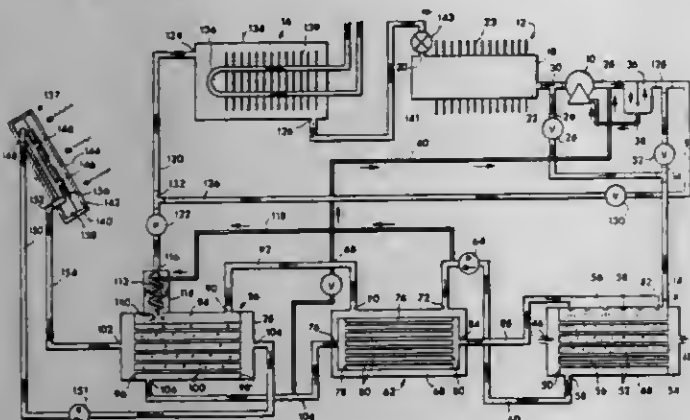
4,285,211

COMPRESSOR-ASSISTED ABSORPTION  
REFRIGERATION SYSTEM

Stiles W. Clark, 1000 Greens Rd., #809, Houston, Tex. 77060  
Continuation-in-part of Ser. No. 887,445, Mar. 16, 1978, Pat.  
No. 4,171,619. This application Mar. 8, 1979, Ser. No. 18,647  
Int. Cl.<sup>3</sup> F25B 7/00, 27/00

U.S. Cl. 62—335

11 Claims



1. In an absorption refrigeration system comprising generator means for generating a refrigerant vapor from a refrigerant solution, condenser means for condensing said refrigerant vapor from said generator means to form condensed refrigerant, evaporator means for evaporating said condensed refrigerant and for cooling a surrounding material, absorber means for absorbing refrigerant vapor from said evaporator means into said refrigerant solution, and a heat exchanger for circulating said solution through said absorber means and said generator means, said generator means, condenser means, evaporator means, absorber means and heat exchanger being connected in a refrigerant circuit, the improvement comprising:

an oiled compressor, connected to said refrigerant circuit, for compressing said refrigerant vapor said compressor discharging oil into said refrigerant circuit;  
oil separating means downstream of said compressor for separating oil from said refrigerant solution and returning said oil to said compressor;  
a bleed line, conducting said refrigerant solution from a portion of said refrigerant circuit between said absorber means and said generator means to a line between said compressor and said oil separating means and  
valve means on said bleed line, for permitting fluid flow through said bleed line only when said oiled compressor and said absorber means are operating,  
said refrigerant solution being miscible in said oil and being separable by evaporation from said oil.

4,285,212

## ICE DISPENSER STORAGE ASSEMBLY

Luis E. Prada, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 2, 1980, Ser. No. 155,344

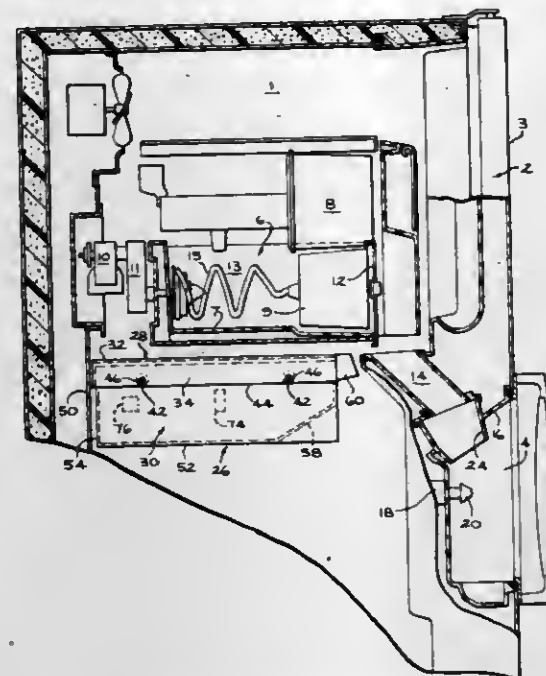
Int. Cl.<sup>3</sup> F25C 5/18

U.S. Cl. 62—344

7 Claims

1. An ice dispenser storage assembly for use in a freezer compartment of a refrigerator including a motor-driven ice dispenser comprising:  
a cover secured to the inside of the freezer compartment,  
an ice storage receptacle movable from a first ice storage position to a second ice transfer position along and below the cover,  
means to stop the ice storage receptacle in the second ice transfer position, and

means to energize the ice dispenser when the ice storage receptacle is in the second position and deenergize the ice



dispenser when the ice storage receptacle is not in the second position.

4,285,213

## COUPLING FOR A TEST STAND

Charles H. Herr, Jr., Peoria, and Alan L. McLees, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

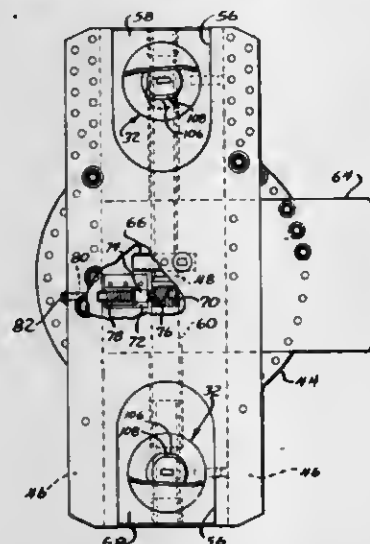
Division of Ser. No. 907,455, May 19, 1978, Pat. No. 4,199,979.

This application Sep. 24, 1979, Ser. No. 78,023

Int. Cl.<sup>3</sup> F16C 1/26

U.S. Cl. 64—3

5 Claims



1. A coupling comprising:  
a housing adapted to be rotated about an axis and including elongated guides in a plane transverse to said axis;  
at least two slides movably received in said guides;  
a screw shaft journaled for rotation in said housing and connected to said slides, said screwshaft being fixed against substantial longitudinal movement within said housing and, when rotated, effecting simultaneous movement of said slides towards or away from said axis;  
detent means carried by said housing and engaging said screwshaft for holding said screw shaft against rotation; and  
a plurality of teeth, one for each slide, each mounted on an associated slide and extending therefrom in a direction generally parallel to said axis.

4,285,214

## FLEXIBLE COUPLING

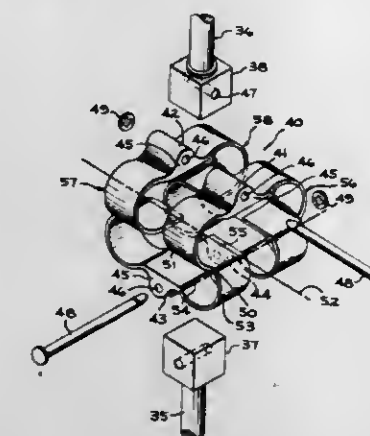
John Roehan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 26, 1979, Ser. No. 107,211

Int. Cl.<sup>3</sup> F16D 3/52

U.S. Cl. 64—15 B

8 Claims



1. A flexible coupling for drivingly interconnecting a driving member and a driven member, comprising:  
a first coupling arrangement adapted for pivotal connection to one of the driving and driven members;  
a second coupling arrangement adapted for pivotal connection to the other of the driving and driven members; and  
a plurality of flexible arms drivingly interconnecting said first and second coupling arrangements;  
each of said arms including a first arm portion smoothly curved about a first axis; a second arm portion smoothly curved about a second axis perpendicular to said first axis; and a planar intermediate portion joining said first and second arm portions and disposed generally parallel to said first and second axes whereby said flexible coupling will transmit rotary motion between the driving member and the driven member in a substantially uniform manner even though the driving and driven members are out of alignment.

4,285,215

## ROTARY TABLE AND KELLY GUARD

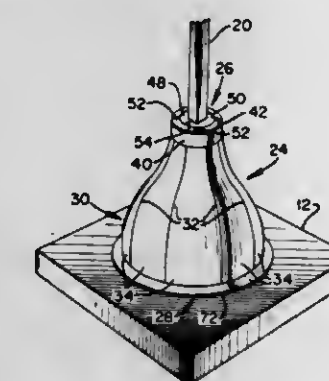
George K. Roeder, Box 4335, Odessa, Tex. 79760

Filed Oct. 18, 1976, Ser. No. 733,113

Int. Cl.<sup>3</sup> F16D 3/06

U.S. Cl. 64—23.5

9 Claims



1. A safety guard in combination with a kelly bushing, a kelly, and a rotary table of a rotary drilling rig;  
said guard comprising an annular shoe for abuttingly engaging a non-rotating floor area outwardly of the rotary table;  
a bearing means spaced from said shoe, including a rotating member which rotates with said slidably receives a marginal length of the kelly therewithin;  
said bearing means includes a fixed housing, said rotating member being rotatably captured in low friction relationship within said housing;  
a circumferentially extending wall having a circumferen-

1009 O.G.—51

tially extending upper end affixed to said housing and a circumferentially extending bottom end affixed to said shoe;  
so that said guard encapsulates the rotary table, kelly bushing, and a marginal length of a kelly.

4,285,216

SINGLE BAR, WARP LIFT-OFF-RESISTANT, LOFTED  
FABRIC CONSTRUCTION

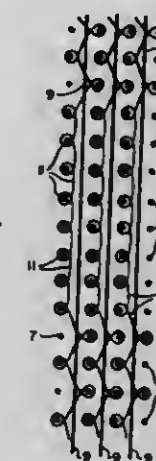
Daniel Dahl, New York, N.Y., assignor to Polylok Corporation, New York, N.Y.

Filed Apr. 26, 1979, Ser. No. 33,181

Int. Cl.<sup>3</sup> D04B 23/08, 23/10

U.S. Cl. 66—192

15 Claims



1. A fabric made on a stitch-through type machine, comprising:  
a flexible substrate;  
a plurality of warp elements laid on the substrate in the general warpwise direction; and  
knitting thread wales extending in the warpwise direction and containing a multiplicity of warpwise stitches in a warp lift-off-resistant configuration network having, on a given knitting thread wale, a combination of chain stitch courses in securing relation to the substrate and generally non-securing relation to the warp elements, and half-tricot stitch courses in securing relation to both the substrate and warp elements, said knitting thread binding together into an integrated structure the substrate and warp elements, to secure the substrate and warp elements against relative displacement, and to stabilize the fabric against unravelling of the knitting thread network and lifting off of the warp elements,  
said fabric having an aesthetically pleasing appearance corresponding to the loft imparted to the warp elements by virtue of the generally non-securing relation of the chain stitch components of the knitting thread network to said warp elements.

4,285,217

STEERING SYSTEM FOR CONTROLLING THE  
OPERATION OF A KNITTING MACHINE

Kresimir Mista, Obertshausen, and Hans-Jurgen Hohne, Hainburg, both of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Jan. 31, 1980, Ser. No. 117,354

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2904367

Int. Cl.<sup>3</sup> D04B 23/04

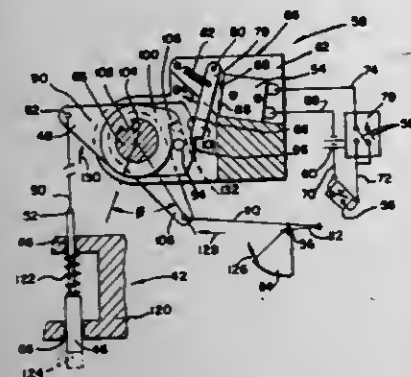
U.S. Cl. 66—205

8 Claims

1. A steering system for controlling the operation of a warp knitting machine having a needle bar and cooperating drive levers and pushrods operatively coupled to a source of driving power comprising:



- (a) steering mechanism means disposed generally above and in relatively close proximity to said guidebar drive levers; (b) a plurality of steering element means disposed proximate said guides, operatively coupled to said steering mechanism means and having two stable positions, said steering element means deflecting said guides during stitch formation in a first position and not deflecting said guides in a



second position, said first or said second position of each steering element means being controlled by said steering mechanism; and

- (c) electromechanical means operatively coupled to said steering mechanism means and in synchronism with said power source for selecting said first or second position of said steering means in accordance with a predetermined program.

4,285,218

# SYSTEM FOR FIXING PRINTS WITH REACTIVE AND VAT DYES

Helmuth Lehmann, Buchholz, Fed. Rep. of Germany, assignor to Artos Dr.-Ing. Meier-Windhorst KG (GmbH), Sevetal, Fed. Rep. of Germany

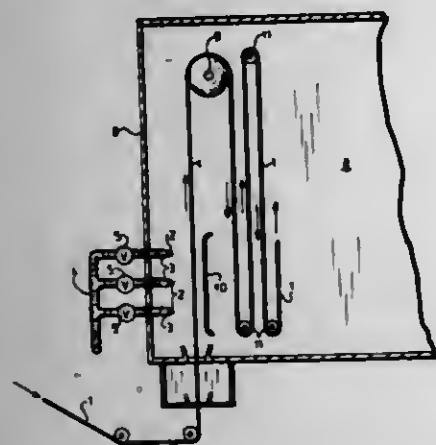
Filed Jan. 17, 1979, Ser. No. 4,106

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2802020

Int. Cl.<sup>3</sup> D06B 1/02, 21/00

U.S. Cl. 68—5 D

3 Claims



1. A system for the fixing of prints with reactive and vat dyes in the two-phase printing method on textile webs made of cellulose of the type wherein required auxiliary means for fixing is applied onto the textile web by electrostatic spraying, the improvement comprising:

a fixing device having a steamer housing which serves as a heating means; means for moving a web through said steamer housing; and a spraying device for electrostatically spraying said auxiliary means onto the textile web which is positioned within said steamer housing of said fixing device, said spraying device comprising a plurality of spray nozzles, said nozzles serving as electrodes and each including valve means for effecting their activation and deactivation and at least one counter electrode mounted adjacent to said web, on the other side thereof and opposite to said spray nozzles, and

a plurality of spray nozzle supports on which said spray nozzles are supported and which are disposed adjacent to said web on one side thereof in a transverse direction relative to the feeding direction of said web, and which supports are also disposed adjacent to each other and are spaced-apart in a longitudinal direction relative to said feeding direction.

4,285,219

# APPARATUS FOR TREATMENT OF LAUNDRY

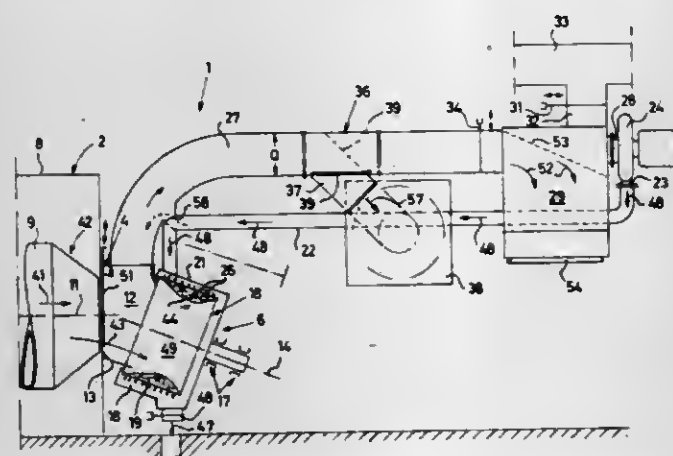
Heinz L. Grunewald, Bremen, Fed. Rep. of Germany, assignor to Engelhardt & Föster, Bremen, Fed. Rep. of Germany

Filed Jan. 12, 1979, Ser. No. 3,397

Int. Cl.<sup>3</sup> D06F 29/02

U.S. Cl. 68—19.2

9 Claims



1. An apparatus for treating laundry which utilizes a spin drying perforated drum disposed within a surrounding housing and wherein a circumjacent space is defined between the drum and the housing, the provision therewith of a fluid pressure source connected in flow communication with the circumjacent space to direct a pressurized fluid flow into the space and thence inwardly through the drum perforations, means for selectively curtailing the flow from the pressurized source, means for subjecting the interior of the drum to suction, the fluid pressure source being a compressed air source which is fluidly interconnected to the housing by an inlet conduit, an open end on the drum connected in communication with the outlet end of a laundry washing unit by means of a laundry transfer chamber, suction means for creating negative pressure within the drum, and the suction means including an outlet conduit from the transfer chamber which leads to the intake side of a blower.

4,285,220

# MAGNETICALLY OPERABLE LOCK

Tomomasa Kajita, 2-3-18, Mariyamadori, Abeno-ku, Osaka-shi, Japan

Filed Nov. 13, 1978, Ser. No. 959,598

Claims priority, application Japan, Dec. 29, 1977, 52-178382[U]

Int. Cl.<sup>3</sup> E05B 47/00

U.S. Cl. 70—276

6 Claims

1. A magnetically operable lock, comprising a hollow cylindrical case, a turnable member which fits into one end of said case and having a contact outer face and an inner face, a plurality of magnetic pivotable pieces supported on said inner face of said turnable member, a solid cylindrical drive member rotatably positioned in said case adjacent said turnable member and movable toward or away from said turnable member and rotatable with said turnable member, said drive member being formed in its outer periphery with a circumferential channel including two axially spaced parallel straight grooves each having a limited circumferential extent and a slanting groove interconnecting said straight grooves and having a face dis-

posed adjacent said pivotable pieces with engagement cavities for engagement with said pieces, an engaging pin extending from the inner periphery of said case into engagement with said circumferential channel, a turnable latch lever rotatably mounted in the other end of said case, a spring between said latch and said drive member and in engagement with said drive member, said drive member being co-rotative with and axially movable toward and away from said latch lever, and a magnetic key engageable with said contact face to pivot said pivotable pieces and being rotatable in one direction to rotate said turnable member, whereby, said drive member moves toward said turnable member with said engaging pin coming into engagement with the slanting groove by virtue of the pushing

openings to maintain said enclosure in place shrouding the knob and shaft.

4,285,222

# MACHINE FOR MANUFACTURE OF SPIRAL TUBING WITH FOLDED SEAM

Kjell-Inge Jagellid, Kungälv, Sweden, assignor to Kurt Hedlund, Kungälv, Sweden

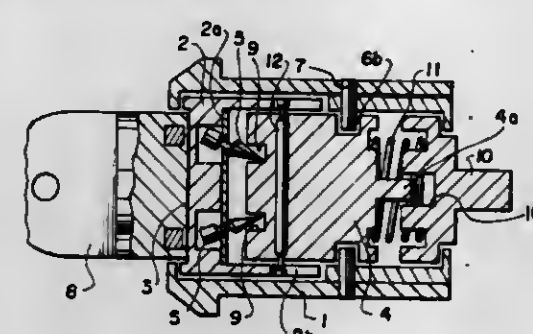
Filed Jan. 13, 1979, Ser. No. 48,189

Claims priority, application Sweden, Dec. 22, 1978, 7813290

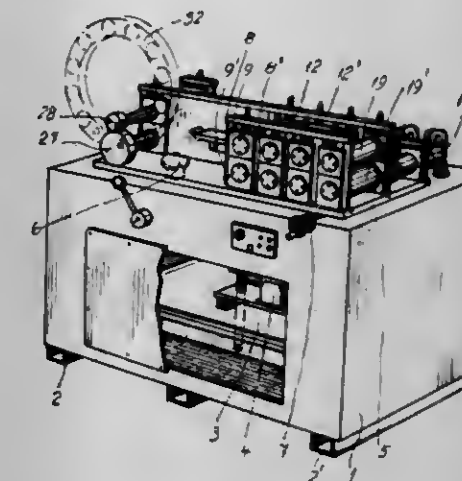
Int. Cl.<sup>3</sup> B21D 5/12

U.S. Cl. 72—28

9 Claims



action of said spring and engagement of said pivotable pieces into said drive member cavities, rendering the latch lever further turnable upon the engaging pin coming into engagement with the straight groove positioned closer to the latch lever, the pivotable pieces being returnable out of engagement with the drive member cavities to hold the drive member away from the turnable member with the engaging pin being engaged in the straight groove positioned closer to the turnable member to render the latch lever turnable only to the extent that travel of said engaging pin in said straight groove closer to said turnable member permits, when the magnet key is removed from the contact face and when the drive member has been moved away from the turnable member by turning the magnet key and drive member in an opposite direction.



1. In a machine for the manufacture of helically seamed tubing, including a plurality of successive roller pairs adapted to preshape a strip material, and a helical coiling tube shaping tool adapted to join two edge portions of the strip material by means of said folded seam the improvement comprising each pair of rollers is provided with a separate hydraulic drive motor operatively connected to a first roller, the second roller being driven by the first roller via a transmission means, fluid pressure means for driving said motors, said motors being connected in series in a hydraulic circuit from said fluid pressure means whereby the outlet of each motor is connected to the inlet of the motor for the next successive pair of rollers.

4,285,221

# RETROFIT DOORKNOB LOCK APPARATUS

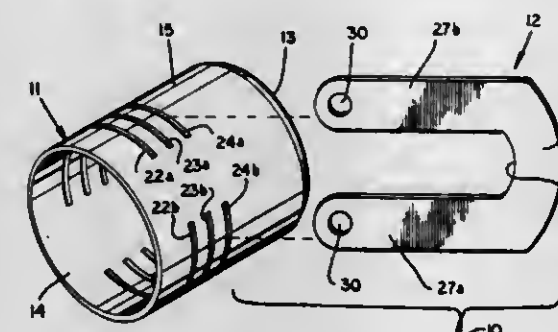
Maxwell G. Atchison, 6695 Ridgemoor Dr., Doraville, Ga. 30360

Filed Jan. 18, 1979, Ser. No. 49,079

Int. Cl.<sup>3</sup> E05B 17/14

U.S. Cl. 70—416

4 Claims



1. Retrofit lock apparatus for a door knob, comprising: means operative to fit over and entirely enclose a knob and associated shaft of a doorknob, so as to shroud the knob and shaft from unauthorized access; and means selectively operative to retain said enclosing means in place shrouding the knob and shaft; said enclosing means comprising an enclosure having an open end to receive the knob and to permit said enclosure to fit over the knob and associated shaft; said enclosure having a plurality of openings located at different spacings from said open end; and said retaining means extending within a selected one of said

4,285,223

# PHOSPHATE AND ESTER COATING METHOD

Narayan Das, Westmont, and Surya K. Misra, Naperville, both of Ill.

Filed Feb. 12, 1979, Ser. No. 11,169

Int. Cl.<sup>3</sup> B21B 45/02

U.S. Cl. 72—42

6 Claims



1. A method for treating metal surfaces of a thin metal sheet to form a coating suitable for use in multi-stage ironing operations to reduce the thickness of said sheet comprising contacting at least one metal surface with an aqueous phosphate solution to produce a totally reacted layer of insoluble crystalline phosphate containing iron phosphate and having a thickness equivalent of less than 100 milligrams per square foot with said phosphate layer having a grain size in the range of about 400 to about 2,500 angstroms, rinsing and cleaning the surface of the



phosphate layer to remove all unreacted phosphate, and applying an organic ester lubricant non-reactive with said phosphate to said surface in an amount no greater than 425 milligrams per square foot.

5. In the method of forming seamless containers from a black plate stock material in which blanks are cut from said black plate stock material and said discs are thereafter first formed into cups and then subjected to at least one ironing step in the presence of a lubricant, the improvement of contacting a surface of stock material with an aqueous acidic phosphate solution to produce a layer of insoluble crystalline phosphate containing iron phosphate chemically bonded to the stock material surface in an amount of less than 100 milligrams per square foot and having a grain size of about 400 to about 2,500 angstroms, contacting the surface of the insoluble crystalline phosphate layer with an organic ester lubricant to produce a layer of said lubricant on said phosphate layer and in an amount no greater than about 425 milligrams per square foot and thereafter performing said forming and ironing steps.

4,285,224

## ELECTRIC PULSE TUBE EXPANDER

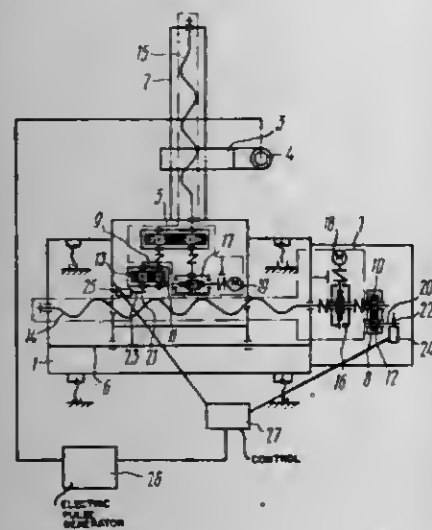
Alexander S. Shkator, ulitsa Oshanskogo, 14, kv. 6; Boris Y. Mazurovsky, ulitsa Teatralnaya, 49/1, kv. 83; Vasily I. Sokolov, ulitsa Sovetskaya, 2, kv. 19; Viktor A. Dmitrichenko, prospekt Mira, 27-b, kv. 143; Sima I. Nazarova, prospekt Mira, 11-b, kv. 71, and Ljudmila M. Fedorova, ulitsa Chaikovskogo, 4, kv. 3, all of Nikolaev, U.S.S.R.

Filed Jan. 25, 1979, Ser. No. 6,458

Int. Cl.<sup>3</sup> B21D 26/14

U.S. Cl. 72-56

5 Claims



1. An electric pulse tube expander for expanding a tube, said tube expander comprising

- a bed;
- horizontal guides mounted on said bed;
- carriage means guided by said horizontal guides;
- a vertical guide mounted on said carriage means;
- an electrode for applying a pulse to a tube to be expanded, said electrode being movable in vertical and horizontal planes, and being mounted on said vertical guide so that it is movable in a vertical plane on said vertical guide;
- a first drive mounted on said bed for moving said electrode in a horizontal plane, said first drive including a first electric motor for producing a torque to move said electrode in a horizontal plane, a first reducer kinematically coupled to said first motor, said first reducer having an output shaft, and a first mechanism for setting the distance of movement of said electrode, said first mechanism being connected to said output shaft of said first reducer and having a first drive shaft operatively coupled to said first reducer, a first drive gear mounted on said first drive shaft, a first driven shaft, a first driven gear mounted on said first driven shaft and having teeth in a number corresponding to a given distance of movement of said electrode, said first drive and driven gear being in coupling

relation with each other, a first arm affixed to and projecting from said first driven shaft, a first limit switch operably interacting with said first arm, a first lead screw mounted on said bed and kinematically coupled to the output shaft of said first reducer for moving said electrode in a horizontal plane, said first lead screw moving said vertical guide with said electrode in a horizontal plane;

a second drive mounted on said horizontal guides for moving said electrode in a vertical plane, said second drive including a second electric motor for producing a torque to move said electrode in said vertical plane, a second reducer kinematically coupled to said second motor, said second reducer having an output shaft, and a second mechanism for setting the distance of movement of said electrode, said second mechanism being operatively coupled to said output shaft of said second reducer and having a second drive shaft operatively coupled to said second reducer, a second drive gear mounted on said second drive shaft, a second driven shaft, a second driven gear mounted on said second driven shaft and having teeth in a number corresponding to the distance of movement of said electrode, said second drive and driven gear being in coupling relation with each other, a second arm affixed to and projecting from said second driven shaft, a second limit switch operably interacting with said second arm, a second lead screw kinematically coupled to the output shaft of said second reducer for moving said electrode in a vertical plane, said second lead screw moving said electrode in a vertical plane on said vertical guide;

a pulse generator electrically connected to said electrode for producing an electric current pulse for a tube expansion operation; and

control means electrically connected to said pulse generator and to said first and second drives for moving said electrode in horizontal and vertical planes.

4,285,225

## TOOL FOR INSTALLATION OF TOGGLE-SCREW ANCHORS

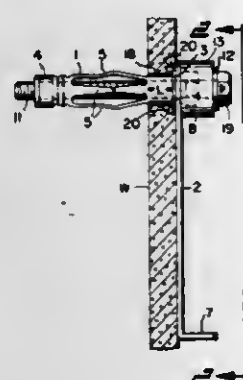
John H. Snell, 1325 Gateway Dr., Lantana, Fla. 33462

Filed Dec. 7, 1979, Ser. No. 101,112

Int. Cl.<sup>3</sup> B21J 15/38

U.S. Cl. 72-114

9 Claims



1. A tool for installation of a toggle-screw anchor of the type including an anchor sleeve having flanged and threaded ends with an intermediate longitudinally slotted section which is radially expanded upon axial movement of the threaded end toward the flanged end; said tool comprising an elongated flat body of strip material of tapered width having a handle at its narrow end projecting transversely from one side of said body and a passage through the middle of its wide end; and an actuating screw having a head and at least one spacer washer adjacent to said head; said screw having a shank extending through said washer and said passage and projecting transversely from the other side of said body for screwing thereonto an anchor sleeve with its flanged end snugly engaged with said other side of said body while said washer is snugly engaged between said head and said one side of said body whereby said projecting shank and anchor sleeve thereon may be inserted

into a hole in a wall or the like with said other side of said body engaged with the front side of the wall to retain said screw, washer, and anchor sleeve perpendicular to the wall; said screw, upon turning thereof with respect to the anchor sleeve by torque applied on said head while said body is held against the wall and against turning by said handle, being operative to expand the anchor sleeve to grip the rear side of the wall around the hole.

4,285,226

MANDREL-HOLDER FOR A PILGER ROLLING MILL  
Emanuele Gancia, Milan, Italy, assignor to Innocenti Santeustacchio S.p.A., Brescia, Italy

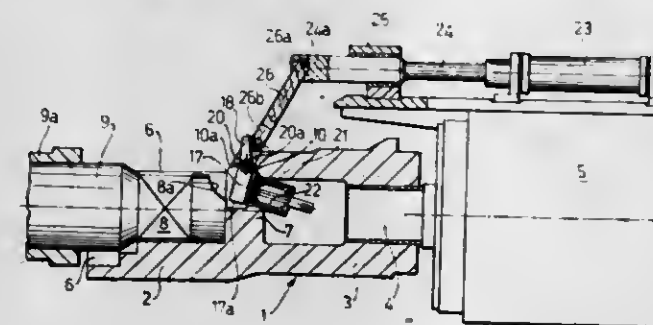
Filed Aug. 20, 1979, Ser. No. 68,286

Int. Cl.<sup>3</sup> B21B 25/02

U.S. Cl. 72-208

3 Claims

resulting from rolling in the breadth direction thereby regulating thickness of the sheet and increasing elongation of the sheet ahead of a portion thereof being rolled.



1. In a mandrel-holder for a pilger rolling mill which is in one piece and comprises a head defining a seat adapted to receive and hold a tang end of a mandrel and a body adapted for coupling to an actuator used for driving the mandrel-holder in rotation and in a straight line, the improvement comprising: a recess formed in the said body and opening on to the said seat;

a lever pivoted to the said body, having its pivoting axis perpendicular to the longitudinal axis of the mandrel-holder, the lever extending in an upper transverse position relative to the said seat and comprising a substantially rodlike portion extending outside the said body and a main portion extending into the recess, the lever also being angularly movable around its pivot from an operative position in which its main portion extends into the said seat into an inoperative position in which its main portion is retracted into the recess against the action of spring means, and

a thrust means borne externally and independently of the mandrel-holder and adapted to act on the rodlike portion of the said lever in order to move the lever through an angle into the inoperative position against the action of the spring means.

4,285,227

## EDGE ROLL ASSEMBLY FOR MANUFACTURING A TAPER LEAF SPRING

Yoshihiro Sakai, Jun Takahashi, Toshiaki Satoh, and Akira Ohno, all of Yokohama, Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed May 30, 1979, Ser. No. 43,838

Int. Cl.<sup>3</sup> B21B 27/00; B21H 8/02

U.S. Cl. 72-240

4 Claims

1. In an apparatus for manufacturing a taper leaf spring from a sheet of spring material, the sheet having top and bottom surfaces and side edges, the apparatus rolling side edges of the sheet to control the breadth of the leaf spring and subsequently rolling at least one of the top and bottom surfaces to control the taper of the leaf spring, the improvement wherein the apparatus includes edge roll assemblies for rolling side edges of the sheet, each of said edge roll assemblies having a concave main roll body for shaping side edges of the sheet to form side edges of the leaf spring and confronting regulating flanges parallel with each other extending outwardly from outer ter-

minal peripheries of the main roll body, the regulating flanges constraining expansion of the sheet in the thickness direction



4,285,228

## CRIMPING MACHINE FOR HOSE ASSEMBLY

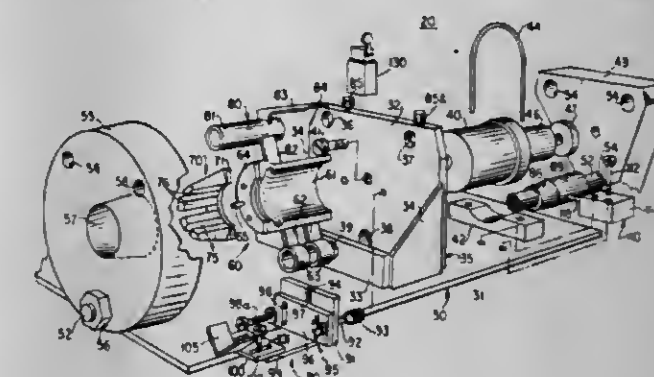
David W. Gunning, Libertyville, Ill., assignor to Anchor Coupling Co., Inc., Libertyville, Ill.

Filed Aug. 20, 1979, Ser. No. 67,954

Int. Cl.<sup>3</sup> B21D 39/00

U.S. Cl. 72-402

22 Claims



1. Apparatus for securing a coupling to the end of a hose over which the coupling is coaxially fitted, said apparatus comprising a frame, support means on said frame for supporting the associated coupling and hose in a predetermined configuration relative to said frame, a die-mounting member, a plurality of crimping dies carried by said die-mounting member for movement with respect thereto between a retracted configuration out of contact with the associated coupling and a crimping configuration adapted for crimping engagement with the associated coupling, means for mounting said die-mounting member and the dies carried thereby as a unit on said frame adjacent to said support means, a crimping head carried by said frame and adapted for movement between a release position out of engagement with said crimping dies and a working position engaging said crimping dies for effecting movement thereof from the retracted configuration to the crimping configuration thereof, and drive means carried by said frame and coupled to said crimping head for effecting movement thereof to the working position thereof thereby to effect crimping of the coupling onto the associated hose by said crimping dies.



4,285,229

# INTRODUCED IN THE DETECTION OF LEAKAGES OF THE COOLING IN BLAST FURNACE NOZZLES

Adolfo Tornos Garcia, Oviedo; Alejandro Pelguero Ruiz, and Aurelio Diaz Fernandez-Raigoso, both of Gijón, all of Spain, assignors to Empresa Nacional Siderurgica, S.A. (Ensidesa), Oviedo, Spain

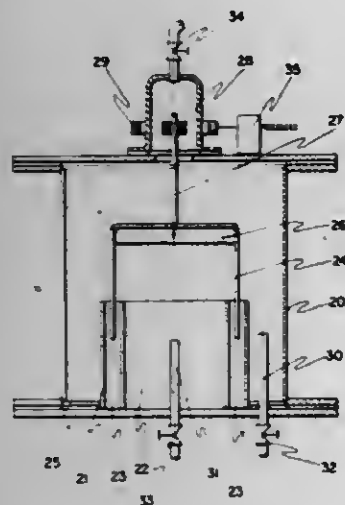
Filed Aug. 8, 1979, Ser. No. 64,744

Claims priority, application Spain, Sep. 14, 1978, 473,370

Int. Cl.<sup>3</sup> G01M 3/28

U.S. Cl. 73—40

14 Claims



1. A device for the detection of leakages in a fluid system and which functions in response to changes in the differential pressure within the system, said device including a detection assembly, said assembly comprising:

a cylindrical housing having therein a fixed annular hood and a relatively movable hood, said fixed hood having a double side wall, a first wall of said double side wall being spaced radially outward from a second wall of said double side wall, said first and second walls defining therebetween an annular space, said movable hood being inverted with respect to said fixed hood and having an annular wall which is movably positioned in said annular space;

an inner chamber defined by the interior space of said hoods; an outer chamber defined by a space between the exterior of said hoods and the interior of said housing;

a first duct means for communicating said inner chamber with a fluid system;

a second duct means for communicating said outer chamber with a fluid system;

an inductive electronic circuit for producing an electromagnetic field and an electronic signal, said circuit having a coil and a movable ferrite core whereby the displacement of said core causes a variation in said field, said electronic signal being varied in response to said field variation;

said movable hood being axially movable in response to a change in the pressure differential between said chambers; an axially projecting stem having two ends, one of said two ends being connected to said movable hoods, the other one of said two ends being connected to said ferrite core; said annular space containing mercury which acts to substantially seal said inner chamber from said outer chamber and to guide said annular wall in its movement; and an electronic means connected to said inductive electronic circuit for receiving said electronic signal therefrom and generating an output signal, said output signal being responsive to said electronic signal variation.

4,285,230

# BOTTLE TESTER

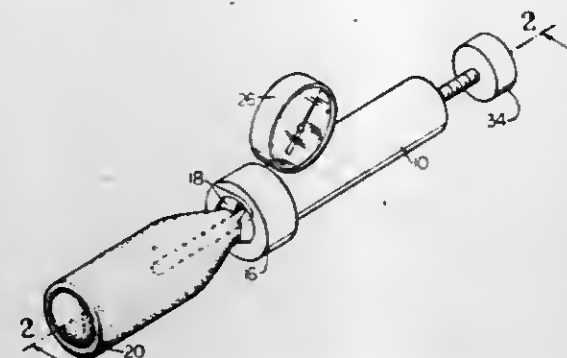
Thomas S. Hartness, Greenville, S.C., assignor to Hartness International, Inc., Greenville, S.C.

Filed Sep. 4, 1979, Ser. No. 71,942

Int. Cl.<sup>3</sup> G01M 3/26

U.S. Cl. 73—49.4

5 Claims



1. A hand-held apparatus for manually testing the physical characteristics of the wall of a bottle by pressurizing fluid carried therein, said bottle having a main body with a neck integral therewith which terminates in an opened top, said apparatus comprising:

an elongated cylinder;

a bore extending axially through said elongated cylinder;

threads carried on a portion of said cylinder surrounding said bore;

a piston carried in said elongated bore and extending out an upper end of said cylinder;

threads carried on a portion of said piston meshing with said threads carried on a portion of said cylinder surrounding said bore;

means for attaching a lower end of said cylinder to the top of said bottle with said piston being axially aligned with the top of said bottle;

seal means sealing said cylinder to the top portion of said bottle; and

hand operated means for rotating said piston feeding a lower end of said piston into said bottle gradually pressurizing said fluid as said piston is inserted into said bottle; whereby the effect of pressure on the wall of said bottle can be monitored.

4,285,231

# APPARATUS FOR MEASURING THE PARTICLE SIZE RANGE IN A SUSPENSION

Kjell R. A. Eriksson, Strandvagen 3, S-542 00 Mariestad, Sweden

Filed Jan. 16, 1980, Ser. No. 112,426

Claims priority, application Sweden, Nov. 27, 1979, 7909782

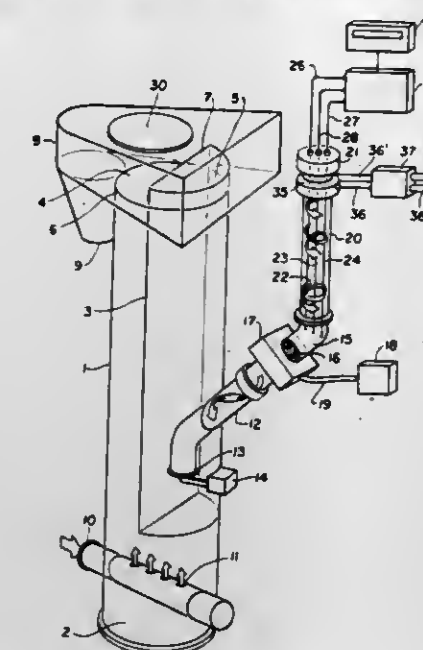
Int. Cl.<sup>3</sup> G01N 15/00

U.S. Cl. 73—63

9 Claims

1. Apparatus for measuring the particle size range in a suspension, comprising a vertical through-flow passage for the suspension, said passage including a space in which a stationary quantity of suspension from the through-flow passage can collect; a measuring tube connected to said space and being provided with a filter which allows liquid through and traps a plug of suspension particles, and a sealing member to cover and uncover the end of said measuring tube at the end by said space; means in said measuring tube to separate a suspension layer of predetermined thickness from said plug in front of the

filter thereby producing a gap in front of the layer to permit the passage of liquid under predetermined pressure through the



layer and the filter; and means for measuring the flow rate of said liquid through said layer.

4,285,232

# MONITOR ASSEMBLY FOR ELECTROCHEMICAL CORROSION PROTECTION OF STAINLESS STEEL BLEACH PLANT WASHERS

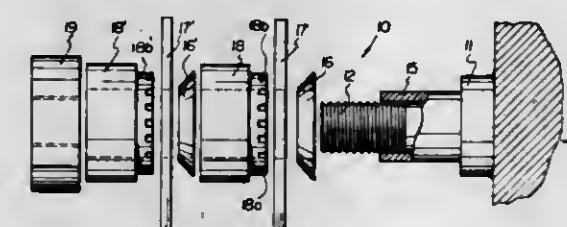
Andrew Garner, Pointe Claire, Canada, assignor to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

Filed Mar. 20, 1980, Ser. No. 132,026

Int. Cl.<sup>3</sup> G01N 17/00

U.S. Cl. 73—86

16 Claims



1. A monitor assembly for monitoring the effectiveness of cathodic crevice corrosion protection of a stainless steel member, comprising:

(a) a mount adapted to be electrically connectable to said stainless steel member, said mount being adapted to be rigidly and fixedly secured to said stainless steel member, said mount having a threaded exposed end;

(b) an electrically non-conductive sleeve disposed on said mount, said sleeve serving to isolate the mount electrically;

(c) a first frusto-conical centrally apertured metal spacer disposed on said sleeve, in electrical contact with said mount;

(d) a first stainless steel centrally apertured monitor coupon disposed on said sleeve in electrical contact with said first frusto-conical metal spacer;

(e) a first segmented electrically non-conductive centrally apertured disc disposed on said sleeve in non-electrical contact with said first monitor coupon;

(f) a second frusto-conical centrally apertured metal spacer, identical with said first frusto-conical metal spacer, disposed in non-electrical contact with said first segmented disc;

(g) a second stainless steel centrally apertured monitor coupon identical to said first stainless steel monitor coupon, disposed on said sleeve, in contact with said second frusto-conical metal spacer;

(h) a second electrically non-conductive centrally apertured

segmented disc, identical with said first segmented disc, disposed on said sleeve in non-electrical contact with said second stainless steel monitor coupon; and

(i) a centrally apertured locknut threaded onto said mount and holding the members on said sleeve under a predetermined, substantially constant, mechanical stress;

wherein, said metal mount and said metal spacers are formed of any metal with sufficient mechanical and chemical stability to withstand the corrosive environment and the mechanical stress;

wherein, said electrically non-conductive sleeve and segmented discs are formed of an electrically non-conductive material having sufficient mechanical and chemical stability to withstand the corrosive environment and the mechanical stress;

and wherein, the face-to-face contact of said first coupon with said first spacer and said first segmented disc is identical to the face-to-face contact of said second coupon with said second spacer and said second segmented disc.

4,285,233

# SYSTEM FOR HOT TESTING ENGINES

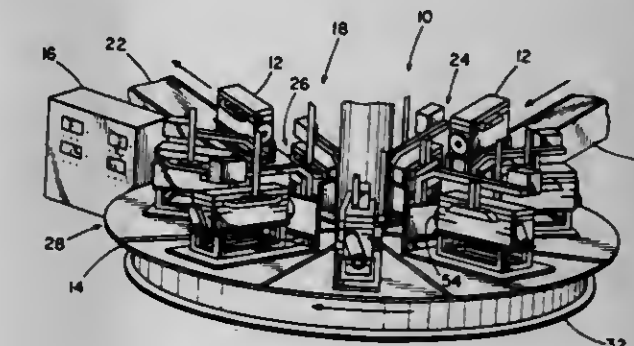
Philip E. Swix, Armada, Mich., assignor to Sun Electric Corporation, Crystal Lake, Ill.

Filed Oct. 5, 1979, Ser. No. 82,313

Int. Cl.<sup>3</sup> G01M 15/00

U.S. Cl. 73—116

14 Claims



1. A system for testing an engine comprising, in combination:

test means for testing said engine;

pallet means for supporting said engine; and

a dial index adapted to receive said pallet means at a loading station and adapted to discharge said pallet means at an unloading station, said dial index advancing said engine from said loading station to said test means and then to said unloading station at a predetermined index rate, said predetermined index rate being defined by a series of indexes by said dial index and a series of predetermined stationary periods between each of said indexes, whereby said engine is normalized upon arrival at said test means.

4,285,234

# LOAD-MEASURING DEVICES

Basil B. Basily, Cairo, Egypt; Dennis H. Sansome, Sutton Coldfield, and Gerald M. Jones, Trimpey, both of England, assignors to National Research Development Corporation, London, England

Filed Nov. 20, 1979, Ser. No. 96,149

Claims priority, application United Kingdom, Nov. 23, 1978, 45768/78

Int. Cl.<sup>3</sup> G01L 5/00

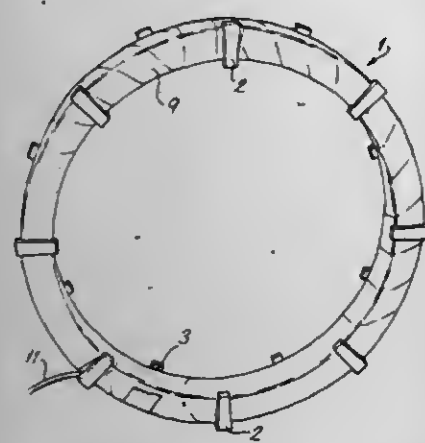
U.S. Cl. 73—862.65

10 Claims

1. A load-measuring device comprising a ring-shaped body, at least three circumferentially-spaced first axial projections presenting sectorially-aligned surfaces operatively mounted so that said surfaces engage a first of the two axial faces of said ring-shaped body; at least three circumferentially-spaced second axial projections presenting sectorially-aligned surfaces operatively



mounted so that said surfaces engage the second and opposite of said axial faces of said ring-shaped body at locations staggered relative to those of said first axial projection;



means to detect the strain imposed upon said ring-shaped body when said ring-shaped body is distorted elastically to sectorially-undulating shape by opposed axial loads applied to said ring-shaped body through said first and second axial projections.

4,285,235

#### METHOD AND APPARATUS FOR NON-DESTRUCTIVE INSPECTION OF TIRES

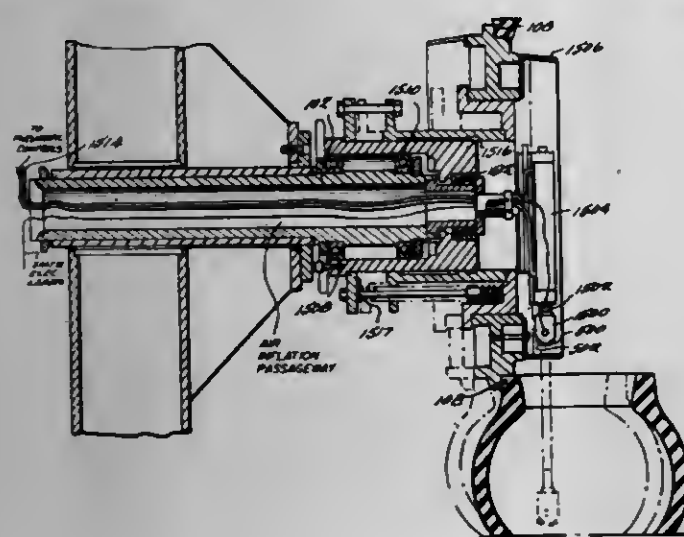
Doyle L. Dugger, Muscatine, Iowa, assignor to Bandag Incorporated, Muscatine, Iowa

Filed Apr. 19, 1979, Ser. No. 31,961

Int. Cl.<sup>3</sup> G01N 29/04

U.S. Cl. 73—146

16 Claims



4. A nondestructive tire testing apparatus comprising: opposing circular rings adapted to sealingly engage the corresponding rims of said tire when placed therebetween; tire inflation means for inflating said tire after engagement by said rings; at least one ultrasonic acoustic receiver disposed for operation outside said tire, and at least one ultrasonic acoustic transmitter disposed for operation inside said tire, and adjustable transmitter mounting means mechanically mounted between said rings for retracting said transmitter radially toward the center of the circular rings while mounting and de-mounting the tire from between said rings and for extending said transmitter radially away from the center of the circular rings and toward the tire tread wall to a fixed active position during a testing cycle said receiver and transmitter being fixed with respect to one another and relative to the environment of said apparatus during said testing cycle.

#### 4,285,236 ROTARY TORQUE AND RPM INDICATOR FOR OIL WELL DRILLING RIGS

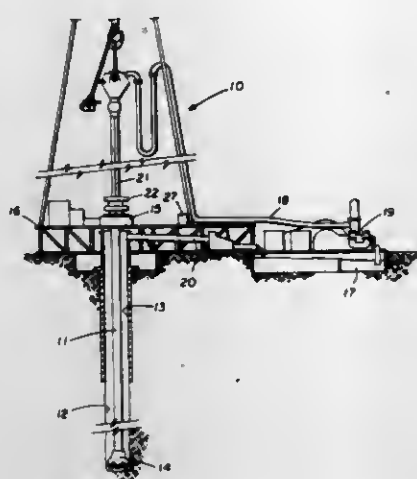
Loring C. Chien, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 23, 1979, Ser. No. 97,007

Int. Cl.<sup>3</sup> E21B 47/00

U.S. Cl. 73—151

4 Claims



1. In a rotary drilling rig having a rotary drilling string of the type employed in the rotary method of drilling wells, the improvement comprising: first transmitting means mounted at a fixed location on said drilling rig for continuously transmitting a first modulated signal; receiving means mounted on the drilling string for receiving said modulated signal; electronic switch means connected to said receiving means and periodically placed in an On state when the magnitude of the modulated signal exceeds a predetermined level; second transmitting means mounted on said drilling string and activated in response to said switch means being placed in an On state to periodically transmit a signal; and receiving means mounted at a fixed location on said drilling rig for receiving said periodic signal, with the number of pulses of said signal being indicative of the RPM of said drilling string.

#### 4,285,237 DEVICE FOR ACCURATE SUBAQUEOUS MEASUREMENTS

Anthony H. Romijn, Vlaardingen, Netherlands, assignor to Hollandsche Beton Groep N.V., Rijswijk, Netherlands

Filed Jan. 21, 1980, Ser. No. 114,012

Claims priority, application Netherlands, Jan. 29, 1979, 7900690

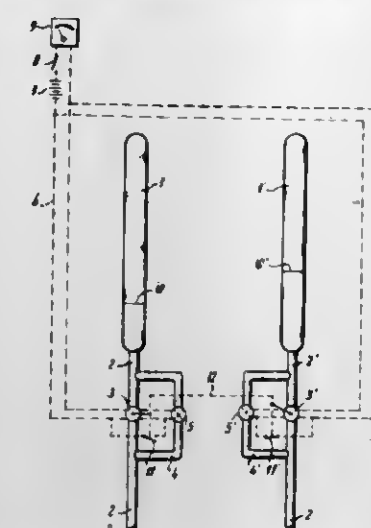
Int. Cl.<sup>3</sup> G01F 23/18; G01L 15/08

U.S. Cl. 73—300

3 Claims

1. Device for accurate measurements of the vertical displacement of a reference point under water, said device comprising a pressure-difference recorder provided at the region of the reference point, said recorder being disposed in a tube and dividing said tube in two parts, one of which being in communication with an air-filled chamber and the other part may communicate with the water pressure, said parts being connected to each other by a pipe bridging the pressure recorder, and a valve is disposed in said pipe, in that the tube portion facing away from the air chamber is open and the valve has only two positions, i.e. open and closed, whereby in the open position the open tube portion is in communication with the air chamber, said air chamber being disposed vertically above the pressure recorder and the valve comprises an electromagnetic operating element which is provided in a circuit that can be

opened and closed, said circuit being also provided with the pressure recorder and a measuring device, and that the air



chamber has an initial pressure which corresponds with the atmospheric pressure at the level of the water-surface.

4,285,238

#### DEVICE FOR MEASURING LUBRICATING OIL TEMPERATURE SUPPLIED TO AN INTERNAL COMBUSTION MOTORCYCLE ENGINE

Thomas E. Wilson, 12889 E. Eleven Mile Rd., Warren, Mich. 48093

Filed Apr. 23, 1978, Ser. No. 899,803

Int. Cl.<sup>3</sup> G01K 1/14, 13/02

U.S. Cl. 73—346

5 Claims



1. A device for measuring the temperature of engine lubricating oil circulating through the oil lubricating system of an internal combustion engine, said device comprising: an appropriate aperture communicating with an oil flow lubricating passage of said oil lubricating system proximate an area of said engine requiring lubrication; a thermometer having a closure body, said closure body mounted to said aperture, said thermometer further having temperature indicator means and a temperature sensing stem extending from said temperature indicator means with said closure body interposed said temperature indicator means and said temperature sensing stem, said temperature indicating means having a dial with indicia corresponding to various temperatures at one end and an opposite end mounted contiguous to said closure body and perpendicular to said temperature sensing stem, said closure body having a sealing surface configured to cooperate with said aperture for isolating the engine lubricating oil from particulate contaminants originating from sources external to said passage, said thermometer further being positioned in said aperture with said temperature indicator means disposed to the exterior of said engine such that irrespective of the angular orientation of said closure body in said aperture, said dial is readable by a viewer positioned above said engine, said thermometer being attached to said engine with said temperature sensing means projecting through said aperture and into said oil flow lubri-

cating passage of said oil lubricating system in at least partially submerged relationship with oil flowing through the oil flow lubricating passage of said lubricating system; and means for indicating the indicia corresponding to the temperature of the oil flowing in said oil flow lubricating passage.

4,285,239

#### APPARATUS FOR MEASURING VARYING DENSITY OF A SLURRY FLOWING IN A PIPELINE

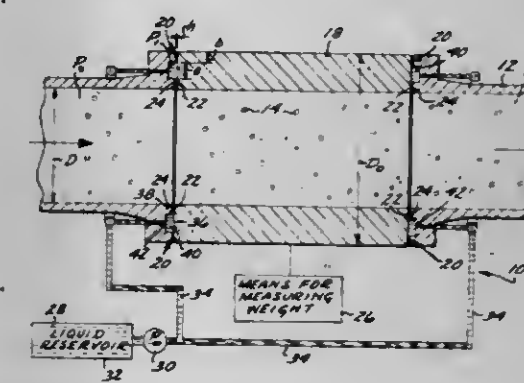
Otto R. Helne, 13372 Calle Colina, Poway, Calif. 92064, and Peter M. Riede, 8257 Via Mallorca, La Jolla, Calif. 92037

Filed May 1, 1980, Ser. No. 145,428

Int. Cl.<sup>3</sup> G01N 9/06; G01F 1/74

U.S. Cl. 73—434

27 Claims



8. A device for measuring density of a slurry flowing through a pipe, the device comprising: a pipe through which the slurry may flow; a section of the pipe, the section having two ends, each end being coupled to the pipe so that the slurry may flow through the section, each end of the section comprising a precision formed surface, ends of the pipe adjacent to the respective ends of the pipe section including precision formed surfaces respectively complementary to the precision formed surfaces provided on the ends of the pipe section, the adjacent precision formed surfaces on the ends of the pipe section and on the adjoining ends of the pipe comprising hydrostatic bearings; first means for measuring the weight of the pipe section, said weight including the weight of the slurry flowing through the pipe section; second means adapted for providing a fluid in the hydrostatic bearing at a pressure higher than the pressure of the slurry flowing in the pipe, and third means for coupling and operatively positioning the pipe section to the pipe.

4,285,240

#### WHEEL UNBALANCE MEASUREMENT SYSTEM AND METHOD

Kenneth S. Gold, Canoga Park, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 11, 1980, Ser. No. 111,159

Int. Cl.<sup>3</sup> G01M 1/22

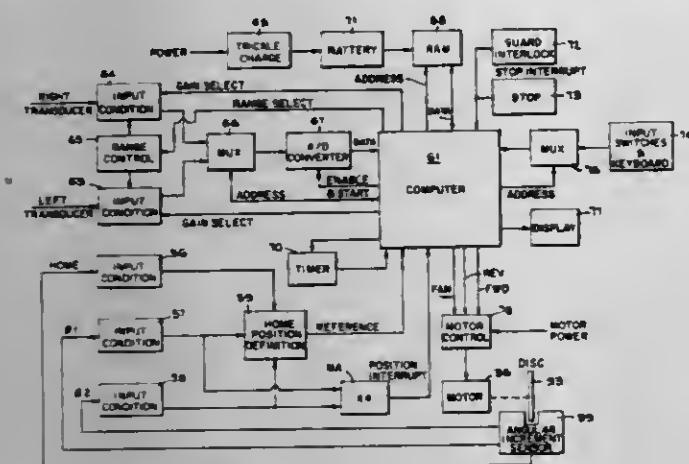
U.S. Cl. 73—462

26 Claims

7. In combination with apparatus for measuring unbalance in a rotatable body wherein at least one force transducer is disposed to provide an electrical signal indicative of periodic unbalance forces coupled thereto through a shaft adapted to support the rotatable body for rotation thereon, and wherein an analog-to-digital converter is coupled to receive the electrical signal and to provide a digital word output corresponding thereto, the improvement comprising means for controlling said analog-to-digital converter to provide said digital words at a predetermined number of angular increments during each revolution of the shaft, a memory containing a plurality of



stored digital sine and cosine representative values, ones of said digital sine and cosine representative values corresponding to predetermined ones of said predetermined number of angular increments, means for modifying each of said digital words in accordance with the corresponding stored digital sine and cosine representative values and for limiting each modification



to include only one addition function so that digital sine and digital cosine representative quantities are provided during the time the shaft is traversing each of said angular increments, and means for summing the digital sine quantities and the digital cosine quantities for each of said angular increments, whereby digital data is provided for determining unbalance force magnitude and direction in the rotatable body.

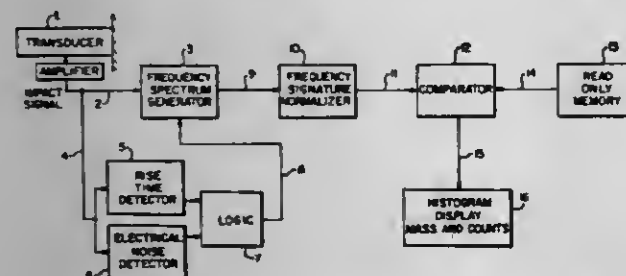
#### 4,285,241 METHOD AND APPARATUS FOR THE DETERMINATION OF THE MASS OF AN IMPACTING OBJECT

John R. Smith, Monroeville; William Ciaramitaro, Murrysville, and Raj Gopal, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 13, 1979, Ser. No. 57,524  
Int. Cl. G01H 13/00; G01M 7/00

U.S. Cl. 73-572

6 Claims



1. A method of detecting the mass of an impacting object behind a wall comprising the steps of: deriving an electric signal representative of an acoustic signal generated by the impact of said object; converting said electric signal into a frequency spectrum signal; comparing said frequency spectrum signal with a set of reference data each having a frequency spectrum indicative of the mass of an impacting sample for identifying matching with reference data from said set having the same relative importance in the spectrum; and providing an indication of the mass associated with such matching reference data which is indicative of the mass of said impacting object.

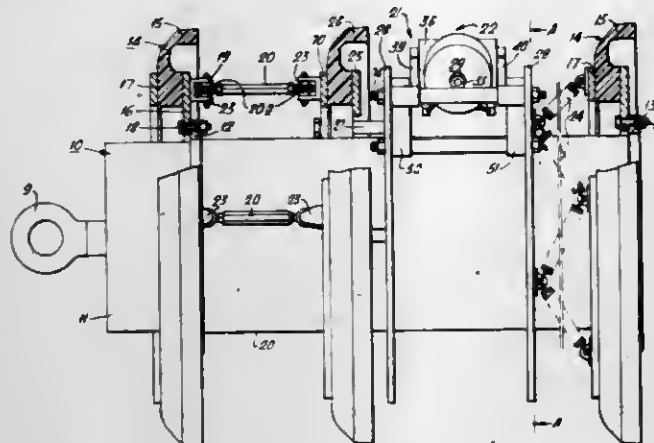
#### 4,285,242 PIPE INSPECTION APPARATUS

Geoffrey C. Braithwaite, Wantage, England, assignor to British Gas Corporation, London, England  
Filed Aug. 20, 1979, Ser. No. 67,790  
Claims priority, application United Kingdom, Feb. 28, 1979, 07149/79

U.S. Cl. 73-623

Int. Cl. G01N 29/04

12 Claims



1. A pipe inspection apparatus which is capable of moving along the bore of a pipe, said apparatus including an elongated vehicle having a forward end and a rearward end;
  - a first annular alignment means attached to the side of said vehicle near its forward end to help position said vehicle within the pipe to be inspected;
  - a second annular alignment means attached to the side of said vehicle near its rearward end to help position said vehicle within the pipe to be inspected;
  - a movable assembly means positioned around said vehicle between said first and second annular alignment means, said movable assembly means including first and second spaced apart annular carrier plates, said first annular carrier plate being located nearer said first annular alignment means than said second annular carrier plate;
  - a plurality of circumferentially spaced apart inspection means mounted between said first and second annular carrier plates near their peripheries which are capable of examining a circumferential band of the pipe wall;
  - an annular centralizing member positioned between said first annular alignment means and said first annular carrier plate;
  - a number of connection means fixedly connecting said annular centralizing member with said first annular carrier plate; and
  - a plurality of circumferentially spaced apart link means connecting said first annular alignment means with said annular centralizing member to function to constrain the movement of said assembly means in a direction towards and away from said vehicle.

#### 4,285,243 ULTRASONIC PIPE INSPECTION APPARATUS

John C. Collingwood, Didcot, England, assignor to British Gas Corporation, London, England  
Filed Aug. 20, 1979, Ser. No. 67,791

Claims priority, application United Kingdom, Feb. 28, 1979, 07148/79

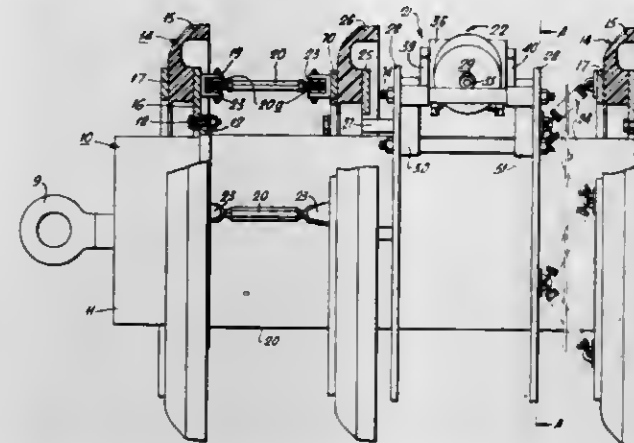
Int. Cl. G01N 29/04

U.S. Cl. 73-623

10 Claims

1. A pipe inspection apparatus which is capable of moving along the wall of a pipe, said apparatus including an elongated, generally tubular vehicle,
  - at least one inspection means mounted on said vehicle, each said inspection means including
  - a support means, one end of said support means being

pivotaly mounted to the side of said vehicle and the second end thereof being radially movable towards and away from the side of said vehicle, an elongated spindle rotatably connected to said second end of said support means, said elongated spindle extending in the longitudinal direction of said vehicle, an elongated mounting means connected to said elongated spindle, said elongated mounting means being connected to said elongated spindle such that the portions thereof



on either side of said elongated spindle are of equal length, two hollow wheels respectively rotatably mounted on opposite ends of said elongated mounting means so as to be capable of contacting a pipe wall and rolling therealong in a longitudinal direction thereof, and at least one ultrasonic transducer mounted within each said hollow wheel such that each transducer is aligned in a predetermined position relative to the geometry of the pipe in which said vehicle moves.

#### 4,285,244 NON-SYMMETRICAL OVERLOAD PROTECTION DEVICE FOR DIFFERENTIAL PRESSURE TRANSMITTER

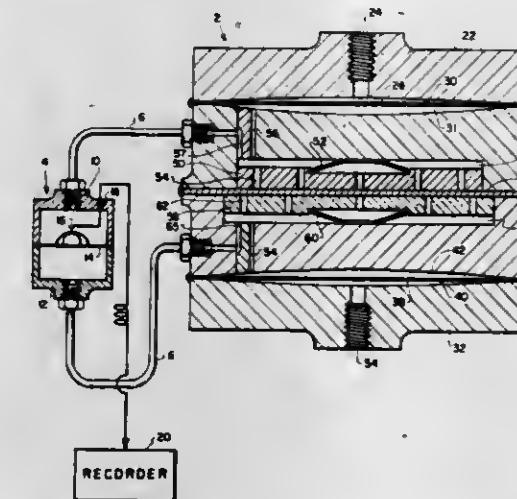
Norman E. Green, Warrington, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 13, 1980, Ser. No. 121,033

Int. Cl. G01L 9/00

U.S. Cl. 73-720

10 Claims



1. A differential pressure transmitter comprising a housing having a central cavity with first inlet means for a first pressure signal and second inlet means for a second pressure signal,
  - means for dividing said cavity for isolating said first signal from said second signal within said central cavity of said housing including a flexible diaphragm,
  - first biasing means for subjecting said diaphragm to a bias

force in a first direction corresponding to the direction of force produced by said first pressure signal, second diaphragm biasing means for subjecting said diaphragm to a second bias force opposite in direction to said first bias force and in the direction of said second pressure signal, and means for proportioning located adjacent to said diaphragm to affect the net effect of said first and second bias force on said diaphragm to produce said net effect of said first and second bias forces in a predetermined nonsymmetrical ratio.

#### 4,285,245 METHOD AND APPARATUS FOR MEASURING AND CONTROLLING VOLUMETRIC FLOW RATE OF GASES IN A LINE

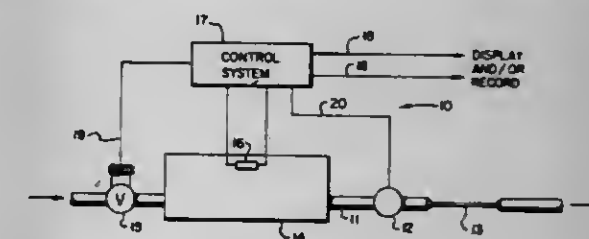
Lyn R. Kennedy, Dallas, Tex., assignor to Precision Machine Products, Inc., Dallas, Tex.

Filed Dec. 6, 1979, Ser. No. 100,918

Int. Cl. G01F 1/34

U.S. Cl. 73-861

24 Claims



1. A method for determining the volumetric flow rate of gas flowing in a line comprising:
  - imposing uniformity of flow rate on said gas at a downstream point in said line;
  - temporarily restricting gas flow in said line at a point upstream from said downstream point;
  - measuring the rate of pressure fall in said line between said upstream and downstream points during at least part of the time of restricted gas flow at said upstream point, said rate of pressure fall being substantially proportional to the volumetric flow rate of the gas.

#### 4,285,246 INTAKE AIR FLOW RATE DETECTOR

Toru Kita, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

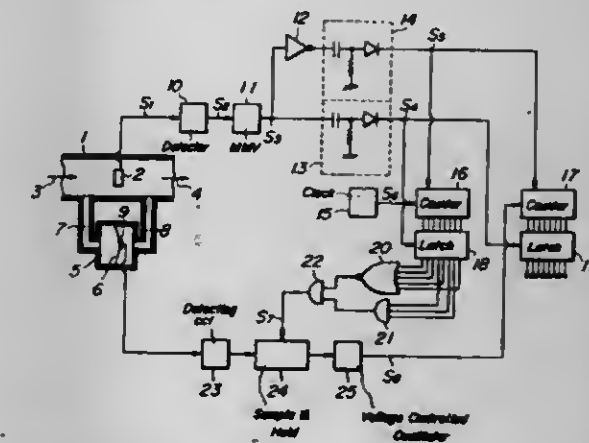
Filed Dec. 4, 1979, Ser. No. 100,706

Claims priority, application Japan, Dec. 6, 1978, 53/149929

Int. Cl. G01F 1/32, 1/86

U.S. Cl. 73-861.03

3 Claims



1. An intake air flow rate detector of an internal engine using a Karman vortex sensor provided in an intake system of the engine for measuring the amount of the intake air comprising:
  - first means for delivering a first signal each time an output of



the Karman vortex sensor assumes a predetermined period or is within a predetermined frequency range;  
 second means for detecting a dynamic pressure of the intake air or a differential pressure between two points in said intake system;  
 third means for sampling and holding an output of said second means at each time of delivery of the first signal, and  
 fourth means responsive to outputs of said Karman vortex sensor and said third means for delivering an output signal which has a value corresponding to the output of the Karman vortex sensor after density compensation.

4,285,247

## FLOW MEASURING DEVICE

Martin Klobe, Karlsruhe, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

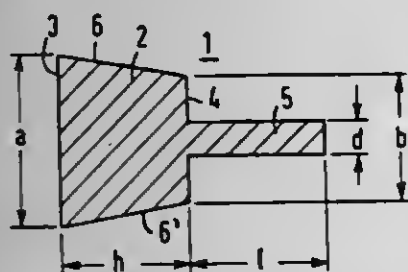
Filed Jul. 19, 1979, Ser. No. 58,768

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832142

Int. Cl.<sup>3</sup> G01F 1/32

U.S. Cl. 73-861.24

14 Claims



1. A flow measuring device according to the principle of the Karman vortex path which comprises:

a vortex generating choke body having a prismatic part of trapezoidal cross-section of a height  $h$ , said prismatic part of trapezoidal cross-section having a first side of a length  $a$  and a second side of a length  $b$  in parallel alignment with said first side, and said choke body having a slab-like extension of a length  $l$  and a maximum width  $d$  projecting away from said second side; and

pressure pickups positioned inside said prismatic part of the choke body, such that said pressure pickups can measure the periodic pressure variations which are generated by the vortex separation, said pressure pickups comprising at least two chambers positioned in the side walls of said prismatic part of trapezoidal cross-section, each of said chambers is covered by an element constructed of a pressure deflectable material, and each of said chambers is connected in a pressure conducting manner with transducers for converting the deflections of said deflectable element into electrical signals which are proportional to said deflections;

wherein:

$b$  is less than  $a$ ;  
 the ratio of the height  $h$  of said trapezoidal cross-section to the length  $a$  of the first side is a value of from about 0.5 to about 1;

The ratio of the length  $l$  of said slab-like extension projecting away from said second side  $b$  to the length of the first side  $a$  is a value of from about 0.5 to about 1;  
 the ratio of the sum of the height  $h$  of said trapezoidal cross-section and the length  $l$  of said slab-like extension to the length of the first side  $a$  is a value of from about 1.2 to about 1.8;

the ratio of the length of said second side  $b$  to the length of said first side  $a$  is a value of from about 0.5 to about 0.7; and the ratio of the width  $d$  of said slab-like extension to the length  $a$  of said first side is a value of from about 0.15 to about 0.35.

4,285,248

## TWO-DEGREE-OF-FREEDOM GYROSCOPE

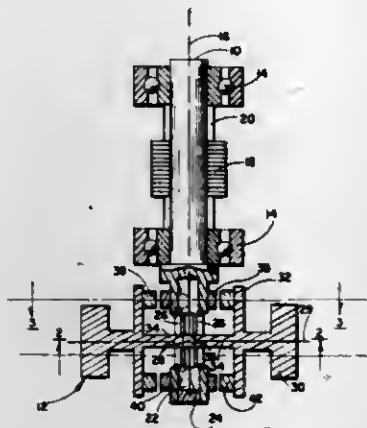
Raymond Noar, Bellflower, and Louis J. Blache, Dana Point, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 17, 1979, Ser. No. 85,576

Int. Cl.<sup>3</sup> G01C 19/22, 19/24

U.S. Cl. 74-5 F

10 Claims



1. A gyroscope, comprising:

a shaft mounted for rotation about a central shaft axis;  
 a wire mounted on and held taut by said shaft for rotation therewith, wherein said wire is directed along said central shaft axis;

a substantially cylindrical rotor having a center of rotation, wherein said rotor is attached to and suspended from said wire at said center of rotation; and  
 magnet means for centering said rotor and for restraining radial displacement of said rotor, wherein said magnet means is mounted for rotation about said central shaft axis with said shaft and said rotor;

whereby there is formed a frictionless universal joint for said rotor, wherein said joint is operable at any arbitrary orientation relative to gravity, said joint permitting rotation of said rotor about any axis perpendicular to said central shaft axis while restraining axial and radial replacement of said rotor.

4,285,249

## APPARATUS FOR CAUSING AXIAL MOVEMENT

Takeshi Kume, Amagasaki, Japan, assignor to Kabushiki Kaisha I.T.L., Kobe, Japan

Filed Jan. 4, 1980, Ser. No. 109,563

Claims priority, application Japan, Feb. 19, 1979, 54-18594; Sep. 18, 1979, 54-120533

Int. Cl.<sup>3</sup> F16H 27/02, 29/02

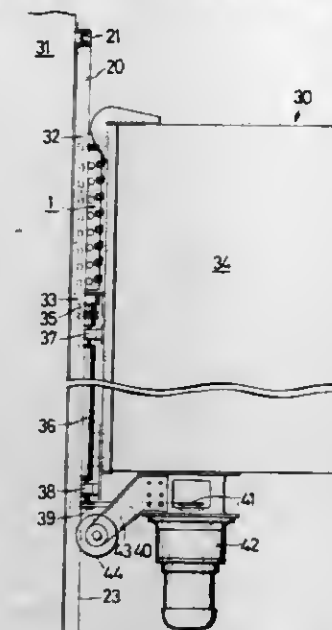
U.S. Cl. 74-89.15

4 Claims

1. An apparatus for causing axial, or linear movement which comprises a generally cylindrical rotary member having a series of idling rollers rotatably supported on the periphery thereof and located on a helical line, the center of the helix being on the axis of said rotary member, and a fixed member having a generally semi-cylindrical wall formed with a series of slots thereacross which lie on a helical line coaxial with said semi-cylindrical wall and having the same pitch as said helical line on which said rollers are located, each of said rollers having its axis extending radially of said rotary member and being adapted to roll through said slots when said rotary member is rotated, whereby said rotary member moves axially along said semi-cylindrical wall of said fixed member, each of

said rollers having a peripheral groove and a radial flange such that said peripheral groove rides on one edge of one of said

parallel to one of said rod means and adapted to be inserted within said respective guide slots.



slots across said semi-cylindrical wall while said flange engages the outer wall of said edge.

4,285,250

## CONTROL LEVER FOR A TRANSMISSION

Takehiko Iizuka, and Kunio Ui, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

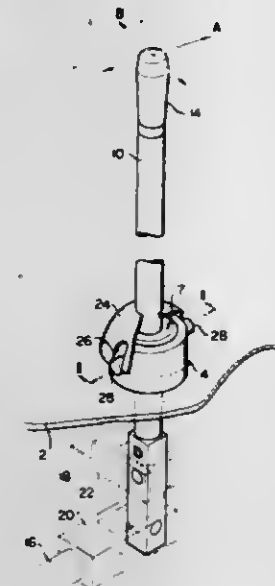
Filed Jan. 18, 1980, Ser. No. 113,315

Claims priority, application Japan, Jan. 23, 1979, 54-5974[U]

Int. Cl.<sup>3</sup> G05G 9/02, 9/12

U.S. Cl. 74-473 P

4 Claims



1. A control lever for a transmission of a vehicle, comprising:

a frame of the vehicle;  
 a housing fixedly secured to said frame;  
 spherical bearing means for mounting said control lever on said housing, said spherical bearing means comprising an outer race mounted on said housing, and a spherical bushing mounted on said control lever within said outer race so as to allow a sliding contact of said spherical bushing with said outer race;

a pair of rod means pivotally connected to said control lever means, said rod means being arranged at right angles with each other;

a cover fixedly secured to said control lever, said cover having a pair of guide slots formed therein positioned diametrically opposite sides to each other relative to said control lever; and

a pair of guide pins fixedly secured to said housing, said guide pins being aligned with each other in a direction

4,285,251

## RIM FOR USE IN FLYWHEELS FOR KINETIC ENERGY STORAGE

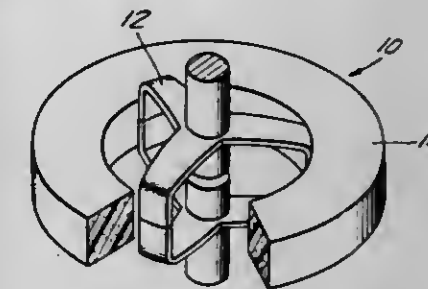
Bruce E. Swartout, San Juan Capistrano, Calif., assignor to U.S. Flywheels, Inc., Irvine, Calif.

Filed Sep. 13, 1978, Ser. No. 942,112

Int. Cl.<sup>3</sup> G05G 1/00

U.S. Cl. 74-572

16 Claims



1. A flywheel for use in a kinetic energy storage apparatus, the flywheel comprising:

a double spider configuration hub having a pair of coaxial, oppositely facing, spaced-apart convex surfaces of substantially equal dimensions, said surfaces being interconnected by a plurality of legs spaced equidistantly around the perimeter of said hub;

each of said legs having a circumferential outward facing surface for support of a cylindrical flywheel rim, the axis of which is collinear with axes of said convex surfaces;

a unitary, thick flywheel rim supported on said leg surfaces, said rim having a combination of fiber and epoxy matrix wound into a substantially cylindrical configuration having an inner radius  $R_1$  and an outer radius  $R_2$  and having at said outer radius,  $R_2$ , a mass density per unit volume  $\rho_0$  and a hoop elastic modulus  $E_\theta$ ;

the mass density per unit volume,  $\rho(r)$ , of said rim being defined as a function of rim radius as follows:

$$\rho(r) = \rho_0 (r/R_2)^{-2}; \text{ and}$$

the hoop elastic modulus  $E_\theta(r)$  of said rim being defined as a function of rim radius as follows:

$$E_\theta(r) = E_\theta^0 (r/R_2)^{1+\nu}$$

where

$R_1 \leq r = \text{rim radius} \leq R_2$ ; and

$0 \leq \nu = \text{constant} \leq 0.5$ .

4,285,252

## SPEED-CHANGE CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION

Kiyoshi Yamaki, and Yoshiro Morimoto, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 25, 1979, Ser. No. 60,672

Claims priority, application Japan, Sep. 5, 1978, 53/100041

Int. Cl.<sup>3</sup> B60K 41/04, 41/06

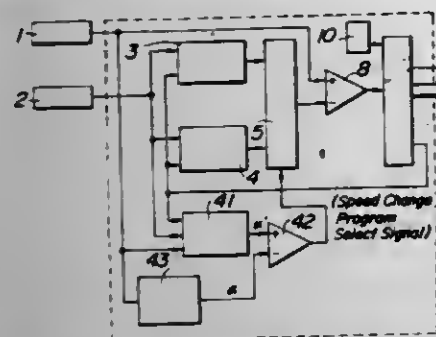
U.S. Cl. 74-866

4 Claims

1. In a speed change control system for an automatic transmission including a vehicle speed sensor for producing signals corresponding to vehicle speeds, an engine load sensor for generating signals corresponding to engine loads, at least one speed change program memory circuit storing speed change programs including reference change speeds corresponding to the signals from the engine load sensor and generating signals corresponding to said reference change speeds, a comparator for comparing the signal from the vehicle speed sensor with a signal depending upon the signal corresponding to said refer-



ence change speed from said speed change program memory circuit, and a speed change control circuit for producing a signal for changing said transmission into a determined speed position in response to an output from said comparator, the improvement comprising a differentiation unit for differentiating the signal from the vehicle speed sensor to produce a signal corresponding to an actual acceleration, a programmed accel-



eration memory circuit for storing programmed accelerations obtained corresponding to the signals from said engine load sensor at every speed position to produce signals corresponding to said programmed accelerations, and means for changing said speed change programs in response to differences between the signals corresponding to said actual acceleration and to said programmed acceleration.

4,285,253

**MECHANICAL STEEL FOR SHARPENING BLADES**

Theodore L. Edling, P.O. Box 593, Bethel Island, Calif. 94511

Filed Jan. 24, 1980, Ser. No. 114,900

Int. Cl.<sup>3</sup> B21K 11/02; B24B 3/54

U.S. Cl. 76—84

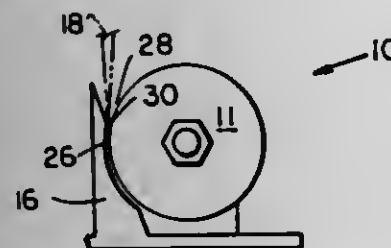
9 Claims

Carl T. Winfrey, 115 Harmony St., Winston-Salem, N.C. 27105

Filed Jan. 28, 1980, Ser. No. 116,286

Int. Cl.<sup>3</sup> B25B 15/00

3 Claims

**1. A mechanical steel comprising:**

a hardened disk of a hardness substantially equal to or greater than the hardness of knives to be sharpened, said disk having a smooth transversely rounded peripheral edge,

drive means for rotating said disk about its axis, and sloped knife-guiding means disposed to partially receive said disk, the slope of said knife-guiding means forming an angle of substantially 40 degrees with a tangent to the disk at the point where its rotation exits the area where the disk is received in the knife-guiding means.

4,285,254

**REVERSIBLE DRIVE RATCHET SOCKET REMOVER ASSEMBLY**

Richard F. Romeo, Kings Park, N.Y., assignor to Excelsior Tool Corp., Jehrico, N.Y.

Filed Dec. 6, 1979, Ser. No. 101,048

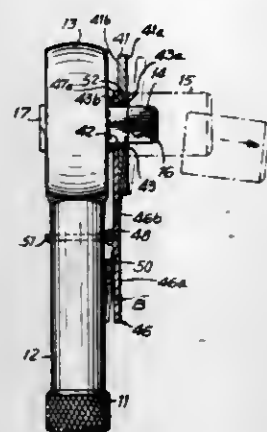
Int. Cl.<sup>3</sup> B25B 13/00

U.S. Cl. 81—58.1

14 Claims

1. A reversible drive ratchet socket remover, adapted to be attached to a reversible drive ratchet wrench and cooperate with a driving stud of said reversible drive ratchet wrench, comprising a disengagement plate means cooperatively disposed in a first position and intermediate said wrench and a socket, when said socket is releasably secured to said stud, a ratchet drive spinner operatively coupled to said disengagement plate means so that said ratchet drive spinner is cooperatively disposed on said driving stud in rotating engagement

therewith, said ratchet drive spinner being disposed in said first position by said disengagement plate means when said socket is releasably secured to said stud, said disengagement plate means including mounting means for releasably mounting said disengagement plate means to a reversible drive ratchet wrench and



4,285,255

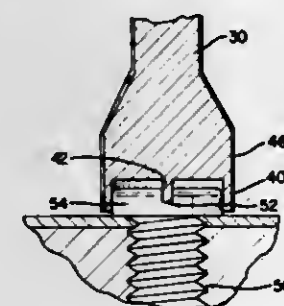
**SAFETY SCREWDRIVER**

Carl T. Winfrey, 115 Harmony St., Winston-Salem, N.C. 27105

Filed Jan. 28, 1980, Ser. No. 116,286

Int. Cl.<sup>3</sup> B25B 15/00

U.S. Cl. 81—451

**1. The combination of a driver and slot head fastener comprising:**

(a) a driver including an elongated shank portion having a handle secured to one end in axial alignment therewith and a hollow tubular extension in axial alignment thereto at the end opposite said handle;

(b) said slot head fastener having a threaded shank and a head of a prescribed thickness secured to one end of said shank, said head having a slot defined in the upper surface thereof, said slot extending a prescribed depth into and transversely of said head;

(c) said tubular extension of said driver including an elongated flat blade positioned therein such that the terminal edge of said blade is recessed a prescribed distance within said tubular extension;

(d) said prescribed distance of said blade recession being so related to the thickness of said fastener head and the depth of said slot that when said blade is positioned in said slot, said tubular member substantially encases said fastener head with the terminal edge of said tubular member positioned in a plane parallel to and intermediate of the upper and lower surfaces of said fastener head;

(e) whereby said tubular member remains clear of the surface into which said fastener is being inserted.

4,285,256

**FIN COLLECTION AND TRANSPORT APPARATUS**

Lawrence A. Franks, Sturgis, Mich., assignor to Burr Oak Tool &amp; Gauge Company, Sturgis, Mich.

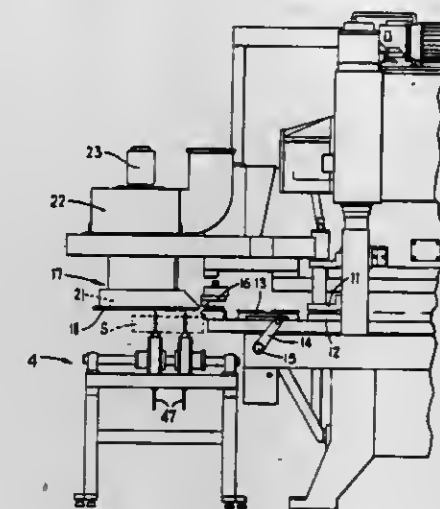
Division of Ser. No. 905,022, May 11, 1978, Pat. No. 4,195,540.

This application Sep. 24, 1979, Ser. No. 78,522

Int. Cl.<sup>3</sup> B23Q 7/16; B26D 7/06; B65H 35/06

U.S. Cl. 83—100

4 Claims



1. In a ribbon-type fin forming apparatus for simultaneously forming a plurality of thin platelike fins arranged in adjacent side-by-side relationship, said apparatus including upper and lower opposed platens having means associated therewith for causing the sheet material as fed therebetween to be severed into a plurality of elongated strips, drive means for intermittently advancing the sheet material through the apparatus so that the strips are advanced outwardly of the apparatus, a cutoff device for simultaneously severing the plurality of side-by-side strips to form a plurality of side-by-side fins, and a suction head disposed directly adjacent said cutoff device for receiving thereunder the plurality of side-by-side fins after severing thereof from said strips, said suction head including a lower suction plate having plural rows of apertures extending therethrough and communicating with an interior suction member disposed thereabove, said fins being positionable adjacent the lower surface of said suction plate substantially between the adjacent rows of apertures, said suction head including means for creating a suction within said chamber so that external air flows upwardly past the fins through said apertures into said chamber, the improvement wherein said suction head includes alignment means mounted on said suction head and cooperating with said fins during the discharge thereof for guiding the downward movement of said fins onto a fin collecting device which is positioned below said suction head, said alignment means including a support vertically movably positioned within said suction chamber and having a plurality of alignment pins fixed thereto and projecting downwardly therefrom, said pins being slidably positioned within openings which extend downwardly through said suction plate, said openings being disposed at locations whereby they are covered by said fins so that downward projection of said pins cause them to project through apertures in said fins, and drive means connected to said support for causing vertical reciprocation thereof.

4,285,257

**APPARATUS FOR SEPARATING BATTERY PLATES**

William J. Eberle, and Timothy M. Reber, both of Reading, Pa., assignors to General Battery Corporation, Reading, Pa.

Filed Feb. 7, 1980, Ser. No. 119,506

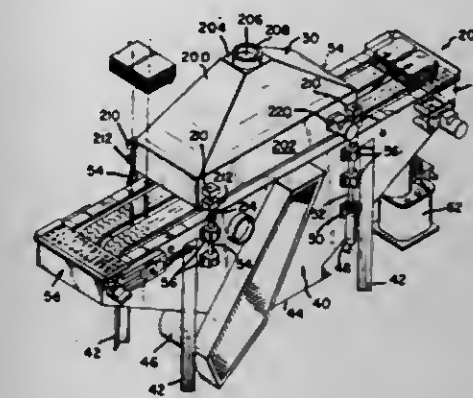
Int. Cl.<sup>3</sup> B23D 45/00

U.S. Cl. 83—167

17 Claims

1. An apparatus for separating battery plates which are joined about a center line, said apparatus comprising: a generally rectangular frame;

conveyor means disposed within said frame, said conveyor means having at least two spaced apart sections; registration means mounted on said frame and between said spaced apart sections for aligning said center line of said battery plates over said space, said registration means further being movable between a first position above the upper plane of said conveyor means and a second position below the upper plane of said conveyor means;



separator means disposed between said spaced apart sections and in line with said registration means, said separator means further having a portion thereof which extends above the upper plane of said conveyor means; and drive means for activating said conveyor means and said separator means.

4,285,258

**DEVICE FOR TRANSLATING AND ROTATING A CUTTING PLATEN WITH RESPECT TO A RECIPROCAL CUTTER**

David J. Logan, Glastonbury, and Robert J. Pavone, South Windsor, both of Conn., assignors to Gulf &amp; Western Corporation, New York, N.Y.

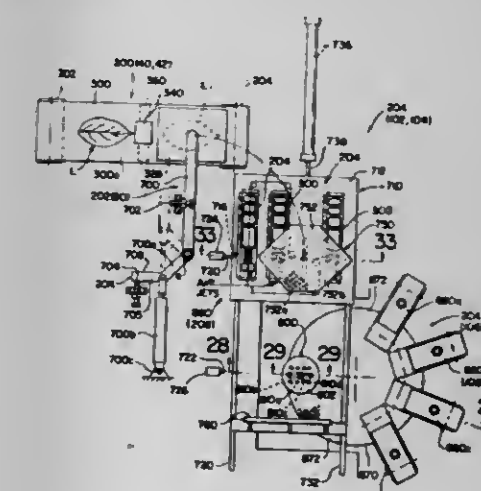
Division of Ser. No. 902,263, May 2, 1978, Pat. No. 4,226,148.

This application Aug. 29, 1979, Ser. No. 70,723

Int. Cl.<sup>3</sup> A24G 1/04

U.S. Cl. 83—410

12 Claims



1. A device for translating and rotating a cutting platen for a flat workpiece with respect to a reciprocable cutter, said device comprising first, second and third guide ways on said platen, said first and second guide ways extending generally in a first direction and said third guide way extending in a second direction at a known angle to said first direction; first, second and third drive elements are slidably received in said first, second and third guide ways respectively; first drive means for shifting said first drive element in a drive direction generally transverse to said first guide way; second drive means for shifting said second drive element in a drive direction generally transverse to said second guide way; third drive means for shifting said third drive element in a drive direction generally











means depending from the collar operative to support the latter within the rimmed entryway without appreciably obstructing the flow therebetween, a tapered nozzle centered within the collar so as to leave a space therebetween, a forced air blower connected to the nozzle operative to direct a stream of air downwardly therethrough, a duct hanging from the underside of the collar forming an elongate continuation thereof, and an upwardly and outwardly flared deflector bordering the upper open end of the collar, said nozzle and collar cooperating with one another and with the blower when the latter is operative to aspirate air into the duct over the top of the deflector, and said deflector being effective to turn the air exhausted through the annular gap aside so no significant quantity thereof will be reaspirated into the duct.

4,285,270

**PAINT SPRAY BOOTH WITH FLOODED FLOOR**

Joseph D. Donahue, Troy, Mich., assignor to Schweitzer Industrial Corporation, Madison Heights, Mich.

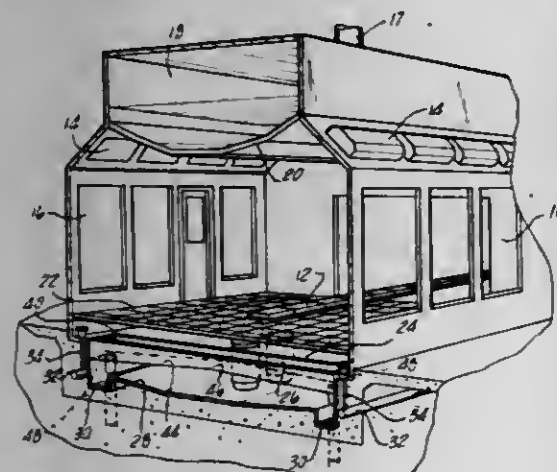
Filed Oct. 29, 1979, Ser. No. 89,075

The portion of the term of this patent subsequent to Sep. 16, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> B05C 15/00

U.S. Cl. 90—115 SB

8 Claims



1. In a paint spray booth of the type comprising an elongate housing defining a working area, a perforate working floor, means for supplying air to the working area from overhead and for causing a flow of said air downwardly through the working floor, a flat subfloor, spaced from and beneath the working floor, means for flooding said subfloor with water to a substantial depth, a plurality of longitudinally spaced discrete outlet structures in said subfloor through which air and water flow, and means beneath said subfloor for receiving and discharging paint-laden water from said outlet structures, the improvement comprising:

means defining at least one trough in the subfloor, said trough extending substantially laterally across the subfloor and having openings in the bottom thereof for draining and cleaning said subfloor, said openings being provided with closing means which close off said openings to prevent drainage except when desired.

4,285,271

**SEAL PLATE DRIVE FOR USE WITH APPARATUS FOR PRESSURE FEEDING AND PRESSURE COOKING A FOOD PRODUCT**

Glenn H. Falck, and James R. Boose, both of Montgomery, Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 14, 1980, Ser. No. 140,125

Int. Cl.<sup>3</sup> A47J 27/12

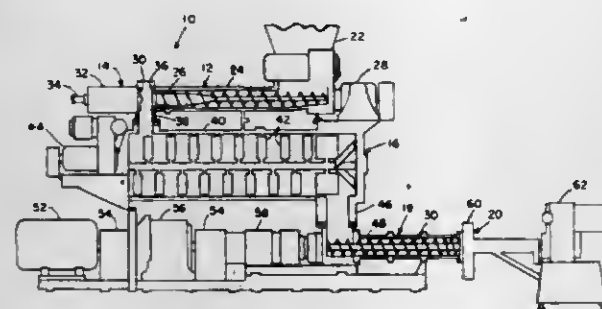
U.S. Cl. 99—348

20 Claims

1. Apparatus for continuously pressure cooking, extruding and forming pellets of a food product, which apparatus includes a pressure feeder assembly, a seal plate assembly, a

pressure cooker assembly, an extruder assembly and a cut-off assembly and, in which, said seal plate assembly comprises:

- a seal plate for compacting and regulating the flow of product mix in a terminal portion of said pressure feeder assembly so as to form a pressure seal for the pressure cooker assembly,
- said seal plate carrying means thereon for abrading the compacted product mix for quick, uniform heating in said pressure cooker assembly,
- said seal plate being mounted on one end of a rotatable and axially translatable seal plate shaft that enters into a feeder housing providing communication for said product mix from said terminal portion of said pressure feeder assembly to the inlet of said pressure cooker assembly,
- said seal plate shaft being telescopically received within a tubular drive shaft mounted externally of said feeder housing,
- bearing means supporting said tubular drive shaft for rotation,



- coupling means interconnecting said tubular drive shaft to said seal plate shaft so that both shafts will co-rotate while permitting axial translation of said seal plate shaft with respect to said tubular drive shaft,
- first drive means operatively connected to said tubular drive shaft to impart rotary motion thereto,
- second drive means operatively connected to said seal plate shaft to impart translatory motion thereto,
- first seal means disposed between said seal plate shaft and said tubular drive shaft at a location adjacent said feeder housing to prevent ingress of product mix and superatmospheric steam between said shafts, and
- second seal means cooperatively associated with said feeder housing and said tubular drive shaft to prevent egress of product mix and superatmospheric steam from said feeder housing and along the outer periphery of said tubular drive shaft.

4,285,272  
TOASTER

Tiede Klijstra, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

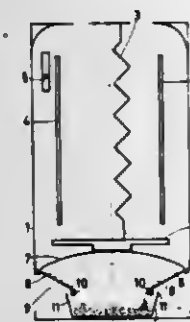
Filed Jul. 9, 1979, Ser. No. 55,842

Claims priority, application Netherlands, Jul. 12, 1978, 7807486

Int. Cl.<sup>3</sup> A47J 37/08

U.S. Cl. 99—391

3 Claims



1. A toaster for slices of bread or the like, which comprises

a housing; at least one heating element in said housing for respectively toasting one or more bread slices; an opening in the bottom of the housing adjacent each heating element for the passage of air over said heating element to cool the same following a toasting cycle; a flap associated with each opening and movable between an open position and a closed position for closing the opening during the toasting cycle; means engaging the flaps for effecting movement of the same between their open position and their closed position; a support for said one or more bread slices movable between a rest position and a toasting position, said slice support when moved to said toasting position contacting said flap-engaging means to effect closing of the flaps; and means to move said slice support to and to maintain the same in said toasting position during the toasting cycle.

4,285,273

**MINI MODULE BUILDER**

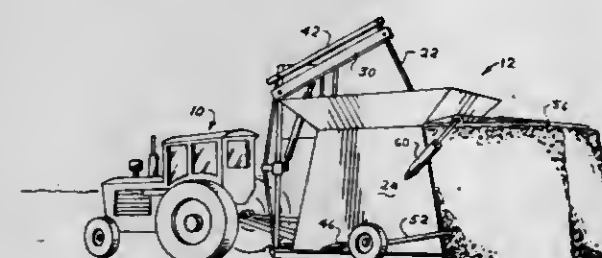
Donald W. DeJarnett, P.O. Box 569, Hale Center, Tex. 79041

Filed Feb. 6, 1980, Ser. No. 119,189

Int. Cl.<sup>3</sup> B30B 1/32

U.S. Cl. 100—35

15 Claims



1. The process of making a self supporting, self contained segmental module of seed cotton which is loaded as a self supported, self contained unit upon a module mover; wherein the improved method comprises:

- compacting freshly harvested seed cotton into a first segment of the module with a module maker, transferring weight from a tractor to the module maker to aid compacting,
- moving the module maker to a position which partially overlaps the first segment, then
- compacting as before freshly harvested seed cotton into a second segment of the module with the module maker, the first and second segments adhered together so that the segments together form a single self supported, self contained unit, and later
- loading said segmental module upon a module mover.

4,285,274

**SEAMLESS CYLINDRICAL PRINTING SCREEN AND PROCESS FOR PREPARATION THEREOF**

Kunio Katsumura, Osaka, Japan, assignor to Toshin Kogyo Co., Ltd., Hyogo, Japan

Filed Oct. 22, 1979, Ser. No. 87,382

Claims priority, application Japan, Jul. 5, 1979, 54-84426

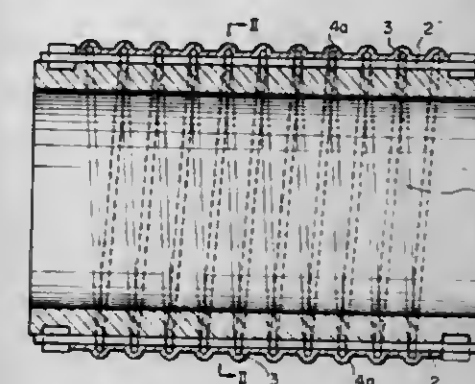
Int. Cl.<sup>3</sup> B05C 17/06; B41L 27/28

U.S. Cl. 101—128.21

8 Claims

1. A seamless cylindrical printing screen composed of a meshed metal cylinder, wherein said cylinder comprises a plurality of axial mother lines composed of a metal wire and extended from one open edge of the cylinder to the other open edge substantially in the axial direction at small intervals between every two adjacent axial mother lines, a circumferential mother line composed of a metal wire and extended spirally from one open edge of the cylinder to the other open edge at small intervals between every two adjacent turns of the cir-

cumferential mother line to cross said axial mother lines and a metal plating layer covering the peripheries of said circumfer-



ential and axial mother lines and bonding them to one another at the crossing points thereof.

4,285,275

**PRINTING PLATEN FOR HAND LABELER, OR THE LIKE**

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Japan

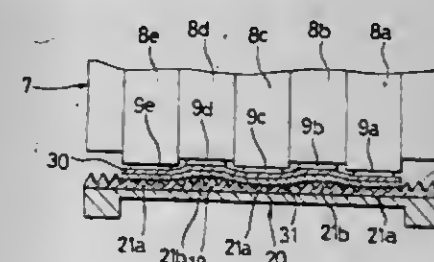
Filed Jun. 25, 1979, Ser. No. 51,954

Claims priority, application Japan, Jun. 26, 1978, 53-86641[U]

Int. Cl.<sup>3</sup> B41K 1/36; B41F 1/38

U.S. Cl. 101—407 BP

5 Claims



1. A printing platen for use with a label printing machine, or the like, wherein said platen includes a surface thereof on which a strip of labels, or the like objects to be imprinted, is fed and wherein said platen surface is opposed to and is adapted to be moved against printing types supported by a printing head, or the like; said platen including a support frame; a plate shaped impression plate supported on said platen support frame; said impression plate having a surface thereof which is the said surface of said platen that is opposed to printing types; said impression plate having a plurality of projections projecting up from said impression plate surface; said impression plate projections being comprised of elastic and deformable material and being adapted to be depressed to varying extents upon being engaged by printing types and said projections are of such height and deformability that, when printing types are applied against the label strip and are pressed against said impression plate surface projections, the types of a printing head may elastically deform said projections to varying extents depending upon the extent of irregularities of the types, and the types may be imprinted upon labels with a uniform, averaged density, despite irregularities in the types or in the orientations of the types; said projections of said impression plate are in the form of a plurality of corrugations defined in said impression plate surface; said corrugations are oriented on said impression plate that each said corrugation extends parallel to the direction of advancing movement of the label strip over said impression plate; said corrugations are of such a width, are so sized and are so placed that at least two of said corrugations will be covered over in the width direction across said platen by each printing type when the type engages a label strip on said impression plate surface.



4,285,276

**METHOD FOR PRINTING EMPLOYING LITHOGRAPHIC FOUNTAIN DAMPENING SOLUTION**

Howard A. Fromson, 15 Rogues Ridge Rd., Weston, Conn. 06096, and Robert F. Gracia, Scituate, Mass., assignors to Howard A. Fromson, Weston, Conn.

Continuation of Ser. No. 960,894, Nov. 15, 1978, abandoned, which is a continuation-in-part of Ser. No. 792,424, Apr. 29, 1977, abandoned. This application Apr. 11, 1980, Ser. No. 139,490

Int. Cl.<sup>3</sup> B41M 1/06

U.S. Cl. 101-451

5 Claims

1. In a method for lithographic printing wherein a lithographic printing plate having oleophilic and hydrophilic areas on the printing surface of the plate is contacted with ink and an aqueous fountain dampening solution during printing, the improvement comprising, as said fountain solution an aqueous solution containing a water-soluble hydrolase enzyme dissolved therein to improve printing quality and reduce the amount of fountain solution necessary to dampen the plate.

4,285,277

**LOW PROFILE GRENADE FUZE**

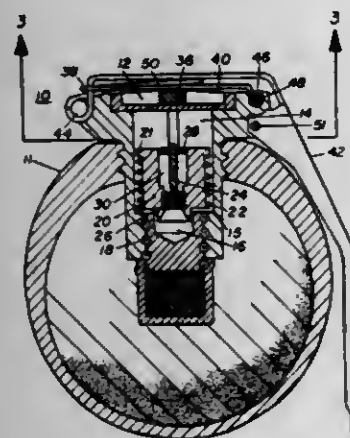
Russell E. Lerman, Dover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 26, 1979, Ser. No. 33,670

Int. Cl.<sup>3</sup> F42B 11/42

U.S. Cl. 102-487

9 Claims



1. A grenade comprising in combination:

- a housing for explosive;
- a tubular fuze body mounted on said housing, said body having an upper open end and a lower open end and containing a first bore and a second bore coaxially located therein;
- a striker plate fixedly mounted in said first bore;
- a spring biased primer holder positioned in said second bore and containing a primer charge and a firing pin, said firing pin being restrainably held therein spaced between said primer charge and said striker plate;
- a biased safety lever for controlling activation of said grenade pivotably attached to said fuze body, upper end;
- a detent lever positioned below said safety lever and pivotably attached to said fuze body upper end, said detent lever being restrained by and pivoting diametrically opposite to said safety lever;
- a spacer means to prevent movement of said spring biased primer holder toward said striker plate until said detent lever is released;

whereby release of said safety lever releases said detent lever permitting said spring biased primer holder to move said firing pin against said striker plate, initiating the primer.

4,285,278

**RAPID TRANSIT SYSTEM**

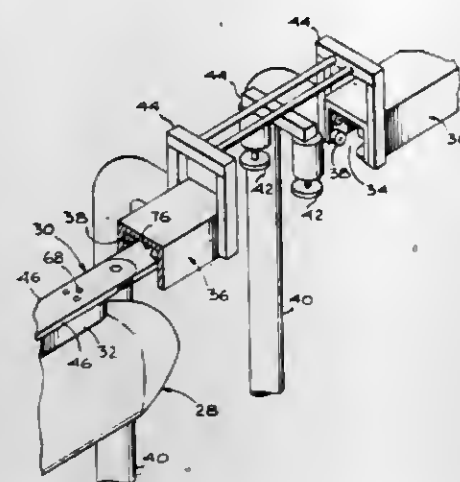
Bruce Mitchell, Terreton, Id. 83450

Filed Jul. 21, 1980, Ser. No. 170,595

Int. Cl.<sup>3</sup> B61B 3/00

U.S. Cl. 104-96

8 Claims



1. In a rapid transit system having a guide line network including a main line and one or more interconnected side guide lines, a car moveable throughout said network, an overhead tow bar interconnecting said car with said guide line network, car drive means, and switch means for diverting said car to and from said main line and said side lines, the improvement comprising improved switch means comprising, in combination:

- a. an overhead main line guide bar extending along said main line immediately before, at and immediately after the intersection of said main line and said side guide line;
- b. a main line guide finger manually moveable vertically from within said car into and out of sliding contact with the side of said main line overhead guide bar away from said side guide line;
- c. an overhead side line guide bar extending along said side line immediately before, at and immediately after said intersection;
- d. a pair of turn off guide fingers spaced laterally on each side of main line guide finger and manually movable vertically as a unit from between said car for sliding engagement with said side line guide bar to divert said car to said side line; and
- e. lever means connected to said three fingers to simultaneously raise said side line guide fingers while lowering said main line guide finger and vice versa.

4,285,279

**RAILWAY VEHICLE ENERGY PRODUCING SYSTEM**

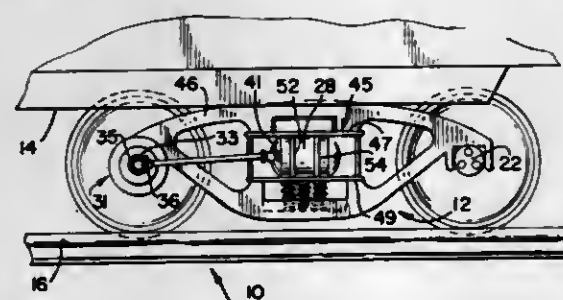
Arthur B. Chiappetti, 10600 S. Oakley, Chicago, Ill. 60643

Filed May 29, 1979, Ser. No. 42,739

Int. Cl.<sup>3</sup> B60L 1/00, 5/00; B61C 17/00

U.S. Cl. 105-118

8 Claims



1. In a vehicular energy producing system, said system including an electrical generating means and being adapted to be mounted on a heavy vehicle having at least one undercar-

riage, the undercarriage having at least one axle journaled for rotation about its ends, a plurality of wheels being connected to the axle for helping support rollably the undercarriage, the combination comprising: bracket means mounted on the undercarriage for supporting said electrical generating means; transmission means for coupling drivingly the input of said generating means and the undercarriage for driving said generating means as the vehicle moves; conductor means for supplying said electrical power from said generating means for utilization purposes; clutch means responsive to the rotation of the wheels of the undercarriage for coupling mechanical power drivingly to said transmission means; said clutch means including a centrifugal clutch for slipping at lower speeds of the wheels and for engaging automatically at higher speeds of the wheels.

4,285,280

**RADIAL RAILWAY TRUCK**

Roy E. Smith, Kingston, Canada, assignor to Urban Transportation Development Corporation Ltd., Toronto, Canada

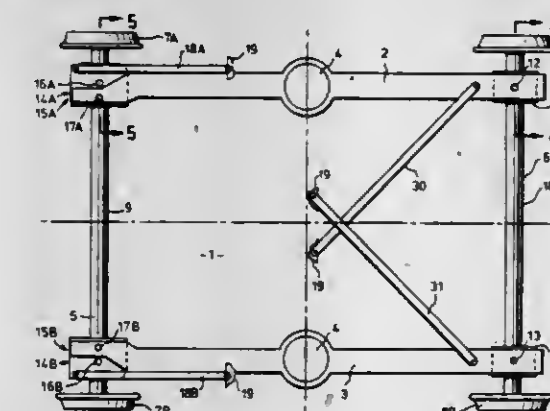
Filed Jul. 14, 1978, Ser. No. 924,610

Claims priority, application Canada, Jul. 12, 1978, 307216

Int. Cl.<sup>3</sup> B61F 3/08, 5/26, 5/44, 5/50

U.S. Cl. 105-168

7 Claims



1. A self steering truck for use in association with a railway vehicle, comprising a first axle, a second axle and frame members extending between said axles; said first and said second axle each having a pair of flanged wheels fixed thereto, each of said axles mounted in a plurality of bearing means for rotation about a generally horizontal axis, each of at least two of said bearing means being attached to said frame members by means of a steering lever; each of said steering levers being attached to said frame members and to said bearing means for pivotal movement about generally vertical axial pivots which axial pivots are horizontally spaced from each other; a steering rod being attached to each of said steering levers and adapted to be attached to the railway vehicle, the other of said bearing means being attached to said frame members for pivotal movement about respective generally vertical axial pivots.

4,285,281

**TABLE AND A TABLE SUPPORT**

Berndt E. Frick, Herrgardsvägen 9, 135 00 Tyresö, Sweden

Filed May 21, 1979, Ser. No. 40,721

Claims priority, application Sweden, May 19, 1978, 7805747

Int. Cl.<sup>3</sup> A47B 9/00

U.S. Cl. 108-147

5 Claims

1. A table having a table top which is selectively ascendable and descendable and having a table support, said table support comprising:

- a first member, said first member being attached to the under side of said table top, and said first member including:
- a plurality of shaft members, each of said shaft members having a tenon projecting outwardly from said first member;
- a plurality of sprockets, each of said sprockets being mounted on one of said shaft members, and at least one

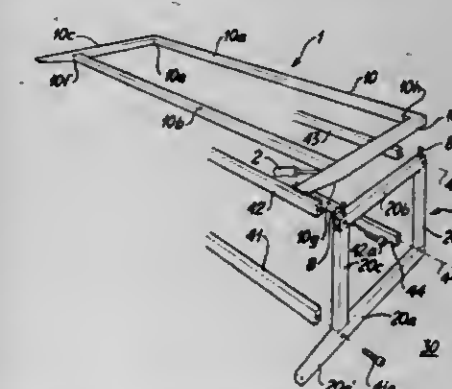
of said shaft members having a plurality of sprockets mounted thereon;

a plurality of chain members, each of said chain members mechanically coupling one of said sprockets mounted on one of said shaft members to another of said sprockets mounted on another of said shaft members, such that each of said chain members mechanically couples only two of said sprockets; and

actuating means for selectively rotating one of said plurality of shaft members,

wherein when said one of said plurality of shaft members is selectively rotated, said plurality of sprockets and said plurality of chain members cooperate such that the tenons included on said plurality of shaft members rotate in synchronism in the same direction; and

a side member, said side member including:



a plurality of screw members, each of said screw members being threadedly engaged with said side member, and each of said screw members having means for receiving the tenon included on one of said plurality of shaft members, such that each of said screw members rotates in unison with the tenon received by said screw member;

whereby when said actuating means selectively rotates the one of said plurality of shaft members in a first direction, said plurality of screw members rotate in synchronism in said first direction, thereby causing said table top to ascend, and

further whereby when said actuating means selectively rotates the one of said plurality of shaft members in a second direction, said plurality of screw members rotate in synchronism in said second direction, thereby causing said table top to descend.

4,285,282

**RUBBISH AND REFUSE INCINERATOR**

Lewis D. Good, Caledonia, Mich., assignor to Russell E. Stadt,

Grand Rapids, Mich., a part interest

Division of Ser. No. 863,255, Dec. 22, 1977, Pat. No. 4,205,614.

This application Sep. 14, 1979, Ser. No. 75,703

Int. Cl.<sup>3</sup> F23G 3/00, 7/00

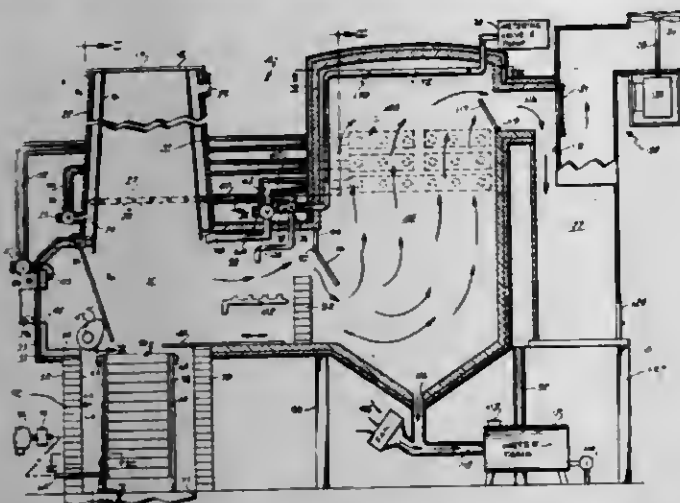
U.S. Cl. 110-259

27 Claims

1. An incinerator for burning rubbish and refuse as fuel comprising a primary and a secondary combustion chamber; a fuel receiving hopper positioned above and communicating with said primary combustion chamber; an ash collecting area positioned below said primary combustion chamber in alignment with said hopper and including a grate for receiving ashes; a gas circulating and flyash collecting chamber located adjacent and communicating with said secondary combustion chamber; a primary air intake for inserting air in said primary combustion chamber; hopper heating means for heating said hopper to begin combustion of the fuel material in said hopper; air heating means for heating air within said incinerator and inserting means for inserting said heated air in at least one of said primary and secondary combustion areas; baffle means for



controlling the flow of gases through said incinerator; and an exhaust stack communicating with said gas circulating and



flyash collecting chamber for exhausting the gases of combustion from said incinerator.

4,285,283

## COAL COMBUSTION PROCESS

Richard K. Lyon, Fanwood, and Howard Freund, Warren, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 7, 1979, Ser. No. 101,210

Int. Cl.<sup>3</sup> F23D 1/00

U.S. Cl. 110—347

6 Claims

1. A coal combustion process wherein the emission of SO<sub>x</sub> is minimized which process comprises:

- providing a coal containing an organic calcium to sulfur ratio of at least 2 to 1 for coal containing less than 1 wt. % sulfur and at least 1 to 1 for coal containing greater than 1 wt. % sulfur;
- burning the coal at temperatures greater than about 1200° C. in a first combustion zone in the presence of an oxidizing agent but under reducing conditions such that the equivalence ratio of coal to oxidizing agent is at least 1.5;
- separating the resulting solid effluent from the gaseous effluent from the first combustion zone; and
- burning the gaseous effluent at a temperature from about 1000° C. to about 1500° C. in a second combustion zone under oxidizing conditions.

4,285,284

## SEEDER WITH PIVOTING SOIL BREAKERS

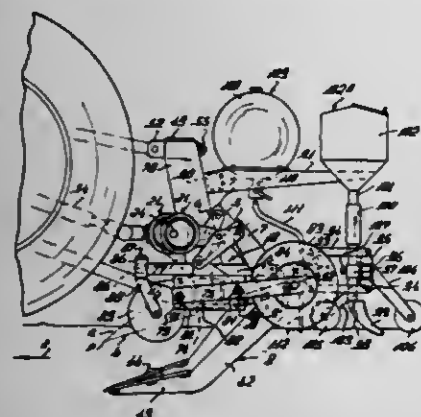
Cornelis van der Lely, Bräckenrain 7, Zug, Switzerland  
Filed Sep. 14, 1977, Ser. No. 833,286

Claims priority, application Netherlands, Sep. 17, 1976, 7610345

Int. Cl.<sup>3</sup> A01C 5/06; A01B 11/00

U.S. Cl. 111—85

22 Claims



1. A soil cultivating implement comprising a frame and a plurality of soil working members being pivotably connected to said frame by corresponding polygonal linkages, driving

means connected to rock said linkages and pivot said members up and down about substantially horizontal axes during operation, said members comprising fastening portions and forwardly extending soil working portions that are vertically displaced during operation to loosen soil, the amplitude of repetitive vertical displacement of points along the lengths of said soil working portions being greater rearwardly from their leading ends, at least one polygonal linkage having vertically spaced apart pivotal axes that extend substantially horizontally transverse to the direction of travel and said pivotal axes being located at different levels and behind one another, said linkage having two forward pivots interconnected to the frame and two trailing pivots interconnected to the fastening portion of said member, the distance between the two forward pivots being less than the distance between the two trailing pivots when viewed from the side.

4,285,285

## FEED DEVICE AND METHOD FOR FEEDING YARN OR OTHER TEXTILE MATERIAL

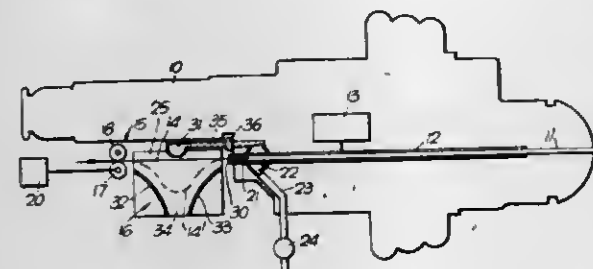
George Chambers, and Kenneth F. Hall, both of Martock, England, assignors to Newroyd Limited, Lancashire, England  
Filed Oct. 31, 1979, Ser. No. 89,726

Claims priority, application United Kingdom, Nov. 10, 1978, 44044/78

Int. Cl.<sup>3</sup> D05C 15/00

U.S. Cl. 112—79 FF

12 Claims



1. A tufting machine comprising a hollow member through the interior of which textile material may be passed; a housing having a passage through which the textile material may pass on its way to the said interior; cooperating rollers between the nip of which the textile material may be passed, for feeding the textile material to the passage, the cooperating rollers, the passage and the hollow member being aligned to ensure that the textile material passes therebetween in a substantially straight line path; reciprocating means for reciprocating the hollow member towards and away from the cooperating rollers; fluid jet means for directing at least one fluid jet onto the textile material passing through the passage so as to tension the said textile material; and pressure supply means which are arranged to supply a pressure fluid to the said interior to entrain the textile material therethrough during a predetermined portion only of the reciprocation of the hollow member, the pressure supply means also supplying the fluid jet means with an intermittently varying fluid pressure which is respectively reduced and increased, so as to reduce and increase the said tension, in accordance with whether or not the textile material is being entrained through the said interior.

4,285,286

## TUFTED PILE FABRIC AND METHOD AND APPARATUS FOR MAKING SAME

Juel T. Hash, Ft. Oglethorpe, Ga., assignor to Shirley M. Jorge, Ft. Oglethorpe, Ga., a part interest

Filed Feb. 22, 1980, Ser. No. 123,913

Int. Cl.<sup>3</sup> D05C 15/00

U.S. Cl. 112—79 R

20 Claims

1. A method of tufting pile fabric comprising, supporting and feeding a base fabric in one direction, penetrating a yarn through the base fabric to form a first loop on one side of said fabric, supporting on said one side a first looper having a free

end pointing in said one direction, relatively moving said looper so its free end enters and seizes said loop and thereafter sheds said loop, supporting upon said one side a second looper having a free end closer to said fabric than the free end of said first looper and pointing in the direction oppositely to said one direction, relatively moving said second looper to enter and

the needles are above the support plate to the upper of said control members and then to the lower control member thereby to shift the needle bar transversely.

4,285,288

## TUFTING APPARATUS FOR PREVENTING SEW-THRU AND TAGGING

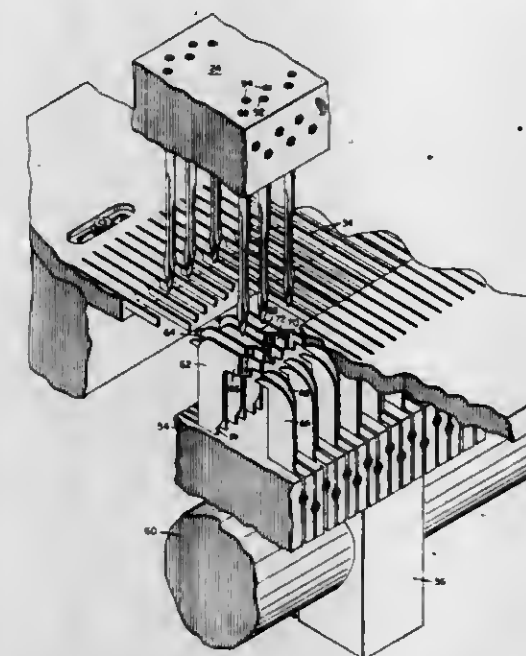
Billy E. Inman, Signal Mountain, Tenn., and Wheeler E. Phillips, Kensington, Ga., assignors to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Sep. 19, 1980, Ser. No. 188,718

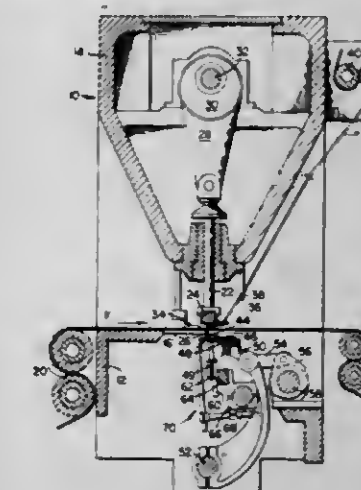
Int. Cl.<sup>3</sup> D05C 15/16

U.S. Cl. 112—79 R

9 Claims



seize the loop shed by said first looper and to hold said loop, penetrating the yarn through said fabric and said loop at a location displaced along the line of feed from the penetration of the first loop to form a second loop on said one side, relatively moving said first looper to seize the second loop, and relatively moving said second looper to thereafter release said first loop.



4,285,287

## APPARATUS FOR SHIFTING TUFTING MACHINE NEEDLE BAR

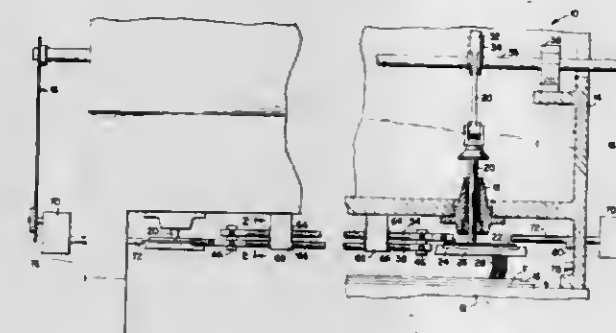
Billy E. Inman, Signal Mtn., Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Sep. 11, 1980, Ser. No. 186,115

Int. Cl.<sup>3</sup> D05C 15/30

U.S. Cl. 112—79 R

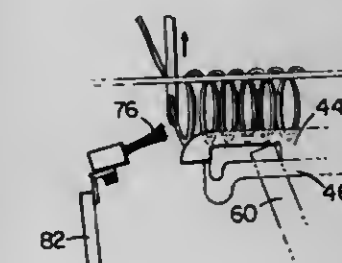
6 Claims



1. In a tufting machine having a reciprocating needle bar carrying a plurality of needles spaced transversely across the machine and adapted to penetrate a base material moving longitudinally across a support plate thereof to insert a plurality of stitches upon each penetration of the base material, and mounting means for mounting said needle bar for transverse movement relatively to the base material, the improvement comprising, first and second control members vertically spaced one from the other, journal means for mounting both said control members for transverse movement relatively to said base material, a guide member including a guideway, means for pivotably mounting said guide member to each of said control members, a follower disposed within said guideway, means connecting said follower to said needle bar, whereby the path of movement of the needle bar is determined by the disposition of the guideway, and positioning means for selectively providing a controlled transverse step shift while

1. In a tufting machine, means for feeding a base fabric in one direction, at least one yarn carrying needle supported on one side of the base fabric, means for reciprocating said needle for penetrating said fabric to present loops of yarn therein, looper means disposed on the other side of said fabric, and means for oscillating said looper means in timed relationship with said needle toward and away from cooperation with said needle for seizing successive loops of yarn presented thereby and for shedding at least some of said loops, the improvement comprising, a wiper disposed on said other side of said fabric and facing in said one direction, means for oscillating said wiper in timed relationship with said needle in a path transverse to the path of said needle for sweeping loops shed by said looper into said one direction away from the path of the needle and for precluding said shed loops from entering the path of said needle as the needle penetrates said fabric, said wiper comprising means readily deflectible when engaged by said needle.

7. In the method of tufting pile fabric including the steps of supporting and feeding a base fabric in one direction, actuating a needle in a reciprocating path to stitch a yarn continuously through said base fabric as the fabric moves to form a row of successive yarn loops on one side of said fabric, and supporting upon said one side of said fabric an oscillating looper having a free end for entering and seizing loops in succession and for shedding at least some of said loops, the improvement comprising supporting upon said one side of said fabric a wiper pointing in said one direction and oscillating said wiper across said path of said needle to sweep each shed loop in succession in





said one direction and to maintain said shed loop out of said path of said needle.

4,285,289

## EMBROIDERING MACHINE

Kurt Bolldorf, Kaiserslautern, and Gottfried Schmidt, Kleinmelscheid, both of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

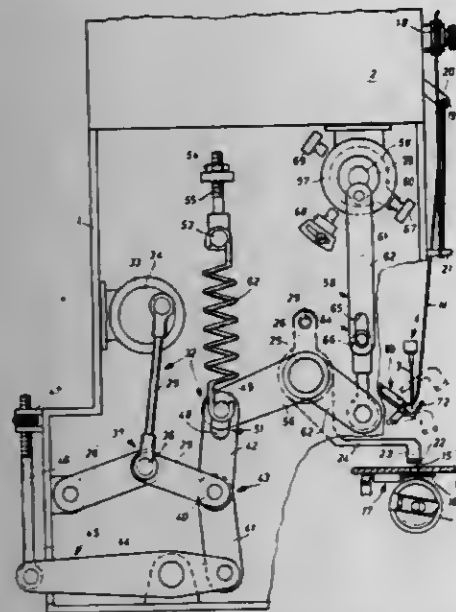
Filed Sep. 11, 1980, Ser. No. 186,122

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 2938894

Int. Cl.<sup>3</sup> D05C 3/02; D05B 55/16, 29/02

U.S. Cl. 112—98

16 Claims



1. An embroidering machine comprising: a group of needles each for carrying separate thread; needle drive means for engaging one needle at a time and moving said one needle from a rest position into an operating position; a presser foot movable cyclically with movement of said one needle in its operating position, between a lower dead center position and an upper dead center position, and having an opening for the passage of said one needle; presser foot drive means connected to said presser foot for moving said presser foot between its upper and lower dead center positions and for moving said presser foot upwardly beyond its upper dead center position; a cutting means for cutting the thread of said one needle to form an end portion of the thread; and holding means for securing the end portion of the thread after the thread is cut.

4,285,290

## MODULAR WORK TRIMMER FOR A SEWING MACHINE

Kenneth F. Kaltenbach, Leonia, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Aug. 30, 1979, Ser. No. 71,156

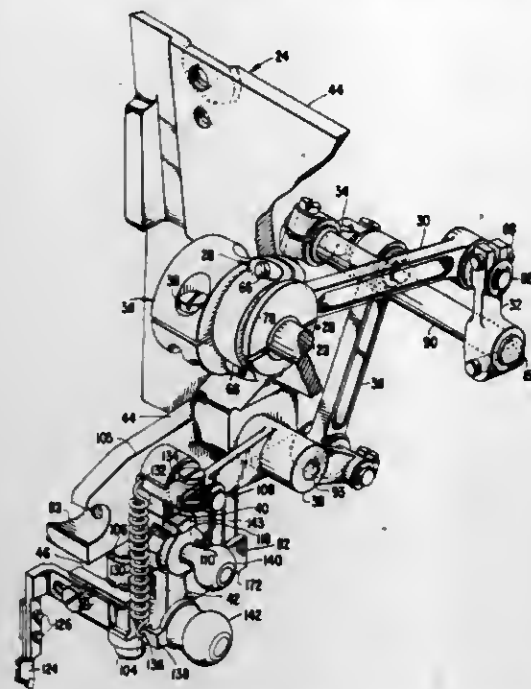
Int. Cl.<sup>3</sup> D05B 37/00

U.S. Cl. 112—125

9 Claims

1. A work trimmer module for a sewing machine having a driving arm shaft within a hollow bracket arm which extends above the bed of the machine and includes an opening at the rear of the machine permitting access to the arm shaft, said module comprising a frame securable to the machine and including an opening which communicates with the opening in the arm when the frame is secured thereon, a split eccentric securable on the arm shaft, a split bearing securable about the eccentric, a member reciprocable by said bearing during rotation of the arm shaft and operable through the said openings, linkage means mounted on the frame outside said bracket arm and removably connected with said reciprocable link, a trim-

mer knife carrier operably connected with said linkage means for movement thereby at least at times in response to the recip-



location of said reciprocable link, and a knife actuable by said carrier.

4,285,291

## NEEDLE GUARD FOR SEWING MACHINES

Manfred Ackermann, Elmhurst, and Nicholas Alfano, Melrose Park, both of Ill., assignors to Union Special Corporation, Chicago, Ill.

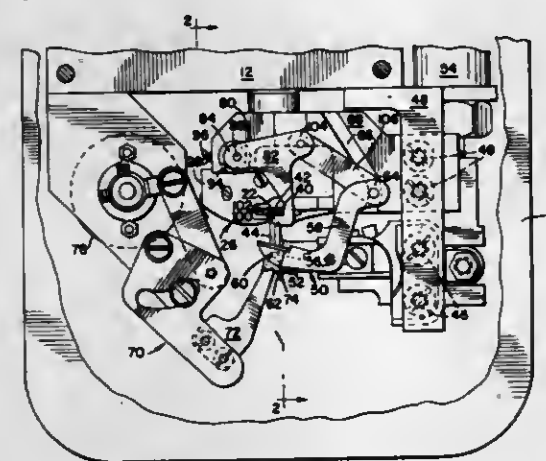
Continuation of Ser. No. 914,693, Jun. 12, 1978, abandoned.

This application Aug. 20, 1979, Ser. No. 68,040

Int. Cl.<sup>3</sup> D05B 55/06, 57/14, 65/02

U.S. Cl. 112—184

11 Claims



11. A sewing machine having in combination a thread carrying needle adapted for movement in an endwise reciprocatory path during a sewing cycle, a lower stitch forming mechanism arranged to manipulate a lower thread and to cooperate with said needle in the formation of stitches, and a needle guard means comprising:

means operative for engaging and positioning said needle relative to said lower stitch forming mechanism, said means operative being adapted to remain in a generally stationary position relative to the needle's path during the sewing cycle but then initially and automatically move from its stationary position at the completion of the sewing cycle.

4,285,292

## METHOD OF THREAD STITCHING LAYERS TO FORM A SEWN BOOK

Horst Rathert, Minden, and Winfried Hedrich, Rahden, both of Fed. Rep. of Germany, assignors to Rahdener Maschinenfabrik August Kolbus, Westphalia, Fed. Rep. of Germany

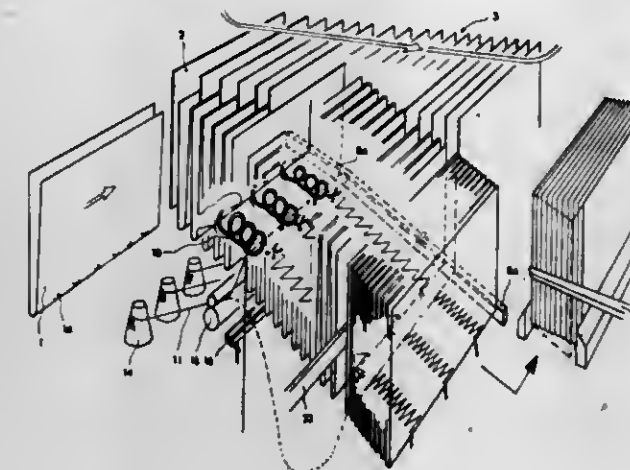
Division of Ser. No. 8,697, Feb. 1, 1979, Pat. No. 4,252,071. This application Jan. 21, 1980, Ser. No. 114,074

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806062

Int. Cl.<sup>3</sup> D05B 97/00; B42B 1/02

U.S. Cl. 112—262.1

9 Claims



1. A method for thread stitching several layers to form a sewn book or the like, the layers comprising signature sheets folded to form a back, the method comprising: conveying the layers in spaced apart parallel relation, the backs of said layers being aligned in a plane, said layers being moved in relation to at least one spiral needle; rotating said spiral needle to provide for penetration and exiting of the backs of the layers by the spiral needle, said spiral needle being rotated at a speed and having a helix angle which is coordinated with the spacing and the speed of advancement of the layers, the spiral needle stitching the plurality of layers with thread to provide a plurality of sewn layers; and drawing the thread through the sewn layers at several points between the layers to reduce the tension of said thread.

4,285,293

## COMBINED NEEDLE GUARD/NEEDLE COOLER FOR SEWING MACHINE

Wayne F. Martling, Oak Park, Ill., assignor to Union Special Corporation, Chicago, Ill.

Filed Oct. 26, 1979, Ser. No. 88,746

Int. Cl.<sup>3</sup> D05B 71/04, 83/00

U.S. Cl. 112—281

7 Claims

1. In combination with a sewing machine having a frame, work support means, a thread carrying needle adapted for endwise reciprocation during a sewing cycle, a lower stitch forming mechanism arranged to manipulate a lower thread and to cooperate with said needle in the formation of a stitch, an operable means for cooling and guarding the needle comprising:

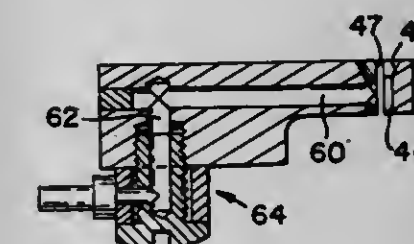
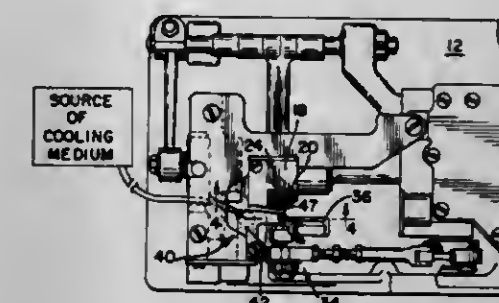
member means extending beneath the work support means to a position in the reciprocatory path of said needle, said member means having a bore the diameter of which constitutes a camming surface which is adapted, in the event that on its downstroke the needle is deflected or bent in any direction away from its normal path, to reposition the needle properly with respect to the lower stitch forming means;

and means defining a passageway formed in said member means and opening into said bore for transmitting a cooling

medium to the area in which said needle passes through said member whereby cooling same.

6. In a sewing machine having a frame, work support means, reciprocatory thread carrying needle means, complementary means cooperating with said needle means for producing a stitch in a workpiece and means operative for simultaneously guarding and cooling said needle comprising:

member means disposed beneath said work support means in



the reciprocatory path of said needle means and having an opening the diameter of which is effective to engage and reposition the needle in the event that it is bent or flexed so as to insure cooperation of said needle with said complementary means; and said member means being provided with channels that are in communication with said opening and adapted to transmit a cooling medium to that portion of the needle encompassed by said opening.

4,285,294

## UPPER LAYER FEED MECHANISM IN A SEWING MACHINE

Kikuo Aida, Tsukimachi, Japan, assignor to Tokyo Juki Kogyo Kabushiki Kaisha, Tokyo, Japan

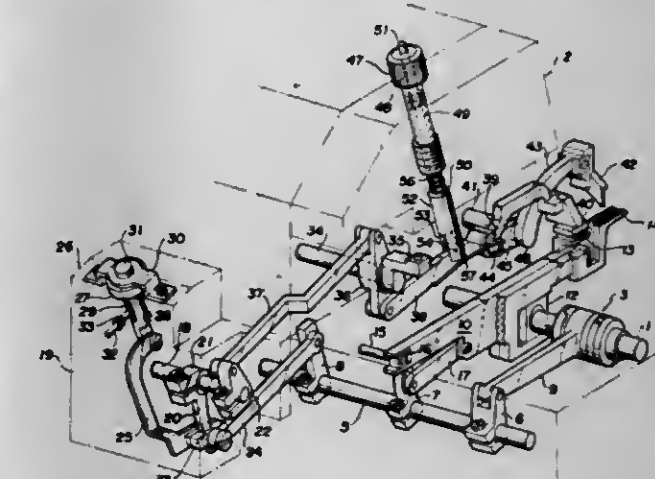
Filed Jun. 26, 1980, Ser. No. 163,625

Claims priority, application Japan, Jul. 4, 1979, 54-92329[U]

Int. Cl.<sup>3</sup> D05B 27/06

U.S. Cl. 112—311

2 Claims



1. In a sewing machine comprising a machine frame, a drive shaft rotatably supported on said machine frame, a horizontal feed adjuster and an eccentric cam mounted on said drive shaft in spaced relationship to each other along the length of the



shaft, the eccentricity of said adjuster and eccentric cam with respect to the drive shaft being adjustable, a horizontal feed shaft rockably supported on said machine frame and interlocked to said adjuster and main- and sub-feed dogs disposed on the opposite sides of the cloth feed path in said sewing machine below a cloth being sewn and interlocked to said horizontal feed shaft and eccentric cam for cloth feed movement, characterized by an upper layer feed mechanism comprising a first interlocking arm secured at one end to said horizontal feed shaft, an upper layer feed shaft rotatably supported at one end on said machine frame and having a second interlocking arm secured to the other end, a connector rod connecting between said first and second interlocking arms, an adjusting means adjusting the connection between said second interlocking arm and connector rod with respect to the axis of said horizontal feed shaft and having an adjusting member disposed out of said machine frame, a support arm rotatably supported at one end on said machine frame, an upper feed arm rotatably supported at one end on said support arm and having an upper layer feed dog at the other end above and facing said main feed dog, a connector means connecting between said upper feed shaft and support arm so as to transmit the rocking movement of the upper feed shaft to the support arm to thereby cause said upper layer feed dog to move in the same horizontal plane as said main feed dog, a resilient means normally urging downwardly said upper layer feed dog at said upper layer feed arm and a means rockable in response to the rotation of said drive shaft to cause said upper layer feed dog to raise said upper feed arm against the resiliency of said resilient means when main feed dog descends.

4,285,295

#### FIXING DEVICE FOR ELECTROPHOTOGRAPHIC COPYING MACHINES

Soichi Iwao, Shinji Takiguchi, and Toshio Sakata, all of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

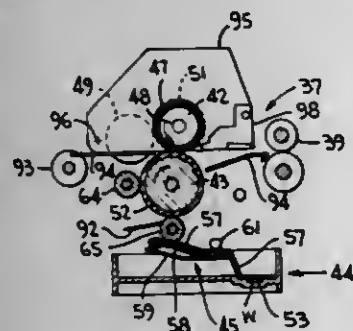
Filed Sep. 18, 1979, Ser. No. 76,738

Claims priority, application Japan, Sep. 19, 1978, 53-115378

Int. Cl.<sup>3</sup> B05C 11/00

U.S. Cl. 118—60

3 Claims



1. A fixing apparatus for use with an electrophotographic copying machine, said fixing apparatus being capable of fixing an unfixed toner image on a copy paper passing therethrough, said fixing apparatus including

- a pair of rotatable fixing rollers which are mounted so as to be capable of being positioned in nip-defining contact, a copy paper having an unfixed toner image on one side being capable of passing therebetween, and
  - an applicator means for intermittently applying a predetermined quantity of offset-preventing liquid to one of said fixing rollers, said applicator means including an applicator roller in contact with the surface of said one fixing roller,
  - a supply tank containing offset-preventing liquid,
  - a movable feeding device capable of intermittently supplying offset-preventing liquid from said supply tank to said applicator roller, and
  - drive means for moving said feeding device,
- said applicator means supplying offset-preventing liquid to said one of said fixing rollers such that upon rotation of said fixing rollers a large amount of offset-preventing

liquid will be located on the roller intended to contact the side of the copy paper having the unfixed toner image at the portion thereof where the leading edge of the copy paper will be positioned so as to facilitate separation therebetween, whereas a lesser amount of offset-preventing liquid will be located on the remaining portion of said roller intended to contact the side of the copy paper having the unfixed toner image thereon.

4,285,296

#### LUBRICATING APPARATUS

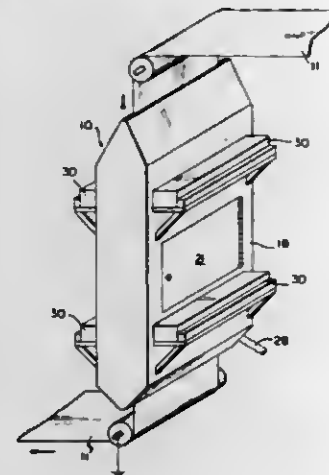
Addison B. Scholes, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Continuation-in-part of Ser. No. 881,057, Feb. 24, 1978, abandoned. This application Jun. 12, 1978, Ser. No. 914,559

Int. Cl.<sup>3</sup> B05C 1/04; B05B 5/02

U.S. Cl. 118—630

6 Claims



1. Apparatus for applying a lubricating material to a fast moving strip comprising means forming a vertical deposition chamber having smooth side walls, a roof slanted at an acute angle with respect to the side walls on each side of the chamber at its top, second means to move the strip rapidly through the deposition chamber along its central plane,

a plurality of sources of lubricating particles spaced in each side of the deposition chamber intermediate its top and bottom,

each of said sources comprising means forming a horizontal chamber outside of the deposition chamber, opening into said deposition chamber, and containing a supply of lubricating material,

each of said sources having a plurality of compressed air atomizers supplied from said supply of lubricating material in said horizontal chamber and directing a spray of particles of said lubricating material particles at said supply within said horizontal chamber to remove the larger particles of lubricating material from said spray,

the plurality of atomizers of each source of lubricating particles being grouped into individually controllable units, the atomizers being formed in circular blocks by providing each circular block with a plurality of bores adjacent its periphery, and providing in each bore a nozzle-forming member and an atomizing orifice member, said block having a slotted periphery with said slot communicating with the supply of lubricating material and intersecting each of said bores between said nozzle-forming member and atomizing orifice member,

each controllable unit including a portion of the total number of atomizers in the source, the individually controlled units being spaced across the horizontal chamber and controllable to provide a uniform source of lubricating particles through said opening of the horizontal chamber permitting the smaller particles to be urged into the deposition chamber by the residual flow of compressed air from said atomizers, and

electrostatic electrode means supported at each end by the end walls of said deposition chamber and on each side of its central plane, said electrode means being connected with a source of high electrical potential.

4,285,297

#### MAGNETIC BRUSH DEVELOPING DEVICES

Yoshiro Suzuki, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

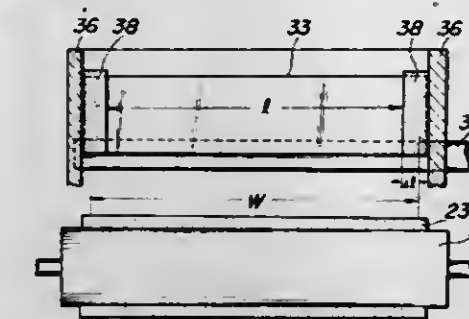
Filed Nov. 29, 1979, Ser. No. 99,191

Claims priority, application Japan, Dec. 2, 1978, 53-166452[U]

Int. Cl.<sup>3</sup> G03G 15/09

U.S. Cl. 118—657

4 Claims



1. An improved magnetic brush developing device comprising: a housing for containing a developing agent, a magnetic brush assembly including a tubular sleeve made of non-magnetic material and a permanent magnet assembly arranged inside said sleeve, a hopper for containing toners and provided at its lower end with an opening through which the toners are supplemented to said developing agent, a toner supplying roller rotatably journaled in said lower opening of said hopper and having a longitudinal recess for receiving a given amount of toners from said hopper, and a resilient plate having one end secured to an inner wall of said hopper, the other free end being operative to engage with said longitudinal recess of said roller, the improvement comprising: a stopper engagable with two side edges of said resilient plate and with the inner side-walls of said housing and extending in a direction perpendicular to the axial direction of said toner supplying roller, whereby, a length of said toner supply opening of said hopper is smaller than a maximum width of an electrostatic charge image to be developed by said developing device, and said stopper being deformable in response to the displacement of said resilient plate.

4,285,298

#### METHOD AND APPARATUS FOR REARING POST-LARVAE SHRIMP

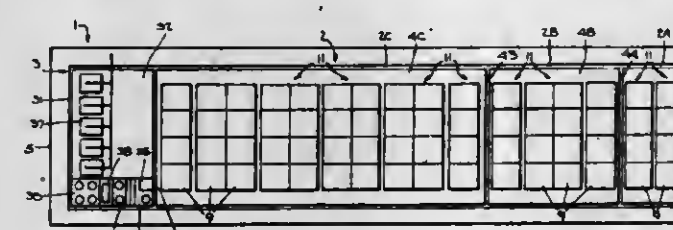
Charles Dugan, Goulde, and Timothy Dugan, Homestead, both of Fla., assignors to Farm Fresh Shrimp Corporation, Fort Lauderdale, Fla.

Filed Oct. 19, 1978, Ser. No. 952,664

Int. Cl.<sup>3</sup> A01K 61/00

U.S. Cl. 119—2

30 Claims



1. A system for rearing post-larvae shrimp comprising: a first rearing tank for retaining shrimp for an initial post-larvae period of growth; first habitat means locatable within said first rearing tank for

providing habitats for shrimp, said first habitat means including

a first plurality of vertically-spaced substrate means arranged in individual groups, each substrate means providing a surface area to which shrimp can cling and having openings therein for permitting the passage of fluid therethrough, said first plurality of substrate means having a first combined total surface area, and

frame means for supporting the individual groups of substrate means of said first plurality of substrate means;

a second rearing tank for retaining shrimp for a period of growth subsequent to said initial post-larvae period of growth, said second rearing tank having a common wall with said first rearing tank;

second habitat means locatable within said second rearing tank for providing habitats for shrimp, said second habitat means including

a second plurality of vertically-spaced substrate means arranged in individual groups, each substrate means being of the same construction as the substrate means of said first habitat means, said second plurality of substrate means having a second combined total surface area which is greater than said first combined total surface area, and

frame means for supporting the individual groups of substrate means of said second plurality of substrate means; and

means for moving said first and second habitat means into and out of said first and second rearing tanks.

4,285,299

#### METHOD AND APPARATUS FOR COLLECTING POULTRY

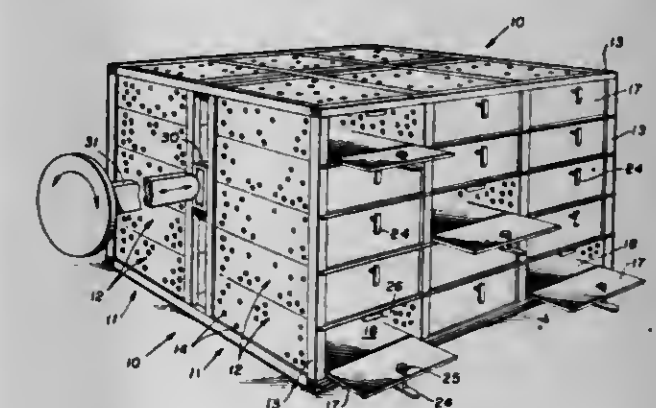
Dover E. Thomas, 2319 Fairway Cir., SE., Decatur, Ala. 35601

Filed Jan. 29, 1979, Ser. No. 53,357

Int. Cl.<sup>3</sup> A01K 31/00

U.S. Cl. 119—17

4 Claims



3. Apparatus for the collection of poultry, comprising:

- a. a pair of enclosures each having walls and a floor, said walls having therein perforations for ventilation,
- b. each of said enclosures having a door pivotally connected to the enclosure in alignment with the floor of said enclosure, said doors being such that a bird placed on the door will slide along the door when said door is inclined at an angle of about 12°-20° from horizontal, said enclosures being secured together in a side-by-side relationship to form a bank of enclosures, said bank having attached thereto a member adapted to support and incline said bank when said member is pivoted.



4,285,300

## ANIMAL FEEDING SYSTEM

Victor L. Spase, 27004 - 64th NW., Stanwood, Wash. 98292

Filed Nov. 19, 1979, Ser. No. 95,583

Int. Cl.<sup>3</sup> A01K 5/00

U.S. Cl. 119-58

1 Claim



1. In an animal feeding system:

a hay feeding station,

elevated hay feeder apparatus located at said station, comprising:

(a) an aligned and integrated plurality of laterally spaced-apart, U-shaped bar-like members attached to longitudinal bar means forming an upwardly open, openwork manger for hay.

(b) a mow suspending a side of said manger at such height above the floor or ground level that feeding animals tend to raise their heads to pull hay from the lower portion of said container between said U-shaped members, said manger having an upstanding fender opposite said mow.

(c) means permitting access to said elevated hay feeder apparatus from below, whereby hay placed in said apparatus may be consumed, and

(d) curb means at said station extending approximately the length of and being located beneath the proximate margin of said manger relative to feeding animals whereby said curb means may be contacted by the front legs of animals tending to intrude underneath the manger and operable to discourage them from occupying and soiling the space beneath the said manger.

4,285,301

## BIRD CAGE

Josef Voss, Hans Dreizehneichen, 5760 Arnsberg 1, Fed. Rep. of Germany, assignor to Josef Voss, Arnsberg, Fed. Rep. of Germany

Continuation of Ser. No. 907,866, May 19, 1978, Pat. No.

4,210,100. This application Jul. 9, 1979, Ser. No. 56,102

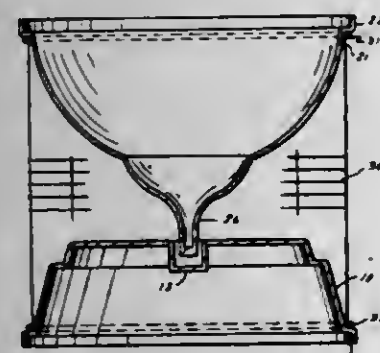
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805866

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> A01K 31/06, 31/08

U.S. Cl. 119-17

6 Claims



1. A collapsible bird-container of the cage type, comprising an elongated cage-type barrel having a rigid peripheral wall bounding the interior of the barrel and an upper and a lower open end; a first discrete end closure detachably mountable on said barrel in an operative position for closing said upper end, said first closure being formed with a first reduced cross-section portion directed upwardly when said closure is installed

on said barrel in said operative position; a second discrete end closure detachably mountable on said barrel in an operative position for closing said lower end, said second closure also being formed with a second reduced cross-section portion directed downwardly when said second closure is installed on said barrel in said operative position, at least one of said end closures being invertible to a storage position in which the reduced cross-section portion thereof extends into and said one end closure is received substantially completely in said barrel to thereby decrease the overall height of the container in order for the container to require less space for storage or transport; and means for detachably securing said end closures to said barrel in at least said operative positions.

4,285,302

## BOILER BLOWDOWN SYSTEM

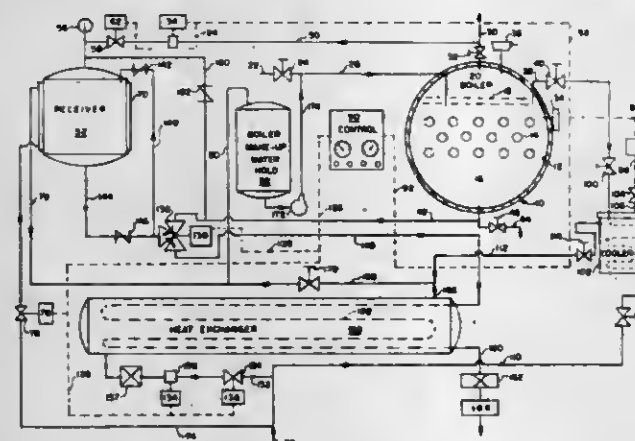
Thomas J. Kelly, 537 N. Euclid, Oak Park, Ill. 60302

Filed Dec. 26, 1978, Ser. No. 972,892

Int. Cl.<sup>3</sup> F22B 37/54

U.S. Cl. 122-382

19 Claims



1. A boiler blowdown apparatus for a boiler having a steam outlet and a bottom blowdown outlet, which comprises:

means for receiving blowdown water from said bottom outlet of said boiler, said receiving means having a one-way top inlet, and a one-way bottom outlet to conduct said blowdown water therefrom and a first valve-controlled steam pressure conduit connected to said steam outlet of said boiler;

heat exchanger means connected to said one-way bottom outlet of said receiving means for cooling said boiler water;

second valve means, normally closed in a first position, adapted to control the flow of blowdown water from said boiler into the top inlet of said receiving means in a second position and adapted to allow the flow of blowdown water from the bottom outlet of said receiving means in a third position;

means monitoring a condition of said boiler water in said boiler to produce a signal to indicate the need for a blowdown cycle;

means responsive to said signal to operate said second valve means in timed sequence from said first position to said second position and thereby pass a portion of blowdown water from said boiler to charge said receiving means;

timing means for controlling the duration of the flow of blowdown water from said boiler to said receiving means and for producing a second signal;

cooling water control means responsive to said second signal;

means to produce a third signal to indicate the flow of coolant water through said heat exchanger means;

means responsive to said third signal to operate said second valve means from said second position to said third position and thereby pass blowdown water from said receiving means and simultaneously open said first valve means of said steam pressure conduit to purge said receiving

means and pass said boiler water to said heat exchanger means; and, means controlling the rate of cooling of said water and the rate of discharge from said heat exchanger means.

4,285,303

## SWASH PLATE INTERNAL COMBUSTION ENGINE

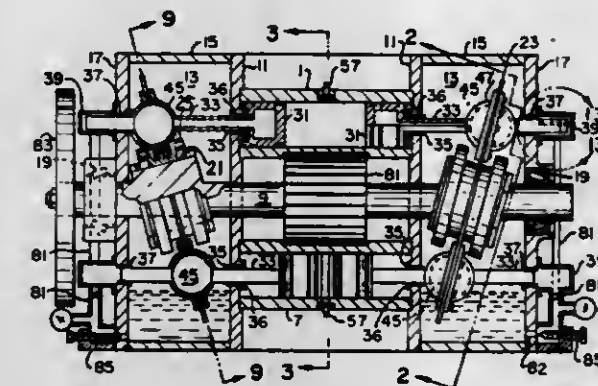
Charles Leach, P.O. Box 212, Redwood Valley, Calif. 95470

Filed Apr. 19, 1979, Ser. No. 31,320

Int. Cl.<sup>3</sup> F02B 75/26

U.S. Cl. 123-51 BA

10 Claims



1. An internal combustion engine having at least a pair of parallel cylinders, a drive shaft parallel to and symmetrically disposed with respect to said cylinders, said drive shaft having a journal portion inclined to its axis, a swash plate held against rotation and mounted on said journal portion to produce rotation of said drive shaft, a piston in each of said cylinders having a rigid axial extension arranged for axial movement only relative to the respective cylinder, and connections of said piston extensions to said swash plate for transmitting axial movements of said extensions to said swash plate and thereby producing rotation of said drive shaft, said connections being reciprocable radially of said swash plate journal portion and parallel to the plane of said swash plate, wall means forming a chamber distinct from said cylinders and enclosing said swash plate, the adjacent portions of said drive shaft and of said piston extensions and said connections, said chamber being adapted to contain a liquid lubricant, each said piston extension being formed with an internal axial passage, there being an opening in said swash plate to accommodate movement of said connections relative to said swash plate, said connections defining with said opening a sealed lubricant recess having an inlet from said chamber and an outlet communicating with the respective piston extension passage, said pistons being formed with passage means connecting said piston extension passages with the periphery of the respective pistons whereby reciprocating movements of said connections of said piston extensions to said swash plate radially with respect to said drive shaft during operation of the engine draw lubricant from said chamber into said swash plate opening and force it into said piston extension passages and therethrough into the peripheral space between the respective pistons and cylinder walls to lubricate and cool said cylinders, wherein each said connection between each piston extension and the swash plate comprises a ball mounted on the respective piston extension, and a spherical socket surrounding said ball, the openings in said swash plate being slightly larger than the periphery of said spherical socket and receiving said socket for movement therein, said socket having spaced parallel external flanges slidably embracing the opposite surfaces of said swash plate along the margin of said swash plate, whereby as the respective sockets move with respect to the swash plate, they draw lubricant into the respective opening from the chamber outwardly of said shell and force such lubricant through the tubular piston extension and piston passages into peripheral regions of said piston, and further including apertures in the wall means aligned with the respective piston extensions slidably receiving the ends of said piston extensions, covers for said piston extensions outwardly of said

apertures, and passage means connecting said piston extension covers with said chamber.

4,285,304

## INTERNAL COMBUSTION ENGINE

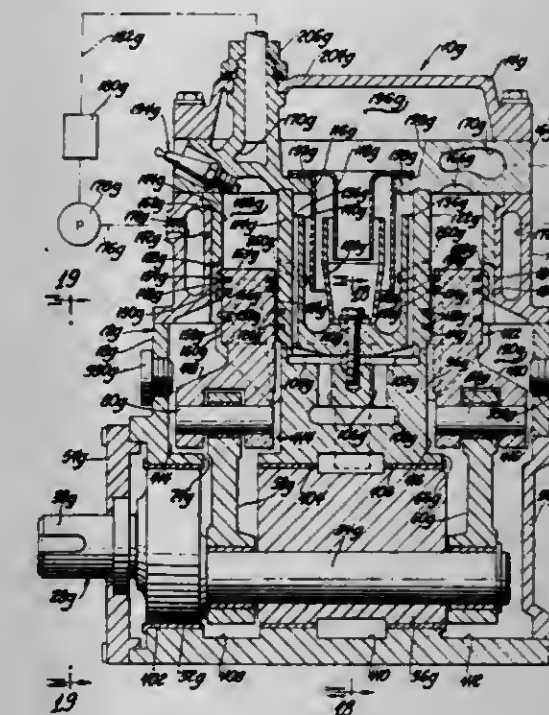
William V. Bachmann, 22517 Tea Mile Rd., St. Clair Shores, Mich. 48080

Filed Aug. 13, 1979, Ser. No. 66,475

Int. Cl.<sup>3</sup> F02B 75/18

U.S. Cl. 123-52 B

68 Claims



1. An internal combustion engine, comprising an engine housing, an annular cylinder with a combustion chamber formed in said housing, said annular cylinder comprising a first radially inner annular wall and a second radially outer annular wall, a ring-like piston received in said annular cylinder for reciprocating movement therein, and motion transmitting means operatively connected to said ring-like piston for transmitting the power developed by the reciprocating movement of said ring-like piston to associated output power consuming means, said motion transmitting means comprising crankshaft means and connecting rod means, said connecting rod means being effective for operatively interconnecting said ring-like piston to said crankshaft means, said crankshaft means comprising a large diameter live bearing portion journaled within said engine housing, said connecting rod means comprising at least first and second connecting rods, said first connecting rod being operatively connected to said crankshaft means at a first axial end of said large diameter live bearing portion, and said second connecting rod being operatively connected to said crankshaft means at a second axial end of said large diameter live bearing portion opposite to said first axial end.

4,285,305

## KEYED ADAPTER SLEEVE

Vernon R. Kaufman, and Eugene L. Nelson, both of Cedarburg, Wis., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Nov. 16, 1979, Ser. No. 94,776

Int. Cl.<sup>3</sup> F02P 3/06

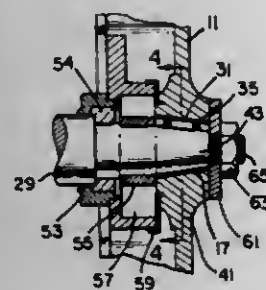
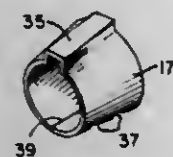
U.S. Cl. 123-146.5 A

21 Claims

1. An arrangement for adapting a standardized wheel and included portion of an ignition system to any of a number of different ignition systems and their associated different timing requirements on any of a number of different internal combustion engines including at least two different size engine driven shafts having tapered surface portions for rotatably supporting the standardized wheel wherein the standardized wheel has a wheel hub integral therewith having a tapered central opening



matable with a larger of the two shaft tapered surface portions, and the shaft tapered surfaces and the wheel hub tapered central opening each contain a keyway, comprising a generally frustoconical sleeve having an outer surface matable with the wheel hub central opening and an inner surface matable with a



smaller of the two shaft tapered surface portions and having an outer protuberance for engaging the wheel hub keyway and an inner protuberance for engaging the shaft keyway with the spacing between the inner and outer protuberances selected to provide a desired engine ignition timing setting.

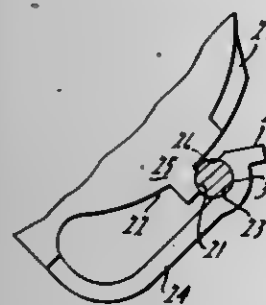
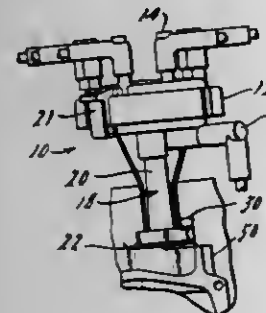
4,285,306

**DISTRIBUTOR ENGINE MOUNTING MECHANISM**  
David H. Fox, Ann Arbor; Robert L. Kuhn, Dearborn, and Charles C. Kostan, Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 14, 1979, Ser. No. 103,679  
Int. Cl.<sup>3</sup> F02P 7/02

U.S. Cl. 123-146.5 A

8 Claims



1. A mechanism for mounting and retaining a distributor assembly in a predetermined fixed position on an engine housing comprising:

a post mounted on said engine housing, wherein said post has a shank portion extending from said housing and an upper shoulder portion at the end of said shank remote from said housing;

means on said distributor for fixedly engaging said shank

portion of said post when said distributor is rotated into said predetermined position.

4,285,307

# METHOD OF PREHEATING AN INTERNAL COMBUSTION ENGINE OF THE DIESEL, OR SIMILAR, TYPE

Leo Steinke, Waiblingen-Hegnach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

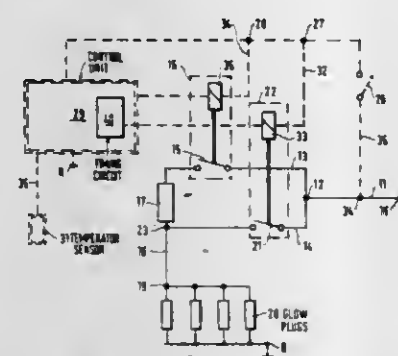
Filed Jun. 7, 1979, Ser. No. 46,469

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829700

Int. Cl.<sup>3</sup> F02P 19/02

U.S. Cl. 123-179 BG

20 Claims



1. In an internal combustion engine requiring preheating for example a Diesel engine, having electrical glow plugs (20, 20'), an electrical circuit (10, 18, 19, 19', 20, 20', 36, R) including said glow plugs, said circuit having positive temperature coefficient of resistance characteristics, and including a current limiting resistor (17) and a controlled first switch (15) serially connected with the glow plugs to control current flow and its intensity thereto, and a controlled second switch (21) connected across the current limiting resistor to selectively short-circuit said resistor upon closing of said second switch,

the method of preheating which comprises, in accordance with the invention,

controlling said first switch (15) to close and thereby energize the electrical circuit and hence pass limited current through the glow plugs (20, 21') and the current limiting resistor (17) while said second switch (21) is in open condition;

then, when a first predetermined time period ( $t_1$ ) of less than 1 second after energization of the glow plugs has elapsed controlling said second switch (21) to short-circuit the current limiting resistor (17);

and passing current through said electrical circuit directly to the glow plugs for a second predetermined time period ( $t_2$ ) of at least 2 seconds to rapidly heat the glow plugs.

4,285,308

# COLD START FUEL ENRICHMENT SYSTEM

James M. Hundertmark, Fond du Lac, and James L. Wagner, Butte des Morts, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed May 14, 1979, Ser. No. 38,599

Int. Cl.<sup>3</sup> F02M 1/16

U.S. Cl. 123-187.5 R

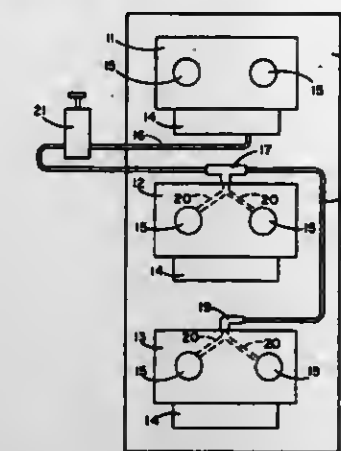
10 Claims

1. A cold start fuel enrichment system for a multi-cylinder internal combustion engine comprising:

A. a plurality of independently operable engine air induction passages each for a different cylinder, each induction passage at a different height on said engine, and each of said induction passages including a carburetor;

B. a fuel passageway connecting the float bowl of the highest of said carburetors to a lower one of said induction passages at a point below said highest float bowl; and

C. a valve means for controlling the flow of fuel through said fuel passageway,



whereby fuel can be directed to flow by gravity into said lower induction passage from said highest float bowl to provide fuel to the lower cylinders of said engine for starting said engine.

4,285,309

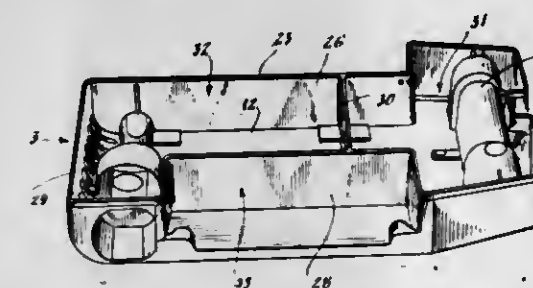
**HOUSING FOR AN INTERNAL COMBUSTION ENGINE**  
Rolf A. G. Johansson, Umeå, Sweden, assignor to Jonsers Aktiebolag, Partille, Sweden

Filed Nov. 13, 1979, Ser. No. 94,039

Int. Cl.<sup>3</sup> F02B 77/02; F02F 7/00; B23D 57/02

U.S. Cl. 123-195 C

10 Claims



1. An engine housing for an internal combustion engine of the type used in chain saws having separate chambers for fuel and lubricating oil comprising: upper and lower portions of said engine housing that are joined along a dividing plane that is substantially parallel to the bottom surface of said lower portion and intersecting the crankshaft of said engine whereby substantially closed cavities forming said chambers for said fuel and lubricating oil are created.

4,285,310

# DUAL INTAKE VALVE TYPE INTERNAL COMBUSTION ENGINE

Masaaki Takizawa, Mishima; Noboru Matsubara, and Kazuo Takahashi, both of Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 10, 1979, Ser. No. 28,823

Claims priority, application Japan, May 25, 1978, 53-61733

Int. Cl.<sup>3</sup> F02B 31/02, 25/00

U.S. Cl. 123-308

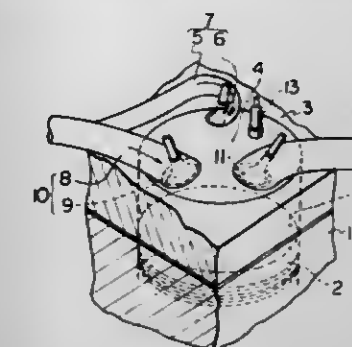
6 Claims

1. A dual intake valve system for use in an internal combustion engine, said valve system comprising:

(a) a main intake valve means including means for generating a swirl motion in the intake gas; said intake valve means being operated by a main cam having a cam profile for low speed, said main cam being synchronized with the crankshaft of the engine; and

(b) an auxiliary intake valve means operated in synchronization with the crankshaft of the engine, said auxiliary intake valve means including variable valve lifter means for lifting said auxiliary intake valve means as a function of engine operating conditions and engine speed, wherein when the flow of intake gas is small, said auxiliary intake

valve means does not operate and said auxiliary intake valve means is normally closed and wherein when the flow of intake gas is large, both said main intake valve



means and said auxiliary intake valve means operate to permit the flow of gas simultaneously through both said main intake valve means and said auxiliary intake valve means prior to ignition.

4,285,311

# TWO STROKE ENGINE HAVING EXHAUST PORT TIMING CONTROL VALVE

Toshimitsu Ito, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan

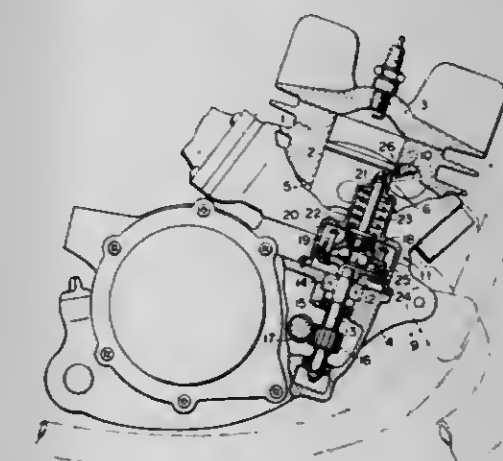
Filed Jul. 27, 1979, Ser. No. 61,514

Claims priority, application Japan, Jul. 31, 1978, 53/105173[U]

Int. Cl.<sup>3</sup> F02D 9/06

U.S. Cl. 123-323

5 Claims



1. A two stroke engine comprising cylinder means and piston means received in said cylinder means for reciprocating movement, said cylinder means having exhaust port means adapted to be closed by said piston means, exhaust port timing control rotary valve means provided in said exhaust port means at an upper portion thereof, said valve means being movable between a projected position wherein it is projected into said exhaust port means to thereby cover an upper portion of said exhaust port means and a retracted position wherein it is retracted from said exhaust port means, actuator means for moving said valve means between said projected and retracted positions in accordance with engine speed, said actuator means including actuating rod means connected between said valve means and centrifugal means responsive to said engine speed and spring means forcing said valve means toward the projected position so that said valve means is moved toward the retracted position in response to an increase in engine speed, said valve means being located with a longitudinal axis perpendicular to a longitudinal axis of said cylinder means and actuating arm means secured to one end thereof, said actuating arm means extending from said valve means substantially perpendicular to the axis of the valve means toward said cylinder

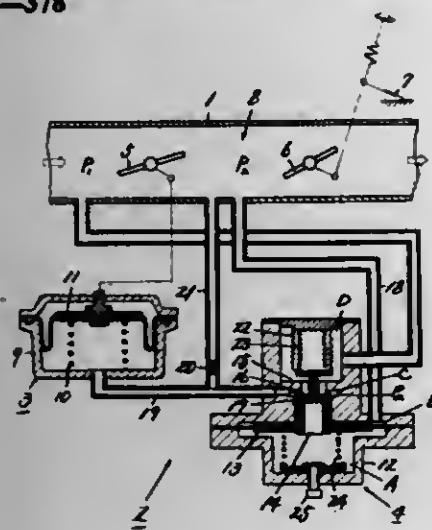


means and being connected with said actuating rod means so that said valve means is actuated under the influence of said centrifugal means, said actuating rod means extending substantially parallel with a longitudinal axis of said cylinder means so that said actuator means is located in a minimum space.

4,285,312

# AIR FLOW MEASURING DEVICE FOR INTERNAL COMBUSTION ENGINES

Tsugito Nakazeki, and Yoshinobu Yasuda, both of Iwata, Japan, assignors to NTN Toyo Bearing Co., Ltd., Osaka, Japan  
Continuation of Ser. No. 710,127, Jul. 30, 1976, abandoned. This application Apr. 11, 1979, Ser. No. 29,027  
Claims priority, application Japan, Jul. 31, 1975, 50-93971  
Int. Cl.<sup>3</sup> E02D 11/08  
U.S. Cl. 123—378 6 Claims



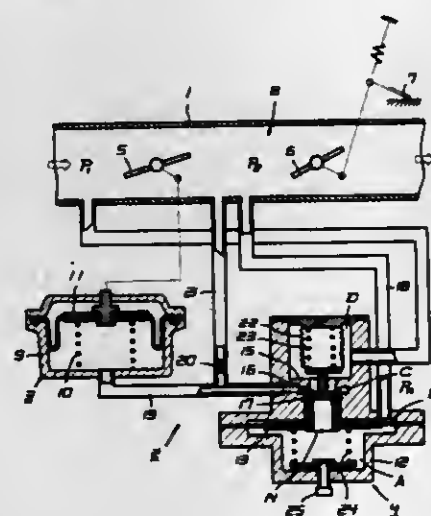
1. In an internal combustion engine having a fuel control unit, air suction pipe means and pedal accelerator means, the improvement of a suction air flow measuring device of the weight-rate of flow type, said measuring device comprising an upstream valve positioned in the air suction pipe means, a downstream valve positioned in the air suction pipe means, and in series downstream from said upstream valve, one of the said upstream valve and the said downstream valve serving as a flow detection valve with the other of the valves serving as a flow regulating valve, one of the said upstream valve and said downstream valve defining an area flowmeter for determining the amount of incoming air flow on the basis of the opening area of the valve serving as the flow detection valve by keeping the difference in the pressure existing on opposite sides of the valve serving as the flow detection valve constant; pressure-sensitive amplifier means operatively associated with said defined area flowmeter, said amplifier means including a first chamber communicating with the upstream side of the valve serving as the flow detection valve, a second chamber communicating with the downstream side of the valve serving as the flow detection valve, said pressure difference setting diaphragm being disposed between the two chambers to partition them and positioned so that the relationship of pressures applied thereon keeps its balance under a selected reference pressure difference and a variable flow orifice having an opening area which is varied in association with the movement of the diaphragm so as to vary an output or control pressure to the valve opening device, said valve opening device being operatively connected with the valve serving as the flow detection valve to operate the same in the opening and closing direction with the output from the amplifier means, said variable orifice being a spool valve fixed to the pressure difference setting diaphragm and having a valve seat fixed to a main body, said pressure-sensitive amplifier means and said valve opening means defining a flow servomechanism, one of the upstream valve and the downstream valve serving as the flow regulating valve being operatively connected to the pedal accelerator means with the other of the valves serving as the flow control valve being operatively connected to the fuel control unit; and

gas-filled bellows means operatively connected to the pressure difference setting diaphragm of said amplifier means whereby said association of said defined area flowmeter, said defined flow servomechanism, and said bellows means will be such that the product of the effective area of said pressure difference setting diaphragm of said pressure-sensitive amplifier means and a reference pressure difference is equal to the product of a reference pressure of the gas enclosed in said bellows means and the effective area of said bellows means.

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# AIR FLOW MEASURING DEVICE

Tsugito Nakazeki, Shunpuro, 133-banchi, Nakano, Iwata-shi, Shizuoka-ken, and Yoshinobu Yasuda, 541-go, Company House of Toyo Bearing, 1358-banchi, Higashikaizuka, Iwata-shi, Shizuoka-ken, both of Japan  
Continuation-in-part of Ser. No. 29,027, Apr. 11, 1979, which is a continuation of Ser. No. 710,127, Jul. 30, 1976, abandoned.  
This application Jun. 29, 1979, Ser. No. 53,261  
Claims priority, application Japan, Jul. 31, 1975, 50-93971  
Int. Cl.<sup>3</sup> F02D 11/08  
U.S. Cl. 123—389 2 Claims



1. Apparatus for determining and controlling the mass rate of flow of air for use in an internal combustion engine having an air intake conduit comprising:
  - A. an air throttle valve for controlling the flow-rate of air in said air intake conduit;
  - B. an air flow detection valve located in said air intake conduit to produce a pressure difference over a portion of the air intake conduit; and
  - C. a servo-mechanism operable to adjust the air flow detection valve to maintain the pressure difference at a control value adapted to be varied in inverse proportion to the specific gravity of the intake air of the engine so that the opening area of the flow detection valve is made proportional to the mass rate of flow of air past the flow detection valve, said servo-mechanism including
    - a. pressure-sensitive amplifier means for producing an amplified actuating pressure in an air flow path formed between the throttle and detection valves in response to any variations of the pressure difference from the control value, said amplifier means including
      - i. a pressure-responsive diaphragm subjected on opposite sides to the air pressure existing on opposite sides of the air flow detection valve and movable in response to any variation in the pressure difference,
      - ii. a variable flow orifice connected in said air flow path and having an opening area which is varied in association with the movement of said diaphragm to produce a variation in the actuating pressure, and
      - iii. setting means for varying said control value in inverse proportion to the specific gravity of the intake air, and
    - b. valve opening means operatively connected to the

pressure-sensitive amplifier means to receive the actuating pressure and to the air flow detection valve to adjust said flow detection valve in response to any variation in said actuating pressure;

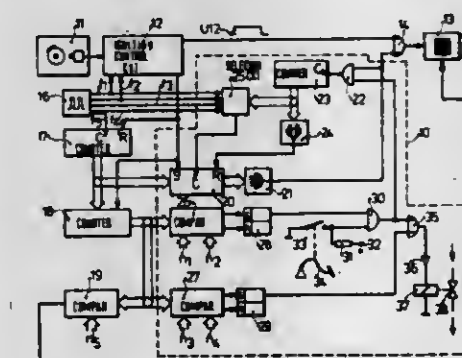
said setting means for varying the control value in inverse proportion to the specific gravity of the intake air comprising resiliently deformable bellows located in a chamber which in turn is connected to said air flow path, said resiliently deformable bellows being operatively connected at one end to said diaphragm of the pressure-sensitive amplifier means and at the other end to a main body of the pressure-sensitive amplifier means with the arrangement being such that a force produced by said bellows acts as a counterforce against a force produced by the diaphragm due to the pressure difference, said bellows being filled with a given mass of a gas in such a manner that when the intake air surrounding the bellows is at its reference temperature, the gas pressure in the bellows becomes equal to a reference pressure of the intake air, said bellows having an effective pressure-sensitive-area equal to: (the effective pressure-sensitive-area of the diaphragm) × (the control value under a reference condition of the intake air) ÷ (the gas pressure in the bellows being equal to the reference pressure of the intake air),

whereby said control value is determined in accordance with the resultant force of a force due to the resilient deformation of the bellows and a force produced by the bellows in response to alteration in temperature and pressure of the intake air and thereby being varied in inverse proportion to the specific gravity of the intake air of the engine.

4,285,314

# SYSTEM TO DECREASE OPERATING JOLTS IN A VEHICLE BY CONTROLLING FUEL AND IGNITION TIMING OF AN INTERNAL COMBUSTION ENGINE THEREIN

Uwe Klencke, Werner Jundt, both of Ludwigsburg, and Karl Seeger, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany  
Filed Jun. 27, 1979, Ser. No. 52,342  
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1978, 2834638  
Int. Cl.<sup>3</sup> F02P 5/14  
U.S. Cl. 123—422 17 Claims



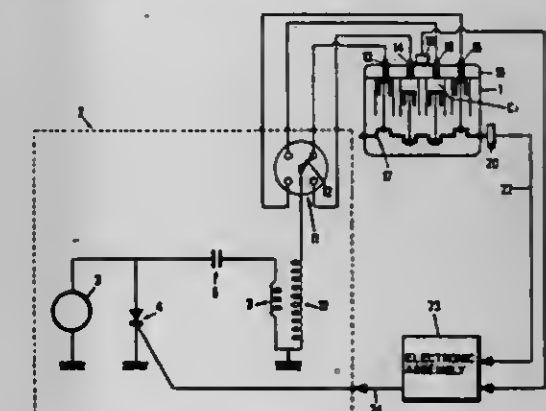
1. An internal combustion engine system having spark generating means, means for furnishing a sequence of ignition timing signals each for initiating generation of a spark by said spark generating means, fuel supply means, control means connected to said fuel supply means for decreasing said fuel supply from a normal operating supply level during no-load operation of said internal combustion engine and for subsequently re-increasing said supply of said fuel back to said normal operating supply in response to loading on the engine for operation thereof under a predetermined operating condition, and comprising, in accordance with the invention means connected to said control means to decrease the jolt

on the engine upon re-increase of fuel supply to a normal operating level upon loading of the engine comprising delay means for initiating an ignition timing delay, in response to said re-increase of fuel supply, thereby delaying at least the first of said ignition timing signals occurring after the start of said re-increasing of said fuel supply, thereby retarding said generation of said spark and decreasing the torque applied to said engine.

4,285,315

# METHOD AND DEVICE FOR AUTOMATICALLY ADJUSTING THE SPARK ADVANCE OF A CONTROLLED IGNITION ENGINE

Andre Douaud, Puteaux, and Joseph Rialan, Meudon, both of France, assignors to Institut Français du Pétrole, Rueil-Malmaison, France  
Continuation-in-part of Ser. No. 945,711, Sep. 25, 1978, Pat. No. 4,213,429. This application Mar. 25, 1980, Ser. No. 133,746  
Claims priority, application France, Sep. 26, 1977, 77 29105  
Int. Cl.<sup>3</sup> F02P 5/04  
U.S. Cl. 123—425 9 Claims



1. A method for automatically adjusting the ignition timing of a controlled ignition engine to the optimum value of this timing for any working condition of the engine corresponding to the maximum output and efficiency of the engine, wherein the ignition timing is so adjusted that the pressure peak in at least one cylinder occurs at a predetermined angular position of the drive shaft of the engine, this method comprising:
  - determining the angular position of the drive shaft,
  - detecting the accelerations at a location on the cylinder head of the engine and providing, during at least a selected fraction of the rotation of the drive shaft and in a low frequency band, a first signal corresponding to these accelerations,
  - integrating said first signal to obtain a second signal for determining the null value of said second signal with respect to the angular position of the drive shaft, and adjusting the ignition timing as a function of the angular position of the drive shaft corresponding to the determined null value of said second signal.
5. A device for automatically adjusting the ignition timing of an engine, comprising ignition control means and a detector of the angular rotation of the engine drive shaft, wherein the device comprises an accelerometer secured to the cylinder head of the engine for generating a first signal representing the accelerations to which the cylinder head is subjected at the point of location of the accelerometer, a low pass filter connected to said accelerometer for filtering said first signal, an integrator connected to said filter for generating a second signal, first detecting means connected to said integrator for detecting a zero value of said second signal during at least a portion of the rotation of the engine drive shaft, second detecting means connected to said means for detecting the zero value of the second signal and to said detector of angular rotation, for detecting the angular position of the drive shaft corresponding to the zero value of the second signal, comparing means connected to said second detecting means for measuring the difference between said angular position and a reference



angular position, and adjusting means connected to said comparing means for adjusting said ignition control means as a function of said difference.

4,285,316

## FUEL SYSTEM FOR A MOTOR VEHICLE

Albert Stolz, Tübingen; Erich Thiel, Esslingen; Volker Bochenek, Denkendorf, and Roland Stokkman, Nürtingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

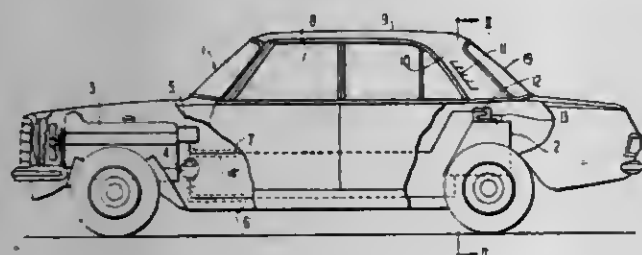
Filed Sep. 19, 1979, Ser. No. 76,816

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1978, 2841557

Int. Cl.<sup>3</sup> F02M 31/20

U.S. Cl. 123—514

23 Claims



1. A fuel system for a motor vehicle driven by an internal combustion engine, comprising fuel tank means, fuel feed pump means, mixture-producing means, inlet line means leading from the fuel tank to the fuel pump means, return line means for excess fuel leading back to the fuel tank means, and a passenger space on the vehicle adapted to be closed and operable to be ventilated, characterized in that an air/liquid heat-exchanger means is provided in the fuel system which is traversed on the liquid side by the fuel and on the air side by the ventilating discharge air out of the passenger space.

4,285,317

## EXHAUST GAS RECIRCULATION SYSTEM

Yasuo Takahara, Oobe; Shigeo Hayashi, Okazaki; Shizuo Yamada, Kariya, and Norio Shibata, Susono, all of Japan, assignors to Nippondenso Co., Ltd. and Toyota Jidosha Kogyo Kabushiki Kaisha

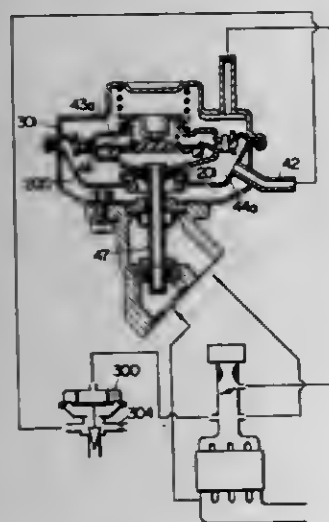
Filed Dec. 19, 1979, Ser. No. 105,119

Claims priority, application Japan, Apr. 13, 1978, 53-49124

Int. Cl.<sup>3</sup> F02M 25/06

U.S. Cl. 123—568

4 Claims



1. An exhaust gas recirculation system having: an exhaust gas control valve disposed in the exhaust gas recirculation passage providing a communication between the exhaust pipe and the intake pipe of an internal combustion engine, said exhaust gas controlling valve having an atmospheric chamber defined by a diaphragm and a case provided with an atmospheric port, a first diaphragm chamber defined by said dia-

phragm and a cover and adapted to receive a signal vacuum derived from the portion in the intake pipe near a throttle valve, and a valve body operatively connected to said diaphragm and adapted to open and close said exhaust gas recirculation passage; and a pressure regulating valve having a second diaphragm chamber and a third diaphragm chamber which are separated from each other by a diaphragm; said second diaphragm chamber being adapted to receive a pressure generated in an exhaust pressure controlling chamber which is defined in said exhaust gas recirculation passage immediately upstream from said valve body of said exhaust gas recirculation passage, said pressure regulating valve being adapted to regulate said signal vacuum by opening and closing the passage between said third diaphragm chamber and said first diaphragm chamber of said exhaust gas control valve; characterized by comprising inner cases disposed in said case and said cover of said exhaust gas control valve and defining said second and third diaphragm chambers of said pressure regulating valve; and a shaft connecting said valve member to said inner case defining said second diaphragm chamber, said shaft and said valve member being made hollow to provide a communication between said second diaphragm chamber and said exhaust pressure control chamber whereby said exhaust gas control valve and said pressure regulating valve being made unitary and the pressure in said third diaphragm chamber is controlled in connection with the state of operation of said engine.

4,285,318

## EXHAUST GAS RECIRCULATION SYSTEM HAVING FLOW CONTROL VALVE COMBINED WITH SUPERSONIC NOZZLE

Kenji Yoneda, Yokohama; Tadashi Yamamoto, Yokosuka, and Kunihiko Sugihara, Yokohama, all of Japan, assignors to Nissan Motor Company, Ltd., Japan

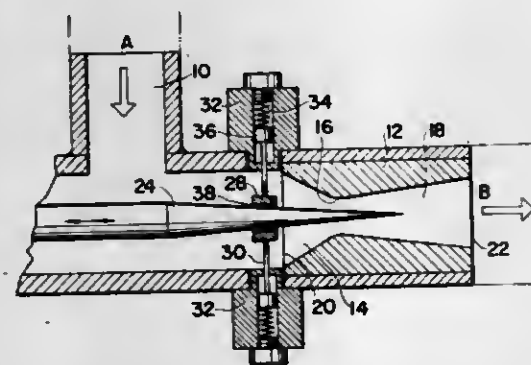
Filed Aug. 1, 1975, Ser. No. 601,053

Claims priority, application Japan, Aug. 5, 1974, 49-90051

Int. Cl.<sup>3</sup> F02M 25/06

U.S. Cl. 123—568

8 Claims



1. In an internal combustion engine, an exhaust gas recirculation system comprising:  
means defining a fluid flow channel connecting an exhaust passage of the engine to an induction passage of the engine to recirculate a portion of the exhaust gas therethrough;  
a converging-diverging nozzle circular in cross section disposed at an intermediate section of said channel for flowing recirculated exhaust gas therethrough, said nozzle having a throat and having a converging section and a diverging section shaped such that the velocity of the recirculated exhaust gas is sonic at the throat of said nozzle when a pressure difference between the entrance and exit pressures of said nozzle exceeds a predetermined magnitude;  
a conical valve member in said nozzle coaxially therewith to extend through said throat;  
the surface of said valve element and inner surfaces of the diverging section defining therebetween an angle from about 7 to 10 degrees in longitudinal section; and  
means for supporting and moving said valve member axially

thereby to vary the cross-sectional area of said channel at said throat.

4,285,319

## AIR FLOW AMOUNT ADJUSTING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Tadashi Hattori, Okazaki; Akira Takata; Tamotsu Fukuda, both of Toyota, and Takamichi Nakase, Gamagori, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of Japan

Division of Ser. No. 30,953, Apr. 17, 1979, Pat. No. 4,192,268, Continuation of Ser. No. 798,948, May 20, 1977, abandoned.

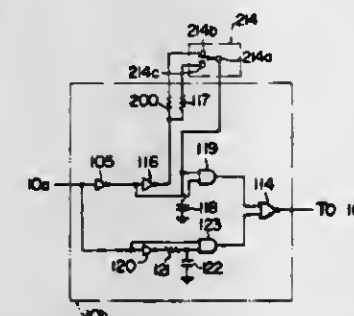
This application Nov. 6, 1979, Ser. No. 91,755

Claims priority, application Japan, May 28, 1976, 51-62542; May 31, 1976, 51-63325

Int. Cl.<sup>3</sup> F02D 1/04

U.S. Cl. 123—585

4 Claims



1. In an additional air supply system for an internal combustion engine comprising:  
a combustion chamber for producing combustion therein;  
an intake system operatively communicated with said combustion chamber for supplying thereto an air-fuel mixture;  
an exhaust system operatively communicated with said combustion chamber for conveying an exhaust gas from said combustion chamber to the atmosphere;  
an additional air supply pipe communicated with at least one of said intake and exhaust systems for supplying additional air thereto, thereby controlling the air-fuel ratio of said air-fuel mixture at a desired value;  
air-fuel ratio detecting means disposed in said exhaust system for detecting the air-fuel ratio of the air-fuel mixture supplied with said additional air;  
control means operatively disposed in said additional air supply pipe for controlling the amount of the additional air to be supplied;  
drive means operatively connected with said control means for driving the same; and  
a control circuit electrically connected with said air-fuel ratio detecting means and said drive means for intermittently actuating said drive means in response to the detected air-fuel ratio;  
the improved control circuit comprising:  
an air fuel ratio discriminating circuit connected with said air-fuel ratio detecting means for comparing the output from said detecting means with a preset level and for generating a high level or a low level signal based on the comparison;  
means for stopping the actuation of said drive means in response to change of said signal from one level to the other for a period following a level change to prevent an erroneous operation of said control means, including a first monostable multivibrator connected to said discriminating circuit for producing a timing pulse for a predetermined period following change from a first to a second level, a second monostable multivibrator connected to said discriminating circuit for producing a timing pulse for a predetermined period following change from said second to said first level, logic means connected to said first and second multivibrators and said discriminating circuit and connected to said driving means for causing actuation of said driving means in accordance with said signal from said discriminating

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## VARIABLE CAPACITY FUEL DELIVERY SYSTEM FOR ENGINES

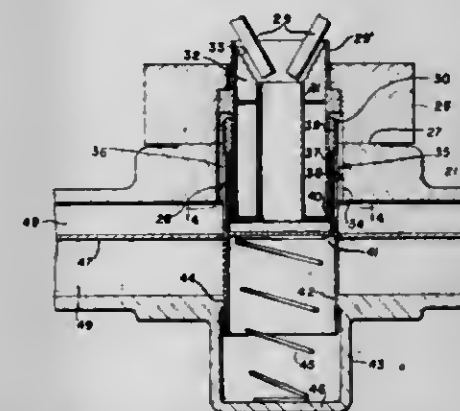
Sherwood F. Webster, 7832 Via Marina, Scottsdale, Ariz. 85258, and Richard L. Helise, 133 E. Garfield, Tempe, Ariz. 85281

Continuation-in-part of Ser. No. 950,470, Oct. 11, 1978, Pat. No. 4,187,820. This application Nov. 28, 1979, Ser. No. 98,033

Int. Cl.<sup>3</sup> F02M 29/04

U.S. Cl. 123—593

14 Claims



1. A fuel delivery system for piston engines comprising an intake manifold having a manifold passage for delivering an air-fuel charge to cylinders of an engine from an external air-fuel source, a variable capacity engine demand responsive atomizing valve connected in the manifold passage and being in communication with said source, said valve including a biased atomizing screen assembly and coating fixed screen covering means whereby movement of the screen assembly against the biasing means in response to increasing engine demand causes a progressively greater atomizing screen area to be uncovered in the manifold passage, and a manifold passage variable closure means carried by the screen assembly and moving therewith and progressively increasing the effective cross section of the manifold passage as engine demand increases.

4,285,321

## CAPACITOR DISCHARGE IGNITION SYSTEM

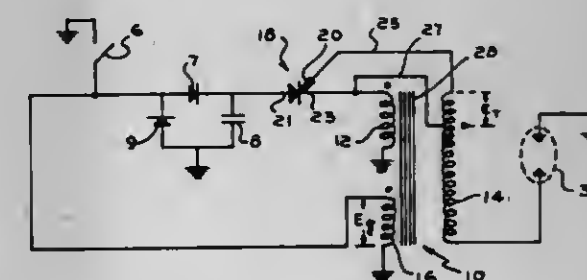
Russell D. Phelon, Longmeadow, and Bob O. Benson, East Longmeadow, both of Mass., assignors to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Filed Oct. 19, 1979, Ser. No. 86,340

Int. Cl.<sup>3</sup> F02P 3/08, 3/06

U.S. Cl. 123—599

5 Claims



1. In a capacitor discharge ignition system for internal combustion engines having permanent magnetic means, rotatable about a circular path in synchronism with the operation of said machine, a charge coil, a capacitor connected in circuit with said charge coil and an electronic switch means which is rendered conductive in response to a trigger pulse connected to said switch means for discharging said capacitor into the primary winding of a transformer ignition coil, the secondary



winding of said transformer ignition coil being connected to a spark gap device for said engine, the improvement in said system comprising an integral core of ferromagnetic material including at least one radially extending leg portion disposed adjacent said circular path, said core providing a path for varying magnetic flux generated by the movement thereby of said magnetic means, said coils being wound on said core such that voltages simultaneously induced therein by said varying flux include half wave voltages of opposite polarity, said capacitor being charged by voltage of one polarity generated in the charge coil and the trigger voltage for said electronic switch being derived at least in part from the secondary winding of said ignition coil, the polarity of the trigger voltage generated in said secondary winding being opposite the polarity of the charge coil whereby said capacitor is charged during one half cycle of voltage induced in the charge coil and discharged during the next half cycle of voltage induced in the secondary coil by said changing flux.

4,285,322

# APPARATUS FOR CONTROLLING AN IGNITION COIL OF AN INTERNAL COMBUSTION ENGINE

Toshikazu Ima, Okazaki; Hisasi Kawai, Toyohashi, and Takeshi Matsui, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

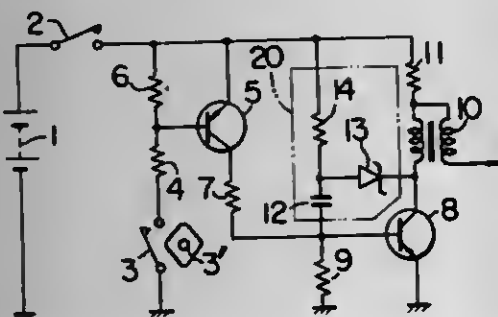
Filed Jul. 2, 1979, Ser. No. 53,847

Claims priority, application Japan, Jul. 5, 1978, 53-81631

Int. Cl.<sup>3</sup> F02P 3/02

U.S. Cl. 123—630

3 Claims



1. An apparatus for controlling an ignition system having an ignition coil including a primary winding operatively connected to an electric power source and a secondary winding coupled to a spark plug, said apparatus comprising:  
input circuit means for generating a train of pulse signals having first and second magnitudes;  
output transistor means having base, collector, and emitter electrodes, said base electrode being connected to the output of said input circuit means and having an emitter-collector path connected in series with one end of said primary winding, said output transistor means being rendered conductive and nonconductive in response to said first and second magnitudes of said pulse signals to thereby energize and deenergize said primary winding of said ignition coil, respectively; and  
feedback circuit means comprising:  
a series circuit capacitor and constant voltage diode coupled between said base electrode and said collector electrode of said output transistor means, and  
a resistor having one end connected to the junction formed by the series connection of said capacitor and said constant voltage diode and the other end connected to the opposite end of said primary winding with respect to the end coupled in series with the emitter-collector path of said output transistor means,  
said series circuit capacitor and constant voltage diode allowing a current to flow from said base to said collector of said output transistor means at its transition from nonconduction to conduction thereby gradually increasing a current flowing from said electric power source to said primary winding of said ignition coil

thereby reducing a voltage induced in said secondary winding,  
said series circuit capacitor and constant voltage diode blocking a reverse current from flowing from said collector to said base of said output transistor means at its transition from conduction to nonconduction thereby instantly cutting off current flowing through said primary winding and producing a high voltage in said secondary winding, said constant voltage diode being caused to break down when a high voltage exceeding a breakdown voltage thereof is developed at said collector of said output transistor means.

4,285,323

# TRANSISTORIZED IGNITION APPARATUS FOR DRIVING IGNITION COILS IN AN INTERNAL COMBUSTION ENGINE

Noboru Sugiyama, and Seiji Suda, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

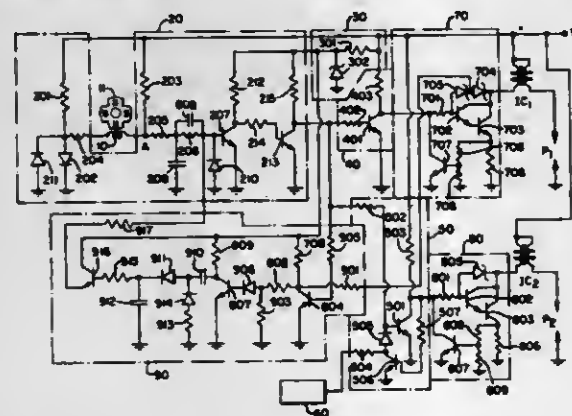
Filed Sep. 29, 1978, Ser. No. 946,865

Claims priority, application Japan, Sep. 30, 1977, 52-116924

Int. Cl.<sup>3</sup> F02P 15/08

U.S. Cl. 123—638

8 Claims



1. A transistorized ignition apparatus for driving two ignition coils of an internal combustion engine comprising:  
two power transistor circuits, each having a power transistor for supplying primary current to the corresponding one of the ignition coils;  
a pick-up coil for generating an ignition timing signal in response to the operation of the engine;  
a wave-form shaping circuit for determining the conduction period of the power transistors of said power transistor circuits on the basis of the ignition timing signal from said pick-up coil;  
two driver circuits, each for producing a driving signal to corresponding one of said power transistor circuits on the receipt of an output from said wave-form shaping circuit; means, each provided for corresponding one of said power transistor circuits and for restricting the current through the power transistor thereof under respective maximum values, wherein one maximum value is preset at the value lower than the other;  
means for detecting the duration of the restriction during which the current is restricted under the lower maximum value; and  
a feedback circuit for controlling the conduction period of the power transistors determined by said wave-form shaping circuit depending on an output from said duration detecting means.

4,285,324

# TOOL FOR TRUEING AND DRESSING A GRINDING WHEEL

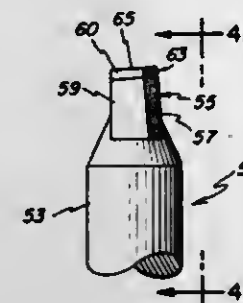
Rangachary Komanduri, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 26, 1979, Ser. No. 78,954

Int. Cl.<sup>3</sup> B24B 53/12

U.S. Cl. 125—11 R

5 Claims



1. A tool for trueing and dressing a grinding wheel at a negative rake angle, said tool having a dressing edge consisting essentially of a side dressing edge angle ranging between 30° and 75° wherein the side dressing edge is at least about 0.5 millimeter in length and an end dressing edge angle ranging between 5° and 30° wherein the end dressing edge is at least about 0.5 millimeter in length and intersects said side dressing edge to provide a nose angle ranging from about 120° to about 165°, said dressing edge having a lip angle ranging from 90° to 120°, and said dressing tool comprising a tool shank and a polycrystalline compact mounted at one end of said shank, said compact comprising bonded crystals selected from the group consisting of diamond, cubic and wurtzite forms of boron nitride and mixtures thereof.

4,285,325

# BALANCING AIR DEVICE FOR A HEATING UNIT

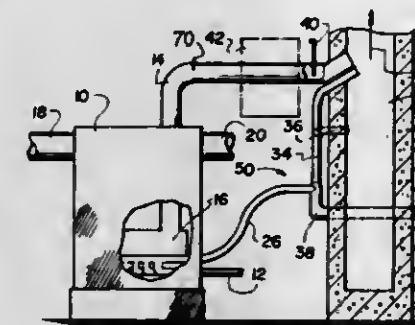
Leslie Bellaff, River Edge, N.J., assignor to William W. Weaver, Lynchburg, Va.

Filed Sep. 28, 1979, Ser. No. 80,058

Int. Cl.<sup>3</sup> F24H 3/00; F23J 11/00

U.S. Cl. 126—112

5 Claims



1. A balancing air device for a heating unit in a building having a flue for the passage of waste combustion gases from a combustion chamber in the heating unit and into a stack capable of having a draft flowing therein, comprising, baffle means in the flue for partially constricting flow therein and to provide sufficient flow therethrough when the heating unit is operating, an open valveless fresh outside air line for supplying air from outside the building, an open valveless combustion air line connected between said outside air line and the combustion chamber for supplying air to the combustion chamber, and an open valveless air return line connected directly between said outside air line and the stack for returning air supplied from outside the building into the stack when the heating unit is not operating, with the relative cross-sectional flow area of said outside air line being 3, the relative cross-sectional flow area of said combustion air line and said return air line being from 1 to 3 and from 1 to 3 respectively, so that, when the heating unit is not operating, no air is supplied to the heating unit through the combustion air line and all the air is supplied

through the air return line to satisfy a draft in the stack, said return line being connected into the stack through a common opening with the flue of the heating unit.

4,285,326

# FIREPLACE CONSTRUCTION WITH ADAPTABLE COMBUSTION AIR INLET

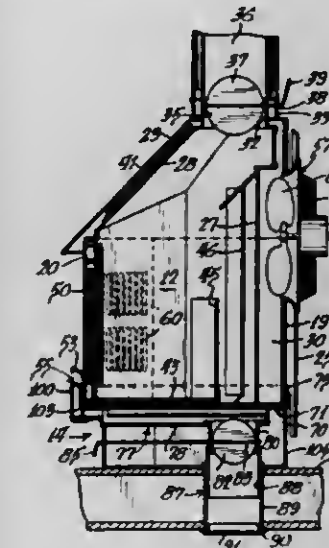
Robert G. Moss, Wisconsin Rapids, Wis., assignor to Preway Inc., Wisconsin Rapids, Wis.

Filed Sep. 11, 1978, Ser. No. 941,007

Int. Cl.<sup>3</sup> F24B 7/00

U.S. Cl. 126—121

2 Claims



1. A fireplace assembly comprising:  
a housing having a firebox with a front opening and a combustion gas outlet adapted to be in fluid communication with a flue;  
door means for optionally sealing said front opening;  
a base structure for supporting said housing above a supporting surface;  
a combustion air inlet in said housing near the bottom of said housing through which combustion air may enter said firebox;  
duct means having a downwardly-opening upstream end positioned within and at a distance above the bottom of said base structure and a downstream end positioned adjacent the bottom of said housing below said combustion air inlet;  
an optionally usable intake conduit having one end removably connected to the upstream end of said duct means and its other end communicating exteriorly of the structure interior to provide fluid communication for delivery of combustion air from an external source to said duct means;  
means in said base structure providing communication between the structure interior and the interior of said base structure whereby combustion air is delivered into the upstream end of said duct means from the structure interior for delivery to said combustion air inlet when the intake conduit is disconnected from said duct means; and  
a damper mounted in said duct means to provide selective control of the flow of combustion air through the duct means regardless of which source of air is being utilized.

4,285,327

# FIREBOX REFRACTORY FLOOR

Carrol E. Buckner, C. Glenn Cook, both of Weaverville, and Thomas J. Kane, Asheville, all of N.C., assignors to CEBU Corporation, Asheville, N.C.

Filed Jan. 4, 1979, Ser. No. 951

Int. Cl.<sup>3</sup> F24B 13/02

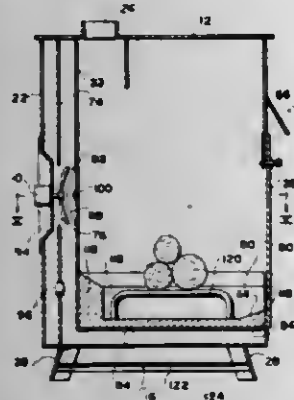
U.S. Cl. 126—143

6 Claims

1. A refractory base for the interior of a firebox of a heating unit comprising:



a horizontal portion for covering the floor of said firebox;  
a rear vertical portion adapted to be positioned along the rear of said horizontal portion and having a height substantially less than the height of said firebox with an upper surface inclined downwardly toward the center of said horizontal portion; and



a pair of side vertical portions adapted to be positioned along the sides of said horizontal portion and each of said side vertical portions having a height substantially less than the height of said firebox with an upper surface inclined downwardly toward the center of said horizontal portion whereby said downwardly inclined surfaces on said rear and side vertical portions will prevent collection of burnt materials thereon.

4,285,328

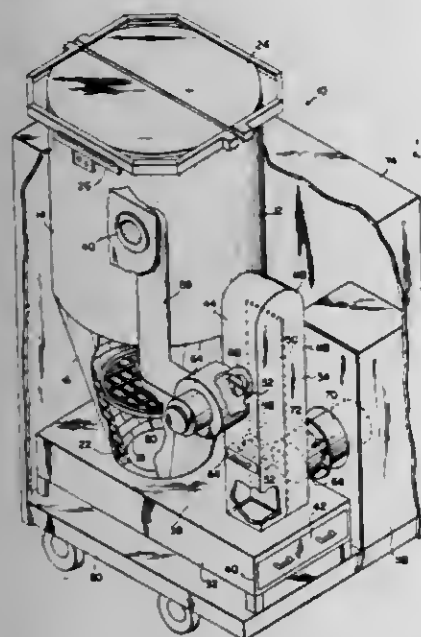
# AGRICULTURAL WASTE BURNING HEATER AND HEATING METHOD

William J. Fritz, 1672 16th Ave.; James A. Fritz, 4023 E. 8th, and Lawrence D. Fritz, R.R. 5, Box 27AB, all of Columbus, Nebr. 68601.

Filed Feb. 28, 1979, Ser. No. 16,279  
Int. Cl. F23G 7/00

U.S. Cl. 126-225

20 Claims



1. An agricultural waste burning heater, comprising:  
a generally vertically disposed agricultural waste combustion chamber having an opening at the bottom thereof, and an openable and closable access means at the top thereof for the addition of agricultural waste to said combustion chamber, a generally cylindrical upper portion, and a generally conical lower portion, said conical lower portion tapering downwardly toward said bottom opening with the interior of said conical lower portion being lined with firebrick;  
means for supporting the waste in said combustion chamber

while permitting gas flow through said combustion chamber;  
an exhaust system connected to said bottom opening, said exhaust system including an exhaust outlet and a filtration means between said bottom opening of said combustion chamber and said exhaust outlet for removing solid products of combustion;  
air intake means in the upper part of said combustion chamber for permitting air flow into said combustion chamber; and,  
gas flow means for creating a downward draft in said combustion chamber which exits said combustion chamber at said bottom opening and passes through said exhaust system to said exhaust outlet whereby agricultural waste burned in said combustion chamber while being subjected to the downward draft is almost completely combusted producing a stream of hot gases which is usable for heating purposes upon leaving said exhaust outlet.

4,285,329

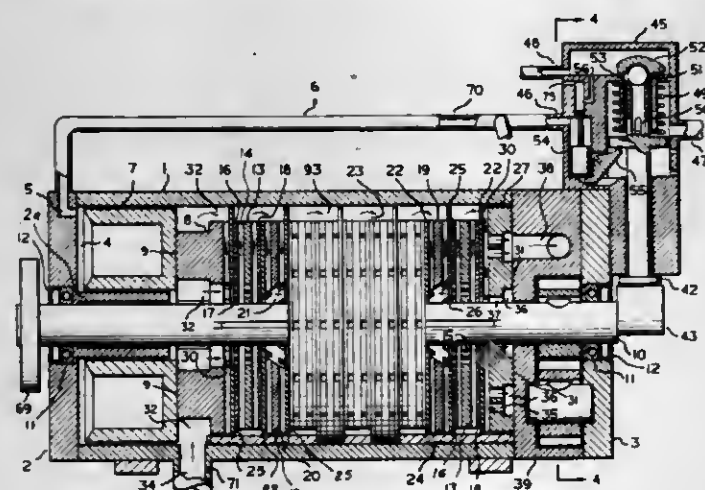
# FRICION HEAT GENERATOR

George A. Moline, 8 Glenwood Dr., Ballston Lake, N.Y. 12019  
Filed Dec. 26, 1978, Ser. No. 973,005

Int. Cl. F24C 9/00

U.S. Cl. 126-247

45 Claims



1. A friction heat generator, comprising:  
a casing, with end walls and with a side wall;  
a drive shaft for receiving power input, rotatably mounted in the end walls of the casing;  
at least one rotatable disc assembly, coaxially mounted on the drive shaft, and keyed to rotate with the drive shaft while being free to slide axially along the drive shaft;  
at least one stationary disc assembly, mounted on the side wall, adjacent to one side of and in frictional contact with the rotatable disc assembly, keyed to remain rotationally stationary with respect to the side wall while being free to slide axially along the drive shaft, and surrounding but not keyed to the drive shaft; and  
means responsive to the generator's driving power input for urging the rotatable disc assembly and the stationary disc assembly closer together as the driving power increases.

4,285,330

# CONCENTRATING SOLAR COLLECTOR

Wayne A. Shook, Rte. 2, Box 34, Marissa, Ill. 62257  
Filed Dec. 13, 1979, Ser. No. 103,377

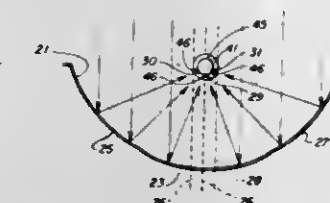
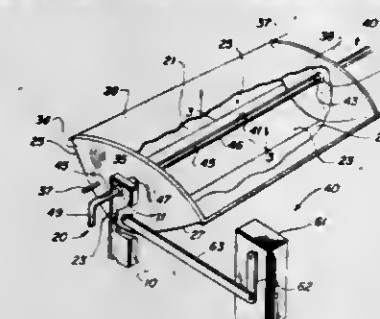
Int. Cl. F24J 3/02

U.S. Cl. 126-425

1 Claim

1. A concentrating solar collector for use in heating liquid, comprising  
a plurality of elongated side-adjacent sunlight reflectors, each having a cross-sectional portion defining a portion of a parabola, each reflector having a line of focus, tracking means to so position the reflectors relative to the

sun that the sunlight incident on each reflector is reflected to its line of focus, and  
a tubular liquid-conducting absorber mounted with its outer surface substantially along the line of focus of the elongated reflector, the absorber being surrounded by a substantially translucent, substantially evacuated tubular cover, the absorber characterized by having  
thermal conductivity not less than that of aluminum, and an outer surface which generally has a coefficient of emittance for thermal radiation of not more than four-tenths that of a perfect blackbody, interrupted by  
a plurality of elongated parallel spaced-apart stripe-like areas extending longitudinally along its outer surface, one at the line of focus of each reflector, the stripe-like areas having



a coefficient of absorptance not less than eight-tenths that of a perfect blackbody,  
whereby to minimize emittance of thermal radiation from the absorber without a corresponding decrease in absorptance of sunlight wherein the combined surface areas of said plurality of elongated stripe-like areas of the absorber outer surface together do not exceed one-third of the total outer surface area of the absorber, the elongated stripe-like areas of the absorber outer surface having a selective absorbing coating having a ratio of absorptance for sunlight to emittance for thermal radiation of not less than five, and wherein the reflective surfaces of the plurality of elongated side-adjacent sunlight reflectors are together formed of a single sheet of reflecting material.

4,285,331

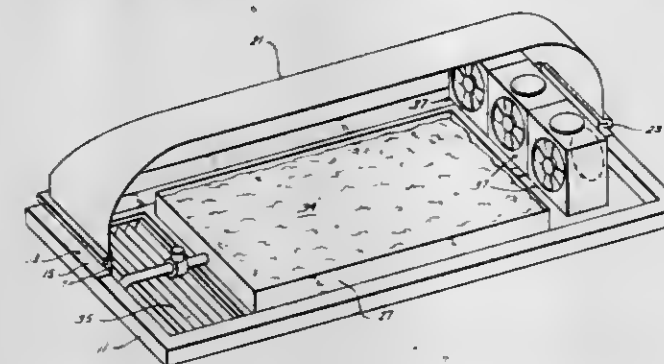
# SOLAR HEATER

Dan E. Bloxson, 22 E. Shady Ln., Houston, Tex. 77042  
Filed Nov. 13, 1978, Ser. No. 959,993

Int. Cl. F24J 3/02

U.S. Cl. 126-428

10 Claims



1. Solar heater for a structure having a roof and a ceiling extending beneath such roof, comprising an arched panel mounted in an opening in such roof, said panel being transparent to solar radiation and including an air inlet means, a heat exchanger disposed on and supported by such ceiling, said heat exchanger including means for absorbing heat from such solar

radiation and being adjacent and spaced from the panel, solar powered means disposed on and supported by such ceiling under said panel in a location to receive some of such solar radiation for moving air over the heat exchanger in the space between said panel and said heat exchanger to absorb heat from said heat exchanger, and a register disposed in an opening in such ceiling movable between an open position in which air is allowed to pass from said solar heater through such ceiling and a closed position in which air is prevented from passing from said solar heater through such ceiling.

4,285,332

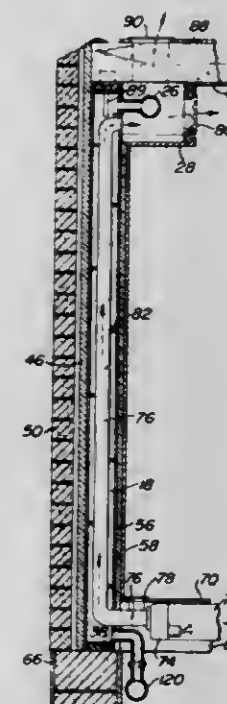
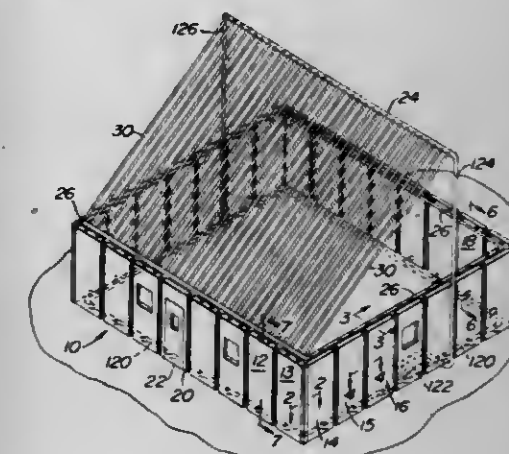
BUILDING HAVING SOLAR HEATING SYSTEM  
Thomas McHugh, 373 NW, 4th Diagonal, Boca Raton, Fla. 33432

Filed Jul. 9, 1979, Ser. No. 55,737

Int. Cl. F24J 3/02; F24D 5/10

U.S. Cl. 126-429

6 Claims



1. A building having a solar heating system integrated in the architecture thereof comprising at least one outer perimeter side wall of the building being defined by hollow load bearing vessels, insulation on opposite major faces of said vessels, each vessel having a width substantially greater than its depth, at least one solar heating panel, said panel being inclined so as to have an upper end and a lower end mounted on a roof of the building; a first manifold at said panel upper end on the roof, a second manifold at said panel lower end, said panel including plural pipes extending between said manifolds, said second manifold communicating with the upper end of said vessels for delivering a heated fluid thereto, a third manifold communicat-



ing with the lower end of said vessels, means for circulating a fluid directly from said third manifold to said first manifold without passing through a heat exchanger reservoir, and an air circulating duct in heat exchange relationship with at least one of said vessels, at least one end of said duct communicating with a room of said building adjacent said perimeter side wall.

4,285,333

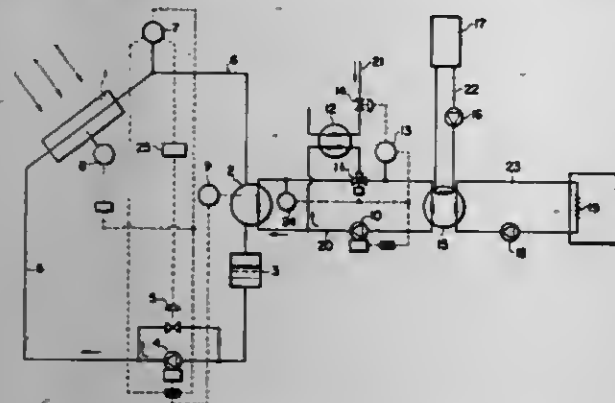
**SOLAR ENERGY COLLECTING SYSTEM**

Yasuo Tanaka; Kenji Shimokawa, and Muneshige Nagatomo, all of Tokyo, Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan  
Filed Mar. 14, 1979, Ser. No. 20,583

Claims priority, application Japan, Aug. 3, 1978, 53/94158  
Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—433

14 Claims



1. A solar energy collecting system utilizing latent heat transfer, comprising a primary closed circuit including, in series, a solar energy collector, a heat exchanger, a carrier receiver tank and a first circulating pump for circulating a heat carrier through said primary closed circuit, said carrier capable of evaporating at a low temperature under a low pressure, and a first control means responsive to surface temperatures of said solar energy collector, the temperature of said heat carrier emanating from said collector and a pressure in said heat exchanger and being operable to output a control signal to control the operation of said pump and the flow of fluid through a bypass circuit connected across said pump by opening and closing a control valve thereof to maintain the temperature of said carrier emanating from said collector at substantially a constant value, a secondary closed circuit including, in series, said heat exchanger, a utilization means, a second circulating pump for circulating water through said secondary circuit and a second control means responsive to the temperature of said water in said secondary circuit to maintain the temperature thereof at substantially a constant value.

4,285,334

**SOLAR HEATING SYSTEM**

Denver G. Collins, Ashland City, Tenn., assignor to State Industries, Inc., Ashland City, Tenn.

Continuation of Ser. No. 877,324, Feb. 13, 1978, abandoned.

This application Dec. 20, 1979, Ser. No. 105,585

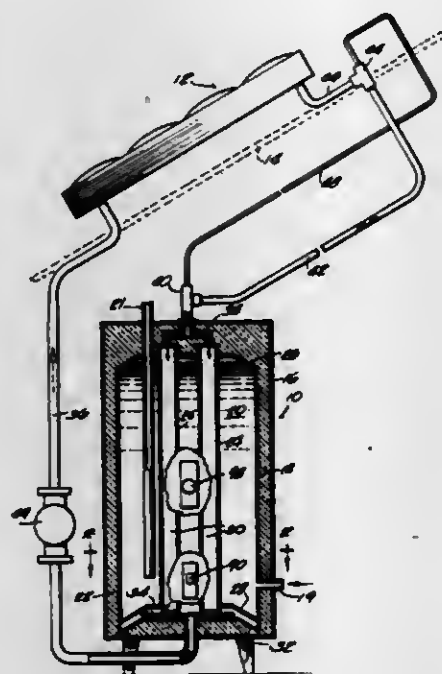
Int. Cl.<sup>3</sup> F24J 3/02

U.S. Cl. 126—437

3 Claims

1. A solar heating system for heating water comprising:  
a solar collector panel assembly positioned to receive rays from the sun, said panel including a collector plate assembly adapted to receive the sun's rays on a surface thereof and to convert such rays into heat energy, said collector plate assembly having an inlet and outlet and a flow passageway means therebetween;  
a fluid heat transfer medium for the system which when circulated through said passageway means in said collector plate will absorb heat energy produced by the sun's rays;  
a combination storage tank and heat exchanger unit located at an elevation lower than that of said collector panel, said

unit adapted to accommodate the flow of said heat transfer medium therethrough and to transfer heat from such transfer medium into the water to be heated, said heat transfer unit comprised of a storage tank and a plurality of vertically extending heat exchanger tubes mounted inside and sealed from said storage tank, said vertically extending heat exchanger tubes forming a plurality of vertically disposed cylindrical chambers, a fluid heat transfer medium inlet for said combination storage tank and heat exchanger unit communicating with the top ends of said vertically extending heat exchanger tubes and a fluid heat transfer medium outlet for said combination storage tank and heat exchanger unit communicating with the bottom ends of said vertically extending heat exchanger tubes;  
conduit means for establishing fluid connection between said collector plate of said solar collector panel and said combination storage tank and heat exchanger unit, said conduit means including first and second fluid conduits, said first fluid conduit connected between said fluid heat transfer medium outlet of said heat exchanger unit and the inlet



to said collector plate to carry said heat transfer medium from said heat exchanger unit to said collector plate, said second fluid conduit connected between the outlet of said collector plate and said fluid heat transfer medium inlet of said heat exchanger unit to carry said heat transfer medium from said collector plate outlet to said heat exchanger unit; and  
a pump means for circulating said fluid heat transfer medium from said fluid heat transfer outlet of said combination storage tank and heat exchanger unit through said solar collector panel assembly and then to said fluid heat transfer inlet of said combination storage tank and heat exchanger unit, said fluid heat transfer medium in said vertically disposed cylindrical chambers is maintained at a level intermediate said fluid outlet and fluid inlet when said pump means is running so that the fluid heat transfer medium flowing through the upper portions of said vertically disposed cylindrical chambers above said level will cascade downwardly along the exposed inner surfaces of said cylindrical chambers.

4,285,335

**SOLAR ENERGY COLLECTOR PANEL**

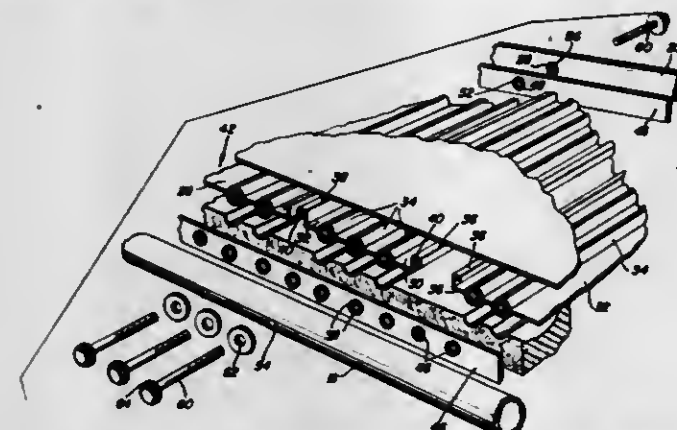
William B. Simmons, Sr., Geneva, and Derrick S. Ellis, Hartford, both of Ala., assignors to Reliable Metal Products, Inc., Geneva, Ala.

Filed Jul. 30, 1979, Ser. No. 62,053

Int. Cl.<sup>3</sup> F24J 3/02; F28F 9/02

U.S. Cl. 126—447

8 Claims



1. An elongated solar energy collector panel assembly including an elongated extruded metal planar panel section means for absorbing solar energy defining a plurality of individual, laterally spaced and open ended fluid flow tubular portions extending longitudinally along and opening endwise outwardly of opposite ends of said panel section with portions of said panel section extending between and interconnecting adjacent tubular portions of said panel section, elongated fluid inlet and outlet manifolds extending transversely of and across the opposite ends of said panel section, said inlet and outlet manifolds including openings therein spaced longitudinally therealong and opening into the corresponding opposite ends of said tubular portions with said manifolds sealed relative to the ends of said tubular portions, each of the opposite ends of said tubular portions including reduced internal width defining remote side portions, gasket means disposed between the opposite ends of said tubular portions and said manifolds, said gasket means comprising a one-piece member extending substantially the length of said manifolds and a plurality of attaching bolts secured transversely and passing entirely through each of said manifolds at points spaced longitudinally therealong and threadedly engaged with the inner portions of the remote side portions of said tubular portions.

4,285,336

**SCOLIOSIS ORTHOTIC SYSTEM**

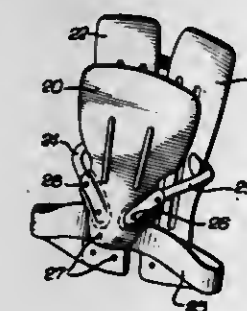
Alfred L. Oehser, Orange, and David L. Porter, Sunset Beach, both of Calif., assignors to Orthomedics, Inc., Brea, Calif.

Filed Oct. 23, 1979, Ser. No. 87,541

Int. Cl.<sup>3</sup> A61F 5/02

U.S. Cl. 128—78

8 Claims



1. In an orthopedic brace, the combination of:  
a stiff anterior panel;  
right and left spaced stiff posterior panels;  
right and left elongated substantially rigid iliac crest members, with said right member fixed to said anterior and right panels and with said left member fixed to said anterior and left panels, with said crest members shaped such that they fit around the torso and over the iliac crest of a person when the brace is worn;

adjustable strap means interconnecting said right and left panels; and  
a flexible pelvic band carried adjacent the lower ends of said panels below said crest members and extending from said right posterior panel to said anterior panel to said left posterior panel and fitting around the pelvis of a person when the brace is worn;  
with said stiff anterior and posterior panels, strap means and substantially rigid crest members providing a pre-determined distance between said anterior panel and said posterior panels and between a person's abdomen and back when the brace is worn.

4,285,337

**SURGICAL ARM-SLING WITH IMPROVED STRAP ADJUSTMENT**

Salvatore Cosentino, P.O. Box 488, Woodridge, N.Y. 12789

Filed Aug. 2, 1979, Ser. No. 63,391

Int. Cl.<sup>3</sup> A61F 13/00

U.S. Cl. 128—133

6 Claims



1. A surgical arm sling comprising a body of trough-like configuration, said body comprising inside and outside walls, means to join said walls to each other at one end of said body to form an elbow pocket, a strap, means to join one end of said strap to said body at said elbow pocket end thereof, composite fastener means comprising ring means to secure said strap at any one of an infinite number of adjusted strap lengths, and said composite fastener means also comprising snap means to permit repeated opening and closing of said sling without disturbing said one adjusted strap length, said strap consisting of elastic material, said snap means comprising a pair of mating snaps secured one to each of said inside and outside body walls at the corners thereof opposite said elbow pocket end, said ring means comprising a pair of rings cooperable with the one end of said strap to infinitely adjust the length of said strap, a loop of the same strap material through said rings to secure said rings to the inside body wall corner, and the ends of said loop being at least partially secured thereto by said snap means at said corner.

4,285,338

**ADHESIVE BANDAGE**

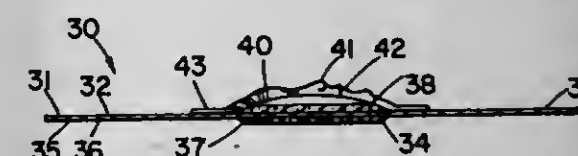
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Oct. 1, 1979, Ser. No. 80,565

Int. Cl.<sup>3</sup> A61F 13/00

U.S. Cl. 128—155

10 Claims



1. An adhesive bandage comprising in combination:  
an elongated thin strip of flexible bandage material containing end portions for engagement with the skin of a person using said bandage and adhesive material coating the







and means for adjusting the rate of delivery of said stimulus pulses to one of a plurality of operating rates, characterized by comprising a controllable current generator and a current controlled oscillator, the oscillator having means for generating stimulus timing signals and connected to said current generator to operate at a rate determined by the current provided by said current generator, means for controlling said current generator to provide a control current at one of a predetermined plurality of levels, said oscillator having current responsive means for establishing the rate of said timing signals and multiple collector transistors in current mirror configuration, and a connecting circuit connecting said current generator to said oscillator so that said control current controls the current of said current responsive means, thereby controlling the rate of said stimulus pulses.

#### 4,285,346 ELECTRODE SYSTEM

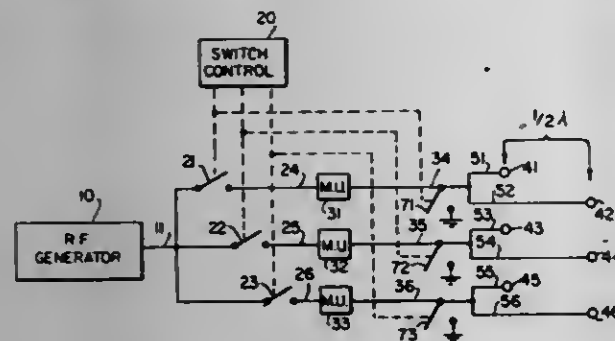
David Armitage, Bangor, Wales, assignor to Harry V. LeVeen, Charleston, S.C.

Filed Mar. 14, 1979, Ser. No. 20,355

Int. Cl.<sup>3</sup> A61N 1/40

U.S. Cl. 128-422

8 Claims



1. An apparatus for developing a radio frequency voltage between a pair of electrodes whereby a radio frequency electro-magnetic field can be applied to a load between said electrodes comprising generator means for generating radio frequency electrical energy having an output at which a voltage varying at a radio frequency is present, a pair of applicator electrodes, a first electrical line connected at one end thereof to one of said electrodes, a second electrical line connected at one end thereof to the other of said electrodes, said first and second lines being connected at the other ends thereof commonly to said output, and said first line having a length which is an odd number of half wave lengths at said radio frequency longer than said second line.

#### 4,285,347 STABILIZED DIRECTIONAL NEURAL ELECTRODE LEAD

Stanley R. Hess, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Jul. 25, 1979, Ser. No. 60,577

Int. Cl.<sup>3</sup> A61N 1/04

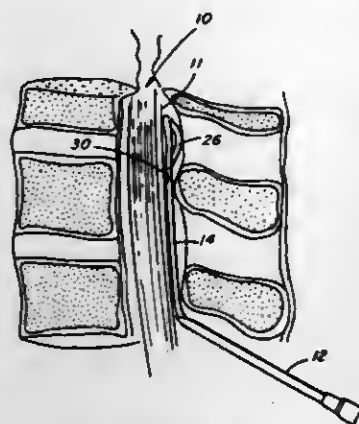
U.S. Cl. 128-785

8 Claims

1. An elongate epidural electrode lead having a distal end portion terminating in a distal end tip for insertion into the spinal canal with the aid of a stylet, comprising:

- an electrical conductor,
  - an insulating sheath covering said conductor, and
  - contact means located on said sheath in said distal end portion, spaced from said distal end tip, and electrically connected to said conductor for electrically contacting a portion of the spinal canal,
- said stylet being insertable in said lead for guiding said lead to its proper position in the spinal canal and removable thereafter,
- wherein the improvement comprises:
- said lead distal end portion including a resilient portion

between said contact means and said distal end tip, and laterally extending when said stylet is not inserted in said lead and substantially nonextending when said stylet is



inserted in said lead, whereby said lead may be inserted into the spinal canal with said stylet inserted, and said laterally extending portion may maintain said distal end portion in position after said stylet is withdrawn.

#### 4,285,348 THRESHING MACHINE

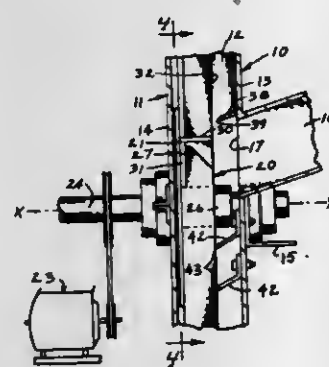
Orville A. Vogel, Pullman, Wash., assignor to Hartman L. Gearhiser, Pullman, Wash.

Filed Mar. 14, 1980, Ser. No. 130,554

Int. Cl.<sup>3</sup> A24C 1/32

U.S. Cl. 130-30 H

9 Claims



1. A threshing machine, comprising:
- a frame;
  - a hollow circular housing mounted to the frame and formed on a horizontal axis having an upright front side and an axially spaced back side;
  - a feed chute leading axially to an opening formed through the front side of the housing to one side of the horizontal housing axis;
  - a shaft mounted to the housing for rotation about the horizontal axis;
  - a flail wheel mounted to the shaft within the housing for rotation in a circular path therein about the horizontal axis and having a flail arm extending radially outwardly from the housing axis by a distance greater than the distance from the axis to the chute opening;
  - said flail arm having a radially extending threshing surface thereon;
  - means for rotating the flail wheel on the shaft about the horizontal axis in a direction so the flail arm will move downwardly in an arcuate path past the chute opening; and
  - baffle means within the housing immediately above the feed chute opening and adjacent the path of the flail arm for producing an inward motion of air entering the housing through the chute opening as the flail arm moves in the arcuate path past the chute opening.

#### 4,285,349 USE OF CERTAIN BRIDGED KETONES IN AUGMENTING OR ENHANCING THE ORGANOLEPTIC PROPERTIES OF SMOKING TOBACCO

Mark A. Sprecker, Sea Bright; James M. Sanders, Eatontown; William L. Schreiber, Jackson; Hugh Watkins, Lincroft; Joaquin F. Vinals, Red Bank, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Thomas J. O'Rourke, Red Bank, N.J.; Myrna L. Hagedorn, Highland Park, N.J., and Philip Klemarczyk, Old Bridge, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

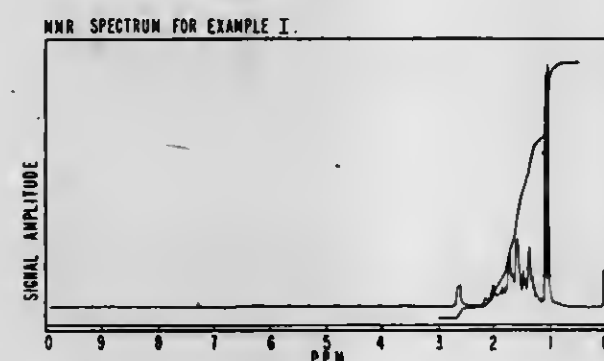
Division of Ser. No. 95,149, Nov. 16, 1979, Pat. No. 4,250,338.

This application Oct. 23, 1980, Ser. No. 200,045

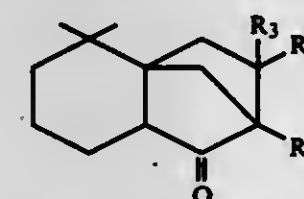
Int. Cl.<sup>3</sup> A24B 3/12, 15/30

U.S. Cl. 131-276

3 Claims



1. A process for augmenting or enhancing the aroma or taste of a smoking tobacco comprising the step of adding to a smoking tobacco an aroma or taste augmenting or enhancing quantity of at least one tricyclic ketone having the structure:



wherein R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are the same or different and each represents hydrogen or C<sub>1</sub>-C<sub>3</sub> lower alkyl.

#### 4,285,350 HAIRSTYLING AID

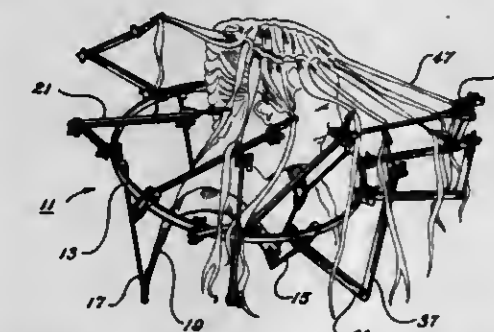
Ginger C. Cox, 4204 Cherokee Trail, Fort Worth, Tex. 76133, and Sandra F. Scott, 4945 Penrose, Fort Worth, Tex. 76116

Filed Mar. 31, 1980, Ser. No. 135,360

Int. Cl.<sup>3</sup> A45D 1/00

U.S. Cl. 132-9

10 Claims



1. An apparatus for use in hairstyling, comprising:
- a rigid loop;
  - support means for supporting the loop around the head of a user;
  - a plurality of arms having one free end and one end secured to the loop;
  - a clip secured to the free end of each of the arms for retaining a strand of the user's hair; and
  - positioning means for allowing the free ends of the arms to

be moved in space, and for retaining the positions of the arms until subsequently moved, to retain strands of hair at different points.

#### 4,285,351 MONITORING DEVICE FOR THE COIN CONTAINER OF A COIN COLLECTING MECHANISM

Alfred Nyffenegger, Uetendorf, Switzerland, assignor to Autelca AG, Gumligen, Switzerland

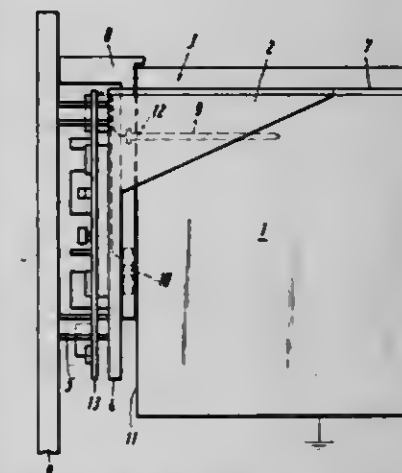
Filed Jan. 20, 1979, Ser. No. 50,154

Claims priority, application Switzerland, Jul. 12, 1978, 7577/78

Int. Cl.<sup>3</sup> G07D 9/00

U.S. Cl. 133-1 R

11 Claims



1. A monitoring device for the coin container of a coin collecting mechanism, comprising a coin container which is metallic and is exchangeable, contact means (1, 9), between which the coins collected in the container (1) are adapted to establish a connection at a specific filling height, a first oscillator circuit (17), coupling means (14) coupling said contact means (1, 9) in such a way to said first oscillator circuit (17) that the latter (17) is oscillating or not oscillating depending on whether the contact means (1, 9) are connected in circuit by the coins, a first signal circuit (26, 32) connected to said first oscillator circuit to emit a first signal which indicates whether the first oscillator circuit (17) is oscillating and accordingly whether the contact means (1, 9) are connected by the coins, a second oscillator circuit (37), a self-induction coil (10) connected to said second oscillator circuit (37), said coil (10) so arranged that one of the walls (11) of the coin container (1) is adapted to extend through the coil field and to influence the coil field in such a way that said second oscillator circuit (37) is oscillating or not oscillating depending on whether the coin container (1) is present, a second signal circuit (38, 39) connected to said second oscillator circuit to emit a second signal which indicates whether the second oscillator circuit (37) is oscillating and accordingly whether the coin container (1) is present, and a logic circuit, to which said first and second signals from said first and said second signal circuit (26, 32; 38, 39) are fed and which emits a signal blocking the coin collecting mechanism when the first signal indicates that the contact means (1, 9) are connected by the coins or the second signal indicates that the coin container (1) is not present.

#### 4,285,352 CONTINUOUS DUTY CHEMICALLY SANITIZING BATCH RINSE SYSTEM

William H. McMahon, Ladlow Falls; Louis F. Fraula, Troy; Stuart E. Athey, Troy; Thomas M. Johnson, Troy, and Terrence W. Moore, Troy, all of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Sep. 12, 1979, Ser. No. 74,649

Int. Cl.<sup>3</sup> B08B 3/02

U.S. Cl. 134-48

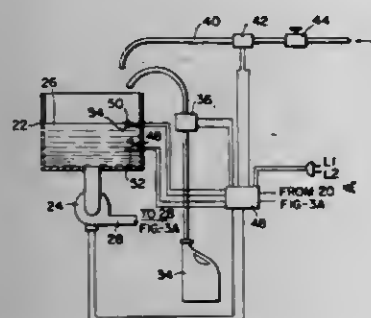
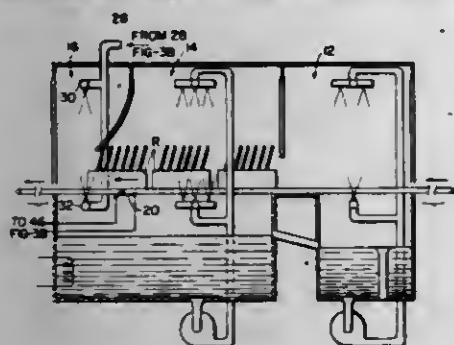
11 Claims

1. In a warewashing machine having a rinse station for



supporting food ware items, a chemically sanitizing batch rinse system, comprising:

- (a) a rinse solution mixing tank;
- (b) a rinse pump and spray system connected for pumping rinse solution from said mixing tank, on demand, and spraying the solution onto foodware items at the rinse station;
- (c) a source of chemical sanitizing agent;
- (d) a source of fresh water; and
- (e) means operable to deliver sanitizing agent and fresh water into said mixing tank in predetermined proportions



and at a rate greater than that at which the solution is pumped from the tank and in response to the solution level in said tank falling below a first lower level and operable to discontinue delivery of water and sanitizing agent when the solution level in said tank reaches a second higher upper level,

- (f) whereby a new batch of chemically sanitizing rinse solution is prepared each time the solution level in said mixing tank falls below said lower level and the size of each new batch prepared is dependent on the volume of solution pumped from said tank but is of substantially constant proportion of sanitizing agent and water.

4,285,353

#### FILTER WITH AUTOMATIC CLEANING

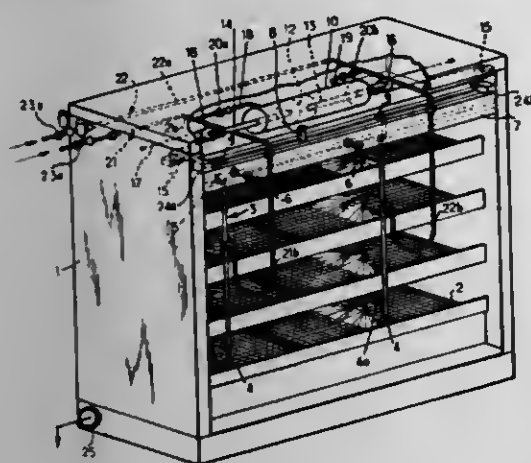
Pierre Colomer, Chateaux-Malabry, France, assignor to Interfil-tre S.A., Livarot, France

Filed Sep. 14, 1979, Ser. No. 75,791

Int. Cl.<sup>3</sup> B01D 41/00, 25/12

U.S. Cl. 134—181

18 Claims



1. A system for automatic cleaning of filter panels supported by a frame comprising means for sprinkling a cleaning liquid

upon the filter panels including at least one sprinkling tube having at least one outlet nozzle directed toward at least one filter panel, carriage means joined to said sprinkling means and movably mounted to said frame for movement thereon to move said sprinkling means and said outlet nozzle with respect to said filter panel, fluid driven hydraulic motor means for moving said carriage means on said frame, transmission means interconnecting said hydraulic motor means and said carriage means to transmit movement of said hydraulic motor means to said carriage means, fluid inlet means for supplying said cleaning fluid to said sprinkling tube and offtake means communicating with said fluid inlet means and said hydraulic motor means to divert a predetermined flow of said cleaning fluid to said hydraulic motor means to power said hydraulic motor means.

4,285,354

#### MULTIPURPOSE TENT

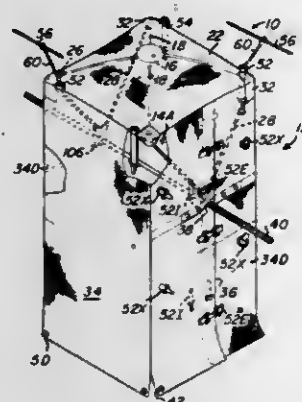
Allan E. Beavers, Littleton, Colo., assignor to T. A. Pelsue Company, Englewood, Colo.

Filed Apr. 17, 1979, Ser. No. 31,017

Int. Cl.<sup>3</sup> A45F 1/00

U.S. Cl. 135—1 R

2 Claims



1. The tent comprising: a rectangular roof panel and four rectangular side panels hanging from the edges of the roof panel and cooperating therewith and with one another to define an open-bottomed box-like canopy, one opposed pair of said side panels being vertically slit intermediate the side margins thereof to free openable flaps arranged in side-by-side relation, and each side panel of the remaining pair thereof cooperating with the adjacent flaps to produce an elevatable curtain; a rigid subframe including connecting means located on the inside of the canopy at the juncture between adjacent side panels and the roof panel, a hub member positioned on the underside of the roof panel at the center thereof, struts radiating diagonally from the hub to points of attachment with the connecting means, and upright cornerposts connected to the connecting means in essentially right-angular relation to the struts connected thereto; and means comprising a base detachably connectable to the cornerposts in supporting relation to the latter, said base comprising a sling including a belt detachably connectable to a personnel-carrying bucket of a cherry picker in encircling relation thereof, and socket like elements carried by said belt for receiving the free ends of the connecting means.

4,285,355

#### TENT

Gene D. Lundblade, Valley Center, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Oct. 31, 1979, Ser. No. 89,960

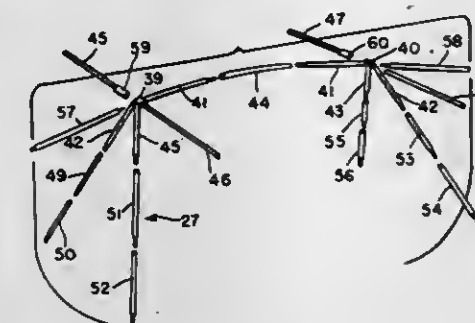
Int. Cl.<sup>3</sup> A45F 1/16

U.S. Cl. 135—4 R

15 Claims

1. A tent assembly comprising a frame assembly and a cover, the cover forming a tent enclosure and having a top and bottom, the frame assembly comprising:

- (a) a pair of brackets, each of the brackets adapted to be removably connected to the top of the cover,
- (b) an elongated flexible ridge pole adapted to be connected to each of the brackets to maintain the brackets in a spaced-apart condition and to maintain the ridge pole bowed upwardly,



- (c) means for attaching the ridge pole to the top of the cover whereby the bowed ridge pole will support the top of the cover, and
- (d) a pair of upright poles adapted to be connected to each of the brackets, each of brackets including means for pivotally connecting the upright poles to the bracket.

4,285,356

#### METHOD OF TRANSPORTING VISCOUS HYDROCARBONS

Thomas R. Sifferman, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Oct. 12, 1979, Ser. No. 84,334

Int. Cl.<sup>3</sup> F17D 1/17

U.S. Cl. 137—13

13 Claims

1. In the method of transporting a viscous hydrocarbon through a pipe, the improvement which comprises forming an oil-in-water emulsion of lower viscosity to facilitate transporting said hydrocarbon through said pipe by adding to said hydrocarbon from about 20 to about 80 volume percent of an aqueous solution containing an effective amount, in the range of about 125 to about 2,000 parts per million based on said hydrocarbon, of (a) about 40 to about 60 weight percent of an anionic alkyl polyether ethoxylated sulfate and (b) about 60 to about 40 weight percent of an alcohol ether sulfate, said anionic alkyl polyether ethoxylated sulfate being represented by the formula



wherein R is a C<sub>8</sub> to C<sub>14</sub> alkyl group, a is a number in the range of 2 to about 13, b is a number in the range of 1 to about 3, and M is sodium, potassium or ammonium, and said alcohol ether sulfate being represented by the formula



wherein x is an integer in the range of about 10 to about 16, n is a number in the range of 3 to about 12, and M is sodium, potassium or ammonium.

4,285,357

#### PNEUMATIC RELAY

Richard A. Jones, Bryn Mawr, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Filed Jan. 16, 1980, Ser. No. 112,706

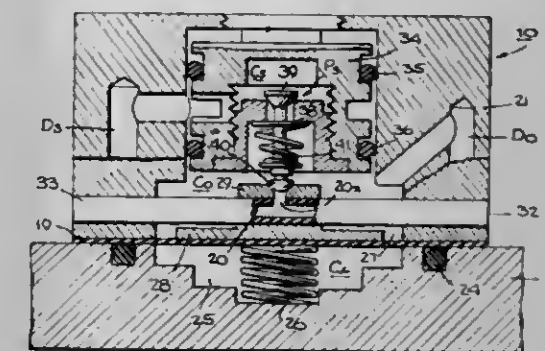
Int. Cl.<sup>3</sup> G05D 16/00; F16K 31/365

U.S. Cl. 137—85

3 Claims

1. A pneumatic relay responsive to an air input signal whose pressure represents a variable to produce an air output signal proportional thereto, said relay comprising:

- A. a structure defining an input chamber, an output chamber and a supply chamber;
- B. an elastomeric diaphragm interposed between the input and output chambers, said structure being constituted by a meter body provided with a central bore which is secured to a plate having a well formed therein to define said input chamber, said diaphragm being sandwiched between said plate and said body, whereby said outer face seals said input chamber and said inner face seals the output chamber which is defined in said bore, said bore being internally divided to further define said supply chamber;
- C. a supply port interposed between the output and supply chambers, said supply port having a valve seat and being operatively coupled to said diaphragm;
- D. means to feed air from a constant pressure source to said supply chamber;
- E. means to feed said input signal into said input chamber to deflect said diaphragm in one direction to cause said supply port to open to admit air from said supply chamber



into said output chamber until the pressure in the output chamber is in equilibrium with the pressure in the input chamber;

- F. an exhaust port provided with a valve seat defined in the raised hub of a disc disposed centrally in said output chamber and bonded to the inner face of said diaphragm, said exhaust port valve seat being coupled by an open-ended elastomeric tube passing through a lateral passage in said hub to the atmosphere at opposing sides of the meter body, whereby when there is a change in input signal pressure resulting in an imbalance between said output pressure and the input pressure, the resultant diaphragm deflection in the reverse direction causes opening of the exhaust port to discharge air from the output chamber until equilibrium is restored;
- G. a helical spring disposed in a well in said plate, the upper end of the spring engaging the inner face of the diaphragm to apply a bias to said disc; and
- H. means to derive said output signal from said output chamber.

4,285,358

#### SERVOVALVE FEEDBACK WIRE INTERFACE CONFIGURATION

Richard J. Haydt, Los Angeles, Calif., assignor to Textron Inc., Providence, R.I.

Filed Jan. 14, 1980, Ser. No. 111,515

Int. Cl.<sup>3</sup> F15B 13/16

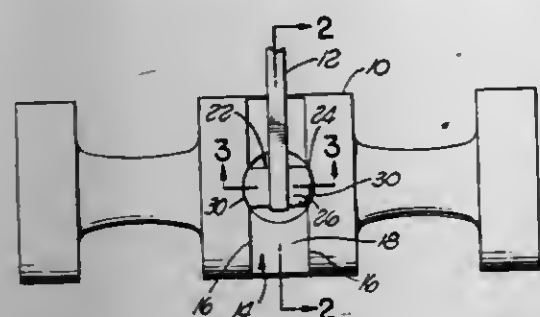
U.S. Cl. 137—85

8 Claims

1. In a servovalve having spool-valve-position feedback provided by a feedback spring in contact with a portion of the spool valve body, the improvement comprising: a spool valve body having a slot therein, said slot having first and second side walls, said first and second side walls each having a recess therein, each said recess having an inner surface; a feedback spring having a head insertable into said slot, said head having bearing surfaces which fit in face to face



relation with said inner surface of each of said recesses; and



said slot being of sufficient depth to prevent contact between the feedback spring and the spool valve body.

4,285,359

# INTERFACE UNIT FOR VACUUM SEWERS

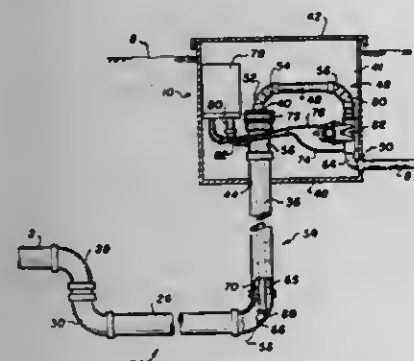
Ian Doherty, Richmond, Canada, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Aug. 1, 1979, Ser. No. 62,653

Int. Cl.<sup>3</sup> E03D 1/00

U.S. Cl. 137—205

18 Claims



1. An interface unit for connecting an accumulation enclosure of a gravity feed conduit to a vacuum conduit comprising: means adapted to be placed adjacent to a surface level for defining a hollow chamber; an enclosure extension extending downwardly from said chamber defining means and having an upper end in the chamber and a lower end spaced below the chamber, the lower end of the enclosure extension adapted to be coupled to said accumulation enclosure in fluid communication therewith, the upper end of the enclosure extension being closed, whereby fluid pressure in the enclosure extension will increase as material is directed into the accumulation enclosure when the extension is coupled thereto; a vacuum conduit extension extending downwardly through the enclosure extension and having a lower open end near the lower end of the enclosure extension, the upper end of the vacuum conduit extension projecting outwardly from the enclosure extension; and means responsive to the fluid pressure in the enclosure extension for coupling the vacuum conduit extension with the vacuum conduit.

4,285,360

# APPARATUS FOR WITHDRAWING THE OIL FROM AN INTERNAL COMBUSTION ENGINE

Johann G. H. Bauer, Hasbergen, Fed. Rep. of Germany, assignor to Robert K. Bauer, Mississauga, Canada

Filed Nov. 26, 1979, Ser. No. 97,155

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1978, 7835250(U); Sep. 22, 1979, 7926919(U); Sep. 26, 1979, 7927321(U)

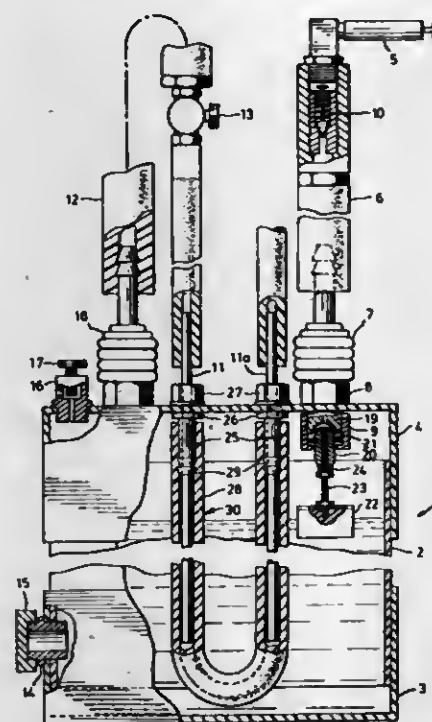
Int. Cl.<sup>3</sup> F16N 33/00; F01M 11/04

U.S. Cl. 137—205

20 Claims

1. Apparatus for withdrawing a liquid from a container comprising:

a rigid, fluid-tight receptacle; vacuum line means for connecting said receptacle to a source of vacuum; check valve means associated with said vacuum line for preventing backflow of gas therethrough; portable inlet probe means for insertion into said container to take up said liquid; suction line means connecting said inlet probe means to said receptacle;



control valve means associated with said suction line means for selectively opening and closing said suction line means; and sheath forming means projecting into the interior of said receptacle without destroying the fluid-tightness thereof for receiving and storing said inlet probe means when not in use.

4,285,361

# SLOW CLOSING FAUCET

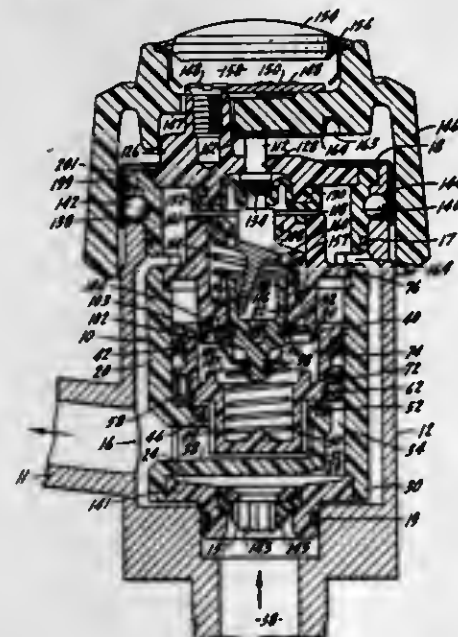
Frederic Lissau, Chicago, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Aug. 3, 1978, Ser. No. 930,605

Int. Cl.<sup>3</sup> F16K 25/00

U.S. Cl. 137—454.6

15 Claims



hot and cold water from said casing, an operating button on top of said casing connected to said cartridge, means in said cartridge responsive to the depression of said operating button for causing said cartridge to effect fluid flow from said hot and cold inlets to said outlet, means responsive to the rotation of said operating button for causing said cartridge to control the mixture of hot and cold water in accordance with the amount of rotation of said operating button, means in said cartridge for causing the passage of water to be shut off in the event said operating button is held depressed unduly long, means in said cartridge for causing said mixing valve to slowly close after being opened to the passage of water, and means in said cartridge for causing a substantially constant rate of flow of mixed water from said outlet regardless of variations in water pressure from said hot and cold inlets.

4,285,362

# POWER TRANSMISSION

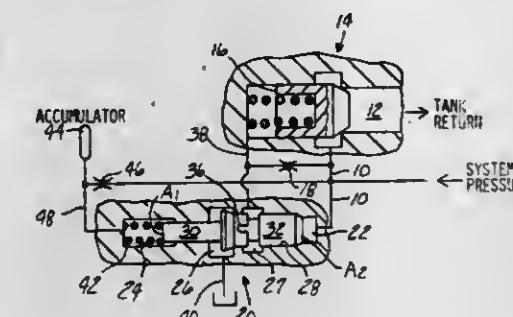
Henry D. Taylor, Pontiac, Mich., assignor to Sperry Corporation, Troy, Mich.

Filed Feb. 4, 1980, Ser. No. 117,933

Int. Cl.<sup>3</sup> F16K 31/383

U.S. Cl. 137—489

24 Claims



1. A hydraulic pressure relief valve circuit comprising:  
a. a source of system pressure and a return tank;  
b. a main valve means operable to shut off fluid flow between said source of system pressure and said return tank;  
c. bleed flow means connected to said source of system pressure and to said main valve means for restricting fluid flow to said main valve means;  
d. pilot valve means for metering fluid flow restricted by said bleed flow means to said return tank, and having first and second ends, said first end connected to both said source of system pressure and said main valve means;  
e. accumulator means connected to said source of system pressure and said second end of the pilot valve means for containing a volume of compressed fluid; and  
f. damping means connected between said source of system pressure and said second end of the pilot valve means and said accumulator means for restricting fluid flow from said source of system pressure to both said pilot valve means and said accumulator means.

4,285,363

# CONTROL VALVE CONSTRUCTION

Harvard B. Kolm, Lewiston, N.Y., assignor to Hydraulic Servo-controls Corporation, Buffalo, N.Y.

Filed Nov. 5, 1979, Ser. No. 91,043

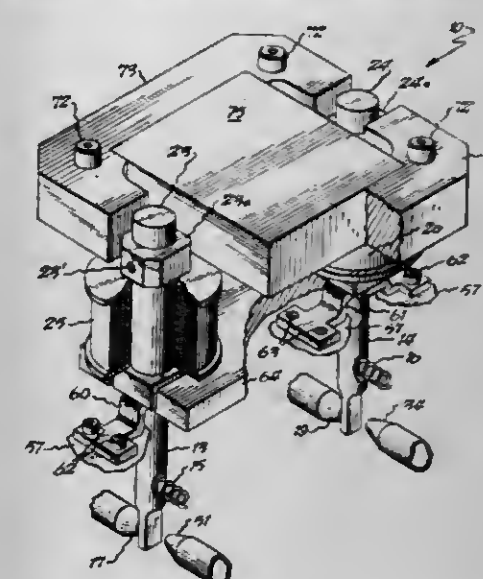
Int. Cl.<sup>3</sup> F16K 11/10

U.S. Cl. 137—596.17

13 Claims

1. A servovalve comprising a base, first and second flappers mounted on said base, armature means coupled to said first and second flappers, respectively, first and second nozzle means on said base for discharging fluid, third and fourth nozzle means for receiving fluid from said first and second nozzle means, respectively, means for normally biasing said first and second flappers into position for effectively preventing flow of fluid from said first and second nozzle means, respectively, and coil means operatively associated with said armature means for simultaneously causing said first flapper to move away from said first nozzle means while said second flapper remains in

position for effectively preventing flow through said second nozzle means when current flow through said coil means is in a first direction, and for causing said second flapper to move away from said second nozzle means while said first flapper



remains in position for effectively preventing flow through said first nozzle means when current flow through said coil means is in a second direction which is opposite to said first direction.

4,285,364

# HOSE COUPLING

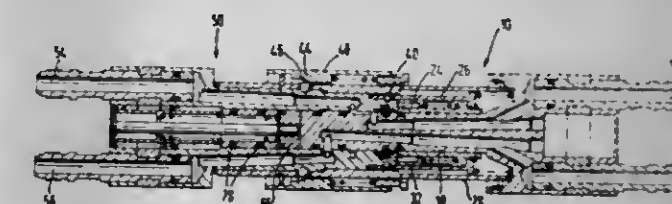
Michael J. Hawker, Lincoln, England, assignor to Clayton Dewandre Co. Ltd., Lincoln, England

Continuation of Ser. No. 966,209, Dec. 4, 1978, abandoned. This application May 21, 1980, Ser. No. 151,910

Int. Cl.<sup>3</sup> F16L 37/28

U.S. Cl. 137—614.03

9 Claims



1. A hose coupling for coupling and uncoupling between high pressure hydraulic system having a high pressure hydraulic source, and a hydraulic circuit that is pressure dependent upon the high pressure hydraulic source, said hose coupling comprising:

(a) a female coupling member including a tubular body open at one end and having a rigid axially-disposed spigot portion, supply and return passages in the spigot portion and leading to radial ports in the periphery thereof, and a sleeve sliding on the spigot portion and biased to a position to close the ports of said female coupling member;  
(b) a complementary male coupling member adapted to enter the female coupling member, said male coupling member defining an axial bore which is adapted to receive with a sealed sliding fit the spigot portion of the female coupling member, the male coupling member also having supply and return passages leading to radial ports disposed radially inwardly toward the bore defined by said male coupling member and a plug or spool slidable in the bore and biased into a position to close the ports of said male coupling member;  
(c) the female and male members being cooperative such that when the two members are coupled together the sleeve is displaced along the spigot portion of the female member to uncover the supply and return ports of said female member, and simultaneously the plug is displaced



along the bore of the male member to uncover the supply and return ports of said male member, with the supply and return ports of said female member cooperating with the corresponding ports of said male member in fluid communication to establish hydraulic flow and return paths through the coupling;

- (d) the supply passage of one of said coupling members being connected to the high pressure hydraulic source, the return port of said one coupling member being disposed outwardly of the supply port relative to the distal end of said one coupling member;
- (e) the supply port of said other coupling member being disposed outwardly of the return port of said other coupling member relative to the distal end of said other coupling member; and
- (f) releasable means for locking the two coupling members together in their operative condition.

4,285,365

### ROTARY VALVE FOR PRESSURE FLUID DISTRIBUTION

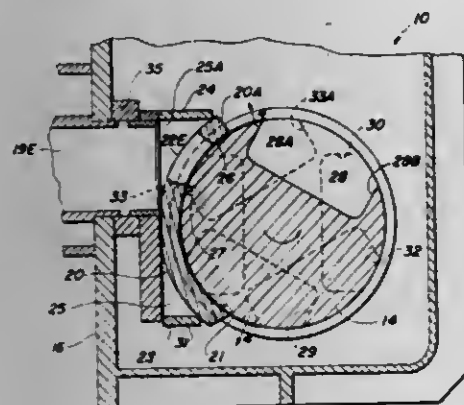
Graham C. Coats, St. Louis; Gary A. Elliott, Chesterfield, and Michael A. Balboa, St. Louis, all of Mo., assignors to Barry-Wehmiller Company, St. Louis, Mo.

Filed Aug. 23, 1979, Ser. No. 68,745

Int. Cl.<sup>3</sup> F16K 11/02

U.S. Cl. 137—625.15

5 Claims



1. A pressure fluid rotary valve for distributing a pressure fluid to a plurality of outlets from a common source, said rotary valve comprising: an elongated housing, a pressure fluid supply connected to said housing, a plurality of fluid outlet connectors spaced apart along the length of and opening outwardly from said housing, and means in said housing cooperating with said outlet connectors for controlling the distribution of the pressure fluid to said outlet connectors in a predetermined order and for establishing continuous flow of pressure fluid, said means including, a stator positioned in said housing adjacent said connectors and presenting to the interior of said housing a face surface which is a segment of a circle, said face surface being formed with a leading edge and a plurality of outlet ports spaced from said leading edge a uniform distance to provide a section of said face surface in advance of each of said outlet ports, means between said stator and said connectors forming separate spaces between said outlet ports and connectors such that each outlet port is in flow registration with a single connector, and an elongated valve body having a cylindrical form and rotatively mounted in said housing in position to make a working fit at said stator face surface, said valve body being formed with fluid flow controlling pockets spaced along the length thereof in position during body rotation to register with said outlet ports, the arrangement of said flow control pockets in said valve body being such as to assure the establishment of said continuous flow of pressure fluid and said predetermined order of distribution of the pressure fluid through said valve body pockets, the predetermined order assuring substantial freedom from bending of said valve body by the effect of the pressure fluid along the length thereof and simultaneous delivery of a series of fluid jets timed in bursts as each pocket passes an associated section of said stator face

surface in its advance into registering with an associated outlet port.

4,285,366

### PRESSURE MEDIUM CONTROL SYSTEM FOR AUXILIARY POWER STEERING SYSTEMS

Dieter Elser, Esslingen-Lauterburg, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

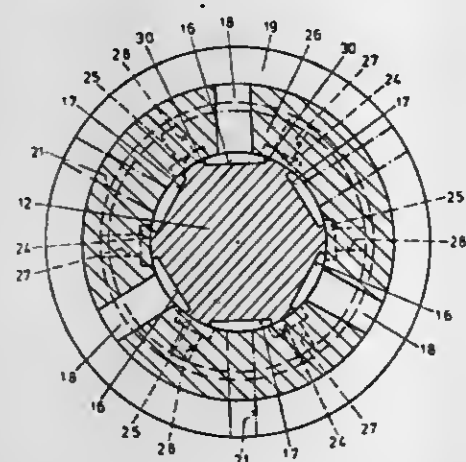
Continuation-in-part of Ser. No. 37,031, May 8, 1979, Pat. No. 4,232,586, which is a continuation of Ser. No. 825,477, Aug. 17, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,571

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1977, 2745786

Int. Cl.<sup>3</sup> F15B 13/04; F16K 11/02

U.S. Cl. 137—625.23

5 Claims



1. In combination with a control device for a pressure medium in an auxiliary power steering system having a rotary valve plug (12) journaled at opposite axial ends by anti-friction bearings mounted within a control bushing (26), passage means (16, 17, 31, 32) formed in the rotary valve plug including axially extending and symmetrically distributed passage grooves formed in the rotary plug and the control bushing and terminating in axially spaced relation to said opposite axial ends, and conduit means (18, 21) for conducting the pressure medium to and from two directional control outlets (27 and 28) along in-phase parallel flow paths of substantially equal flow volume respectively established through said grooves; means for improving pressure control of the pressure medium at the outlets in response to positioning of the rotary plug, comprising only two beveled edges (30, 33) formed on the rotary plug between the conduit means and the passage means along only one of the parallel flow paths to each of said outlets, respectively, to conduct the pressure medium therein in out-of-phase relation to a plurality of the other of the in-phase parallel flow paths.

4,285,367

### DEVICE FOR MIXING TWO FLUIDS

Johan P. Nommensen, Stein, Netherlands, assignor to Stamcarbon, B.V., Geleen, Netherlands

Filed Mar. 4, 1980, Ser. No. 127,986

Claims priority, application Netherlands, Mar. 6, 1979, 7901750

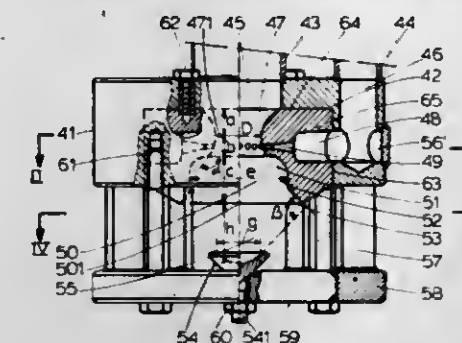
Int. Cl.<sup>3</sup> F16K 19/00

U.S. Cl. 137—888

14 Claims

1. Device for mixing two fluids provided with a venturi tube through which a first fluid can flow said venturi tube in the direction flow narrowing in a first part to a throat and then widening in a shorter second part, with a feed member for a second fluid disposed around said venturi tube and from said feed member one or more channels open into said venturi tube, through which said channels said second fluid can be added to

said first fluid, and with a baffle placed axially opposite the mouth of said second part of said venturi tube, comprising, a venturi tube connecting to a feed line for said first fluid with the length of said first part of said venturi tube from the inlet to said throat of said tube in the range of from about 0.4 D to about 1.6 D, wherein D is the diameter of said throat of said venturi tube, and the length of said shorter second part of said venturi tube from said throat to the outlet of said tube in the range of from about 0.2 D to about 0.7 D, wherein D is the diameter of said throat,



channels for adding said second fluid from said feed member disposed around the venturi tube, said channels opening into said second part of said venturi tube, a turbulence chamber which connects with an abrupt widening to said outlet of said venturi tube, a secondary mixing chamber into which said turbulence chamber opens and from which said mixed fluid can issue at the circumference, and a baffle in the shape of an axially positioned concave dish having its concave side facing said venturi tube, said baffle forming the bottom of said secondary mixing chamber.

4,285,368

### PIPELINE STOPPER AND PIPE FITTING

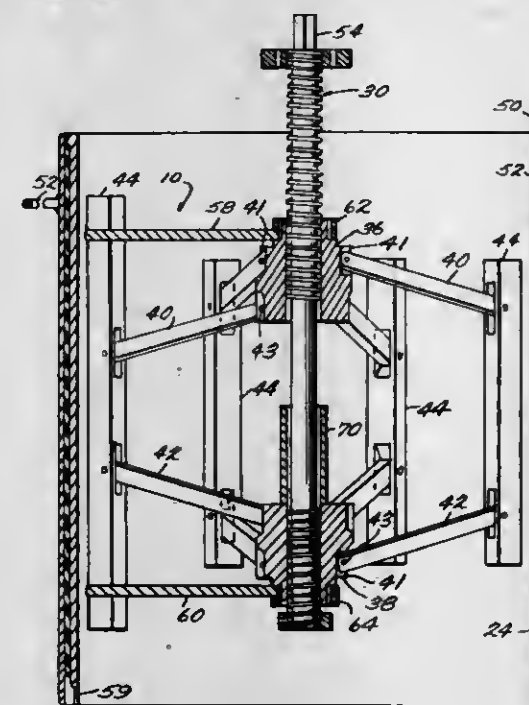
Garrett D. Terrill, and Lynn D. Edwards, both of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.

Filed Jul. 27, 1977, Ser. No. 819,621

Int. Cl.<sup>3</sup> F16L 55/12

U.S. Cl. 138—89

17 Claims



1. In combination:

a stopper fitting adapted to be secured around a pipeline, said fitting having a generally tubular portion extending transverse to an axis of the pipeline and through which a transverse circular opening is made in the pipeline, said stopper fitting having at least one inwardly extending lug adjacent one end thereof and positioned exterior of the transverse circular opening through the pipeline; a cylindrical stopper assembly adapted to be inserted into the

transverse circular opening of the pipeline, said stopper assembly comprising a longitudinally split expandable and contractible cylindrical sleeve having a gasket material on at least a portion of its outer surface, means on said split cylindrical sleeve cooperating with said at least one lug to axially position said split cylindrical sleeve in the transverse circular opening and to properly orient and prevent rotation of said sleeve with respect to said stopper fitting, said last mentioned means including a notch in the lower edge of said cylindrical sleeve for receiving said at least one lug, said stopper assembly further including means to expand said sleeve into sealing engagement with edges of opening in the pipeline and to contract said sleeve out of engagement, said means comprising a plurality of angularly spaced longitudinally extending bars secured to the inner surface of said sleeve, each of said bars having a slot adjacent each end thereof, a jackscrew, a pair of members threadedly connected to said jackscrew for movement toward and away from each other, a first set of angularly spaced toggle arms pivotally connected to one of said members and to said bars in the slots adjacent one end of the same; and a second set of angularly spaced toggle arms pivotally connected to the other of said members and to said bars in the slots at the other end of the same whereby movement of said members relative to each other expand and contract said sleeve, stop means slidably mounted on said jackscrew and loosely carried by one of said members for engaging the other of said members to thereby control maximum expansion of said cylindrical sleeve by limiting movement of said members toward each other and by limiting pivotal movement of said arms to an angle no greater than 90° to the longitudinal axis of said jackscrew, and means separate from said toggle arms, and extending between at least one of said members and said bars and movable with said one member and relative to said bars for transferring torque from said members during operation directly to said longitudinally extending bars and said cylindrical sleeve without torque being transferred through said toggle arms.

4,285,369

### THERMAL INSULATION ENHANCEMENT

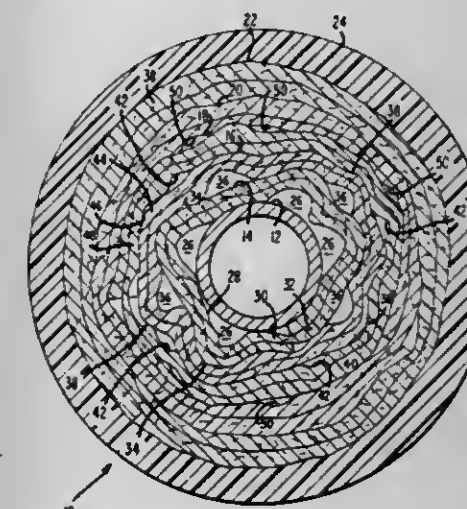
Thaddeus D. Misiura, Princeton Junction, N.J., and Gordon K. Lambert, Starkville, Miss., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 874,980, Feb. 3, 1978, abandoned, which is a continuation of Ser. No. 709,038, Jan. 27, 1976, abandoned. This application Jan. 9, 1980, Ser. No. 110,862

Int. Cl.<sup>3</sup> F16L 11/12

U.S. Cl. 138—149

6 Claims



1. A thermally insulated tubing product comprising a tubular core element for conveying a fluid the temperature of which is to be maintained, said tubular core element having a smooth



and uninterrupted cylindrical outer surface, and a wrap of thermally insulative tape extending about said element having more than one lamination, at least more than one of said laminations being wrapped around core element at preselected helix angles to cause said laminations to be randomly wrinkled and to define random air spaces to enhance the insulating properties of said wrap, said air spaces decreasing progressively in volume in a direction taken radially outwardly from the core element.

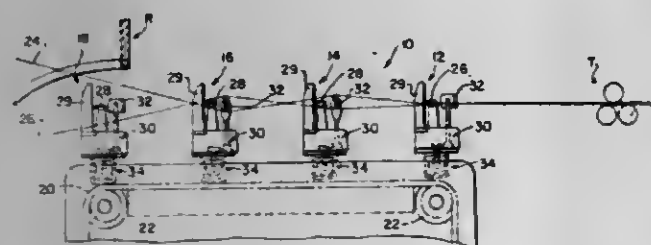
4,285,370

## SHED RETAINER

Thomas F. McGinley, 175 Prospect St., Phillipsburg, N.J. 08865  
Filed Jul. 19, 1979, Ser. No. 58,790  
Int. Cl.<sup>3</sup> D03D 47/00

U.S. Cl. 139—11

12 Claims



1. A shed-retaining member for use in connection with a loom for the weaving of warp and weft threads into fabric of the type wherein said loom has a shed-forming means for elevating some of said warp threads and depressing others of said warp threads to form warp sheds, said shed-retaining member being insertable between adjacent warp threads to maintain said warp sheds, said shed-retaining member comprising:

an upper surface which in a first position is engageable with at least one elevated warp thread, and a lower surface which in said first position is engageable with at least one depressed warp thread;

means for moving said shed-retaining member to a second position in which neither said elevated warp thread nor said depressed warp thread is retained on said respective upper and lower surfaces of said shed-retaining member; and

said shed-retaining member including at least one spacing surface for engagement with said warp threads to space said warp threads, said spacing surface constructed and arranged to operate to increase the spacing between groups of at least said depressed warp threads when said shed-retaining member is moved from said first position to said second position in order to release said elevated and depressed warp threads toward each other and to allow said shed-retaining member to be withdrawn from between said warp threads.

4,285,371

## METHOD FOR GUIDING WARP THREADS WITH A BACK REED

Hissai Nishiyama, Hayahoshi, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jan. 20, 1979, Ser. No. 50,341

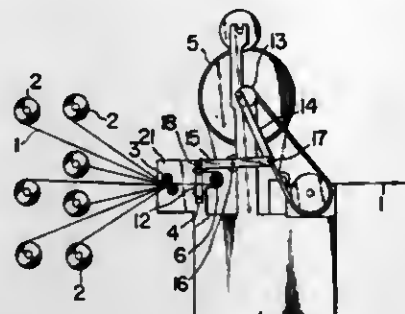
Claims priority, application Japan, Jan. 22, 1978, 53-76017  
Int. Cl.<sup>3</sup> D03D 49/00, 49/04

U.S. Cl. 139—97

5 Claims

1. A loom having a back reed, with dents for spacing warp threads running therethrough and which is movable in reciprocal motion in a direction parallel to the dents and vertically

transverse to the running direction of the warp threads, and a rotating tension drum to impart tension to the running warp



4,285,372

## METHOD AND DEVICE FOR THE REFILLING OF DOUBLE CHAMBER PRESSPACK SPRAY CONTAINERS

Lothar Kleber, Mulheim an der Ruhr, Fed. Rep. of Germany, assignor to Deutsche Calypso-Gesellschaft mbH & Co., Düsseldorf, Fed. Rep. of Germany

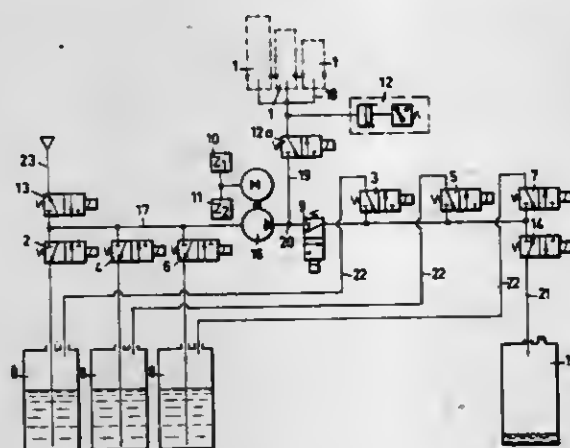
Filed Sep. 25, 1979, Ser. No. 78,735

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 7828516[U]

Int. Cl.<sup>3</sup> B65B 3/04

U.S. Cl. 141—2

7 Claims



1. A method for refilling a double-chamber presspack spray container which has a spray valve, a product-holding inner bag communicating with the spray valve and a sealed, compressed gas chamber charged therein with compressed gas biasing the inner bag for dispensing the product through said spray valve without expelling said gas, and after the product has been dispensed with the inner bag being collapsed and the gas expanded and reduced in pressure, and without adding any additional compressed gas, comprising the step of inverting said container, connecting said spray valve to a supply of product to be refilled into said collapsed inner bag without adding any additional gas into the gas chamber, selectively metering the product into the collapsed inner bag so as to fill and expand said bag against the force of the gas and compressing and building up the pressure of the gas back to its original compressed gas pressurized condition without adding any additional gas into the gas chamber, disconnecting the supply of product from the spray valve, removing the refilled container with the refilled product and unused compressed gas.

4,285,373

## CRUSHING APPARATUS

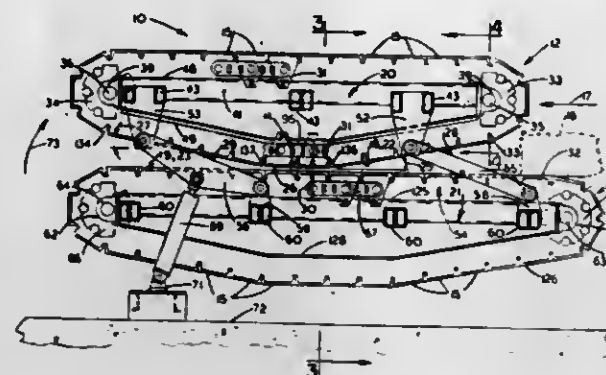
Robert H. Buchanan, 102-2445 Cornwall St., Vancouver B. C., Canada (V6K 1V9)

Filed Oct. 15, 1979, Ser. No. 84,806

Int. Cl.<sup>3</sup> B29C 15/00

U.S. Cl. 144—2 R

16 Claims



1. A crushing apparatus having: oppositely disposed first and second endless loops of crushing belts carried on respective support means and disposed so that an inner run of the first belt is spaced closely to an adjacent inner run of the second belt to define a throat therebetween, wherein each belt has a slat bed having a plurality of closely spaced slats connected together and extending transversely thereto to provide an essentially continuous working surface when the slats are coplanar, the apparatus also including means to power at least one belt and converging intake means communicating with the throat to admit a forward end of material to be crushed between the belts, the apparatus being further characterized by:

(a) each slat having particular roller means journaled thereon, the roller means being disposed adjacent an inner surface of the slat remote from the working surface and extending substantially along the length of the slat to follow movement of the particular slat and to support the slat along the length thereof, each roller means having means associated therewith defining a longitudinal guiding means,

(b) rail means carried on the respective support means and extending adjacent and along the two opposed inner runs of the belts that define the throat, the rail means extending between outer portions of each respective endless loop of belt and adjacent the inner surfaces of the slats of the inner runs, the rail means cooperating with the roller means to support against crushing forces the runs of the belts adjacent to and defining the throat and also cooperating with the longitudinal guiding means of the roller means to restrain the roller means and slats against lateral shifting to ensure essentially longitudinal movement of the crushing belts.

4,285,374

## MOBILE WOOD SPLITTER

Edward R. Klingel, 405 Poplar St., Stroudsburg, Pa. 18360

Filed Sep. 14, 1979, Ser. No. 75,680

Int. Cl.<sup>3</sup> B27L 7/00

U.S. Cl. 144—193 A

1 Claim

1. A log splitting device for attachment to a motor vehicle, said log splitting device comprising:

an elongated rigid base member, said base member including an I-beam having a topmost flanged portion onto which a log to be split may be positioned;

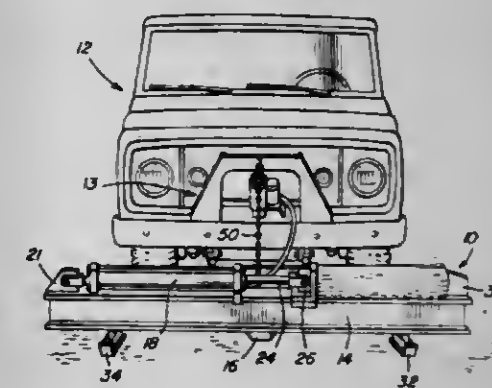
a ram slidably mounted to a first end of said topmost flanged portion of said I-beam, said ram including an upstanding plate abutable against a first end of said log and a piston member pivotally attached to said upstanding plate for facilitating a horizontal sliding movement of said plate along said topmost flanged portion of said I-beam;

hydraulic power means operably connected to said piston member for facilitating said horizontal movement of said plate, said hydraulic power means including a hydraulic

cylinder having one end pivotally attached to said topmost flanged portion of said I-beam, said piston member operably extending from and being movable relative to a second end of said hydraulic cylinder;

a cutting wedge member operably attached to a second end of said topmost flanged portion of said I-beam, said cutting wedge member being abutable against said second end of said log whereby said log may be forced against said wedge member in response to an extending movement of said piston member from said hydraulic cylinder to thereby facilitate the splitting of said log;

first guide means associated with said hydraulic cylinder, said first guide means being fixedly attached to said hydraulic cylinder and being abutable against said topmost flanged portion of said I-beam to prevent a lateral displacement of said hydraulic cylinder from said topmost flanged portion, said first guide means including a pair of downwardly extending clips which overlap an edge portion of said topmost flanged portion of said I-beam so as to permit a vertical upward movement of said hydraulic cylinder while preventing any lateral movement thereof; second guide means associated with said upstanding plate, said second guide means being fixedly attached to said upstanding plate and being slidably engageable with said



topmost flanged portion of said I-beam so as to prevent both lateral and vertical displacement of said upstanding plate and said piston member from said topmost flanged portion of said I-beam, said second guide means including a pair of downwardly extending and returned guide members which serve to overlap said edge portions of said topmost flanged portion of said I-beam so as to prevent both vertical and lateral movement of said upstanding plate;

a mounting frame connectible to a motor vehicle and having said I-beam fixedly secured thereto, said mounting frame including a pair of diverging legs, each having first ends fixedly securable to a bottommost flange of said I-beam and being further secured together by first and second cross members, said first cross member having a first mounting bracket extending upwardly therefrom, said first mounting bracket serving as a connection means for a chain hoist means, said second cross member having a pair of second mounting brackets extending laterally therefrom, said second mounting brackets being attachable to a structural member of said motor vehicle; and a pair of leg members extending downwardly from said I-beam to support said log splitting device from a supporting surface when in use.

4,285,375

## T-BAR RATCHETING SCREWDRIVER

J. Bruce Judson, 1711 Kenora Dr., Escondido, Calif. 92027

Filed Jan. 20, 1980, Ser. No. 161,587

Int. Cl.<sup>3</sup> B25G 1/08

U.S. Cl. 145—77

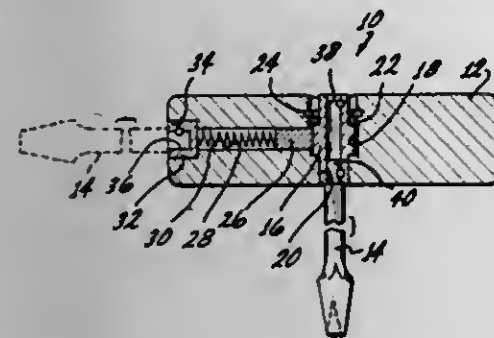
2 Claims

1. A T-bar ratcheting screwdriver assembly comprising in combination:



an elongated generally cylindrical handle for grasping in the hand including a socket fixed co-axially thereof for detachably receiving a screwdriver shank for rotation therewith,

ratchet rotor means having teeth formed on the outer diameter thereof, and mounted in a transverse bore substantially midway between the ends of said handle and having a rotary axis transverse to the axis of said handle and a shank receiving socket in each end thereof extending to and accessible to opposite sides of said handle for alternately



- detachably receiving a screwdriver shank for reversible rotation thereof by said handle, and
- a pawl member slideably mounted in a channel extending along the axis of said handle and biased into engagement with said teeth,
- a screwdriver stem having a shank portion for removably mounting in said socket for rotation therewith said handle includes a bore coaxially in one end thereof communicating with said channel, and
- a plug member having said socket therein press fitted into said bore.

4,285,376

#### RECLOSABLE PLASTIC BAG CONSTRUCTION MADE FROM A ONE PIECE EXTRUSION

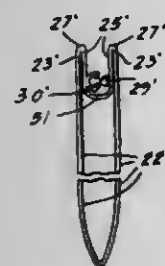
Steven Ausnit, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Jul. 7, 1977, Ser. No. 813,450

Int. Cl.<sup>3</sup> B65D 33/02

U.S. Cl. 150—3

7 Claims



1. A plastic bag construction made from a one piece extrusion, comprising:
  - a pouch body;
  - an infolded security closure forming a gusset extending into the top of the pouch body;
  - side wall panels defining the pouch body;
  - gusset walls integral in one piece at their top edges with the side wall panels and extending folded inwardly from said top edges and forming with said wall panels double thickness free upper end bag mouth flange extensions on the bag serving as digitally manipulatable bag opening pull flanges;
  - said gusset providing a seal for the bag mouth and having a lower closed portion adapted to be severed or punctured to open the gusset to gain access to contents within the bag body pouch;
  - and separable fastener means comprising complementary flexible fastener profiles which are integral parts of said extrusion located inwardly from said double thickness free

upper end bag mouth flange extensions and adjacent to the gusset, said profiles being separable by pulling said upper thickness bag mouth flange extensions apart and being reclosable to seal the bag after the gusset has been opened; said fastener profiles being formed integrally on said gusset walls.

4,285,377

#### SAFETY BOLT

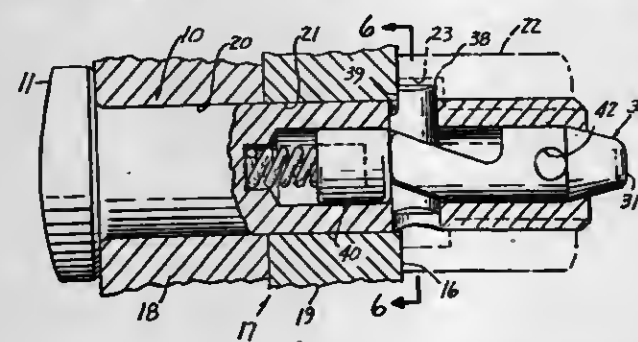
Dale H. Hart, Seal Beach, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Continuation-in-part of Ser. No. 781,851, Mar. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 757,574, Jan. 7, 1977, abandoned. This application Feb. 28, 1978, Ser. No. 881,141

Int. Cl.<sup>3</sup> F16B 39/04

U.S. Cl. 411—190

14 Claims



1. A safety bolt comprising: an element having a shank with an axis, the element having a first end and a second end, an axial passage opening onto one of said ends, and a laterally-extending passage in the shank and intersecting the axial passage; a dog in said laterally-extending passage slidably movable between an extending and a retracted position, whereby the dog extends beyond the maximum diameter of the shank in the extended position and retracts entirely within said shank in the retracted position, thereby being adapted to abut the back side of a workpiece into which the shank is inserted; a cam member axially movable in said axial passage and reactive with said dog to retract or to extend the same, said cam member having a pair of sloping cam surfaces which face in opposite lateral directions; a pair of oppositely facing spaced-apart follower surfaces on said dog, each said follower surface being parallel to and engaging a respective one of said cam surfaces in substantial surface-to-surface contact, whereby one set of said cam surfaces and follower surfaces causes movement of the dog in one direction of movement of the cam member and the other set causes movement of the dog in the other direction of movement of the cam member, said sets being in embracing relationship, whereby the lateral position of the dog is a unique function of the axial location of the cam member in the axial passage; and bias means biasing the cam member in its direction which forces the dog toward its extended position, the dog when extended when the shank is fully inserted in the workpiece preventing the removal of the bolt from the workpiece.

4,285,378

#### THREAD LOCK

Richard B. Wallace, Bloomfield Hills, Mich., assignor to The Oakland Corporation, Troy, Mich.

Continuation of Ser. No. 745,796, Nov. 29, 1976, abandoned.

This application May 8, 1978, Ser. No. 903,738

Int. Cl.<sup>3</sup> F16B 39/34; B05D 3/02

U.S. Cl. 411—258

18 Claims

1. A metal threaded member having in the thread grooves thereof a solid deposit of friction material effective to provide a frictional resistance to turning of the threaded member in thread-engaging relation to a companion threaded member, said deposit consisting essentially of a body of a uniform mixture throughout of a major proportion of uniformly dispersed

discrete particles of pre-cured thermoplastic resin adhered together to form a substantially solid continuum by a bonding resin cured in situ, said bonding resin forming a bond directly



between individual particles, substantially filling the spaces between the particles, and also forming an essentially permanent bond to the surfaces of the threads throughout the deposit area.

4,285,379

#### PASTER

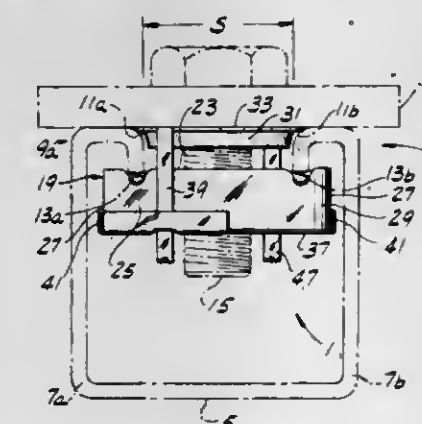
Joseph W. Kowalski, Florissant, Mo., assignor to B-Line Systems, Inc., Highland, Ill.

Filed Sep. 17, 1979, Ser. No. 76,461

Int. Cl.<sup>3</sup> F16B 39/00

U.S. Cl. 411—85

8 Claims



1. For securement to metal framing having a slot and inside and outside faces on opposite sides of the slot for attachment of parts to the framing through the slot from the outside of the slot, a fastener comprising:

an elongate body having a first face constituting an inside face and an opposite face constituting an outside face, opposite sides, and opposite ends, the width of said body between said sides being less than the width of the slot in the framing whereby the body may be generally aligned with the slot, entered into the slot and passed through the slot from the outside to the inside of the framing and then turned to extend in crosswise position relative to the slot for engagement of portions of the outside face of the body adjacent the ends of the body with the inside face of the framing at opposite sides of the slot;

means for clamping the body in place in its said crosswise position comprising a clamp member carried by the body on the outside face of the body for engagement with the outside face of the framing on opposite sides of the slot when the body is generally aligned with and entered into and passed through the slot and also when the body is turned to its said crosswise position; and retaining means for holding the clamp member in assembly with the body while permitting movement of the clamp member relative to said body between an extended position in which the clamp member is spaced away from the outside face of the body and a retracted position wherein the clamp member is more closely adjacent the outside face of the body, said retaining means comprising a retainer on the inside face of the body, and guide members extending from the clamp member on opposite sides of the body having a length

greater than the thickness of said body and projecting inwardly beyond the inside face of the body and said retainer when said clamp member is in its said retracted position, at least one of said guide members having a portion bent to provide spring finger means engageable with said retainer on the inside face of the body for providing spring action tending to draw the clamp member in the direction back toward the outside face of the body for clampwise engagement of the body and clamp member with portions of the framing on opposite sides of the slot.

4,285,380

#### PANEL FASTENER

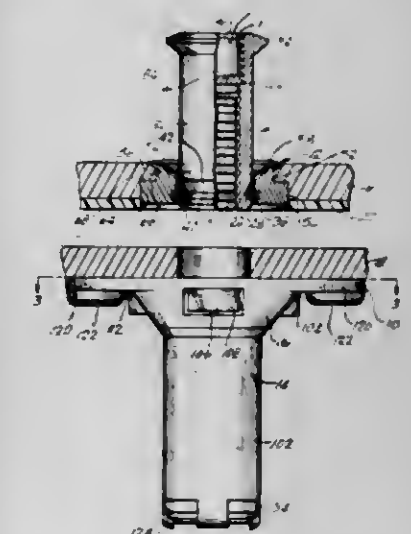
Bulent Gulistan, Woodland Hills, Calif., assignor to VSI Corporation, Pasadena, Calif.

Filed Mar. 30, 1979, Ser. No. 25,363

Int. Cl.<sup>3</sup> F16B 43/00

U.S. Cl. 411—103

12 Claims



1. In a panel fastener of the type having a stud assembly that has a stud and which is adapted to be attached to a substructure, a stud nut adapted to be attached to a panel and to engage the stud, and a retaining ring adapted to hold the stud nut to a top panel while permitting the stud nut to move along its axis for approaching toward and retracting away from the stud assembly, the retaining ring being in compressive radial bearing with the stud nut over a continuous range of axial positions of the stud nut with respect to the panel, an improvement which comprises:

- (a) a clear through bore in the stud nut;
- (b) an internally threaded section at one end of the bore;
- (c) a hardened wrenching insert at the other end of the bore having a wrenching socket adapted to receive a wrenching tool;
- (d) a thin plug in the bore between the wrenching insert and the internal threads to separate the two;
- (e) a grommet adapted for attachment to the top panel, and having a wall defining an axial bore for receiving the stud nut, a standoff base adapted for receipt in a counterbore in the top panel and for extending below the lower surface of the top panel to present a barrier to a gasket from moving radially inward towards the axis of the stud nut, an annular interior groove in the standoff portion opening into the axial bore and spaced from a lower surface of the standoff portion by a portion of the wall defining the axial bore, the groove receiving and capturing the retaining ring, a neck integral with and axially adjacent the standoff base, and having a major outer diameter less than the major outer diameter of the standoff base, and a seating and clamping section integral with and axially adjacent the neck, the seating and clamping section being adapted to be flared radially outward from the axis of the axial bore to define a conical seat for a head of the stud nut and to cooperate with the standoff base in clamping the grommet to the top panel.



4,285,381

## CURABLE COMPOSITION FOR HARD RUBBER AND THE USE THEREOF

Hiroshi Furukawa, Kobe, and Takahiko Tsuyuri, Asahi, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

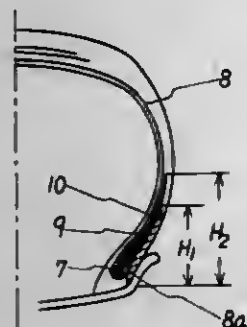
Filed Jan. 10, 1980, Ser. No. 158,314

Claims priority, application Japan, Jun. 18, 1979, 54-77179

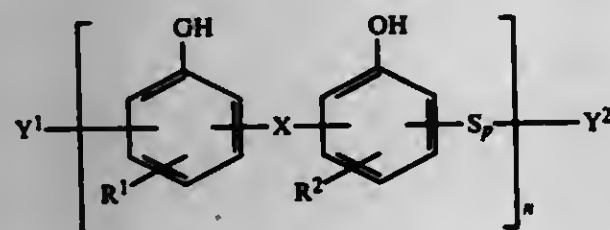
Int. Cl.<sup>3</sup> B60C 15/06

U.S. Cl. 152-362 R

3 Claims



1. A radial tire comprising a carcass ply composed of cords arranged in the radial direction of tire, the both end portions of the carcass ply being turned up at a bead to fasten, and a bead filler being positioned between the carcass ply and the turned-up end portion thereof and extending from a location just above a bead wire toward the side wall of the tire, said radial tire being improved in that said bead filler is made of a cured composition comprising (1) at least one rubber selected from the group consisting of natural rubber, a diene rubber and a diene copolymer rubber, (2) a sulfide resin as a curing agent having the following general formula:



wherein X is methylene group, ethylene group, —S— or —S—S—, R<sup>1</sup> and R<sup>2</sup> are independently a C<sub>1-10</sub> alkyl or alkylene group, Y<sup>1</sup> and Y<sup>2</sup> are independently the residue of a phenol compound, p is an integer of 2 to 8, and n is an integer of 2 to 5, (3) a phenolic thermosetting resin and (4) a hardener for hardening said thermosetting resin.

4,285,382

## TIRE REPAIR PATCH

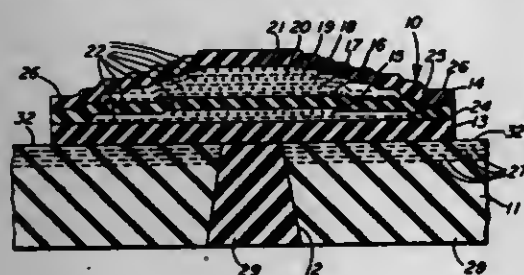
Jobbie DiRocco, 3424 Sweetbrier Ave., Akron, Ohio 44321, and David J. DiRocco, 7090 Grove Rd., Clinton, Ohio 44216

Filed Jul. 10, 1980, Ser. No. 167,460

Int. Cl.<sup>3</sup> B60C 21/02, 21/04

U.S. Cl. 152-367

14 Claims



1. A tire repair patch for application to the inner surface of a tire at an injured portion comprising a plurality of overlapping plies of reinforcing cords and at least some of said plies having overlapping end portions, a base cushion gum layer

underlying said plies at said underside for engagement with said inner surface of the tire, a top cushion gum layer overlying said plies at the opposite side of the patch from said underside, an intermediate cushion gum layer interposed between at least two of said plies of reinforcing cords, each of said overlapping plies being coated with rubber and having a thickness less than the thickness of said intermediate cushion gum layer, said intermediate cushion gum layer extending continuously between said overlapping end portions of at least two of said reinforcing plies, said base cushion gum layer being adapted for adherence to the inner surface of the tire to provide reinforcement of the tire in the area of said patch, and said reinforcing plies interposed between said base cushion gum layer and said intermediate cushion gum layer interacting with the remainder of said plies and said base and top cushion gum layers for distributing the forces transmitted through said patch at the injured portion of the tire.

4,285,383

## ADJUSTABLE VEHICLE SCREEN

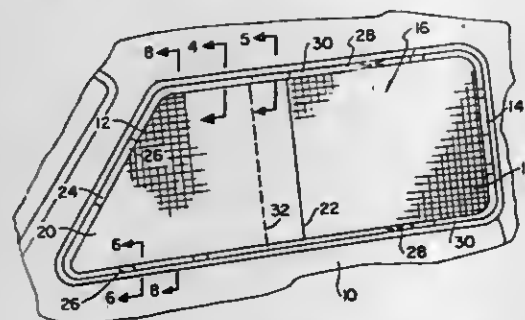
Ronald L. Steenburgh, 662 Bellaire St., Peterborough, Canada (K9J 3Y6)

Continuation-in-part of Ser. No. 848,105, Nov. 3, 1977. This application Nov. 22, 1978, Ser. No. 956,474

Int. Cl.<sup>3</sup> E06B 9/06

U.S. Cl. 160-374

10 Claims



1. An adjustable vehicle screen comprising a closed frame, said frame being disposed residing in a plane, said frame including a plurality of alternate elongated elements, said elongated elements slidably, telescopically engaged to one another, a screen, said screen including a plurality of screen elements, each said element having a plurality of circularly shaped turns each disposed having a coil-like shape when there is an absence of forces applied thereto in an outward radial-like fashion, said plurality of elements disposed in side by side parallel relationship adjacent one another, adjacent said elements each having said turns thereof interlocking with each other, wherein each of said turns of said each element may be disposed at selected distances apart from one another along the length of said coil-like shape, means to selectively shorten and lengthen said distances upon first opposed forces being applied to the ends of said plurality of elements, means to selectively shorten and lengthen the distance separating the longitudinal axes of said each of said adjacent elements at selected distances apart when second opposed forces are applied to said adjacent elements, means to dispose said circularly shaped turns into elliptically shaped turns when said second opposed forces are applied to adjacent elements directed away from one another, wherein said first opposed forces are at right angles to said second opposed forces, the marginal edges of said screen slidably engaged and captured from disengagement with said frame, said screen residing within said plane, whereby said frame and said screen may be simultaneously, selectively, independently and concurrently expanded and contracted in the length of said coil-like shape and the distance defined by end most said elements upon the application of said first and said second opposed forces to selective portions of said marginal edges of said screen, wherein said frame and said marginal edges of said screen are configured to be in a closed polygonal shape.

4,285,384

## APPARATUS AND METHOD FOR TIE BAR NUT DRIVE SYSTEM

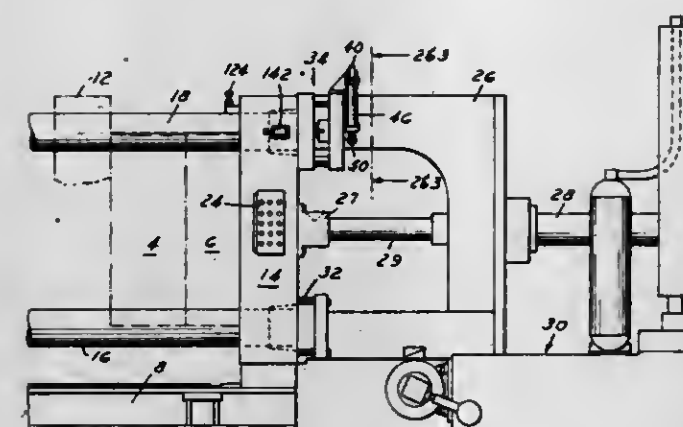
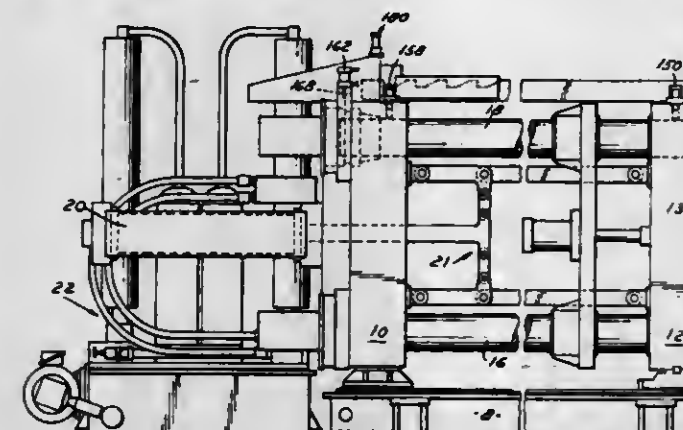
William G. Wender, Hamilton, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 31, 1979, Ser. No. 89,829

Int. Cl.<sup>3</sup> B22D 17/10, 17/26

U.S. Cl. 164-1

15 Claims



1. An apparatus for use with a threaded fastener in a clamp type machine having a front and rear platen spaced apart and with a moveable platen therebetween wherein said fastener includes a threaded member having front locking nut means and rear locking nut means used for restraining said front and rear platens, the improvement comprising means for removing and holding said front locking nut means of said threaded fastener captive on said front platen of said machine, said holding means supporting said front locking nut means in engaging contact with said front platen during removal of said front locking nut means, a ring gear means in sliding engagement on said front locking nut means is connected to a speed reducer means which can operatively disengage and engage said front locking nut means from said threaded member.

4,285,385

## METHOD FOR THE PRODUCTION OF HEAT EXCHANGERS

Masakatsu Hayashi, Ushikunichi, Takeo Tanaka, Minorimachi; Tatsuo Natori, Kashiwa; Tatsushi Aizawa, Shimoinayoshi; Shigeru Kojima, Kasukabe, and Takeo Senshu, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 22, 1979, Ser. No. 51,141

Claims priority, application Japan, Jun. 28, 1978, 53/77417

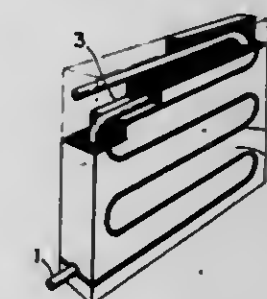
Int. Cl.<sup>3</sup> B22C 9/04; B22D 19/00

U.S. Cl. 164-9

2 Claims

1. A method for the production of a heat exchanger comprising the steps of:  
casting a mold forming material in a fluid state into continuous, three-dimensional cavities in plastic patterns to produce pattern-retaining molds;  
removing by heating said plastic patterns from said pattern-retaining molds to produce fin molds;  
assembling a plurality of said fin molds with a heat-transmit-

ting pipe shaped beforehand into a substantially serpentine form in such a manner that said fin molds enclose said heat-transmitting pipe with suitable spacing intervals defined between said fin molds themselves and between said fin molds and said heat-transmitting pipe, thereby to produce a fin block mold formed therein with continuous, three-dimensional cavities;



casting by introducing molten metal under pressure into said continuous, three-dimensional cavities in said fin block mold and into said spacing intervals and allowing said molten metal to solidify; and  
removing the material of said fin block mold, thereby producing said heat exchanger in which a porous metal block formed with continuous, three-dimensional pores and fin plates connected to said porous metal block which are unitarily secured to said heat-transmitting pipe.

4,285,386

## CONTINUOUS CASTING METHOD AND APPARATUS FOR MAKING DEFINED SHAPES OF THIN SHEET

Mandayam C. Narasimhan, Seekonk, Mass., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

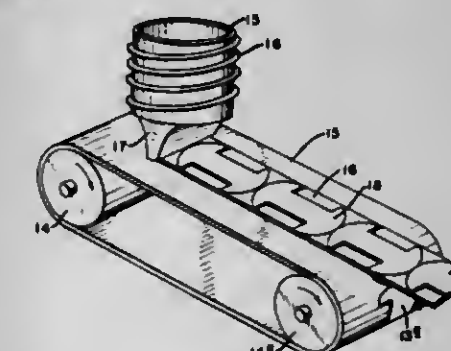
Filed Mar. 16, 1979, Ser. No. 20,906

The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> B22D 11/06, 25/00

U.S. Cl. 164-463

15 Claims



2. The method of making essentially flat metal sheets having predetermined defined outline directly from molten metal comprising:

- a forcing the molten metal under pressure through a slotted nozzle located in close proximity to a chill surface which is provided with raised and/or lowered essentially flat domains having the outline of the desired shape of the shaped metal sheet product, said domains being defined by a bordering wall having a height of at least about 0.02 millimeter, said bordering wall being formed at an angle deviating not more than about 20° from the normal to the chill surface and said nozzle having its slot arranged generally perpendicular to the direction of movement of the chill surface.
- advancing the chill surface, at a predetermined speed; and
- quenching the molten metal in contact with the chill surface to permit the metal to solidify on the chill surface to form the essentially flat metal sheets having an outline corresponding to that of the bordering walls of said domains.



4,285,387

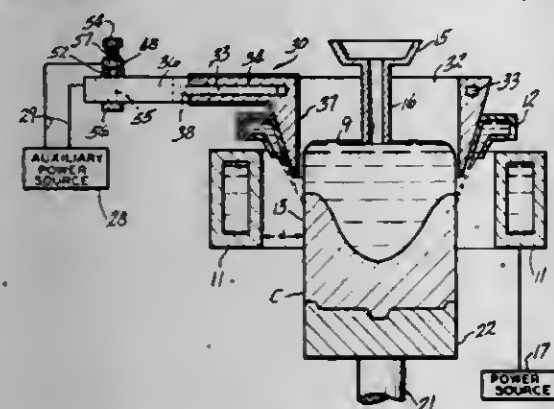
# TRANSFORMER-DRIVEN SHIELD FOR ELECTROMAGNETIC CASTING

Peter J. Kindlmann, Northford; John C. Yarwood, Madison;  
Gary L. Ungarean, Woodbridge, and Derek E. Tyler, Cheshire,  
all of Conn., assignors to Olin Corporation, New Haven,  
Conn.

Filed Jan. 14, 1980, Ser. No. 111,485  
Int. Cl.<sup>3</sup> B22D 27/02

U.S. Cl. 164-603

12 Claims



1. In an apparatus for electromagnetically forming molten materials into a casting of desired shape comprising means establishing a casting zone for receiving and electromagnetically forming said molten material into said desired shape, said receiving and forming means including an inductor carrying a driven current for generating a magnetic field, and a non-magnetic shield for attenuating said magnetic field, said inductor and non-magnetic shield being positioned relative to each other to enable inducing of a current by said inductor in said non-magnetic shield, the improvement comprising: means for actively driving said non-magnetic shield to establishing a bucking current therein.

4,285,388

# COOLING SYSTEM FOR CONTINUOUS CASTING OF BAR PRODUCTS

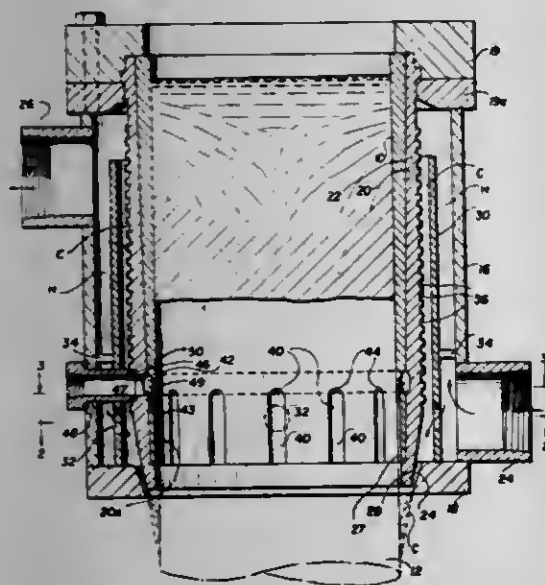
Gus Sevastakis, 5645 Angola Rd., Toledo, Ohio 43615  
Filed Dec. 29, 1978, Ser. No. 974,317

Int. Cl.<sup>3</sup> B22D 11/00

U.S. Cl. 164-444

1 Claim

U.S. Cl. 165-1



1. A die and cooler assembly for use in a continuous vertical casting operation, the assembly comprising, a vertical die having a vertical bar forming passage for receiving molten material and for casting the same into a product, with the product emerging from the bottom of the die, and a cooling sleeve surrounding and in engagement with the die throughout a substantial portion thereof, a cooling jacket surrounding the cooling sleeve and defining therewith a space for receiving

coolant, said cooling sleeve having substantially throughout its outer surface a plurality of annular channels for receiving coolant, and wherein said annular channels in the cooling sleeve extend continuously in helical fashion for conveying coolant in contact with the cooling sleeve substantially uniformly throughout a substantial length of the cooling sleeve, and wherein there is further included partition means surrounding and spaced from the cooling jacket and defining a first coolant passage between the partition means and the cooling sleeve, a first inlet means including an inlet port in a lower part of the jacket and a port in the partition for introducing a coolant into the first coolant passage, an outlet port in an upper part of the jacket for discharging coolant, and wherein the cooling sleeve at its lower end is spaced from the cooling jacket to define a passage between the sleeve and the jacket communicating with the port in the partition for permitting coolant to impinge against the cast product emerging from the die, and wherein there is further included a barrier extending between the partition means and the cooling jacket preventing coolant from the inlet port from flowing upwardly into the space between the partition means and the jacket, and wherein said channels in the cooling sleeve are helical grooves formed in the sleeve and having a generally U-shaped cross section, and wherein said die has, on its inner lower surface, at least one coolant passage formed therein, and wherein there is further included a coolant passage means extending through the coolant sleeve and the die and communicating with said coolant passage in the die for conveying coolant to the inner surface of the die and the outer surface of the cast product, and wherein there is further included another inlet in the jacket for introducing coolant into said coolant passage means and to said coolant passage on the inner surface of the die independently of the coolant introduced in said first inlet, said coolant passage means being isolated from communication with the space between the jacket and the sleeve.

4,285,389

# THERMAL ENERGY STORAGE APPARATUS

Jack F. Horton, 4572 Via Marina #203, Marina del Rey, Calif. 90291

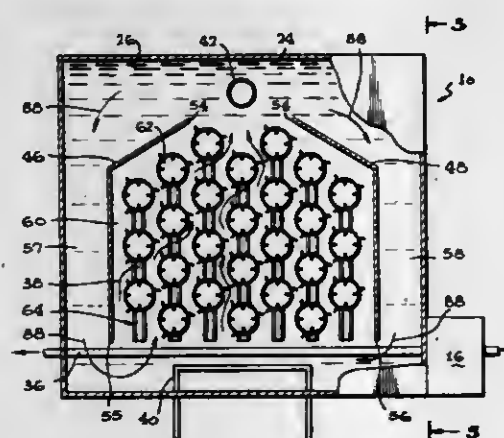
Filed Dec. 26, 1979, Ser. No. 106,770

Int. Cl.<sup>3</sup> F28D 21/00

1 Claim

U.S. Cl. 165-1

21 Claims



20. A method of storing thermal energy comprising the steps of:

heating a lower portion of a bath liquid thereby creating a convection current in said bath liquid;  
rotatably mounting one or more containers holding a heat storage material in a portion of said convection current;  
rotating said containers by said convection current; and  
isolating said rotatably mounted containers from a downwardly moving portion of said convection current.

4,285,390

# METHOD OF AND APPARATUS FOR SUPPLYING TREATED AIR TO SPACES HAVING DIFFERENT COOLING REQUIREMENTS

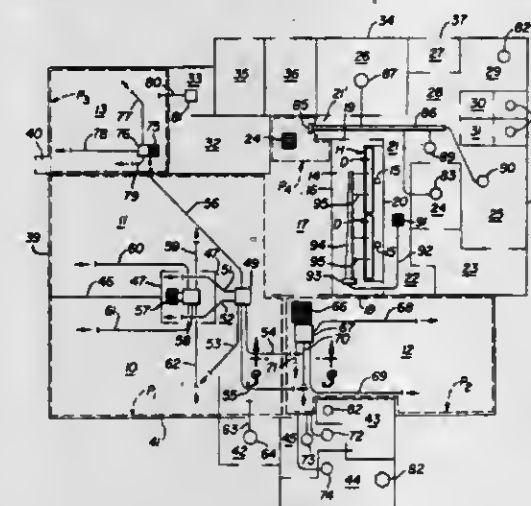
Dennis M. Fortune, Longmont, and Victor D. Molitor, Denver,  
both of Colo., assignors to Stainless Equipment Company,  
Englewood, Colo.

Filed Apr. 16, 1979, Ser. No. 30,117

Int. Cl.<sup>3</sup> F25B 13/00; F24F 3/14

U.S. Cl. 165-2

14 Claims



1. A method for supplying treated air to a first space and a second space, wherein air may be transferred from said first space to said second space and said second space requires additional cooling of the transferred air and contains cooking equipment and means for removing heated gases and products of cooking from above said cooking equipment, which comprises:

cooling fresh air and supplying the same to said first space;  
removing a first portion of air from said first space, cooling said first portion and reintroducing said cooled first portion into said first space as treated, recirculated air;  
removing a second portion of air from said first space and passing at least a part of said second portion into engagement with water, so as to chill said water and also cool said air of said part of said second portion;  
introducing said cooled part of said second portion of air into said second space;  
passing the water chilled by engagement with said part of said second portion in heat exchange relationship with air to be introduced into said first space; and  
alternatively transferring heat from said heated gases and products of cooking to a heat transfer liquid and passing said heat transfer liquid in heat exchange relationship, directly or indirectly, with said incoming fresh air.

4,285,391

# ELECTRICAL SYSTEM FOR FOOD SERVICE DEVICES

Howard Bournier, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Nashville, Tenn.

Filed Aug. 29, 1979, Ser. No. 70,680

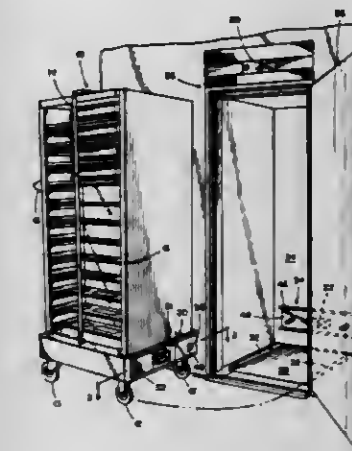
Int. Cl.<sup>3</sup> F25B 29/00

U.S. Cl. 165-30

8 Claims

1. In apparatus for storing, refrigerating and heating food items, including covered trays, a movable cart having a plurality of shelves to receive the trays, a refrigerator for receiving the cart with trays therein, and wherein said trays are formed with dish holding compartments and openings for receiving other dishes and said shelves have electrical heating areas positioned under said openings and dishes in said openings are disposed thereon to be heated before serving, the improvement in an electrical control and supply apparatus for the heater areas comprising: a switch means adjacent to each of the one or more shelves to control the application of electrical power to the heating areas of said shelves, said switch means including a sensing lever having a free end projected into an area above the shelf where a covered tray placed on a shelf may engage a

sensing lever to operate said switch means, wherein a cover for each tray extends over a portion of each tray whereby when a covered tray has a first orientation on a shelf the cover will



engage said sensing lever to actuate said switch means, and when a covered tray has a second orientation on a shelf the cover will not engage said sensing lever.

4,285,392

# HEATING AND COOLING SYSTEM

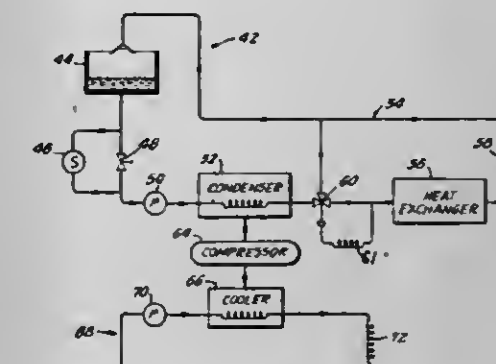
Robert L. Rannow, New York, N.Y., assignor to Thermocycle, Inc., New York, N.Y.

Filed Jul. 27, 1979, Ser. No. 61,397

Int. Cl.<sup>3</sup> F24F 3/00

U.S. Cl. 165-50

3 Claims



1. In a heating and cooling system for a building, including a cooling tower, cooling tower water circuit means for circulating the water of said cooling tower, a heated water circuit in said building, condenser means for providing heat to said heated water circuit and compressor means operating said condenser means, the improvement comprising:  
means for cleaning and treating said cooling tower water;  
means for directly injecting said cleaned and treated cooling tower water into said heated water circuit to thereby circulate said cleaned and treated cooling tower water in the heated water circuit, thus eliminating the need for dual circulated condensers in said system and;  
bypass means for bypassing at least a portion of said water passing from said cooling tower water circuit to said heated water circuit back into said cooling tower water circuits.



4,285,393

**HEAT EXCHANGER FOR HIGH-TEMPERATURE GASES**  
Wolfgang Mann; Wolfgang Niemeyer, and Helmut Swars, all of Bergisch Gladbach, Fed. Rep. of Germany, assignors to GHT, Gesellschaft für Hochtemperaturreaktor-Technik mbH, Bergisch Gladbach, Fed. Rep. of Germany

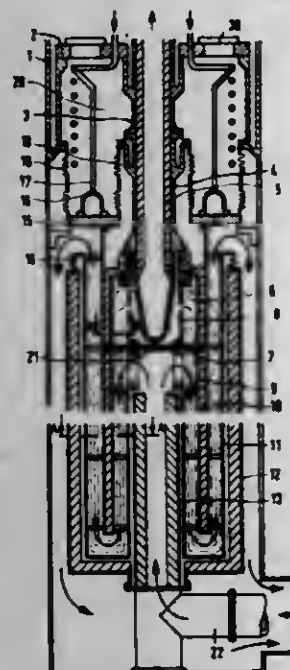
Filed Oct. 22, 1979, Ser. No. 87,255

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846581

Int. Cl.<sup>3</sup> F28D 7/06; F28F 9/02

U.S. Cl. 165—76

11 Claims



1. Heat exchanger for high temperature gases, particularly for the heat transfer from a primary gas circuit to a secondary gas circuit in a high temperature nuclear reactor, with the secondary gas flowing counter-current to the primary gas, comprising a heat exchanger housing, a plurality of U-tubes with vertical legs connected in parallel through which the secondary gas flows, contained in the housing, passageways adjacent the legs of the U-tubes for the counter-current flow of primary gas, an inlet and an outlet in the housing for the introductions and discharge of primary gas into and out of the passageways, a hot gas collector into which hot secondary gas from the hot end of the U-tubes discharges, a cold gas collector from which the colder secondary gas enters the U-tubes, said U-tubes at their hot ends being fastened to said hot gas collector, said hot gas collector being fixedly connected in a longitudinal direction at the housing, and said cold gas collector being flexibly fastened at the housing.

4,285,394

**MANIFOLD HEAT EXCHANGER**

James M. Stewart, 115 Sylvania Way, Greenville, S.C. 29606

Filed Dec. 12, 1977, Ser. No. 859,977

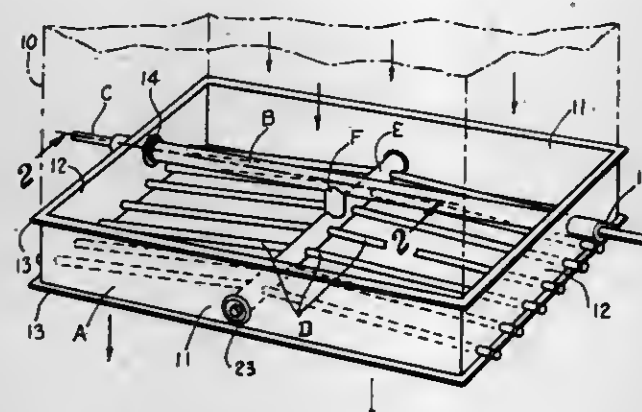
Int. Cl.<sup>3</sup> F28D 15/00

U.S. Cl. 165—104.21

5 Claims

1. Heat pipe heat exchange apparatus for conducting heat between a gas stream and a liquid comprising:  
an elongated substantially horizontal manifold;  
a liquid carrying pipe extending within said manifold in spaced relation thereto;  
a plurality of spaced heat tubes having a vaporizable liquid medium partially filling same;  
means mounting said heat tubes in heat exchange relation to said gas stream in a generally side-by-side manner for individual contact with said gas stream;  
conduit means communicating with said manifold for collecting said liquid medium from said heat tubes for controlling the liquid level therein and for conveying vapor-

ized medium into said manifold in heat exchange relation to said liquid within said pipe;  
said spaced heat tubes having one end carried by said conduit means being open thereto and an opposing end extending away therefrom;  
said heat tubes being substantially horizontal relative to said conduit means so that said liquid medium in said heat tubes



is maintained at a level at which said tubes are only partially filled along substantially the entire length thereof; and  
said heat tubes being carried by opposing sides of said conduit means extending outwardly from both said sides in substantially horizontal relationship.

4,285,395

**STRUCTURE OF FLUID CONDENSING AND HEAT CONDUCTING SURFACE OF CONDENSER**

Kenzo Masutani; Akira Horiguchi, and Hiroyuki Samitomo, all of Osaka, Japan, assignors to Hisaka Works, Limited, Osaka, Japan

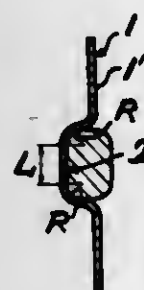
Filed Aug. 3, 1979, Ser. No. 63,407

Claims priority, application Japan, Aug. 3, 1978, 53-95209

Int. Cl.<sup>3</sup> F28B 9/08

U.S. Cl. 165—110

1 Claim



1. A structure of a fluid condensing and heat conducting surface of a condenser plate characterized in that completely recessed grooves for collecting fluid are provided on said surface integrally therewith, said grooves each having two rounded corners of a predetermined radius with the centers of said radii being spaced from each other, and positioned on the same side of said plate, wherein the distance between the centers of radii of rounded corners of said groove is made less than 3 mm.

4,285,396

**STEAM GENERATOR TUBE SUPPORT SYSTEM**

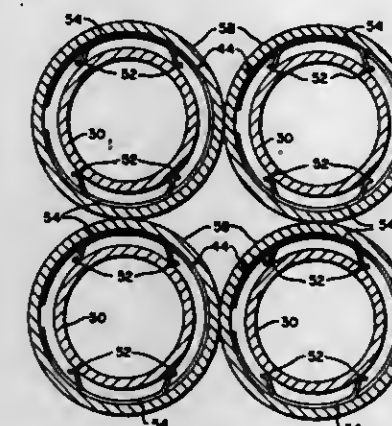
Frank Schwoerer, Chevy Chase, Md., and William J. Wachter, Wexford, Pa., assignors to Wachter Associates, Inc., Gibsonia, Pa.

Filed Jan. 25, 1979, Ser. No. 6,415

Int. Cl.<sup>3</sup> F28D 7/00; F22B 37/24

U.S. Cl. 165—162

11 Claims



1. A system for supporting a bundle of tubes against lateral movement in a heat exchanger in which a first fluid flows through the tubes and a second fluid flows past the outer walls of the tubes so as to transfer heat from one fluid to the other, said system comprising spring collar devices each surrounding a tube forming said bundle with adjacent spring collar devices being in engagement with each other to form a cluster of such spring collar devices to laterally support the bundle of tubes, each spring collar device having at least one resilient tube contacting portion for independent resilient lateral support of a tube, the resilient tube contacting portion of each spring collar device comprising a spring tab, tube plate means to support the ends of the tubes for said first fluid flow through the tubes, and a band encircling the outer peripheral surface of said cluster to compressively hold said collar devices together at a spaced relation from said tube plate means while the spring collar devices permit a limited degree of lateral movement of each tube against its encircling spring collar device.

4,285,397

**HEAT-EXCHANGERS WITH PLATE-LIKE HEAT EXCHANGE ELEMENTS**

John D. B. Östbo, Byrågen 84-86, 151 52 Södertälje, Sweden

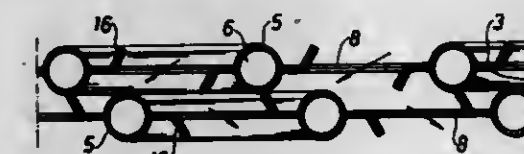
Continuation of Ser. No. 756,156, Jan. 3, 1977, abandoned. This application Oct. 15, 1979, Ser. No. 84,962

Claims priority, application Sweden, Jan. 22, 1976, 7600671; Dec. 29, 1976, 7614704

Int. Cl.<sup>3</sup> F28D 9/02; F28F 9/12

U.S. Cl. 165—163

12 Claims



1. In a heat exchanger comprising an array of at least two plate-like heat exchange elements positioned adjacent one another, each of said plate-like heat exchange elements including at least one passageway defined by a bulge in a portion of the wall of said plate-like heat exchange element, coupling means extending between and integrally attached to adjacently disposed plate-like heat exchange elements for providing a transverse flow conduit connecting a first passageway in a first of said plate-like heat exchange elements with a second passageway in a second of said plate-like heat exchange elements, and flow means for providing a flow passage through said

array of plate-like heat exchange elements, the improvement which comprises:

said array of plate-like heat exchange elements each including a plurality of apertures extending transversely through wall portions thereof, with said apertures in said first plate-like heat exchange element axially offset from a further plurality of apertures formed in said adjacently disposed second plate-like heat exchange element,  
said array of plate-like heat exchange elements each further including a separate pair of parallel flap means extending outwardly in opposite directions from opposite sides of each aperture, with each of said flap means on said first plate-like heat exchange element forming a substantially perpendicular angle with each of said flap means on said second plate-like heat exchange element; and means for substantially reversing the direction of fluid while flowing through said array, thereby creating turbulence and significantly improving the heat transfer within said heat exchanger between said fluid and a further fluid flowing through said passageways in said elements.

4,285,398

**DEVICE FOR TEMPORARILY CLOSING DUCT-FORMERS IN WELL COMPLETION APPARATUS**

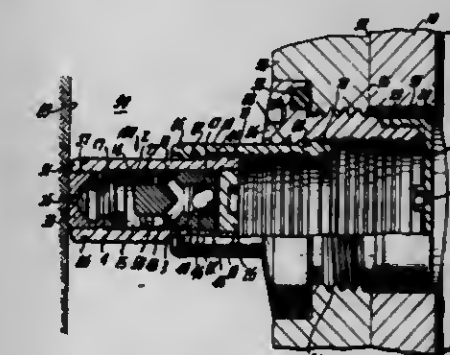
Solis M. Zandmer, deceased, late of Freeport, The Bahamas, and by Herbert M. Zandmer, executor, 1200 S. Flagler Dr., Apt. 1104, West Palm Beach, Fla. 33401

Continuation of Ser. No. 953,119, Oct. 20, 1978, abandoned, which is a continuation of Ser. No. 743,070, Nov. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 565,363, Apr. 7, 1975, abandoned. This application Oct. 19, 1979, Ser. No. 86,522

Int. Cl.<sup>3</sup> E21B 49/10

U.S. Cl. 166—100

38 Claims



1. A duct-forming device for use in well completion apparatus of the kind, wherein a bore hole casing is positioned in a bore hole and duct-forming devices of acid-resistant metal are secured at spaced levels of the casing in alignment with holes machined in the casing wall, and wherein, upon pressurizing the casing space, each duct-forming device is laterally extended from the casing for making contact with a producing formation, each of said duct-forming device comprising:

- (a) a terminal sleeve adapted to make contact with the producing formation when the duct-forming device has been laterally extended, said terminal sleeve having passageway means for establishing communication between said formation and the interior space of said duct-forming device;
- (b) a passage-forming removable piston assembly within said interior space of the duct-forming device and including means defining passages through said piston assembly and a piston means movable between:
  - I. an initial position in which the piston means permits fluid flow through the passageway means of (a);
  - II. a blocking position in which said piston means blocks fluid flow through said passageway means of (a); and
  - III. an ultimate position in which the piston means and the entire piston assembly are forced from the interior space



of said duct-forming device toward and into the casing space;

(c) an acid and/or alkali-soluble closure cap having hole means, said closure cap being mounted on said duct-forming device adjacent the end at which the duct-forming device is secured to said casing; and

(d) an acid and/or alkali-soluble flow-impeding means located within the interior of said duct-forming device and being interpositioned between said closure cap (c) and said piston assembly (b), whereby acidic or alkaline liquid forced down said casing space impinges on and dissolves that closure cap, while simultaneously passing through said hole means of said closure cap to make contact with and dissolve said flow-impeding means, said liquid, after having eaten through said flow-impeding means flowing through the passages of said piston assembly and through the passageway means in said terminal sleeve into said formation while, depending on its flow rate and its pressure, said liquid gradually moves said piston means of said piston assembly from said initial position (I) into said blocking position (II) to block the communication between the formation and the interior of said duct-forming device, and after said liquid has substantially totally dissolved said flow-impeding means and said closure cap and the formation pressure exceeds the pressure within the interior of said duct-forming device, fluid from said formation forces said piston assembly, including the piston means, towards and into said casing space, said means defining passages through said piston assembly being configured to permit flow from one side of said piston to the opposite side thereof through said terminal sleeve (a) in a direction from said casing toward said formation when said flow-impeding means has been dissolved and when said piston means is in said initial position (I), said piston means including blocking means for blocking flow through said passageway means when said piston means is in said blocking position (II).

4,285,399

# APPARATUS FOR SETTING AND ORIENTING A WHIPSTOCK IN A WELL CONDUIT

Arvie E. Holland; Douglas C. Wright, both of Lafayette, La.; John R. Baker, Houston, and Alfred R. Curington, Woodlands, both of Tex., assignors to Baker International Corporation, Orange, Calif.

Filed Jul. 21, 1980, Ser. No. 170,458  
Int. Cl.<sup>3</sup> E21B 7/08, 23/00, 47/024

U.S. Cl. 166—113

7 Claims



1. An apparatus for setting and orienting a whipstock in a well conduit, comprising: an annular packer mountable in fixed relationship to the well casing, said packer having a key element on its inner periphery; a whipstock anchor having a shaft portion insertable in the bore of said packer, said shaft portion having a key element cooperable with said key element on said packer to angularly fix the whipstock anchor in relation to said packer, said whipstock anchor having a socket portion rotat-

ably mounted on the top of said shaft portion; means in said socket portion for securing a whipstock in fixed relationship therewith; means for indicating the angular position of the tool guiding face of the whipstock relative to said key element on said whipstock shaft; means for locking said whipstock socket to said shaft to position the whipstock face at a pre-selected angular position relative to said key element on said whipstock shaft prior to insertion in the well conduit; and means for securing said whipstock anchor to said packer with said key elements in engaged relationship.

4,285,400

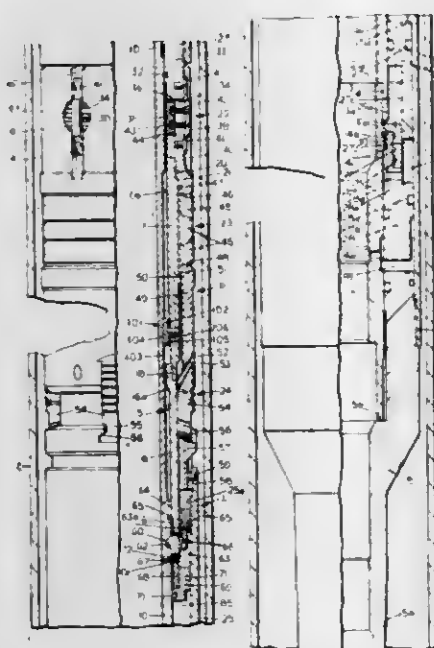
# RELEASING TOOL FOR PRESSURE ACTIVATED PACKER

Albert A. Mullins, II, Humble, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Jul. 14, 1980, Ser. No. 168,888  
Int. Cl.<sup>3</sup> E21B 23/04, 33/128, 33/129

U.S. Cl. 166—179

5 Claims



1. A releasing tool for use in releasing a packer set in a well casing and having a normally pressure balanced annular releasing piston disposed in an annular chamber surrounding an inner annular mandrel body, and a pair of ports respectively connecting between the bore of the packer body and said annular chamber at opposite ends of said piston, said releasing tool comprising: a tubular housing insertable within the bore of the packer body; means within said tubular housing defining a first chamber at atmospheric pressure and a second chamber exposed by an external port to existing tubing pressure; spaced sealing means on said housing isolating one of said packer ports and connecting said isolated port to said second chamber port; and means responsive to an increase in tubing pressure to interconnect said first and second chambers, thereby producing a pressure imbalance on said packer releasing piston to effect said shifting of the releasing piston to release the packer.

4,285,401

# ELECTRIC AND HYDRAULIC POWERED THERMAL STIMULATION AND RECOVERY SYSTEM AND METHOD FOR SUBTERRANEAN WELLS

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., Commerce, Calif.

Filed Jun. 9, 1980, Ser. No. 157,745  
Int. Cl.<sup>3</sup> E21B 43/12, 43/24

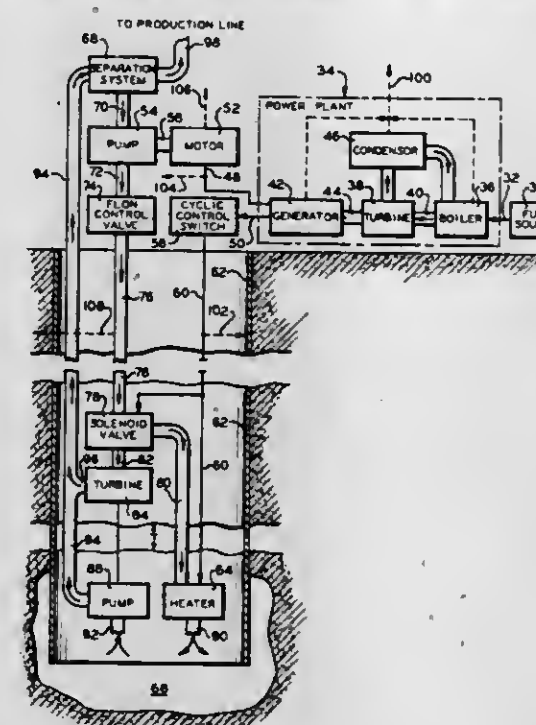
U.S. Cl. 166—303

25 Claims

1. A system for thermally stimulating and recovering produced fluid from a subterranean well, comprising: a source of pressurized fluid; an electric power source for generating electric energy; a heater means positioned in the well for thermal stimulation and having a fluid inlet connected to said fluid

source, a fluid outlet to the well, and a heating element in said heater connected to said electric power source for converting said electric energy into heat energy; and a fluid driven pump means connected to said fluid source for pumping produced fluid from the well, said pressurized fluid flowing through said heater means and receiving heat energy from said heating element to cool said heater means and to thermally stimulate the well.

15. A method for thermally stimulating and recovering produced fluid from a subterranean well comprising:



- supplying electric energy to the bottom of the well;
- directing a stream of pressurized fluid to said bottom of the well;
- converting said electric energy into heat energy to thermally stimulate the well;
- transferring a portion of said heat energy to said fluid stream and utilizing said fluid stream to thermally stimulate the well; and
- utilizing hydraulic energy in said fluid stream to pump the produced fluid from the well.

4,285,402

# METHOD AND APPARATUS FOR STIMULATING OIL WELL PRODUCTION

Emmet F. Brieger, Bonito Rt., Nogal, N. Mex. 88341

Filed Apr. 28, 1980, Ser. No. 144,688

Int. Cl.<sup>3</sup> E21B 33/129, 34/10, 37/00

U.S. Cl. 166—311

9 Claims

1. Apparatus for cleaning perforations in earth formations traversed by a well bore where the well bore contains a well packer and production tubing and where production is from perforations below the packer and through the production tubing to the earth's surface, said apparatus comprising:

- an elongated tool body having an upper end adapted for coupling to a string of pipe, said tool body being sized for passage through said production tubing;
- packer means on said tool body for movement between a retracted position for passage through said production tubing and an expanded position in sealing engagement with said production tubing;
- means in said tool body for passing fluid in only one direction from said upper end in said tool body to the exterior of said tool body at a location above said packer means;
- bypass means in said tool body for providing a fluid bypass extending through said packing means and opening to the exterior of said tool body above and below said packing means; and
- closure means normally closing said bypass means, said closure means being responsive to a selected pressure

differential across said packer means for opening said bypass means.

7. A method for cleaning perforations in earth formations traversed by a well bore where the well bore contains a well packer and production tubing and where production is from perforations below the packer and through the production tubing to the earth's surface, the method comprising:

- disposing a stimulation tubing within a production tubing;
- packing off the stimulation tubing in a selected area of a production tubing at a location above the perforations to be cleaned;



reducing the pressure in the annulus between the stimulation tubing and the production tubing above the selected area packed off in the production tubing; and when the pressure differential across said selected areas reaches a preselected value, opening a bypass across said selected area to place the production tubing below said selected area in fluid communication with the annulus between the stimulation tubing and production tubing above said selected area.

4,285,403

# EXPLOSIVE FIRE EXTINGUISHER

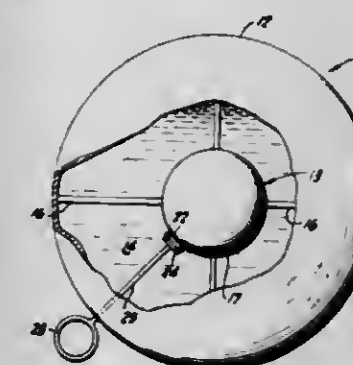
Cedric M. Poland, 1850 Carter Dr., Reno, Nev. 89509

Filed Nov. 9, 1979, Ser. No. 92,744

Int. Cl.<sup>3</sup> A62C 35/02

U.S. Cl. 169—28

3 Claims



- An explosive fire extinguishing device comprising:
  - a spherical, frangible outer shell;
  - a spherical, frangible inner shell centrally positioned within said outer shell, said inner shell containing an explosive charge;
  - means for supporting said inner shell in a centrally located position within said outer shell comprising at least one



rigid support leg extending between said inner shell and said outer shell;

d. a fluid medium contained by said outer shell, said fluid medium generally filling the void between said inner shell and said outer shell; and,

e. means for detonating said explosive charge comprising an open ended cylinder intersecting and positioned within said inner shell, one open end of said cylinder being in communication with said fluid medium, the other open end of said cylinder enclosing a percussion cap extending into said explosive charge, a piston positioned within said cylinder and capable of sliding axially away from said one open end of said cylinder in response to an increase in pressure of said fluid medium, said piston including a firing pin directed toward said other open end of said cylinder and said percussion cap, a removable safety closure member positioned over said one open end of said cylinder, thereby isolating said piston from said fluid medium and preventing said piston from sliding in response to any increase in pressure of said fluid medium, and a connecting member attached to said closure member and extending outside said outer shell enabling selective removal of said closure member from said open end of said cylinder so that said firing pin strikes and actuates said percussion cap in response to an increase in pressure of said fluid medium, said percussion cap thereby detonating said explosive charge and instantaneously creating a substantially spherical cloud of finely divided droplets of fluid.

4,285,404

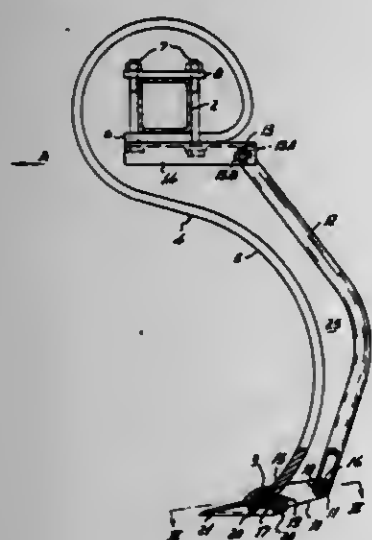
**SOIL WORKING MACHINE WITH RESILIENT SUPPORT AND TRAILING, RIGID CONTROL ARM**  
Cornelis van der Lely, 7, Brüschrain, Zug, Switzerland  
Filed May 30, 1979, Ser. No. 43,844

Claims priority, application Netherlands, Jun. 5, 1978, 7806075

Int. Cl.<sup>3</sup> A01B 35/06

U.S. Cl. 172-708

8 Claims



1. A soil working machine comprising a frame and at least one soil working member pivotably mounted for displacement on said frame, said member comprising a forward, upwardly extending resilient support and a trailing, rigid control arm, a generally horizontally extending soil working element being pivoted to the lower portions of said support and arm by respective pivots, the upper portions of said support and arm being interconnected to said frame by pivot means, said pivot means including at least one pivot that defines an axis parallel to the axes of said pivots, said control arm having an intermediate curved portion between its upper and lower portions and said curved portion being directed rearwardly with respect to the direction of travel of the implement, whereby said support can deflect rearwardly and said element maintains its working

position, a stop being located adjacent said element for limiting the pivotal movement of said element in at least one direction.

4,285,405

**OSCILLATOR FOR RECIPROCATING TOOL OR OTHER DEVICE**

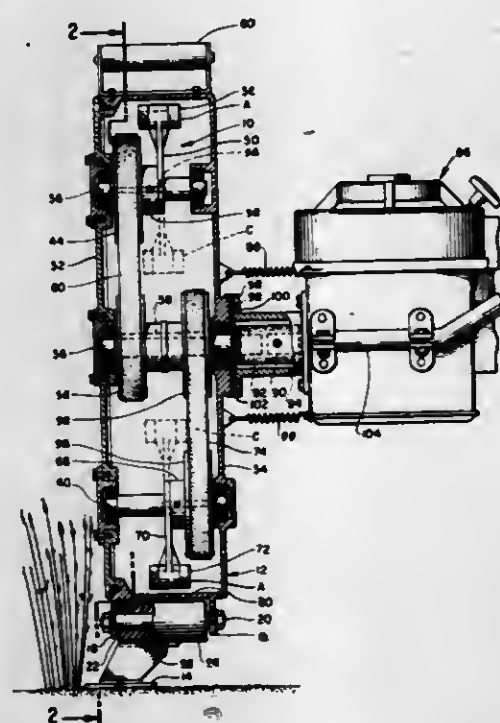
Casper J. Weir, Jr., Rte. 3, Box 215-B, San Luis Obispo, Calif. 93401

Filed Dec. 26, 1979, Ser. No. 106,915

Int. Cl.<sup>3</sup> E21B 3/00

U.S. Cl. 173-162 R

12 Claims



1. An oscillator comprising:

a frame,  
a plurality of first means each connecting respective masses to said frame for rotation relative thereto, each mass having a respective axis of rotation in a respective first means, second means connecting rotatable driving means to said frame and to said first means to rotate said masses, said driving means having an axis of rotation in said second means and being spaced from the axes in the first means, each mass being spaced from its axis of rotation by a respective rotatable support, each mass and its axis being spaced with respect to the axis of the driving means so that rotation of said masses produces radial forces that are balanced with respect to said last axis,  
each mass being positioned on its support so that rotation of the masses by the driving means generates a force through the mass supports to the axes of the respective first means, said last force being tangential with respect to the axis in the second means,  
said first means being adapted to transmit said tangential forces to the frame to generate a couple about the axis of the second means to oscillate said frame about said last axis when said frame is supported for oscillation thereat,  
power means attached to said frame to rotate said driving means about its axis and to support said frame for oscillation at said last axis,  
a device to be reciprocated attached to said frame at one end thereof in the plane through said last axis, and  
handle means extending from said power means in a direction away from said frame;  
said device being attached at a lower end of said oscillator to support said oscillator on a surface; and  
said handle means being adapted for moving said device along said surface and for controlling the position of said oscillator.

4,285,406

**DRILLING HEAD**

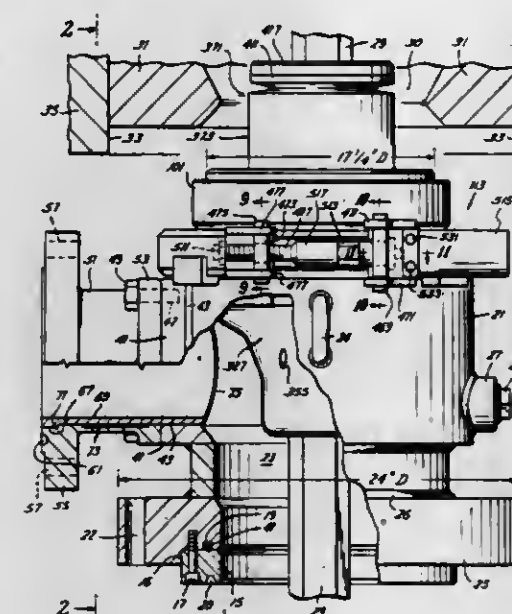
William R. Garrett, Coaroe, and David E. Young, Friendswood, both of Tex., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Aug. 24, 1979, Ser. No. 69,360

Int. Cl.<sup>3</sup> E21B 3/04

U.S. Cl. 175-195

5 Claims



1. Drilling head comprising,

a tubular body adapted at its lower end for connection to the top of a drilling control stack and having a seat at its upper end to receive top closure means,  
top closure means including a removable stator having a seating surface releasably supported on said seat, a rotor carrying first replaceable seal means for making a rotating seal with the stator and second replaceable seal means for making an axially slidable seal with a kelly and replaceable bearing means for rotatability supporting the rotor by the stator with respect to both radial and axial thrust,  
drive bushing means carried by the rotor for axially slidably engaging a kelly to transmit torque from the kelly to the rotor, and  
spline means on an outer periphery of said drive bushing and an inner periphery of said rotor whereby said drive bushing can be released from said rotor and reengaged therewith whenever desired,  
said tubular body including a radial flange at its lower end adapted for connection to the flange on the upper end of an adjacent member of a control stack,  
said tubular body having an opening at its lower end of a preselected internal diameter that is as large as the internal diameter of such adjacent element of a control stack with which the body is to be connected,  
said opening of said preselected diameter forming the throat of the drilling head,  
said tubular body having above said throat and outboard of said top closure means a belly portion of smaller outer diameter than said radial flange but of larger internal diameter than said throat adapted to receive said first replaceable seal means when the latter is flexed outwardly, e.g. by a large diameter drill stem member there-within,  
said seating surface on said stator being of smaller diameter than the largest inner diameter of said belly portion, said seat in said body for receiving said top closure means being inboard of said belly portion to receive said seating surface,  
A replaceable metal bushing carried by said stator on the interior of the stator and colevel with said seat and seating surface adapted on its inner periphery to rotatably engage the outer periphery of said first replaceable seal means for making a rotating seal,

said spline means and bearing means being colevel and above said rotating seal and said seat and seating surface.

4,285,407

**STRAIGHT HOLE DRILLER**

Travis L. Samford, 6110 Elmgrove, Spring, Tex. 77379

Filed Dec. 17, 1979, Ser. No. 104,277

Int. Cl.<sup>3</sup> E21C 17/00

U.S. Cl. 175-323

8 Claims



1. For use in a drill string positioned in a well which deviates, a hole straightening apparatus which comprises:

(a) an elongate, axially hollow, tubular member terminating in threaded connections enabling said tubular member to be connected in a drill string;  
(b) said tubular member defining an intermediate section forming a plurality of substantially flat surfaces and a plurality of lengthwise straight ribs positioned between adjacent flat surfaces, said lengthwise ribs extending radially outwardly to a specified distance such that, on rotation of the drill string, each of said ribs contacts the deviated well bore to cut against the deviated hole and wherein said ribs each includes exposed hardfacing material thereon and wherein said ribs stand radially further than the adjacent portion of said external face; and  
(c) bottom located helical flute means being positioned beneath said ribs and at least partially encircling said tubular member and having a raised portion formed of hardfacing material on said external face to guide and advance said tubular member in a well bore.

4,285,408

**REVERSE CIRCULATING TOOL**

Robert L. Franks, Jr., Lake Charles, La., assignor to Well Tools, Inc., Lake Charles, La.

Continuation-in-part of Ser. No. 145,432, May 1, 1980. This application Jan. 2, 1980, Ser. No. 155,656

Int. Cl.<sup>3</sup> E21B 17/18, 21/10

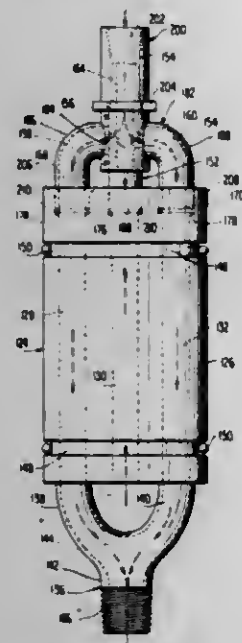
U.S. Cl. 175-323

14 Claims

1. A device for reversing the flow of circulating fluid which comprises (i) a cylindrical body, (ii) four passageways lengthwise through the cylindrical body, (iii) a bottom member which is generally Y-shaped, which contains a Y-shaped passageway therethrough, which is affixed on the ends of its two upper arm members to the bottom surface of the cylindrical body so as to have each of its upper arms communicate with one of two generally oppositely located passageways in the cylindrical body, the central axis of the bottom Y-shaped member generally lying on the central axis of the cylindrical



body, (iv) a top stem which has a passageway extending longitudinally through a portion thereof, and which has four side ports located in the side thereof that communicate with the passageway therein, the central axis of the top stem generally lying on the central axis of the cylindrical body, (v) a collar which is rotatably positioned around the region of the top stem where the four ports therein are located, which is slidably removable from the top stem, which contains two side L-



shaped arms, each having an L-shaped passageway there-through which communicates with one of the ports in the top stem and with the top end of one of the passageways in the cylindrical body, and (vi) retainer means which is detachably positioned around the top region of the top stem and which retains the collar in position around the four ports in the top stem and the two side L-shaped arms of the collar in communication with the appropriate two passageways of the cylindrical body.

4,285,409

### TWO CONE BIT WITH EXTENDED DIAMOND CUTTERS

James H. Allen, Lakewood, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jan. 28, 1979, Ser. No. 52,879  
Int. Cl.<sup>3</sup> E21B 9/08

U.S. Cl. 175—336

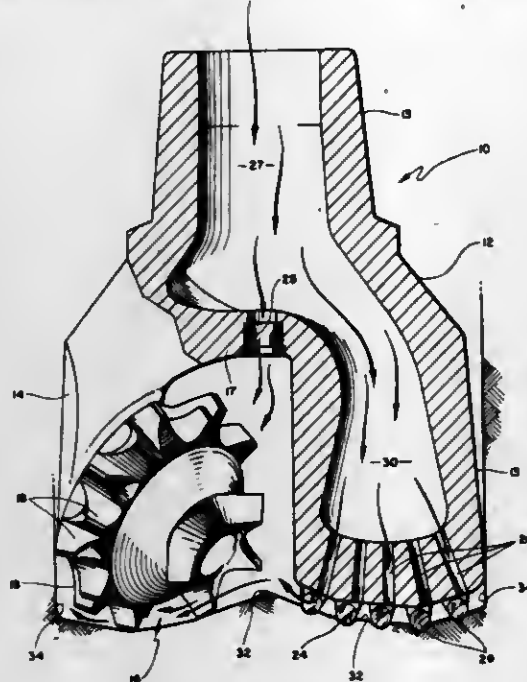
2 Claims

1. A three leg segment hybrid rock bit, each leg segment being about 120°, said bit is of the type wherein hydraulic mud is directed to a chamber formed in said bit and out through openings downstream of said chamber, at least one 120° leg segment of said bit is converted to a drag bit segment with insert cutting elements inserted in the face formed by said drag bit segment, the remaining 120° leg segments supporting conventional roller cone cutters, the hybrid bit further comprising:

a multiplicity of hydraulic passages formed in said face of said drag bit leg segment adjacent said insert cutting elements, at least one of said hydraulic passages being positioned adjacent to and in front of at least a pair of said insert cutting elements in said 120° drag bit leg segment, said hydraulic passages communicating with said chamber formed in said hybrid bit, and

a passage for crossflow of said hydraulic mud exiting said hydraulic passages adjacent said insert cutting elements in said 120° drag bit segment and formed between said adjacent roller cone cutters, said crossflow passage between

the roller cutters having no hydraulic passage communicating with said chamber, thereby sweeping detritus mate-



rial from the bottom of a borehole formed by said hybrid rock bit to the exterior of the bit and up the borehole.

4,285,410

### BROACH FOR INCORPORATION IN A DRILL STRING

Travis L. Samford, 6110 Elmgrove, Spring, Tex. 77379

Filed Sep. 10, 1979, Ser. No. 74,159

Int. Cl.<sup>3</sup> E21C 17/00

U.S. Cl. 175—394

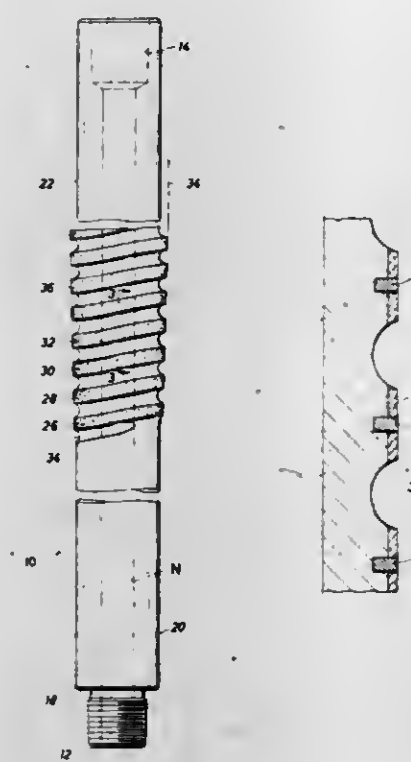
7 Claims

1. A broach for cutting a well bore to enlarge the opening thereof which comprises:

(a) an elongate, hollow, tubular body having threaded end connections thereon constructed in accordance with an industry standard to communicate an axial passage through said tubular body and wherein said passage is adapted to receive mudflow therethrough with said tubular body installed in a drill string; and

(b) an external thread formed on said tubular body, said external thread incorporating multiple helical turns around said tubular body wherein the lowermost turn is larger in diameter than the diameter of said tubular member and wherein the turns thereabove are progressively larger and define a threaded taper terminating at an uppermost turn of largest diameter, the turns being comprised of a crown adjacent to a groove and the crown including an outer exposed face made of hardfacing material across at least a portion of the outer face, said crown and said hardfacing material defining a plurality of insert recesses extending to a substantial depth within said crown, and said external thread further including periodically placed inserts located within said insert recesses and extending through said hardfacing material and having a major portion thereof positioned beneath said hardfacing mate-

rial, and inserts having an exposed outer surface in the outer face wherein said inserts are formed of a hardfacing



material and said inserts are located at spaced locations along the crown of said thread.

4,285,411

### ELECTRONIC WEIGHING APPARATUS

Masamichi Hino, 9-3, Aoyamada 2-chome, Suita-shi, Osaka-fu, and Seichi Itani, 22-407, Shinkanaoka-cho 3-1, Sakai-shi, Osaka-fu, both of Japan, assignors to Kabota Ltd., Osaka, Japan

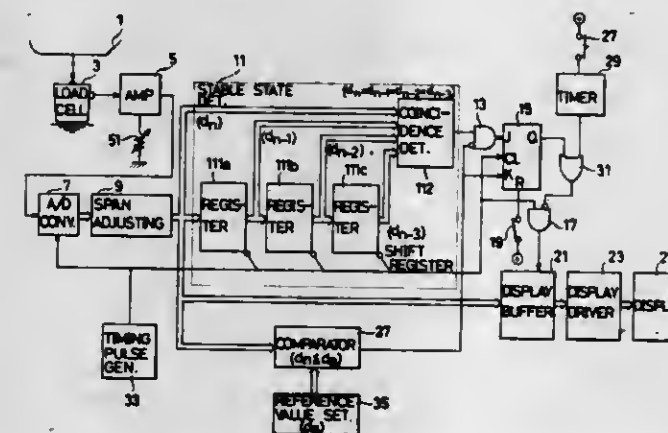
Filed Nov. 21, 1979, Ser. No. 96,540

Claims priority, application Japan, Mar. 14, 1979, 54-30269; Jan. 5, 1979, 54-71015

Int. Cl.<sup>3</sup> G01G 19/44

U.S. Cl. 177—25

16 Claims



1. An electronic weighing apparatus employing a strain gauge type load cell and digital display, particularly applicable as a live body scale for babies and other live load articles whose movement changes the displayed body or article

weight, comprising article placement means for placement of an article being weighed, analog signal generating means operatively coupled to said article placement means and responsive to the weight of an article being placed on said article placement means for generating an analog signal representative of the measured weight of said article, digital data generating means responsive to said analog signal from said analog signal generating means for generating digital data associated with said analog signal and thus the weight of said article, digital data storing means operatively coupled to said digital data generating means for storing said digital data, digital data display means responsive to said digital data stored in said digital data storing means for sequentially displaying in a digital manner the measured weight of said article, stable state detecting means operatively coupled to at least one of said analog generating means and said digital data generating means and responsive to at least one of said analog signal and said digital data for sampling said digital data at predetermined intervals of time, comparing the digital data from successive intervals, and determining that said article placement means has reached for the first time a substantially stable state after said article is placed on said article placement means, display maintaining means responsive to the output of said stable state detecting means for arresting the sequential display of digital data and for maintaining the data being displayed by said display means at said weighed value obtained when said stable state was determined in spite of movement of the body or article being weighed causing a variation in the measured weight sampled by said stable state detecting means, detecting means operatively coupled to at least one of said analog signal generating means and said digital data generating means for detecting that at least one of said analog signal and said digital data has become smaller than a predetermined value after said stable state detected output has been determined, and releasing means responsive to the detected output of said detecting means for releasing said display maintaining state by said display maintaining means.

4,285,412

### SCALE PROTECTED AGAINST THE INGRESS OF DUST AND WATER

Johannes Wirth, Zurich, Switzerland, assignor to Wirth, Gallo & Co., Zurich, Switzerland

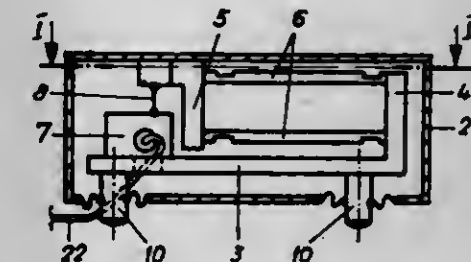
Filed Mar. 31, 1980, Ser. No. 135,677

Claims priority, application European Pat. Off., Mar. 10, 1980, 80101189.1

Int. Cl.<sup>3</sup> G01G 21/02, 21/28

U.S. Cl. 177—179

5 Claims



1. In a scale protected against the ingress of dust and water a measuring system, a frame, at least one foot supporting said frame, a load support, guiding means for parallel and vertical guiding of said load support, at least one opening having an inner edge in said load support for said foot, an annular diaphragm mounted between said foot and said inner edge, said load support enclosing completely said measuring system, said frame and said guiding means.



4,285,413

**LOAD RECEIVER WITH BEAM HAVING ELASTIC FLECTION**

Gilbert V. Dauge, Laguy, and Jacques F. Langlais, Coudray Montereaux, both of France, assignors to Testut-Aequitas, Paris, France

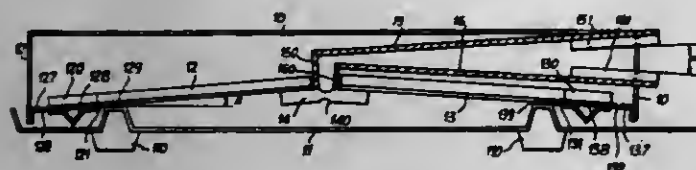
Filed Apr. 28, 1980, Ser. No. 144,361

Claims priority, application France, May 7, 1979, 79 11457

Int. Cl.<sup>3</sup> G01G 3/14, 21/08

U.S. Cl. 177-210 C

9 Claims



1. A weighing device comprising an upper load-carrying plate, a lower bearing plate, and a mechanism cooperating with these two plates to produce an indication relative to the load on the load-carrying plate, said mechanism comprising flection members and hinge means to transform the force due to a load on the load-carrying plate into two bending moments applied at the ends of the flection members, the hinge means comprising two parallel double hinges, mounted at a distance from each other, each being between the load-carrying plate and the bearing plate, the flection members comprising a rigid bridge provided with an elastic central zone, and of which the ends are respectively connected to the intermediate parts of the two double hinges, and the mechanism also comprising two arms respectively connected rigidly by one of their ends to the bridge on each side of its central part, and also two capacitor plates supported by the said arms and able to define at least one capacity as a function of the load applied on the load-carrying plate.

4,285,414

**SUPPORTED MEMBRANE PLANER FOR SES SEALS**

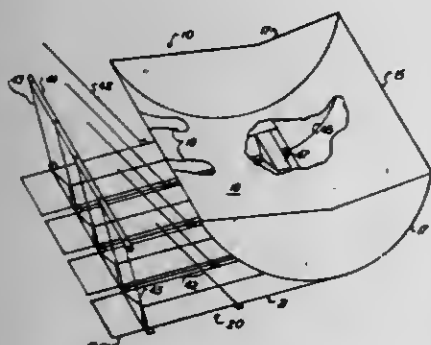
Alexander Malakhoff, Arlington, Va., and Sydney Davis, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 30, 1979, Ser. No. 99,151

Int. Cl.<sup>3</sup> B60V 1/04

U.S. Cl. 180-126

11 Claims



1. A seal structure for an air cushion marine vessel of the type having a hull with spaced, depending sidewalls for forming a plenum chamber therebetween, comprising:

a flexible bag secured to the hull and positioned between the sidewalls to form an expansible chamber and said bag being resiliently responsive to fluid pressure changes exerted thereon;

a plurality of elongated, juxtaposed planer members positioned between the spaced sidewalls in cooperative relationship with said bag for substantially closing-off the space between an end of the hull and the water surface; each said planer member comprising an elongated shell portion having spaced longitudinal edge portions and a

flexible membrane portion secured to said longitudinal edge portions to form a planing surface; means for interconnecting said planer members along their adjacent longitudinal edge portions; and means for supporting said planer members in cooperative relationship with said bag so that the opposite end portions of said planer members are supported for fore and aft movements with respect to the hull of the vessel.

4,285,415

**ACOUSTIC IMPULSE GENERATOR**

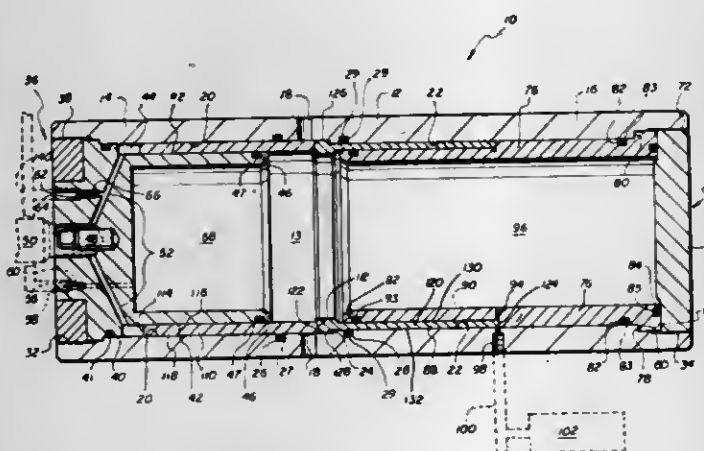
John L. Paitson, Drawer 2600, Galveston, Tex. 77552

Filed Jun. 25, 1979, Ser. No. 51,403

Int. Cl.<sup>3</sup> G01V 1/137, 1/38

U.S. Cl. 181-120

22 Claims



1. A device for instantaneously producing the release of a pressurized fluid for generating controlled acoustic impulses comprising:

(a) a body portion defining a hollow, enclosed chamber communicating with the environmental exterior via an exhaust port;

(b) a first piston member slidably mounted with respect to said body portion shiftable between a first position closing said exhaust port and a second position opening said exhaust port;

(c) a second piston member slidably mounted with respect to said body portion shiftable between a first position opening said exhaust port, and a second position closing said exhaust port;

(d) means for introducing compressed fluid into said body chamber;

(e) means for causing said first piston member to move from its first position to its second position, opening said exhaust port and thereby controllably releasing a volume of pressurized fluid creating an acoustic impulse;

(f) means for causing said second piston member to move immediately thereafter from its first position to its second position, closing said exhaust port and interrupting said release of pressurized fluid and acoustic impulse; and

(g) means for thereafter returning said first and second piston members to their respective first positions so as to prepare said device for generating subsequent controlled acoustic impulses.

4,285,416

**WHEELCHAIR LIFT DEVICE**

Peter P. Dudynskyj, Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 10, 1980, Ser. No. 128,555

Int. Cl.<sup>3</sup> B66B 9/20

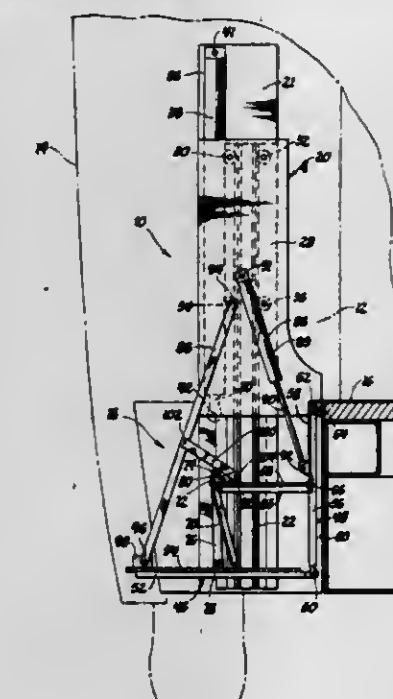
U.S. Cl. 187-9 R

4 Claims

1. A wheelchair lift unit of the type having a swingable subframe section carried for rotation about a horizontal axis at its top edge and a horizontal subframe section carried for guided horizontal orbiting movement and linked to the lower

edge of said swingable subframe section at its inboard edge for relative movement about a horizontal axis, and wherein the swingable subframe section when in a pendulous vertical position defines an upper riser portion and locates the unit in step configuration and when in its horizontal position locates the unit in platform configuration, the outboard edge of the horizontal subframe section being held horizontal by a guide link supported for pivotal movement about a horizontal axis at its upper end and pivoted to the horizontal subframe section at its lower end whereby the horizontal subframe section defines both a lower step portion and a platform portion; the improvement comprising:

an upper step member hinged at its inboard end to the upper riser portion of the swingable subframe section for rotation about a horizontal axis;



a lower riser member hinged to the outboard end of the upper step member;

a support link connected to the upper step member and to the horizontal subframe section whereby as the swingable subframe section is shifted from a vertical to a horizontal position the upper step member folds down into horizontal alignment with the swingable subframe section and completes the platform in conjunction with the swingable and horizontal subframe sections; and

crank means attached to the lower riser member and connected to said guide link so as to tuck the lower riser member backwardly and underneath the upper step member when the swingable subframe section swings to the horizontal position.

4,285,417

**FLOATING CALIPER DISC BRAKE**

Fritz Ostwald, Buchschlag, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,789

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2836108

Int. Cl.<sup>3</sup> F16D 65/02

U.S. Cl. 188-73.3

5 Claims

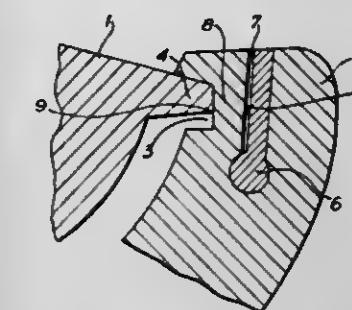
1. A floating caliper disc brake comprising:

a stationary brake support having at least one straight-line guide groove therein spaced from an outer surface of said support;

a floating caliper axially slidable with respect to said support having at least one projecting part engaging said groove for axially guiding said caliper, said caliper being capable of an elastic displacement transversely of said groove due to action of a braking torque acting on said caliper; and

a slot disposed in said support spaced from and transverse to said groove extending from said outer surface of said support to a point below said groove to render said sup-

port in the area between said groove and said slot elastically deformable around a bending axis extending parallel to said groove at a distance from force vectors of said braking torque, said elastically deformable area rendering



the sliding of said caliper in said groove substantially resistant to dirt and corrosive media by dislocating the points of contact between said projecting part and said groove due to said braking torque.

4,285,418

**FRICTION COUPLING CONTROL SYSTEM**

John C. Paine, North Olmsted, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

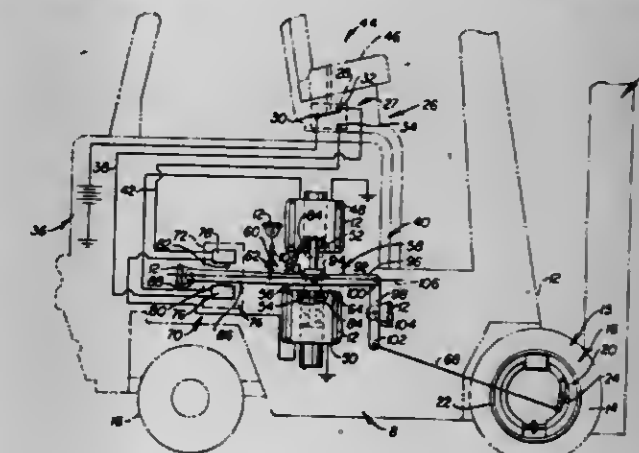
PCT No. PCT/US80/00017, § 371 Date Jan. 7, 1980, § 102(e) Date Jan. 7, 1980

This PCT application filed Jan. 7, 1980, Ser. No. 116,742

Int. Cl.<sup>3</sup> F16D 65/34

U.S. Cl. 188-109

9 Claims



1. A friction coupling control system (8) having a frame (12), a friction coupling (18) mounted on said frame (12) and being movable between an engaged (15) and disengaged (17) position, comprising:

a control device (26) movable between a first position (27) corresponding to a friction coupling engaged position (15) and a second position (29) corresponding to a friction coupling disengaged position (17);

power means (40) for moving the friction coupling (18) to said engaged position (15) in response to said control device being at said first position (27), and for moving the friction coupling to said disengaged position (17) in response to said control device being at said second position (29); said power means (40) includes first (48) and second (50) solenoids each having a plunger (52,54), said solenoids being positioned a predetermined spaced apart distance from one another and in a plunger facing relationship;

means (70) for deactivating said power means (40) at the engaged (15) and disengaged (17) positions of the friction coupling (18);

means (60) for releasably maintaining said friction coupling (18) at the engaged (15) and disengaged (17) position; said maintaining means (60) includes a linkage assembly (62) being movable between first (64) and second (66) over center positions, said friction coupling (18) being connected to said linkage assembly (62) and movable to said



engaged position (15) in response to said linkage assembly (62) being moved to said first over center position (64) and movable to said disengaged position (17) in response to said linkage assembly (62) being moved to said second over center position (66);

said linkage assembly (62) includes a first link (86) having first (88) and second (90) end portions, a second link (92) having first (94) and second (96) end portions and a third link (98) having first (100) and second (102) end portions and a middle portion (104), the first end portion (88) of the first link (86) being pivotally connected to said frame (12), the middle (104) portion of the third link (98) being pivotally connected to said frame (12), the second end portion (102) of the third link (98) being connected to said friction coupling (18), and the first end portion (94) of the second link (92) being pivotally connected to said second end portion (90) of said first link (86) and the second end portion (96) of the second link (92) being connected to the first end portion (100) of said third link (98), a plane (106) extends through the first end portion (88) of the first link (86) and the second end portion (96) of the second link (92), and between the first (48) and second (50) solenoids, said plane (106) being closer to one of the solenoids than the other; and

said plungers (52,54) being controllably movable between a retracted position and an extended position, said plungers (52,54) being of a construction sufficient for moving the first (86) and second links (92) through said plane (106) in response to movement of either one of said plungers (52,54).

4,285,419

# BRAKE CLUTCH RELEASE CONTROL FOR BELT DRIVEN RIDING MOWERS

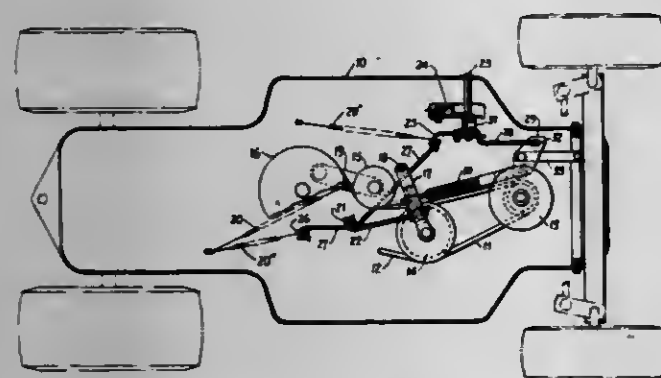
Lehman E. Anderson, Ankeny, Iowa, assignor to AMF Incorporated, White Plains, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,888

Int. Cl.<sup>3</sup> F16D 13/76

U.S. Cl. 192-11

2 Claims



1. In a belt driven riding lawn mower having solely a hand operated clutch for said belt drive and solely a foot operated brake for braking said mower, the improvement of structure for automatically disengaging said clutch at all speeds of said mower upon operation of said foot brake, said structure comprising linkage means having lost motion interconnecting said foot brake and clutch, said linkage means comprising a chain of three pivotally connected links, one end of said chain being connected to said foot brake and the other end of said chain being connected to said clutch, and said lost motion comprising a slot at the pivotal connection between two of said links.

## 4,285,420 AIR GAP ADJUSTER FOR ELECTRIC CLUTCHES

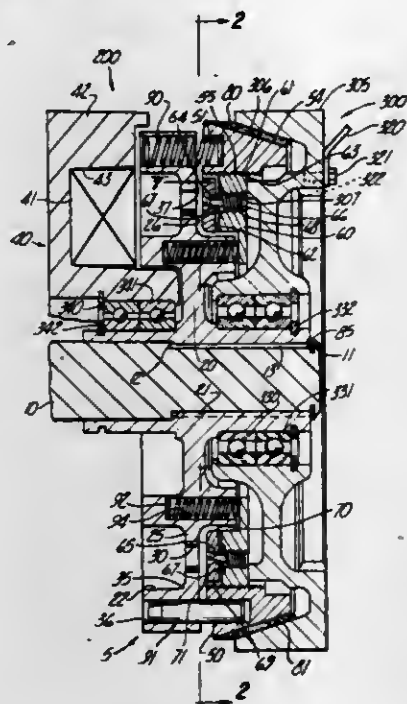
Thomas C. Sekella, Elmira, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Jul. 23, 1979, Ser. No. 59,931

Int. Cl.<sup>3</sup> F16D 13/75, 27/10

U.S. Cl. 192-84 C

11 Claims



1. An electromagnetic device for transmitting torque comprising:  
input means;  
output means coaxially disposed with said input means;  
means for transferring torque from said input means to said output means, said torque transferring means further comprising:  
an adjustable friction ring member disposed adjacent to said output means and interposed said input and output means;  
an inner body member interposed said friction ring and said input means, said inner body member coaxially disposed with said friction ring member;  
means for attaching said inner body member to said friction ring member for rotational movement therewith; and  
biasing means, interposed said friction ring member and said inner body member, for engaging said friction ring member to said output means;  
means for electromagnetically actuating said torque transferring means, said actuating means disposed with respect to said inner body member to form a circuitous flux path therewith, said actuating means further comprising:  
a magnetic armature member concentrically disposed with said friction ring member;  
an adjuster plate member concentrically disposed with said friction ring member and mounted for rotation with said magnetic armature member;  
means for mounting said adjuster plate member to said friction ring member;  
means for moving said adjuster plate member and said armature with respect to said inner body member when said electromagnetic means is engaged so that a circuitous flux path is formed between said armature and said inner body thereby causing the friction ring to disengage the output means; and  
means for axially adjusting said armature relative to said inner body member whereby said armature is axially adjusted free of requiring complete disassembly of said device, said adjusting means forming a predetermined axial air gap between said armature and said inner body member so that when said electromagnetic means is de-energized, said biasing means causes said friction ring to engage said output means and so that when said

electromagnetic means is energized by a predetermined voltage level applied to said electromagnetically actuating means, said friction ring is caused to disengage said output means.

4,285,421

# ELECTROMAGNETIC CLUTCH

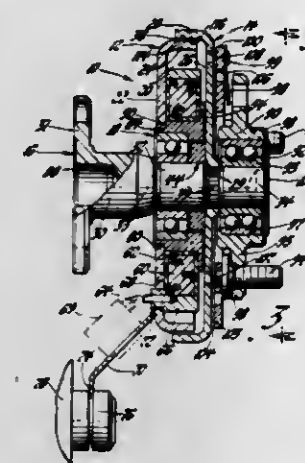
Edwin H. Halsted, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1979, Ser. No. 93,182

Int. Cl.<sup>3</sup> F16D 27/10

U.S. Cl. 192-84 C

3 Claims



1. A compact, readily assembled electromagnetic clutch comprising a pair of cup-like sheet metal housing members facing each other and overlapping at their respective outer peripheries in a manner to form an outer radial air gap and spaced from each other to form a cavity, one of said housing members being adapted for installation on a shaft in driving relationship thereto, an electromagnetic coil in said cavity, an armature adjacent to one of said housing members and operative upon energization of said coil to interconnect said armature and said one of said housing members in driving relationship, a bearing affixed with respect to the other of said housing members so that the housing members may rotate relative to each other, and means for locating said housing members with respect to each other to provide an axial air gap and to control the flux transfer area of said outer radial air gap, said means including a first spacer interposed in engaging relationship between said one housing member and said bearing to locate said housing members axially with respect to each other, and a second spacer engaging said bearing and the other of said housing members to locate said other housing member with respect to said bearing and to locate the periphery of said other housing member with respect to the periphery of said one housing member when said one housing member is installed on said shaft, and both of said spacers cooperating with each other and said bearing to space said second spacer from said one housing member to form said axial air gap directly therebetween and additionally form an inner radial air gap directly between said spacers in parallel with said axial air gap.

4,285,422

# CENTRIFUGALLY OPERATED CLUTCH AND VARIABLE RATIO TORQUE MULTIPLIER

Arthur P. Bentley, P.O. Box 1952, Roswell, N. Mex. 88201

Filed Jun. 25, 1979, Ser. No. 51,535

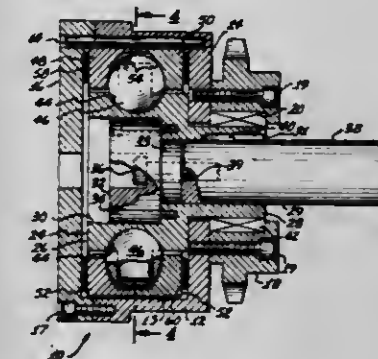
Int. Cl.<sup>3</sup> F16D 23/00

U.S. Cl. 192-105 B

9 Claims

1. A centrifugally operated clutch and variable ratio torque multiplier comprising:  
(a) a rotatably drivable input shaft;  
(b) a disc affixed for rotation with said input shaft and having a plurality of radial sockets formed in equally spaced increments in the periphery thereof, each of the sockets

being open on diametrically opposed sides with the opening in a line parallel with the rotational axis of said disc;  
(c) a ball radially movable in each of the sockets of said disc;  
(d) a housing journaled for rotation about said input shaft and having a chamber in which said disc and said balls are located, said housing having opposed end walls;  
(e) power output means fast for rotation with said housing;  
(f) a pair of ring-shaped races axially movable in the chamber of said housing and fixed for rotation with said housing, said races concentric with said disc and on opposite sides of said balls, said races cooperatively defining an



annular groove in which said balls are movable upon rotation of said input shaft; and  
(g) biasing means in the chamber of said housing for yieldingly urging said races toward each other so that said balls will roll freely in the annular groove of said races to cause zero rotational output of said housing when said input shaft is driven at low RPM with increased RPM of said input shaft causing said balls to move radially due to centrifugal force with such movement causing an increase in frictional engagement between said balls and said races to rotatably drive said housing.

4,285,423

# CLUTCH DISC ASSEMBLY

Kurt Fädler, Niederwerra, and Karl-Helmut Werner, Schweinfurt, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

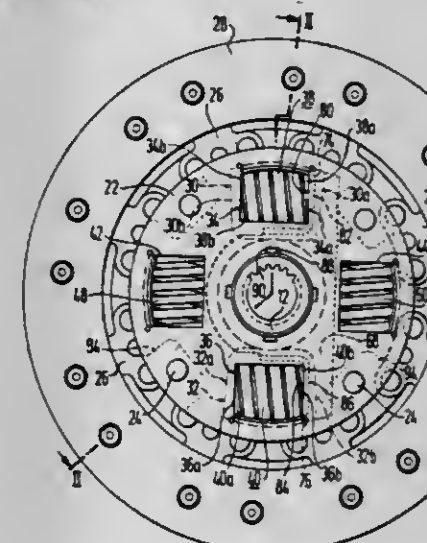
Filed Apr. 11, 1980, Ser. No. 139,476

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1979, 2916868

Int. Cl.<sup>3</sup> F16D 3/14

U.S. Cl. 192-106.2

17 Claims



1. In a clutch disc assembly, especially for motor vehicles, comprising: a hub unit having an axis, said hub unit including a hub and a hub disc fixed on said hub in a position perpendicular to said axis, at least one first hub disc window extending circumferentially relative to said hub axis with oppositely positioned first and second terminal edges extending generally radially of the hub axis being provided in said hub disc; a cover



unit mounted on said hub unit for angular movement about said hub axis between a neutral angular position and respective terminal angular positions on opposite sides of said neutral angular position, said cover disc unit including two cover discs, each cover disc being positioned on an opposite side of said hub disc, lining carrier means being provided on one of said cover discs, at least one first cover disc window extending circumferentially relative to said hub axis with oppositely positioned first and second terminal edges extending generally radially of the hub axis being provided in each of said cover discs, said first cover disc windows of said two cover discs being axially aligned with each other and in overlapping relation with said first hub disc window; at least one first compression spring extending in the circumferential direction relative to the hub axis with oppositely directed first and second ends extending generally in the radial direction relative to said hub axis being housed within said first hub disc window and said first cover disc windows with said first end adjacent said first terminal edges and said second end adjacent said second terminal edges, said first compression spring functioning as torsion spring means operatively interconnecting said hub unit and said cover disc unit, said torsion spring means resisting angular movement from said neutral angular position toward said terminal angular positions; friction damping means damping said angular movement of said cover disc unit with respect to said hub unit, said friction damping means including a control disc mounted on said hub unit for angular movement about said hub axis; a first friction unit operatively interposed between said control disc and said cover disc unit, said first friction unit providing a damping torque having a first torque value; a second friction unit operatively interposed between said control disc and said hub unit, said second friction unit providing a damping torque having a second torque value different from said first torque value; a first abutment member being provided on said control disc, said first abutment member having a spring abutment face and an edge abutment face, said spring abutment face facing in the circumferential direction around said hub axis toward said first end of said first compression spring; the improvement which includes, that the circumferential extent of said first hub disc window is different from the circumferential extent of said first cover disc windows; that the circumferential extent of said first compression spring is—seen in said neutral angular position—substantially equal to the circumferential extent of the shorter one of said first hub disc window and said first cover disc windows in the circumferential direction around said hub axis; that said edge abutment face of said first abutment member faces the first terminal edge of the longer one of said first hub disc window and said first cover disc windows in the circumferential direction around said hub axis; that a second abutment member is provided on said control disc having a spring abutment face and an edge abutment face; that a further first compression spring extending in the circumferential direction around said hub axis is located in another said first hub disc window and in another pair of said first cover disc windows, said further first compression spring having oppositely directed first and second ends, that said spring abutment face of said second abutment member faces the second end of said further first compression spring and said edge abutment face of said second abutment member faces the second terminal edge of the longer one of said another first hub disc window and another first cover disc windows.

4,285,424

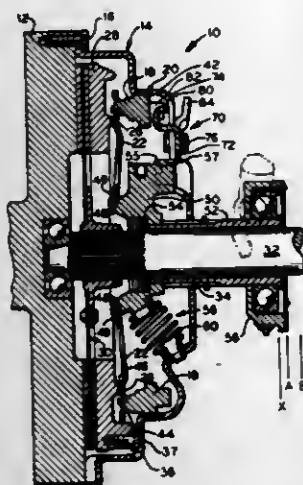
**LOCKING DEVICE FOR A FRICTION TYPE CLUTCH**  
William H. Sink, Auburn, and Richard A. Flotow, Fort Wayne, both of Ind., assignors to Dana Corporation, Toledo, Ohio  
Continuation of Ser. No. 896,290, Apr. 14, 1978, abandoned.  
This application Feb. 8, 1980, Ser. No. 119,921  
Int. Cl.<sup>3</sup> F16D 13/75

U.S. Cl. 192—111 B

1 Claim

1. A rotatable clutch assembly including a drive member, support means secured to the drive member, a clutchable driven member, means for clutching the driven member to the

drive member, adjusting means supporting the clutching means and connected to the support means for relative rotative movement, and a manually adjustable locking device interconnecting the support means and the adjusting means to militate against any relative rotational movement therebetween, said locking device comprising: a unitary structure including an attaching plate portion defining a first panel, detent means extending inwardly of said plate portion interconnectable with

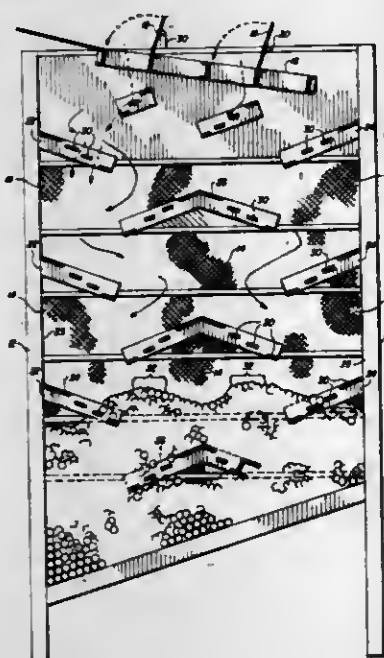


4,285,425

**STEPPED BAFFLE STORAGE BIN**  
George L. Smith, P.O. Box 2153, Sanford, Fla. 32771  
Filed Aug. 13, 1979, Ser. No. 66,492  
Int. Cl.<sup>3</sup> B65G 11/20

U.S. Cl. 193—27

1 Claim



1. A storage bin for citrus fruit and the like, comprising: a housing having an opening at the upper extremity thereof for gravity feeding said articles into said housing; a first set of baffles in said housing spaced away from one side thereof and each baffle of said first set sloping downwardly toward an opposing side; a second set of baffles in said housing spaced along said opposing side, each baffle of said second set extending downwardly and terminating short of said one side;

a third set of baffles, each baffle of said third set sloping downwardly and extending across said housing and interposed between an adjacent pair of said first and second baffles below said adjacent baffle pair at a point permitting each third baffle to receive the flow of fruit or the like from the end of the adjacent first and second baffle pair, each baffle of said first, second and third baffle set formed of plural, substantially parallel steps, each step being spaced from adjacent steps a distance which permits said citrus fruit to pass therebetween, so as to permit said fruit to occupy the volume underneath said baffles.

4,285,426

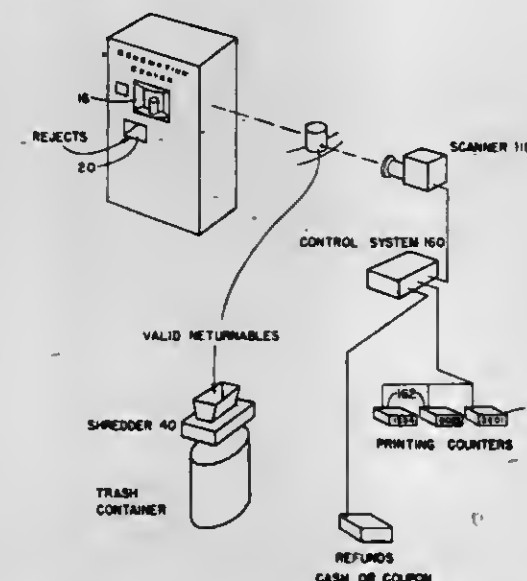
**CONTAINER REDEMPTION APPARATUS AND PROCESS**

John W. Cahill, Yorktown Heights, N.Y., assignor to PepsiCo Inc., Purchase, N.Y.

Filed Jan. 25, 1979, Ser. No. 6,437  
Int. Cl.<sup>3</sup> G07F 7/06

U.S. Cl. 194—4 C

21 Claims



5. A redemption system for accepting the return of selected types of containers and for compensating the customer for the deposit therein of accepted containers, comprising:

- (a) an open carousel including a turntable in which a returnable container is adapted to be positioned with a code thereon facing radially outwardly from the carousel;
- (b) scanning means positioned adjacent said carousel for scanning the code markings on the container as the carousel rotates the radially outwardly directed markings past the scanning means;
- (c) means responsive to the output of said scanning means for selectively accepting or rejecting the container; and
- (d) a plurality of counters, one for each distributor of an acceptable type of container, whereby each counter maintains a record of the number of returned acceptable containers of the type monitored by that counter.

4,285,427

**FOLDING SHIRT CARD AND BLANK THEREFOR**  
George Webinger, Minneapolis, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Nov. 15, 1979, Ser. No. 94,493  
Int. Cl.<sup>3</sup> B65D 85/18; A41H 5/00

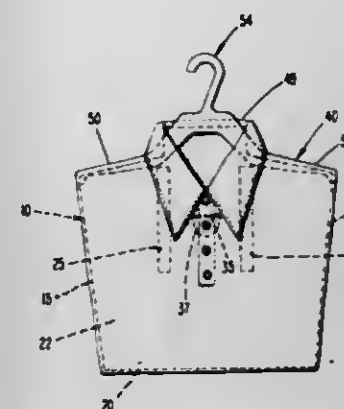
U.S. Cl. 206—292

7 Claims

1. A shirt card for supporting a shirt having a body portion with a collar at the top, a tail at the bottom and two sleeves at the sides, comprising:

- a main panel having a top edge, a bottom edge, a first side edge and a second side edge forming the periphery thereof;
- a fold line extending between said side edges dividing said main panel into a top section and a bottom section, the

body portion of the shirt overlying said top and bottom sections;  
means, in said top section, for receiving the sleeves of the shirt;  
means, located in said bottom section, for receiving the sides



of the shirt; said means including a pair of slits extending from the interior of said bottom section to the outer periphery thereof, and  
means, located in said top section and in said bottom section, for locking said sections together upon folding thereon about said fold line.

4,285,428

**RAZOR CARTRIDGE DISPENSER**

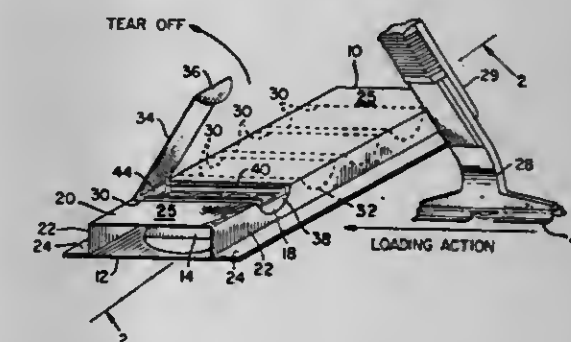
Edward A. Beddall, Fairfield, and Bryan J. Goddard, North Branford, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 718,258, Aug. 27, 1976, abandoned.  
This application Feb. 6, 1978, Ser. No. 875,651

Int. Cl.<sup>3</sup> B65D 83/10

U.S. Cl. 206—354

9 Claims



1. A cardboard dispenser for razor cartridges of a type having coupling means for engagement with a razor handle having complementary coupling means comprising a substantially rectangular tubular container having a succession of partitioned compartments within, each of the compartments dimensioned to receive and support the entirety of one of the razor cartridges, the container including an integral cover member having a median wall and two depending side walls, a base member wall affixed to the side walls having a plurality of tabs struck therefrom and extending interiorly of the container for partitioning the compartments, and a plurality of tear strips integral with the cover member normally covering at least a portion of the median wall and one of the contiguous side walls of each of the compartments, the tear strips being manually removable to provide access to the coupling means on the cartridges, thereby providing for removal of the cartridges from the container after engagement with the razor.



4,285,429

## TAPE CASSETTE SECURITY CONTAINER

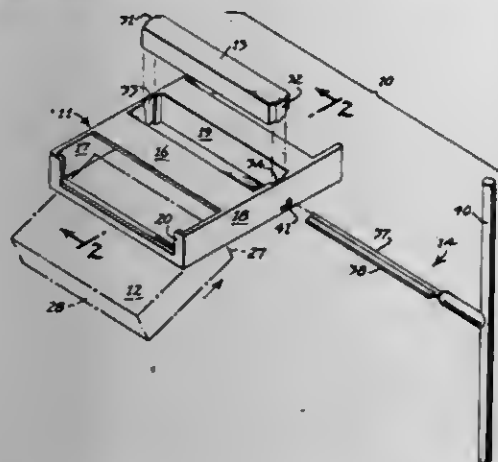
William D. MacTavish, 309 Sequoya Dr., Hopkinsville, Ky. 42240

Filed Feb. 4, 1980, Ser. No. 118,525

Int. Cl.<sup>3</sup> B65D 85/67; A45C 13/10; E05B 65/52

U.S. Cl. 206—387

8 Claims



1. A security device for receiving and displaying a cassette, comprising:

- a housing for receiving a cassette having a longitudinal dimension and a transverse dimension,
- said housing having opposed front and rear walls, longitudinally spaced opposed end walls, and transversely spaced opposed first and second side walls,
- an entry opening in said front wall having a length slightly greater than the longitudinal dimension of the cassette to be received in said housing,
- said opening having opposed edges spaced apart widthwise less than the transverse dimension of the cassette to be received in said housing,
- a first ledge between one edge of said opening and said first side wall,
- a second ledge between the opposite edge of said opening and said second side wall,
- said opposed side walls being spaced apart a distance sufficiently greater than the transverse dimension of said cassette to permit the cassette to be inserted widthwise at a transverse angle, leading edge first, through said entry opening toward said first side wall until the trailing edge of the cassette clears said opposite edge of said opening and then can be moved toward said second wall until said cassette rests upon both said first and second ledges in a contained position within said housing and providing a locking space between said leading edge of the cassette and said first side wall,
- locking means movable into a locking position within the locking space to prevent removal of said cassette from said housing until said locking means is removed from said locking space.

4,285,430

## SKIN PACKAGE

Alan Caunt, Leeds, England, assignor to Baker Perkins Holdings Limited, Peterborough, England

Filed Nov. 30, 1979, Ser. No. 98,822

Claims priority, application United Kingdom, Jan. 26, 1979, 02891/79

Int. Cl.<sup>3</sup> B65D 73/00

U.S. Cl. 206—471

3 Claims

1. An air-free skin package consisting of an article enclosed between a generally flat bottom layer of thermoplastic film having a dimpled surface contacting said article and a top layer of thermoplastic film having a domed portion accommodating said article, said layers being heat sealed together in a zone immediately surrounding the entire perimeter of the article and being in close and intimate contact with the entire surface of said article, said package being devoid of any weakened sever-

ance line and including, along at least one edge and disposed between said layers, a strip of material which is heat sealed to



one only of said layers and extends laterally beyond the other layer so that the package may be opened by separation of the strip from the other layer.

4,285,431

## INFLATABLE BLADE BAG

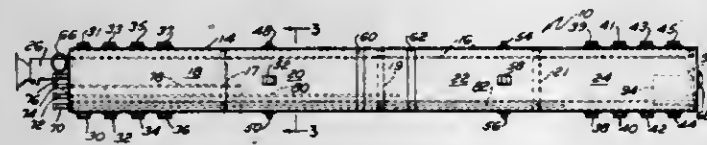
David L. Wickman, Stamford, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 5, 1980, Ser. No. 146,855

Int. Cl.<sup>3</sup> B65D 81/14

U.S. Cl. 206—522

9 Claims



1. An inflatable blade bag for protecting the rotor blade of an aircraft during alignment, transportation and storage thereof, which comprises:

- a generally elongated, double-layer bag having an inner layer and an outer layer enclosing an airtight space therebetween;
- means for mounting and demounting said double layer bag in deflated position thereof over the rotor blade;
- means for inflating and deflating said double layer bag by adjusting the pressure of a gas inside said airtight space enclosed by the inner layer and outer layer of said double layer bag;
- means for carrying manually said double-layer bag in inflated position thereof and enclosing the rotor blade; and
- means for manipulating said double-layer bag when inflated and enclosing the rotor blade for alignment purposes.

4,285,432

## PACKAGE ARRANGEMENT FOR FRAGILE ARTICLES

Paul de Villers, Vandreuil-sur-le-Lac, and Judith Barriault, Scarborough, both of Canada, assignors to Gestioo Paul de Villers, Inc., Vandreuil-sur-le-Lac, Canada

Filed Dec. 7, 1978, Ser. No. 967,518

Claims priority, application Canada, Nov. 21, 1978, 316557

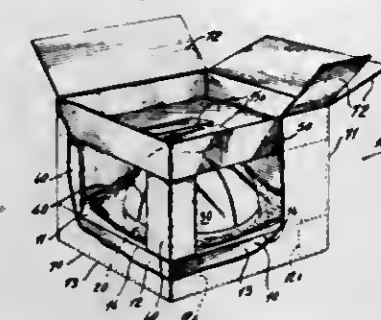
Int. Cl.<sup>3</sup> B65D 81/08, 81/10

U.S. Cl. 206—591

6 Claims

1. A package arrangement comprising in combination:
- a first member having a top surface defined by peripheral edges;
  - shock absorbing resilient cushioning material on said top surface;
  - an article located on said material and positioned within said peripheral edges;
  - means securing said article in place on said material and said material to said first member;
  - a second member positioned in spaced relation to said first member and located above and spaced from said article;
  - a plurality of post-like members being tubular and triangular

In cross section, located intermediate said first and second members and abutting said top surface for use in maintaining said first and second members in said spaced relation; and



means retaining said first, second and post-like members in said relative positions, one to another.

4,285,433

## METHOD AND APPARATUS FOR REMOVING DICE FROM A SEVERED WAFER

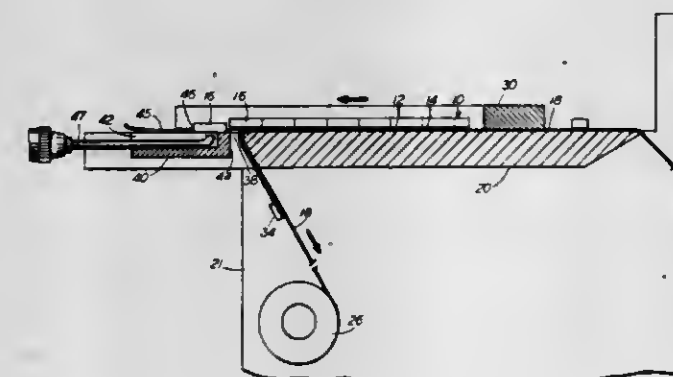
Robert W. Garrett, Sr., Reading; Donald E. Horning, Wyomissing, and Dennis L. Merkel, Hamburg, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,464

Int. Cl.<sup>3</sup> B07C 5/34

U.S. Cl. 209—573

7 Claims



1. Apparatus for separating dice from a severed wafer comprising:

- a first surface with an edge located thereon;
- flexible adhesive material attached to the wafer and adapted to pass across said first surface and over said edge of said first surface for releasing a forward advancing edge of a plurality of dice in the wafer from said flexible adhesive material and for pulling away said flexible adhesive material from the remaining portion of said plurality of dice;
- a second surface located in a spaced relationship with said edge of said first surface forming a slot therebetween and providing a support for said forward advanced edge of said plurality of dice and a receiving area for said plurality of dice after removal from said flexible adhesive material;
- a dice receiving area; and
- a dice transport tool for attaching to the backside of the dice and for transporting the dice to said dice receiving area;
- said receiving area having in said second surface a recess of sufficient size and shape to permit insertion therein of the dice transport tool for attaching to the backside of the dice.

4,285,434

## WALKING-BEAM CONVEYOR WITH ADJUSTABLE WIDTH GAUGING APERTURE

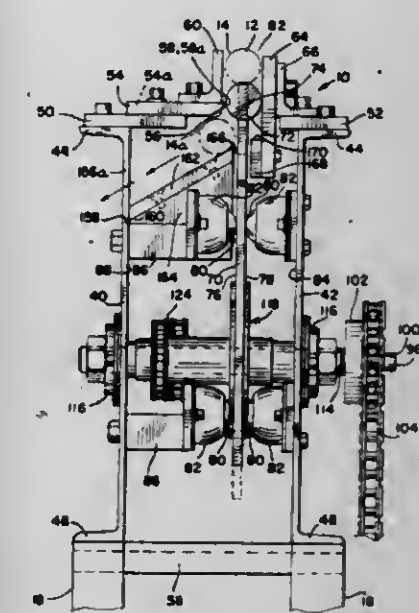
Henry A. Schuricht, Pontiac, Mich., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Apr. 23, 1979, Ser. No. 32,548

Int. Cl.<sup>3</sup> B07C 5/06; B65G 25/02

U.S. Cl. 209—625

4 Claims



1. A conveyor for moving objects by means of a series of successive steps wherein said objects are lifted from rest at a first point, carried forward and then returned to rest at a second point located a distance from said first point, said conveyor comprising,

- a conveyor body,
- a drive plate carried by said body, said plate having a centrally located first slot defined in part of spaced vertical sidewalls, and a pair of second slots located one each on each side of said first slot, each said second slot defined by a horizontal top wall spaced from a horizontal bottom wall,
- a first eccentric assembly rotatively carried by said body and disposed within said first slot to interact continuously with said sidewalls of said first slot,
- second eccentric assemblies rotatively carried by said body and disposed one each in said second slots to interact continuously with said top walls of each said second slot, said first and second eccentric assemblies operatively interconnected and positioned to rotate and maintain respective outermost eccentric points in like orientation during said rotation, said second eccentric assemblies having a lesser eccentricity than said first eccentric assembly so that said drive plate may rotate in a pattern having a horizontal elliptical-like configuration, and
- a stop plate carried by said body below a guide path of said conveyor defined by a guide angle and a guide plate, said stop plate having an end wall located a selective distance from said guide plate to provide a space for said drive plate to move into said guide path, engage objects held in said guide path by said stop plate and carry said objects from said first point to said second point,
- said conveyor further characterized by including a sorting feature comprising, an aperture formed in one side of said conveyor body,
- a slide plate having a bottom edge joined to said body immediately below a lower edge of said aperture, said plate sloped upwardly and terminating adjacent to said drive plate,
- a deflection bar carried by said guide plate adjacent to said drive plate, and
- said stop plate including an adjustable portion positioned to align with said aperture and having an end wall positioned to provide a clearance space for a portion of said objects



to selectively pass therethrough, engage said deflection bar and be ejected through said aperture.

4,285,435

# **HOLDER FOR PACKAGING, DISPLAYING AND OFFERING FOR SALE OF ARTICLES, AS WELL AS SEPARATE ASSEMBLY THEREFOR**

Gerardus C. Brinkers, 49 Vlamingsstraat, 2711 Ad Zoetermeer, Netherlands

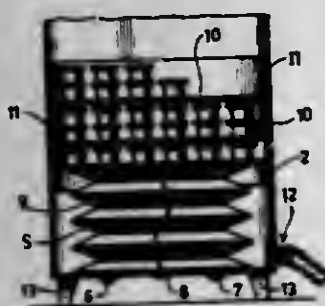
Filed Sep. 26, 1978, Ser. No. 945,798

Claims priority, application Netherlands, Sep. 27, 1977, 7710543

Int. Cl.<sup>3</sup> A47F 3/022, 3/04

U.S. Cl. 211—49 D

7 Claims



1. A holder for packaging articles, displaying them and offering them for sale, at least one pallet unit being present in the holder adapted for carrying a number of articles or layers of articles separated by intermediate trays, the pallet unit being provided along at least a substantial portion of its periphery with an upwardly and downwardly directed rim flange, a levelling device being present by means of which the pallet unit and the articles thereon are movable up and down, together with article bearing trays which may be supported by the pallet unit, the holder comprising means for the support and convenient positioning of the filled holder said levelling device being selectively operable to move said pallet unit to a selected level and maintain said pallet unit at said selected level until operation of said levelling means by an operator to move said pallet unit to another selected level, said levelling device for moving the pallet unit up and down together with any trays which may be supported on said pallet comprising an inflatable hollow body below the pallet unit provided with a valve and a pressure safety valve.

4,285,436

# **INTEGRAL LOCKING TAB FOR STORAGE RACKS**

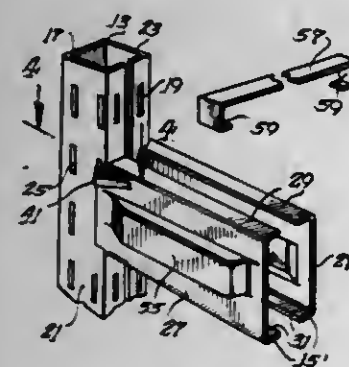
Anthony N. Konstant, Mount Prospect, and John J. Weider, Arlington Heights, both of Ill., assignors to Speedshelf International, Inc., Skokie, Ill.

Filed Dec. 26, 1978, Ser. No. 973,742

Int. Cl.<sup>3</sup> A47F 5/00

U.S. Cl. 211—192

3 Claims



1. A rack structure for supporting items at different vertical levels which incorporates

vertical posts each having two vertical rows of narrow vertical slots at predetermined locations, longitudinal metal support members each including an integrally formed connector located at the end of a longitudinally-extending vertical wall portion that joins said members to said posts in supported relationship thereon, said connectors having book-like appendages which are bent at about 90° to the longitudinal axis of said member and which enter said narrow slots and interengage with the bottom edges thereof upon downward movement of said members relative to said posts, and locking tab means for positively preventing disengagement of said members from said posts, said locking tab means being integrally formed from said member at a location immediately adjacent and above one of said connector appendages, said tab means being displaceable into the upper region of said narrow slot wherein said adjacent connector appendage is received following downward movement of said connector to thereby block disengagement of said member from said post until said locking tab means is first withdrawn and to thus lock said member to said post, said locking tab means having a tapered head portion and a root portion, said head portion having an upper edge which slants upward from a narrow end portion that first enters said slot and being oriented at about 90° to said root portion, said root portion being displaced from said vertical wall portion of said support member and said head portion of said tab means being offset from vertical alignment with said adjacent connector appendage before said tab is moved to locking position, and said root portion being joined to the remainder of said member along a generally vertical line so that said tab means moves in a generally horizontal plane as it is displaced into locking position, whereby said upper slanting edge engages the upper edge of said narrow slot and effects camming movement as a result of movement relative to said post.

4,285,437

# **PUSH BUTTON CHILD-RESISTANT CAP FOR CONTAINERS**

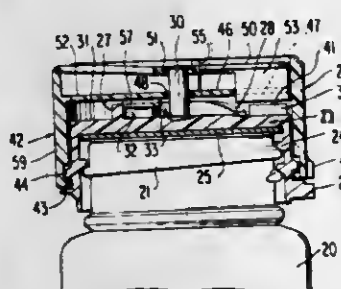
Glenn H. Morris, 4203 Highwood Dr., Chattanooga, Tenn. 37415

Continuation-in-part of Ser. No. 74,780, Sep. 12, 1979, Pat. No. 4,223,794. This application Jul. 17, 1980, Ser. No. 169,840

Int. Cl.<sup>3</sup> B65D 55/02

U.S. Cl. 215—220

13 Claims



13. A push button child-resistant cap for containers comprising inner and outer relatively rotatable cap sections, the inner cap section being screw-threaded to engage container screw-threads, the inner cap section having circumferentially spaced first and second stage tightening surfaces thereon and an unscrewing surface, at least one tightening lug on the outer cap section engageable at least with the first stage tightening surface of the inner cap section during relative rotation between the two cap sections, said tightening lug being adapted to escape over the first stage tightening surface following a certain build-up of resistance to cap tightening, a depressable push button element on the outer cap section including a drive lug adapted to engage the unscrewing surface of the inner cap section while the push button element is depressed to cause

unscrewing of the inner cap section, and camming means on the inner cap section engageable with said drive lug to elevate the push button element during tightening rotation of the cap.

4,285,438

# **PALLET BOX**

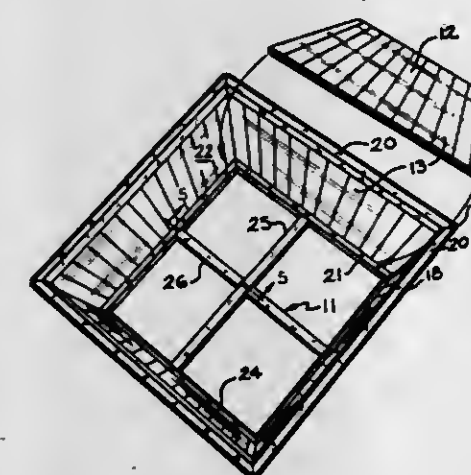
Hershey Wait, Lake Zurich, Ill., assignor to General Box Company, Elk Grove, Ill.

Filed Nov. 2, 1979, Ser. No. 90,537

Int. Cl.<sup>3</sup> B65D 6/24

U.S. Cl. 217—43 A

14 Claims



1. A pallet box comprising, in combination, a plurality of side wall assemblies joined at their adjacent vertical edges to form an enclosure, a bottom liner assembly comprising cleats mounted adjacent the lower perimeter edges of said joined side wall assemblies, said cleats defining a plurality of bearing recesses, a bottom support assembly having finger members extending outwardly therefrom, said finger members being received by said bearing recesses defined by said cleats, and a floor assembly positioned on and supported by said cleats and said bottom support assembly, whereby said bottom support assembly and said floor assembly can be assembled with said side wall assemblies without the use of nails.

4,285,439

# **WALL CONSTRUCTION FOR WIRE-BOUND BOXES HAVING SPLIT CLEATS**

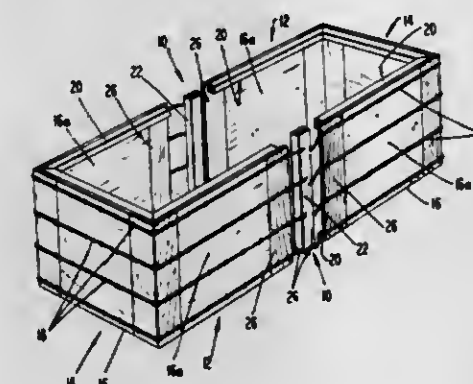
Harry F. Dyer, McComb, Miss., assignor to American Box Company, Fernwood, Miss.

Filed Dec. 26, 1979, Ser. No. 106,922

Int. Cl.<sup>3</sup> B65D 6/28, 6/36

U.S. Cl. 217—45

14 Claims



1. An improvement in the construction of wire-bound containers, wherein the walls of the container include rectangular panels bound together in opposing edge relationship by wires normal to the opposing edges, the panels having cleats of like thickness forming at least a portion of the edges of said panels normal to the opposing edges, said improvement comprising:

a set of two successive panels arranged in the same plane; and  
an auxiliary support member having the same thickness as the cleats inserted between the opposing edges of said successive panels, the lengths of said cleats of each of the successive panels being determined for clamping said support member between the opposing ends of the cleats of the successive panels under the normal tension of the wires binding the panels of the wire-bound container together.

4,285,440

# **SPILL AND SPIT RESISTANT FUEL CAP**

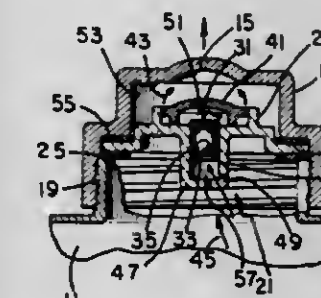
Gar M. Adams, Elkhart Lake, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Apr. 9, 1979, Ser. No. 28,714

Int. Cl.<sup>3</sup> B65D 51/16

U.S. Cl. 220—202

6 Claims



1. In combination with a removable fuel reservoir filler cap having a small generally centrally disposed air admitting aperture for venting the reservoir to generally balance the rate of decrease in fuel volume and the rate of increase of air volume within the reservoir, a check valve positioned intermediate a cap inner surface and an annular gasket seated in the cap with the gasket and check valve in turn captured between the cap inner surface and the fuel reservoir filler when the cap is in the reservoir filler closing position; the check valve comprising a generally disc-like support, an elongated valve cavity member carried by the support and having openings near opposite ends thereof, a valve member captive within the valve cavity member and movable therein between a position near one cavity end for closing the opening of said one cavity end and a position near the other cavity end whereby the cavity and valve member cooperate to allow air to enter the reservoir while precluding the rapid egress of material from the reservoir; a first baffle disposed intermediate the aperture and the check valve and carried by said support to obstruct direct material flow paths between the check valve and the aperture and provide bidirectional circuitous flow paths only between the check valve and the aperture; a second baffle formed by said support with a passage opening spaced below said valve cavity member, air entering the reservoir along a path defined in order by the aperture, the first baffle, the check valve, the second baffle and into the reservoir to thereby reduce the probability of liquid fuel being expelled from the aperture.

4,285,441

# **VENTABLE STEAM COVER FOR CULINARY VESSELS**

Stephen A. Ziskind, New York, N.Y., assignor to Foxy Products, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 121,057, Feb. 13, 1980. This application May 23, 1980, Ser. No. 152,641

Int. Cl.<sup>3</sup> B65D 51/00, 51/16

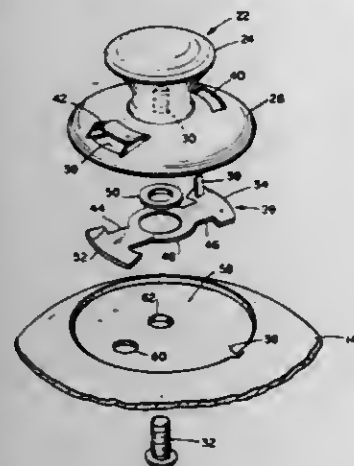
U.S. Cl. 220—231

10 Claims

1. A ventable steam cover for a culinary vessel adapted to provide a modified enclosed atmosphere comprising cover means for defining a closure chamber having a central opening, seating means integral with said cover including an annular rim, handle assembly means including a knob portion for positioning the central opening over the vessel, said knob portion



including a flared skirt, said skirt having at least one window, an outlet orifice in said cover, said window being positioned over the outlet orifice, valve means interposed between said



skirt and outlet orifice, said valve means being displaceable for progressively exposing the outlet orifice whereby exhaust steam and vapors can vent through the window.

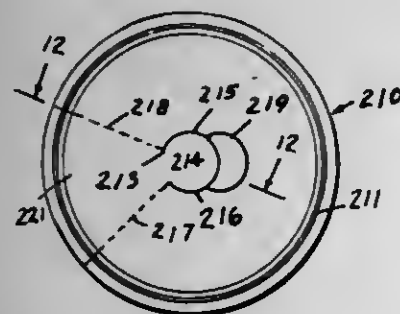
4,285,442

## DRINKING CUP LID

Theresa M. Wedzik, 210 Hillcrest Ave., Erie, Pa. 16509  
Continuation of Ser. No. 35,629, May 3, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,842  
Int. Cl.<sup>3</sup> B65D 41/48, 41/37

U.S. Cl. 220-270

1 Claim



1. A drinking cup lid that can be fitted over the rim of a drinking cup comprising,  
a circular shaped lid,  
means on said lid to attach said lid to a container,  
a pair of generally radially extending scored lines starting in scored first segments at the peripheral edge of the lid and extending inwardly and converging toward each other, defining generally a pie-shaped piece and terminating adjacent the center of said lid in a second line defining an arc of a circle said second segment being completely cut through said lid connecting said lines together,  
said segment at the center of the lid providing a part of said pie-shaped piece adapted to be pressed inwardly by a drinking straw,  
said lines defining a pie-shaped piece of the lid defined by the scored segments and cut through segments being adapted to be removed by tearing along the scored lines providing a relatively large opening for drinking,  
said scored line segments and said cut through line segments comprise one continuous line,  
said cut through lines defining a circular outwardly extending section 215 adapted to be deflected inwardly by a drinking straw; said cut through section 215 extending outwardly from said lid then inwardly to said lid providing access for a user's finger nail thereunder, an inwardly extending section adjacent said outwardly extending section, said inwardly extending section terminating at the top surface of said lid, providing an efficient position for the finger nail of a person to lift said outwardly extending

section whereby the finger nail of a person can be inserted under said cut through section and said outwardly extending section can be lifted by said person to remove said pie shaped piece.

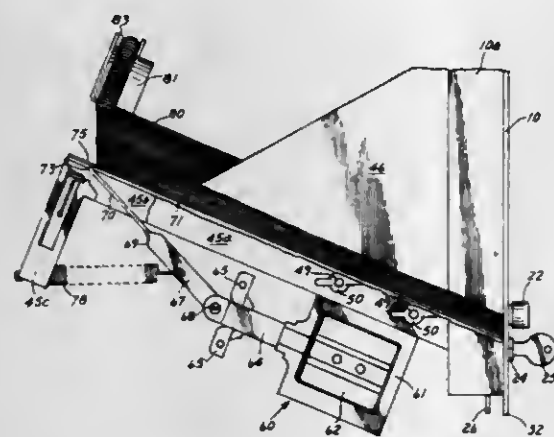
4,285,443

## CARD DISPENSING MODULE

Eugene P. Winans, 7795 E. Napa Pl., Denver, Colo. 80237  
Continuation-in-part of Ser. No. 892,182, Mar. 31, 1978, Pat. No. 4,209,108. This application Jan. 21, 1980, Ser. No. 114,055  
Int. Cl.<sup>3</sup> G07F 11/28

U.S. Cl. 221-155

7 Claims



1. A modular dispenser for cards and the like comprising:  
(a) face plate means arranged for attachment in an opening in a housing wall, and having depending flanges from one side forming a walled support, and said face plate means including one large advertising window and one card display smaller window, and a card eject slit;  
(b) a support frame with depending upper and lower flanges arranged to seat in a portion of said walled support and be secured therein over said smaller window;  
(c) side wall means adjustably secured to said support frame;  
(d) card support base means sloped at an angle to said support frame, secured to said side wall means and arranged to seat adjacent said card eject slit;  
(e) said card support base means being smooth for unrestricted card travel thereon, and having a central slot in the end opposite said card eject slit;  
(f) a card pusher bar, of not more than the thickness of the cards to be dispensed, having a length of about the width of said support base means between said side wall means mounted on said support base means and arranged for free, uninhibited travel on said support base means between said side wall means;  
(g) solenoid means mounted beneath said sloped card support base means;  
(h) connector means extending through said central slot and connected between said solenoid means and said card pusher bar for moving said pusher bar to contact a card and push a portion thereof out said card eject slit;  
(i) means for actuating said solenoid means;  
(j) spring means secured to said support base means and to said connector means for biasing said pusher bar onto said card support base means and for returning said pusher bar to a position out of contact with a stack of cards on said support base means; and  
(k) card stack presser means, pressing said stack of cards on said card support base means and toward said support frame.

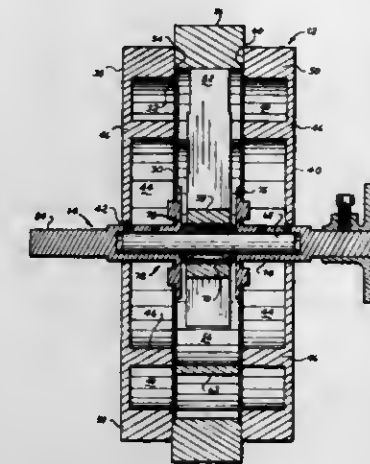
4,285,444

## HIGH SPEED PRECISION PLANTER

John M. Tye, P.O. Box 218, Lockney, Tex. 79241  
Filed Jan. 21, 1980, Ser. No. 113,756  
Int. Cl.<sup>3</sup> A01C 7/04

U.S. Cl. 221-211

16 Claims



1. A precision planter having  
a. a seed box,  
b. a vacuum source,  
c. a first perforated disc having a seed side and a vacuum side,  
d. a housing around the disc,  
e. a rotatable shaft through the housing,  
f. said disc mounted on said shaft,  
g. a seed reservoir on the seed side of the disc connected to the seed box,  
h. a vacuum chamber on the vacuum side of the disc connected to the vacuum source,  
i. a discharge chute connected to the housing and extending to an earth working implement, and  
j. release means on the housing for releasing seed from the disc and into the chute;  
wherein the improvement comprises:  
k. a second perforated disc mounted on said shaft,  
l. a seed reservoir on a seed side of said second disc,  
m. a vacuum chamber on a vacuum side of said second disc, and  
n. a second release means for releasing said seed from said second disc and into said chute.

4,285,445

## CONCENTRATE METERING APPARATUS

Gary L. Vander Molen, Waterloo, and Timothy A. Brown, Ames, both of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 1, 1979, Ser. No. 35,059

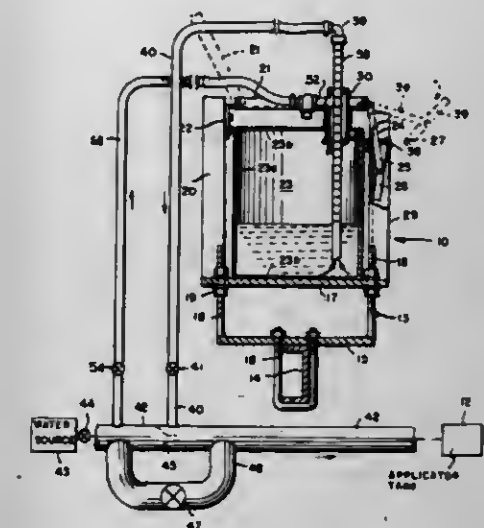
Int. Cl.<sup>3</sup> B67D 5/22, 5/60

U.S. Cl. 222-49

26 Claims

1. An apparatus for removing liquid concentrates from their shipping/storage containers and for mixing such concentrates with water, such containers having side and end walls, comprising a support frame for supporting a concentrate container with one end wall thereof facing upwardly, a top member movably mounted on said support frame for movement between raised and lowered positions, a piercing tube mounted upon said top member having a piercing tip adapted to engage an upwardly facing end wall of a concentrate container supported by said frame for piercing a hole in such end wall as said member is moved from its raised to its lowered positions, a rigid elongated suction tube having upper and lower ends and being telescopically carried by said piercing tube for movement between a retracted position wherein said lower end is disposed within said piercing tube and any of a plurality of extended positions wherein said lower end is spaced selected distances below said piercing tip, conduit means connected to the upper end of said suction tube for carrying the contents of

a container supported by said frame to a water supply line, and a water supply line communicating with said conduit, said



4,285,446

## AUTOMATIC PURGING SYSTEM HAVING A PRESSURE SENSOR AND A TIMING MECHANISM

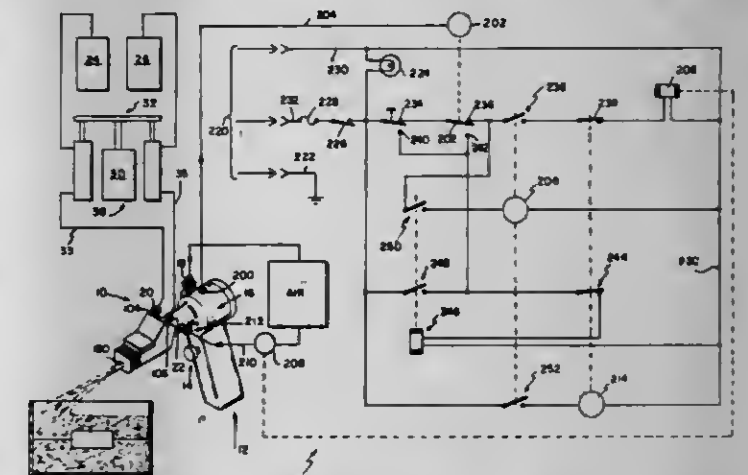
John S. Rapp, Noblesville, and David H. Jackson, Indianapolis, both of Ind., assignors to Ransburg Corporation, Indianapolis, Ind.

Filed Jun. 22, 1979, Ser. No. 51,010

Int. Cl.<sup>3</sup> B05B 7/04; B67D 5/08

U.S. Cl. 222-70

8 Claims



1. An apparatus for dispensing a mixture of materials, which, upon being mixed, undergo a reaction which produces a non-flowable material, the apparatus comprising means for providing flows of the materials for mixing, a housing to which the material flow-providing means is coupled, the housing including first and second valve means in communication with the flow-providing means, and a chamber from which the mixed materials are expelled from the apparatus, the first and second valve means being housed for movement between first orientations in which the first and second valve means provide a flow of the mixed materials from the chamber and second orientations halting flow of the mixed materials from the chamber, means for providing a flow of a purging medium, additional valve means for controlling flow of the purging medium, means providing communication between the additional valve means and the chamber, means for providing a flow of the purging medium to the chamber, means for sensing when the first and second valve means are placed in the second orientations, and timing means coupled to the sensing means to time a first interval starting when the first and second valve means are placed in said second orientations and to open the additional



valve means when the first interval reaches a predetermined non-zero duration to start the purging cycle.

4,285,447

# SUSPENSION FOR BIN DISCHARGING DEVICE

Paul Fairbank, Stroud, England, assignor to Simon-Solitec Limited, Gloucester, England

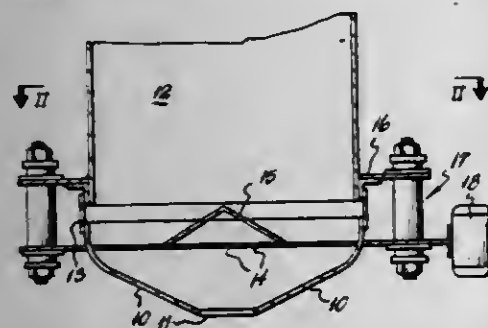
Filed Mar. 3, 1980, Ser. No. 126,849

Claims priority, application United Kingdom, Mar. 6, 1979, 07921/79

Int. Cl.<sup>3</sup> B65G 65/44

U.S. Cl. 222-200

10 Claims



1. A bin-activator supported beneath a bottom outlet opening of a bin or hopper and having means for vibrating the activator to facilitate discharge of material from the bin or hopper, characterized in that the bin-activator is suspended from the bin or hopper by a plurality of hangers, each of which extends between a fixed part of the bin or hopper and the bin-activator itself, each said hanger comprising an upright rod having pivoting movement relative to said fixed part and to said bin-activator, bushes of resilient material surrounding portions of the rod near to the ends thereof and restricting the relative movement between said fixed part and said bin-activator, said bushes themselves being surrounded by fixed rigid sleeve members connected with said fixed part and said bin-activator respectively.

4,285,448

# APPARATUS UTILIZING GROOVED ROLLER FOR DISPENSING POWDER IN PREDETERMINED QUANTITY AND CONFIGURATION

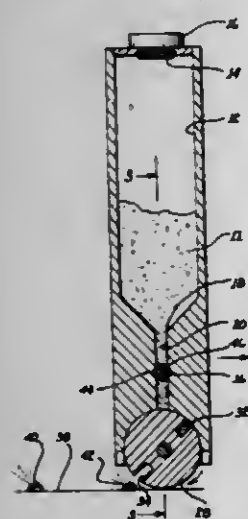
Spencer M. Group, 421 E. 80th St., New York, N.Y. 10021

Filed Sep. 10, 1979, Ser. No. 73,921

Int. Cl.<sup>3</sup> G01F 11/10

U.S. Cl. 222-613

1 Claim



1. A refillable, manually-operated dispenser having a leak proof closure for dispensing powder in uniformly-spaced, repeated mounds upon a surface while minimizing the mixing of air with the powder as the powder impacts the surface, each of the dispensed mounds of powder being of a predetermined

compact quantity and configuration, said dispenser comprising in combination:

- a hopper for holding the powder, said hopper including a sealable aperture means for loading said hopper with powder, said hopper having a V-shaped downwardly directed bottom for directing powder under the force of gravity toward the bottom of said hopper;
- a downwardly extending chute having an inlet in fluid communication with the V-shaped bottom of said hopper for discharging the powder from said hopper through an outlet of said chute, said chute including depressions within opposed sides thereof;
- a roller having a cylindrical surface in wiping contact with said chute outlet, said roller including at least one groove of rectangular cross-section into which powder from said chute outlet drops as said groove passes said chute outlet, the powder within said groove dropping therefrom onto the surface upon rotation of said roller along the surface; and
- a rod including a half-round section journaled within said depressions of said chute and coincident with said chute, said rod being positionable in a first and second position for impeding and permitting, respectively, flow of powder through said chute.

4,285,449

# MODULE FOR HOUSING CONTAINERS AND FOR FORMING A STORING ARRANGEMENT

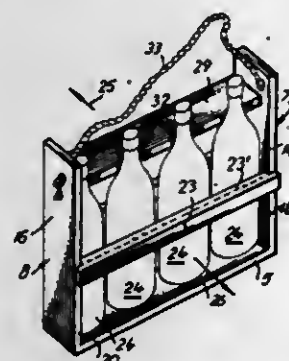
Pilar A. Campos, 3435 Cabildo St., Buenos Aires, Argentina

Filed Jan. 28, 1979, Ser. No. 52,755

Int. Cl.<sup>3</sup> A47F 7/28

U.S. Cl. 294-32

6 Claims



1. A module for receiving containers, preferably bottles, in oriented parallel array, for their transport in vertical position and storage in horizontal position, a plurality of said modules being adapted to be stacked one above another to form a container storage arrangement, said module comprising:

- an elongated base having a longitudinal axis and a predetermined width as measured perpendicularly to said axis;
- two substantially parallel, spaced apart, elongated lateral walls each having a longitudinal axis and each being secured by one end to each end of said base, said walls having like widths, as measured perpendicularly to the longitudinal axis thereof, which are the same as the width of said base, said walls being perpendicular to said base, thereby defining with said base a "U" shaped structure with a predetermined width defined by the width of said base and walls and having two parallel spaced apart imaginary sides each parallel to said axes;
- first fixed container retaining means extending between said two walls and fully contained between the imaginary sides and parallel thereto and adapted to prevent movement of said containers, when positioned within the structure, perpendicularly to said longitudinal axes;
- protruding means extending outwardly beyond one of the imaginary sides of said structure;
- notch means formed in said structure adjacent the imaginary side thereof opposite said protruding means for receiving the protruding means of another module when

two modules are stacked one above the other with one imaginary side of one module adjacent one imaginary side of the other module to form an arrangement having an overall width equal to the sum of the individual widths of both modules and in which the bases of said stacked modules will be coplanar, and the corresponding sides of said stacked modules are also coplanar;

- and a second container retaining means also extending between said two walls and fully contained within the imaginary sides of said structure, said second container retaining means being rotatable between a first position for preventing movement of said containers, and a second position enabling movement of said containers, when positioned within the structure, parallel to the longitudinal axes of said walls.

4,285,450

# WATCH BAND PIN CONNECTOR ASSEMBLY

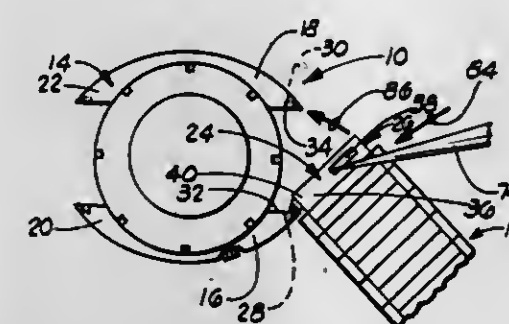
Mary K. Barnes, P.O. Box 692, Sulphur, Okla. 73086

Filed Feb. 25, 1980, Ser. No. 124,131

Int. Cl.<sup>3</sup> A44C 5/18, 5/14

U.S. Cl. 224-164

16 Claims



9. An improved watch band-pin connecting assembly for connecting a watch band to a watch case wherein the watch band is provided with a first and a second end, the watch case is provided with a first pair of substantially parallel, spatially disposed lug members extending from a first side portion of the watch case, and a second pair of substantially parallel, spatially disposed lug members extending from a second side portion of the watch case so as to be substantially opposite the first pair of lug members, the first pair of lug members having axially aligned sockets in facing surfaces thereof and adapted to receive therebetween the first end of the watch band, the second pair of lug members having axially aligned sockets in facing surfaces thereof and adapted to receive therebetween the second end of the watch band, the improved watch band-pin assembly comprising, in combination:

- a tubular link disposed on each of the first and the second end of the watch band, the tubular link having an elongated slot formed in one side portion thereof;
- a telescoping, spring-biased pin assembly positionable within each of the tubular links and engagable with the axially aligned sockets in the facing surfaces of the first and second pairs of lug members for securing the first and second ends of the watch band to the watch case, the telescoping, spring-biased pin assembly comprising:
- a tubular housing having a closed first end, a substantially open second end, and a longitudinally disposed, elongated slot formed in a side portion thereof;
- a first post member disposed on the closed first end of the tubular housing, the first post member positionable within the socket of one of the spatially disposed lug members of the watch case;
- a spring disposed within the tubular housing such that the spring is supported therein by the closed first end;
- an elongated member having a first end and an opposed second end, the elongated member positionable within the tubular housing such that the first end of the elongated member engages the spring, the spring biasing the elongated member so that the opposed second end of the elongated member extends a distance from the open sec-

ond end of the tubular housing, the opposed second end of the elongated member positionable within the socket of the other of the spatially disposed lug members of the watch case; and

pick engaging means disposed on the elongated member for engagement with a pick such that in an assembled position the pick engaging means of the elongated pin member is alignable with the elongated slot in the tubular link and the elongated slot in the tubular housing of the pin assembly so that upon positioning the pick through the elongated slots and engaging the pick engaging means of the elongated member with the pick the elongated member is movable to a retracted position wherein the opposed second end of the elongated member is disposed substantially adjacent the opposed second end of the tubular housing of the pin assembly and the tubular link of the watch band is movable between the spatially disposed lug members.

4,285,451

# METHOD OF AND APPARATUS FOR SEVERING EDGES OF A GLASS SHEET

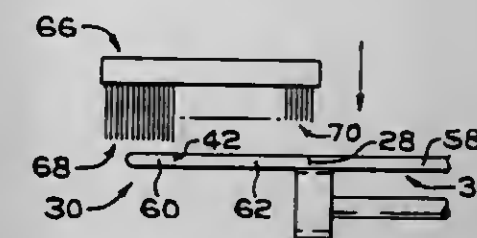
Peter R. Ferraisio, Linesville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 10, 1979, Ser. No. 102,210

Int. Cl.<sup>3</sup> C03B 33/02

U.S. Cl. 225-2

9 Claims



1. A method of severing a glass ribbon comprising the steps of:
  - imposing a pair of scores in the glass ribbon adjacent each edge with the score closest to the ribbon edge deeper than the remaining score;
  - biasing a first portion of severing means having a resilient surface and first section the ribbon toward one another to apply a biasing force against the first section to open the deeper score to sever the first section from the ribbon; followed by
  - biasing adjacent portion of the severing member and second section of the ribbon toward one another to open the remaining score to sever the second section from the ribbon.

4,285,452

# SYSTEM AND METHOD FOR DISPERSING FILAMENTS

Imants Reba, and Edward C. Wolthausen, both of Vancouver, Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 15,272, Feb. 26, 1979, abandoned. This application Aug. 20, 1979, Ser. No. 68,246

Int. Cl.<sup>3</sup> B65H 51/00, 17/32

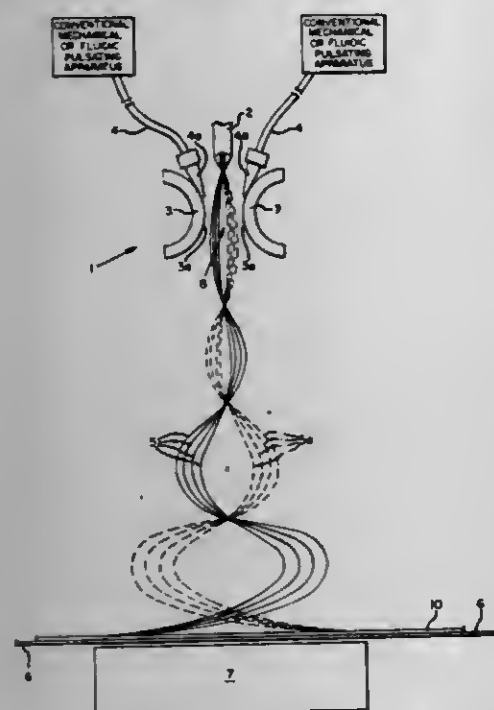
U.S. Cl. 226-7

13 Claims

1. A method for producing a plurality of filaments in a dispersed condition, which comprises:
  - (a) discharging said filaments in a downward direction at high velocity;
  - (b) introducing said discharged filaments into a dispersion region formed between opposed Coanda nozzles, said Coanda nozzles comprising an auxiliary fluid supply means and opposed Coanda surfaces;
  - (c) applying a Coanda effect to said discharged filaments within the dispersion region by transporting a pulsating



fluid intermittently in an alternating mode, from said auxiliary supply means and attaching said pulsating fluid to the outer surfaces of said opposed Coanda surfaces under conditions whereby the fluid flow follows the curved contour of said Coanda surfaces to create said Coanda effect, thereby causing nonsteady-state conditions



with respect to the opposed Coanda surfaces to be created, and a nonsymmetrical filament flow pattern to be formed within the dispersion region, so that the filaments move in a downward direction past said opposed Coanda nozzles and are alternatively oscillated in a plane perpendicular to said Coanda surfaces by the action of the Coanda effect.

4,285,453

# WIRE INSERTION APPARATUS, PARTICULARLY FOR FORMING PRESSES

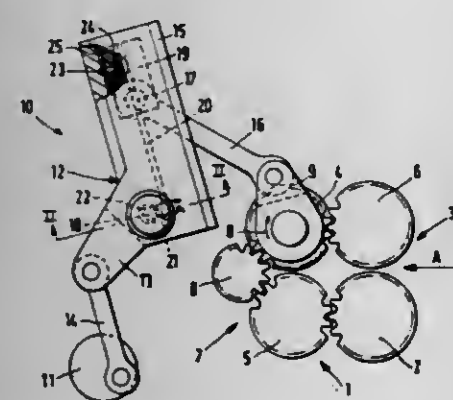
Walter Flamme, Wegberg-Beeckerheide, and Willi Mielke, Duisburg-Mündelheim, both of Fed. Rep. of Germany, assignors to Peltzer & Ehlers GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Dec. 4, 1979, Ser. No. 100,273

Int. Cl.<sup>3</sup> B65H 17/26, 17/22

U.S. Cl. 226—142

7 Claims



1. A wire insertion apparatus for forming presses and comprising at least one pair of insertion rollers between which a wire or rod is periodically advanced by a predetermined insertion length, a crank and connecting rod mechanism connecting at least one of said insertion rollers to drive shaft for producing a periodic angular movement of said at least one of said insertion rollers, said mechanism comprising an intermediate lever member pivotally mounted about an axis, a first linkage rod connecting said intermediate lever member with a first eccentric on said drive shaft for pivoting said intermediate lever member, a second linkage rod connecting said intermediate

lever member with a second eccentric mounted on said at least one insertion roller for producing said angular movement in response to pivotal motion of said intermediate lever member, shifting motor means mounted on said axis for changing the distance between said axis and the pivot point connection between said intermediate lever member and said second linkage rod and thereby changing the degree of said angular movement of said at least one insertion roller.

4,285,454

# CABLE CONVEYOR

Gerard Plumettaz, BEX, Switzerland, assignor to Plumettaz, S.A., Canton of Vaud, Switzerland

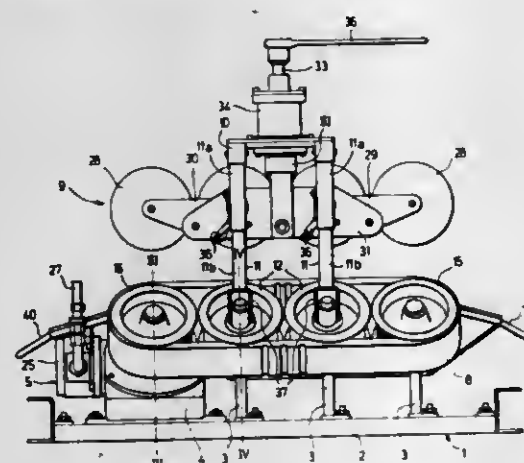
Filed Jan. 4, 1979, Ser. No. 45,395

Claims priority, application European Pat. Off., Jun. 13, 1978, 78200040.0

Int. Cl.<sup>3</sup> B65H 17/22

U.S. Cl. 226—174

9 Claims



1. A cable conveyor comprising a frame, a motor supported by the frame, and a cable-advancing gear-train comprising of two supporting and advancing assemblies disposed in the form of a V and a holding assembly acting vertically on the cable to hold it in contact with the supporting and advancing assemblies, the frame including a rigid base disposed beneath and between the two supporting and advancing assemblies so as not to exceed the width of the cable-advancing gear-train, the motor being accommodated in the frame so as not to exceed the width of the frame, and said supporting and advancing assemblies comprising rollers and shafts bearing the rollers overhangingly, in which conveyor the shafts are connected at one end to the frame, and the holding assembly includes a rigid framework resting upon the free end of certain ones of said shafts.

4,285,455

# MECHANICAL FILM DRIVE FOR DRIVING MOTION PICTURE FILM, PARTICULARLY IN PROJECTION AND SCANNING SYSTEMS

Otto Stemme, Munich; Eduard Wagensohnner, Aschheim, and Wolfgang Ruf, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 136,114, Mar. 31, 1980. This application Jun. 23, 1980, Ser. No. 162,106

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1979, 2927541

Int. Cl.<sup>3</sup> B65H 17/22

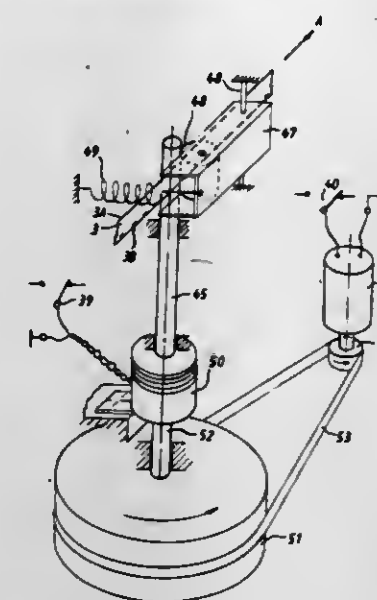
U.S. Cl. 226—188

8 Claims

1. A mechanical film drive for driving motion picture film when the drive is connected to a speed-regulated drive motor, comprising:

- a rotatable drive shaft which, when rotated, drives the film;
- a power takeoff attached to the motor and rotated thereby;
- an electrically-operable clutch connected to the drive shaft

and the power takeoff, the clutch mechanically coupling and uncoupling the drive shaft and the power takeoff to and from each other; and means for energizing and deenergizing the clutch including a circuit controlled by the desired film position and the desired projection mode; and



a switch having a first position and a second position, the switch being connected in a manner that when the switch is in the first position, the clutch will be continuously energized, and when the switch is in the second position, the clutch may be intermittently energized by the circuit.

4,285,456

# CONSECUTIVELY NAILING MACHINE

Wu Sheng-Wei, No. 33, Tieh Shieh Chun, Fang Liao Hsiang, Pingtung Hsien, Taiwan

Filed Mar. 28, 1979, Ser. No. 24,521

Int. Cl.<sup>3</sup> B25C 1/02

U.S. Cl. 227—147

5 Claims



1. A nailing machine comprising an area for storing an interconnected row of nails within said machine at an angle so that a head and body portion of a nail is canted relative to a vertical plane, and a thrust pin for driving individual nails into material to be fastened including an inclined guidance surface relative to a vertical plane for coacting against a single nail disposed at a terminal portion of a row whereby coaction of said guidance surface with said nail dissociates said nail from said row by vertically orienting said nail so that said thrust pin can drive said nail into the material to be fastened wherein said area for storing said row of nails includes a substantially box shaped container having one side wall with an inwardly directed guide plate including a pair of legs: a shorter horizontal upper leg and a longer parallel lower leg whereby said row of nails are canted thereagainst.

4,285,457

# APPARATUS FOR SOLDERING PRINTED CIRCUIT BOARDS

Kenshi Kondo, c/o Nihon Denetsu Keiki Kabushiki Kaisha, No. 27-1, Shimomaru 2-chome, Ohta-ku, Tokyo, Japan

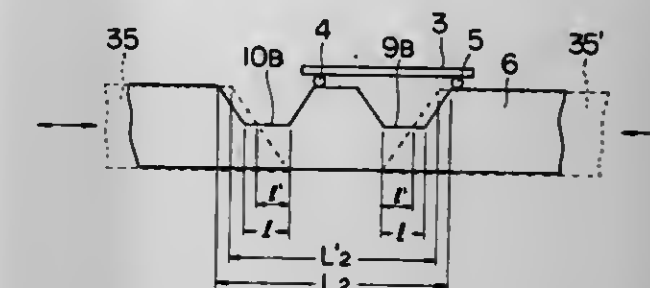
Filed Dec. 18, 1979, Ser. No. 104,722

Claims priority, application Japan, Feb. 19, 1979, 54/17262

Int. Cl.<sup>3</sup> B23K 1/08

U.S. Cl. 228—36

5 Claims



1. An apparatus for soldering a printed circuit board, comprising:  
a carrier adapted to support a printed circuit board thereon; first front and rear wheel members mounted at one side of said carrier;  
second front and rear wheel members mounted at the other side of said carrier;  
a pair of laterally spaced first and second track members adapted for supporting said carrier thereon, said first track member being engageable with said first front and rear wheel members of said carrier and said second track member being engageable with said second front and rear wheel members;  
a solder vessel containing molten solder and located between said first and second track members;  
drive means for displacing said carrier along said first and second track members and supportably engageable with a part of said carrier on said one side thereof;  
said first and second track members each having first and second depressions of the same depth formed at positions to be met simultaneously by said first and second front and rear wheel members of said carrier;  
said first and second depressions having a length and a depth sufficient to allow the underside of said printed circuit board on said carrier to be brought into contact with the molten solder in said solder vessel when said first and second front and rear wheel members are moving along said first and second depressions;  
a first rail means slidably located parallel with said first track member and having a guide track portion supportably engageable with said first front and rear wheel members; and  
means for driving said first rail means such that said first front and rear wheel members are guidingly engaged by said guide track portion when said first front wheel member and said second rear wheel member are passing respectively through said second and first depressions and that said first front and rear wheel members are engageable with at least part of said first and second depressions to contact said printed circuit board on said carrier with the molten solder in said solder vessel.

4,285,458

# WELDING BACKUP SHOE APPARATUS

Clyde M. Slavens, Houston, Tex., assignor to Midcon Pipeline Equipment Co., Houston, Tex.

Filed Sep. 27, 1979, Ser. No. 79,533

Int. Cl.<sup>3</sup> B23K 37/06

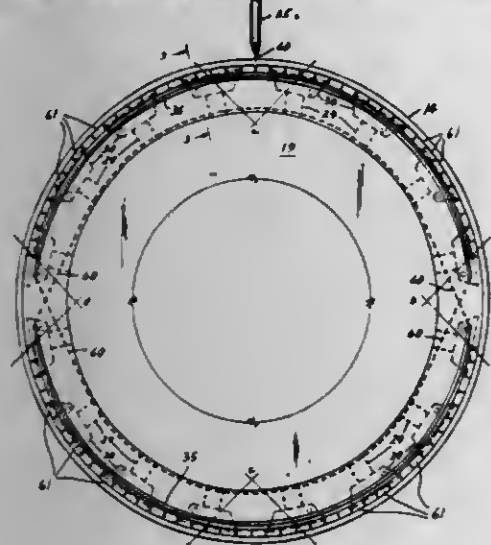
U.S. Cl. 228—49 B

29 Claims

1. Apparatus for backing up welds during formation of the welds comprising a pair of flexible semicircular band means



disposed end-to-end in spaced circular configuration, means biasing the adjacent band ends toward one another to retract the band means, plural backup elements disposed adjacently side by side along the convex outer side of each said band means, means connecting each said backup element to said



band means and resiliently biasing said backup elements radially outwardly from said band means, and support means for supporting said band means whereby said backup elements may be resiliently disposed against a weld joint between the ends of aligned sections of pipe.

4,285,459

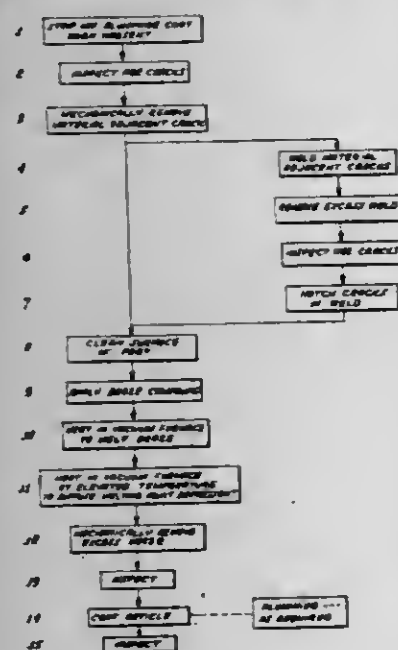
### HIGH TEMPERATURE BRAZE REPAIR OF SUPERALLOYS

Gregor Baladjanian, Malibu, and Robert L. Rothman, San Pedro, both of Calif., assignors to Chromalloy American Corporation, St. Louis, Mo.

Filed Jul. 31, 1979, Ser. No. 62,410

Int. Cl.<sup>3</sup> B23P 6/04; B23K 1/04

U.S. Cl. 228-119



20 Claims

1. The method for repairing a crack in an article consisting of superalloy material selected from the group that includes Ni and Co as a base material, the crack extending into the article from the surface thereof, the method comprising the steps:

- mechanically removing said material adjacent that part of the crack that extends from said surface down into the article, thereby to form in the article a recess whose walls are oxide free,
- filling into the recess a braze mix that consists essentially of first and second portions in powdered state, the first portion consisting essentially of said superalloy material or a material analogous thereto, and the second portion consisting essentially of a braze component containing a

melting point depressant, the weight ratio of said first and second portions being less than 1.5/1,

- subjecting said mix in the recess and the article material adjacent the recess to first elevated temperature under vacuum conditions and for a first time interval for causing said mix to form a melt, said first elevated temperature being less than the melting temperature of said material adjacent the recess; and
- thereafter subjecting the melt and the article material adjacent the recess to second elevated temperature near said first elevated temperature under vacuum conditions and for an extended time sufficient to diffuse the depressant out of a melt into the recess wall and into the first portion of the mix, and thereby to increase the melting temperature of said melt to slightly below that of the article superalloy material,
- said extended time including a primary interval during which the second elevated temperature remains at an initial level lower than said first elevated temperature, and at a lower level within the range 2050°-2150°, and a secondary and subsequent interval during which the second elevated temperature remains at another level which is higher than said initial level, each of said primary and secondary intervals being less than five hours but substantially greater than said first time interval.

4,285,460

### METHOD AND APPARATUS FOR DOUBLE JOINTING PIPE

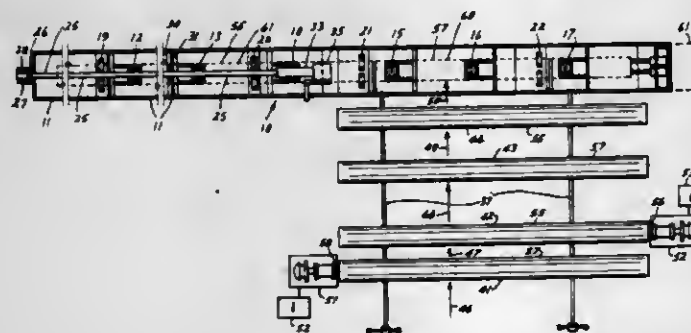
Edward A. Clavin, Houston, Tex., assignor to Midcon Pipeline Equipment Co., Houston, Tex.

Filed Aug. 13, 1979, Ser. No. 66,037

Int. Cl.<sup>3</sup> B23K 31/06, 37/04

U.S. Cl. 228-212

16 Claims



- Double jointing station apparatus for use in welding two pipe sections together to form a double length pipe section, comprising support means for supporting two pipe sections disposed end-to-end, means for conveying pipe sections lengthwise of said support means in both directions, means for rotatively turning pipe sections disposed on said support means, longitudinal boom means supported at one of its ends at one end of said support means and extending parallelly above one end portion of said support means to a central point of said support means whereby a first pipe section placed on the other end portion of said support means may be conveyed lengthwise onto said one end portion of said support means to a position surrounding said boom means, and a second pipe section may be disposed on said other end portion of said support means in end-to-end relation with said first pipe section, internal welding clamp means and internal welding head means carried at the free end of said boom means within the joint between said first and second pipe sections, external welding head means supported outside of said joint between said first and second pipe sections, said welding clamp means including a pair of clamps each expandable and retractable in the end of one of said first and second pipe sections at the opposite sides of said joint and said internal welding head means being disposed between said clamps at said joint, whereby with said clamps expanded said pipe sections may be

rotatively turned together and welded simultaneously internally and externally at said joint.

12. Method for double jointing pipe, comprising moving a first pipe section over a longitudinal cantilevered horizontal support having an internal pipe clamp carried at its free end, clamping said first pipe section at one side of said pipe clamp, moving a second pipe section into aligned abutment with said clamped end of said first pipe section and clamping its abutted end at the other side of said pipe clamp, and rotating said pipe sections about their axes while simultaneously forming internal and external welds about the joint therebetween while said pipe sections are being rotated.

4,285,461

### CONTAINER

George L. Meyers, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

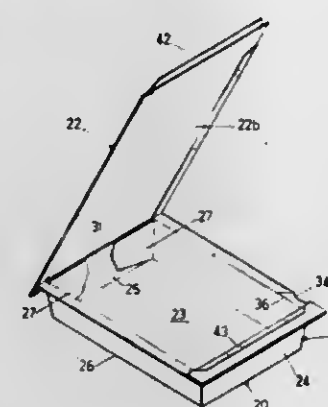
Division of Ser. No. 870,597, Jan. 18, 1978, Pat. No. 4,183,458.

This application Aug. 27, 1979, Ser. No. 70,166

Int. Cl.<sup>3</sup> B65D 5/66, 43/16

U.S. Cl. 229-44 R

9 Claims



1. A container comprising:

- an open topped tray formed of paperboard having a bottom, and at least front, back, and lateral side walls connected together and having a top peripheral edge defining the top opening in said tray, a front outwardly extending flange affixed to and extending outward from the front peripheral edge of said tray, an outwardly extending flange attached to and extending outward from the back edge of said tray, and a pair of outwardly extending flanges affixed to and extending from the lateral peripheral edges of said tray, wherein all of said flanges on said tray are attached thereto by cut score hinge lines;
- a substantially flat cover having upper and lower sides, the lower side of said cover being adhered to the surfaces of said peripheral flanges to cover the open top of said tray, whereby upon opening, said front and lateral side flanges split with a portion adhering to said cover and a portion remaining attached to said tray, and whereby said cover can be rotated open and closed about said cut score hinge line of attachment between said back edge of said tray and said back flange.

4,285,462

### CENTRIFUGES WITH HYDRAULIC CONTROLS

Denis Buffet, Meyzieu, France, assignor to Robatel S.L.P.I., Genas, France

Filed Dec. 11, 1979, Ser. No. 102,473

Claims priority, application France, Jan. 9, 1979, 79 01169

Int. Cl.<sup>3</sup> B04B 1/14

U.S. Cl. 233-20 A

6 Claims

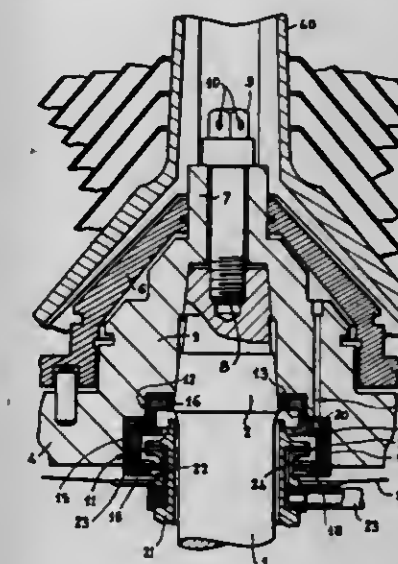
1. A centrifuge comprising:

- a frame supporting a rotating shaft having an annular support surface near its outer end;
- a sleeve supported by the frame and extending around the shaft adjacent to its support surface, the sleeve having ports extending radially therefrom, and the ports being

coupled to a source of hydraulic control liquid whose pressure is adjustable;

(c) an annular member supported on said support surface and surrounding the sleeve in the vicinity of its radial ports, the annular member having an annular groove in its inner surface opening radially toward said ports and the groove having a bottom surface located away from said ports, and the annular member having passages extending from the bottom of the groove away from said ports;

(d) a bowl and lid unit comprising a base bowl having a central hub shaped to slide onto said support surface of the



shaft and be supported thereby and having an enlarged housing portion shaped to overlie and removably seal to said annular grooved member, and the unit having an inner bowl within said base bowl and moveable axially of the shaft therein, and the unit having a lid supported by the base bowl and sealingly engaged by the inner bowl when the latter is moved toward the lid axially with respect to the shaft and the base bowl; and

(e) first hydraulically controlled means operative to move the inner bowl into sealing engagement with the lid, and coupled with said passages extending from the bottom of the groove to receive liquid therefrom.

4,285,463

### DECANTING CENTRIFUGE

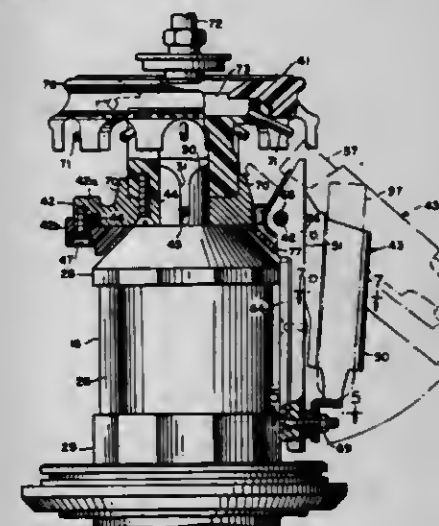
Franklin F. Intengan, Hialeah, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Nov. 1, 1979, Ser. No. 90,505

Int. Cl.<sup>3</sup> B04B 9/12

U.S. Cl. 233-26

23 Claims



1. A decanting centrifuge comprising a base housing a motor having an upstanding drive shaft; and electromagnet coaxially mounted upon said drive shaft for rotation therewith; said



electromagnet having lateral pole faces; a rotor head assembly secured to said drive shaft for rotation therewith; said rotor head assembly including an annular support member coaxial with said shaft and a plurality of magnetically-attractable open-topped tube carriers pivotally suspended from said member about said electromagnet; said tube carriers being adapted to support centrifuge tubes and being pivotally movable between substantially vertical decant positions wherein said carriers rest directly against the pole faces of said electromagnet and outwardly inclined spin positions wherein the carriers are spaced outwardly from said pole faces under the influence of centrifugal force; said electromagnet being selectively energizable for magnetically holding said carriers in said decant positions during rotation of said rotor head assembly for decanting under centrifugal force the liquid contents of the tubes supported by such carriers.

4,285,464

# APPARATUS FOR SEPARATION OF BLOOD INTO COMPONENTS THEREOF

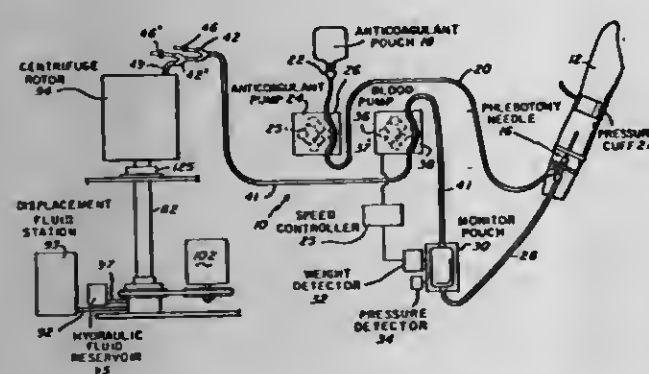
Allen Latham, Jr., Jamaica Plain, Mass., assignor to Haemonetics Corporation, Braintree, Mass.

Division of Ser. No. 5,126, Jan. 22, 1979, abandoned. This application Jan. 2, 1980, Ser. No. 155,069

Int. Cl.<sup>3</sup> B04B 9/12, 11/02

U.S. Cl. 233—26

5 Claims



1. A disposable blood pathway for use in the centrifugal separation of blood in a spinning centrifuge rotor into a first blood component and a second blood component comprising, in combination:

a flexible blood processing bag having at least one inlet port and one outlet port, said flexible blood processing bag having inner and outer wall members with a relatively small distance between said inner and said outer wall members compared to other internal bag dimensions so that the distance blood components travel during centrifugal separation is minimized when said bag is supported in the centrifuge rotor in a position whereby said relatively small distance is positioned transverse to the axis of rotation so that second blood component travels along this short internal bag dimension during centrifugal separation;

a receiver container for receiving first blood component separated in said flexible blood processing bag, said receiver container having at least one inlet port and having a geometry which minimizes imbalance in said centrifuge rotor as separated first blood component is introduced into the receiver container;

blood-compatible tubing connecting an outlet port of said flexible blood processing bag with an inlet port of said receiver container; and

blood compatible tubing for providing fluid communication between a source of blood to be separated and an inlet port on said flexible blood processing bag.

## 4,285,465 THERMOSTATIC DEVICES

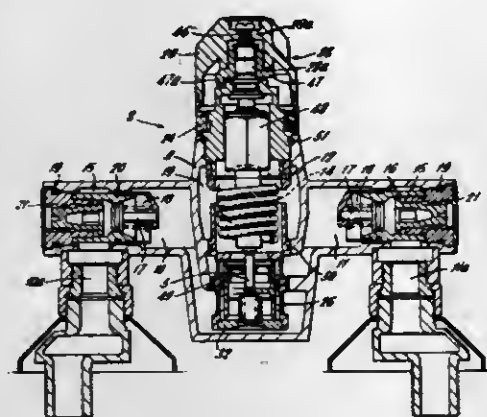
Royston J. North, Cheltenham, England, assignor to Walker Crosweller & Company Limited, Cheltenham, England

Filed Apr. 24, 1979, Ser. No. 32,878

Int. Cl.<sup>3</sup> G05D 23/13

U.S. Cl. 236—12 A

7 Claims



1. A thermostatic device for an ablutionary water mixing appliance, said device comprising a housing, valve means axially movable within said housing for controlling the proportions of fluids to be mixed, a thermoscopic device mounted in said housing so that mixed fluid flows over the external surfaces of said thermoscopic unit, an actuator operable connected to said thermoscopic unit for controlling movement of said valve means, said thermoscopic unit comprising a bellows unit mounted within a hollow body located in said housing, an expansion chamber defined between said bellows unit and said hollow body and containing thermally responsive material, the thermally responsive material comprising a wax based material selected for the temperature range of use and having a liquid phase at the higher temperatures of said range, said actuator being movable by responsive movement of the thermoscopic unit on change of temperature of the mixed fluid.

4,285,466

# APPARATUS FOR MIXING HIGH AND LOW PRESSURE AIR FROM A JET ENGINE

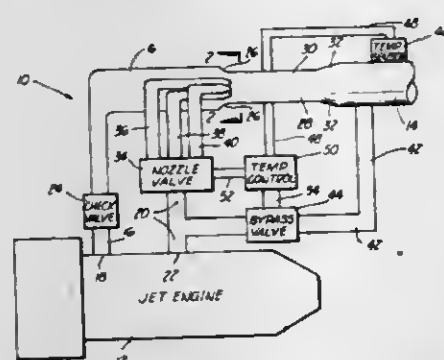
Larry L. Linscheld, Wichita, and Philip M. Mueller, Derby, both of Kans., assignors to The Boeing Co., Seattle, Wash.

Filed Feb. 25, 1980, Ser. No. 124,530

Int. Cl.<sup>3</sup> G05D 23/13

U.S. Cl. 236—13

7 Claims



5. The apparatus for mixing high and low pressure air from a jet engine and introducing the mixed air to an air duct of the air conditioning system of an aircraft, the apparatus comprising:

a low pressure air supply line adapted for connection at one end to the low pressure bleed air of the jet engine;

a high pressure air supply line adapted for connection at one end to the high pressure bleed air of the jet engine;

an air-mixing chamber having an inlet section connected to the other end of the low pressure air supply line, the inlet section flared inwardly into a venturi section, the venturi

section connected to an outwardly flared outlet section, the outlet section adapted for connection to the air duct; a high pressure air supply bypass line connected to the high pressure air supply line and adapted for connection to the air duct; a bypass valve connected to the high pressure air supply bypass line; a first, a second, and a third high pressure nozzle, the nozzles connected to a first nozzle valve, a second nozzle valve, and a third nozzle valve, respectively, the nozzle valves connected to the high pressure air supply line, the ends of the nozzles positioned in the air-mixing chamber for mixing the high pressure air with the low pressure air; a temperature control connected to the nozzle valves for opening and closing the nozzle valves, the control also connected to the bypass valve for opening and closing the bypass valve; and a temperature sensor adapted for connection to the air duct for sensing the temperature of the mixed air, the sensor also connected to the temperature control for regulating the temperature control.

4,285,467

# THREE-PORT THERMALLY RESPONSIVE VALVE

Edgar W. Maltby, Elgin, Ill., assignor to Eaton Corporation, Cleveland, Ohio

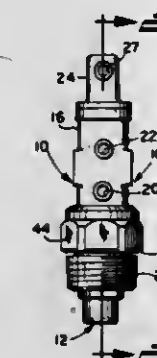
Continuation of Ser. No. 841,422, Oct. 12, 1977, abandoned.

This application Jul. 2, 1979, Ser. No. 53,675

Int. Cl.<sup>3</sup> G05D 23/12

U.S. Cl. 236—86

17 Claims



1. A thermally responsive device for valving a plurality of fluid ports, comprising:

(a) a housing means, said housing means defining

(i) a fluid chamber,

(ii) first, second and third spaced fluid ports communicating with said fluid chamber,

(iii) a transversely extending stop surface intermediate said first and second fluid ports;

(iv) a first valve sealing surface integrally formed by said housing means;

(v) a second valve sealing surface integrally formed by said housing means and spaced from said first valve sealing surface;

(b) valve means disposed within said fluid chamber, said valve means including a valve member movable between a first valving position, an intermediate position, and a second valving position, and having first and second spaced seal means thereon, said valve member further including a flanged portion adjacent said first seal means, said flanged portion being engageable with said stop surface, in said first position said first seal means seals against said first valve sealing surface for isolating said first and second fluid ports from each other, said second seal means is spaced from said second valve sealing surface for fluidly communicating said second fluid port with said third fluid port, said flanged portion being in abutment with said stop surface, in said intermediate position said first seal means remains sealed against said first valve sealing surface and said second seal means against said second seal surface for isolating said first fluid port from said second and third

fluid ports, and in said second valving position said first seal means is spaced from said first valve sealing surface for fluidly communicating said first fluid port with said second fluid port and said second seal means remains sealed against said second valve sealing surface for isolating said second fluid port from said third fluid port; said flanged portion being spaced from said stop surface in said intermediate and said second positions;

(c) means biasing said valve member to said first position such that said flanged portion abuts said stop surface; and, (d) thermally responsive means associated with said housing means and including means operative to move said valve member between said first and second positions in response to predetermined temperatures.

16. A thermally responsive device for valving a plurality of fluid ports, comprising:

(a) housing means, said housing means defining

(i) a fluid chamber,

(ii) first, second and third spaced fluid ports communicating with said fluid chamber,

(iii) a lower housing member having said first and second fluid ports spaced thereon,

(iv) an upper housing member having said third fluid port located thereon,

(v) a first valve sealing surface integrally formed by said lower housing member;

(vi) a second valve sealing surface integrally formed by said upper housing member;

(vii) said upper and lower housing members being joined in a fluid sealing arrangement along a parting surface located adjacent said second valve sealing surface;

(b) valve means disposed within said fluid chamber, said valve means including a valve member disposed within said fluid chamber, said valve member being movable between a first valving position, an intermediate position, and a second valving position, and having first and second spaced seal means thereon, in said first position said first seal means seals against said first valve sealing surface for isolating said first and second fluid ports from each other, said second seal means is spaced from said second valve sealing surface for fluidly communicating said second fluid port with said third fluid port, in said intermediate position said first seal means remains sealed against said first valve sealing surface and said second seal means seals against said second seal surface for isolating said first fluid port from said second and third fluid ports, and in said second valving position said first seal means is spaced from said first valve sealing surface for fluidly communicating said first fluid port with said second fluid port and said second seal means remains sealed against said second valve sealing surface for isolating said second fluid port from said third fluid port;

(c) means biasing said valve member to said first position;

(d) thermally responsive means associated with said housing means and including means operative to move said valve member between said first and second positions in response to predetermined temperature; and

(e) check valve means disposed within said fluid chamber intermediate said valve member and said third fluid port for preventing fluid flow in a direction from said third fluid port to said second fluid port and permitting fluid flow in a direction from said fluid port to said third fluid port.

4,285,468

# ARTICLE FOR THE DISPENSING OF VOLATILES

Sy Hyman, 425 E. 58th St., New York, N.Y. 10022

Continuation-in-part of Ser. No. 803,369, Jan. 3, 1977, Pat. No. 4,161,283. This application May 10, 1979, Ser. No. 37,688

Int. Cl.<sup>3</sup> A61L 9/04

U.S. Cl. 239—55

15 Claims

1. An article for the dispersion of a volatile substance to the



surrounding atmosphere comprising a substantially liquid impervious, gas permeable polymeric layer, said layer being bonded so as to form a reservoir, a solid comprising a plurality of particulates comprising a polymeric matrix comprising a volatilizable substance in the matrix and being disposed in said reservoir, said matrix providing a controlled release of said volatilizable substance and being one selected from a varied



concentration of said substance in said particulates and varied sized particulates, and a barrier removably adhesively attached to and covering the outer surface of said polymeric layer, whereby the volatilizable substance disperses from the particulates through the polymeric layer to the outer surface of the polymeric layer so that with the removal of the barrier layer the substance volatilizes from the exposed surface of the polymeric layer to the surrounding atmosphere.

#### 4,285,469 APPARATUS FOR CLEANING SURFACES HAVING AN UPRIGHT ORIENTATION

Paul Hammelmann, Zum Sundern 17, 4740 Oelde 1, Fed. Rep. of Germany

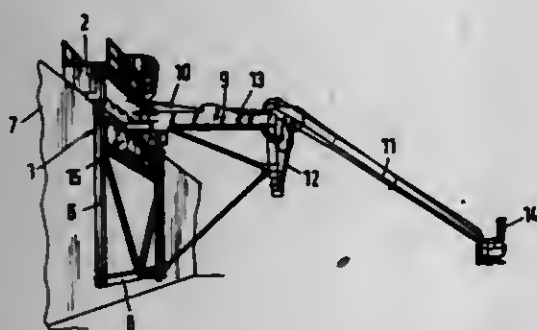
Filed Nov. 9, 1979, Ser. No. 92,949

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2849079

Int. Cl.<sup>3</sup> B05B 3/18

U.S. Cl. 239-184

9 Claims



1. Apparatus for cleaning surfaces having an upright orientation, particularly ship hulls, comprising an elongated carriage movable horizontally along a support having an upright wall; a multi-partite pivotable arm projecting from said carriage and having a free end portion provided with a water-discharging device; a reservoir mounted on and extending along said carriage so as to be located laterally adjacent said wall, said reservoir having an upper portion provided with a water inlet opening which is located at a side facing said wall and is substantially coextensive with the length of said reservoir; a water supply conduit mounted at said wall extending along the path of movement of said carriage and having a plurality of longitudinally spaced water discharge valves positioned to discharge water through said inlet opening into the reservoir; and means responsive to the water level in the reservoir for opening said valves during movement of the reservoir when the water level therein drops below a predetermined lower limit.

#### 4,285,470 SELF-CONTAINED HEADLAMP WASHER SYSTEM

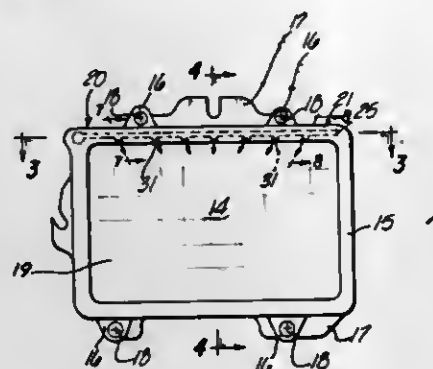
David W. Roth, Detroit, Mich., assignor to The 2500 Corporation, Lathrup Village, Mich.

Filed Aug. 3, 1979, Ser. No. 63,473

Int. Cl.<sup>3</sup> B05B 1/10; B60S 1/52

U.S. Cl. 239-284 A

16 Claims



1. A headlamp washer system for use on a vehicle having at least one headlamp having a lens and a power source, said system including in combination a headlamp bezel for holding said headlamp and nozzle in place on said vehicle, a headlamp washer nozzle assembly at the top of said bezel and having a plurality of passageways therein, an inlet connected to said passageways, a flexible washer fluid container, an electrical pump assembly connected to said container and adapted to be operated by said power source and having an outlet, hosing connected between said pump outlet and said inlet, and an electrical switch connected to said pump assembly to operate the same, wherein the headlamp washer nozzle assembly is of a two-piece construction within the headlamp bezel and does not protrude or cover any portion of the headlamp lens, the electrical pump assembly and said means for activating the same is an electrical pump assembly unit for both the headlamp washer and windshield washer systems, the flexible container is a fluid reservoir unit for both the headlamp washer and the windshield washer systems, and wherein said plurality of passageways include a long fluid passageway which decreases in cross-sectional area across the width of the nozzle.

#### 4,285,471 FUEL INJECTION NOZZLE

Ewald Eblen, Stuttgart; Karl Hofmann, Neckarrems, and Odon Koppe, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 13, 1978, Ser. No. 886,323

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1977, 2711393

Int. Cl.<sup>3</sup> F02M 61/04

U.S. Cl. 239-533.4

11 Claims

1. A fuel injection nozzle for internal combustion engines comprising, a nozzle body having a first set of fuel injection openings and fuel inlet means for applying pressurized fuel to said first set of injection openings, a slidable valve needle in said nozzle body, means for applying a closing force to said valve needle against which said valve needle opens for moving said valve needle into closing relationship with said first set of injection openings, a control piston slidably disposed in said nozzle body for acting at one side on said valve needle, a spring chamber in said nozzle body, inlet means in said nozzle body for applying a pressurized control fluid from an associated source of fluid pressure

on a side facing said valve needle in said spring chamber to said control piston, and



means for controlling said control fluid pressure independently of the fuel being discharged from said fuel injection nozzle through said first set of injection openings.

#### 4,285,472 WATER DROPPING TYPE IRRIGATION PIPE

Hiroaki Okada; Takefumi Sonoda, and Osamu Shoji, all of Ayasemachi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin anyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,650

Claims priority, application Japan, Apr. 12, 1978, 53/42834

Int. Cl.<sup>3</sup> B05B 15/00

U.S. Cl. 239-542

7 Claims



1. A water dropping type irrigation pipe which comprises a base film; a peeling coating mounted on said base film along the longitudinal axis of said base film; a second film laminated onto said base film and said peeling coating to form a water conduit having at least one opening; and a plurality of laminated side parts projected from at least one side of the conduit in the form of fins to form a distribution passage which is branched from the conduit and has a throat in fluid communication with each of said at least one openings wherein said water distribution passage is formed by said conduit and said throat part and wherein said throat part is smaller in width than the distribution passage and said at least one opening.

#### 4,285,473 COMPACT SPEED-REDUCING UNIVERSAL MOTOR DRIVE ASSEMBLY ARRANGEMENT FOR FOOD PROCESSOR

James E. Williams, Stamford, Conn., assignor to Wilson Research & Development, Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 847,759, Nov. 2, 1977, abandoned. This application Jun. 11, 1979, Ser. No. 47,312

Int. Cl.<sup>3</sup> B02C 18/12

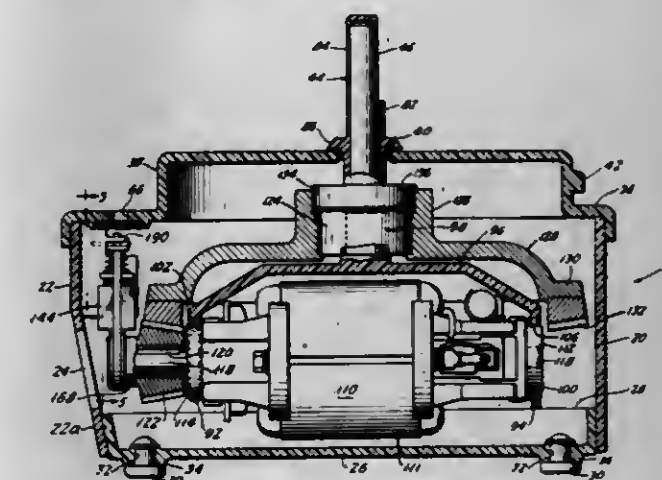
U.S. Cl. 241-37.5

42 Claims

1. In a food processor of the type including a base housing enclosing a drive unit, a rotatable spindle driven by said drive

unit and extending vertically upward from said housing, a bowl detachably mounted on said housing and defining a base opening receiving said spindle, a rotary tool mounted on said spindle within said bowl, and a cover detachably secured to said bowl defining a food receiving aperture therethrough, the improvement wherein said drive unit comprises:

means for supporting an electric motor within said housing; a universal electric motor carried by said supporting means and having a substantially horizontal drive shaft extending from one end thereof;



a pinion gear mounted on said drive shaft for rotation therewith; a ring gear engaging said pinion gear and encircling said motor for rotation thereabout in a substantially horizontal plane about a substantially vertical axis; means for coupling the rotation of said ring gear to said vertically extending rotatable spindle; and, means for controlling rotation of said motor.

#### 4,285,474 TOILET PAPER DISPENSER WITH BIASING MEANS FOR RESTRAINING THE UNWINDING OF THE PAPER

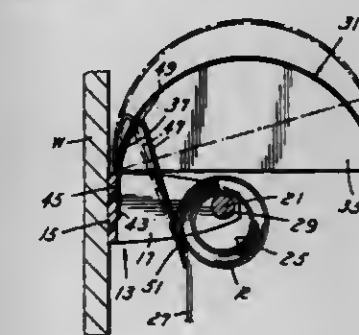
Michael A. Perez, 5825 Glenis St., Taylor, Mich. 48180

Filed Mar. 27, 1980, Ser. No. 134,377

Int. Cl.<sup>3</sup> B65H 19/00

U.S. Cl. 242-55.2

11 Claims



1. In combination with a toilet paper dispenser including a bracket having a base mountable upon a wall and a pair of opposed trunnion arms at the ends of said base with opposed sockets, and a dowel at its ends removably mounted within said sockets supporting and loosely journaling a roll of toilet paper having a depending lead sheet; a biasing means for restraining unwinding of said roll including a cover projecting from said wall, overlying and partly enclosing said roll, and having front and rear edges; an elongated mount strip of resilient material secured upon said cover at its rear edge; an elongated hinge strip flexibly connected to and depending from said mount strip and secured to said wall; and a friction tab on and flexibly and resiliently connected to said mount strip extending angularly and forwardly downward thereof and adapted to tangentially and yieldably



engage said roll, retaining said roll and lead strip for limited and controlled unwinding movements.

4,285,475

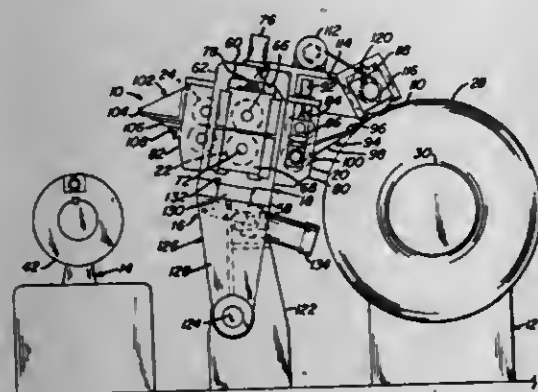
# MECHANICAL FEED-UP OF WEB MATERIAL ON A RECOILER

John W. Rogers, 22175 Douglas Rd., Shaker Heights, Ohio 44122

Filed Mar. 13, 1980, Ser. No. 129,967  
Int. Cl.<sup>3</sup> B65H 15/02; B21C 17/10

U.S. Cl. 242—56.2

20 Claims



1. In a web slitting line including an uncoiler, a slitter head containing rotary slitting knives and a recoiler, a coil of web material carried by said uncoiler, said web material being adapted to extend through said slitter and be cut into strips, the method of feeding said web material from said uncoiler to said recoiler comprising the steps of:

- (a) moving said slitter head to a position closely adjacent said uncoiler;
- (b) unwinding said web material from said uncoiler to place the leading end thereof at the nip of said slitting knives;
- (c) engaging said web leading end by said slitting knives;
- (d) moving said slitter head to a position closely adjacent said recoiler;
- (e) operate said knives to move the leading end of said web into engagement with said recoiler; and
- (f) attaching said web leading end to said recoiler.

4,285,476

# TOUCH CONTROL FOR A SPIN-CASTING REEL

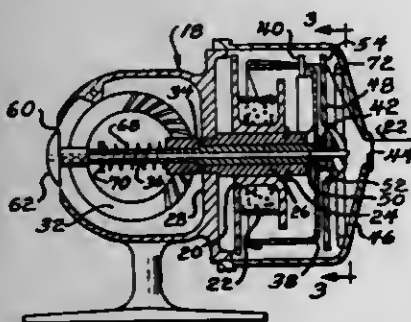
Robert C. Baenziger, 115 Voltz Rd., Northbrook, Ill. 60062

Continuation-in-part of Ser. No. 958,038, Nov. 6, 1978, abandoned. This application Jul. 11, 1979, Ser. No. 56,611

Int. Cl.<sup>3</sup> A01K 89/01

U.S. Cl. 242—84.2 A

11 Claims



2. In a fishing reel of the type including a non-rotating spool adapted to discharge line therefrom by unwinding line in a generally axial direction from one end of said spool, and line take-up means engageable with the line and rotatable around said spool for winding line onto said spool, the improvement comprising, in combination;

an axle member and means supporting said axle member in a generally coaxial relationship with respect to said spool

and freely rotatable with respect to said spool and said line take-up means;

line engaging means mounted on said axle member adjacent said discharge end of said spool, said line engaging means including at least one distinct line engaging portion engageable with the line during discharge from said spool to cause rotation of said line engaging means and said axle member;

touch control means mounted on said axle member beyond the other end of said spool for rotation with said axle member and said line engaging means during line discharge, and operable upon frictional engagement to retard selectively rotation of said line engaging means to control the discharge of line from said spool.

4,285,477

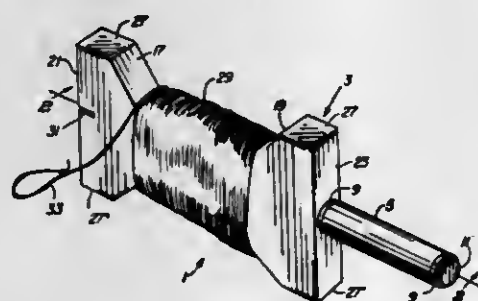
# CONSTRUCTION LINE REEL

Terrence L. Oxendahl, 1130 E. Butler B-5, Phoenix, Ariz. 85020, and Allen E. Davidson, 17008 N. 49th Ave., Glendale, Ariz. 85308

Filed Apr. 30, 1979, Ser. No. 34,552  
Int. Cl.<sup>3</sup> B65H 75/40

U.S. Cl. 242—96

6 Claims



1. Apparatus for dispensing cord for use in conjunction with construction work, said apparatus comprising in combination:

- a. an elongated handle to be held in a single hand of a construction worker during dispensing of cord from said apparatus, said handle having a first axis;
- b. a substantially elongated cord bearing head rotatably mounted on said elongated handle, said cord bearing head including

- i. a second axis aligned with and parallel to the first axis of said elongated handle, said cord bearing head having a substantially rectangular cross-section to effect convenient insertion of said cord bearing head into a pocket of the construction worker and withdrawal of said cord bearing head from a pocket of the construction worker, said second axis being an axis of rotation of said cord bearing head,
- ii. first and second opposed parallel ends through which the axis of rotation passes,
- iii. first and second parallel opposed major faces extending between respective edges of said first and second opposed ends, and
- iv. first and second opposed side surfaces each extending between corresponding edges of said first and second major faces and said first and second ends, said first side surface having first and second substantially coplanar end portions, a first cord receiving notch being disposed between said first and second end portions, said first cord receiving notch having a first notch bottom surface parallel to said second axis, a first sloping surface extending between said first notch bottom surface and said first end portion, and a second sloping surface extending between said first notch bottom surface and said second end portion, said second side surface having third and fourth substantially coplanar end portions, a second cord receiving notch being disposed between said third and fourth end portions, said second cord receiving notch having a second notch bottom surface parallel to said second axis, a third sloping surface ex-

tending between said second notch bottom surface and said third end portion, and a fourth sloping surface extending between said second notch bottom surface and said fourth end portion, said first and second sloping surfaces sloping outwardly from said first notch bottom surface toward said first and second ends, respectively, said third and fourth sloping surfaces sloping outwardly from said second notch bottom surface toward said first and second ends, respectively;

- c. bearing means for rotatably connecting said elongated handle to said second end; and
- d. notch means for retaining a loose end of cord wound on said cord bearing heads, the distance between said first and second end being equal to a first distance, the lengths of said first and second notch bottom surfaces being equal to a second distance, said first distance being substantially greater than said second distance, the second distance being substantially greater than a third distance between said first and second major faces, said first, second and third distances being selected to enable said cord bearing head both to be easily inserted into and withdrawn from a pocket of the construction worker and to enable an approximately 200 foot length of construction cord to be conveniently wound on said cord bearing head so that loops of the wound construction cord do not extend substantially outwardly of said first, second, third and fourth end portions, thereby preventing loops of wound construction cord from slipping laterally off of said cord bearing head, said cord bearing head having no protrusions therefrom which can interfere with inserting said cord bearing head into a construction worker's pocket or withdrawing said cord bearing head from a construction worker's pocket, whereby a worker can safely and conveniently carry and deploy said apparatus to dispense construction cord using only one hand with little attention being focused on orientation of said apparatus during the dispensing.

4,285,478

# SEAT BELT RETRACTOR MECHANISM HOUSING

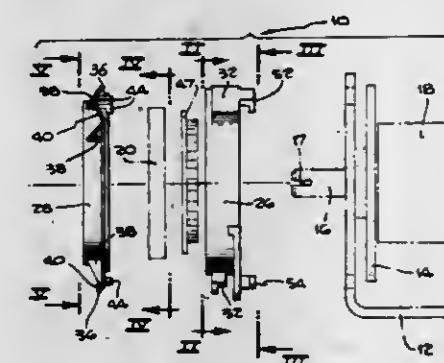
Nazareth Stambouljan, Los Angeles, Calif., assignor to American Safety Equipment Corporation, San Fernando, Calif.

Filed Jul. 6, 1979, Ser. No. 55,181

Int. Cl.<sup>3</sup> A62B 35/00; B65H 75/48

U.S. Cl. 242—107

9 Claims



1. In a safety belt retractor having a frame, a belt storage spool rotatably mounted to said frame, a safety belt connected to and having belt portions stored on said storage spool for protraction and retraction relative to said frame, and spring means including an inner end and an outer end for applying a bias on said spool in a direction resisting unwinding of said belt from said spool to a position of use, said spring means attaching by said inner end to said spool, a housing for said spring means comprising:

- a housing body attached to said frame and having at least one socket member disposed on its periphery; and
- a housing cap including means for engaging said outer end of said spring means and being separate from and abutting said body in covering relation, said cap having at least one

locking flange positioned on its periphery, said locking flange being positionable between a first position allowing said cap to rotate relative to said housing in said abutting position to tension said spring means and a second position allowing said locking flange to engage said socket means, said engagement thereby affixing said housing cap to said housing body when the desired tension has been achieved.

4,285,479

# INERTIA RELEASE FOR BELT RETRACTOR WINDING PREVENTION MECHANISM

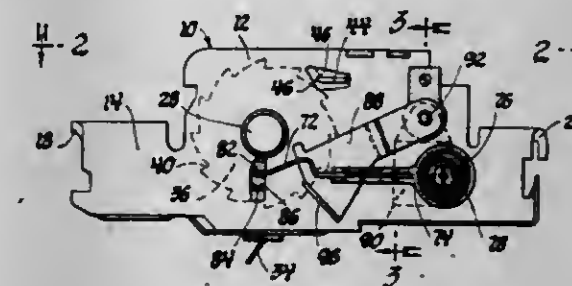
Hubert P. Blom, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 11, 1980, Ser. No. 120,573

Int. Cl.<sup>3</sup> A62B 35/02; B65H 75/48

U.S. Cl. 242—107.4 A

3 Claims



1. A vehicle occupant restraint belt retractor comprising: a housing; a belt reel rotatably mounted on the said housing; a restraint belt attached to the reel and wound and unwound thereon during reel rotation; a winding spring normally biasing the reel in the belt winding direction of rotation to pull the belt taut about the occupant; a first inertia-sensing means adapted to sense a predetermined level of vehicle deceleration and lock the belt reel against belt unwinding rotation upon occurrence of the predetermined level; detent means acting between the reel and the housing to selectively lock the reel against belt winding rotation by the winding spring and thereby relieve belt tension on the occupant by establishing a slackened belt condition about the vehicle occupant; a second inertia-sensing means for sensing a predetermined second level of vehicle deceleration less than the level of deceleration sensed by the first inertia-sensing means and adapted to unlock the detent means whereby the winding spring effort is restored to rotate the reel in the belt winding direction of rotation to pull the belt taut against the vehicle occupant prior to locking of the belt reel against belt unwinding rotation by the first inertia-sensing means.

4,285,480

# CASSETTE LOADING SYSTEM AND SELF-THREADING CASSETTE FOR USE THEREWITH

Ralph Parker, Melbourne Beach, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 31, 1979, Ser. No. 62,290

Int. Cl.<sup>3</sup> G03B 1/04; G11B 15/32

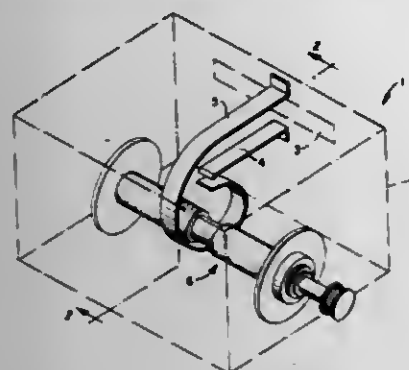
U.S. Cl. 242—195

25 Claims

1. A self-threading cassette for strip material comprising: a cassette housing having an opening through which said strip material is introduceable; a take-up reel rotatably mounted within said cassette housing; and guide means mounted in said cassette housing for directing said strip material introduced through said opening to said take-up reel and causing said strip material to pass in an unsecured manner over and around said take-up reel until the leading end of said strip is gripped between said reel and a remote portion of said strip material, said guide means being formed of a spring curved continuously



around said reel so as to be urged against said reel at a nip portion between itself and said reel, the contour of said



spring being curved upstream and downstream of said nip portion so as to be able to flex and expand away from said reel as said strip material is wound about said reel.

4,285,481

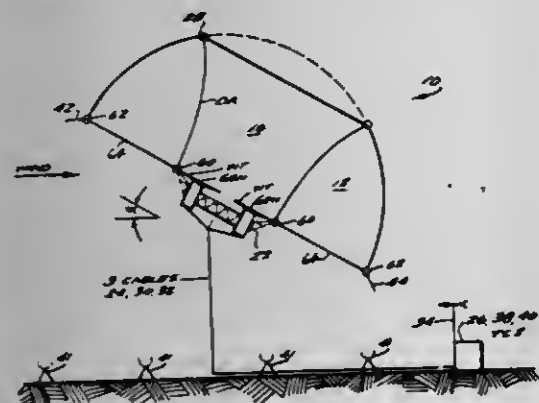
# **MULTIPLE WIND TURBINE TETHERED AIRFOIL WIND ENERGY CONVERSION SYSTEM**

Lloyd I. Biscomb, 4452 Burlington Pl., N.W., Washington, D.C. 20016

Continuation-in-part of Ser. No. 44,934, Jun. 4, 1979. This application Dec. 7, 1979, Ser. No. 101,492  
Int. Cl.<sup>3</sup> B64B 1/02, 1/50; F03D 9/00

U.S. Cl. 244—33

32 Claims



1. A multiple wind turbine tethered airfoil wind energy conversion system, comprising:  
a positive-lift, lighter-than-air, flexible gas bag-type airfoil provided with a lined vent which extends completely generally axially therethrough;  
a plurality of wind energy conversion devices each having a power output-providing device;  
frame means supported by said airfoil and mounting said wind energy conversion devices for rotation relative to said airfoil, each being axial aligned so as to be substantially parallel with said vent;  
a plurality of motorized, individually operable winches, being at least three in number, and being for disposition at spaced sites generally in an imaginary ring on the ground; each such winch having a tether line having a first end connected therewith and having a respective outer end; means connecting each tether line outer end to said airfoil radially distally of said vent, so that said airfoil is tethered to said winches from a plurality of widely distributed sites; a means for supplying inflating lighter-than-air gas to the airfoil, this means including a gas inlet control valve;  
a means for releasing inflating lighter-than-air gas from within the airfoil, this means including a gas release control valve;  
means for sensing wind direction incident upon said airfoil and for providing an output signal in relation thereto;  
a tether control system incorporating means for determining for each of a plurality of various different wind direction-related output signals received from said sensing means,

respective control signals equating to the amounts by which each of the respective tether lines must be reeled in or payed out in order to tilt the airfoil into the wind at an optimum angle of attack to maximize power output of said power output-providing devices of said wind energy conversion devices;  
means operatively connecting said sensing means to said tether control system for furnishing said output signal to said tether control system; and  
means operatively connecting said tether control system to each of said motorized, independently operable winches for furnishing said respective control signals to the respective said winches.

4,285,482

# **WING LEADING EDGE HIGH LIFT DEVICE**

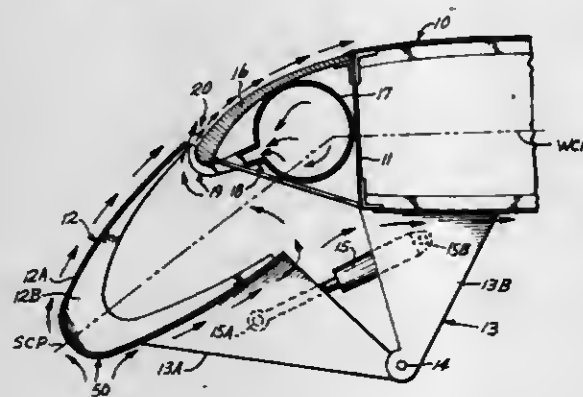
Delbert S. Lewis, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 10, 1979, Ser. No. 65,403

Int. Cl.<sup>3</sup> B64C 21/08, 9/24, 3/44

U.S. Cl. 244—207

18 Claims



1. A leading edge high-lift generating device for an airfoil, comprising: a spanwise slat segment forming the nose structure of the airfoil, and having both an upper and a lower trailing edge surface faired into the cross-sectional configuration of the airfoil, without any aerodynamic surface discontinuities, when in a fully retracted and stowed position; means for externally hinging said spanwise slat segment to the undersurface of the airfoil for curvilinear extension and retraction movement relative to the airfoil; said external hinge means comprising, a support bracket extending downward from the undersurface of the airfoil, and a drive arm pivotally mounted to the lower end of the support bracket and having its swinging end fastened to the slat segment; said pivotal connection between the support bracket and the drive arm, forming the slat segment hinge axis; means for actuating the slat segment from a stowed position to a forward and downward extended operative position; a contoured panel member being secured at an aft portion to fixed structure of the airfoil and having a forward portion forming a fixed nose structure for the airfoil when said contoured panel member is exposed by forward curvilinear extension of the slat segment to form a continuous upper surface contour between said extended slat segment and the airfoil, and thereby providing both an increased cambered airfoil and an increased airfoil area; said panel member having an upper surface contoured along a radial arc that has a virtual center off-set from the slat segment hinge axis, for tailoring an aerodynamic slot between said slat segment and said panel member to increase in size proportional to the degree of slat segment extension for providing a greater amount of airflow through the aerodynamic slot as both the exposed upper contoured surface area of said panel member increases and said slat segment angle-of-deflection increases; thereby, maintaining streamwise boundary layer airflow attachment to the upper surface of the airfoil.

4,285,483

# **ELECTRONIC EVENTS RECORDING MEANS**

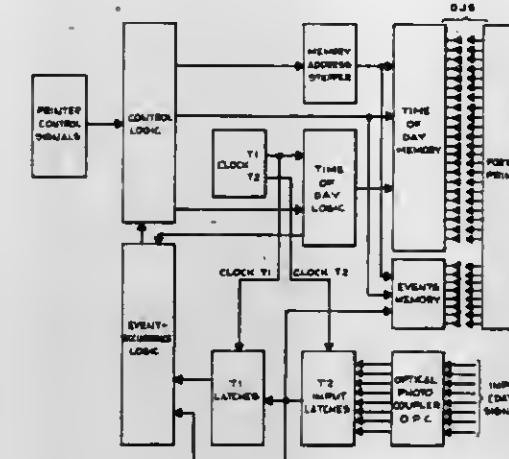
John J. Cipollone, San Bernardino, Calif., assignor to Electro Pneumatic Corporation, Riverside, Calif.

Filed May 7, 1979, Ser. No. 36,347

Int. Cl.<sup>3</sup> B61L 21/00

U.S. Cl. 246—107

5 Claims



1. An events-monitoring and event-data storing device comprising:  
a plurality of electric signal input lines for receiving respective event-representing electric signals;  
clock means for providing a first series of electric timing pulses and a second series of such pulses each following in time a pulse of said first series;  
a first series of logical latches each connected to a respective one of said signal input lines and to said clock means to pass a clocked input signal in response to a pulse of the first series of pulses and a coincident signal on a respective one of said input lines;  
memory means including a series of memory units connected to said latches to receive and record clocked input signals from respective ones of said latches;  
a second series of latches each connected to said clock means to receive and pass a signal passed from a respective one of said first series of latches in response to a coincident pulse of the second series of electric timing pulses;  
means to provide a continuing series of signals representing current time of day information; and  
logical circuit means responsive to a signal passed by any of said second series of latches to cause recording in said memory means of the time-of-the-day concurrently with the recording of any passed input signal;  
whereby throughout an indefinitely extended period of time any event-representing electric signal received on any of said signal input lines is individually recorded in said memory means concurrently with a record of the time of occurrence of the respective event.

4,285,484

# **SHELF AND CLOTHES ROD ASSEMBLY FOR A CLOSET**

James S. Follows, 19239-96th Ave., Surrey, British Columbia, Canada (V3T 4W2)

Filed Jun. 7, 1979, Ser. No. 46,405

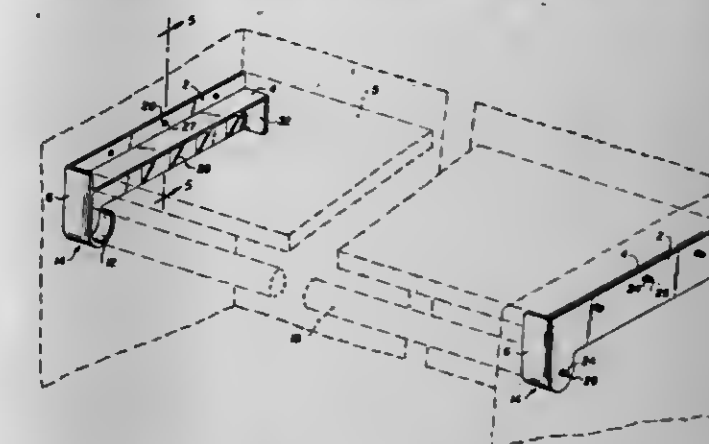
Int. Cl.<sup>3</sup> A47B 57/00

U.S. Cl. 248—235

5 Claims

1. A shelf and clothes rod assembly for a closet comprising:  
a rigid shelf having end surfaces oriented substantially transversely to the lengthwise axis of said shelf;  
a clothes rod having end surfaces oriented substantially transversely to the lengthwise axis of said rod;  
a pair of closet fittings adapted for attachment to opposing interior walls of the closet, each fitting having an elongate first solid wall to abut an interior wall of the closet and a second wall longitudinal of and extending transversely from said first wall for supporting an end of said shelf, each fitting further including a curved wall extending

from said first wall for supporting an end of said clothes rod, said curved wall being below said second wall when said fitting is attached to said closet wall, each fitting further including a plurality of openings in said first wall, including a plurality of said openings positioned in said first wall to open toward an end surface of said shelf and an opening positioned in said first wall to open toward an end of said clothes rod when the assembly, including the shelf and clothes rod, is installed in the closet;  
expansion fastener means associated with said openings of said fittings for attaching said fittings to said closet walls, said fastener means each including an expandable body insertable through an opening of said fitting and into an



aligned hole in the wall and an expander member insertable in said expandable body to forcibly expand said expandable body outwardly, each of said expandable bodies further including an integral ring that abuts said first wall of said fitting upon said expandable body being inserted through said opening of said fitting;  
said shelf and said clothes rod each being sized in length such that their opposite end surfaces snugly abut said expander members of said expansion fastener means when said fittings are attached to said opposing interior walls of said closet and said shelf and said clothes rod are interposed substantially horizontally between said fittings to bear upon said second walls and said curved walls, respectively, of said fittings.

4,285,485

# **RETRACTABLE SONAR SENSING SYSTEM**

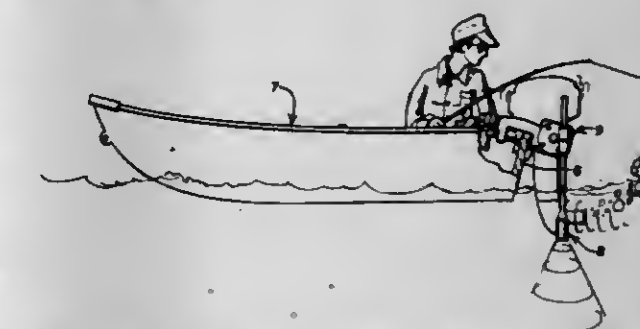
Willard E. Burke, 416 W. Douglas Ave., Fergus Falls, Minn. 56537

Filed Jul. 23, 1979, Ser. No. 59,562

Int. Cl.<sup>3</sup> E04G 3/00

U.S. Cl. 248—291

10 Claims



1. A readily retractable sonar sensor system comprising:  
(a) a support plate member;  
(b) clamping means carrying said plate member and constructed and arranged to clamp the transom of a fishing boat and thereby support said plate member in rearwardly generally vertically extending position relative to such a transom;  
(c) a mounting disc member extending substantially parallel to and beside said plate member;



- (d) a pivot pin carried by said plate member rearwardly of said clamping means and of the boat and rotatably mounting said disc member thereon for rotation of said disc member about an axis located centrally of the latter and closely adjacent said clamping means;
- (e) spring bias means carried by said pivot pin and urging said members toward each other;
- (f) a sleeve fixedly mounted on said disc member laterally of said pivot pin and on the side of said disc member non-adjacent to said plate member and having its axis extending generally parallel to said disc member;
- (g) a sonar sensor support rod slidably mounted within said sleeve for longitudinal shifting thereof axially of said sleeve to permit vertical adjustment of said rod;
- (h) means for adjustably securing said support rod within said sleeve;
- (i) a sonar sensor mounted on the lower end of said support rod; and,
- (j) cooperative releasable catch means carried by said members and normally holding said disc member from rotating about said pivot pin while said sensor is held in depending position by said support rod, said plate and disc members being constructed and arranged to permit said sensor to be readily swung upwardly away from the boat about the axis of said pivot pin and held by said catch means in an elevated out-of-way position by pulling forwardly on the upper end portion of said support rod.

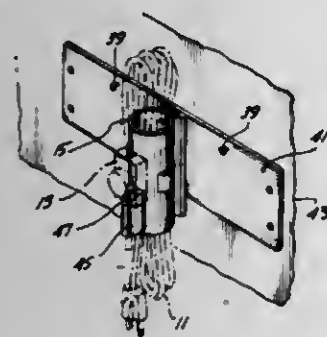
4,285,486

## CORD HOLDER

Jewell Von Osten, Rte. 2, Box 854, Shelton, Wash. 98584, and Gilbert F. Dupppman, P.O. Box 96, Allyn, Wash. 98524  
Filed Jul. 12, 1979, Ser. No. 56,819  
Int. Cl.<sup>3</sup> A47F 5/00

U.S. Cl. 248—316 B

7 Claims



1. A cord holder for holding a bundle formed of loops of electrical cord, rope and the like comprising:  
an elongate cylinder formed of a rigid material, said elongate cylinder formed of inner and outer longitudinal sections hinged together along one of the longitudinal edges of said section;  
a clasp integrally formed with said inner and outer longitudinal sections for attaching said sections together along the edge opposed to the hinged together edge of said sections; and,  
an elongate bracket formed of a rigid material and including a slot adapted to receive a nail, screw, peg or the like, said elongate bracket including an elongate circular portion having a longitudinal axis lying parallel to the longitudinal axis of said elongate cylinder, said elongate circular portion affixed to the outer surface of the inner longitudinal section of said elongate cylinder, said elongate bracket also including a slotted plate mounted across one end of the rails defined by said circular portion, said slot being formed in said slotted plate.

4,285,487

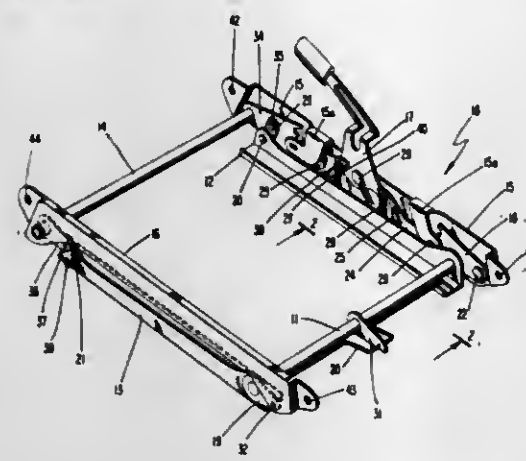
## ASSEMBLY FOR LOCKING AND UNLOCKING AN AUTOMOBILE SEAT IN SELECTED VERTICAL POSITIONS

Kenichi Kazaoka, Nagoya, and Masayuki Hayashi, Toyohashi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 16, 1979, Ser. No. 30,471  
Claims priority, application Japan, Apr. 17, 1978, 53/44925  
Int. Cl.<sup>3</sup> B60N 3/06

U.S. Cl. 248—396

5 Claims



1. A seat-supporting assembly for locking and unlocking an automobile seat in selected vertical positions comprising:  
a seat rail for attachment to an automobile seat,  
a floor rail for attachment to an automobile floor,  
a rotatable latch member pivotably mounted at one point to the seat rail and at a second point to the floor rail for permitting the selective adjustment of the relative portions of the rails upon its rotation, said latch member including a plurality of spaced notches,  
a locking plate rockably connected to one of said rails by the combination of a first pin fixedly mounted on said one of said rails and an elongated arcuate slot formed in said locking plate, said first pin protruding through said slot, said locking plate including a stop pin, fixedly connected to said locking plate, for engaging a selected one of said notches to lock the latch member in a selected position upon the rocking of said locking plate to a locking position and for disengaging said notches to unlock the latch member upon the rocking of said locking plate to an unlocking position;  
a flange formed on said one of said rails, said flange including an elongated slot to guide said stop pin along only one linear path of motion and into engagement with a selected one of said notches,  
said arcuate slot formed in said locking plate being formed so that a wall of said arcuate slot opposite said elongated slot interacts with said first pin to preclude the movement of said locking plate and stop pin along said linear path of motion when said locking plate is in the locking position,  
a lever rotatably connected to one of said rails for rocking said locking plate to an unlocking position to permit the adjustment of the rails, and  
resilient means for urging said locking plate and said lever into the locking position.

4,285,488

## HEIGHT ADJUSTING MECHANISM FOR A SWIVEL CHAIR

William L. Hancock, Lexington, Ky., assignor to Hoover Universal, Inc., Saline, Mich.

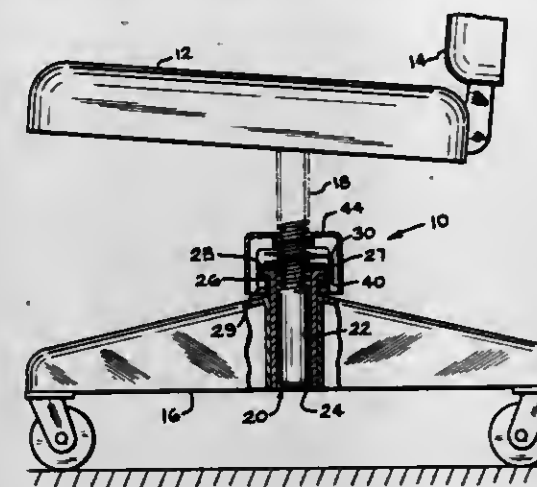
Filed Mar. 20, 1979, Ser. No. 22,190  
Int. Cl.<sup>3</sup> F16M 11/26

U.S. Cl. 248—405

5 Claims

1. Height adjusting apparatus for a swivel chair comprising a main screw member having thread means formed thereon, a nut member having a body portion which is a generally flat

piece of steel deformed into engagement with said screw thread so that said nut member is threadably mounted on said screw member for selective movement lengthwise thereof to adjusted positions in response to relative rotation between said nut member and said screw member, said body portion being continuously biased against said thread means in a direction axially of said screw member to impart an initial frictional



resistance between said nut member and said screw member hindering rotation therebetween, said body portion being operable to deform against said screw member thread means in response to the application of a load to said nut member in a direction generally lengthwise of said screw member thereby increasing the frictional resistance between said nut member and said screw member to restrain relative movement between said nut member and said screw member.

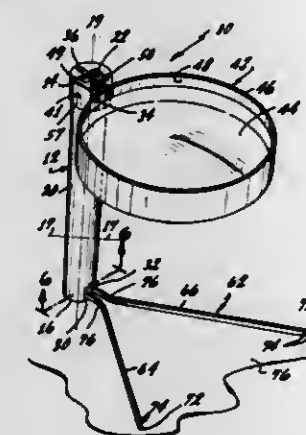
4,285,489

## STAND FOR SUPPORTING A HAND-HELD IMPLEMENT

Floyd W. Blanchard, 4347 Sarah St., Burbank, Calif. 91505  
Filed Mar. 27, 1979, Ser. No. 24,267  
Int. Cl.<sup>3</sup> A47F 7/14

U.S. Cl. 248—471

6 Claims



1. In combination, a stand and hand-held implement comprising:  
an elongated grip portion sized to fit comfortably in a user's hand, said elongated grip portion including upper and lower ends and major and minor axes;  
an instrument affixed to said upper end of said elongated grip portion;  
a pair of elongated support members each having major and minor axes;  
a bight member connecting said support members together into a unitary structure with said support members each having a free end and a natural resiliency normally biasing said free ends to positions diverging away from each other  
an elongated channel formed inside said grip portion along its major axis and extending from its upper end to a point closely adjacent its lower end, whereby a bottom wall and

an encompassing sidewall are provided on said grip portion, said bottom wall having an outside lower surface forming said lower end of said grip portion; and  
a pair of spaced-apart slots provided in said bottom wall in communication with said channel, each of said slots piercing said sidewall and extending from said outside, lower surface of said bottom wall vertically upwardly in said sidewall to a position above said bottom wall, whereby said support members may be moved to a convergent position in said channel with said bight member adjacent said upper end of said elongated grip portion and with the free end of each support member extending through an associated one of said slots on said bottom wall to a position externally of said lower end so that said encompassing sidewall and said slots will hold said support members in said convergent position against said bias and so that said free ends may be grasped by said user for drawing said members from said channel to a position such that said bight member bottoms out on said bottom wall when each of said support members is positioned in the sidewall-piercing portion of its slot with the major axis of each support member spread to its normally divergent position and lying approximately normal to the major axis of said elongated grip portion.

4,285,490

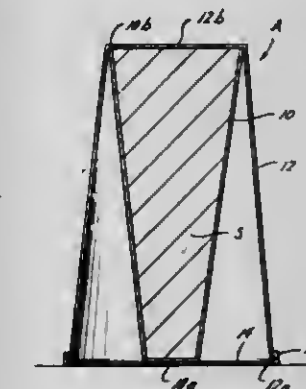
## APPARATUS FOR PARTIALLY PRE-MAKING A SOLID-LIQUID BEVERAGE

Michael W. Hanley, 6000 Sun Forest Dr., #2701, Houston, Tex. 77092

Filed Dec. 21, 1979, Ser. No. 106,277  
Int. Cl.<sup>3</sup> A23G 9/00; B29C 6/00

U.S. Cl. 249—92

5 Claims



1. Apparatus for making a solid-liquid beverage, comprising:  
a first cup suitable for being filled with a freezable, edible substance;  
said first cup having a base at one end and being open at the opposite end;  
a cup lid mounted with the base of said first cup; and,  
a second cup having a base for mounting over the open end of said first cup and an open end for engaging said lid when said first cup and said second cup are assembled together.

4,285,491

## SECTIONAL HOT TOP

Anthony R. Bonta, Hobart, and Charles J. Gasche, Portage, both of Ind., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 944,506, Sep. 21, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,799  
Int. Cl.<sup>3</sup> B22D 7/10

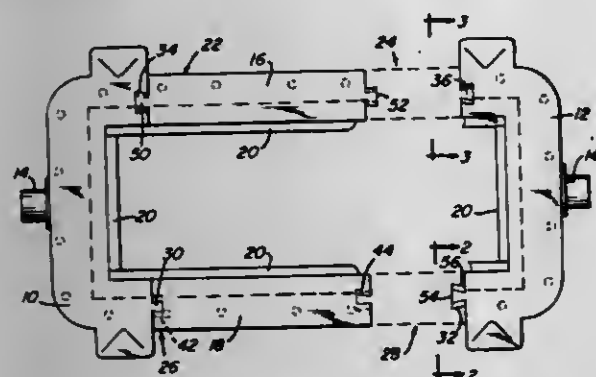
U.S. Cl. 249—102

5 Claims

1. In a hot top for an ingot mold, said hot top comprising a plurality of sections mateable along adjoining substantially vertical edges, said sections including a pair of diametrically



opposed lift sections with means engageable by a crane for transporting said hot top and an intermediate section fitting between each of the corresponding ends of the lift sections, and means for connecting said lift sections and intermediate sections together, the improvement in said hot top in which: said connecting means comprises a tongue and groove joint extending longitudinally along the adjoining edges of said



lift sections and intermediate sections so that said sections are readily detachable and may be interchanged with sections of various lengths to change the size of said hot top, said joints being tapered in the longitudinal direction thereof so as to transmit an upward force to the intermediate sections when the lift sections are raised and thus prevent separation of the sections during transport of the hot top.

4,285,492

## FLOW CONTROL DEVICE

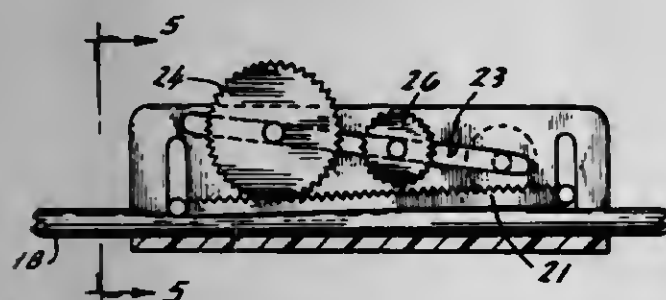
Albert F. Bujan, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Sep. 20, 1979, Ser. No. 77,456

Int. Cl.<sup>3</sup> F16K 7/06; A61M 5/14

U.S. Cl. 251-9

14 Claims



1. A tubing clamp for regulating flow of fluid through a length of flexible tubing comprising:
  - a clamp body defining a surface for supporting a length of flexible tubing having a longitudinal axis;
  - opposing walls extending from said support surface and presenting a passage for said tubing;
  - a platen mounted between said walls for contacting said tubing;
  - guide surfaces arranged in said walls;
  - a first rotatable member positioned to be guided by said guide surfaces;
  - said platen constructed and arranged to be movably positioned between said first rotatable member and said tubing;
  - said platen presenting a compression surface against said tubing substantially along and over the path of travel of said first rotatable member, and cooperating with said first rotatable member to exert an incremental compressive force on said tubing and by means of said platen to distribute the compressive force of said first rotatable member over a wide area of said tubing including a substantial distance along its longitudinal axis; and
  - a second rotatable member operatively positioned within

said clamp body and arranged to cooperate with said first rotatable member and said platen to exert an incremental compressive force upon said tubing whereby said first rotatable member and said second rotatable member provide separate control means for coarse and fine regulation of said flow of liquid through said flexible tubing; said first rotatable member being a roller having pins extending therefrom and said guide surfaces comprise a plurality of grooves with said pins positioned in said grooves and said grooves having an axis positioned to intersect the axis of said support surface; said roller being adapted to rotate within said grooves and thereby to move longitudinally along said grooves so as to compress said platen against said tubing and thereby constrict same; and said second rotatable member comprising a roller having pins extending therefrom with said pins positioned in said opposing walls, whereby movement of said first rotatable member along said guide surface is effective to contact said first rotatable member initially against said platen so as to pivot said platen against said tubing thereby compressing said tubing and consequently constricting said flow of liquid through said tubing; movement of said second rotatable member against said platen being effective to further compress said platen against said tubing thereby further compressing said tubing so as to incrementally increase or decrease said flow of said liquid in minute quantities.

4,285,493

## VALVE OPERATOR

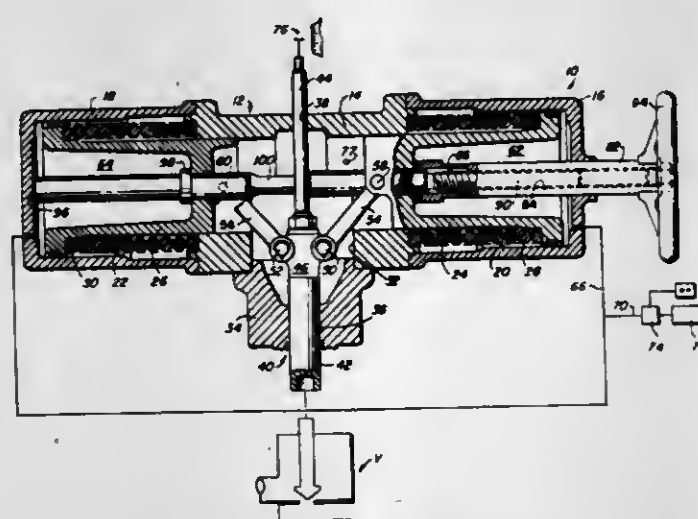
Gordon A. Willis, Canoga Park, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 1, 1979, Ser. No. 16,654

Int. Cl.<sup>3</sup> F16K 31/143, 31/50

U.S. Cl. 251-14

2 Claims



1. A fail-safe-open valve operator comprising:
  - a pair of opposed cylinders joined together;
  - a piston in each cylinder and each defining with its cylinder a piston chamber located at opposed ends of said joined cylinders;
  - said pistons being movable between a normal position spaced from each other corresponding to a valve-open position and a position closely adjacent to one another corresponding to a valve-closed position;
  - resilient means in said cylinders and surrounding said pistons urging said pistons to their normal positions spaced from each other;
  - a valve operating rod movable in directions normal to the pistons and having a valve member adapted to be seated on a valve seat, said rod being movable between said valve-open position in which said valve member is spaced from said valve seat and said valve-closed position in which said valve member is seated on said valve seat;
  - toggle link means connecting said pistons and said valve

operating rod for providing the valve operating rod movement; means to supply a pressurized fluid to each chamber and to the piston therein to counter said resilient means and to move said pistons and said valve operating rod to their valve-closed position wherein said pistons are closely adjacent one another; said resilient means moving said pistons and said valve operating rod to their valve-open positions upon failure of said pressurized fluid supply means to supply pressurized fluid to said chambers.

2. A valve operator as recited in claim 1 further comprising means to manually move said pistons and said valve operating rod between their positions.

4,285,494

## ENGINE AIR CUT-OFF DEVICE

Leonard A. Sturgeon, Edmonton, Canada, assignor to Bralorne Resources Limited, Calgary, Canada

Division of Ser. No. 842,691, Oct. 17, 1977, Pat. No. 4,215,845.

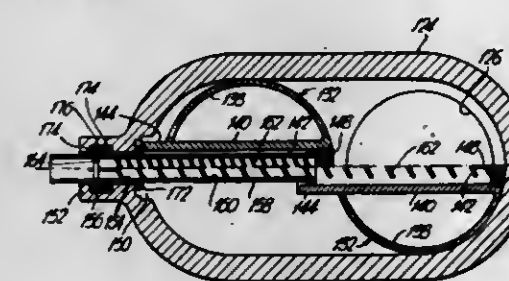
This application Jun. 2, 1980, Ser. No. 155,684

Claims priority, application Canada, Dec. 16, 1976, 268047

Int. Cl.<sup>3</sup> F16K 3/00; F02B 77/00

U.S. Cl. 251-63

2 Claims



1. A cut-off device for an engine air manifold comprising a valve body having a generally cylindrical passage there-through arranged for alignment with a corresponding passage in an engine air manifold, a cavity in said valve body opening into said valve body passage, a generally circular gate movably contained in said valve body and having a path of movement across said valve body passage extending from a normally retracted position with said gate fully housed in said cavity so as to maintain said valve body passage normally fully open, to a closed position with said gate fully blocking and sealing said valve body passage, a cylindrical bore in said gate axially aligned with said path of movement, said bore being closed at one end by an end face and being open at the other end, a hollow rod resiliently mounting said rod at one end in said valve body coaxial with, extending through said cavity into the open other end of and sealingly engaging said cylindrical bore, wherein said mounting means includes an annular enlargement on said rod and a pair of annular resilient mounting members located in a recess of said valve body, said enlargement being positioned between said mounting members, a tension spring located in the interior of said hollow rod with one end attached to said end face and the other end thereof anchored in said rod adjacent the one end thereof, said spring biasing the gate to its normal retracted position, and means for introducing fluid under pressure into said bore via said hollow rod whereby the fluid may react against said end face to drive the gate from the retracted position to the closed position.

4,285,495

## SAFETY VALVE

Ottis W. King, 8534 E. 24th, Tulsa, Okla. 74127

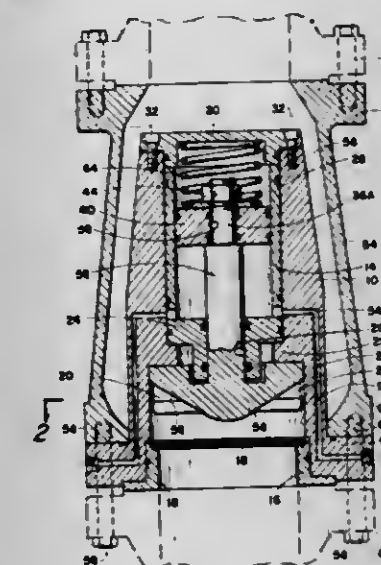
Continuation of Ser. No. 860,700, Dec. 12, 1977, abandoned.

This application Mar. 31, 1980, Ser. No. 135,498

Int. Cl.<sup>3</sup> F16K 31/122

U.S. Cl. 251-63.5

5 Claims



1. A safety valve comprising:
  - an upright tubular body having an axial opening there-through, a portion of the opening at the lower end forming a flow passageway communicating with the lower end and forming an outlet port, the body having inlet ports spaced above the lower end communicating between the flow passageway and the body exterior surface, said inlet ports comprised of a plurality of spaced openings in a common plane, the upper portion of the axial opening forming a cylinder, the body having an internal cylindrical shoulder in the axial opening dividing the lower flow passageway from the upper cylinder;
  - an end cap closing the upper portion of the body axial opening;
  - a cylindrical internal stem guide member removably positioned within said axial opening separating said lower flow passageway and said upper cylinder, and having a reduced diameter axial opening therein;
  - a tubular sleeve received in said cylinder portion of said body axial opening, the lower end of the sleeve engaging said stem guide member and the upper end of said sleeve engaging said end cap whereby said sleeve and stem guide are held in place between said internal shoulder and said end cap;
  - a plunger including a valve means reciprocally supported within said flow passageway, the plunger having an upwardly extending axial stem reciprocally and sealably received in said stem guide member axial opening, the plunger having a sealing surface thereon said valve means provides a recess for receiving a portion of said stem guide when the valve means is in the fully open position;
  - a seating surface within and partially defining said flow passageway, the seating surface being between said inlet port and said lower end outlet port, the valve being closed when said plunger sealing surface engages the seating surface;
  - a piston reciprocally positioned in said upper sleeve, the piston being affixed to the upper end of said plunger stem;
  - a spring compressibly positioned within said sleeve between said piston and said end cap to urge said plunger towards the closed position;
  - and said body having a small diameter passageway communicating between the body exterior and said cylinder above said stem guide means whereby fluid pressure may be supplied through the small passageway to force said piston and thereby said plunger upwardly to open the valve means.

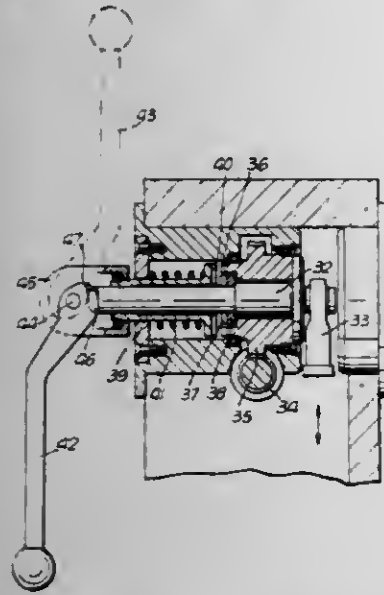


4,285,496

## ELECTRO-HYDRAULIC SYSTEMS

Ernest F. Coles, Hertfordshire, England, assignor to Hawker Siddeley Dynamics Engr., Ltd., Hatfield, England  
Division of Ser. No. 841,442, Oct. 12, 1977, Pat. No. 4,190,081.  
This application May 22, 1979, Ser. No. 41,496  
Claims priority, application United Kingdom, Oct. 14, 1976, 42695/76

Int. Cl.<sup>3</sup> F16K 31/05; F16D 11/10  
U.S. Cl. 251-130



- Mechanical drive means for valve spool comprising a rotary shaft, a worm wheel rotatable on said shaft, a motor-driven worm meshing with said worm wheel, coupling means converting rotary motion of said shaft to rectilinear valve spool motion, a clutch sleeve surrounding said shaft and slidable axially along said shaft to clutch said shaft to and unclutch said shaft from said worm wheel, spring means urging said clutch sleeve into clutching engagement, a trunnion mounted on an end of said clutch sleeve, and a manual operation mounted on said trunnion beyond one end of said shaft for rotating said shaft when said shaft is unclutched from said worm wheel, said handle being pivotally mounted to swing on said trunnion about an axis at right angles to said shaft axis from a first position in which said handle is disconnected from said shaft to a second position in which said handle is engaged with said shaft to rotate it, and cam means being provided on said handle whereby said clutch sleeve is cammed axially out of clutching engagement against the action of said spring when said handle is swung into said second position.

4,285,497

## ELECTROMAGNETICALLY ACTUATED VALVE

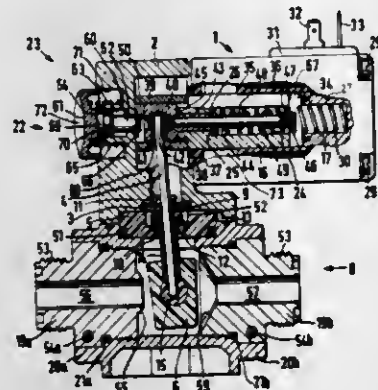
Otto Götzel, Ingelfingen, Fed. Rep. of Germany, assignor to Barkert GmbH, Ingelfingen, Fed. Rep. of Germany  
Continuation of Ser. No. 906,283, May 15, 1978. This application Oct. 29, 1980, Ser. No. 201,897  
Claims priority, application Fed. Rep. of Germany, Jan. 2, 1977, 2724901

Int. Cl.<sup>3</sup> F16K 11/02, 1/16, 31/10  
U.S. Cl. 251-138

- A direct-acting magnetic valve for fluid media comprising an actuating unit, a magnetic actuating system including an armature connected to said actuating unit, said armature being movable in one direction by magnetic force and a primary return spring for moving said armature in the opposite direction, a valve unit having a housing connected to said actuating unit, said valve unit including at least one valve seat and a movable valve closing member disposed within said housing, means for transmitting the motion of said armature to said

6 Claims

closing member for closing engagement with said at least one valve seat, a secondary spring disposed between said armature and said motion transmitting means concentrically with said primary return spring, said secondary spring being adapted to permit an additional movement of said armature by said magnetic actuating system with lost motion upon the termination of the action of said motion transmitting means, said secondary spring exerting a compression force in the opposite direction of movement of said armature after the return of said armature from said additional movement caused by said lost motion between said armature and said motion transmitting means, said motion transmitting means including a rod having one end connected to said movable valve closing member and pivot means for connecting the other end of said rod to said armature with said rod being disposed in substantially verti-



cally extending relationship with respect to the axis of said armature, said motion transmitting means including a drawing pin, means for supporting said pin for transverse play, said armature being continuously urged in said opposite direction by said primary return spring, said secondary spring comprising a compression spring disposed between said pin and said armature, said armature being provided with an axially disposed hollow space forming a shoulder at one end, said motion transmitting means including a pivotal joint, said pin being disposed centrally in said armature hollow space, said pin supporting means including said pivotal joint, one end of said pin including a nut said compression spring being disposed between said pin with one end in engagement with said nut and said shoulder and said return spring being disposed in surrounding relationship with said compression spring within said hollow space with one end in contact with said shoulder and the other end in contact with said housing.

4,285,498

## CONTROL VALVES

Douglas D. J. Nightingale, St. Albans, England, assignor to Imperial Chemical Industries Limited, London, England  
Filed May 9, 1977, Ser. No. 795,306

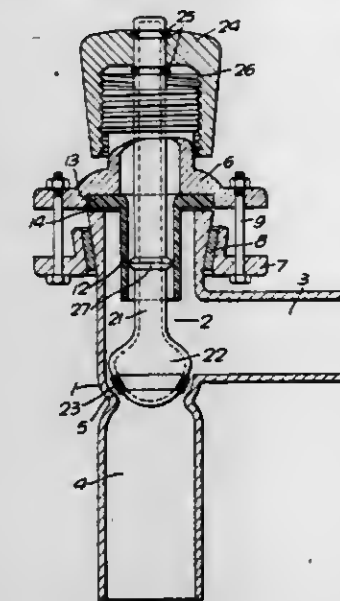
Claims priority, application United Kingdom, May 17, 1976, 20196/76; Jul. 29, 1976, 31652/76

Int. Cl.<sup>3</sup> F16K 41/00; F16V 31/50  
U.S. Cl. 251-214

6 Claims

- A valve for controlling fluid flow, comprising a hollow body having a flow passage for the fluid; a sealing member formed of flexible polymeric material and consisting essentially of a generally radially resilient tubular portion encircled by at least one radially extending flange, the sealing member being supported within the hollow body by said radially extending flange; a movable spindle comprising means for occluding the flow passage during operation of the valve and a stem connected to or integral with the occluding means, the spindle passing through the tubular portion of the sealing member with the exterior surface of the spindle adjacent to the interior surface of the tubular portion; and means for defining at least one generally radially rigid annu-

lar ridge extending from one of said adjacent surfaces to contact the other and positioned so that at least during normal operation of the valve it remains displaced axially along said sealing member from the plane of each of said at least one radially extending flange, said ridge being oversized in that it stands proud from the surface from which it extends by an amount greater than the difference



between the diameters of said two adjacent surfaces as measured before assembly of the valve, so that in the assembled valve the annular region of said tubular portion overlying said annular ridge, and said annular ridge, and the surface which said annular ridge contacts, are biased together by resilient radial distension of said tubular portion, thereby to provide a gland seal against loss of the fluid from the valve body.

4,285,499

## CAM ACTUATED BUTTERFLY VALVE

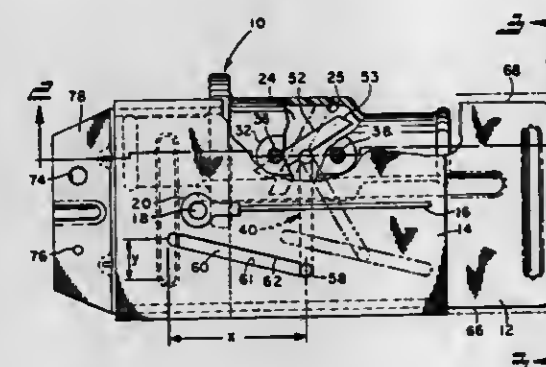
Keith E. Zukausky, St. Charles, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 5, 1979, Ser. No. 17,518

Int. Cl.<sup>3</sup> F16K 31/524

U.S. Cl. 251-229

11 Claims



- A fluid valve assembly for modulating fluid flow there-through actuated by a linear input means, said valve assembly comprising:
  - housing means defining a fluid flow passage therethrough and a valve seat within said fluid flow passage, said housing means including structure defining at least one exterior guide surface;
  - a butterfly valve member rotatably mounted to said housing means, said valve member being movable between a closed position engaging said valve seat and an open position spaced from said valve seat;
  - crank means having a first portion connected to said butterfly valve member for providing said rotary movement, a second portion extending exteriorly of said hous-

ing means, said second portion including a cam follower portion; (d) actuator means slidably received on said exterior guide surfaces and movable linearly relative to said housing means between a first and second position in response to actuation by said linear input means, said actuator means defining a cam surface engageable with said cam follower portion, said crank means rotatable in response to movement of said actuator means such that in said first position said valve member is closed and in said second position said valve member is open, said cam surface being aligned relative to the direction of motion of said actuator means such that while said actuator means is in or near said first position, a given movement of said actuator means produces lesser movement of said cam follower portion relative to said housing means.

4,285,500

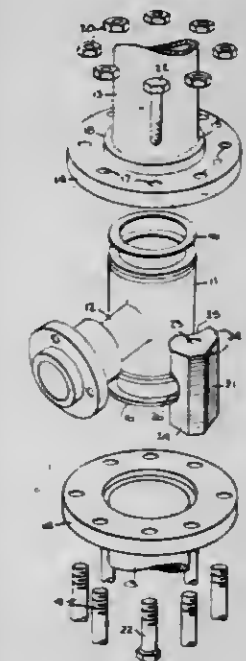
STUD BLOCK FOR AN ECCENTRIC ROTARY VALVE  
Henry Illing, Parkville, and Chauncey Newkirk, Wurtsboro, both of N.Y., assignors to Kieley & Mueller, Inc., Middletown, N.Y.

Filed Apr. 26, 1979, Ser. No. 33,516

Int. Cl.<sup>3</sup> F16K 5/00; F16L 41/00

U.S. Cl. 251-367

7 Claims



- In combination, a housing for an eccentric rotary control valve, said housing having a cylindrical body part disposed on a longitudinal axis and a neck part disposed on an axis extending in radially offset relation from said longitudinal axis of said cylindrical body part; a pair of flanges disposed about opposite ends of said cylindrical body part, each said flange having equi-spaced apertures therein; a plurality of draw bolts extending coaxially of said cylindrical body part and through at least some of said apertures in said flanges to secure said flanges together; a stud block disposed perpendicularly between said flanges in alignment with a pair of coaxial apertures in said flanges, said block being disposed between one of said draw bolts and said neck part and having a recess partially encompassing said neck part; and a pair of cap screws, each cap screw passing through a respective flange aperture into coaxial threaded engagement with said stud block, said cap screws and said draw bolts being disposed at equal spacings about said flanges.



4,285,501

# APPARATUS FOR RETAINING GUIDE PULLEYS FOR LOAD CABLES OF A BUILDING FRONT CABLE LIFT IN A HOUSING STATIONARILY ARRANGED AT THE TOP OF A BUILDING

Erich Schneider, Emmelhansen, Fed. Rep. of Germany, assignor to Kombi-Lift Montage- und Handelsgesellschaft mbH, Solingen, Fed. Rep. of Germany

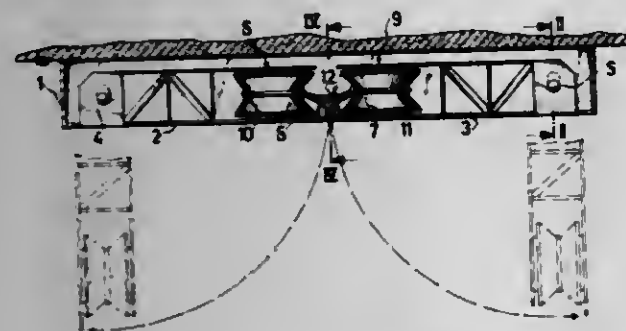
Filed Mar. 21, 1980, Ser. No. 132,573

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911029

Int. Cl.<sup>3</sup> B66D 3/06

U.S. Cl. 254—394

3 Claims



1. An apparatus for retaining guide pulleys for load cables of a building front cable lift in a housing stationarily arranged at the top of a building, from which housing said guide pulleys are outwardly pivotable from ground, said apparatus comprising

- (a) an elongate housing (1) having a base (13), a rear wall, a top wall, end walls and an open face;
- (b) two beams (2,3) pivotally mounted in the housing;
- (c) guide pulleys (6,7) rotatably mounted in the beams and arranged to guide load cables;
- (d) means for pivoting the beams along with the guide pulleys (6,7) outwardly horizontally from the housing;
- (e) an interlocking device arranged in the interior of the housing and releasable by means of auxiliary cables guided on the guide pulleys, said auxiliary cables passing through and depending from an edge cutout (12) in the base (13) of the housing (1).

4,285,502

# DEVICE FOR KEEPING CONSTANT THE TENSILE STRESS IN A CABLE

Dirk J. C. Lub, Dirk de Dordelaan 309, Vlaardingen, Netherlands

Filed May 31, 1978, Ser. No. 911,106

Claims priority, application Netherlands, Jun. 1, 1977, 7706008

Int. Cl.<sup>3</sup> B66D 1/36

U.S. Cl. 254—398

6 Claims



1. Device for keeping constant the tensile stress in a cable or the like, comprising two guide pulleys for the cable disposed in one plane at a distance from each other and at least one pulley disposed between the two said guide pulleys and in the same plane, said at least one pulley being secured to a piston-cylinder unit in such a manner that an essentially constant force is exerted upon the pulley owing to the interior of the cylinder communication with an hydraulic system for the purpose of maintaining an essentially constant hydraulic pressure within the cylinder, the intermediate pulley in the operative position guiding the cable from the one guide pulley to the other while

forming a loop, characterized in that means are provided to move the guide pulleys and the cable with respect to each other and that the piston-cylinder unit is constructed in such a manner that the intermediate pulley can be moved out of engagement with the cable, the guide pulleys being mounted on a frame mounted for movement perpendicularly to the plane of the pulleys and the piston-cylinder unit with the intermediate pulley being likewise mounted on said frame.

4,285,503

# APPARATUS FOR STEAM GENERATOR TUBE WRAPPER SPACER AND SUPPORT BLOCK REMOVAL

Gregory L. Calhoun, Lutz, Fla., and Angelo Cassette, Greensburg, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

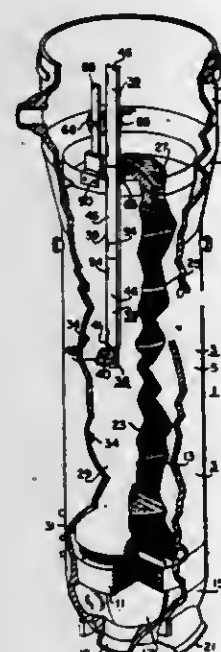
Continuation of Ser. No. 974,160, Dec. 28, 1978, abandoned.

This application Jul. 20, 1979, Ser. No. 59,857

Int. Cl.<sup>3</sup> B23K 7/10

U.S. Cl. 266—71

8 Claims



1. Apparatus for cutting spacer and support members extending at distributed locations between the tube-bundle-encircling wrapper and the outer shell of a vertically-extending nuclear steam generator with top removed, comprising: a cutting torch disposed in an annulus between said wrapper and said shell for cutting through said spacer and support members, a vertical support column extending downwardly in said annulus in support of said torch at its lower end, said support column including a plurality of longitudinal separably-interconnected sections, an elongated guide member extending above the upper edge of said wrapper and including a rack extending along the length thereof, vertically movable motorized carriage means on said guide member in motion-driving position-securing cooperation with said rack, horizontally adjustable arm means carried by said carriage means, column-supportable releasable clamp means on said arm for clamped support of said column, and, conduit means extending along said column for conveying operating gas to said cutting torch.

4,285,504

# TUYERE SEALING MEANS AND SILENCER

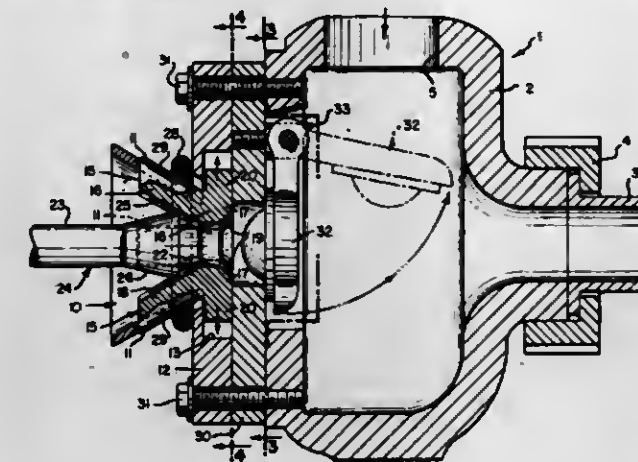
Beal H. Colvin, Claypool, Ariz., assignor to Inspiration Consolidated Copper Company, Inspiration, Ariz.

Filed Dec. 3, 1979, Ser. No. 99,633

Int. Cl.<sup>3</sup> C21B 7/16

U.S. Cl. 266—266

6 Claims



1. A tuyere sealing means and silencer comprising a bell-shaped nozzle, a plurality of axially extending guide slots in said nozzle, a radially movable ramp-type valve element in each said guide slot adapted to be engaged by a punch rod wherein each said valve element has an arcuate segment, a ramp segment movable in said guide slot, and an axial center segment joining said ramp segment and said arcuate segment, and spring means urging all of said valve elements inwardly towards each other.

4,285,505

# APPARATUS FOR USE IN FORMING A FINISH ON A JEWELRY BAND

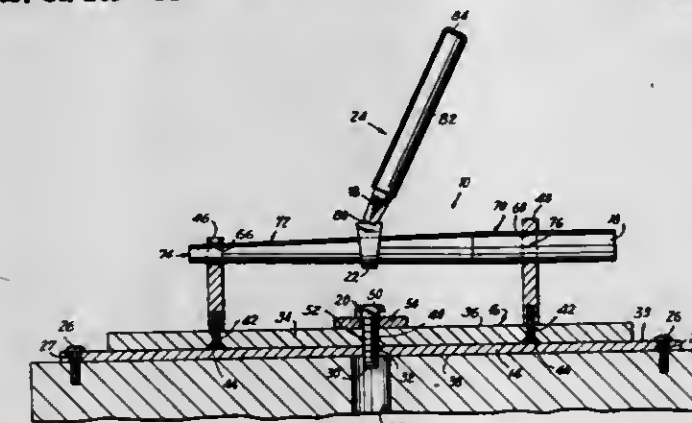
Abraham Winzelberg, 3620 Bowne St., Flushing, N.Y. 11354

Filed Dec. 26, 1979, Ser. No. 106,937

Int. Cl.<sup>3</sup> B25B 5/14

U.S. Cl. 269—50

5 Claims



1. Apparatus for holding a ring in place on a mandrel placed on a work surface while the surface of the ring is sculpted by the hammering of a stamping die against the surface of the ring, said apparatus comprising a flat base plate having a threaded aperture therethrough, a chassis comprising a flat chassis plate resting on said base plate, said chassis plate having an aperture which is in registry with the aperture of said base plate, said work surface having a recess adapted to be in registry with said apertures, a pair of opposite vertical supports fixedly attached to said chassis plate with each of said supports having respective apertures therethrough, said apertures of said supports being in horizontal alignment, an elongated mandrel having a frusto-conical shaped portion for allowing the mounting of a jewelry band

thereon, said mandrel being press fit into said apertures of said supports to allow rigid mounting of the mandrel on the support, and a threaded member for passing through said apertures of said base plate and said chassis plate to be threaded into said threaded aperture of said base plate to firmly secure said chassis to said work surface when said threaded member is tightened in said threaded aperture of said base plate, said threaded member being loosened to permit horizontal repositioning of said chassis with respect to said work surface, the vertical position of said mandrel being fixed with respect to said work surface in accordance with the location of the apertures in said opposite vertical supports.

4,285,506

# CLOTH SPREADING AND CLAMPING APPARATUS

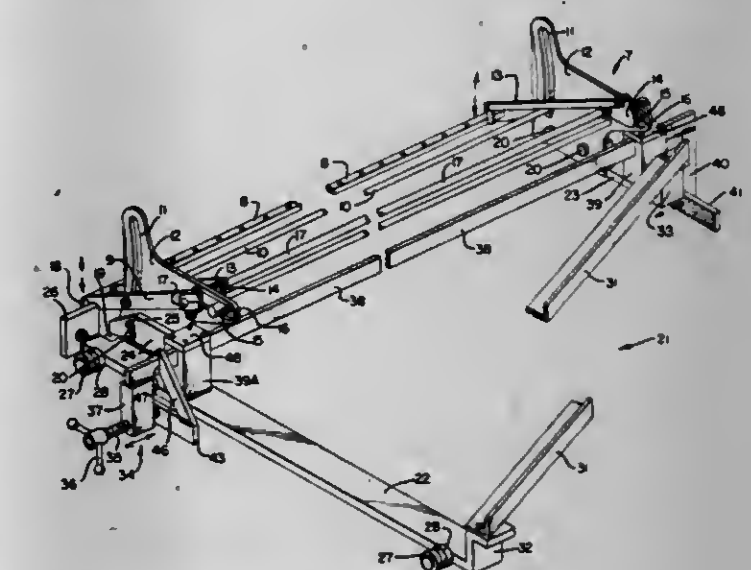
Nyal J. Weaver, 12345 Colby Dr., Mishawaka, Ind. 46544, and William F. Teal, 16630 County Rd. 10, Bristol, Ind. 46507

Filed Nov. 12, 1976, Ser. No. 741,394

Int. Cl.<sup>3</sup> B65H 29/46

U.S. Cl. 270—30

31 Claims



1. Cloth spreading apparatus comprising: a table, a catcher carriage guide track fixedly disposed on said table and extending longitudinally thereof, a cloth spreader reciprocally movable along the length of the table and including means for laying down superimposed layers of cloth on said table with reversing folds in said cloth at respective ends of the travel path of the spreader, a pair of cloth catching devices disposed at the respective ends of the travel path of said spreader and including movable cloth clamping means for selectively clamping said cloth at the table while said cloth spreader travels intermediate said catching devices laying down said layers, and a catcher carriage supportingly carrying one of said catching devices for movement between a plurality of operating positions along the length of the table, said catcher carriage means including: rigid frame means rigidly connected to said one catching device said rigid frame means including first and second longitudinally extending frame members disposed at respective opposite lateral sides of said one catching device, and a transverse frame member interconnecting said first and second frame member, catcher carriage guide means engageable in said catcher carriage guide track for continuously maintaining said catcher carriage and said one catching device in proper alignment with said table and cloth spreader for all adjusted positions of said one catching device along the length of the table,



and releasable carriage holding means for releasably holding said catcher carriage in respective adjusted positions along the length of the table, wherein said releasable carriage holding means is operable from one side of said table and wherein all portions of said carriage which extend transversely of said table across portions covered by layers of materials during cloth spreading by said cloth spreader are disposed sufficiently above the level of the table to accommodate movement of said catcher carriage and catcher to positions for spreading layers of shorter length on existing longer length layers of cloth utilizing a continuous bolt of cloth on said cloth spreader, wherein said catcher carriage includes carriage wheel means arranged at respective opposite sides of said carriage for accommodating relatively frictionless longitudinal adjusting movement of the catcher carriage along said table independently of the cloth spreader, and wherein said catcher carriage guide means includes portions of said carriage wheel means, wherein said first frame member has opposite longitudinal ends and is substantially longer than said second frame member, wherein said carriage wheels means includes first and second guide wheels bearingly supported adjacent respective opposite longitudinal ends of said first frame member, and wherein said guide wheels are guidingly engageable in said catcher carriage guiding track to continuously maintain said catcher carriage in said proper alignment with said table and cloth spreader.

#### 7. Cloth spreading apparatus comprising:

- a table,
- a cloth spreader reciprocally movable along the length of the table and including means for laying down superimposed layers of cloth on said table with reversing folds in said cloth at respective ends of the travel path of the spreader,
- a pair of cloth catching devices disposed at the respective ends of the travel path of said spreader and including movable cloth clamping means for selectively clamping said cloth at the table while said cloth spreader travels intermediate said catching devices laying down said layers, and

catcher carriage means attached to one of said catching devices, said catcher carriage means including a roller means for accommodating easy longitudinal adjusting movement of said catcher carriage means and releasable carriage holding means for releasably holding said carriage in respective adjusted positions along the length of the table,

wherein the catching device attached to said catcher carriage includes guide arms attached to a cloth clamping bar which are disposed above a transversely extending guide rod that travels in curved guide slots at support brackets at opposite sides of said table, and wherein the other catching device has corresponding guide arms disposed below a corresponding guide rod, and

wherein the carriage includes a frame having a relatively long rigid frame member extending along one side of the table,

a relatively short rigid frame member extending along the other side of the table,

and a transverse rigid frame member also serving as a handle attached to said long and short frame members.

#### 15. Cloth spreading apparatus comprising:

- a table,
- a cloth spreader reciprocally movable along the length of the table and including means for laying down superimposed layers of cloth on said table with reversing folds in said cloth at respective ends of the travel path of the spreader,
- a pair of cloth catching devices disposed at the respective ends of the travel path of said spreader and including movable cloth clamping means for selectively clamping said cloth at the table while said cloth spreader travels intermediate said catching devices laying down said layers,

catcher carriage means attached to one of said catching

devices, said catcher carriage means including roller means for accommodating easy longitudinal adjusting movement of said catcher carriage means and releasable carriage holding means for releasably holding said carriage in respective adjusted positions along the length of the table,

wherein said holding means includes a single hand operable handle for simultaneously clampingly engaging both sides of said table to said carriage,

wherein said holding means includes:

- a brake rod extending across said table,
- a brake pad fixed at one end of said brake rod,
- a threaded block at the other end of said brake rod,
- a rotatable screw threaded member threadably engaged in said threaded block,
- and a movable brake shoe axially movable with said screw threaded member and engageable with the other side of said table so as to clamp the table between said brake shoes upon rotation of the threaded member, and
- wherein the carriage includes a frame having a relatively long rigid frame member extending along one side of the table,
- a relatively short rigid frame member extending along the other side of the table,
- and a transverse rigid frame member also serving as a handle attached to said long and short frame members,
- and wherein a brake rod guide block is fixed to each of said long and short frame members, said guide blocks including guide slots for slidably guiding said brake rod.

4,285,507

#### INK JET PRINTER

George Marinoff, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

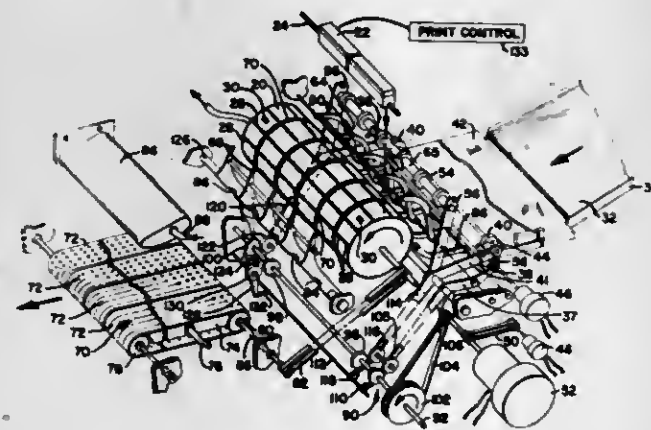
Division of Ser. No. 7,999, Jan. 31, 1979, Pat. No. 4,225,872.

This application Feb. 1, 1980, Ser. No. 117,688

Int. Cl.<sup>3</sup> B65H 5/12, 9/06, 29/56

U.S. Cl. 271—3

11 Claims



#### 1. A sheet handling system for transporting a sheet of material past a work station, comprising:

- rotatable support means including a sheet supporting drum, mounted adjacent said work station, for supporting a sheet of material,
- rotary drive means for rotating said support means,
- sheet supply means for loading a sheet onto said support means such that said sheet is supported thereby, said sheet supply means including
- a pair of sheet supply rollers for engaging a sheet therebetween and transporting the sheet so engaged toward said sheet supporting drum,
- a sheet stop between said supply rollers and said drum, movable into a sheet engaging position for positioning a sheet prior to engagement by said supply rollers,
- a sheet deflector positioned adjacent said drum such that a sheet transported towards said drum by said supply rollers

is directed into a path substantially tangential to the periphery of said drum, and  
a drum contacting roller, mounted for movement into contact with said drum, for pressing a sheet against said drum as the sheet is loaded onto said drum,  
sheet ejector means for removing said sheet from said support means, and  
control means, driven by said rotary drive means in fixed relation to rotation of said rotatable support means, for controlling operation of said sheet supply means and said sheet ejector means such that a sheet is supplied to said rotatable support means, rotated for a predetermined number of rotations thereon, and thereafter removed from said support means after transportation of said sheet past said work station a predetermined number of times.

4,285,508

#### COLLATOR

Tamaki Kaneko, Fujisawa, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

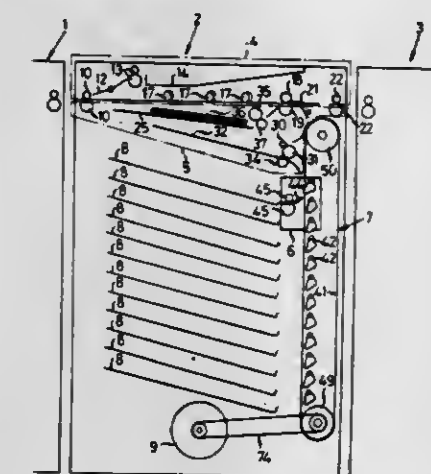
Filed Dec. 28, 1979, Ser. No. 107,768

Claims priority, application Japan, Dec. 29, 1978, 53-161793

Int. Cl.<sup>3</sup> B65H 39/11, 39/07

U.S. Cl. 271—4

8 Claims



1. An improved collator of the type having copy sheet distributing means, means for receiving and carrying copy sheets produced by and supplied from a copying machine along a copy sheet transportation path to the distributing means, a plurality of bins arranged in a vertical array for storing the copy sheets, and wherein the distributing means is movably arranged along inlets of the bins for distributing the copy sheets from the receiving and carrying means to a predetermined one of said bins, the improvement, in combination therewith, comprising a copy sheet feeding table mounted above the vertical array of bins and arranged out of the copy sheet transportation path for receiving the copy sheets in a stack, a copy sheet feeding mechanism for sending, one by one, the copy sheets on said copy sheet feeding table through the copy sheet transportation path to said bins, and means removably mounted above the copy sheet feeding table and enclosing the copy sheet transportation path operable to expose the feeding table and the copy sheet transportation path thereby permitting the removal of copy sheets jammed in the transportation path and the setting of copy sheets on the feeding table.

4,285,509

#### FEEDER MECHANISM

Laurie M. Reid, Luthersville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 14, 1979, Ser. No. 94,292

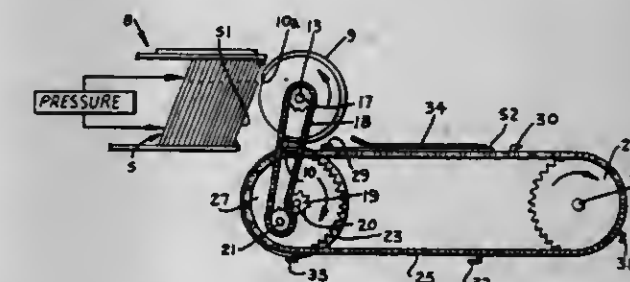
Int. Cl.<sup>3</sup> B65H 5/30

U.S. Cl. 271—10

4 Claims

1. A feeder mechanism comprising a hopper (8) having a plurality of open-ended, collapsed carrier sleeves (S) stacked in said hopper, each sleeve having a transverse fold line (7) defining an inner major part (7b) and an outer minor part (7a) each

folded upwardly into flat face contacting relation with each other, a horizontal rotatable hollow cylindrical feeder element (9) having an open feeder slot (10) formed therein and disposed in parallel relation to the axis thereof, bearing means (15,16) arranged to support said feeder element adjacent said hopper in such manner that rotation of said feeder element in one direction causes the upper portion (1a) of said minor part (7a) of the outermost sleeve to move into the interior of said feeder element through said slot (10) so as to effect withdrawal of



such outermost sleeve from the hopper (10), means (17, 18) for rotating said feeder element in said one direction, a horizontal, rotatable feed roll (23) disposed below said feeder element, said feed roll and said feeder element being arranged to receive sleeves (S) in sequence therebetween which are withdrawn from the hopper (8), and endless conveyor means (25) having spaced pusher elements (29-33) thereon arranged to receive said sleeves (S) in sequence from between said feed roll (23) and said feeder element (9), said slot (10) being arranged to receive and to discharge said pusher elements in sequence.

4,285,510

#### SHEET FEEDING CASSETTE FOR COPYING APPARATUS CAPABLE OF RECEIVING MANUALLY INSERTED SHEETS

Tadaaki Kanno, Yokosuka, and Tadao Koike, Tokyo, both of Japan, assignors to Ricoh Co. Ltd., Japan

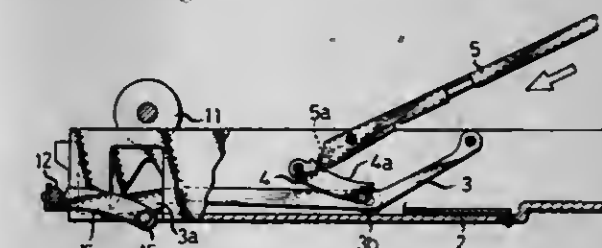
Filed Nov. 1, 1979, Ser. No. 90,280

Claims priority, application Japan, Nov. 13, 1978, 53/155975[U]

Int. Cl.<sup>3</sup> B65H 1/08

U.S. Cl. 271—127

7 Claims



2. In a copying apparatus having at least one cassette in position for carrying a stack of sheets, a feed roller for feeding one sheet at a time from the cassette in position in the copying apparatus and a pressure applying lever movable into a position for bringing the stack into engagement with the feed roller, an improvement comprising, cassette lid means movably mounted to the cassette and engageable with the pressure applying lever to move the pressure applying lever out of its position for bringing the stack into engagement with the feed roller, said cassette lid means having an upper lid pivotally mounted to the cassette so that a rear part of the lid can be moved into an open position for bringing the stack out of engagement with the feed roller when the cassette is in position in the copying apparatus, whereby a manually inserted sheet can be inserted into the cassette at the top of the stack.



4,285,511

## METHOD AND APPARATUS FOR STACKING SHEETS SUCH AS PAPER CURRENCY

Masahiro Abe, Kawaguchi, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Himeji, Japan

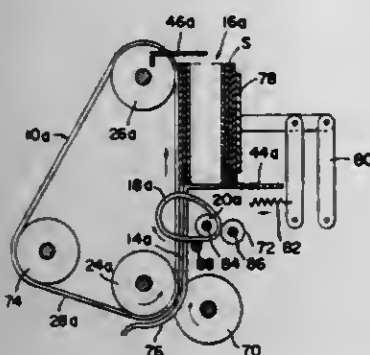
Filed Jan. 10, 1980, Ser. No. 158,087

Claims priority, application Japan, Jun. 14, 1979, 54-75417

Int. Cl.<sup>3</sup> B65H 29/40

U.S. Cl. 271-178

9 Claims



1. An apparatus for stacking sheets, such as paper currency, being fed one by one and with spacings therebetween along a prescribed path, comprising:

- (a) means for feeding the successive sheets to be stacked along said path;
- (b) a stacking compartment on said path for receiving the successive sheets and holding same as a stack;
- (c) at least one belt of relatively pliant material disposed immediately upstream of the stacking compartment and supported at a fixed point on the same side of said path as the stacking compartment so as to form a free loop normally crossing said path, the free loop of the belt being capable, when pressed by each sheet traveling along said path, of engaging the upstream edge of the stack of sheets in the stacking compartment and of moving same way from said path, whereby each new sheet is fed to a position between said path and the stack of sheets in the stacking compartment; and
- (d) means for withdrawing the free loop of the belt from between the stack of sheets and each new sheet following the completion of the feeding of the new sheet into the stacking compartment.

4,285,512

## DOCUMENT FEED DEVICE

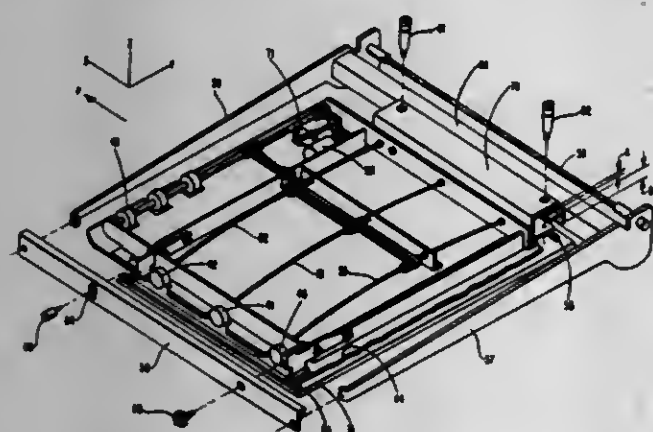
Myron F. Shletz, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,636

Int. Cl.<sup>3</sup> B65H 5/06, 9/16

U.S. Cl. 271-233

15 Claims



1. A paper feed device for use with a document copying machine for moving documents to be copied across a horizontal document glass comprising:

paper forwarding means positioned above said horizontal

document glass and in relationship thereto for moving said documents across said glass;

drive means including drive shafts for propelling said paper forwarding means;

mounting plate means upon which said drive means and said paper forwarding means are mounted;

stationary reference means for positioning said mounting means above said document glass to achieve the relationship desired in a vertical plane between said paper forwarding means and said glass; and

frame means for carrying said mounting means slidably fastened thereto to allow said mounting means to float in a vertical plane relative to said frame means.

4,285,513

## METHOD AND APPARATUS FOR FORMING A STREAM OF PARTLY OVERLAPPING PAPER SHEETS OR THE LIKE

Hans-Dieter Kwasnitza, Neuffen, Fed. Rep. of Germany, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Continuation of Ser. No. 910,066, May 26, 1978. This

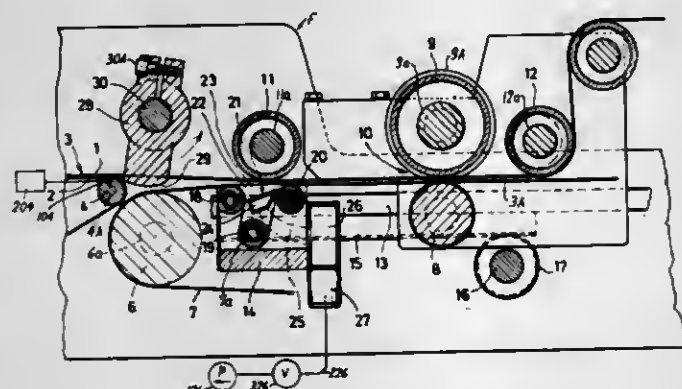
application May 9, 1980, Ser. No. 148,220

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1977, 2725547

Int. Cl.<sup>3</sup> B65H 5/34

U.S. Cl. 271-270

22 Claims



1. A method of forming a stream of partially overlapping flexible sheets, comprising the steps of transporting a series of discrete spaced-apart non-overlapping sheets at a relatively high first speed in a predetermined direction along a predetermined path; decelerating successive sheets of said series in a first portion of said path to a lower speed whereby each sheet following the respective preceding sheet in said first portion of said path catches up with the preceding sheet in a second portion of said path upstream of said first portion, as considered in said direction; deflecting the trailing portion of each preceding sheet at a first deflecting station as it travels at said lower speed past said first station and when there is no gap in said series of discrete sheets due to the absence of at least one sheet in said series, said deflection occurring substantially immediately before the following sheet catches up therewith so that the leader of each following sheet overlies the trailing portion of the respective preceding sheet before the following sheet enters into and is decelerated in said first portion of said path; and deflecting the trailing portion of a decelerated sheet as it travels at the lower speed past a second deflecting station downstream from said first station, as considered in said direction when said series of discrete sheets exhibits a gap as a result of the absence of at least one sheet in said series so that the trailing portion of the sheet preceding a gap is deflected substantially immediately before the sheet following such gap catches up therewith.

4,285,514

## RAMP DEVICE FOR PRACTICING WHEELED SPORTS

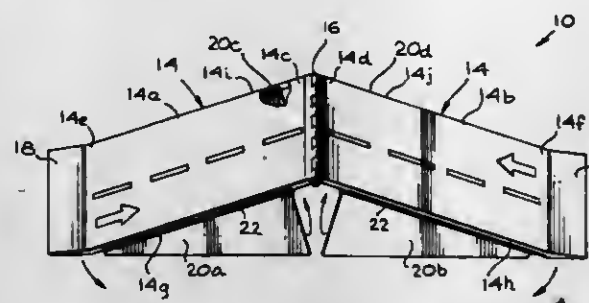
Robert Romero, 5018 Granada St., Los Angeles, Calif. 90042

Filed Jan. 25, 1980, Ser. No. 115,605

Int. Cl.<sup>3</sup> A63G 31/00

U.S. Cl. 272-3

2 Claims



1. A ramp device for practicing wheeled sports thereon, comprising:

- (a) A plurality of rectangular plates of rigid material, edge portions of which are arranged in juxtaposition to each other;
- (b) a continuous hinge, extending connectively along and between the juxtaposed edge portions of the rectangular plates;
- (c) triangularly shaped flaps of rigid material, one edge portion of which is connected hingedly and supportively to oppositely extending edge side portions of the rectangular plates, respectively, whereby the rectangular plates may be placed stationarily in inclined positions relative to each other.

4,285,515

## SURGICAL ERGOMETER TABLE

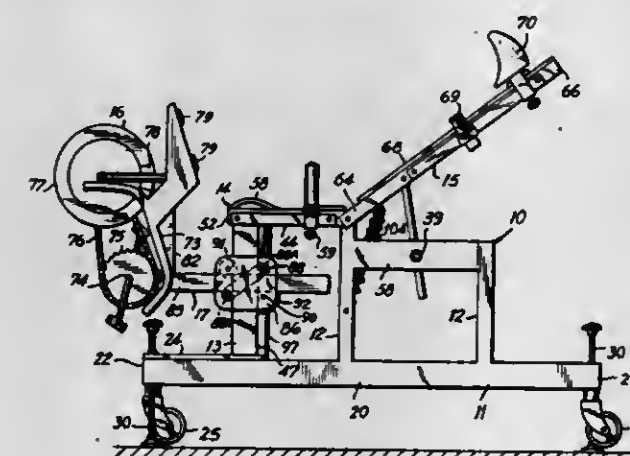
Daniel Y. Gezari, 317 Bradley Blvd., Bethesda, Md. 20034

Filed Oct. 3, 1979, Ser. No. 81,565

Int. Cl.<sup>3</sup> A63B 23/04, 69/16

U.S. Cl. 272-73

5 Claims



1. An improved surgical table for supporting a patient for the development of cardiac stress while performing a cardiac scan, comprising: a horizontal base adapted to be supported upon a floor and having first and second ends; a platform supported in horizontal position adjacent one of said ends at a level substantially in the plane of said base element; a first support element extending upwardly from said base element medially of said ends; a generally planar back rest having a first end pivotally connected to said first support element, and having means for adjustably positioning the angular inclination thereof relative to the horizontal; a second support element extending upwardly from said base element and adjacent said first support element; a seat element positioned adjacent said first end of said back rest and supported in substantially horizontal position by said second support element; said second support element including first and second vertical members defining an interstice; and an ergometer support element in-

cluding a horizontal beam adjustably supported for longitudinal and vertical movement relative to said base element in said interstice.

4,285,516

## AMUSEMENT AND/OR EXERCISING DEVICE

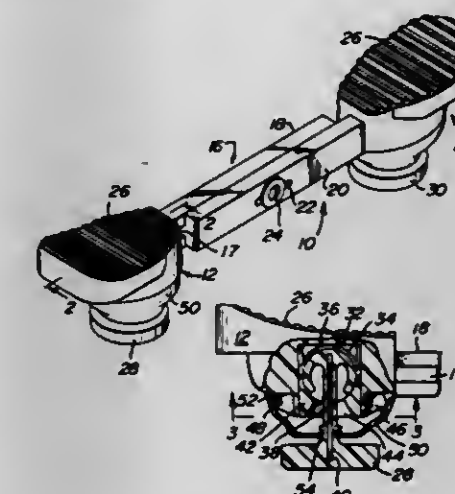
Richard Heatwole, Decatur, Ill., assignor to James A. Southerland, Marshall, Ill., a part interest

Filed Feb. 7, 1980, Ser. No. 119,327

Int. Cl.<sup>3</sup> A63B 23/04

U.S. Cl. 272-146

7 Claims



1. An amusement and/or exercising device comprising first and second pads spaced from each other, each pad being adapted to support one leg of a person, means extending between and rigidly interconnecting said pads, a discrete ground engaging element below and associated with each pad, the improvement comprising means defining a bearing socket approximately  $\frac{1}{2}$  of a sphere on the bottom of each pad, a generally spherical bearing in each socket, each bearing being rigidly connected to one of said ground engaging elements, each pad being pivotable relative to its associated element through a limited arc to thereby facilitate tilting the pads as a unit so that one pad is higher than the other and off the ground, and each bearing permitting its pad to rotate relative to its associated ground engaging element about a vertical axis.

4,285,517

## ADAPTIVE MICROCOMPUTER CONTROLLED GAME

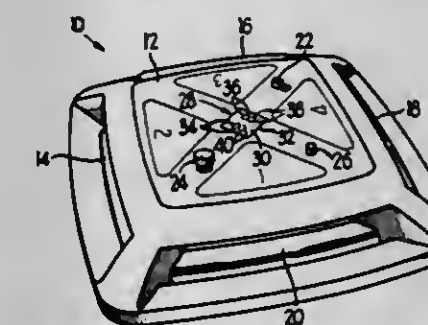
Howard J. Morrison, Deerfield, Ill., assignor to Marvin Glass &amp; Associates, Chicago, Ill.

Filed Feb. 9, 1979, Ser. No. 10,938

Int. Cl.<sup>3</sup> A63B 71/06

U.S. Cl. 273-1 GC

44 Claims



1. A game device comprising: means for automatically generating a sensorially perceptible event, said event having a predetermined physical characteristic having a predetermined value; means for automatically generating a plurality of values, one of which is a simulation of said value; means actuable by a participant for entering into said device an estimate of when said predetermined value has been



simulated by means of a single actuation of said participant actuable means; and  
means coupled to said participant actuable means and to said event generating means for comparing said value and said estimate and for providing a first indication if said estimate corresponds to said value within a predetermined margin of error and for generating a second indication if said estimate does not correspond with said value within said predetermined margin of error.

4,285,518

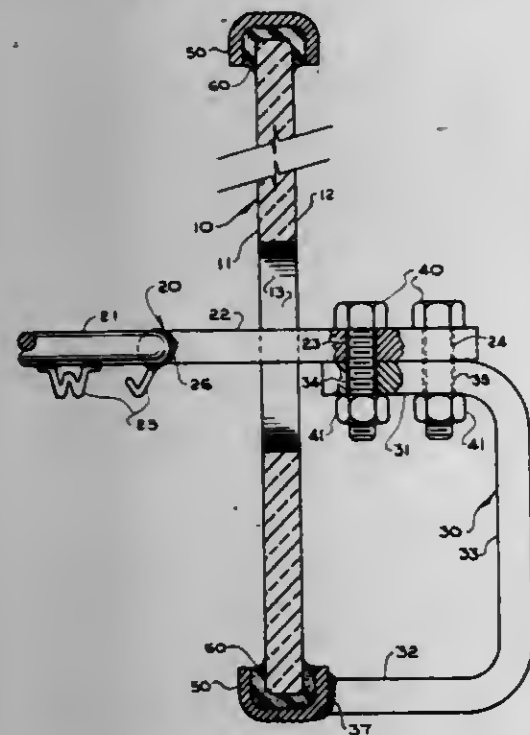
## BASKETBALL GOAL

John M. Pearo, 3211 Castleleigh Rd., Beltsville, Md. 20705  
Filed Jan. 14, 1980, Ser. No. 112,093

Int. Cl.<sup>3</sup> A63B 63/08

U.S. Cl. 273-1.5 R

1 Claim



1. A basketball goal comprising,  
a glass backboard,  
a metallic channel frame completely surrounding said backboard,  
a continuous resilient seal interposed between the surface of the glass backboard and the metallic channel frame to act as a shock absorber between the frame and backboard,  
an aperture in said backboard,  
a mounting bracket comprising a top flange, a bottom flange and a web connecting said top and bottom flanges, the bottom flange being secured to said frame below said aperture, and said top flange being positioned behind and centrally disposed with respect to said aperture, and  
a goal hoop assembly, said assembly comprising a goal hoop positioned in front of said aperture and a backplate, said backplate being secured at one end to said goal hoop and extending rearwardly therefrom through said aperture and secured at another end to the top flange of said mounting bracket,  
said aperture having dimensions greater than the cross section dimensions of said backplate in the area where said backplate passes through said aperture, whereby said goal assembly may move relative to said backboard without contacting said glass.

4,285,519

## PING-PONG POKER

Jose E. di Donato, 3545 Island Rd., Wantagh, N.Y. 11793  
Filed Mar. 4, 1980, Ser. No. 127,104

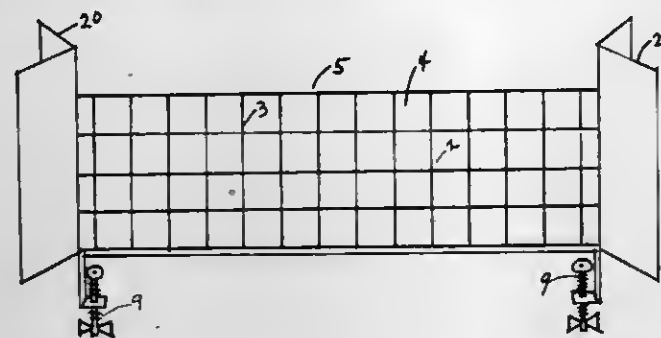
Int. Cl.<sup>3</sup> A63B 39/00

U.S. Cl. 273-30

3 Claims

1. A guide-ball card game comprising: the combination of a smooth, hard surface platform table and a gallery card rack

extending across a central part of said table; said rack comprising a plurality of horizontally and vertically spaced card support members; a vertically extending support post attached at each end of said card support members for holding said members in said spaced relationship; each of said support posts having clamping means for attaching said rack to said table; an array of playing cards positioned within said space between each of said card support members; each of said cards having a first attachment means on at least two opposite edges thereof;



said card support members having second attachment means thereon whereby said cards are releasably attached thereto and held vertically between said card support members, said cards being releasable from said rack when impacted on either side thereof by a ball during game play; means on said rack for compartmentalizing each of said spaces between said support members, each compartment being of a size to have a said card therein; means defining a shield at each end of said rack, said shield being positioned such that a ball impinged thereagainst will be deflected back to a player.

4,285,520

## MASS CIRCULATION PUBLICATION BINGO TYPE GAME

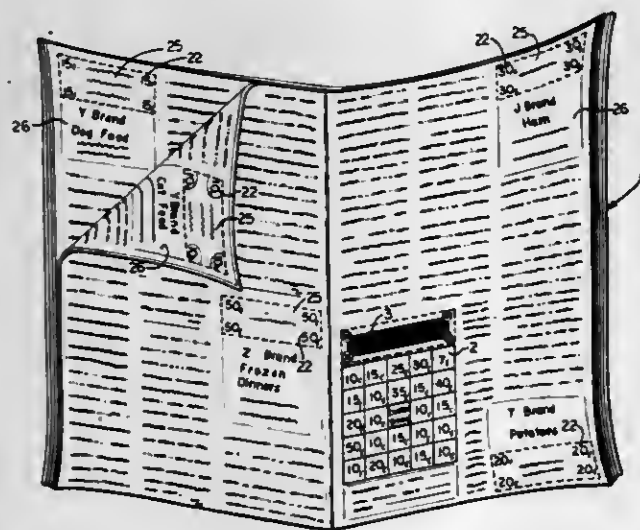
Maynard E. Small, 105 Ward Pkwy., Apt. #507, Kansas City, Mo. 64112

Filed Sep. 26, 1979, Ser. No. 79,189

Int. Cl.<sup>3</sup> A63F 3/06

U.S. Cl. 273-240

10 Claims



1. A game of the type known as "bingo" for players comprising:

- a single edition of a printed run of press, multi-page, and mass circulation publication;
- a playing card common to all players printed in said publication, said card having a grid with several rows and columns forming a set of oriented areas, each oriented area respectively bearing individual indicia whereby every player has a identical playing card having an identical set of oriented area indicia; and
- a set of devices common to all players printed in said publication, at least a portion of said devices being posi-

tioned at various isolated locations throughout the pages of the publication as to be spaced apart from one another by printed subject matter unrelated thereto, each device respectively bearing individual indicia, whereby every player has an identical set of indicia bearing devices; at least a portion of said devices being located on pages separate from said playing card;

- said area indicia and said device indicia being cooperatively related, in that selected device indicia from the device indicia set match with selected indicia from the area indicia set such that said matched area indicia describes a predetermined pattern on said playing card grid; whereby each player is urged to scan each page of said publication to determine the presence of said devices in order to determine said predetermined pattern.

4,285,521

## SIMULATED ATHLETIC GAME

Lewin G. Joel, III, Box 184, Cohasset, Mass. 02025

Filed May 8, 1978, Ser. No. 903,607

Int. Cl.<sup>3</sup> A63F 3/00

U.S. Cl. 273-247

2 Claims

	18	20	22	10
1	A	B	C	
RUN INSIDE	-3	0	1	KICKOFF 50 PAT B
SHORT PASS	B	B	B	RETURN 24 BREAK 12
DELAY	B	-1	0	PUNT 30 FS 25
SCREEN PASS	B	-	-	RETURN
RUN OUTSIDE	6	7	0	INT RET Y
LONG PASS	-	-	-	L

1. A device for simulating strategic play of a competitive athletic game comprising:

a deck of cards including a first set of in play offense and a second set of in play defense cards, the number of in play offense cards being greater than the number of in play defense cards;

each of said offense cards in said first set having means indicating, on one face thereof, a plurality of defendable offense plays and means indicating a plurality of groups of outcomes for said defendable offense plays;

indicia means, on said one face of each of said offense cards, associated with each of said groups of said plurality of outcomes, each of said indicia means being distinguishable from the other of said indicia means on said offense card; and

said defense cards being equal in number to the number of said indicia means, each of said defense cards bearing one of said indicia means whereby a particular outcome of a selected defendable offense play may be determined with reference to matching indicia of an offense card with one of said defense cards, and

means defining a region on each of said offense cards for indicating a plurality of different undefendable plays and a single outcome adjacent each of said undefendable plays.

4,285,522

## PATTERN GAME

Dale E. Turner, 5313 Halison St., Torrance, Calif. 90503

Filed Feb. 4, 1980, Ser. No. 117,825

Int. Cl.<sup>3</sup> A63F 9/20

U.S. Cl. 273-293

9 Claims

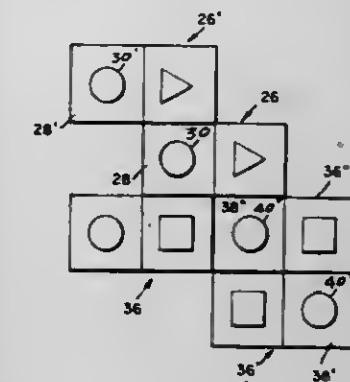
1. A game for establishing a pattern of identical squares in either a rank, a file or a diagonal comprising:

a first set comprising a plurality of identical three dimensional rectangles each divided into identical first squares and identical second squares,

said first and second squares on said first set of rectangles being separately identifiable from each other,

a second set comprising a plurality of identical three dimen-

sional rectangles each divided into identical first squares and identical second squares,  
said first and second square on said second set of rectangles being separately identifiable from each other,  
said first square on each rectangle of said first set being identical to said first square on each rectangle of said second set, and



said second square on each rectangle of said first set being different from said second square on each rectangle of said second set for establishing a total of three different identifiable squares,

whereby alternately placing rectangles from said first set and said second set in a touching relationship provides a contest for first establishing a pattern of identical squares in either rank, a file or a diagonal.

4,285,523

## GAME AIMING DEVICE SECURABLE TO TELEVISION RECEIVER CABINET

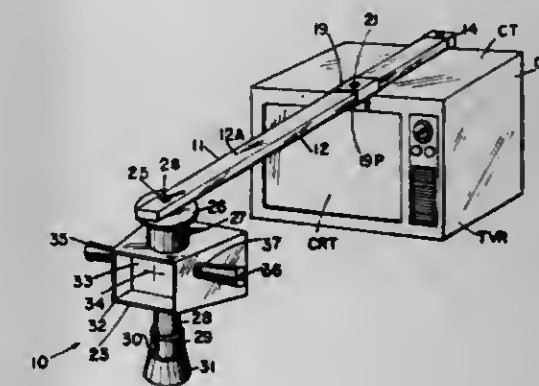
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Nov. 6, 1978, Ser. No. 958,057

Int. Cl.<sup>3</sup> A63F 9/22

U.S. Cl. 273-313

12 Claims



1. A game apparatus for use with a home style television receiver supported in a box-like cabinet wherein target images are generated on the display screen of said television receiver and scoring is effected by electronic circuit means which is operable to generate images on said display screen, said apparatus comprising:

a first support,  
adjustable means secured to said first support for adjustably supporting and securing said first support to different cabinets of different television receivers containing television in picture display screens and wherein said first support extends substantially normal to the display screen of the television receiver to which said first support is secured,

a second support supported by said first support near the end of said first support and disposed thereby a distance away from the display screen of the television receiver,  
an aiming device supported by said second support a substantial distance away from said display screen,



sighting means associated with said aiming device for aiming said aiming device at the display screen of said receiver, manually operable means for moving said aiming device to permit said sighting means to be aimed at different locations of said screen, and manually operable electrical control means including a switch supported by said second support and accessible to a hand of the operator operating said manually operable means for moving said aiming device and controllable thereby to effect scoring with respect to target images generated on said screen.

4,285,524

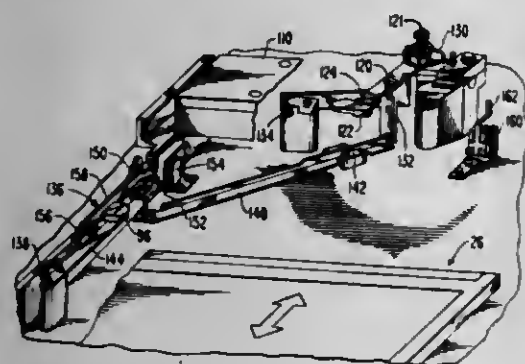
# STYLUS CLEANING APPARATUS FOR VIDEO DISC PLAYER

Larry M. Hughes, and Kenneth L. George, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.  
Filed Feb. 21, 1980, Ser. No. 122,959

Int. Cl.<sup>3</sup> G11B 3/58

U.S. Cl. 369-71

7 Claims



1. In a record player including a pickup stylus subject to engagement with a record for recovering prerecorded information disposed thereon during playback; said stylus being mounted at one end of a stylus arm supported in a carriage which is subject to translatory motion along a path between a starting position and an ending position; said record being subject to removable occupancy of a protective caddy comprising a jacket and a record retaining spine; said player having a record extraction mechanism for removing the record/spine assembly from said jacket, and retaining said record/spine assembly in said player, during jacket withdrawal subsequent to the insertion of an occupied caddy into said player to a fully inserted position along a further path disposed substantially parallel to said carriage path; wherein an empty jacket is inserted into said player along said further path to retrieve said record/spine assembly; stylus cleaning apparatus comprising:

(A) a cleaning element;

(B) a cleaner arm movably mounted in said player and carrying said cleaning element; said cleaner arm being subject to engagement with said caddy during its travel to said fully inserted position in said player for effecting motion of said cleaner arm from a first position to a second position; said retained spine holding said cleaner arm at said second position during occupation of said player by said spine;

(C) means for biasing said cleaner arm toward said first position; and

(D) an actuated latch member mounted in said player; said actuated latch member being subject to motion from a first location to a second location in response to insertion of said caddy into said player; said actuated latch member, while occupying said second location, engaging said cleaner arm during motion thereof from said second position toward said first position in response to caddy withdrawal for holding said cleaner arm at an intermediate position between said first position and said second position; said actuated latch member being subject to movement from said second location to said first location in response to withdrawal of said carry from said player, thereby releasing said cleaner arm to return to said first

position; the location of said intermediate position of said cleaner arm being such that said cleaning element wipes said pickup stylus during motion of said cleaner arm from said intermediate position to said first position.

4,285,525

# PRESSURE CUSHION SEAL FOR LAMINATING MACHINE

Kurt Held, Alte Strasse 1, D-7218 Trossingen 2, Fed. Rep. of Germany

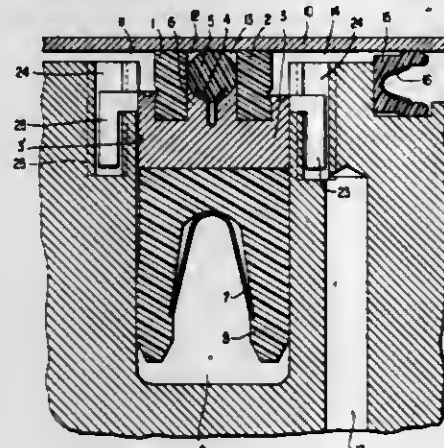
Filed Feb. 22, 1980, Ser. No. 123,925

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907087

Int. Cl.<sup>3</sup> F16J 15/24; B30B 5/06

U.S. Cl. 277-12

5 Claims



1. A slide surface seal for laterally sealing a pressure cushion formed between a pressure plate and a metal belt advancing parallel to the plate in a moving belt laminating machine operating according to the pressure cushion principle, said seal being arranged to be mounted in a groove formed in the pressure plate and to bear against the metal belt to laterally surround the pressure cushion and to establish a fluid seal therebetween the plate and the belt and said seal comprising: a seal mount of rigid material arranged to be inserted in the groove; at least one sealing strip secured to said mount and arranged to bear against the belt for maintaining a gap of minimum width between said seal and the belt; and an elastic sealing member secured to said mount adjacent the side of said sealing strip directed toward the interior of the pressure cushion and arranged to bear against the belt for maintaining losses of pressure medium from the cushion at a minimum.

4,285,526

# SEALING DEVICE FOR BEARINGS, ESPECIALLY ROLL BEARINGS

G. Rune Klinteberg; N. A. Bertil Johansson; B. Lennart Johansson, all of Landskrona, and Christer H. Dahlgren, Scalöv, all of Sweden, assignors to Stefa Industri Aktiebolag, Landskrona, Sweden

Filed Sep. 25, 1979, Ser. No. 78,812

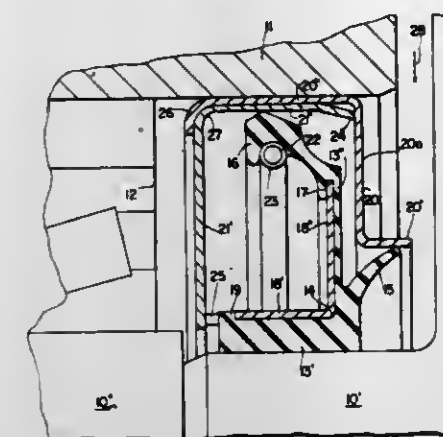
Int. Cl.<sup>3</sup> F16J 15/32

U.S. Cl. 277-153

6 Claims

1. Sealing device for bearings especially roll bearings, in which two sealing places (15-20', 16-21') are provided in series, each comprising a sealing lip (15, 16) made from an elastomer, and arranged on one single ring (13) made from the same elastomer for contacting a cylindrical surface at the sealing places, said sealing ring (13) being connected to a metallic liner (18), characterized thereby, that the sealing lips (15, 16) are arranged to extend from one single ringshaped part (13) but at different radial distances from the axis of the sealing device, the sealing device being covered by a housing comprising two parts (20, 21), one of said parts (20) having a Z-shaped

profile and the other one (21) having an L-shaped profile, so that the at least substantially cylindrical outermost parts of the two last mentioned parts (20, 21) tightly contact each other,



and the edge of the one (20) of them being folded over a cavetto shaped part of the other one (21), two cylindrical portions of the housing parts forming contact surfaces for respective ones of the two sealing lips (15, 16).

4,285,527

# HEAD GASKET ASSEMBLY WITH METAL INLAYS

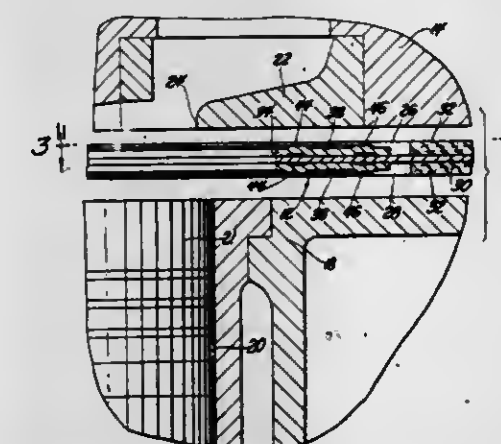
Terrence T. Connely, Southgate, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Apr. 25, 1980, Ser. No. 143,620

Int. Cl.<sup>3</sup> F16J 15/06

U.S. Cl. 277-235 B

7 Claims



1. A head gasket assembly adapted to be disposed between a head having a precombustion chamber therein and a cylinder block having a cylinder therein with the precombustion chamber located at least partially outside the diameter of the cylinder and with a precombustion chamber insert disposed in the head for defining the passageway between the precombustion chamber and the cylinder, said gasket comprising: body means defining two parallel surfaces adapted to engage and seal the head and the cylinder block, said body means including a metal core having resilient material on said surfaces thereof and at least one cylinder opening for surrounding the cylinder, metal inlays fixedly secured to both of said surfaces of said core and extending completely about said cylinder openings and including integral extensions extending from said cylinder openings and in engagement with said metal core for engaging the chamber insert and the cylinder block to perfect a seal therebetween.

4,285,528

# CHUCK ASSEMBLY

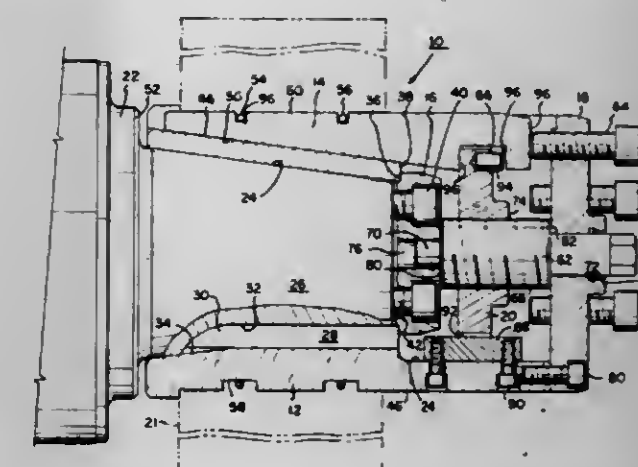
Nicolae Neamtu, Weymouth, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Apr. 18, 1980, Ser. No. 141,457

Int. Cl.<sup>3</sup> B23B 31/40

U.S. Cl. 279-2 R

11 Claims



1. A chuck assembly for clamping a hollow work piece to a spindle comprising:

a hollow arbor adapted to slide over said spindle with grooves longitudinally extending along an outside arbor surface, said grooves having an inclined bottom surface; means for securing said arbor to said spindle; locking keys being slidably disposed within said arbor grooves with an inclined surface in friction contact with said inclined surface of said grooves; and

means disposed within said arbor for simultaneously moving said locking keys in a forward direction and a predetermined distance outside of said grooves against an internal wall of said work piece to centrally locate and clamp said workpiece to said arbor and for moving selected locking keys in a reverse direction back into said grooves to ease removal of said work piece from said arbor.

4,285,529

# SLED WITH OCCUPANT PROTECTION

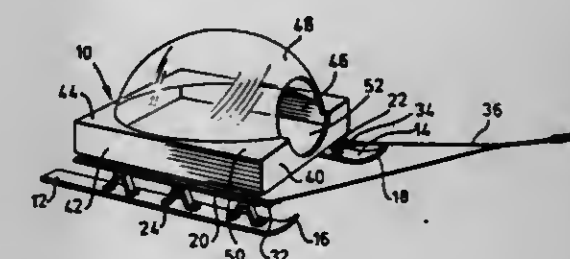
Ellen M. Vaillancourt, 3 Victoria St., Kapuskasing, Ontario, Canada (P5N 1K6)

Filed Sep. 4, 1979, Ser. No. 72,390

Int. Cl.<sup>3</sup> B62B 13/00

U.S. Cl. 280-12 R

4 Claims



1. A sled for transportation of passengers or cargo and comprising:

a frame;

mutually parallel snow traversing sled runners fixedly secured to said frame;

a passenger or cargo receiving enclosure mounted above the runners, said enclosure including a generally flat base with short side walls upstanding therefrom and a domed cover defining said enclosure therebetween, and a laterally presented access aperture provided in one side wall of the base and a side of the domed cover, said access aperture having a smooth continuous boundary edge;



said enclosure being pivotally mounted to said frame for angular adjustment relative to the sled runners and the frame about a vertical axis, so as to vary the direction of lateral presentation of the access aperture relative to the sled runners.

4,285,530

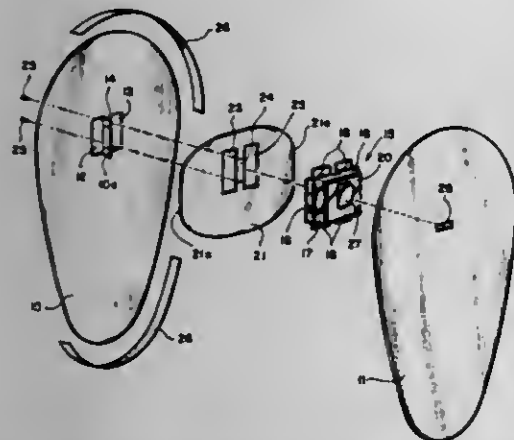
**HAND HELD SKIING STABILIZER**

Jacques F. Ducourant, 1823 W. 700 North, Salt Lake City, Utah 84104

Filed Feb. 1, 1979, Ser. No. 8,248  
Int. Cl.<sup>3</sup> A63C 11/00

U.S. Cl. 280-809

6 Claims



1. A hand-held skiing stabilizer comprising a pair of similarly shaped sheets of semirigid material; means attaching said sheets together about their edges; two holes through one of said sheets in spaced, side-by-side relationship forming a bar between the two holes so that a hand may be inserted to grasp the bar; box structure positioned between the two sheets to spread and hold the two sheets apart in the area of the handle, so that a hand grasping the bar does not pass through the second sheet, said box structure being of a size so that the edges of the box structure extend about the perimeter of the holes through the one sheet, and having flanges adjacent to one of the sheets; a reinforcing piece, smaller than the sheets, attached to one of the sheets and arranged to hold the flanges of the box structure against the sheet to which the reinforcing piece is attached, the box structure extending through the reinforcing piece to the opposite sheet.

4,285,531

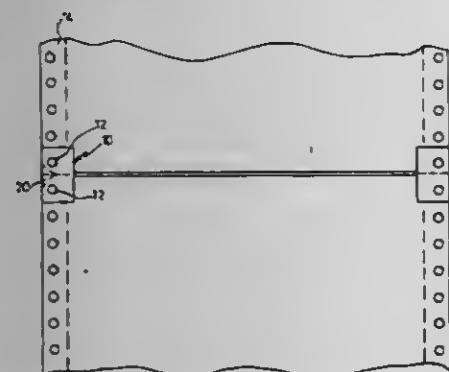
**REINFORCEMENT FOR COMPUTER PRINTOUT SHEETS**

Ronald Balsamo, 131 Bogota Gardens, Bogota, N.J. 07603  
Filed Apr. 16, 1979, Ser. No. 30,116

Int. Cl.<sup>3</sup> B42D 19/00

U.S. Cl. 281-5

4 Claims



1. An improved computer printout sheet comprising, in combination:  
a continuous paper form having punched marginal portions

and printout pages therebetween being adapted for handling by spoked ratchets of paper-advance mechanisms;  
a binding strip having a flat web of reinforcing adhered thereto;  
said binding strip with at least two spaced apertures there-through dimensioned to accept successive spokes of said paper advance mechanism; and  
a perforation along a line between said spaced apertures so that with said binding strip adhered to said continuous paper form, the perforation is adapted to coincide with the printout page edge,  
whereby said binding strip is adapted to connect the punched marginal portion of two adjacent ones of said continuous paper forms.

4,285,532

**BOOK MARKER**

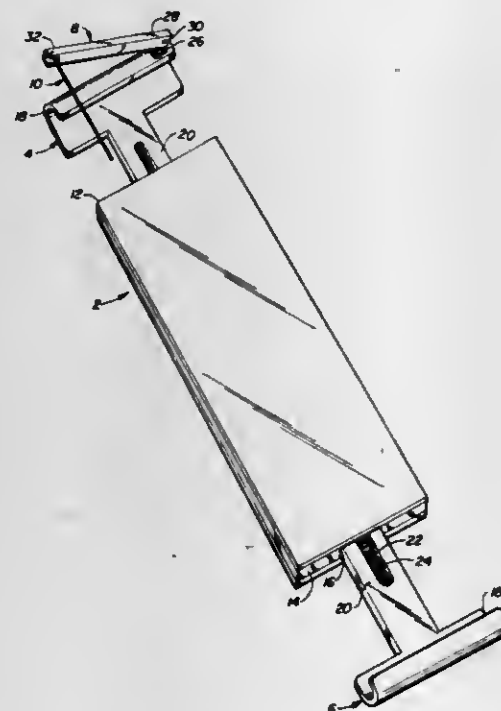
Charles S. Davis, 418 Laughton St., Antioch, Calif. 94509, assignor to Leonard Russo, San Rafael, Calif.

Filed Nov. 30, 1979, Ser. No. 99,149

Int. Cl.<sup>3</sup> B42D 9/00; A47B 97/04

U.S. Cl. 281-42

5 Claims



1. A device for marking the user's place in a book and for holding the pages of the book down, said book having a book-cover, comprising:

a frame;  
first and second cover engaging members attached to said frame, at least one of said members being movably attached to said frame;  
said members having means for engaging the opposed edges of said book cover;  
means for biasing said members towards each other whereby said book cover is captured between said engaging means;  
an arm pivotally attached at one end to said first cover engaging member; and  
a page marker pivotally attached to said arm whereby when said device is secured to said bookcover, said page marker can be disposed in a first position extending over and in physical contact with at least one page of said book to cause said at least one page to be held between said page marker and said frame or a second position out of physical contact with said at least one page.

4,285,533

**APPARATUS FOR CARRYING FIRST AND SECOND WEIGHT LOADS OF A TUBING STRING**

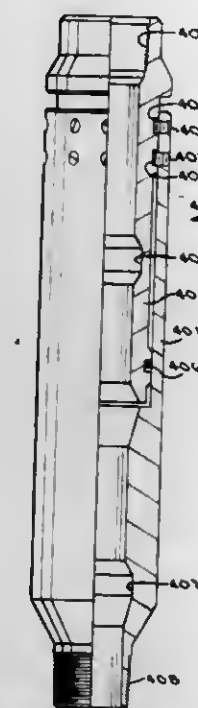
Raphael J. Silberman, and Everett H. Smith, both of Houston, Tex., assignors to Baker International Corporation, Orange, Calif.

Filed May 7, 1979, Ser. No. 36,910

Int. Cl.<sup>3</sup> E21B 17/06

U.S. Cl. 285-2

6 Claims



1. In an apparatus connectable on a tubing string extendible into a subterranean well, said apparatus being selectively separable whereby said tubing string may be parted, the improvement comprising: first means selectively retrievable from said apparatus for carrying across said apparatus a first weight load defined through said tubing string below said apparatus; and second weight load carrying means for carrying across said apparatus a second weight load defined through said tubing string below said apparatus, said second weight load carrying means comprising a shear pin initially engaged through said apparatus and selectively shearable thereacross for carrying across said apparatus a second weight load defined through said tubing string below said apparatus, said second weight load being less than said first weight load, said second weight load carrying means being activatable to separate said apparatus and said tubing string when said second weight load is exceeded.

4,285,534

**PULSATION-ABSORBING FLEXIBLE PIPE FOR PRESSURE FLUID DEVICE**

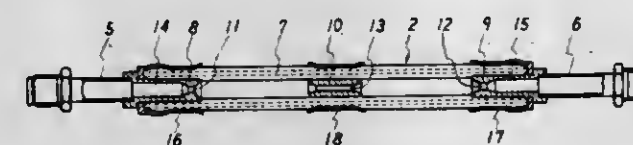
Toshiyuki Katayama, Aki; Kiyokazu Agura, and Masayuki Matsuda, both of Himeji, all of Japan, assignors to Nichirin Rubber Industrial Co., Ltd., Hyogo, Japan

Filed Dec. 28, 1979, Ser. No. 107,916

Int. Cl.<sup>3</sup> F16L 55/00

U.S. Cl. 285-119

2 Claims



1. A pulsation-absorbing flexible pipe for a pressure fluid device, comprising a first connection metal fitting, having one end for connection to a discharge opening of a pressure fluid-feeding device, a second connection metal fitting, having one end for connection to a feed opening of a working device operated by the pressure fluid discharged from said pressure

fluid-feeding device; a flexible pipe coupled to the other ends of said first connection metal fitting and said second connection metal fitting; first throttling means positioned at the other ends of said first connection metal fitting and said second connection metal fitting, said first throttling means having a bore of a diameter smaller than that of the connection metal fittings; and a second throttling means positioned inside of the bore of said flexible pipe, said second throttling means having a bore of a diameter smaller than that of the flexible pipe wherein said second throttling means prevents noise resulting from pulsating of fluid in said flexible pipe.

4,285,535

**PORTABLE AUXILIARY DOOR LOCK**

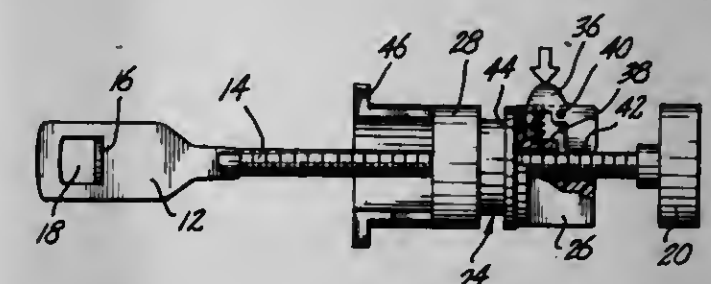
John E. Leary, Box 35, Woodville Herbert Rd., Bray, County Wicklow, Ireland

Filed May 14, 1979, Ser. No. 38,458

Int. Cl.<sup>3</sup> E05C 19/18

U.S. Cl. 292-293

7 Claims



1. A portable auxiliary locking device for securing an inwardly swinging door that is mounted in a frame, said locking device comprising:

a threaded rod having a relatively thin plate region extending axially from one end thereof, said plate region including an angularly extending hook-like flange configured and arranged for engagement with a portion of said door frame; and  
a body assembly coaxially received on said threaded rod and positionable therealong, said body assembly having a first face region configured for abutting solely with the inner surface of said door without abutting said frame when said hook-like flange is engaged with said frame and said door is in a closed position, said body assembly including a locking barrel and a body member each having a central bore for slidably receiving said threaded rod, said locking barrel including a recess having at least a portion thereof extending inwardly into said central bore, said first end face region of said body assembly being formed at a first end of said body member, said locking barrel being rotatably linked with the second end of said body member to permit rotation of said locking barrel relative to said threaded rod while said body member is stationary with respect to rotation about said threaded rod said body assembly further including quick-release means having a latch member mounted within said recess of said body member for maintaining said body assembly in threaded engagement with said threaded rod and allowing axial movement of said body assembly relative to said threaded rod through rotation of said locking barrel, said latch member having a plurality of teeth dimensioned and arranged for threaded engagement with said threaded rod, said teeth being the sole means for engaging said body assembly to said threaded rod, said quick-release means further including spring means for biasing said locking means in a position in which said teeth are threadedly engaged with said threaded rod, said locking means being manually depressible to operate said spring for disengaging said teeth from said threaded rod.



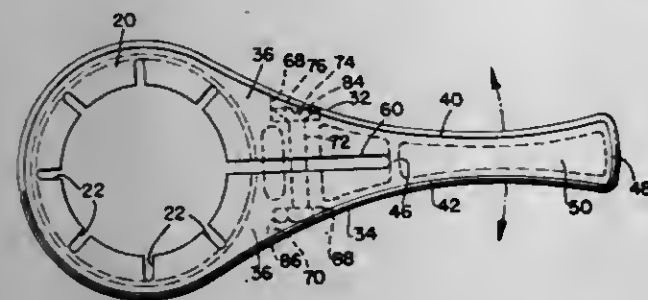
4,285,536

## UNIVERSAL LEVER HANDLE ATTACHMENT FOR DOOR KNOB

French T. McCoy; Thomas A. Steinbrunner; Dale L. McEvers, and Loyal M. Overholser, all of Dayton, Ohio, assignors to TLM Industries, Inc., Dayton, Ohio  
Filed Nov. 23, 1979, Ser. No. 96,882  
Int. Cl.<sup>3</sup> E05C 13/00

U.S. Cl. 292—336.3

5 Claims



1. A universal lever handle attachment for a door knob said attachment comprising:

- a knob engaging and gripping portion including a cylindrical head portion having a diameter closely approximating that of the knob which it is adapted to fit over the grip, relief means formed in the cylindrical head portion to provide adjustability of effective diameter of the cylindrical head portion,
- an intermediate portion connected to the knob engaging and gripping portion, said intermediate portion being configured to operatively receive a universal screw adjusting assembly, said universal screw adjusting assembly including an adjusting screw having a slotted head, said head being tapered downwardly from its outer periphery to the screw body extending therefrom, a washer fitting up against the underside of the screw head and having its contacting face correspondingly tapered with respect to the underside of the screw head, and a nut threadably engaging the end portion of the screw body,
- the aforesaid relief means in the cylindrical head portion extending into the intermediate portion connected to the knob engaging and gripping portion, the intermediate portion being provided with opposed openings spanning the relief means in the intermediate portion whereby the universal screw adjusting assembly is mounted with the washer in one opening and the nut in the other,
- and a handle portion extending from the intermediate portion, said handle portion being symmetrical so that it may be conveniently operated from the right or left side of the door knob.

4,285,537

## SEALED CELL LIFT TOOL

Stan Hawrylo; Ed Neukirch, and William J. Eberle, all of Reading, Pa., assignors to General Battery Corporation, Reading, Pa.

Filed Sep. 14, 1979, Ser. No. 75,600  
Int. Cl.<sup>3</sup> B66C 1/46

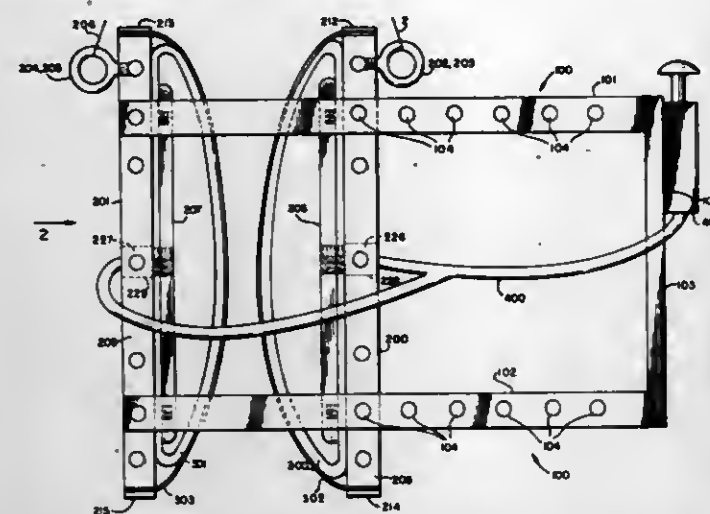
U.S. Cl. 294—93

12 Claims

1. A lifting apparatus comprising:

- (a) a framework;
- (b) at least two endplates adjustably spaced from each other within said framework;
- (c) at least two inflatable means opposing each other and connected to each of said endplates for inflating and holding an object between said endplates, wherein each inflatable means comprises a hose-like material open at each end and slit longitudinally from end to end;
- (d) fluid supply means adapted to be connected to a fluid source and to said inflatable means for supplying and controlling a flow of fluid to said inflatable means, whereby supplying fluid to said inflatable means through

said fluid supply means causes said inflatable means to inflate and expand toward each other; and



(e) lift means connected to said endplates for lifting said endplates thereby.

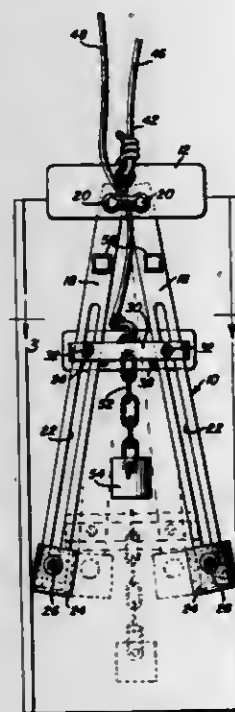
4,285,538

## FLUE LINING INSTALLATION TOOL

Raymond J. Luke, 27 - 17th St., Cloquet, Minn. 55720  
Filed Apr. 10, 1980, Ser. No. 138,906  
Int. Cl.<sup>3</sup> B66C 1/44

U.S. Cl. 294—97

4 Claims



1. A flue pipe installation tool including an upper head portion, a pair of slightly downwardly divergent elongated and substantially longitudinally straight legs each having its upper end pivotally supported from said head portion for oscillation about an axis extending transversely of said head portion and the legs for relative swinging movement of the lower ends of the legs toward and away from each other, said legs each including a longitudinal slot formed therein, a horizontally elongated control block extending between and interconnecting said legs intermediate their upper and lower ends, each end of said block including pin means slidably received in the corresponding leg slot, whereby upward and downward movement of said block along said legs causes the lower ends thereof to swing away and toward each other, respectively, said head and control block each including anchor means for anchoring one end of an elongated suspension member section thereto, the pivot axes of said legs relative to said head portion being spaced horizontally apart in parallel relation, the remote portions of the lower ends of said legs including resilient por-

tions thereof for frictionally gripping the internal surfaces of a flue lining block.

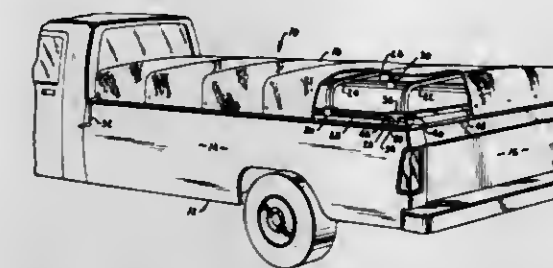
4,285,539

## RETRACTABLE TONNEAU TOP

Richard C. Cole, 627 E. 16th St., Sedalia, Mo. 65301  
Filed Mar. 9, 1979, Ser. No. 18,949  
Int. Cl.<sup>3</sup> B60J 7/06

U.S. Cl. 296—105

4 Claims



1. A retractable tonneau top for a vehicle bed having a pair of side walls, said tonneau top comprising:
  - a pair of tracks mounted to the respective side walls of the vehicle bed, each track having a substantially enclosed tube underlying a substantially enclosed guideway having an opening therein;
  - a plurality of sleeve members received in each guideway for movement lengthwise therein, said sleeve members being arranged in the opposed guideways in laterally aligned pairs;
  - a guide unit for each sleeve member, each guide unit having a guide portion substantially surrounding the guideway and a connecting portion extending through said opening from the guide portion and connected with the corresponding sleeve member, each guide portion having a pair of side plates embracing opposite sides of the guideway and a top plate covering the top of the guideway;
  - a plurality of bow members adapted to span the vehicle bed and each having opposite ends attached to the guide portions of the corresponding guide units;
  - a flexible cover carried by the bow members and having sufficient size to substantially cover the vehicle bed;
  - a pair of endless drive members supported for movement on the respective tracks and each having an upper run extending within the guideway of the corresponding track and a lower run extending within the tube of the corresponding track; and means for coupling the upper runs of the drive members with the rearmost pair of sleeve members to effect movement of the rearmost pair of sleeve members in unison with the upper runs of the drive members for extension and retraction of the flexible cover.

4,285,540

## BODY STRUCTURE FOR AN AUTOMOBILE WITH CONCEALED WIPERS

Hideo Harada, Yokosuka, and Elji Imai, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan  
Filed Aug. 2, 1979, Ser. No. 62,997

Claims priority, application Japan, Aug. 24, 1978, 53/115122[U]

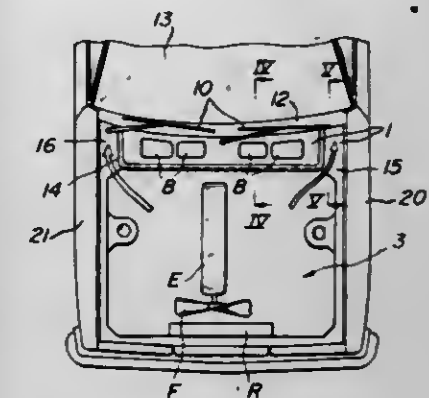
Int. Cl.<sup>3</sup> B60J 1/02; B60S 1/04

U.S. Cl. 296—192

4 Claims

1. A body structure for an automobile, the automobile having an engine compartment, a cowl top upper panel adjacent the rear of the engine compartment, and wipers arranged on the cowl top upper panel, said structure comprising:
  - an engine hood covering the engine compartment, the cowl top upper panel and said wipers while in a closed position, the hood including an inner panel adjacent the cowl top upper panel, said cowl top upper panel including air intake holes therein concealed by the engine hood; and
  - a rubber seal carried on top of said cowl top upper panel and in contact along the length of the seal with the inner panel

while the engine hood is in the closed position, said inner panel, said cowl top upper panel and said rubber seal forming air passages on sides of the seal opposite the air



4,285,541

## COMBINED CHAIR AND BED

Tetsuo Onishi, 37, Bizen, Iwade-cho, Naga-gun, Wakayama-ken, Japan

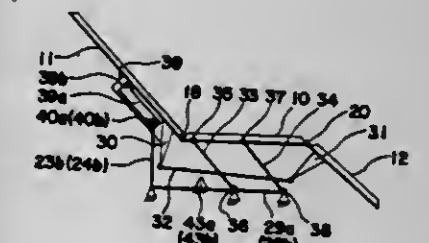
Filed Aug. 6, 1979, Ser. No. 63,989

Claims priority, application Japan, Aug. 12, 1978, 53/97794

Int. Cl.<sup>3</sup> A47C 17/16, 13/00, 1/02

U.S. Cl. 297—84

7 Claims



1. A combined chair and bed which comprises:
  - a frame assembly comprising a pair of generally U-shaped frame structures of identical construction, a plurality of beam members extending between the frame structures to keep said frame structures in spaced relation to each other and a wheel assembly on which said frame structures are mounted for movement from place to place;
  - a seat assembly including a back rest supported in position for pivotal movement between a generally upright position and a laid-down position, and a seat hingedly connected at one side edge to the back rest, said back rest when in the upright position forming a certain angle relative to the seat to assume a generally L-shaped configuration in cooperation with the seat, said back rest when in the laid-down position being level with the seat, said seat assembly being positioned between said frame structures; and
  - at least one link mechanism through which the seat assembly is mounted on the frame assembly, said link mechanism including means fixed relative to the frame assembly for providing a fulcrum about which the back rest pivots accompanied by the pivotal movement of the back rest relative to the seat, the hinge axis between the back rest and the seat moving angularly about the fulcrum during the pivotal movement of the back rest about said fulcrum, thereby shifting the seat relative to the frame assembly



selectively upwardly and downwardly depending upon the direction of the pivotal movement of the back rest between the upright and laid-down positions, and link means pivotally supported for movement between generally inclined and upright positions, said link means, when said seat is upwardly shifted incident to the pivotal movement of the back rest from the upright position towards the laid-down position, being erected to assume the upright position to support the seat in flush with the back rest in the laid-down position.

4,285,542

## DECK SEAT BRACKET

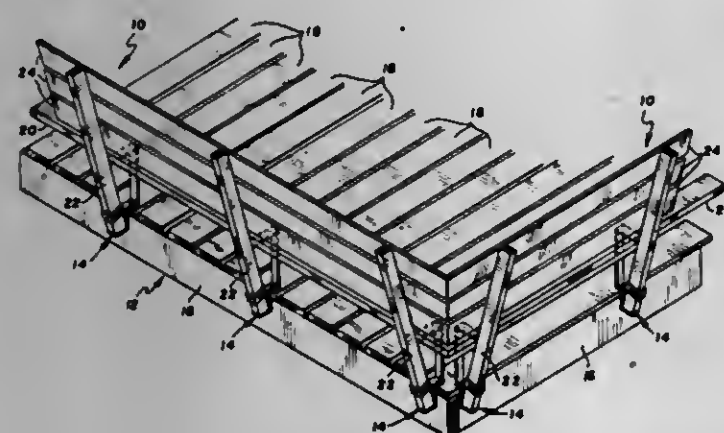
Ives L. Boisvert, 1200 - 72nd Ave. Northeast, Minneapolis, Minn. 55432

Filed Jan. 17, 1979, Ser. No. 4,174

Int. Cl.<sup>3</sup> A47C 11/00

U.S. Cl. 297-217

8 Claims



1. A bracket for connection to a base having a top surface and a vertical side surface to support a seat and a back joist adjacent to the seat, the bracket comprising:  
a generally horizontal top portion for supporting the seat;  
a generally horizontal bottom portion for connection to the top surface of the base;  
first and second generally vertical side portions extending between and connected to the top and bottom portions and supporting the top portion above the bottom portion;  
a loop connected to the first generally vertical side portion adjacent to the connection to the bottom portion for receiving the back joist and holding the back joist in a generally upstanding position; and  
a back joist support portion having a first downwardly extending portion below the bottom portion for connection with the vertical side surface of the base and a second outwardly turned portion, the second outwardly turned portion engaging and supporting a bottom end of the generally upstanding back joist.

4,285,543

## ROCKER ATTACHMENT

Chester V. Clark, P.O. Box 644, Yarnell, Ariz. 85362

Filed Dec. 17, 1979, Ser. No. 103,994

Int. Cl.<sup>3</sup> A47D 13/10

U.S. Cl. 297-272

9 Claims

1. A rocker attachment for mounting on a folding lawn chair of the type having a pair of front legs integrally interconnected at the bottom ends by a first transverse bar and a second pair of legs integrally interconnected at the bottom ends by a second transverse bar, said rocker attachment comprising:

- (a) a pair of rocker elements in spaced apart parallel relationship, each of said rocker elements formed of an elongated tubular member which is bowed along its length into an arcuate configuration;
- (b) a spaced apart pair of beam means transversely interconnecting said pair of rocker elements for demountably

receiving the first and second transverse bars of the folding lawn chair; and



(c) said pair of beams are movably mounted on said pair of rocker elements for varying the spaced relationship of said pair of beam means.

4,285,544

## FURNITURE CONSTRUCTION

Otto W. Zapf, Eschborn, Fed. Rep. of Germany, assignor to Knoll International, Inc., Greenwich, Conn.

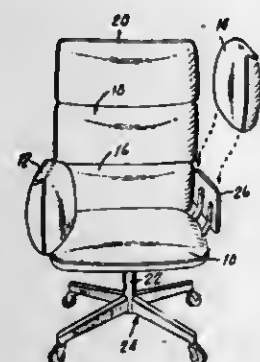
Continuation of Ser. No. 633,410, Nov. 19, 1975, abandoned, which is a continuation of Ser. No. 480,295, Jun. 17, 1974, abandoned, which is a continuation-in-part of Ser. No. 363,798, May 25, 1973, abandoned. This application May 12, 1977, Ser. No. 796,311

Claims priority, application Fed. Rep. of Germany, May 31, 1972, 7220445; Jan. 13, 1972, 7222086; Jul. 22, 1972, 7227236; Oct. 24, 1972, 7238927

Int. Cl.<sup>2</sup> A47C 1/12

U.S. Cl. 297-440

7 Claims



1. Cushion construction comprising a resilient padding member in the general shape of a bag open at one of its ends and closed at its opposite end, upholstery material covering said padding member and also in the general shape of a bag open at one of its ends and closed at its opposite end and closed along its sides, said upholstery material enclosing said padding member with the open end of each adjacent each other, and the open end of said upholstery material extending inside the open end of said padding member, first attaching means along an inwardly exposed under surface of said upholstery material at the open end thereof, second attaching means along an inside surface of said padding member at and inside the open end thereof and removably attached to said first attaching means to provide an upholstered cushion in the general shape of a padded bag open at one of its ends and closed at its opposite end and closed along its sides and in which the upholstery material may be readily removed.

4,285,545

## AUTOMOBILE PASSENGER SEAT WITH AN AUTOMATICALLY POSITIONED HEADREST

Dieter Protze, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

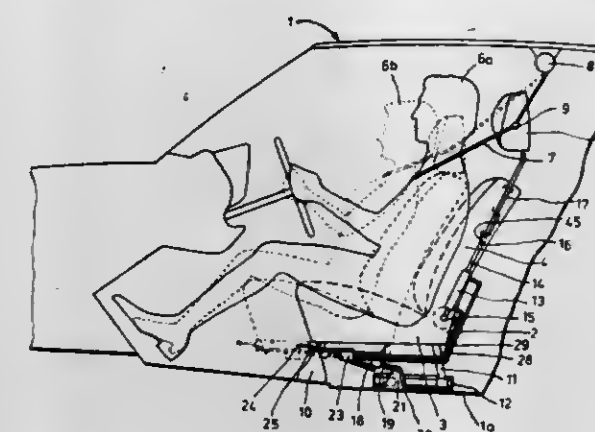
Filed Mar. 1, 1979, Ser. No. 16,545

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2810577

Int. Cl.<sup>3</sup> B60R 21/10; A62B 35/00

U.S. Cl. 297-483

20 Claims



1. In an automobile driver or passenger seat, said seat adjustable in the lengthwise direction of the vehicle and having a backrest, and a headrest supported on said backrest and vertically adjustable in relation thereto, the improvement comprising means for adjusting automatically the position of said headrest in response to lengthwise movement of said seat for moving said headrest upwardly away from said backrest when said seat is moved backward, and for moving said headrest downwardly when said seat is moved forward.

20. An automobile seat according to claim 1, wherein said seat includes a safety belt means associated therewith, and said safety belt means are attached at one end to said seat on said headrest thereby to be adjustable in response to the longitudinal position of the seat.

4,285,546

## TUNNEL PROFILE CONTROL

Michael Etherington, Retford, England, assignor to Douco Overseas Engineering Ltd., Newark, England

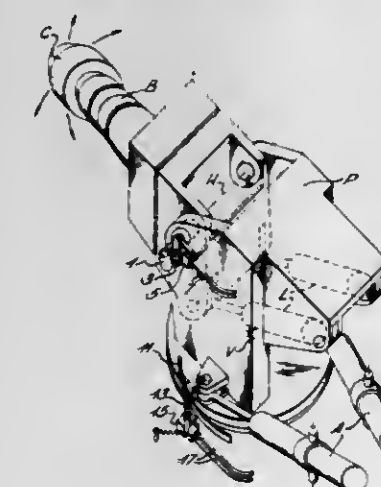
Filed Jan. 8, 1980, Ser. No. 110,541

Claims priority, application United Kingdom, Jan. 17, 1979, 01667/79

Int. Cl.<sup>3</sup> E21C 35/04

U.S. Cl. 299-1

9 Claims



1. Apparatus for controlling the profile of an aperture cut by a cutting head capable of traversing movement in two directions at right angles to each other, comprising means to control the movement of the cutting head in said two directions, a template having an internal profile representing that of the

aperture to be cut, a sensing device engageable with the profile of the template, following means responsive to movement of the cutting head to cause relative movement between the sensing device and template in a direction which is related to the direction of movement of the cutting head, said sensing device being engageable with the profile of the template when the cutting head has been traversed sufficiently in a particular direction so as to reach its desired profile extremity, and hydraulic sensing equipment which is actuated in response to said sensing device and template coming into engagement, said sensing equipment being effective to over-ride said means controlling the movement of the cutting head to ensure the head does not cut outside its desired profile.

4,285,547

## INTEGRATED IN SITU SHALE OIL AND MINERAL RECOVERY PROCESS

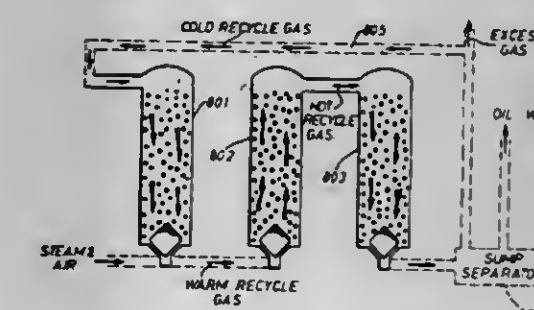
Bernard E. Weichman, Houston, Tex., assignor to Multi Mineral Corporation, Houston, Tex.

Filed Feb. 1, 1980, Ser. No. 117,570

Int. Cl.<sup>3</sup> E21C 43/00

U.S. Cl. 299-2

11 Claims



1. A method of in situ processing of oil shale ore comprising the steps of:

- (a) establishing first, second, and third underground stopes, each stope being established by removing a portion of the oil shale ore from the stope, rubblizing the remaining ore in the stope, extracting the rubblized ore from the stope, crushing the ore to obtain a first fraction comprising substantially nahcolite particles and a second fraction comprising substantially oil shale particles, separating the substantially nahcolite particles from the substantially oil shale particles, and restoring at least a portion of the substantially oil shale particles to the stope by back filling the stope with said oil shale particles as the extraction, crushing, and separation are carried out to maintain the stope substantially filled with particles, wherein the first stope is a heating stope and having been subjected to retorting and carbon recovery, the second stope is a carbon recovery stope and having been subjected to retorting, and the third stope is a retort stope;
- (b) injecting gas into the first stope and heating the gas by passing it through the first stope to recover sensible heat from the spent shale therein;
- (c) transferring the heated gas from the first stope to the second stope and using the heated gas together with steam and a limited amount of air to obtain producer fuel gas by reaction with the carbon on the spent shale in the second stope;
- (d) transferring the producer fuel gas to the third stope and using the producer fuel gas to retort the contents of the third stope to produce gaseous and liquid hydrocarbons and water;
- (e) collecting the liquid and condensable hydrocarbon products produced by the retorting of the third stope; and
- (f) transferring at least a portion of the noncondensable gaseous product of the retorting of the third stope to the first stope for heating to recover sensible heat from the spent shale in the first stope.



4,285,548

**UNDERGROUND IN SITU LEACHING OF ORE**

Jalmer W. Erickson, P.O. Box 3561, Casper, Wyo. 82602

Filed Nov. 13, 1979, Ser. No. 93,904

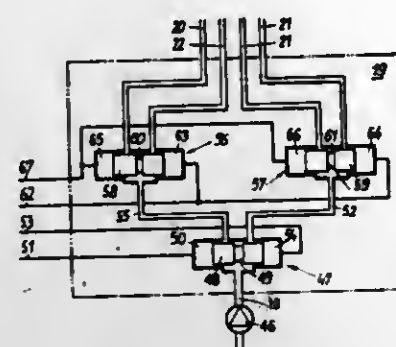
Int. Cl.<sup>3</sup> E21B 43/28; E21C 41/14

U.S. Cl. 299—2

20 Claims



dently controlling the flow of cooling fluid to each group of nozzles and for selectively and independently controlling the



flow of cooling fluid to all the nozzles of each respective cutting head.

4,285,550

**WEIGHT TRANSFER ROLLER APPARATUS**

Robert V. Blackburn, 11542 Luzon St., Cypress, Calif. 90630,

and Ian Blackburn, 16081 Gold Cir., Huntington Beach, Calif.

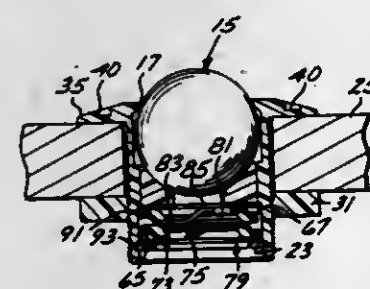
92647

Filed Oct. 15, 1979, Ser. No. 84,996

Int. Cl.<sup>3</sup> F16C 29/04

U.S. Cl. 308—6 R

16 Claims



1. An underground in situ leaching process for the recovery of mineral values which are capable of being weakly soluble in aqueous solutions from deposits of such minerals which are located within permeable sedimentary or igneous rocks which are associated with geochemical interfaces or stratiform mineral accumulations when such deposits are located below a water table comprising:

establishing a drift close to the resource body in such a manner as to minimize any effect on the subsurface water and hydrostatic pressure;

drilling long holes from the drift into the resource body and perforating the long holes, wherein the drilling and perforating are done in such a manner as to minimize effects on the subsurface water and hydrostatic pressure;

injecting a recovery solution into the resource body through some of the long holes;

recovering the recovery solution the resource body through long holes which are not being used as injection long holes; and

conducting the injection and recovery of the recovery solution in such a manner as to maintain the hydrostatic pressure of the outer periphery of the resource body and to control the hydrostatic pressure of that portion of the resource body being leached in order to maximize the exposure of the resource body to the recovery solution thereby maximizing the recovery of the mineral from the resource body.

4,285,549

**ASSEMBLY FOR COOLING THE TEETH OF THE CUTTING HEAD AND THE ROCK FACE**

Alfred Zitz, Otto Schettina, and Herwig Wralich, all of Zeltweg, Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Sep. 25, 1979, Ser. No. 78,835

Claims priority, application Austria, Oct. 10, 1978, 7278/78

Int. Cl.<sup>3</sup> E21C 35/22

U.S. Cl. 299—75

15 Claims

13. In a mining machine having a jib arm which carries a pair of rotary cutting heads positioned on opposite sides of the jib arm, each cutting head having a plurality of axially spaced-apart circumferential rows of cutting teeth: an assembly for cooling the cutting teeth comprising first and second sets of nozzles associated with each cutting head, the first set being disposed to direct cooling fluid on to the teeth of the respective cutting head and the second set being disposed to direct cooling fluid into the space between the rows of teeth of the respective cutting head, said first sets forming one group of nozzles and said second sets forming another group of nozzles; a water supply main; and valve means for selectively and indepen-

1. Weight transfer roller apparatus for mounting on a platform defined by a wall having a through wall bore formed therein and comprising:

a housing including an elongated barrel formed to be received telescopically in said bore and further formed with a ball-receiving bore and having oppositely disposed first and second extremities, said first extremity being formed with an annular radially outwardly flared flange for overlying the marginal edges of one end of said wall bore and said barrel being further formed with exterior threads; an interior threaded nut for screwing onto said second extremity of said barrel;

a radially inwardly projecting retaining flange formed on said first extremity and defining a circular protrusion opening concentric with said ball-receiving bore;

a cylindrical low friction thrust bearing means disposed intermediately in said ball-receiving bore and formed with a spherically-shaped concave bearing seat opening toward said one extremity;

a spherical roller ball received in said ball-receiving bore and nested on one side directly on said bearing seat and projecting on its opposite side from said protrusion opening; and,

retainer means in said second extremity of said bore and engaging said barrel to hold said roller ball captive between said retaining flange and bearing means whereby said housing can be affixed to said platform with said one side of said roller ball projecting from said protrusion opening and when a weight is applied to said ball it will be substantially uniformly supported by such spherically-shaped concave bearing seat.

4,285,551

**FLUID BEARING**

Hiroshi Suzuki, Okazaki; Kunio Shibata, Kariya, and Kazuhiko Sugita, Anjo, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi, Japan

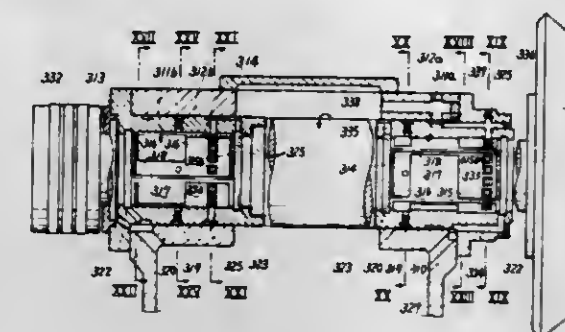
Filed Jun. 28, 1979, Ser. No. 53,038

Claims priority, application Japan, Jul. 3, 1978, 53/80696; Jul. 3, 1978, 53/80697; Jul. 24, 1978, 53/90098; Aug. 2, 1978, 53/94427; Dec. 27, 1978, 53/161527; Dec. 27, 1978, 53/161528

Int. Cl.<sup>3</sup> F16C 32/06

U.S. Cl. 308—9

14 Claims



1. A fluid bearing for rotatably supporting a rotary shaft comprising:

a stationary housing;

a bearing member fixedly inserted in said stationary housing and having an internal bore which forms a bearing surface;

a plurality of pressure generating zones defined on said bearing surface in a circumferential direction;

a pair of axially spaced fluid pockets in each of said pressure generating zones;

a land portion defined on said bearing surface between said pair of axially spaced fluid pockets in each of said pressure generating zones;

at least one raised land formed in at least one of said pair of fluid pockets;

an axial passage for fluidically communicating said pair of fluid pockets with each other;

throttle means connected to said fluid pockets for admitting pressurized fluid in the same;

an exhaust port formed on said at least one raised land and communicating with atmosphere for discharging pressurized fluid; and

exhaust means formed on said bearing surface outside said pressure generating zones and communicating with the atmosphere for discharging pressurized fluid.

4,285,552

**TORQUER APPARATUS FOR MAGNETICALLY SUSPENDED MEMBERS**

Clair G. Satter, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,202

Int. Cl.<sup>3</sup> F16C 39/06

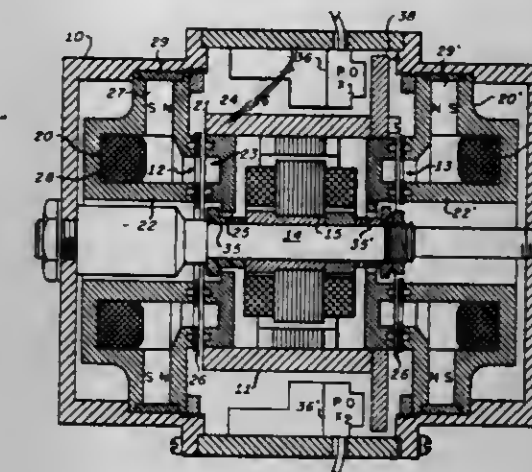
U.S. Cl. 308—10

5 Claims

1. In a magnetic suspension system of the type including a fixed member and a movable member adapted to be suspended relative to said fixed member with three degrees of rectilinear freedom and three degrees of angular freedom, at least one of said members having a plurality of spaced magnetically permeable pole pieces and the other thereof having cooperable magnetically permeable pole faces defining a plurality of magnetically permeable gaps therebetween, each of said spaced plurality of pole pieces further including permanent magnet means for producing a fixed magnetic field across said gaps and variably energized coil means associated with said permanent magnet means for modulating said permanent magnet flux field in said gaps for suspending said movable member relative to said fixed member in a predetermined rectilinear positional relationship in the direction of said flux field, and means responsive to said flux field for normally maintaining said mov-

able member relative to said fixed member in a predetermined rectilinear positional relationship normal to the direction of said flux field, the improvement for applying an electronically generated force on said movable member for controlling the angular positional relationship between said fixed and movable members comprising:

electric coil means mounted on at least one of said pole



pieces and within its associated gap and having the conductors thereof oriented at right angles to said magnetic flux field in said gap, and

control means for supplying an electric current through said coil means for changing the direction of said modulated magnetic flux field across said gap whereby to induce a force on said movable member normal to said flux field proportional to said current.

4,285,553

**MAGNETIC SUSPENSION MOMENTUM DEVICE**

Alan A. Robinson, Wassenaar, Netherlands, assignor to Organisation Europeenne de Recherches Spatiales, France

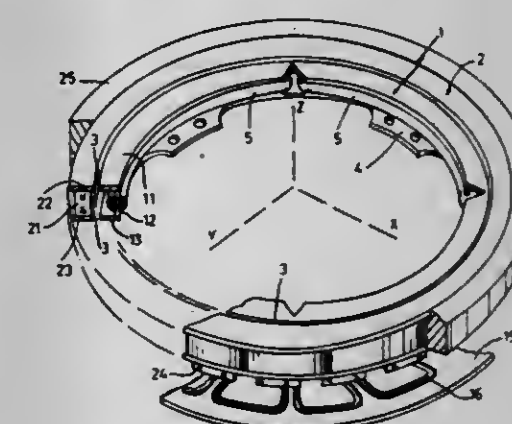
Filed May 2, 1979, Ser. No. 35,409

Claims priority, application Belgium, May 22, 1978, 187909; Mar. 27, 1979, 194243

Int. Cl.<sup>3</sup> F16C 39/06

U.S. Cl. 308—10

6 Claims



1. A magnetic suspension momentum device comprising an annular stator member and an outer annular rotor member coaxial with the stator member, said rotor member surrounding the stator member without mechanical contact with the latter and with an annular gap therebetween;

said rotor member comprising a pair of parallel radial annular pole pieces, an axial ring-like permanent magnet therebetween with said permanent magnet being polarized axially, an outer ring of a non-magnetic material fixed on the periphery of said rotor member, said outer ring being surrounded by a second ring of a magnetic material, said stator member comprising a ring-like U-shaped section of a magnetic material with an axial ring portion and a pair

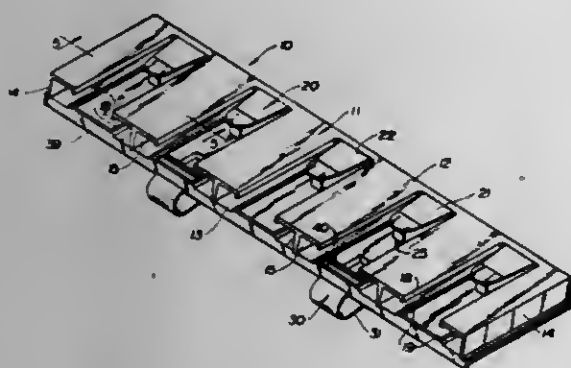


of parallel radial annular portions extending outwardly respectively in the same planes as the annular pole pieces of the rotor member with radial annular gaps therebetween, said axial ring portion including segmental coils for producing, when traversed by an electric current, magnetic fluxes across said radial annular gaps to circulate circumferentially along the annular pole pieces of the rotor member.

4,285,554

**SUNVISOR CASSETTE HOLDER**

Ted A. Bell, and Timothy S. Cooksey, both of Coshocton, Ohio, assignors to Pretty Products, Inc., Coshocton, Ohio  
Filed Apr. 14, 1980, Ser. No. 140,189  
Int. Cl.<sup>3</sup> A47B 81/06; B60R 7/00  
U.S. Cl. 312—9 25 Claims



1. A storage holder for tape cassettes comprising a structural body including a pair of sidewalls supported in relatively spaced relationship and defining a plurality of tape-cassette-receiving compartments disposed in side-by-side relationship and an opening for each compartment formed along a longitudinal side of the structural body for passage of tape cassettes into and out of each respective compartment, said side walls provided with a plurality of elongated cassette support ribs extending longitudinally through each of said compartments in substantially perpendicular relationship to the opening thereto with the ribs on opposed walls of each compartment cooperatively defining a space therebetween substantially equal to the thickness of a tape cassette and between which a tape cassette can be slideably displaced during insertion and withdrawal from a compartment, said ribs projecting a distance from respective ones of said walls to prevent a cassette tape transport head from engaging either of said walls, and
- a retaining element for each respective compartment carried by said structural body including a clamping plate resiliently biased from one wall toward the other and disposed to engage with a tape cassette interposed between said ribs and operable to retain a cassette in the respective compartment.

4,285,555

**DOCUMENT HOLDER**

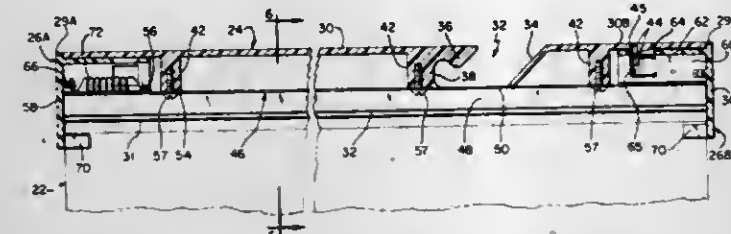
Norman A. Hedstrom; Robert G. Bogren, both of Worcester, and David M. Wright, Shrewsbury, all of Mass., assignors to Wright Line Inc., Worcester, Mass.  
Filed Dec. 10, 1979, Ser. No. 102,150  
Int. Cl.<sup>3</sup> A47B 65/00; B42F 3/00  
U.S. Cl. 312—184 11 Claims

1. A device for filing bound items such as books, loose leaf notebooks, and the like, said bound items being characterized by having a binding with a spine terminating in head and tail edge portions, said device comprising in combination:
  - a) an elongate member having a longitudinal axis and longitudinally terminating in a first open end and a second open end spaced apart a distance substantially equal to that separating said edge portions, said member also having a back extending between said ends and a structure parallel to

and remote from said back which is dimensioned to fit said spine;

- a first end piece and a second end piece extending respectively into said first and second open ends, at least said first end piece being capable of limited longitudinal motion within said elongate member so as to be movable relative to said second end piece between a first position and a second position;

first and second elongate fingers attached to said first and second end pieces respectively, and disposed so that they extend toward said second and first ends respectively, said fingers being adjacent to said structure, and extending substantially parallel to said longitudinal axis, said fingers being more remote from said back than is said structure so as to accommodate between said first finger and said structure and between said second finger and said struc-



ture the said head and tail edge portions respectively of said binding; said first position being characterized by said first and second fingers being disposed nearer to one another than said head and tail edge portions are from one another and said second position being characterized by said first finger and second finger being disposed further from another than said head and tail edge portions are from one another;

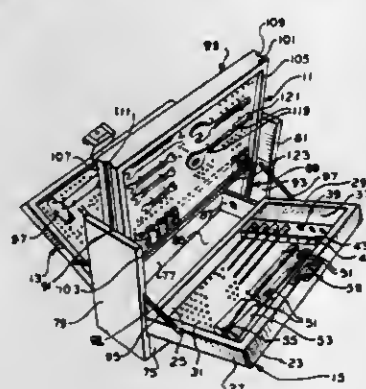
defeatable restraining means for maintaining said first and second end pieces in said first position; and

- at least one hook means situated on said back of said member remote from said first and second ends; whereby one of said bound items may be detachably affixed to said elongate member by the cooperative action of said first and second finger and said elongate member may be attached to a filing system by said hook means.

4,285,556

**TOOL CHEST**

Emil Loeffel, 141 Centre St., Waldwick, N.J. 07463  
Filed Feb. 25, 1980, Ser. No. 124,549  
Int. Cl.<sup>3</sup> A47B 51/00, 81/00; B65D 85/28  
U.S. Cl. 312—244 12 Claims



1. A chest for the storage of tools and the like comprising:
  - (a) a main support housing;
  - (b) a center member slideably mounted in said main support housing in a vertical direction when said chest is upright, said center member unattachably mounted in said housing, whereby said center member can be removed from said housing, said center member including a vertically dis-

posed board member and means disposed thereon for supporting tools and the like; and

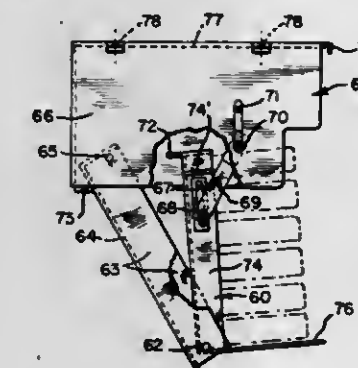
- (c) at least one side member pivotally mounted to said main support housing, said side member including a board member and means disposed thereon for supporting tools and the like, said board member orientated in a vertical position when said side member is pivoted to form a closed chest, and said board member orientated in a position between vertical and horizontal when said side member is pivoted to an open position.

4,285,557

**STORAGE TRAY FOR PACKAGED ARTICLES**

Angelo Paladino, Brooklyn, and Arnold Campolo, Jr., Staten Island, both of N.Y., assignors to Palco Industries, Inc., Brooklyn, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,839  
Int. Cl.<sup>3</sup> A47B 67/02, 43/00; B65D 85/672  
U.S. Cl. 312—246 2 Claims



1. A storage tray assembly for packaged articles including a movable tray where said tray has a plurality of spaced parallel upstanding panels extending across a portion of the tray, a housing for said tray including side walls and a bottom portion pivotally connected at one end to a side wall and pivotally connected at its opposite end to an end of said tray, and a crank arm having one end pivotally connected to a side wall and an opposite end pivotally connected to a side of said tray whereby when said bottom portion is moved about its pivotal connection with said side walls, the ends of said crank arm will pivot with respect to said side walls and to said tray to cause said tray to move about its pivotal connection with said bottom portion from a horizontal position to a substantially vertical position.

4,285,558

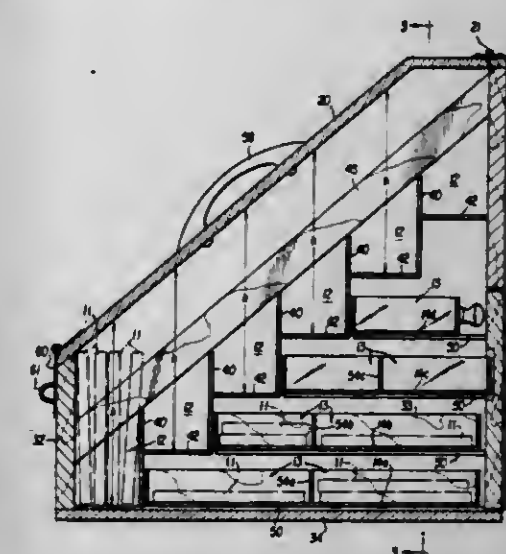
**CASSETTE HOLDER**

Miles E. Medford, 1642 Union St., Brooklyn, N.Y. 11213  
Filed Feb. 27, 1980, Ser. No. 125,110  
Int. Cl.<sup>3</sup> A47F 7/00, 3/06; A47B 81/00  
U.S. Cl. 312—278 2 Claims

1. A cabinet specifically for storing and displaying a plurality of tape cassettes, the cabinet comprising:
  - a pair of side panels each having bottom and rear edges which are substantially normal with respect to one another, a top edge parallel with and shorter than the bottom edge and a front edge having a portion parallel with the rear edge and an oblique portion extending at an oblique angle to the other edges from the lower portion of the front edge to the top edge;
  - a front panel extending between the front edges;
  - a back panel extending between the rear edges at upper portions thereof;
  - a rigid, transparent cover hinged to the top edge of the back panel, said cover having one section which is parallel to the top edges and another section oblique to said one section which is parallel to the oblique edges when the cover is closed;
  - locking means on the oblique section and front panel for

locking the cover to the front panel upon closing the cover;

- a plurality of front compartments disposed between the panels and stepped vertically with respect to one another and said compartments separated horizontally by vertical dividers, each front compartment including a horizontal shelf and vertical wall whereby the front compartments each contain a plurality of tape cassettes resting on end therein;



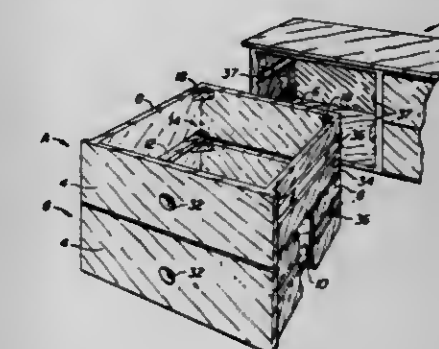
- a plurality of draw runners on the side panels and located at the same heights as some of the horizontal shelves of the front compartments;
- a plurality of drawers slidably on the runners and each having a height less than the vertical distance between the shelves so as to fit under the shelves, at least some of said drawers including vertical partitions for subdividing the drawers into compartments for holding tape cassettes, and said drawers being accessible below the back panel, and door means beneath the back panel for shutting behind the drawers when the drawers are shut.

4,285,559

**COMBINING DRAWERS**

George B. Koch, 711 Meadowsweet #109, Corte Madera, Calif. 94925

Filed Dec. 10, 1979, Ser. No. 102,206  
Int. Cl.<sup>3</sup> A47B 47/00  
U.S. Cl. 312—298 10 Claims



1. At least a pair of first drawers adapted to be held by a support structure in vertically registered, adjoining relation and to be joined together to effectively form a second drawer having a holding capacity substantially equal to the sum of the holding capacities of the first drawers, each of said first drawers being slidably mounted in said support structure for individual movement when not joined together and united movement when joined together, each of said first drawers comprising:
  - a generally rectangular sidewall structure including a front panel, a back panel and a pair of side panels, said front,



back and side panels having substantially identical transverse dimensions;  
a bottom panel configured and dimensioned to be situated to extend between opposing surfaces of the sidewall structure with the front, back and side panels extending vertically upward from the bottom panel when the drawer is held by the support structure, at least the upper one of the first drawers including means for allowing the bottom panel to be removable; and  
means for releasably joining said first drawers to one another in vertically registered alignment so that slidable movement of one of the first drawers will effect like movement in the other of the drawers.

4,285,560

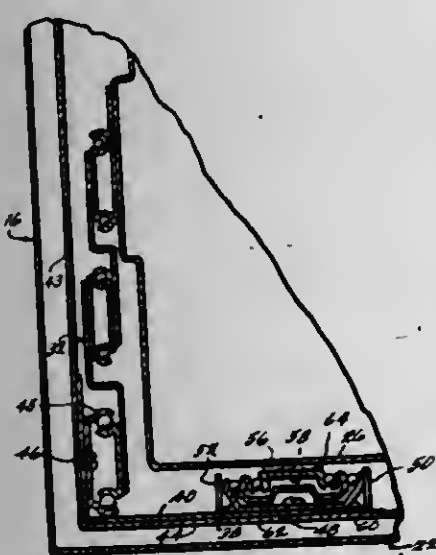
## ANTI-RACKING DEVICE

Norman Miller, Lafayette, Ind., assignor to Schwab Safe Co., Inc., Lafayette, Ind.

Filed Sep. 24, 1979, Ser. No. 77,918  
Int. Cl.<sup>3</sup> A47B 88/00; F16C 21/00

U.S. Cl. 312-331

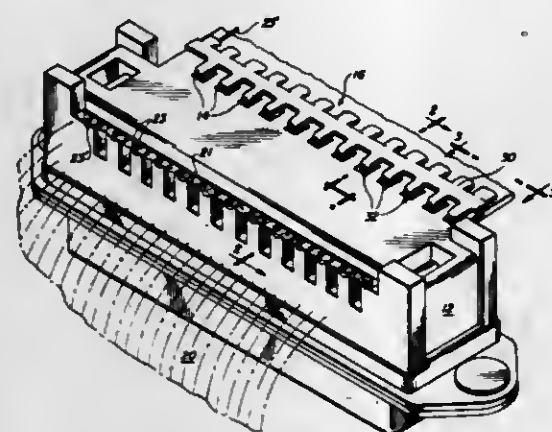
6 Claims



1. A slide assembly for slidably mounting a drawer having two vertical sides and a horizontal base in a cabinet having side walls and a base support comprising:

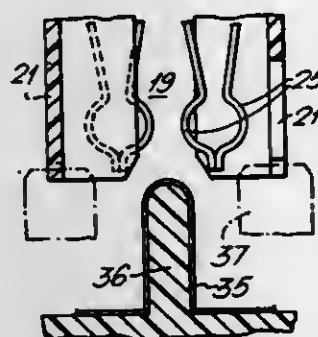
- an L-shaped bracket having an inner end, a horizontal planar portion and a vertical planar portion joined to said horizontal planar portion along a longitudinal edge;
- a first elongated slide mounted to the horizontal portion of said bracket parallel said longitudinal edge;
- a second elongated slide mounted to said vertical portion of said bracket parallel said longitudinal edge, said first and second elongated slides each including a first slide member fixedly mounted to said bracket, and a second slide member slidably mounted to said first slide member for movement in a direction parallel said longitudinal edge;
- a third elongated slide and means for mounting said third slide between one of said drawer vertical sides and one of said cabinet walls for sliding of said drawer into and out of said cabinet; and
- means for vertically supporting said bracket in relation to said cabinet and fixing said bracket against longitudinal movement in relation to said cabinet, such that said bracket vertical portion is disposed between the other of said two drawer vertical sides and the other cabinet side wall adjacent said other of said two drawer vertical sides, and said bracket horizontal portion is disposed between said drawer horizontal base and said cabinet base support with said bracket inner end disposed at the inner end of said cabinet;
- said bracket longitudinal edge being parallel aligned such that said drawer may be slid into and out of said cabinet on said first, second and third slides, said first slide acting to prevent racking when said drawer is slid in and out of said cabinet.

4,285,561  
TRANSMISSION CABLE MASS TERMINATION  
Weichien Chow, Park Forest, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.  
Continuation of Ser. No. 871,908, Jan. 24, 1978, abandoned. This application Jul. 6, 1979, Ser. No. 55,921  
Int. Cl.<sup>3</sup> H01R 9/07, 11/20  
U.S. Cl. 339-14 R 11 Claims



1. An assembly for terminating an electrical cable having a plurality of first conductors for transmitting electrical signals or power to an associated electrical component and ground conductors, all of said conductors carried in a flat strip of insulative material, said assembly comprising:
  - a connector including terminal means for electrically engaging one or more of said first conductors, and active contact means in electrical communication with said terminal means for electrical connection to said associated component;
  - means associated with said cable outside said connector for isolating said connector from the ground conductors of said cable; and
  - means for bridging said isolation means to electrically join at least one of said ground conductors to a ground terminal within said connector.

4,285,562  
DUAL PURPOSE ELECTRICAL CONNECTOR  
Vladimiro Teagno, and Franco Trevisiol, both of Turin, Italy, assignors to AMP Incorporated, Harrisburg, Pa.  
Continuation of Ser. No. 853,922, Nov. 22, 1977, abandoned. This application Jun. 7, 1979, Ser. No. 46,873  
Int. Cl.<sup>3</sup> H01R 27/00  
U.S. Cl. 339-33 4 Claims



1. A stamped and formed electrical terminal which is intended to be inserted into an insulating housing, said terminal being mateable with a terminal tab and being alternatively mateable with a conductor on a circuit board, said terminal comprising:
  - a channel-shaped body portion having a mating end and a rearward end, said body portion having a web and side-walls, wire connecting means extending from said body portion at said rearward end,

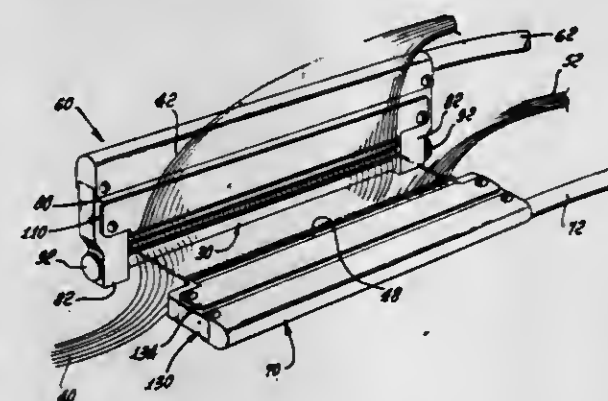
inwardly directed flanges extending from each of said side-walls at said rearward end, first spring arms extending from each of said flanges to said mating end, said spring arms being inclined towards said web and being between said sidewalls, said spring arms having parallel adjacent side edges,  
a second spring arm struck from said web adjacent to said rearward end, said second spring arm being initially inclined outwardly from said web, said reversely curved intermediate its ends, and having a free end portion which is inclined towards said web whereby,  
said terminal is mateable with a flat terminal tab by relative movement of said tab between said first spring arms, and said second spring arm, and said terminal can be mated with a circuit board conductor by contacting the external surface of said second arm at the reversely curved portion with said circuit board conductor.

4,285,563

CABLE CONNECTOR AND CAP SHOES THEREFOR  
Claire G. Crozier, San Marcos, and Charles W. Waas, Huntington Beach, both of Calif., assignors to Communications Technology Corporation, Los Angeles, Calif.  
Filed Jul. 26, 1979, Ser. No. 60,997  
Int. Cl.<sup>3</sup> H01R 13/635

U.S. Cl. 339-45 M

7 Claims



1. In a cap shoe for making electrical connections between a plurality of conductors in a first cable and a corresponding plurality of conductors in a connector module of an elongate strip connector which includes an index strip, the connector module, and a cap, the cap having access holes leading to the respective conductors in the connector module, the connector module including means for terminating the ends of conductors of a second cable, the combination of:
  - a cap shoe body of a size and shape to accommodate the connector and having an elongate central section with first and second arms projecting from opposite ends of said central section forming a first U shaped receptacle for the connector, with an inwardly projecting guide ridge on each of said arms for sliding engagement with the connector;
  - releasable means for securing said cap shoe body to the connector;
  - a plurality of spring loaded contact pins carried in a line along said central section of said cap shoe body and insertable through the respective access holes in the cap into electrical contact with the respective conductors in the connector module, each of said pins including means for terminating the end of a conductor of the first cable, with said cap shoe body including means for receiving the first cable;
  - a second U shaped slide member mounted on said cap shoe body with the arms of said slide member embracing said body and slidable relative thereto between extended and retracted positions in a direction parallel to the axes of said contact pins, and including an elongate spacer between the arms of said slide member with openings in a line through which said contact pins extend; and
  - compression spring means positioned within said cap shoe

body and engaging said body and slide member urging said slide member away from said body for ejecting the connector from said body;  
whereby said extending contact pins enter the access holes in the cap into electrical contact with the respective conductors in the connector module upon retraction of said slide member by sliding said cap shoe body onto the connector and compressing said spring means.

4,285,564

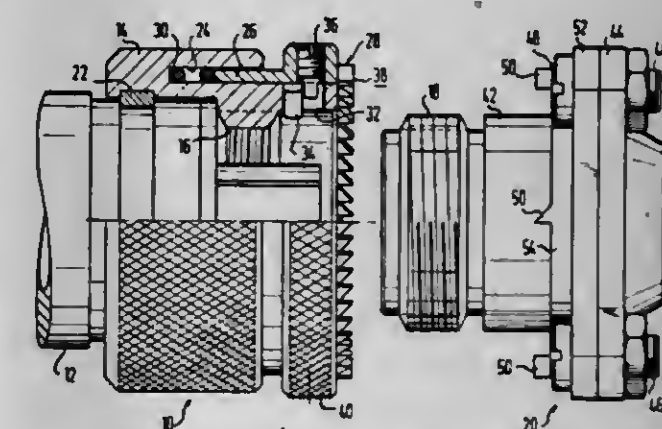
## HF COAXIAL PLUG CONNECTOR

Georg Spinner, Am Elchberg 12, 8152 Feldkirchen-Westerham 1, Fed. Rep. of Germany  
Filed Sep. 17, 1979, Ser. No. 76,062  
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1978, 2840728

Int. Cl.<sup>3</sup> H01R 13/639

U.S. Cl. 339-89 C

13 Claims



1. HF coaxial plug connector having a pin plug connector and a jack connector, one of which has a cap nut and the other an external thread onto which said cap nut can be screwed in the connected condition, and having an anti-turning device for said cap nut which comprises two toothed rings with rigid sawtooth toothing formed thereon, which rings can be brought into locking engagement with each other, said toothing of each said ring pointing toward the other said ring when said connectors are in the connected condition, and which rings are arranged on said cap nut and on said other connector, respectively in such manner as to be fixed against turning in either the locking or the unlocking direction when in the connected condition, one of said toothed rings being arranged on said cap nut and the other said toothed ring being fastened to said other connector, said one toothed ring being disengagable from said other toothed ring axially against a spring force, characterized by the fact that a cap ring is connected with said cap nut for causing said cap nut to rotate and that the other said toothed ring comprises teeth seated on a ring which is fastened to the opposing said connector; said other toothed ring being developed as an individual structural part adapted to be secured to conventional plug connectors.

4,285,565

## ELECTRICAL CONNECTOR

Edward Kirby, Mt. Prospect, Ill., assignor to TRW Inc., Cleveland, Ohio

Filed Nov. 19, 1979, Ser. No. 95,227

Int. Cl.<sup>3</sup> H01R 9/09

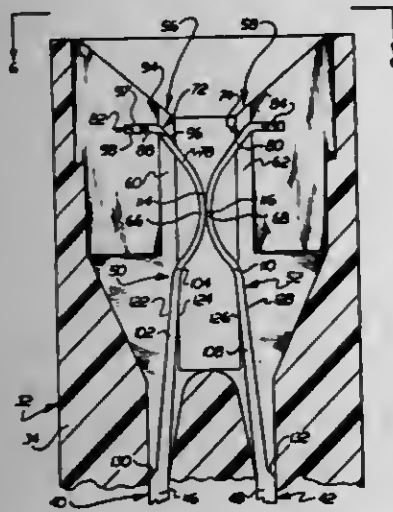
U.S. Cl. 339-176 MP

9 Claims

1. A connector for making electrical contact with a printed circuit board or the like comprising a housing formed of an electrical insulating material, said housing including first and second spaced wall sections defining an area into which a portion of the circuit board is inserted, said first wall section defining a first slot, said second wall section defining a second slot which extends parallel to and is disposed directly across



from said first slot, first and second contact members having mounting sections held by said housing, terminal sections projecting out of said housing and movable cantilevered spring sections disposed within said housing, said cantilevered spring sections including contact surface means disposed in the space between said first and second wall sections and disposed in abutting engagement with each other for completing an electrical connection therebetween and movable from abutting engagement with each other by insertion of a portion of a circuit board between said contact surface means to complete an electrical connection with the portion of the circuit board, said first and second contact means including respective first



and second end sections which extend through respective slots in said first and second wall sections and each of said first and second end sections having a stop engageable with a respective portion of said housing to limit the amount of movement of said first and second contacts into said area, the stops on each of said first and second end sections having a normal position spaced from engagement with its respective portion of said housing when said cantilevered spring sections are disposed in abutting engagement with each other and each of said stops being movable from its normal position into engagement with its respective portion of said housing in response to an amount of movement of its associated contact member toward the wall section associated with the other contact member.

4,285,566

## OPTICAL SCANNING APPARATUS

Shigeyuki Yamamoto, Kure, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

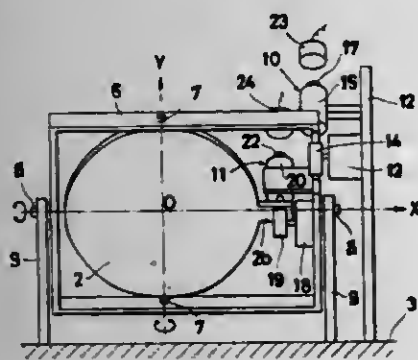
Filed Feb. 8, 1980, Ser. No. 119,783

Claims priority, application Japan, Mar. 30, 1979, 54/38849

Int. Cl.<sup>3</sup> G02B 27/17

U.S. Cl. 350—6.6

2 Claims



1. An optical scanning apparatus for providing planar scanning of a test specimen in a waveform locus with a beam, which comprises a reflector provided with a pair of support shafts parallel to the surface of the reflector and adapted to reflect the beam and throw it upon the test specimen; a frame rotatably supporting thereon the support shafts of the reflector

and provided with stationary shafts rotatably fixed perpendicularly to the support shafts of the reflector; a heart cam possessing a contour of the shape of a symmetrical Archimedes' spiral with respect to a specific line and held in direct contact in one direction with the portion of the reflector angularly displaced by one normal angle from the direction of the support shafts of the reflector; a retention pin opposed to the heart cam held in contact with the reflector and serving to energize the reflector in the other direction; a motor means serving to rotate in one fixed direction the heart cam held in contact with the reflector and causing the reflector to be oscillated around the support shafts thereof; another heart cam possessing a contour of the shape of a symmetrical Archimedes' spiral with respect to a specific line and held in direct contact in one direction with the portion of the frame angularly displaced by one normal angle from the direction of the stationary shafts of the frame; another retention pin opposed to the heart cam held in contact with the frame and serving to energize the frame in the other direction; and a motor means serving to rotate in one fixed direction the heart cam held in contact with the frame and causing the frame to be oscillated around the stationary shafts of the frame, whereby the two heart cams are simultaneously rotated by the two motor means to have the beam provide scanning of speed linearity on the surface of the test specimen.

4,285,567

## AUTOMATIC BIAXIAL SUN TRACKING MECHANISM FOR SUN RAY UTILIZATION DEVICES

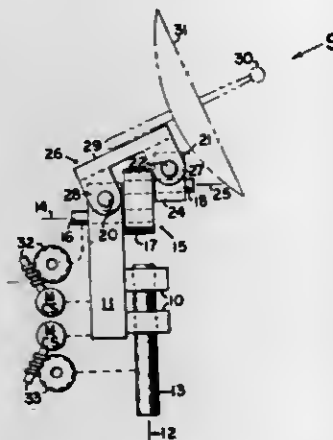
Paul A. Hansen, 435 Dogwood Rd., West Columbia, S.C. 29169

Filed Dec. 19, 1979, Ser. No. 105,386

Int. Cl.<sup>3</sup> G02B 7/18; F16H 21/44

U.S. Cl. 350—83

9 Claims



1. An automatic biaxial sun tracking mechanism for sun ray utilization devices comprising means for continuously orienting said devices relative to the sun, said means including a mount structure for supporting and positioning said sun ray utilization devices, a polar shaft, a declination crankshaft, and suitable connecting members:

- A. said suitable connecting members providing connection between said mount structure, said polar shaft, and said declination crankshaft and arranged to maintain a mutually perpendicular relationship of (1) the longitudinal axis (daily axis) of said polar shaft, (2) the longitudinal axis (main journal axis) of said declination crankshaft, and (3) the longitudinal axis (seasonal axis) of a pivoting means for said mount structure;
- B. said polar shaft having its daily axis oriented parallel to the earth's axis of rotation and having means to rotate said suitable connecting members with attached parts about said daily axis;
- C. said declination crankshaft having rotary motion effecting alternating pivotal movement of said mount structure about said seasonal axis by means of a crankpin having a suitable linkage with said mount structure, and said declination crankshaft having means for rotation about its main journal axis.

4,285,568

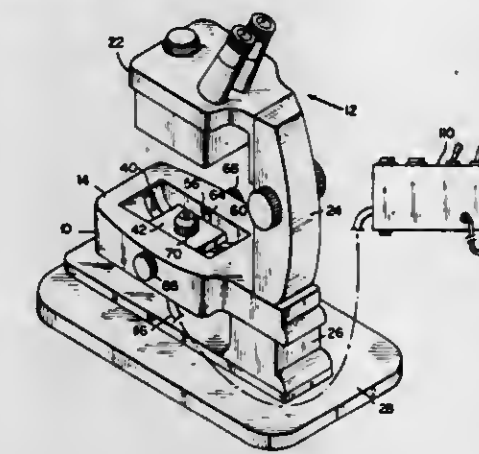
## MICROSCOPE STAGE

Alan Elgart, R.D. 4, P.O. Box 70B, Beakes Rd., New Windsor, N.Y. 12550

Filed Aug. 13, 1979, Ser. No. 65,890

Int. Cl.<sup>3</sup> G02B 21/24

U.S. Cl. 350—90



1. A stage for a microscope comprising: body means having an aperture therein for supporting an article to be viewed, vacuum means extending through said body means for holding the article on said aperture and, illumination means extending through said body means for illuminating said aperture.

4,285,569

## CCD DRIVEN INTEGRATED OPTICAL MODULATOR ARRAY

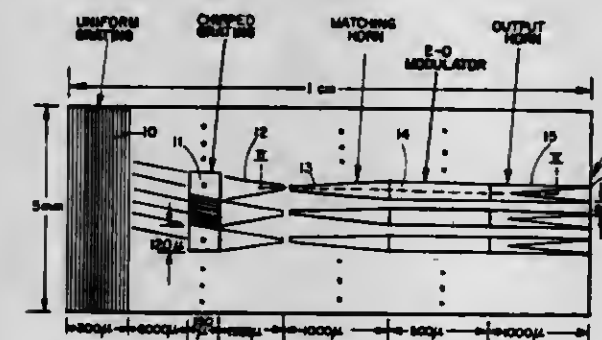
Shi-Kay Yao, Anaheim, and Richard A. Gudmundsen, Santa Ana, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 3, 1979, Ser. No. 81,419

Int. Cl.<sup>3</sup> G02B 5/14

U.S. Cl. 350—96.14

5 Claims



1. An optical array comprising: a substrate having a major surface; a plurality of individual optical waveguides capable of propagating light, the waveguides being formed from a material which modulates the propagating light in response to an electric field and being implemented on a major surface of said substrate; a uniform grating which functions to convert an incident optical beam into a guided optical beam into a guided optical wave traveling in said optical waveguides along said major surface of said substrate; a chirped grating spaced from said uniform grating for focusing said guided optical wave into said waveguides; means for modulating the propagating light in each of the individual waveguides, comprising a first and a second spaced apart electrode disposed on the surface of said substrate for creating an electric field in each of said waveguides; a body of semiconductor material disposed adjacent said substrate; and circuit means implemented on said body of semiconductor

material for providing said predetermined quantities of electric charge to said means for modulating.

4,285,570

## LIGHT BRANCHING DEVICE

Kouichi Minemura, and Teiji Uchida, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

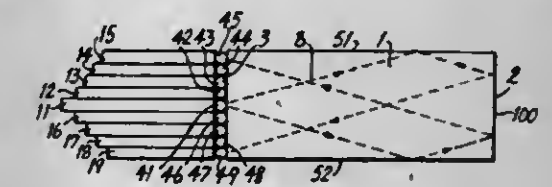
Filed Oct. 10, 1978, Ser. No. 949,745

Claims priority, application Japan, Oct. 14, 1977, 52-123716; Oct. 14, 1977, 52-123717; Aug. 17, 1978, 53-113002[U]; Aug. 30, 1978, 53-119339[U]

Int. Cl.<sup>3</sup> G02B 5/14

U.S. Cl. 350—96.18

9 Claims



1. A light branching device comprising a light focusing transmission body having a refractive index decreasing approximately in proportion to the square of the distance from the optical axis plane and first and second end faces approximately perpendicular to said optical axis plane, said second end face having a reflective means, said light focusing transmission body having a physical length measured in the direction of said optical axis equal to an integral multiple of approximately 1/4 of the pitch and a substantial light path length equal to an integral multiple of approximately 1/4 of the pitch at which the light propagates, a plurality of optical fibers, one end of each of said optical fibers lying adjacent to said first end face of said light focusing transmission body and focusing means disposed between the ends of at least a proportionate number of said optical fibers and said light focusing transmission body, said focusing means having its center axis in a direction perpendicular to said optical axis plane and having a curved surface parallel to its center axis, whereby the light beam from a selected one of said optical fibers is respectively coupled to at least one other of said optical fibers.

4,285,571

## BRANCHING DEVICE

Gerhard Winzer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

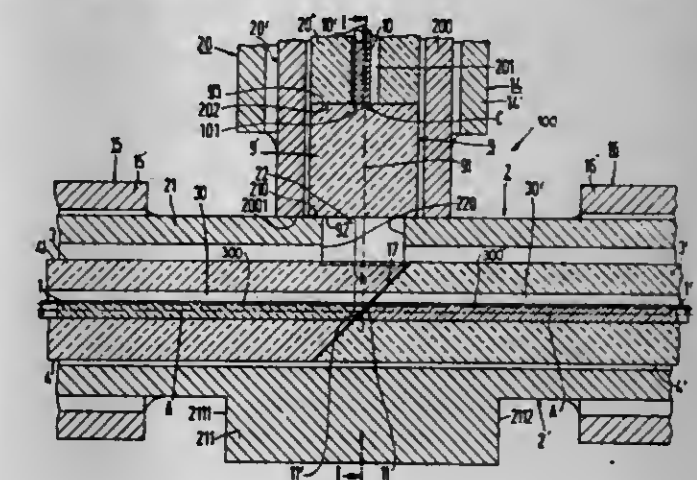
Filed Aug. 20, 1979, Ser. No. 68,051

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842535

Int. Cl.<sup>3</sup> G02B 5/14

U.S. Cl. 350—96.18

28 Claims



1. A branching device for branching a light component out of an optical waveguide, said device comprising first, second



and third optical waveguides; means for positioning the first and second optical waveguides as a pair of waveguides with the axis of the first and second waveguides being on a common waveguide axis and a gap between the end surfaces thereof; a beam divider means being disposed in the gap and including a layer extending obliquely to the common waveguide axis for reflecting out a portion of the light transmitted by one of said pair of waveguides as a light component; focusing means including a focusing lens being positioned to receive said light component and focusing the light component in real terms at a point; and means for supporting the third optical waveguide with an end surface arranged at said point, said means for positioning including a carrier for supporting said first and second waveguide, said carrier including a support member and a pair of cylindrical carrier members, said support member being a sleeve member having a wall provided with an aperture at a position to enable the reflected light component to pass from the sleeve member, each of said carrier members receiving one of said waveguides with the axis of the waveguide being parallel to the axis of the carrier member, each of said carrier members consisting of a transparent material at least at the end adjacent to the end surface of the waveguide, and said sleeve member receiving said cylindrical carrier member with their axes aligned.

4,285,572

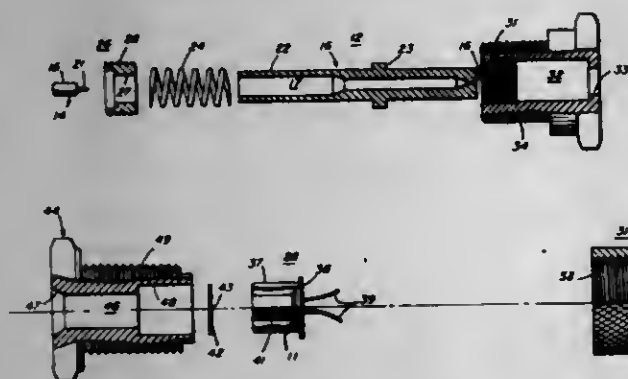
# OPTICAL CABLE CONNECTOR FOR CONNECTING AN OPTICAL FIBER WITH A PHOTODIODE

Richard A. Beaudette, Tewksbury, and John A. Gonsalves, Woburn, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 27, 1980, Ser. No. 134,366  
Int. Cl.<sup>3</sup> G02B 7/26

U.S. Cl. 350-96.20

2 Claims



## 1. An optical cable connector comprising:

- (a) a fiber connector plug adapted to receive an optical fiber assembly including sheath and fiber, including
  - (i) a generally cylindrical optical pin having an axial passageway including a large diameter portion for receiving said fiber assembly, and a small diameter portion for receiving said fiber, said pin having a nominal outer diameter with a medial circular flange,
  - (ii) a compression spring having an inner diameter large enough to receive said optical pin nominal outer diameter but smaller than said flange;
  - (iii) a spring retainer nut having an inner passageway with an inner diameter greater than said nominal outer diameter, but smaller than said flange, said nut having an external male thread; and
  - (iv) an optical pin housing assembly having an axial passageway, said axial passageway having a first end portion characterized by an internal female thread adapted to engage with said external male thread of said spring retainer nut, a medial portion large enough to receive said optical pin including its medial flange for axial reciprocation therewithin, and an opposing end portion having a diameter barely larger than said nominal outer diameter but smaller than said medial circular flange; and

## (b) a mating connector receptacle including

- (i) a housing including an outer cylindrical shell, a flanged base, a photodiode chip affixed to said base, electrical leads extending through said base to said chip, and a transparent light pipe affixed to said chip and extending axially with said shell, said light pipe having a diameter substantially larger than the diameter of said fiber;
- (ii) a circular shim having an outer diameter larger than said nominal outer diameter, and having a central hole smaller than said nominal outer diameter but larger than said small diameter portion;
- (iii) a photodiode housing assembly having an axial passageway including a medial portion large enough so that the nominal outer diameter portion of said pin can reciprocate therewithin, a first tapered end portion for engaging said medial portion, and an opposing larger end portion for receiving said shim and a substantial portion of said outer cylindrical shell of said housing, but not said flanged base; and having an outer thread; and
- (iv) a retainer cap having an inner thread adapted to engage with said outer thread of said photodiode housing assembly and having an inner portion adapted to engage said flanged base of said housing, whereby said receptacle is mated to said plug, as they are engaged, wherein said pin reaches its seat in said receptacle slightly before said receptacle is fully seated so that said compression spring remains under load.

4,285,573

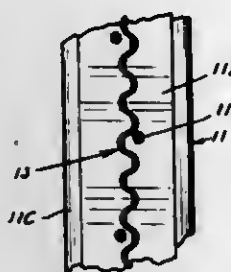
# LIGHT REFLECTIVE BICYCLE SAFETY DEVICE AND METHOD OF MAKING THE SAME

Richard W. Stone, Minneapolis, Minn., assignor to Industrial Design and Engineering, Minneapolis, Minn.

Continuation-in-part of Ser. No. 590,935, Jun. 27, 1975, abandoned. This application Apr. 4, 1977, Ser. No. 784,543  
Int. Cl.<sup>3</sup> G02B 5/12

U.S. Cl. 350-99

3 Claims



1. The method of producing a light reflective strip for bicycle wheels comprising,
  - providing an elongated strip of relatively thin light-weight malleable material,
  - corrugating said strip of material to produce alternate ridges and valleys of substantial depth therein,
  - at least partially flattening the corrugations along only one marginal edge portion of the strip to reduce the depth of said ridges and valleys along said one marginal edge portion thereof and thus increase the length of that edge portion as compared with the other marginal edge of said corrugated strip and produce a curved strip wherein the flattened portions form the larger radius of curvature thereof, and
  - applying light reflective material to the surfaces of said strip.

4,285,574

# DEVICE FOR READING CODED NOTCHES ON KEYS

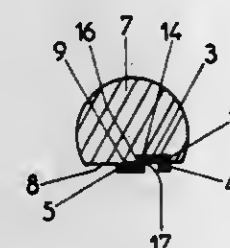
Paul Lipschutz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

Filed Nov. 29, 1979, Ser. No. 98,452

Claims priority, application France, Dec. 13, 1978, 78 35020  
Int. Cl.<sup>3</sup> G02B 27/02

U.S. Cl. 350-114

5 Claims



## 1. A device for reading the combination of a flat elongated key provided with coded notches on at least one elongated edge, comprising:

- (a) an elongated magnifier of transparent material defined by a curvilinear surface on one side of the magnifier through which the image to be viewed by the user emerges and two substantially planar surfaces on the other side, said planar surfaces being contained in planes substantially parallel to and offset from each other thereby forming between them an elongate abutment shoulder for positioning a key, the combination of which is to be read,
- (b) a plurality of spaced apart parallel lines provided on one of said planar surfaces and extending longitudinally of the magnifier and positioned near to said shoulder, the spacing of said lines corresponding to the individual key notch depths, and
- (c) a plurality of coding indices provided on said one planar surface on the side of the spaced parallel lines remote from said shoulder, said indices identifying said parallel lines respectively, whereby when a notched key is placed with a rectilinear portion thereof engaging the abutment shoulder the notched edge of the key is disposed against a background comprising said parallel lines, the coded values of said notches are readable.

4,285,575

# IMAGE DISPLAY DEVICE

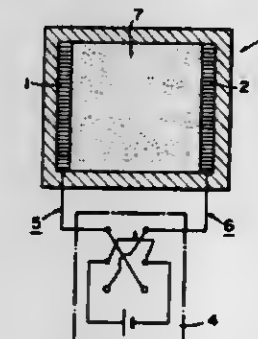
Hiroyuki Imataki, Kawasaki; Michiko Takahashi, Tokyo; Masatsune Kobayashi, and Tokuya Ohta, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,971

Claims priority, application Japan, Feb. 15, 1978, 53-16763  
Int. Cl.<sup>3</sup> G02F 1/17

U.S. Cl. 350-357

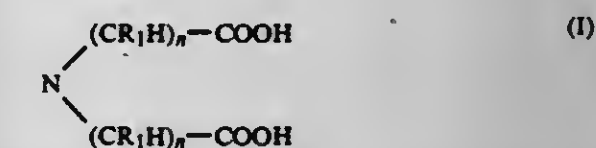
13 Claims



## 1. An image display device which comprises a cell container, at least a pair of electrodes, and an electrically responsive electrochromic medium accommodated in said cell container,

said electrochromic medium comprising a complexon, a redox reactive organic substance,  $Fe^{+2}$  ion and at least one metal ion which is (a) other than a  $Fe^{+2}$  ion (b) other than an  $Fe^{+3}$  ion and (c) other than an alkali metal ion, wherein said complexon is a member selected from the group consisting of:

- (1) an aminocarboxylic acid compound containing 1 to 3 aminocarboxylic acid groups represented by the following formula (I)



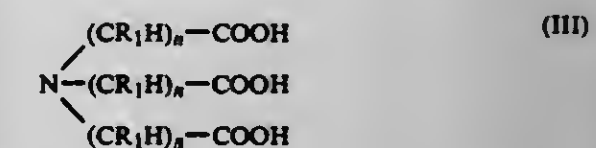
wherein  $R_1$  represents hydrogen, methyl or hydroxyphenyl and  $n$  is 1 or 2;

- (2) an aminocarboxylic acid compound containing 1 to 2 aminocarboxylic acid groups represented by formula (I) above and 1 to 2 aminocarboxylic acid groups represented by the following formula (II):



wherein  $R_1$  and  $n$  have the same meaning as in formula (I);

- (3) an aminocarboxylic acid compound containing an aminocarboxylic acid group represented by the following formula (III):



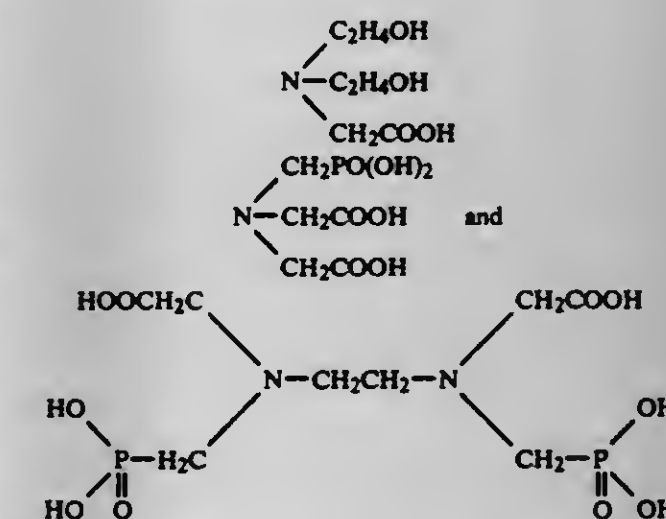
wherein  $R_1$  and  $n$  have the same meaning as in formula (I);

- (4) an aminocarboxylic acid compound containing 2 aminocarboxylic acid groups represented by the following formula (IV):



wherein  $R_1$  and  $n$  mean the same as in formula (I);

- (5) an aminocarboxylic acid compound selected from the group consisting of

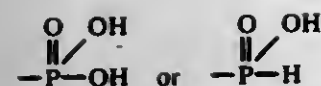


- (6) nitrogen, phosphorus and arsenic homologues thereof containing 1 to 2 groups represented by the following formula (V):

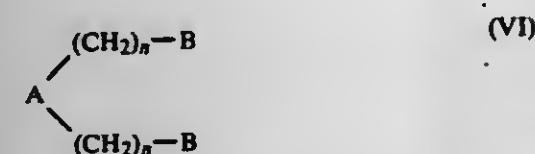


wherein  $n$  is 1 or 2,  $A$  represents N, P or As and  $B$  represents  $-COOH$ ,





with the proviso that B is not  $-\text{COOH}$  when A is N;  
(7) nitrogen, phosphorus and arsenic homologues thereof containing 1 or 2 groups represented by the following formula (VI):



wherein n, A and B mean the same as in formula (V);  
(8) nitrogen, phosphorus and arsenic homologues thereof containing 1 group represented by the following formula (VII):



wherein n, A and B mean the same as in formula (V); and  
(9) mixtures thereof.

4,285,576

## LIGHT GATING METHODS AND APPARATUS

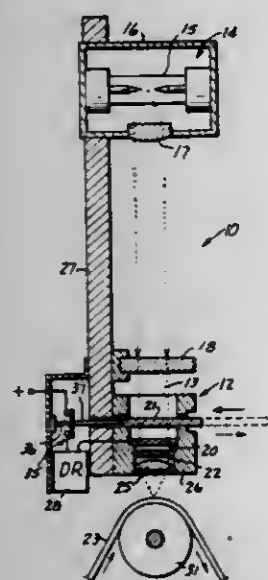
Thomas H. Garland, El Monte, and Michael T. Zimmerman, Arcadia, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed May 7, 1979, Ser. No. 36,489

Int. Cl.<sup>3</sup> G02F 1/03

U.S. Cl. 350—387

6 Claims



1. In a method of selectively gating light with an array of electrically switchable light gates, the improvement comprising in combination the steps of:

- providing said electrically switchable light gates in an electrooptically active solid-state material displaying field-induced and photoinduced birefringence;
- locating said light gates between a light polarizer situated in a first region and a complementary light analyzer situated in a second region;
- providing a source of light for illuminating said light gates; polarizing light from said source with said polarizer by emitting light from said source through said polarizer in said first region;
- providing electric potentials externally of said array of light gates for selectively switching said light gates;
- illuminating said light gates with said polarized light and

selectively switching said illuminated light gates through field-induced birefringence by selective application of said electric potentials to said light gates until photoinduced birefringence occurs in said array;

removing said polarizer from said first region; and neutralizing said photoinduced birefringence by illuminating said light gates with light from said source through said first region while maintaining said polarizer removed from said first region and externally provided electric potentials away from said light gates.

4,285,577

## WINDOW SYSTEM COMPRISING LIGHT POLARIZERS

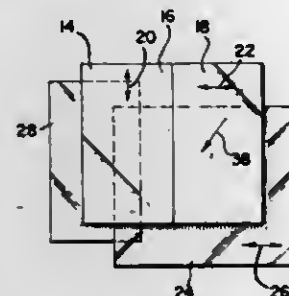
Norman W. Schuler, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1977, Ser. No. 830,208

Int. Cl.<sup>3</sup> G02F 1/01

U.S. Cl. 350—403

5 Claims



1. A light polarizing window comprising:
  - a first light polarizing element having its absorption axis aligned in a predetermined direction;
  - a second light polarizing element substantially parallel and superposed with a portion of said first light polarizing element and having its absorption axis perpendicular to the absorption axis of said first light polarizing element;
  - a third light polarizing element adjacent to said second light polarizing element and coincident with the plane of said second element, said third element being superposed with a portion of said first element and having its absorption axis parallel to the absorption axis of said first polarizer; and
  - a wave retarder of  $\frac{1}{4}$ ,  $\frac{3}{2}$  or  $\frac{5}{2}$  waves of retardation with respect to a given wavelength of the visible light spectrum slidably mounted between said first polarizer element and said second and third polarizing elements from a first position where it is between said first and second polarizer elements to a second position where it is between said first and third polarizer elements to effect maximum light transmission or minimum light transmission through said window.

4,285,578

## PHOTO EYEPIECE FOR ENDOSCOPES

Nobuo Yamashita, Tama, and Miwako Maeda, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1978, Ser. No. 958,496

Claims priority, application Japan, Nov. 16, 1977, 52/138283

Int. Cl.<sup>3</sup> G02B 9/34, 25/00

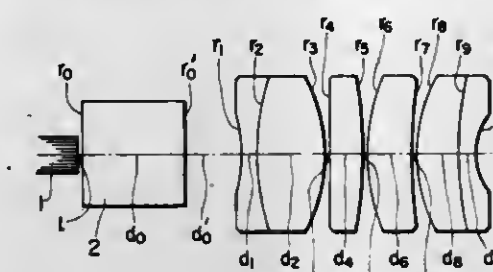
U.S. Cl. 350—410

4 Claims

1. A photo eyepiece for endoscopes comprising a positive cemented meniscus lens component having a concave surface on the object side, a positive lens component, a positive meniscus lens component having a convex surface on the object side and a negative cemented meniscus lens component having a convex surface on the object side, and said photo eyepiece system satisfying the following conditions:

- (1)  $\nu_{1p} - \nu_{1n} > \nu_{2p} - \nu_{2n}$
- (2)  $0.43f < R < 0.47f$  wherein the reference symbols  $\nu_{1p}$  and

$\nu_{1n}$  represent Abbe's numbers of the positive and negative elements respectively of said positive cemented meniscus lens component, the reference symbols  $\nu_{2p}$  and  $\nu_{2n}$  designate Abbe's numbers of the positive and negative elements



respectively of said negative cemented meniscus lens component, the reference symbol R denotes radius of curvature on the surface located on the extreme image side and the reference symbol f represents focal length of the photo eyepiece system as a whole.

4,285,579

## COPYING LENS SYSTEM

Yu Yamada, Kokubunji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

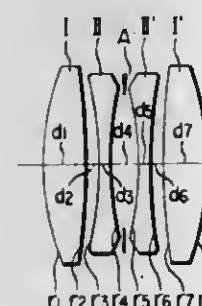
Filed Dec. 3, 1979, Ser. No. 99,892

Claims priority, application Japan, Dec. 15, 1978, 53-156105

Int. Cl.<sup>3</sup> G02B 9/36

U.S. Cl. 350—470

9 Claims



1. A copying lens system comprising, in succession from the object side, a first biconvex positive lens, a first biconcave negative lens, a diaphragm, a second biconcave negative lens identical to said first biconcave negative lens, and a second biconvex positive lens identical to said first biconvex positive lens, said system satisfying the following conditions:

$$0.298F < f_1 < 0.378F$$

$$-0.41F < f_2 < -0.312F$$

$$1.54 < r_2/r_3 < 2.38$$

$$0.064 < N_1 - N_2 < 0.146$$

where

F: the focal length of the entire lens system

f<sub>1</sub>: the focal length of the first and second biconvex positive lensesf<sub>2</sub>: the focal length of the first and second biconcave negative lensesr<sub>2</sub>/r<sub>3</sub>: the ratio of curvature radii of the adjacent surfaces of the biconvex positive lens and the biconcave negative lensN<sub>1</sub>-N<sub>2</sub>: difference between the refractive index of the biconvex positive lens and the refractive index of the biconcave negative lens

1009 O.G.—55

4,285,580

## COLOR VISION PERCEPTION TESTING DEVICE

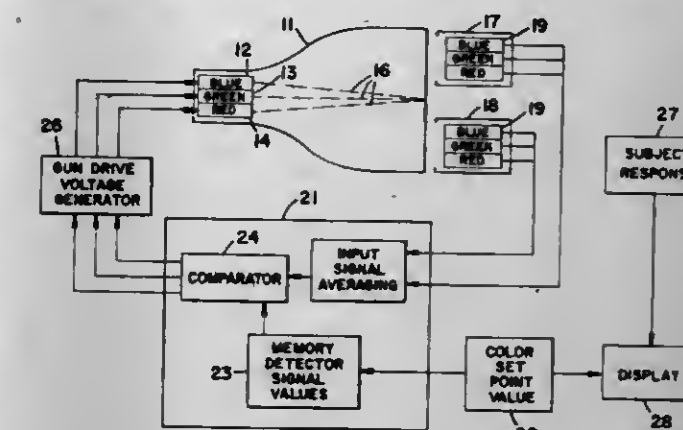
William C. Murr, Piedmont, Calif., assignor to Synamed, Inc., Berkeley, Calif.

Filed Nov. 8, 1979, Ser. No. 92,524

Int. Cl.<sup>3</sup> G03F 3/08; A61B 3/02

U.S. Cl. 351—35

10 Claims



1. An apparatus for producing a controlled color light signal, comprising a light source capable of producing and displaying any combination of the three primary colors; photodetector means for sensing the primary color output of said light source and generating a detector signal in response thereto; first storage means for storing a plurality of predetermined detector signal values corresponding to a unique combination of specific color output values of said light source; comparator means for comparing said detector signal with one of said stored detector signal values corresponding to a desired specific color output of said light source, and for generating a comparator signal in response to differences therebetween; and control means for receiving said comparator signal and correcting the output of said light source in response thereto to display said unique combination of color output values.

4,285,581

## MULTIPURPOSE FILM HANDLING CASSETTE HAVING A MODULAR FILM PROCESSOR

Joseph A. Stella, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1979, Ser. No. 108,521

Int. Cl.<sup>3</sup> G03C 11/00

U.S. Cl. 352—130

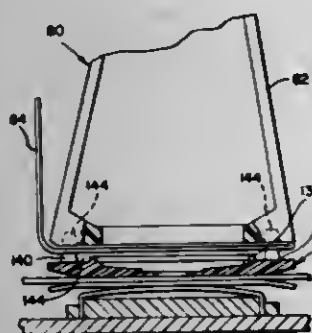
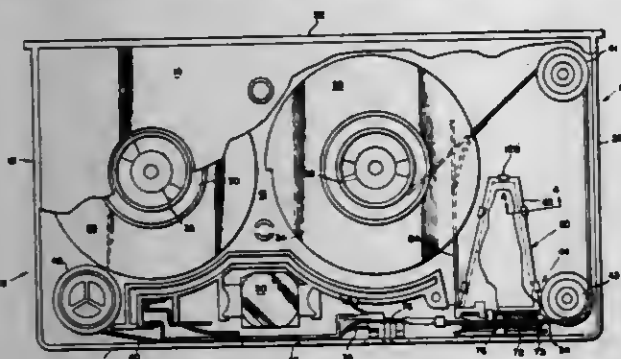
7 Claims

1. An applicator for depositing a coating of processing fluid on a moving run of photographic film strip, the applicator comprising:

- a fluid reservoir having an opening in an exterior surface through which processing fluid may pass;
- a nozzle plate having a fluid opening therein and a reservoir-facing surface normally spaced from said reservoir exterior surface thereby defining a space therebetween, said nozzle plate being configured to be urged toward said reservoir exterior surface, to sealingly engage and cooperate with said reservoir exterior surface so that fluid will flow only through said nozzle plate opening when said plate and reservoir are so engaged;
- a tear tab having a first length thereof positioned in said space defined between said reservoir and said nozzle plate in sealing engagement around said opening in said reservoir exterior surface to initially seal processing fluid in said reservoir, said first length passing from said space between said reservoir exterior surface and said reservoir facing surface to a position wherein it is operative, responsive to advancing removal thereof from said reservoir exterior surface for releasing said fluid from said reservoir; and
- means structurally attached to said reservoir for removably supporting said nozzle plate in said spaced relationship with said reservoir exterior surface and with at least said



first length of said tear tab positioned in said space defined therebetween, whereby upon removal of said first length



of said tear tab from said space between said nozzle plate and said reservoir, said nozzle plate may move into sealing engagement with said exterior surface of said reservoir.

4,285,582

## LIGHT MEASURING APPARATUS

Masaru Yamazaki, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 816,711, Jul. 18, 1977, abandoned. This application Jan. 11, 1979, Ser. No. 2,764 Claims priority, application Japan, Jul. 22, 1976, 51-86611; Jul. 29, 1976, 51-89722; Jul. 29, 1976, 51-89723

Int. Cl.<sup>3</sup> G03B 7/08

U.S. Cl. 354—23 D

8 Claims

1. A light measuring apparatus for measuring the intensity of incident light, comprising:

photoelectric means coupled to said light for generating photoelectric current in dependence on the intensity of said incident light;

capacitor integrating means coupled to said photoelectric means for integrating for a predetermined time period the photoelectric current so as to produce an integrated electric charge in said capacitor integrating means which is proportional to the total quantity of said light incident to said photoelectric means for said predetermined time period;

a constant current source capable of generating current of at least one constant current level;

control means coupled to said capacitor integrator means and said constant current source for controlling the discharging/charging of the electric charge of said capacitor integrating means through said constant current circuit so as to vary the voltage of said capacitor integrating means; said capacitor integrating means comprising a plurality of parallel connectable capacitors adapted to be successively connected in parallel to the previously connected capacitor under the control of said control means, and

said control means comprising, shift register means coupled to each of said capacitors for controlling the charging/discharging of each of said capacitors,

comparator means coupled to said capacitors and said shift register means for actuating said shift register means to connect a respective succeeding capacitor additionally in parallel to the previously connected capacitor each time the voltage of the respective previously parallel con-

nected capacitors reaches a predetermined comparison voltage applied to said comparator means, and means for applying said predetermined comparison voltage to said comparator means.

4,285,583

## PHOTOMETRIC DEVICE

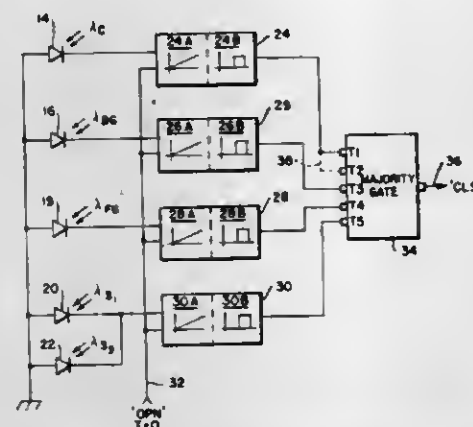
Joseph M. Canter, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 13, 1979, Ser. No. 93,261

Int. Cl.<sup>3</sup> G03B 7/093

U.S. Cl. 354—23 D

16 Claims



1. A photometric device for determining the exposure interval for a scene to be photographed, said photometric device comprising:

a photometric array including a plurality of photo-responsive cells each for receiving light reflected from a selected portion of a scene to be photographed and each providing an electrical output responsive to the light incident thereon; and

an electronic means coupled to said photo-responsive cells for, upon initiation of the exposure interval, integrating the output of each cell to provide an integrated output for each cell and for subsequently terminating said exposure interval when a predetermined percentage of said so-integrated outputs meet or exceed a predetermined film exposure value.

4,285,584

## PHOTOMETRIC DEVICE

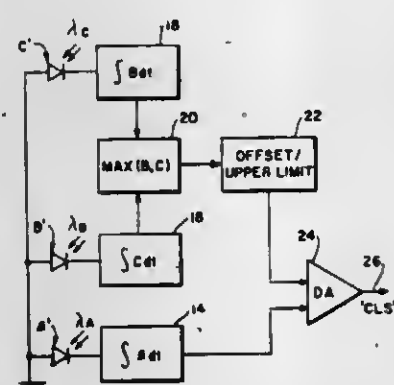
Joseph M. Canter, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 2, 1979, Ser. No. 81,207

Int. Cl.<sup>3</sup> G03B 7/083

U.S. Cl. 354—31

33 Claims



18. An exposure control system for controlling the exposure interval of a photographic camera of the type having a shutter means that is adapted, upon initiation of a film exposure interval, to admit light from a scene to be photographed into the camera to expose photographic film within the camera and

which is adapted to terminate the exposure interval in response to a shutter close command signal, said system comprising:

a photo-responsive means for receiving light from the scene to be photographed, said photo-responsive means including a first photo-responsive portion adapted to receive the light reflected from the foreground portion of the scene and provide a first electrical input responsive thereto, a second photo-responsive portion adapted to receive the light reflected from the background portion of the scene and provide a second electrical output responsive thereto, and a third photo-responsive portion adapted to receive light reflected from the central portion of the scene and provide a third electrical output responsive thereto;

first electronic circuit means coupled to said first and said second photo-responsive portions for selecting the maximum electrical output of said first and said second electrical outputs; and

second electronic circuit means coupled to said third photo-responsive portion and said first electronic circuit means for providing a shutter close command signal responsive to said third electrical output and said so-selected maximum electrical output of said first and said second electrical outputs, the exposure indication being increased when the illuminance of the light incident on said so-selected photo-responsive portion as indicated by said so-selected maximum electrical output exceeds the illuminance incident on said third photo-responsive portion as indicated by said third electrical output and the film exposure indication being decreased when the illuminance of the light incident on said third photo-responsive portion as indicated by said third electrical output exceeds the illuminance of the light incident on said so-selected photo-responsive portion as indicated by said so-selected maximum electrical output.

4,285,585

## EXPOSURE CONTROL COMPENSATING MEANS FOR CLOSE-UP PHOTOGRAPHY

Saburo Numata, Urawa, Japan, assignor to Fuji Photo Optical Co., Ltd., Japan

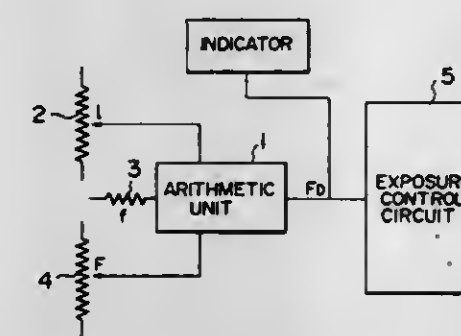
Filed May 3, 1979, Ser. No. 35,449

Claims priority, application Japan, May 4, 1978, 53-53319

Int. Cl.<sup>3</sup> G03B 15/05, 7/20

U.S. Cl. 354—33

5 Claims



1. In a camera, exposure control apparatus including means for automatically compensating exposure control for close-up photography in accordance with the formula

$$FD = F \cdot \left( \frac{l}{l-f} \right)$$

where

FD=effective F-value

F=a preselected F-value

l=the actual distance from the camera lens to an object to be photographed

f=the actual focal length of the lens,

and wherein the value of  $l/(l-f)$  is always greater than 1,

said means comprising:

- (a) an arithmetic unit;
- (b) an F-value input means connected to said arithmetic unit;
- (c) distance information input means connected to said arithmetic unit;
- (d) a focal length information input means connected to said arithmetic unit;
- (e) said arithmetic unit providing an effective F-value exposure control output according to said formula based on said inputs.

4,285,586

## CAMERA CONTROLLER FOR FLASHGUN OPERATION

Masahiro Kawasaki, Tokyo, and Saji Urata, Tachikawa, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

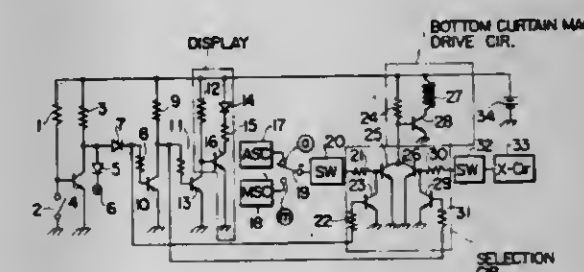
Filed Aug. 2, 1979, Ser. No. 63,305

Claims priority, application Japan, Aug. 25, 1978, 53-117217[U]

Int. Cl.<sup>3</sup> G03B 15/03, 17/18

U.S. Cl. 354—34

9 Claims



1. A device for providing multi-mode camera shutter control according to flashgun mounting and flashgun charging status, said camera having electrically controlled automatic shutter operating means, manual shutter operation means, and X shutter control means for flashgun operation, said device for providing multi-mode camera shutter control comprising:

a detection switch means for detecting the presence of a flashgun on said camera;

an input terminal providing an indication of the charge on said flashgun; and

multi-mode control means for controlling said camera shutter according to one of said automatic shutter operation means and said manual shutter operation means

- (i) when said detection switch means detects a flashgun, said flashgun has a charge output terminal, and said input terminal indicates an insufficient charge on said flashgun in response to said charge output terminal, and
- (ii) when said detection switch means does not detect a flashgun; and

said multi-mode control means controlling said camera shutter according to said X shutter control means

- (i) when said detection switch means detects a flashgun, said flashgun has a charge output terminal, and said input terminal indicates a sufficient charge on said flashgun in response to said charge output terminal, and
- (ii) when said detection switch means detects a flashgun, and said flashgun has no charge output terminal connected to said input terminal,

whereby said device for providing multi-mode camera shutter control may be used with either a flashgun having a charge output terminal, or a flashgun without a charge output terminal.



4,285,587

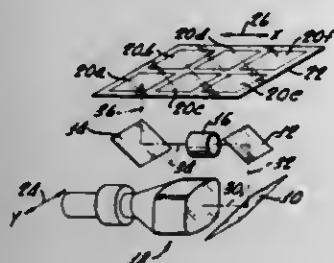
## COMPACT MULTIPLE IMAGE CAMERA

Otto M. Schiff, Irvine, and Vitolds Rikis, Mission Viejo, both of Calif., assignors to Schiff Photo Mechanics, Santa Ana, Calif.

Filed Jan. 9, 1980, Ser. No. 157,674

Int. Cl.<sup>3</sup> G03B 29/00, 1/00, 27/42, 27/70  
U.S. Cl. 354-124

34 Claims



1. A multiple image camera comprising a camera housing, a video monitor mounted in said housing for bi-directional motion in a transverse direction relative to the housing, film transport means mounted in said housing for bi-directional transport of film in a longitudinal direction relative to the housing, and means for transmitting an image of an object from said monitor for reception by film transported by the transport means.

4,285,588

## APPARATUS AND METHOD FOR MINIMIZING RED-EYE IN FLASH PHOTOGRAPHY

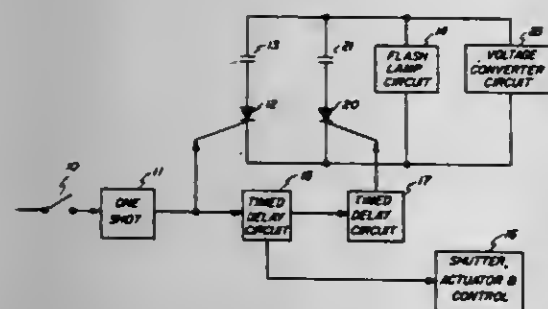
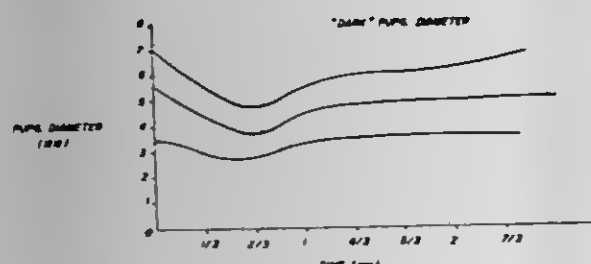
Jose M. Mir, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 24, 1980, Ser. No. 171,639

Int. Cl.<sup>3</sup> G03B 15/03

U.S. Cl. 354-137

11 Claims



1. In photographic apparatus for recording still pictures with supplementary illumination and including shutter means actuable to an aperture-open condition and to an aperture-closed condition, flash means actuable for providing supplementary illumination and means for actuating said shutter and flash means to initiate and terminate an exposure period of a picture-taking operation, the improvement comprising means for providing a subject-conditioning, illumination pulse which is of a predetermined energy and commences a predetermined period prior to the initiation of said exposure period to effect a substantial reduction of subject's eye-pupil diameter, said pre-

termined period having a magnitude in the range of from about 0.35 to about 0.60 seconds.

4,285,589

## SWITCH CONTROL FOR CAMERA FLASH UNIT

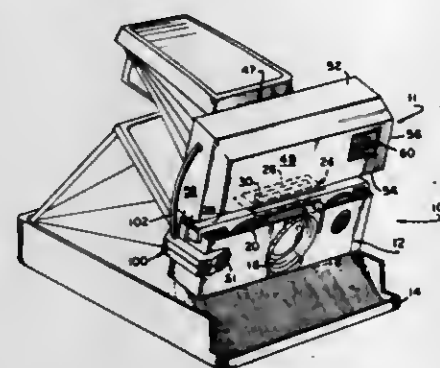
David Van Allen, Malden, and Fred M. Finnemore, North Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 23, 1978, Ser. No. 889,248

Int. Cl.<sup>3</sup> G03B 15/05

U.S. Cl. 354-145

8 Claims



1. An electronic flash unit for use with a camera of the type which the photographer would normally hold in one hand and operate with his other hand and which includes a photographic exposure cycle initiating button together with means for providing a flash fire trigger signal at an appropriate time during the photographic exposure interval together with connecting apparatus for accommodating the removable fixed connection of said flash unit with respect to the camera, said flash unit comprising:

a first housing;  
a storage capacitor;  
a flash discharge tube;  
means responsive to an applied voltage for charging said capacitor;  
circuit means responsive to the trigger signal for discharging said capacitor through said discharge tube to produce an illuminating flash of light;  
electrical connecting means for facilitating the electrical connection of said circuit means to the trigger signal providing means of the camera;  
physical connecting means complementary to the camera connecting apparatus for facilitating the releasable fixed connection of said flash unit housing to the camera; p1 an actuator assembly comprising: an electric switch connectable to a source of electrical energy for controlling the application of electrical energy to said capacitor charging means, means for connecting said switch to said capacitor charging means, an actuator member mounted for manual displacement from a first position to a second position and operatively associated with said switch so as to move said switch from an open condition so as not to apply electrical energy to said capacitor charging means, to a closed condition so as to apply electrical energy to said capacitor charging means when said actuator is moved from its said first position to said second position, resilient means for yieldably biasing said actuator member to move from its said second position back to its said first position, means for facilitating the releasable fixed connection of said actuator assembly to the camera so as to locate said actuator member in closely spaced apart relation with respect to the camera photographic cycle initiating button thereby enabling the photographer to first apply electrical energy to said capacitor charging means by moving said actuator member from its said first position to its said second position with the thumb of his camera operating hand and to thereafter, without substantially changing the position of his camera operating hand initiate a photographic exposure cycle by actuating the photographic

cycle initiating button with the forefinger of his same camera operating hand.

4,285,590

## PRECESSION SCANNING SYSTEM FOR COPIER DEVICE

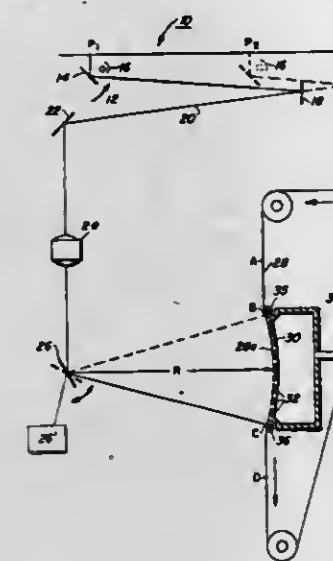
Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 15, 1980, Ser. No. 197,384

Int. Cl.<sup>3</sup> G03G 15/28; G03B 27/60

U.S. Cl. 355-8

5 Claims



1. A scanning system for projecting light images of a stationary object at an object plane along an optical path onto a curved portion of a photoreceptor moving in a first direction comprising

scanning illumination means for scanning said object, projecting means for transmitting said scanned object images,

reflecting means positioned between said projecting means and said photoreceptor for directing said transmitted image into a curved exposure zone of said photoreceptor, means for introducing said curvature of said photoreceptor in said exposure zone, said curved portion having a radius defined as an arc of a circle equal to the distance between said curved portion and the center of said reflecting means,

means for rotating said reflecting means so as to reflect said transmitted image along said curved portion in a direction opposite to said first direction.

4,285,591

## COMPUTER-CONTROLLED COPY PRODUCTION MACHINE HAVING JOB SEPARATION CAPABILITIES

Anthony J. Botte, James H. Hubbard, both of Boulder, Colo., and Paul R. Spivey, Winchester, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 841,623, Oct. 13, 1977, Pat. No. 4,201,464.

This application Dec. 3, 1979, Ser. No. 99,383

Int. Cl.<sup>3</sup> G03G 15/00

U.S. Cl. 355-14 C

4 Claims

1. In a copy production machine having operating means comprising image input means, copy production means, copy output means having a given capacity, and copy sheet transport path means extending between said copy production means and said copy output means for transporting copy sheets therebetween, copy sheet source means for supplying copy sheets to said copy production means to receive images, the improvement comprising, in combination:

programmable processor means for executing computer programs and having input register means for receiving signals to be operated upon in accordance with computer programs and output register means for supplying control signals to said machine generated in accordance with execution of computer programs;

means included in said operating means coupled to said input

register means for supplying status signals to said processor;

actuating means in said operating means coupled to said output register means for receiving control signals to control operation of said operating means;

console means including a plurality of switch means coupled to said input register means for providing operating parameters to control said processor means in operating said machine and a plurality of indicator means coupled to said output register means for displaying the status of said machine;

control memory means included in said processor means for storing a plurality of computer program means sensible and executable by said processor to enable said processor means to supply said control signals in response to said status signals and said parameter signals to operate said machine to produce a console-selected number of copies of each image supplied by said image input means to said copy producing means in succession of copy production runs,

said program means including means for responding to one of said plurality of switch means indicating, when actuated, that copy sheets are to be supplied from said copy sheet source means and including inhibiting means for preventing the copying of images onto said supplied copy sheets whereby said supplied copy sheets become separator sheets, means for limiting a production run to said output means given capacity if the operating parameter representing a number of copies to be produced supplied by said switch means exceeds said given capacity, and means for indicating cumulative copies produced in a series of copy production runs in response to said one of said plurality of switch means being actuated.

4,285,592

## MULTIDIRECTIONAL PHOTOGRAPHIC COMPOUND STAGE

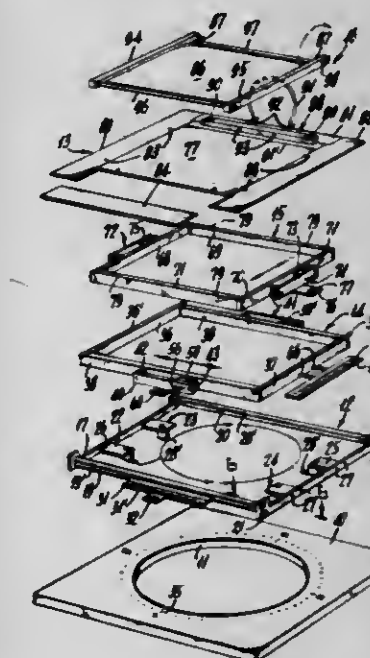
Richard Sassenberg, 422 Ward Ave., Mamaroneck, N.Y. 10543

Filed Aug. 4, 1980, Ser. No. 175,297

Int. Cl.<sup>3</sup> G03B 27/42

U.S. Cl. 355-53

10 Claims



1. A multidirectional compound stage for photographic reproduction of images comprising a relatively thick base having an opening therein defined by a circular wall, a first carriage having rollers extending from the bottom thereof and engaging the said circular wall to permit rotary motion of said carriage, a pair of spaced parallel tracks on said carriage, a second carriage overlying said first carriage and having at least two sets of rollers engaging said tracks for movement of said







said metering slide assembly further including a grease barrier disposed between said metering slide and said cement hopper, said grease barrier preventing moisture from reaching said cement hopper.

4,285,599

# APPARATUS FOR PREPARATION OF FLUIDIZED SAND

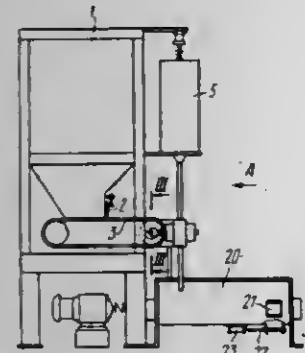
Vitaly A. Zitsler, ulitsa Pervomaiskaya, 9/4, kv. 17, Dolgoprudny Moskovskoi; Leonid V. Bachelis, Schelkovskoe shosse, 91, korpus 2, kv. 221, Moscow; Jury E. Morozov, Leninsky prospekt, 39/1, kv. 264, Moscow; Alexandr V. Melnikov, ulitsa Dorozhnaya, 7, korpus 1, kv. 138, Moscow; Vladimir A. Ivanov, ulitsa Rustavelli, 3, korpus 6, kv. 34, Moscow; Igor I. Dreishev, Volgogradsky prospekt, 181, kv. 33, Moscow; Eduard G. Shartner, ulitsa Krylova, 4a, kv. 21, Karaganda; Vladimir D. Abaskalov, bulvar Mira, 47, kv. 30, Karaganda, and Vladimir A. Levinson, ulitsa N. Abdirova, 46/2, kv. 47, Karaganda, all of U.S.S.R.

Filed Aug. 10, 1979, Ser. No. 65,507

Int. Cl.<sup>3</sup> B28C 7/04

U.S. Cl. 366—17

2 Claims



1. An apparatus for the preparation of the fluidized sand for use in foundry practice, comprising:

a container for loose components; containers for liquid components, having spring-loaded valves built therein; an actuator for effecting forced opening of each of said spring-loaded valves, and a means for controlling said actuator; feeders for feeding and metering the materials to be mixed, said feeders being connected with one another, a drive of said feeders; an eccentric mounted on a shaft of said drive of the feeders and acting on the said control device; each of said liquid-component feeders having spring-loaded diaphragms, one of which is adapted to control the loose-component feeder and the other is used to close an outlet from the liquid-component feeder.

4,285,600

# INJECTION MOLDING MACHINE WITH MULTICHANNEL WAVE SCREW

George A. Kruder, Marion, Ohio, assignor to HPM Corporation, Mount Gilead, Ohio

Continuation-in-part of Ser. No. 917,204, Jun. 20, 1978, Pat. No. 4,173,417, which is a continuation-in-part of Ser. No. 788,028, Apr. 15, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 25,884

Claims priority, application United Kingdom, May 31, 1978, 26053/78

The portion of the term of this patent subsequent to Nov. 6, 1996, has been disclaimed.

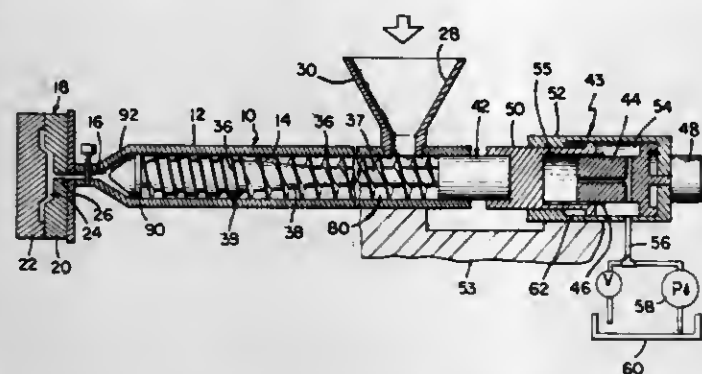
Int. Cl.<sup>3</sup> B29B 1/06

U.S. Cl. 366—89

26 Claims

1. An injection molding apparatus comprising: a barrel having an inner wall and inlet and outlet openings, a rotatable and reciprocable screw disposed in said barrel means for rotating said screw about its axis and advancing said screw axially in said barrel toward the outlet opening, said screw including a section for enhancing substantially complete melting and mixing of resinous material plasticated by it comprising an out-

wardly extending conveying flight defining a helical passage, an outwardly extending barrier flight disposed intermediate said conveying flight to divide the helical passage into a pair of flow channels extending side by side helically along said screw section, each of said channels having a base surface whose radius from the screw axis of rotation varies cyclically through a plurality of cycles along the helical length of such channel to provide a channel of varying depth, with the variations of said



4,285,601

# DRILLING MUD MIXER

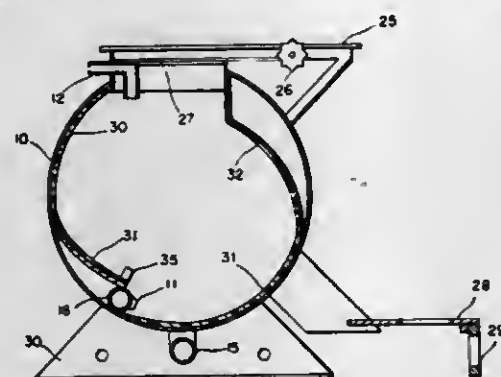
Robert M. Mimer, P.O. Box 373, Casper, Wyo. 82602

Filed Oct. 22, 1979, Ser. No. 87,049

Int. Cl.<sup>3</sup> B01F 5/10, 15/02

U.S. Cl. 366—137

8 Claims



1. A mixer for preparing drilling mud at a desired viscosity, comprising in combination, a generally cylindrical tank, a set of nozzles located axially along the tank about the internal periphery disposed to direct materials in a rotary flow pathway about the interior circumference of the tank, path deflector means shaping the internal tank periphery to direct the rotary flow path into an elliptical orbit substantially symmetrical about the tank axis, material input means for introducing drilling mud ingredients into the tank for mixing into the rotary flow pathway before encountering the nozzles, means for introducing liquids into the tank to effect a change of drilling mud viscosity, and means for removing drilling mud from a position near the internal periphery of said tank to circulate back through said nozzles.

4,285,602

# METHOD AND APPARATUS FOR THE BLENDING OF GRANULAR MATERIALS

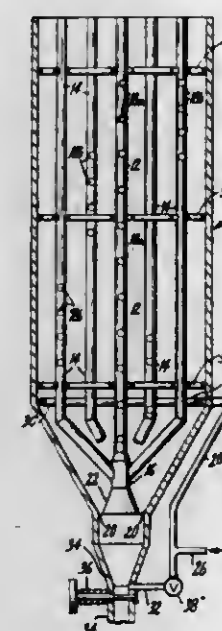
Robert O. Hagerty, Bound Brook, N.J.; Jannan G. Lee, Houston, Tex., and Kenneth C. Yi, Belle Mead, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 38,738, May 14, 1979, abandoned. This application Oct. 9, 1979, Ser. No. 82,471

Int. Cl.<sup>3</sup> B01F 15/02

U.S. Cl. 366—177

4 Claims



1. A method for the high efficiency blending of solid particulate materials which comprises: introducing the materials to be mixed into a bin; withdrawing one portion of said solid particulate materials by gravity through downwardly-extending main blending tube means having positioned, through the walls thereof, a plurality of material inlet passages positioned and dimensioned to provide unblocked or starved flow characteristics therethrough; withdrawing another portion of said solid particulate materials by gravity through a plurality of downwardly extending auxiliary blending tube means having positioned, through the walls thereof, a plurality of material inlet passages positioned and dimensioned to provide blocked flow characteristics therethrough; joining the portions of material in an enlarged section near the downstream ends all of said main blending tube and auxiliary blending tube means which joined portions of material are passed therefrom as a blended stream; and maintaining unblocked or starved flow characteristics in said main blending tube means while maintaining blocked flow characteristics in said plurality of auxiliary blending tube means.

4,285,603

# WIRE PRINTING DEVICE

Francesco Bernardis, Ivrea; Contardo Adamoli, Castellamonte, and Franco Cretaz, Pont Saint Martin, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Italy

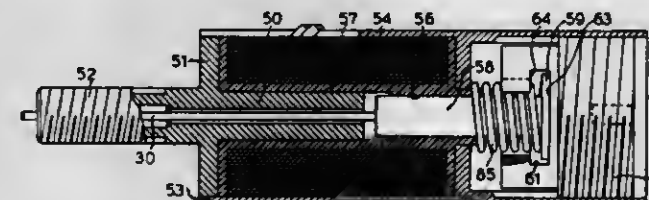
Filed Apr. 17, 1979, Ser. No. 30,950

Claims priority, application Italy, Apr. 19, 1978, 67885 A/78

Int. Cl.<sup>3</sup> B41J 3/12

U.S. Cl. 400—124

5 Claims



1. A wire printing device comprising a base member, a plurality of actuatable printing wires slidably mounted on said base member, and a plurality of driving electromagnets

mounted on said base member for individually actuating said printing wires, wherein each one of said driving electromagnets comprises a magnetic circuit having a fixed central core, an excitation coil, an armature movable with respect to said fixed core and connected with a corresponding one of said printing wires and means for regulating the gap between said armature and said core leaving unaltered the stroke of said armature with respect to said core, said regulating means comprising an element screwable with respect to said fixed core having a first and a second shoulder between which said armature is movable.

4,285,604

# RIBBON SHIELD FOR PRINTER

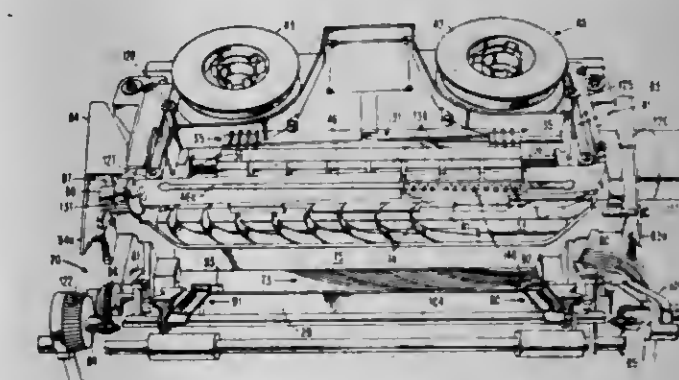
Donald K. Rex, Highland Beach, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,568

Int. Cl.<sup>3</sup> B41J 33/32

U.S. Cl. 400—247

3 Claims



1. A ribbon shield arrangement for a printer unit having a print station with a print line, said print station incorporating a forms feed assembly with a platen supporting forms to be printed upon, a print assembly at said print station for printing upon said forms as they move past said print line, said print assembly incorporating a plurality of print heads, each of which comprises a plurality of print wires and a plurality of actuators and said print heads being mounted in an elongated array along said print line for printing information on said forms, said print wires and actuators being arranged along said print line in a nonconventional print wire pattern, such as a slanted serrated pattern, said print assembly incorporating means to reciprocate said print heads along said print line and to concurrently operate said print wire actuators in order to print on said forms, and a ribbon drive assembly arranged to drive a ribbon along said print line during printing operations, said shield arrangement comprising:

a one-piece detachable ribbon shield member, said ribbon shield member comprising a flexible elongated plastic or metallic element having at least one aperture substantially corresponding in size and dimensions to the largest area occupied by said print wires along said print line as said print heads are reciprocated along said print line and said ribbon shield member including a pair of slits therein located a predetermined distance apart in said ribbon shield member, one of said slits being located near each extremity of said ribbon shield member;

and ribbon shield mounting means comprising a pair of complementary flat spring elements at each end of said print line, said elements extending toward said print line, said spring elements being respectively engageable with the pair of slits in said ribbon shield member to position said ribbon shield member along said print line, said ribbon shield mounting means being arranged to retain said ribbon shield between said forms and between said ribbon during printing operations to protect said forms and said ribbon but to allow printing through the elongated aperture in



said ribbon shield member by said print assembly during printing operations.

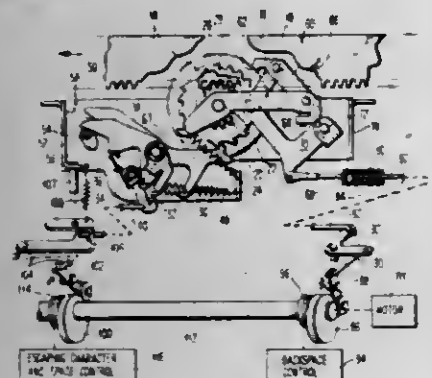
4,285,605

**ESCAPEMENT MECHANISM AND BACKSPACE MECHANISM FOR A MOVING PAPER CARRIAGE TYPEWRITER HAVING DUAL PITCH CAPABILITY**  
Edward R. Lloyd, and Raymond M. Marowski, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1979, Ser. No. 54,059  
Int. Cl.<sup>3</sup> B41J 19/62

U.S. Cl. 400—310

3 Claims



1. An escapement and backspace apparatus for a dual pitch typewriter having a carriage, a printing means, means for selecting characters on said printing means, said carriage associated with said typewriter to translate relative thereto:

escapement means for defining the positions of said carriage with respect to said typewriter and for moving said carriage through said positions in stepwise manner, in a selected one of a plurality of predetermined escapement pitches, said escapement means comprising, a plurality of escapement ratchets, each defining a separate escapement pitch, and a backspace ratchet, said ratchets associated to rotate together, the ratchet teeth on said backspace ratchet subtending an arc equal to the lowest common divisor of the angles subtended by the teeth on said escapement ratchets;

an escapement pawl operatively associated with each of said escapement ratchets, means for withdrawing said escapement pawls from said escapement ratchets and thereafter releasing said escapement pawls for re-entry into the next tooth of said escapement ratchets,

operator controlled means for rendering all but one of said escapement pawls inoperative; and a backspace pawl operative to engage said backspace ratchet and rotate said backspace ratchet in a backspacing direction by an arcuate increment greater than the arc subtended by the largest arc between teeth on said escapement ratchets.

4,285,606

**ARRANGEMENT FOR DRIVING A PRINTING HEAD ALONG A PRINTING LINE**

Felice Giaccone, Giaveno, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Italy

Continuation of Ser. No. 745,321, Nov. 26, 1976, abandoned, which is a continuation of Ser. No. 575,758, May 8, 1975, Pat. No. 4,034,842. This application Aug. 14, 1978, Ser. No. 933,426  
Claims priority, application Italy, May 10, 1974, 68471 A/74  
The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.

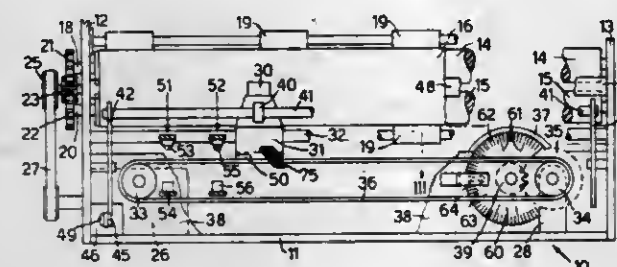
Int. Cl.<sup>3</sup> B41J 19/30, 19/70

U.S. Cl. 400—317.1

5 Claims

1. In a printer having a printing head, means defining a rest position for said head, means for advancing said head along a plurality of printing positions of a printing line in front of a

recording medium in a forward movement at a substantially constant advancing speed starting from said rest position, and start printing means for causing said printing head to begin printing during said forward movement starting from a first of said printing positions to define a printing stage of said head, the improvement comprising: means defining a predetermined position of said printing positions along said printing line, beyond said first printing position, detecting means for detecting the passage of said head through said predetermined position during said printing stage, memory means connected to



said detecting means for storing whether said head during its forward movement has passed said predetermined position, first means for generating a signal indicative of a last character printed along said printing line, and second means controlled by said memory means and by said indicative signal for applying to said head a low return speed when said head has not reached said predetermined position during said printing stage and a high return speed of a value higher than said advancing speed when said head has passed said predetermined position during the printing stage.

4,285,607

**APPARATUS FOR FEEDING SINGLE SHEETS FROM A MAGAZINE TO THE PRINTING CYLINDER OF A PRINTING OFFICE MACHINE OR DATA PROCESSING MACHINE AND FOR STACKING THE SINGLE SHEETS ARRIVING FROM THE PRINTING CYLINDER**

Helmut Stelabilber, Königstr. 47, 7210 Rottweil, Fed. Rep. of Germany

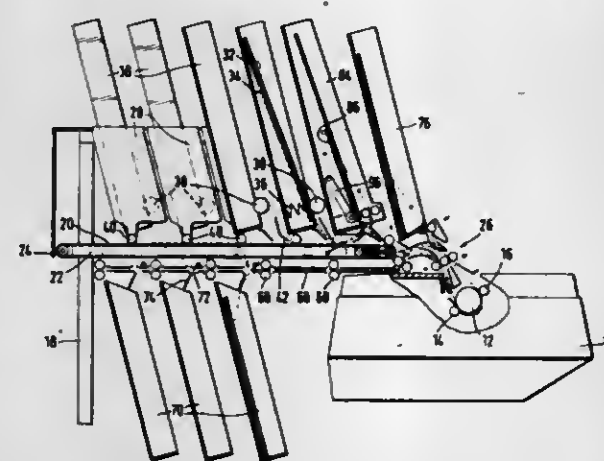
Filed Jan. 25, 1980, Ser. No. 115,389

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1979, 2905171

Int. Cl.<sup>3</sup> B41J 11/58, 13/10

U.S. Cl. 400—625

16 Claims



1. An apparatus for feeding single sheets from a magazine to the printing cylinder of a printing office machine or data processing machine and for stacking the single sheets arriving from the printing cylinder, wherein the improvement comprises:

a feed-in conveyor track (20) disposed substantially horizontally and leading to said printing cylinder (12); at least two substantially vertical magazine units (30); which are disposed above said feed-in conveyor track (20)

one after another in the direction of feed of sheets to the printing cylinder and provided with separately controllable separation devices (38); a delivery track (66, 68) disposed below said feed-in conveyor track (20) and leading away from said printing cylinder (12); which are disposed below said delivery track one after another in the direction of delivery from the printing cylinder; separately controllable delivery diverters (72) assigned to said stacking units (70) and provided in said delivery track (66, 68); and a sheet guide (26) with an induction channel (52) leading from said feed-in conveyor track (20) to the induction side of said printing cylinder (12) and an ejection channel (54) leading from the ejection side of said printing cylinder to said delivery track (66, 68), said ejection channel crossing said induction channel (52).

4,285,608

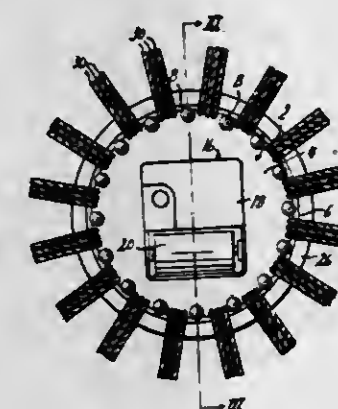
**ORNAMENT MOUNTING BRACKET FOR MACRAME DESIGNS**

Calvin E. Hoover, 6715 Verde Dr., Kansas City, Kans. 66104  
Filed Jan. 14, 1980, Ser. No. 111,895

Int. Cl.<sup>3</sup> F16D 9/00; F16P 5/00

U.S. Cl. 403—002

8 Claims



1. An ornament mounting bracket for macrame designs comprising:

a. a flat plate having forward and rearward surfaces and adapted to mount an ornament on its forward surface, b. an open ring usually disposed in a plane spaced behind and parallel to the rearward surface of said plate, and adapted to have macrame cords secured therein, and c. connecting means operable to secure said ring to said plate in said usual relationship thereto.

4,285,609

HINGE JOINT ASSEMBLY

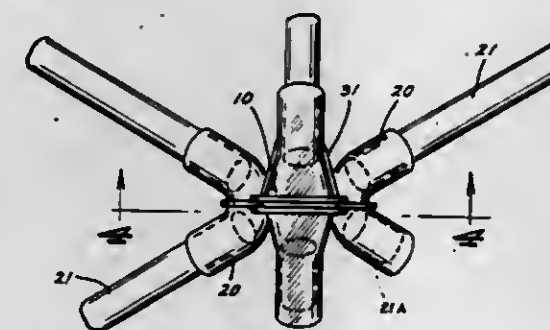
John F. Runyon, 91 Kent St., Apt. 4, St. Paul, Minn. 55102

Filed Mar. 19, 1980, Ser. No. 131,622

Int. Cl.<sup>3</sup> F16B 7/00

U.S. Cl. 403—172

10 Claims



5. A hinge joint assembly for flexibly connecting a plurality of at least three elongated structural components in the con-

struction of modular buildings, said hinge joint assembly comprising:

(A) a plurality of at least two lengths of resilient tubing, (B) a body member having a plurality of at least two slot openings, (1) at least two of the slot openings (a) being adjacent to a peripheral edge of the body member and (b) engaging a flattened portion of one of said lengths of tubing, (2) the flattened portion of the tubing in each slot functioning as a hinge for relative movement of the adjacent unflattened portions, and (3) the unflattened portion of said tubing spaced from the body member functioning as a socket to receive one end of an elongated structural component.

4,285,610

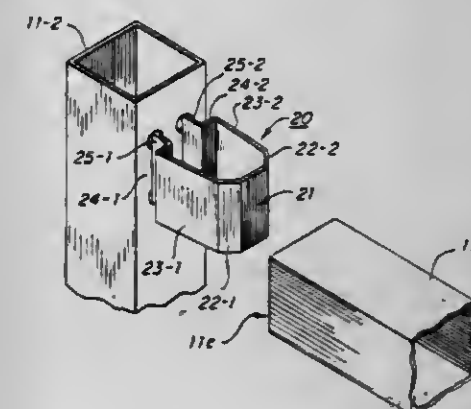
STRUCTURAL MEMBERS AND ASSEMBLAGES

Richard B. Rusch, 55 Flagg Rd., Southborough, Mass. 01772  
Continuation of Ser. No. 739,109, Nov. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 645,428, Dec. 30, 1975, abandoned. This application Feb. 12, 1979, Ser. No. 11,408

Int. Cl.<sup>3</sup> F16B 7/08

U.S. Cl. 403—189

7 Claims



1. A connector for joining one member to another member having opposed parallel and planar interior wall surfaces, comprising:

means for positioning the connector on the one member, two spaced apart neck members extending outwardly from the positioning means, and two side panels extending outwardly from respective ones of the neck members, said side panels having side surfaces for simultaneously securely gripping the interior wall surfaces of said another member and compressing said neck members into clamping engagement with said one member.

4,285,611

ARRANGEMENT FOR THE RETAINING OF TUBES

Eberhard Willeitner, Utting a. Ammersee; Wilhelm Hirschmann, Friedberg; Erwin Maier, Freising; Georg Lammell, Olching, and Jürgen Haas, Munich, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany  
Filed May 29, 1979, Ser. No. 43,544

Claims priority, application Fed. Rep. of Germany, Jan. 1, 1978, 2824108

Int. Cl.<sup>3</sup> F16B 2/14

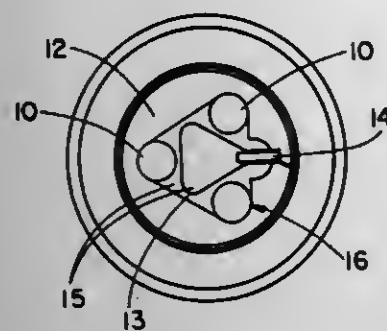
U.S. Cl. 403—374

9 Claims

1. An arrangement for retaining at least two tubes in substantially mutually parallel positions, comprising a single piece adapter having a single bore having a polygonal cross sectional shape through which the tubes are inserted, and a clamping element arranged in said bore between said tubes,



said clamping element including means for radially expanding in said single bore to bias said tubes in positions parallel to each



other against the wall of the single bore without causing an axial displacement of the tubes.

4,285,612

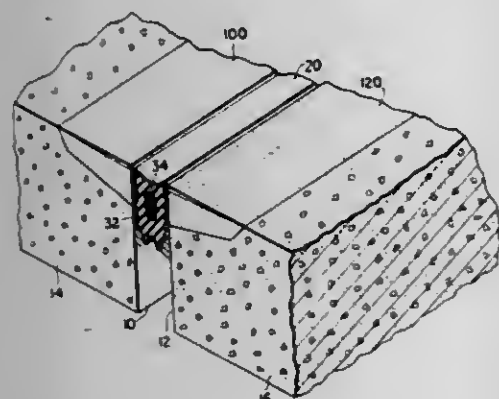
### PROTECTIVE SHOULDER STRUCTURE FOR ROADWAY JOINTS

Pier L. Betti, Sao Paulo, Brazil, assignor to Dinamyl Pesquisa E. Desenvolvimento Tecnológico S/C Ltda. Tecnologia de Solucoes, Sao Paulo, Brazil

Filed Jun. 11, 1979, Ser. No. 47,117  
Int. Cl.<sup>3</sup> E01C 11/04

U.S. Cl. 404—68

1 Claim



1. In a roadway structure formed of concrete slabs interconnected by a joint formed between a pair of opposed walls of said slabs, said walls defining therebetween a gap which is bridged by said joint, the improvement comprising shoulder portions defining at least the upper adjacent edges of said opposed walls of said slabs, said shoulder portions consisting essentially of cured silica-epoxy mortar built into said walls by compacting said silica-epoxy mortar into previously prepared sockets formed in said walls to provide structurally bonded reinforcement at such shoulder portions, and resilient joint means interposed between said opposed walls and extending in adhesive bonding engagement at least along said silica-epoxy mortar shoulder portions, said resilient joint means comprising a sealing element consisting essentially of resilient material and formed to define cavity means internally thereof, and adhesive material applied between said sealing element and each of said opposed walls to effect an adhesive bond therebetween, said adhesive material being capable of setting after application thereof to effect said adhesive bond, a filler material introduced into said cavity means under pressure and rendered rigid after introduction into said cavity means, said sealing element being capable of undergoing flexure as a result of introduction into said cavity means of said pressurized filler material to maintain said adhesive pressed between said sealing element and said opposed walls during setting of said adhesive material, said filler material and said adhesive material being selected such that said adhesive material sets to form said adhesive bond in said joint prior to hardening of said filler material within said cavity means.

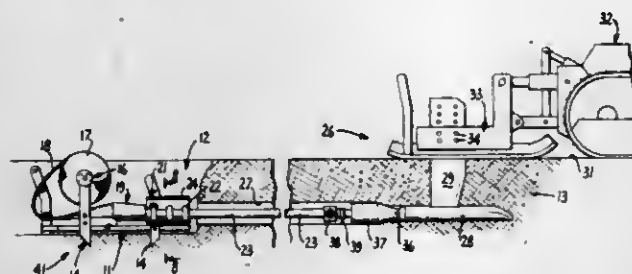
### 4,285,613 APPARATUS FOR FORMING AND INSTALLING UNDERGROUND DRAINPIPE

Kenichiro Takagishi, 4223-11, Dazaifu-cho, Chikashi-gun, Fukuoka-ken, and Yutaka Tsuda, 1260, Kokubu-cho, Kurume-shi, Fukuoka-ken, both of Japan

Filed Oct. 5, 1979, Ser. No. 82,305  
Int. Cl.<sup>3</sup> F16L 1/02

U.S. Cl. 405—156

14 Claims



1. Apparatus for forming and installing underground drainpipe, comprising:  
an elongated frame adapted for positioning in a depression in the soil;  
means for anchoring said frame in place;  
dispensing means on said frame formed for carrying a rolled web of semi-flexible sheet material;  
curling means on said frame formed for receiving the web of sheet material from said dispensing means and for curling same to bring the side edges of the web into confronting relation;  
pressor means on said frame formed for receiving the curled web from said curling means and pressing together the confronting side edges of said web;  
ring means on said frame formed for receiving the web from said pressor means and forming same into a tube of substantially cylindrical cross-section;  
a transparent shield overlying said ring means and pressor means and formed for preventing loose soil from falling into said ring and pressor means while permitting constant visual inspection;  
and means for drawing said web from said dispensing means through said curling and pressor and ring means into a subterranean passage.

4,285,614

### STRUCTURE ALLOWING THE ATTAINMENT OF A PRECISE SEABED LOCATION

Jacques E. Lamy, Fontenay-Aux-Roses, France, assignor to Compagnie Generale pour les Developpements, Paris, France

Filed Dec. 5, 1978, Ser. No. 966,552

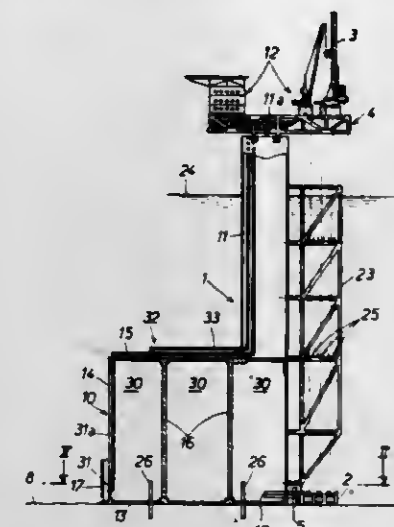
Claims priority, application France, Dec. 5, 1977, 77 36508  
Int. Cl.<sup>3</sup> E02B 17/02

U.S. Cl. 405—203

3 Claims

1. A process for a precise in situ seating of a buoyant rig upon a seabed bottom at an offshore location established by a seabed work template, comprising the steps of:  
towing the buoyant rig afloat to a sea-surface position close to the offshore location;  
partially ballasting the buoyant rig for intermediate submergence thereof above the seabed bottom and down to a depth such that horizontally spaced notches defined by a plurality of protrusions at a periphery of a base section of the buoyant rig are at a level lower than tops of horizontally spaced piers driven into the seabed bottom adjacent to the seabed work template, whereby said spaced notches are in horizontal matching register with respective ones of said spaced piers;  
horizontally displacing the buoyant rig, while in said intermediate submergence, for engagement of said spaced piers by said spaced notches respectively;  
downwardly projecting piles from retracted positions towards the seabed bottom;

locking firmly said piles in such downwardly projecting position to preclude retraction thereof; and further ballasting the rig for grounding said base section thereof on the seabed bottom, while said rig is vertically



guided by the cooperative engagement of respective ones of said spaced notches with said spaced piers, and while said downwardly projecting piles are driven into the seabed bottom.

4,285,615

### CORROSION RESISTANT TENSION LEG CABLES

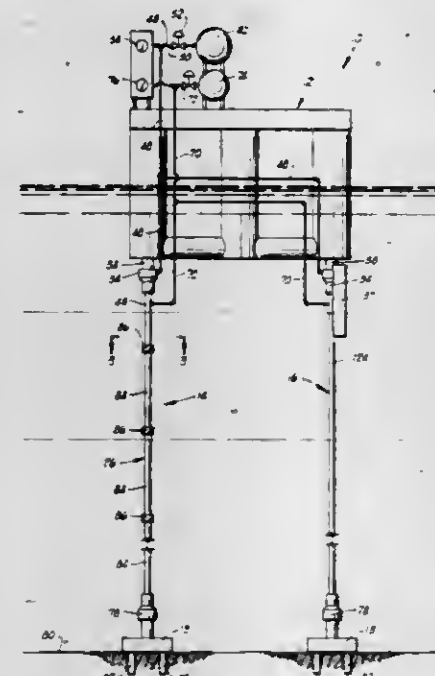
Frederick J. Radd, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Dec. 13, 1978, Ser. No. 968,881

Int. Cl.<sup>3</sup> B63B 35/44; E02B 17/00

U.S. Cl. 405—211

20 Claims



1. A mooring system apparatus for a structure floating on a body of water, comprising:  
a corrosion resistant cable system, including:  
a multi-strand cable, having voids between adjacent strands;  
a fluid tight covering engaging an outer surface of said cable;  
a means for supplying fluid under pressure directly to said voids; and  
a fluid pressure monitoring means, for continuously monitoring said fluid pressure in said voids and determining when said fluid pressure in said voids changes;  
a first connector means, connected to an upper end of said cable, for connecting said cable to said floating structure; and  
a second connector means, connected to a lower end of said

cable, for connecting said cable to an anchor means attached to a floor of said body of water.

4,285,616

### ROLL COMPRESSION MEMBER

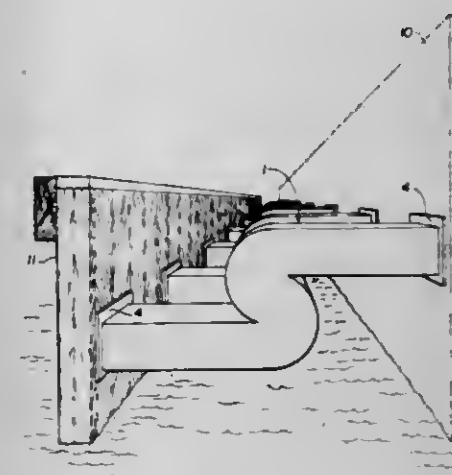
Jonathan Evetts, 35 Tulip Ct., Burlingame, Calif. 94010

Filed Jul. 23, 1979, Ser. No. 59,850

Int. Cl.<sup>3</sup> E02S 3/22

U.S. Cl. 405—215

6 Claims



1. An elastomeric compression member for separating two surface members, comprising:  
first and second parallel, transversely spaced apart elongate leg portions having outer and inner ends, said leg portions extending generally at right angles from said surface members with said outer ends abutting said surface members; said leg portions spaced apart by a distance  $\Delta$ ; said leg portions having lengths  $L$ , a first dimension  $T$  taken parallel to said distance  $\Delta$  and a second dimension  $W$  taken perpendicular to said first dimension  $T$ , said length  $L$  being substantially greater than said first dimension  $T$ ; a generally S-shaped connecting portion coupling said inner ends of said leg portions; whereby when said surface members are brought together, said compression member compresses by rolling said leg portions around said connecting portion.

4,285,617

### DUCT AND FLOP-GATE CONSTRUCTION AND METHOD OF HANDLING DUST OR OTHER PARTICULATE MATERIAL

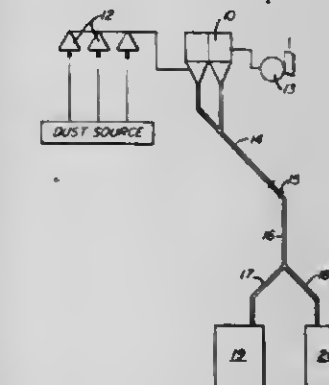
Mark Gozion, 570 Richland Rd., Pittsburgh, Pa. 15228, and H. Mark Hall, 2453 Saddle Dr., Allison Park, Pa. 15101

Filed Dec. 26, 1979, Ser. No. 106,626

Int. Cl.<sup>3</sup> B65G 53/56

U.S. Cl. 406—171

3 Claims



1. In a system in which a dust-particulate mixture is filtered in a bag house, or the like, and the separated particulate material is conducted for discharge alternately to each one of a pair of receptacles, said system including duct means extending



between the discharge side of said bag house and said receptacles and containing a bifurcate portion having a pair of branches each of which is connected with the inlet to one of said receptacles, fan means for inducing an air flow through said duct means counter to the direction of particulate flow therethrough for partially evacuating said system, and means for directing particle flow alternately to the respective ones of said receptacles without disrupting the partial evacuation of air therefrom, comprising:

- a flop-gate having a frame, a plurality of mutually spaced baffles carried by said frame, said baffles being of a length to traverse the width of the interior of the respective duct branches and each having a pair of particle-deflecting surfaces divergent in the direction of flow of particulate material through said duct,
- a shaft connecting said frame to the juncture of said branches in said duct means for pivotal movement between each of said branches, and
- plate means mounted on said shaft for pivotal movement with respect to said duct means and effective to restrict the flow area of the other of said branches traversed by said frame.

4,285,618

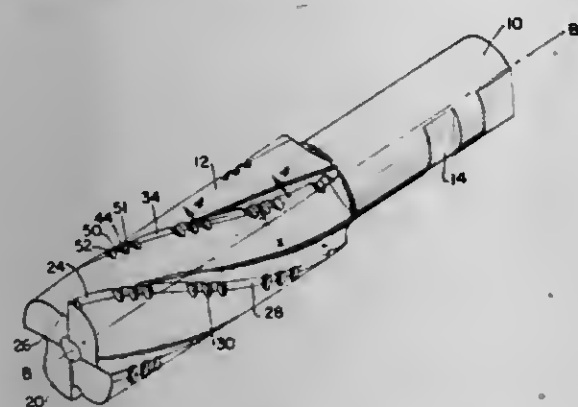
## ROTARY MILLING CUTTER

Stephen E. Shanley, Jr., 9434 Lakewood, Grosse Ile, Mich. 48188

Filed Oct. 12, 1979, Ser. No. 84,073  
Int. Cl.<sup>3</sup> B26D 1/12; B23B 51/00

U.S. Cl. 407—54

27 Claims

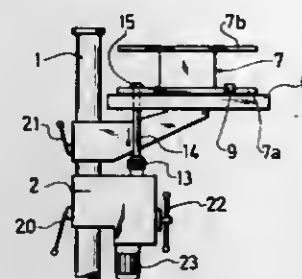


1. A milling cutter comprised of a generally cylindrical shank section joined to a cutting section, the cutting section consisting essentially of a hard metal body whose surface has formed into it a plurality of blades separated by flutes, each said blade having a leading side, a cutting edge on the leading side, a land, and a trailing face side; at least two of said blades having at least one smooth segment, wherein the land and cutting edge are even and unbroken, and at least one serrated segment, wherein the land consists essentially of a row of cutting teeth, adjacent teeth in the land being separated from each other by a transverse groove in the blade; said smooth and serrated segments being located in staggered positions from blade to blade, so that a diametrical plane perpendicular to the axis of the cutter and passing through any point along said axis of the cutting section will intersect at least one smooth cutting segment and one serrated cutting segment to thereby contact and work any point of a workpiece being cut with a smoothing and a serrated segment portion of cutting edge.

4,285,619  
SURFACE MACHINING METHOD AND A MACHINE FOR PERFORMING THE METHOD  
Filip Henningson, Grästorp, Sweden, assignor to Frammestad Smides & Mek. Verktad AB, Nossebro, Sweden  
Filed Oct. 16, 1979, Ser. No. 85,209  
Claims priority, application Sweden, Oct. 25, 1978, 7811071  
Int. Cl.<sup>3</sup> B23B 35/00, 39/00

U.S. Cl. 408—1 R

4 Claims



1. A method of machining a surface of a workpiece adjacent to the mouth of a passage in a workpiece where said surface is not directly accessible from the driving component of a working machine, comprising the steps of providing a substantially horizontal working table with an opening therein, locating the workpiece upon said table with its non-accessible surface turned upwards and with the passage therein aligned with the opening in said table, introducing, from below, a spindle adapted to carry a cutter means and rotatable by said driving component through said opening and said passage, and machining the surface while maintaining a downwardly directed pressure upon the workpiece by the cutter of sufficient magnitude to hold said workpiece fixed in relation to said opening.

4,285,620

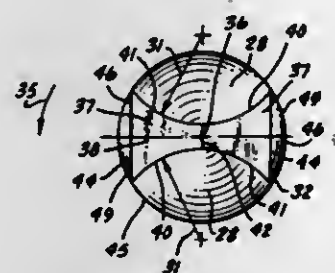
## SYMMETRICAL SPUR POINT DRILL

William K. Luebbert, Florissant; Thomas O. Blankenship, Marshville, and Lawrence F. Kuberski, St. Peters, all of Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 14, 1979, Ser. No. 48,643  
Int. Cl.<sup>3</sup> B23B 51/04

U.S. Cl. 408—212

10 Claims



1. A drill having a forward cutting end, comprising:  
a cylindrical marginless drill body having two flutes symmetrical about the axis of the drill body which define two symmetrical lands, the cross section of said flutes, taken in the plane perpendicular to the axis of the drill body, are in the shape of semicircles cut from the periphery of the drill body;  
four surfaces on the forward end of said drill body, said surfaces divided into two sets of surfaces symmetrical about the axis of the drill body, each said surface having a forward or cutting edge and a trailing edge which is relieved from said cutting edge, the first or inside two symmetrical surfaces adjacent the axis of the drill body comprising planes passing through the major diameter of the drill and disposed within the range of 30 to 40 degrees to the plane perpendicular to the axis of the drill body, said surfaces meeting at the minor diameter of the drill and

extending from the axis of the drill body radially to the line between the points where the flute radiuses meet the periphery of the drill, and the second two symmetrical faces comprising planes passing through said line between the points where the flute radiuses meet the periphery of the drill and disposed within the range of 40 to 50 degrees to the axis of the drill measured along the major diameter of the drill said first and second sets of planes intersecting along said line between the points where the flute radiuses meet the periphery of the drill, said second planes extending from said line radially to the periphery of the drill, said second faces defining two symmetrical spurs which contact the workpiece first in a drilling operation.

4,285,621

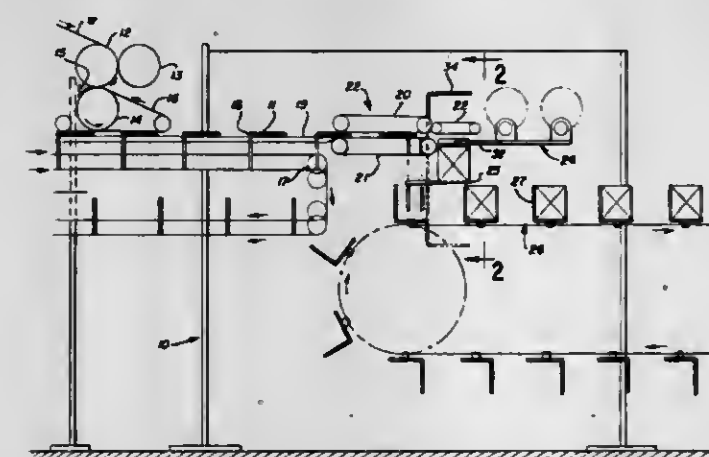
## APPARATUS FOR STACKING PRODUCT

Harvey J. Spencer, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Nov. 14, 1979, Ser. No. 93,994  
Int. Cl.<sup>3</sup> B65H 29/34

U.S. Cl. 414—45

10 Claims



1. Apparatus for stacking web units including a frame, means on said frame for advancing product units along a horizontal path and then along a vertical path to a horizontally traveling receiving and takeaway conveyor wherein the units accumulated into stacks, the improvement characterized by a pair of transfer finger mechanisms on said frame, one on each side of said horizontal path, each mechanism carrying a plurality of L-shaped fingers, and means on said mechanisms for moving the fingers thereof through a generally obround orbit intersecting said horizontal path slightly inwardly of the sides thereof and defining said vertical path, said advancing means including first and second horizontally extending conveyors arranged sequentially in said horizontal path, said first conveyor being arranged to engage the central portion of said product units while said second conveyor is arranged to engage the side portions of said units and with the outside longitudinal edges of the first conveyor spaced from the inside longitudinal edges of the second conveyor to provide a finger engageable portion on each unit, said mechanisms being arranged relative to said first and second conveyors to orbit said fingers into supporting engagement with said finger engageable portions of certain of said product units.

8. Apparatus for stacking web units including a frame, means on said frame for advancing product units along a horizontal path and then along a vertical path to a horizontally traveling receiving and takeaway conveyor wherein the units accumulated into stacks, the improvement characterized by a pair of transfer finger mechanisms on said frame, one on each side of said horizontal path; each mechanism carrying a plurality of L-shaped fingers, and means on said mechanisms for moving the fingers thereof through a generally obround orbit intersecting said horizontal path slightly inwardly of the sides thereof and defining said vertical path, said L-shaped fingers having a first part connected to said means and extending in the plane of

said orbit and radially away therefrom, and a second part perpendicular to said first part and spaced from said means.

4,285,622

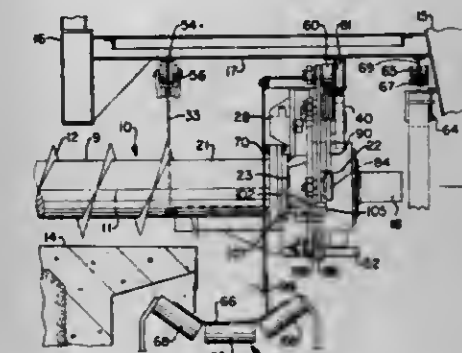
## APPARATUS FOR FEEDING MATERIAL OUT OF SILOS OR FROM STACKS

Louis R. Allard, Ile Bizard, Canada, assignor to Beloit Corporation, Beloit, Wis.

Filed Aug. 6, 1979, Ser. No. 63,901  
Int. Cl.<sup>3</sup> B65G 65/46

U.S. Cl. 414—133

10 Claims



1. In a traveling screw apparatus for removing material from a stored quantity of such material, the apparatus including a screw having a core and flights, means for rotatably supporting the screw at both the front and rear ends, support structure including a pair of support rails for carrying the weight of both ends of the screw, a motor for rotating the screw, means for moving the screw along the support rails transversely to the axis of screw rotation, wherein the improvement comprises:

the front and rear ends of the screw are rotatably mounted in corresponding front and rear trunnion carriages which permit the screw to skew relative to its traversing path of travel along the support rails, one of said trunnion carriages including a double trunnion arrangement which permits movement of its associated end of the screw substantially both horizontally and vertically whereby the screw can move both axially toward and away from the other trunnion carriage as well as skew in a horizontal plane;  
the front and rear trunnion carriages are mounted on the support rails for travel therealong;  
the means for moving the screw include a traversing motor mounted to each trunnion carriage which engages the support structure and powers the trunnion carriages upon the corresponding support rail, said motors being independently operable to control the alignment of the screw relative to its direction of travel.

4,285,623

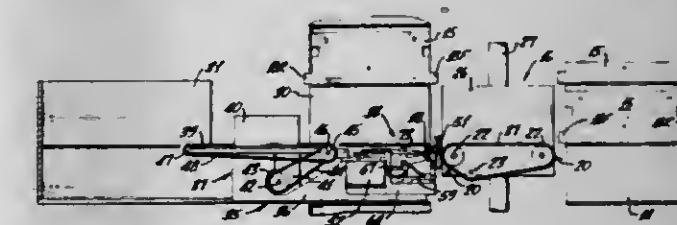
## COMBINED TRANSPORT AND GATE ASSEMBLY FOR DOCUMENT STORAGE AND RETRIEVAL SYSTEMS

Edwin V. Stephens, Los Alamitos, Calif., assignor to Infodetics Corporation, Anaheim, Calif.

Filed Mar. 17, 1980, Ser. No. 131,076  
Int. Cl.<sup>3</sup> B65G 1/02

U.S. Cl. 414—278

16 Claims



1. In a document storage system of the type including a storage rack having a plurality of individual storage compart-



ments, each of said compartments normally having positioned therein a cartridge holding a plurality of cards or the like, at least a first one of said compartments being empty and functioning as an access port for feeding cartridges into and removing cartridges from said storage rack, and a carriage assembly which travels on one side of said rack for transferring cartridges between said access port and the other storage compartments, said carriage assembly including a transport mechanism for moving cartridges thereon to and thereof of, an improved gate assembly positionable in a second empty storage compartment immediately below said first compartment comprising:

- a mechanical stop extending upwardly from the leading edge of said gate assembly, on said one side of said rack, in front of said first compartment, positioned to intercept the leading lower edge of a cartridge to block movement thereof into or out of said first compartment;
- actuator means having a movable arm; and
- means interconnecting said stop and said arm for moving said stop into said second compartment to clear a cartridge in said first compartment and said carriage assembly transport mechanism.

4,285,624

#### TRASH COLLECTION AND MANAGEMENT SYSTEM FOR AN OFFICE ENVIRONMENT

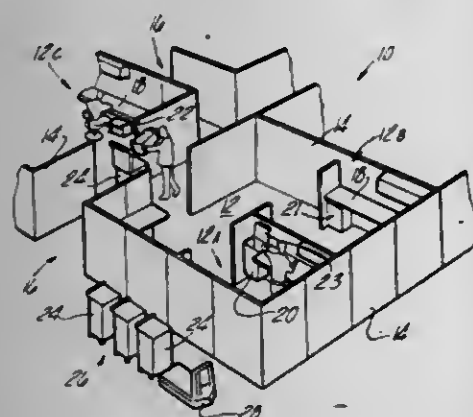
Robert L. Propst, and Paul L. Propst, both of Ann Arbor, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Apr. 9, 1979, Ser. No. 28,256

Int. Cl.<sup>3</sup> B65G 67/40; B65D 43/16; B60D 1/14

U.S. Cl. 414—362

5 Claims



1. A trash collection, transport, and management system for an office environment that includes upright walls, walkways between said walls, and furniture such as desks positioned against said walls, said system comprising

- a plurality of trash receptacles of substantially desk top height for receiving trash generated in said environment, storing said trash and transporting the trash to a remote dump site,

each of said receptacles having an open upper end, a bottom wall, a front wall, a back wall, a pair of side walls, a cover movably supported on said back wall for pivotal movement between an upright open position adjacent one of said office walls and a closed position overlying said open upper end, a pair of casters secured to said bottom wall at one end thereof and a pair of fixed position wheels secured to said bottom wall at the opposite end thereof, means operable to pivotally connect two or more of said receptacles for movement as a train of receptacles through said walkways, and

one or more dumping mechanisms adapted to be located at said dump site, each of which is operable to pivot one of said receptacles about a single fixed and substantially horizontal axis from an upright position upon said walkway to an elevated and substantially inverted position over said dump site wherein said cover is moved to a substantially open position, said axis being located above said upper end of said one receptacle in said upright posi-

tion thereof upon the walkway and spaced horizontally therefrom in a direction toward said dump site.

4,285,625

#### METHOD AND APPARATUS FOR CUTTING AND PEELING THE PACKAGING MATERIAL OF AN ELONGATED PACKAGE CONTAINING A PRODUCT

Morio Yamada, Yokohama, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

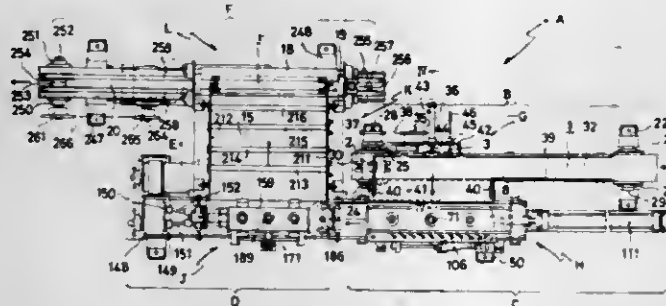
Filed Dec. 8, 1978, Ser. No. 967,924

Claims priority, application Japan, Dec. 17, 1977, 52-151220

Int. Cl.<sup>3</sup> B65B 65/09, 17/00

U.S. Cl. 414—412

11 Claims



1. A method of cutting and peeling the packaging material of elongated packages each containing a product comprising feeding said packages from a feeding section to a cutting section, gripping the packaging material of each package at the upper portion along the length thereof after each said package has been intermittently fed separately one by one from said feeding section to said cutting section, thrusting a plurality of cutting blades of cutter members synchronously and simultaneously into the packaging material to cut a continuous cut line along the whole length between the gripped upper side thereof and the product, feeding the package to a peeling section, forcibly peeling off the packaging material of the package at such peeling section, delivering the peeled and thus exposed product to a delaying section in which the product received from the peeling section is shifted stepwise and successively in dead weight fashion to be delayed and stored therein, feeding said product intermittently from said delaying section to a delivering and discharging section which regularly delivers and discharges in one or more lines the products received intermittently from said delaying section to thereby form a continuous process line.

4,285,626

#### FORK LIFT TRUCK WITH PLATE GLASS HANDLING ATTACHMENT

Guido A. Dousto, Wayne, Pa., assignor to Drexel Industries, Inc., Horsham, Pa.

Filed Mar. 24, 1980, Ser. No. 133,439

Int. Cl.<sup>3</sup> B66F 9/24, 9/18

U.S. Cl. 414—622

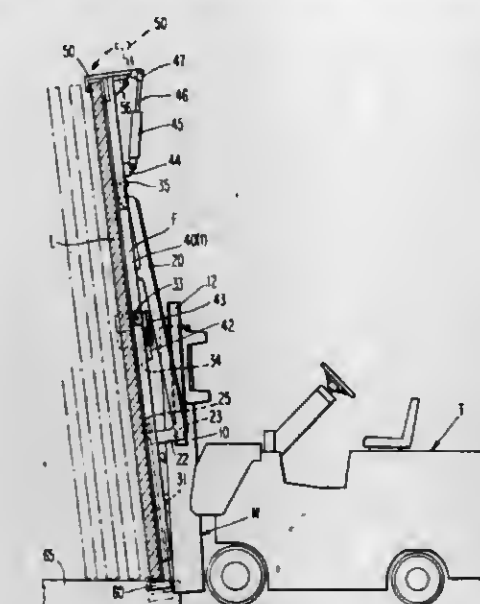
2 Claims

1. A fork lift truck having a truck drive-control circuit, a parking-brake control circuit, an elevatable mast-control circuit, and plate glass handling means, said plate glass handling means and control circuitry including:

- a. a plate glass handling fixture supported on said mast;
- b. said fixture having means at its upper and lower ends for capturing the upper and lower edge portions of a plate glass load;
- c. said upper capture means being movable pivotally between open and closed positions;
- d. spring-loaded feeler means supported on said fixture and adapted to be actuated by a plate glass load;
- e. switch means responsive to actuation of said feeler means for opening said drive-control circuit to disable said drive and for completing said parking-brake control circuit to apply said parking brake;
- f. means, operable after said fixture has been raised suffi-

ciently to capture the lower edge portion of a plate glass load, for closing said drive-control circuit to reestablish said drive;

- g. means for moving said pivotal upper capture means to



closed position to capture the upper edge portion of said plate glass load; and

- h. means, responsive to the closing of said upper capture means, for opening said brake-control circuit to release said parking brake.

4,285,627

#### UNDERCARRIAGE FOR ADVERSE TERRAIN VEHICLE

Norman D. Oswald, Duncanville, and Harry S. Mankey, Dallas, both of Tex., assignors to Standard Manufacturing Company, Incorporated, Dallas, Tex.

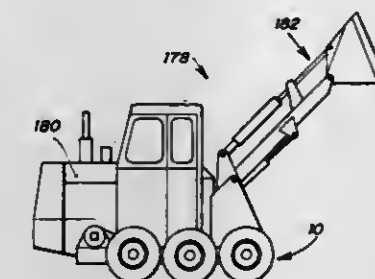
Continuation of Ser. No. 971,710, Dec. 21, 1978, which is a division of Ser. No. 799,328, May 23, 1977, abandoned. This application Jan. 31, 1980, Ser. No. 117,350

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> B62D 21/00

U.S. Cl. 414—695.5

10 Claims



1. A loader mechanism including:

- (a) an undercarriage assembly comprising:
  - an elongate hollow load-bearing undercarriage frame;
  - at least three axle members each having a wheel receiving member at one end thereof;
  - at least three wheel members each mounted on and secured to a wheel receiving end of an axle member outside said frame;
  - means rotatably supporting the axle members at longitudinally spaced points along the undercarriage frame with each of the axle members extending out of the undercarriage frame and being rotatably supported in at least one side of said undercarriage frame;
  - the middle wheel member extending below a plane lying tangent to the bottoms of the endmost wheel members to facilitate skid steering of the mechanism;
  - transmission means positioned within the undercarriage

frame for drivingly interconnecting at least two of the axle members; and

drive means operably connected to the transmission means for actuation thereof whereby the drive means and the transmission means cause concurrent rotation of the interconnected axle members;

- (b) arm means;
- (c) means connected to the undercarriage assembly for supporting one end of the arm means for pivotal movement about an axis;
- (d) a bucket mounted at the opposite end of the arm means for receiving, lifting and carrying materials therein;
- (e) fluid cylinder means for selective actuation to extend and retract the arm means and the bucket;
- (f) an operator's compartment; and
- (g) an engine for powering the undercarriage assembly and the fluid cylinder means.

4,285,628

#### GRAPPLE SYSTEM

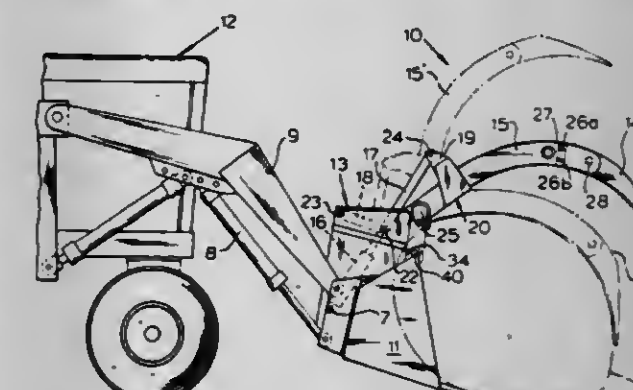
Edward M. Jankowski, Sioux Falls, S. Dak., assignor to Du-Al Manufacturing Company, Division of Core Industries, Inc., Sioux Falls, S. Dak.

Filed Sep. 27, 1979, Ser. No. 79,508

Int. Cl.<sup>3</sup> B66C 1/00

U.S. Cl. 414—739

13 Claims



1. A grapple system for mounting on a tractor bucket, comprising:

- (a) a grapple tooth frame including a plurality of grapple teeth extending in fork-like fashion from a hinge means for swinging movement of the grapple tooth frame and a crank arm connected to the frame;
- (b) a grapple linkage housing connected to the grapple tooth frame by the hinge means;
- (c) the linkage housing having mounted thereon first and second pivotally series connected linkages and a hydraulic driving member having one end pivotally connected at the pivotal junction between the first and second linkages and its other end pivotally connected at a first point to the linkage housing, the free end of the first linkage pivotally connecting to the crank arm and the free end of the second linkage pivotally connecting to the linkage housing at a second point, the first and second points and relative lengths of the first and second linkages and hydraulic driving member being chosen such that with the grapple tooth frame in an open position the hydraulic driving member and first linkage are approximately in line and with the tooth frame in a closed load engagement position the first and second linkages are approaching an in-line configuration.



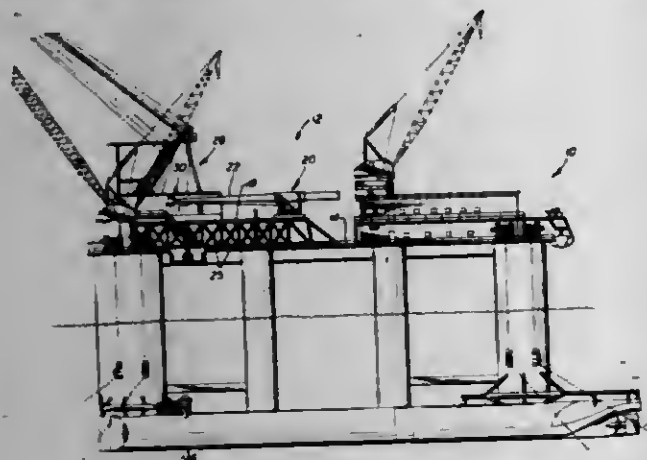
4,285,629

**FIRE FIGHTING BOOM ASSEMBLY FOR SERVICE VESSEL**

Thomas L. Elliston, 6000 E. Berry, Fort Worth, Tex. 76119  
 Filed May 18, 1978, Ser. No. 907,046  
 Int. Cl.<sup>3</sup> B66C 1/42

U.S. Cl. 414-740

8 Claims



1. A utility claw assembly comprising, in combination: a support arm having an elongated shank, a fixed arcuate jaw projecting from one end of the shank, a first slot extending axially through the shank, and a second slot extending along a curved path through the fixed jaw; a moveable arcuate jaw having a lever portion pivotally mounted to the support arm; a draw bar disposed on one side of the shank for axial movement along the first slot; a link bar disposed on the opposite side of the shank, the link bar having a first end portion disposed for movement along the first slot and a second end portion disposed for movement along the second slot; a first bearing element disposed within the first slot pivotally connecting the draw bar to the first end portion of the link bar; and, a second bearing element disposed within the second slot pivotally connecting the second end portion of the link bar to the lever arm.

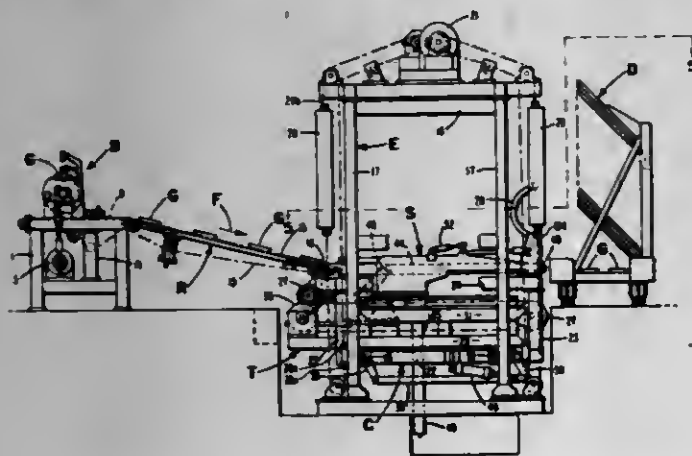
4,285,630

**METHOD OF AUTOMATICALLY TRANSFERRING A PLURALITY OF OBJECTS BETWEEN TWO DIFFERENT SUPPORTING SURFACES**

Silvio Manini, and Antonio Pacciarini, both of Milan, Italy, assignors to Industrie Pirelli, S.p.A., Milan, Italy  
 Continuation of Ser. No. 825,828, Aug. 18, 1977, which is a division of Ser. No. 577,459, May 14, 1975, Pat. No. 4,062,458.  
 This application Sep. 25, 1979, Ser. No. 78,787  
 Claims priority, application Italy, Jun. 28, 1974, 24491 A/74  
 Int. Cl.<sup>3</sup> B65G 3/00

U.S. Cl. 414-786

2 Claims



1. A method for transferring a plurality of sections of elastomeric material on an apparatus having a storing plane, a rotatable member, a substantially planar first supporting surface

defined by the upper run of a first system of endless conveyor belts mounted at laterally spaced intervals, the upper run of said first system being movable in a first substantially straight direction parallel thereto towards the storing plane, and a substantially planar second supporting surface defined by the upper run of a second system of endless conveyor belts running around inlet and outlet rollers, mounted at laterally spaced intervals, movable substantially vertically between the belts of the first system of endless conveyor belts and in a substantially horizontal direction over storing plane and back again, said method comprising the steps of:

- holding each section against the rotatable members;
- rotating the member and thereby inverting each section;
- releasing the holding of each section against the rotatable member, effecting transfer to the first supporting surface;
- moving the first supporting surface and each section of elastomeric material thereon in said first direction towards the storing plane;
- vertically displacing said substantially planar second supporting surface to an overhanging position with respect to the first supporting surface, effecting the transfer of the sections of elastomeric material from the first supporting surface to the second supporting surface;
- displacing said second system including the second supporting surface and each section thereon in a substantially horizontal direction over the storing plane;
- stopping said sections in a position fixed with respect to said storing plane and above it; and
- horizontally displacing the roller located at the outlet end of the second system relative to and toward the roller located at the inlet end of the second system, whereby the sections are no longer supported and fall on the underlying storing plane.

4,285,631

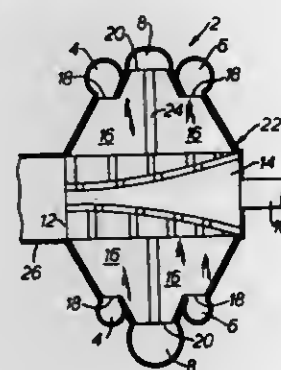
**RADIAL FLOW CENTRIFUGAL IMPELLER**

Peter J. Taylor, Fareham, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland  
 Filed Oct. 24, 1979, Ser. No. 87,770  
 Claims priority, application United Kingdom, Nov. 20, 1978, 45184/78

U.S. Cl. 415-143

Int. Cl.<sup>3</sup> F01D 1/06

3 Claims



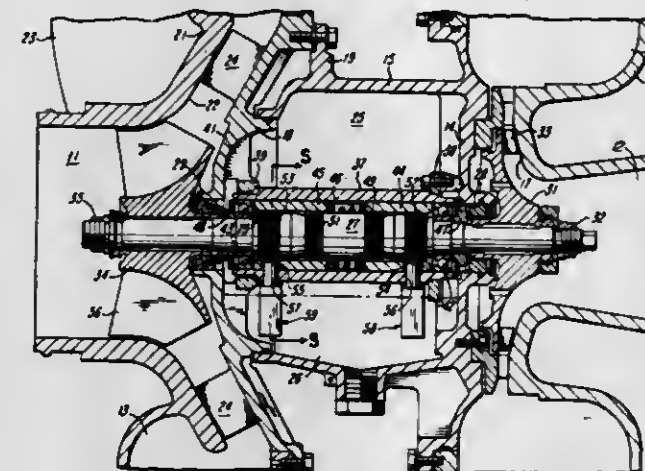
1. A radial flow centrifugal impeller comprising an even number of re-heat flow ports, a main engine flow port, and a drive shaft having a helical impeller arrangement provided on its circumference and impeller blades mounted on the circumference of the helical impeller arrangement, each impeller blade having a flat peripheral first portion adjacent each re-heat flow port and a flat peripheral second portion adjacent the main engine flow port, the ratio of the size of the first portions on all the impeller blades to the size of the second portions on all the impeller blades being effective to control the ratio of the fuel flowing through the re-heat flow ports and the main engine flow port, and the re-heat flow ports being symmetrically disposed about the radial flow centrifugal impeller.

4,285,632

**OILING SYSTEM FOR ROTOR BEARINGS**

Dennis W. DeSalve, Findlay, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio  
 Filed Feb. 28, 1979, Ser. No. 16,112  
 Int. Cl.<sup>3</sup> F01D 25/18; F04D 29/06; F01M 9/00  
 U.S. Cl. 415-175

8 Claims



1. In a rotor assembly, a housing providing an oil sump, a cartridge substantially bridging said sump, a rotor shaft rotatable in said cartridge and having integral screw threads thereon forming a pump means, flow passage means defining a capillary means for lifting oil from said sump to said shaft to prime said pump means, other flow passage means defining an oil feed means through which a full flow of oil is lifted to said shaft by operation of a primed pump means, said capillary means and said oil feed means being part of a unitary assembly extending through said cartridge to an adjacent relation to said pump means on said shaft, said unitary assembly being so positioned relative to said shaft as to create therewith a critical gap across which oil moves directly from said assembly on to the screw threads on said shaft, the width of said gap being selected to compensate for shear effects associated with shaft operation at relatively high oil temperatures, and shaft bearing means to and through which oil flows along said shaft in response to operation of said pump means.

4,285,633

**BROAD SPECTRUM VIBRATION DAMPER ASSEMBLY FIXED STATOR VANES OF AXIAL FLOW COMPRESSOR**

Carmen B. Jones, West Chester, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 26, 1979, Ser. No. 88,503

Int. Cl.<sup>3</sup> F03B 3/18

U.S. Cl. 415-191

6 Claims

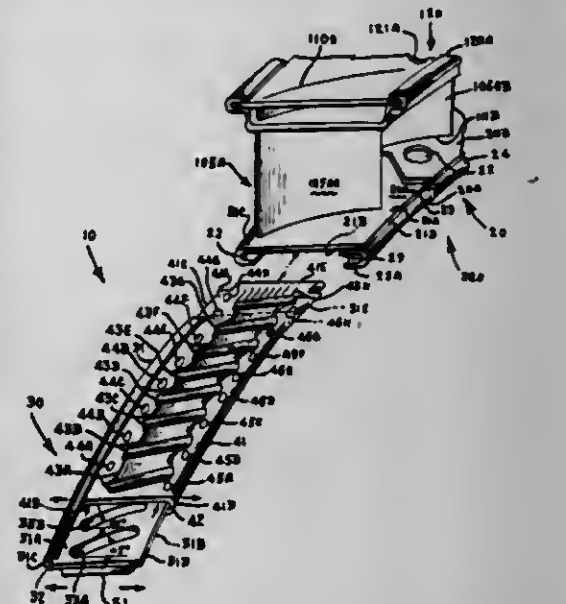
1. A broad spectrum vibrations damper assembly for use in a gas turbine engine having an axial flow compressor with a plurality of stator airfoil vanes disposed circumferentially in an annular row, with each vane having an outer end and an inner end, and with said outer end of each vane affixed to a common sector outer shroud, wherein air flows into and through said compressor, comprising:

- a common sector outer inner shroud, with each sector divided into a plurality of similar constituents segments, wherein each inner shroud segment has an outer surface, an inner surface, a leading edge, and a trailing edge with said inner end of at least one vane affixed to said outer surface of said inner shroud segment, and with said leading edge of each said segment curved below said inner surface of said segment and also curved toward said trailing edge of said segment, thereby forming and defining a leading edge channel for each segment;
- a channel member affixed to said inner surface of each said inner shroud segment at said trailing edge thereof, with each said channel similar to, and facing, said leading edge

channel of its respective inner shroud segment, whereby said channel member constitutes a trailing edge channel of said inner shroud segment;

c. and, a damper and seal subassembly, one such subassembly for each sector of said inner shroud, with each such subassembly fitted into, and frictionally engaged with, said leading edge channel and said trailing edge channel of said segments of a different one of said sectors of said inner shroud, wherein each said subassembly includes:

- (1) a metal seal strip member of the same length as its respective inner shroud sector, and having an outer surface, and inner surface, a leading edge, a trailing edge, and a first end, with said leading edge curved above said outer surface and toward said trailing edge, thereby forming and defining a leading edge channel that is sized smaller than, and is complementary to, said leading edge channel of said constituent segments of its respective inner shroud sector, and with said outer surface having a plurality of equally spaced, rectangular-like shaped, identical indentations therein
- (2) a metal damper and spring member having an outer surface, an inner surface, a leading edge, a trailing edge, and a first end, with said trailing edge curved under said inner surface and toward said leading edge, thereby forming and defining a trailing edge channel that is



sized smaller than, and is complementary to, said trailing edge channel of said constituent segments of its respective inner shroud sector, and is fitted over said trailing edge of said seal strip member, and with said outer and inner surfaces of this damper and spring member having a common plurality of equally spaced, identical, sine-wave-like corrugations therein complementary to, and fitted on, said seal strip member and its plurality of indentations, and also with said outer and inner surfaces of this damper and spring member having a first plurality of aligned perforations therein adjacent to and aft of said leading edge of said damper and spring member, and also having a second plurality of aligned perforations therein adjacent to and fore of said trailing edge of said damper and spring member, and further with a portion of said leading edge and a portion of said trailing edge of said damper and spring member removed from and at said first end, with said first end bent over, and in contact with, said first end of said seal strip member;

(3) and, a seal matrix member, made of cellular material, affixed to said inner surface of said seal strip member between said leading edge and said trailing edge thereof, and disposed between said leading edge channel and said trailing edge channel of said constituent segments of its respective inner shroud sector.



4,285,634

## COMPOSITE CERAMIC GAS TURBINE BLADE

Axel Roessman, Karlsruhe; Wilhelm Hoffmüller, Munich, and Wolfgang Krüger, Priel, all of Fed. Rep. of Germany, assignors to Motoren- und Turbinen-Union München GmbH, Munich, Fed. Rep. of Germany

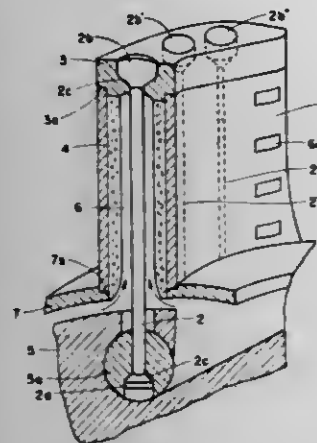
Filed Aug. 9, 1979, Ser. No. 65,062

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834864

Int. Cl.<sup>3</sup> F01D 5/18

U.S. Cl. 416—97 A

8 Claims



1. In a gas turbine blade having a plurality of supporting metallic blade cores extending therethrough; a ceramic airfoil enveloping the cores at a spacing therefrom; a tip plate formed of ceramic material having a circumference in conformance with the airfoil, said airfoil engaging in a recess in said tip plate, each blade core having a widened head for restraining the tip plate, each core being a wire-shaped blade core including a root at the radially inward end thereof; and a generally cylindrical metallic adaptor adapted to be inserted and locked in a turbine disc for commonly supporting the blade by each core root.

4,285,636

## VERTICAL AXIS TYPE WIND POWER TURBINE

Yoshio Kato, Tokyo; Kazuichi Seki, Isehara, and Yoshio Shimizu, Kanagawa, all of Japan, assignors to Gakko Hojin Tokai University, Tokyo, Japan

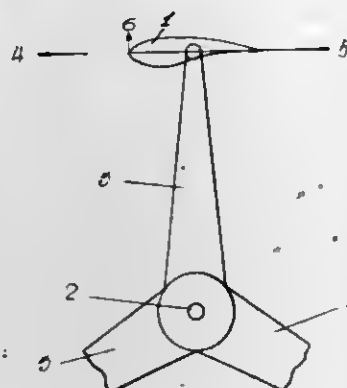
Filed Feb. 17, 1978, Ser. No. 878,769

Claims priority, application Japan, Feb. 19, 1977, 52/17525; Feb. 19, 1977, 52/19704[U]

Int. Cl.<sup>3</sup> F03D 3/06

U.S. Cl. 416—197 A

6 Claims



1. A vertical axis type wind powered turbine comprising a plurality of vertical blades of an airfoil form, each of said blades comprising a leading edge, a trailing edge, a chord line extending between said leading and said trailing edge and a mean camber line reversing position provided on said chord line between said leading and trailing edges, each of said blades further having a mean camber line having a radially inward curved convex curvature between said position and said leading edge and a mean camber line having a radially outward curved convex curvature between said position and said trailing edge and a rational thickness distribution is given to said mean camber line.

4,285,637

## PROPELLER ASSEMBLY

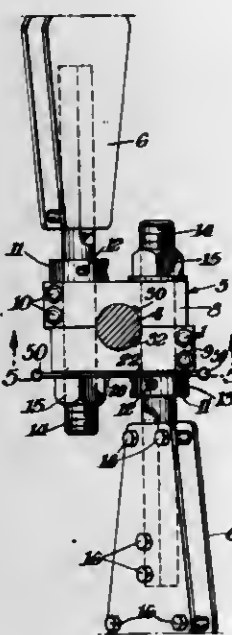
Richard R. Thompson, 336 Fitzwater St., Philadelphia, Pa. 19147

Filed Apr. 5, 1979, Ser. No. 27,483

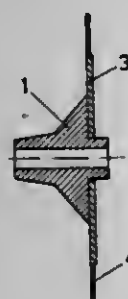
Int. Cl.<sup>3</sup> B64C 11/06; F04D 29/36

U.S. Cl. 416—202

17 Claims



1. A propeller or fan assembly comprising a hub slideably positionable on an axial drive shaft and two propeller blades with root shafts passing therethrough, tangential to said drive shaft and parallel each other with their blades deployed oppositely, said hub being axially or horizontally split to permit



1. In a impeller for centrifugal blower including a back plate having a center part and a radial outer part whose material thickness is smaller than said center part, a method of forming said back plate comprising the steps of: forming said outer part from a plurality of ring segments; welding said ring segments to said center part; and welding said ring segments radially to each other such that said center part is subjected to compressive stress.

4,285,635

## IMPELLER IN A CENTRIFUGAL BLOWER

Seppo J. Leakinen, Västerås, and Olli J. Pukkila, Helsinki, both of Finland, assignors to Oy Mercantile AB, Helsinki, Finland

Filed Jul. 27, 1979, Ser. No. 61,302

Claims priority, application Finland, Aug. 23, 1978, 782579

Int. Cl.<sup>3</sup> F04D 29/26; B21K 1/28

U.S. Cl. 416—185

3 Claims

removal of entire propeller assembly without disturbing outboard shaft bearings, said blade shafts being rotatively and longitudinally adjustable within the hub such that pitch and length may be equally set for both blades, and clamped in their respective outboard hub half and secured against their respective constraining inboard hub half by a positive retention means such as a large nut threaded to their free end such that said blade shafts serve the multiple functions of blade main structure, position adjustment mechanism, hub structure, main clamps and blade retention means.

4,285,638

## JET PUMP NOZZLE ASSEMBLY

Kenneth M. Clark, Tulsa, Okla., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 6, 1979, Ser. No. 55,922

Int. Cl.<sup>3</sup> F04F 5/46

U.S. Cl. 417—172

4 Claims



1. An improved jet pump, comprising:

a pump body having a longitudinal passage means therein to receive fluid to be pumped;

a venturi assembly mounted within said pump body including a venturi body placed in a pump fluid flow path to receive in the inlet thereof fluid to be pumped and power fluid, said venturi assembly being operably connected in fluid communication with an outlet from said pump body; and

a nozzle assembly within the pump body including a nozzle shell mounting means in said pump body, a hollow nozzle shell having one end portion mounted in said shell mounting means and having an outlet opening positioned near the inlet of said venturi body, and a tubular nozzle tip mounted within said nozzle shell outlet opening and extending therefrom,

said nozzle tip being secured to said nozzle shell by a bonding material interposed between said nozzle tip and said nozzle shell, said nozzle mounting means including an opening in said pump body to receive and mount one end of said nozzle shell and an abutting surface around an end of said mounting means to support a surface of said nozzle shell; and

said nozzle nozzle-and shell having a tubular end portion mounted in said nozzle shell mounting means opening and an outwardly extending flange having said surface on one side thereof in contact with said mounting means abutting surface;

(a) said nozzle tip being constructed of a corrosion and abrasion resistant solderable material that has a brittle nature;

(b) said nozzle shell being constructed of a solderable metal material that has a resilient nature; and

(c) said bonding material having a resilient nature and joining both said nozzle shell and said nozzle tip in order to form a fluid tight seal therebetween and to compensate for deformation of said nozzle shell when it is mounted in a nozzle housing thereby preventing possible damage to said nozzle tip by isolating said nozzle tip from deformation of said nozzle shell that may occur upon mounting of said nozzle shell within a pump housing.

4,285,639

## ELECTRONIC CONTROL FOR VARIABLE DISPLACEMENT PUMPS

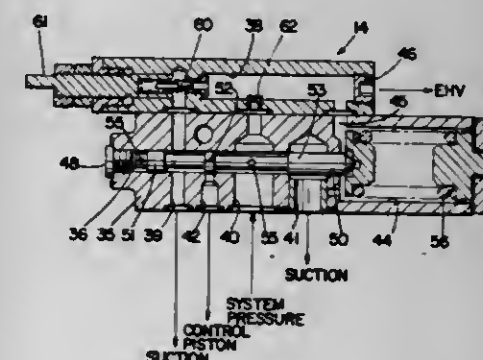
Richard H. Woodring, Plainwell; Paul K. Houtman, Kalamazoo; Thomas A. Kowalski, Paw Paw, and Charles H. Whitmore, Plainwell, all of Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jun. 12, 1979, Ser. No. 47,853

Int. Cl.<sup>3</sup> B64C 11/04; B63H 5/00

U.S. Cl. 417—218

30 Claims



27. A pump, comprising flow generating means, fluid motor means for changing the flow rate of said flow generating means, means for adjusting the fluid pressure supplied to said fluid motor means, and means for generating a control signal for controlling said adjusting means, comprising means for producing a first command signal, means for producing a second command signal, means indicative of the position of said fluid motor means for producing a feedback signal, means responsive to said first command signal and said feedback signal for producing a first combined signal, means responsive to said first combined signal and said second command signal for producing a second combined signal, and means responsive to said first and second combined signals for producing said control signal.

4,285,640

## SWASH PLATE TYPE COMPRESSOR

Takamitsu Mukai, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Jul. 25, 1979, Ser. No. 60,462

Claims priority, application Japan, Aug. 3, 1978, 53-94931; Mar. 26, 1979, 54-35789

Int. Cl.<sup>3</sup> F04B 1/18; F16C 17/06

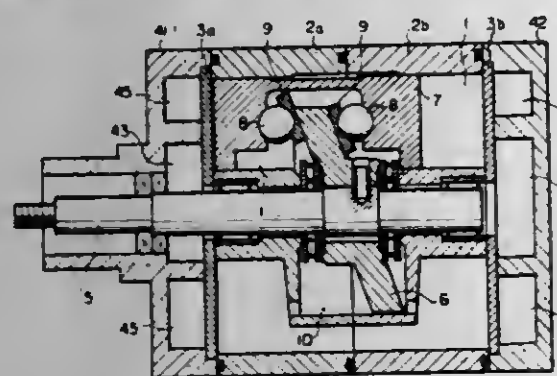
U.S. Cl. 417—269

5 Claims

1. A swash plate type compressor comprising: a cylinder block having therein at least one cylinder bore; a compressor piston reciprocally fitted in said cylinder bore for effecting compression of a refrigerant; a drive shaft axially passing through said cylinder block and rotatably supported by bearing means; a swash plate secured onto said drive shaft rotated by said drive shaft thereby causing a reciprocal motion of said piston, and an operative engagement means for establishing an



operative engagement between said swash plate and said compressor piston, said operative engagement being formed with a flattened face slidably contacting said swash plate, wherein said swash plate is made of a high silica aluminum alloy, and



wherein said operative engagement means is made of a carbon steel material, and wherein said flattened face of said operative engagement means comprises a boron diffused steel layer formed in said carbon steel material of said operative engagement means.

4,285,641

## HYDRAULIC PUMP AND VALVE

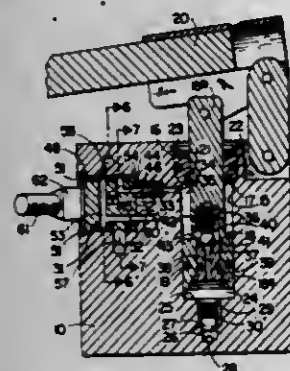
Randall L. Brimhall, 6918 Rhonda Ave., West Jordan, Utah 84064

Filed Jul. 27, 1979, Ser. No. 61,482

Int. Cl.<sup>3</sup> F04B 21/00, 39/00

U.S. Cl. 417-442

5 Claims



1. A hydraulic pump and valve unit comprising
  - a unitary block having a hydraulic fluid reservoir appended to one side of the block;
  - a first cylindrical bore drilled into said block extending inwardly from one end wall thereof;
  - a first flow passage bored into said block from said hydraulic fluid reservoir, said first flow passage communicating from the inner end of said first cylindrical bore to said hydraulic fluid reservoir;
  - a pump piston adapted for reciprocal movement in said first cylindrical bore so as to form a pump chamber between the piston and the inner end of said first cylindrical bore; means for moving said piston in its reciprocal movement;
  - first check valve means which allows hydraulic fluid to flow from the reservoir to the pump chamber but substantially prevents backflow of the hydraulic fluid from the pump chamber to the reservoir;
  - a second cylindrical bore drilled into said block extending inwardly from a second end wall so as to be generally perpendicular to said first cylindrical bore, with the inner end of the second cylindrical bore being milled so as to be flat;
  - a third cylindrical bore drilled into said block extending from the flat, milled, inner end of said second cylindrical bore toward the first cylindrical bore, said third cylindrical bore having a diameter no greater than one-half the diameter of the second cylindrical bore, with the cylindri-

cal axis of said third cylindrical bore being offset from the cylindrical axis of said second cylindrical bore;

- a second flow passage bored inwardly from the inner end of said third cylindrical bore so as to connect said third cylindrical bore with said first cylindrical bore;
- a third flow passage associated with said piston and adapted to connect said second flow passage to said pump chamber;
- second check valve means which allows hydraulic fluid to flow from said pump chamber through said third flow passage to said second flow passage, but substantially prevents backflow of the hydraulic fluid from said second flow passage to said pump chamber;
- a cylindrical thrust seal having a substantially axial borehole extending therethrough and being slidably mounted in said third cylindrical bore, said seal including sealing means between the outer cylindrical wall of the thrust seal and the cylindrical wall of said third cylindrical bore;
- a fourth flow passage bored inwardly from the inner end of said second cylindrical bore so as to connect said second cylindrical bore with said reservoir;
- a cylindrically-shaped valve spool rotatably mounted in said second cylindrical bore, said valve spool having an essentially flat inner end adapted to abut the flat end of said second cylindrical bore;
- means for rotating the valve spool;
- fifth and sixth flow passages in said valve spool having mutually respective ports disposed on the flat, inner end of said valve spool so that the ports can be brought into mutually alternating register with said third cylindrical bore and said fourth flow passage, respectively, in the inner end of said second cylindrical opening by rotation of said valve spool, said fifth and sixth flow passages extending through said valve spool from said ports in the end of the valve spool to mutually respective openings in the cylindrical side of said valve spool, so that said fifth and sixth flow passages extend solely between the cylindrical side and the inner, flat end of said valve spool, with the outer end of the valve spool being externally open to the exterior of the unitary block and connected to the means for rotating the valve spool and;
- seventh and eighth flow passages bored inwardly from the side of said block so as to have respective spaced openings into said second cylindrical bore which are adapted to register with the respective openings in said valve spool, said seventh and eighth flow passages being adapted to direct the outflow and return of hydraulic fluid from and to the pump and valve unit.

4,285,642

## PUMP PISTON CYLINDER ASSEMBLY WITH EXTERIOR RING SEALS

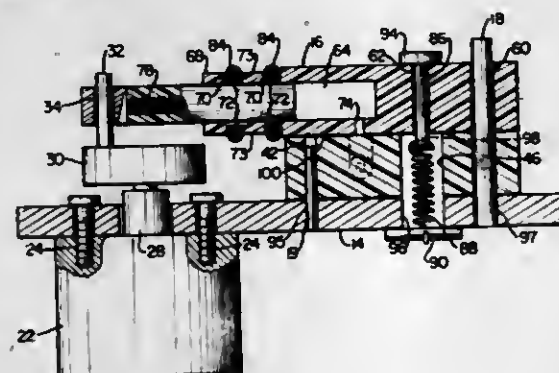
Walter D. Komhyr, 70 Manhattan Dr., Boulder, Colo. 80303

Filed Sep. 11, 1979, Ser. No. 74,560

Int. Cl.<sup>3</sup> F04B 21/08

U.S. Cl. 417-465

22 Claims





which includes the rotation axis of the reaction member and preferably in the vicinity of that side edge of the working space which constitutes the extreme end of the process space, and the plane of rotation of the valve member being at least approximately directed towards the rotation axis of the working member; and synchronizing means interconnecting said working member, reacting members and valve member so that the connection between the process space and the corresponding flow conduit is established during such a part of the process cycle, during which the working space moves circumferentially over a certain distance, at the end of which the partition wall is in the process space end of the working space, and that once for each process cycle a passage of one separating wall of the working member through one transition sector in the partition wall forming part of the reacting member is established.

4,285,645

## PRODUCING MICROSPHERES BY VIBRATIONS

Giovanni Bezzi, Bagnacavallo; Ego Pauluzzi, Bologna, and Mauro Zanardi, Filattiera, all of Italy, assignors to AGIP NUCLEARE S.p.A., Rome, Italy

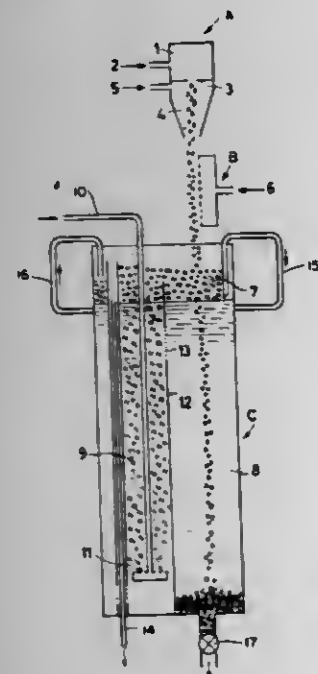
Filed Apr. 11, 1978, Ser. No. 895,365

Claims priority, application Italy, Apr. 15, 1977, 22498 A/77

Int. Cl.<sup>3</sup> B01J 2/06

U.S. Cl. 425-6

4 Claims



1. In an apparatus for producing spheres from a solidifiable solution, comprising: a dropping header for receiving the solution, a disc having at least one dropping hole for forming droplets from the solution, and a collection vessel spaced from and below the dropping header having a reactive liquid therein through which the droplets from the header fall and become solid spheres, the improvement comprising:

means between the header and vessel connected to the header and having a chamber below each dropping hole through which the droplets fall,

means connected to said chamber means for supplying inert gas which contacts the droplets falling through said chamber to prevent pre-hardening thereof,

a reactive gas distributor between the header and vessel and below and parallel to the path of the droplets which fall from said chamber means for sending a stream of reactive gas onto the falling droplets for partially hardening such droplets before they fall into the collection vessel; and means connected to the vessel for providing and continuously renewing a dampening layer of foam on the reactive liquid in the vessel adapted to be penetrated by the partially hardened droplets while preventing deformation thereof as they fall and impinge upon the reactive liquid, including tube means in the vessel for removing foam at

the foam/reactive liquid interface in the region where the partially hardened droplets first impinge upon the reactive liquid.

4,285,646

## APPARATUS FOR QUENCHING MELT-SPUN FILAMENTS

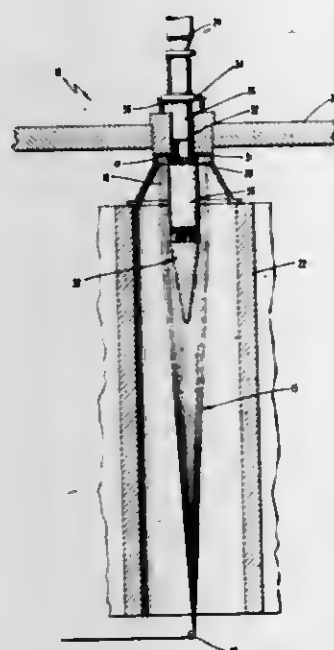
Roland Waite, Matthews, N.C., assignor to Fiber Industries, Inc., New York, N.Y.

Filed May 13, 1980, Ser. No. 149,370

Int. Cl.<sup>3</sup> B29C 25/00

U.S. Cl. 425-72 S

4 Claims



1. Improved apparatus for the manufacture of melt-spun polymeric filaments, said apparatus being of the type wherein molten polymer is extruded downwardly through a filter pack and through an annular array of holes of a spinneret to form a circularly arranged group of filaments, quenching means for directing quenching gas across the filaments emerging from said spinneret, said quenching means comprising gas supply means, gas conduit means and gas discharge means, and a stationary or rotating guide therebelow at which all the filaments are gathered and redirected, said conduit means including gas discharge means disposed above said guide for discharging quench gas outwardly through the group of filaments, wherein the improvement comprises:

said gas supply conduit means extending downwardly through the middle of said pack, whereby polymeric filaments melt-spun therefrom have reduced birefringence variability.

4,285,647

## APPARATUS FOR THE MANUFACTURE OF FIBROUS WEBS

Cedric A. Dunkerly, II, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Oct. 31, 1979, Ser. No. 89,927

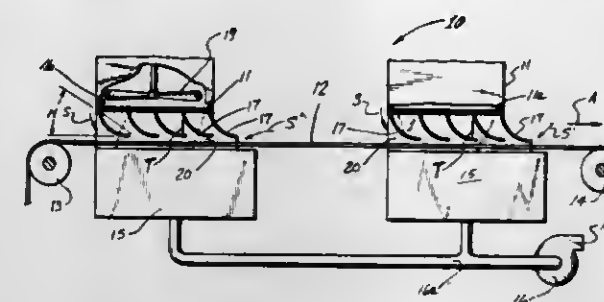
Int. Cl.<sup>3</sup> B29H 1/02

U.S. Cl. 425-82.1

11 Claims

1. An apparatus for the manufacture of fiber webs, comprising: distributor means for dry fibers; a forming wire including a planar section disposed beneath said distributor means and linearly movable at a predetermined first velocity; suction box means disposed beneath said planar section of said forming wire and operative to draw air through said forming wire at a predetermined second velocity normal to said planar section; and means for imparting a horizontal velocity component less than said first velocity to said fibers in the direction of movement of said forming wire, wherein the fibers are caused to

impinge upon the forming wire at an angle of from about 21 degrees to about 30 degrees, said second velocity is in excess of



about 250 feet per minute, and said first velocity is in excess of about 500 feet per minute.

4,285,648

## APPARATUS FOR EXTRUDING A CROSS-LINKED MATERIAL

Robert Jocteur, Moret sur Loing, France, assignor to Societe Industrielle de Liaisons Electriques Silec, Paris, France

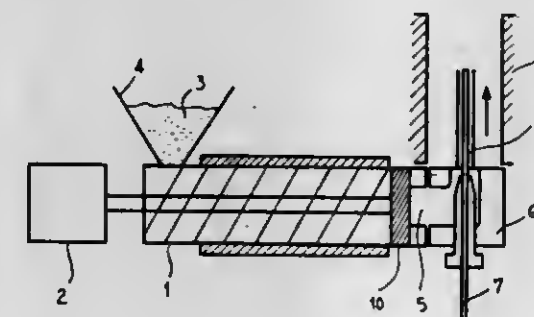
Division of Ser. No. 8,574, Feb. 1, 1979. This application Nov. 16, 1979, Ser. No. 94,929

Claims priority, application France, Feb. 2, 1978, 78 02942

Int. Cl.<sup>3</sup> A01J 21/00; A21C 3/00

U.S. Cl. 425-97

9 Claims



1. An apparatus for continuously extruding a cross-linked insulating material, said apparatus comprising an extrusion machine including a housing having an inlet and an outlet, extrusion means, an extrusion head positioned at the outlet end of said housing and a filtering means positioned adjacent said outlet end of said housing;

an injection means connected to said housing for injecting a cross-linking agent into a cross-linkable material within said housing between said filtering means and said extrusion head,

said apparatus further comprising cooling means provided between said filtering means and said injection means and controllably operable heating means, whereby the temperatures of the different operating zones of said apparatus may be respectively adjusted such that the cross-linkable insulating material and cross-linking agent are extruded together at an injectable, curable extrusion temperature.

4,285,649

## PROTECTION SYSTEM FOR PART MOLDING MACHINES

Patrick B. Joute, 1932 Perry Lake Rd., Ortonville, Mich. 48462, and John K. Biener, 8620 Waumegah Rd., Clarkston, Mich. 48016

Filed Nov. 19, 1979, Ser. No. 95,689

Int. Cl.<sup>3</sup> B29F 1/14, 1/00

U.S. Cl. 425-137

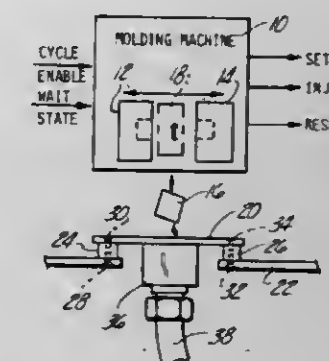
17 Claims

1. A protection system for monitoring the operation of a part molding machine which ejects the part from the molds after successful completion of the molding process, said system comprising:

a plate for receiving the parts after they are ejected from the molds;

transducer means coupled to the plate, operative to provide a spectrum of signals having different frequencies and amplitudes upon detection of a part impacting said plate, the amplitude of said signals at particular frequencies depending upon the characteristics of the parts being made by the machine;

selector means for generating a selected frequency signal associated with the parts currently being made by the machine;



comparison means for comparing said selected frequency with the signals from the transducer means, operative to provide an output signal if the amplitude of the transducer signals at the selected frequency exceeds a predetermined level; and

control means for preventing further operation cycles of the machine if said output signal is not generated thereby protecting the molds from being damaged by a part which has not been fully ejected.

4,285,650

## APPARATUS FOR PRODUCING TOBACCO PRODUCT FILTER RODS

Paul A. Müller, Triesenberg, Liechtenstein, and Hans Muster, Greifensee, Switzerland, assignors to Celfil Company Establishment, Vaduz, Liechtenstein

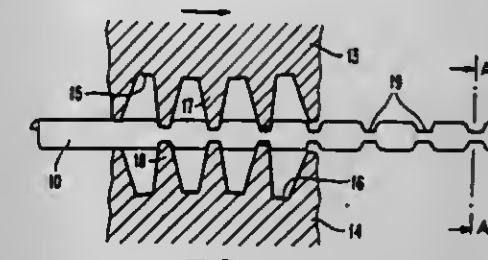
Division of Ser. No. 844,389, Oct. 21, 1977, abandoned. This application Nov. 14, 1979, Ser. No. 94,157

Claims priority, application Switzerland, Aug. 11, 1977, 9888/77

Int. Cl.<sup>3</sup> B31F 1/22

U.S. Cl. 425-168

13 Claims



1. Cigarette filter production apparatus comprising: apparatus for treating a web of fibrous material to increase its effectiveness as a filter for tobacco smoke and increase its resistance to lateral crushing when gathered transversely and enclosed in a wrapper to make a filter cord subdividable into filter rods and filter plugs for cigarettes, the web being provided with closely spaced longitudinal corrugations wherein the material has been laterally stretched to loosen and expose fibers, said treating apparatus comprising: a pair of non-contacting rollers mounted for rotation at the same peripheral surface speed about spaced parallel axes with their peripheral surfaces in opposition and for adjustment of the distance between said surfaces to contact and compress and compact a corrugated web of the material



passed longitudinally through the nip between said rollers, at least one of the rollers of said pair being provided with ribs projecting from its periphery and extending generally parallel to its axis and forming a uniform design, the maximum separation between the tip of each of said ribs and the opposed surface of the other roller at the nip therebetween not exceeding about 0.2 mm, whereby the web is compressed and compacted in successive spaced narrow transverse zones to substantially eliminate the corrugations and produce a denser structure in said zones, the width of the tips of said ribs being not over about 0.4 mm and said tips being spaced circumferentially not over about 2.0 mm, whereby said zones are of a thickness not over about 0.2 mm, of a width not over about 0.4 mm and are spaced apart not over about 2.0 mm; and means for feeding the treated web to a tow machine for making cigarette filters.

4,285,651

# EXTRUSION DIE HEAD AND METHOD OF MAKING THE SAME

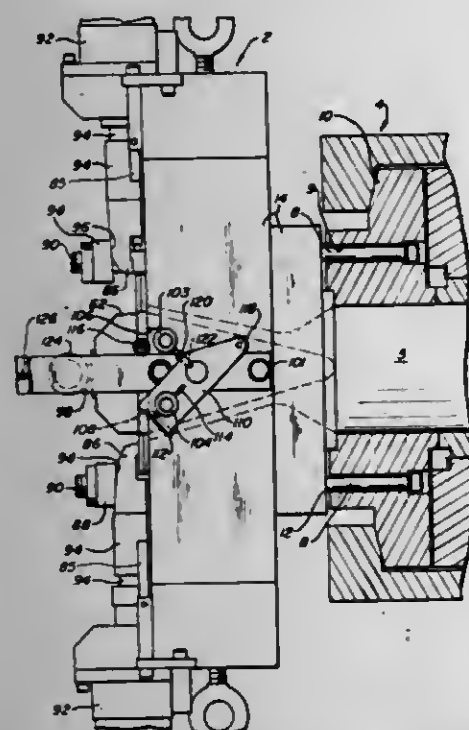
David C. Fetchu, Tallmadge, and William H. Weidman, Independence, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Feb. 15, 1980, Ser. No. 121,942

Int. Cl.<sup>3</sup> B29F 3/04

U.S. Cl. 425—192 R

13 Claims



1. An extrusion die head for forming two elongated strips of elastomeric material from a core of said material emanating from a single bore in an extruder, said extrusion die head having an inboard end to be located facing toward said extruder and an outboard end to be located facing away from said extruder, said extrusion die head including an outer head section having a central opening extending from said inboard end to said outboard end, an inner head section located within said central opening and spaced from the walls of said central opening so as to define two separate passages for guiding the flow of said elastomeric material through said head, characterized in that:

- (a) said outer head section includes a ring member having a central axis and extending from said inboard end to said outboard end of said extrusion die head, said ring member having a radially inwardly facing conical surface, said inwardly facing conical surface having a relatively small diameter at said inboard end of said extrusion die head and a relatively large diameter at said outboard end of said extrusion die head,
- (b) said outer head section also includes first and second cone members each having on one side a radially outwardly facing conical surface mating with the radially

inwardly facing conical surface of said ring member and on the opposite side a flow passage surface forming one of said walls of said central opening, and

- (c) said inner head section includes a middle cone member disposed between said first and second cone members and extending across said central opening to divide said central opening into said two separate passages, the side edges of said middle cone member being radially outwardly facing conical surfaces that mate with the radially inwardly facing conical surface of said ring member, the top and bottom sides of said middle cone member each facing one of said flow passage surfaces of said first and second cone members forming therewith one of said passages for guiding the flow of said elastomeric material through said head, thereby forming said elastomeric material into a desired strip shape as said material passes from said inboard end to said outboard end of said extrusion die head.

12. A method of making an extrusion die head for forming two elongated strips of elastomeric material from a core of said material emanating from a single bore in an extruder, characterized by the steps of:

- (a) fabricating a ring member and machining on said ring member a radially inwardly facing conical surface,
- (b) fabricating a conical piece with an outboard end surface and an axially extending surface intersecting said outboard end surface, and machining said axially extending surface to form a radially outwardly facing conical surface that mates with said radially inwardly facing conical surface of said ring member,
- (c) cutting said conical piece into three cone members along two cutting planes that intersect said base surface,
- (d) machining the cone member surfaces that extend along said cutting planes to a configuration such that when said cone members are mounted with their radially outwardly facing conical surfaces engaging the mating radially inwardly facing conical surface of said ring member, the said surfaces extending along said cutting planes form two extrusion passages of the desired shape for guiding and forming said elongated strips of elastomeric material, and
- (e) reassembling and mounting said cone members within said ring member with said radially outwardly facing conical surfaces of said cone members engaging said mating radially inwardly facing conical surface of said ring member and positioned so as to form said two extrusion passages of said desired shape.

4,285,652

# GRANULATING APPARATUS

Dietmar Anders, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, An der Breiten Wiese, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,762

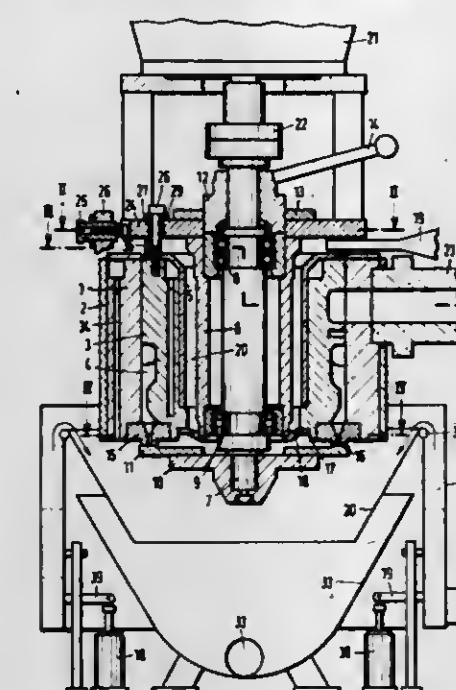
Int. Cl.<sup>3</sup> B29C 17/14

U.S. Cl. 425—311

10 Claims

1. Apparatus for granulating plastics melt and like materials, comprising a granulating head, a housing surrounding said granulating head, said housing including means for cooling and conveying away granulated material, a cutting plate on said granulating head, a rotatable cutter assembly, including a plurality of cutter blades cooperating with said cutting plate to granulate said materials, a rotatable cutter shaft on which said cutter assembly is mounted, drive means and bearing means for said shaft; said drive means, bearing means, shaft and cutter assembly being connected and operable as a unit, and mounting means for said unit including means providing a bearing surface adjacent said cutting plate such that said unit can be swivelled to adjust the cooperation of the blades of said cutter

assembly with said cutting plate whereby the distance between said blades and said cutting plate can be maintained at a desired



and constant spacing, and means operatively connected to said unit for effecting swivelling adjustment thereof.

4,285,653

# APPARATUS FOR FOLDING FOOD ARTICLES IN SHEET FORM

Jean A. L. Broanec, Brest, France, assignor to Etablissements Generaux de Mecanique de l'Ouest, Brest, France

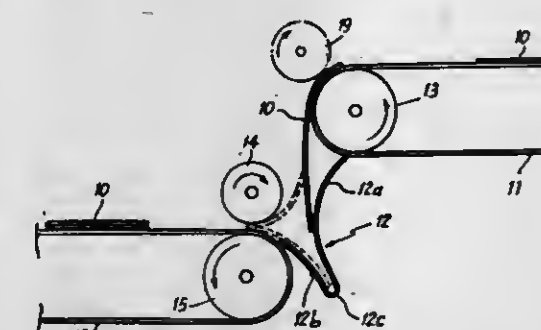
Filed Jun. 26, 1979, Ser. No. 52,328

Claims priority, application France, Jul. 4, 1978, 78 19944

Int. Cl.<sup>3</sup> A21C 11/00

U.S. Cl. 425—324.1

16 Claims



1. Apparatus for folding crepes comprising:

- (a) an upper conveyor belt and a lower conveyor belt, each of said belts having upper surfaces for transporting crepes, the upper conveyor belt having an end drum;
- (b) a hollow casing positioned below the end drum of the upper belt to catch a crepe as it drops by gravity from the end drum, the hollow casing being configured to cause a crepe, dropped from the end drum of the upper conveyor belt to fold over on itself along a line perpendicular to the direction of its movement on the upper conveyor belt;
- (c) a pair of vertically displaced, horizontally disposed feed rollers whose axes are perpendicular to the direction of movement of a crepe on the upper conveyor belt, the feed rollers being adjacent to casing and positioned so that their bite receives the folded edge of a crepe for feeding said crepe onto the upper surface of the lower conveyor belt;

said hollow casing having a base located below the upper surface of the lower conveyor belt and positioned to engage the lowermost end of said crepe as said crepe drops from the end drum of the upper conveyor belt, and an anterior wall connected to the base and extending forwardly towards the bite between said feed rollers.

4,285,654

# APPARATUS FOR CONTINUOUS TREAD PRODUCTION

George G. A. Bohm, Akron, Ohio, and Stanley S. Gross, Evans City, Pa., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

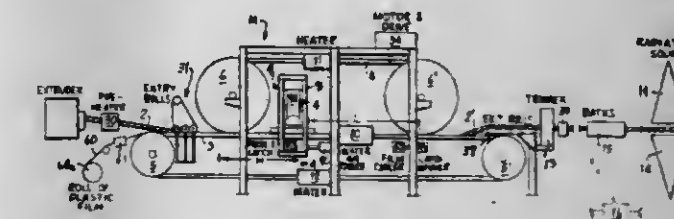
Division of Ser. No. 908,345, Jun. 12, 1978, Pat. No. 4,230,649.

This application Jan. 21, 1980, Ser. No. 114,094

Int. Cl.<sup>3</sup> B29D 7/22

U.S. Cl. 425—327

18 Claims



1. Apparatus for producing a continuous rubber strip molded with a surface design comprising:

1. means for extruding uncured rubber at a temperature below the curing temperature into a continuous moving rubber strip;
2. molding means for receiving and impressing a surface design on said strip comprising:
3. a first moving endless belt means, having block mold segments which during a portion of their travel butt together, for forming a continuous design pattern into which the strip is received;
4. a second moving endless belt means, having flat-plate segments which during a portion of their travel cooperatively move with said block mold segments for pressing the strip into the design pattern after it has been received in the block mold segments;
5. means for applying a high pressure of about 1000 psi to said strip while pressed in the block mold segments; said high pressure applying means comprising:
- A. frame means for moving reciprocatingly along the path of travel of said first and second endless belt means within said molding means;
- B. press means mounted on said frame means for engaging and urging successive flat-plate segments to press the strip into the design pattern during successive movements of the frame means in the direction of travel of said first and second endless belt means;
6. means for maintaining a lower pressure on said strip after the imposition of said high pressure while said strip remains in the molding means;
7. means for releasing said maintaining means to remove all external pressure from the molded strip upon its moving out of the molding means; and
8. means for removing the molded strip from said block mold segments after moving out of the molding means.

4,285,655

# COAT HANGER DIE

Yutaka Matsubara, Tokyo, Japan, assignor to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1979, Ser. No. 91,893

Claims priority, application Japan, Nov. 7, 1978, 53/136284

Int. Cl.<sup>3</sup> B29F 3/04; B29D 7/04

U.S. Cl. 425—461

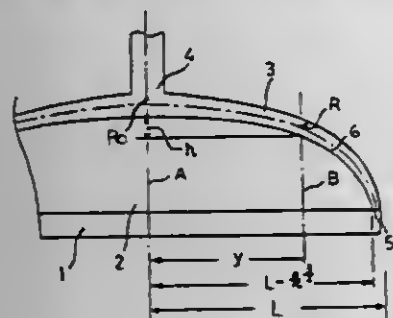
7 Claims

1. A coat hanger die comprising a coat hanger slit part, manifold part and manifold inlet part, wherein the manifold part is in the form of a coat hanger wherein the depth of the coat hanger slit part is defined by the following formula (2):

$$d = \left[ R_0/m \cdot \frac{1}{3(n+1)} \cdot \pi^{-1} \cdot \left( \frac{(3n+1)}{2(n+1)} \right) \cdot \frac{n}{3(n+1)} \cdot L^1 \right]^{\frac{1}{2}} \quad (2)$$



in which  $R_0$  is the radius of a circle equivalent to the cross section of the manifold on the center line of the die,  $n$  is the flow behavior index of the melt resin,  $m$  is the ratio of the residence time of a resin flowing through the manifold and die side end to the residence time of a resin flowing through the



coat hanger slit part along the center line of the die and ranges from 1 to 50,  $L$  is the required half width of the die, and wherein the customary assumptions regarding resin melt viscosity, melt flow through the die, melt temperature and residence time have been made.

4,285,656

## TUBULAR EXTRUSION APPARATUS

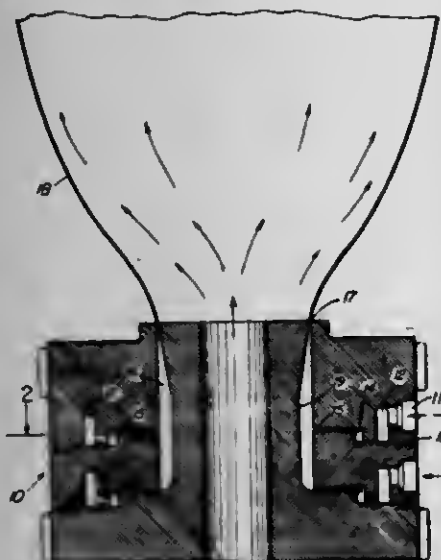
F. John Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 4, 1980, Ser. No. 109,696

Int. Cl.<sup>3</sup> B29F 3/04

U.S. Cl. 425—467

1 Claim



1. A side-fed tubular extrusion die comprising: a sidewall defining the exterior of said die, an inlet orifice in said sidewall for introducing a molten resin into said die, a first toroidal-shaped chamber located interiorly of said die in communication with said inlet for receiving a molten resin introduced through said inlet orifice, a second toroidal-shaped chamber located interiorly of said die and substantially concentric with said first chamber, an annular interior die wall separating said first and second chambers, a plurality of openings provided in and spaced along said interior die wall, said openings interconnecting said first and second chambers to allow said second chamber to receive a molten resin from said first chamber, the cross-sectional area of said openings progressively increasing from an opening closest to said inlet orifice to an opening farthest removed from said inlet orifice, a said opening closest to said inlet orifice being out of axial registration with said inlet orifice to prevent said molten resin from taking a straight path from said inlet orifice through said closest opening and into said second chamber, and an extrusion gap defined by a mandrel positioned coaxially within said die and an interior die sidewall coaxial with said mandrel, said extrusion gap receiving molten resin from said second toroidal-shaped chamber.

4,285,657

## INJECTION BLOW MOLDING APPARATUS

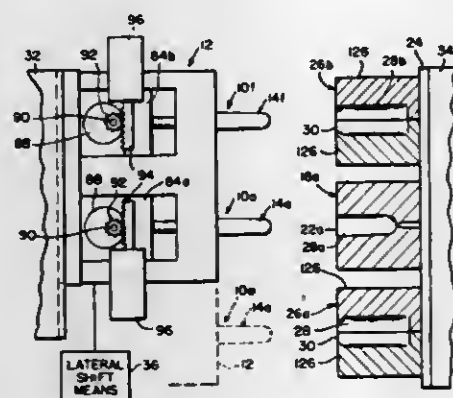
Leonard B. Ryder, 5 Sharon Dr., Whippany, N.J. 07981

Filed Dec. 3, 1979, Ser. No. 99,927

Int. Cl.<sup>3</sup> B29C 17/07

U.S. Cl. 425—525

9 Claims



1. An apparatus for forming biaxially oriented articles from thermoplastic materials, said apparatus comprising:
  - (a) at least one injection mold defining an injection mold cavity having an open mouth and a horizontal longitudinal axis;
  - (b) two blow molds associated with and positioned laterally of each injection mold, each such blow mold defining a blow mold cavity having an open mouth and a horizontal longitudinal axis, the dimensions of each such blow mold cavity being greater than the dimensions of said injection mold cavity;
  - (c) two core assemblies corresponding to each injection mold and its associated blow molds, each such assembly including an elongated core rod having a horizontal longitudinal axis and a sleeve surrounding such core rod in the neck area, said sleeves and core rods having respective circumferentially extensive seal surfaces, each such core rod having a parison contact portion which extends outwardly to a parison contact end or tip, each such core rod being slidable relative to the associated sleeve, between a fully retracted position wherein its seal surface sealingly engages the seal surface of the associated sleeve and a fully extended position wherein its seal surface is spaced from the seal surface of the associated sleeve in an outward direction;
  - (d) support and transfer means, consisting of conventional injection molding machine platens, press, and lateral shifting mechanism for engaging and disengaging each of said core assemblies alternately with an injection mold and a blow mold, such that the sleeve of the core assembly is within the cavity mouth of the engaged mold and the core rod of the core assembly protrudes into the cavity of said mold, said support and transfer means being constructed and arranged to simultaneously engage one of said core assemblies with an injection mold and one of said core assemblies with a blow mold;
  - (e) neck form means, operative during the engagement of each of said core assemblies within an aforesaid mold, for defining the neck extension of the mold cavity and for retaining a parison about the core rod;
  - (f) core rod retractor means for retaining the core rod of each of said core assemblies in its fully retracted position while such assembly is engaged within an injection mold, and holding the core rod in this position during lateral transfer to a blow mold until the time the core rod is advanced for axial stretching;
  - (g) injection means comprising sprues in the injection mold which allow thermoplastic, in molten form, to be injected via a conventional runner system, into the cavity of each of the said injection molds while one of said core assemblies is engaged therewith to form a parison;
  - (h) core rod cooling means comprising interlaced helical

channels formed around a cylindrical flow director slug within the core rod wherein coolant is circulated throughout the core rod for maintaining parison contact surfaces of said core rod at cold temperatures relative to the injection temperatures at which the thermoplastic is processed, at least while such core rod is engaged within the injection mold;

- (i) injection and blow mold cooling means for maintaining the cavity surface of each said injection and blow molds at cold temperatures relative to the injection temperatures of the thermoplastic being processed;
- (j) equilibration means for promoting equalization of temperatures across the wall thickness of a parison during the interval between the engagement of the associated core rod within the blow mold and the advancement of the core rod of such assembly during axial stretching of the parison;
- (k) core rod advance means for advancing the core rod of each of said core assemblies to a partially or fully extended position during each engagement of said core assemblies within a blow mold, so that an associated parison thereon may be stretched in an axial direction;
- (l) blow gas passageway means for introducing gas under pressure within each parison while said parison is within a blow mold cavity, at a time not earlier than the aforesaid axial stretching of such parison, to radially expand and stretch the walls of such parison into intimate contact with the blow mold cavity surfaces, such that said parison assumes the final shape of a finished article;
- (m) final cooling means for cooling each of said finished articles to a suitable ejection temperature within a blow mold cavity; and
- (n) means for releasing each finished article from its associated neck form means and for ejecting said finished article from its associated core assembly while said core assemblies are disengaged from said injection mold and blow molds.

4,285,658

## SELF-CENTERING BLOW MOLD

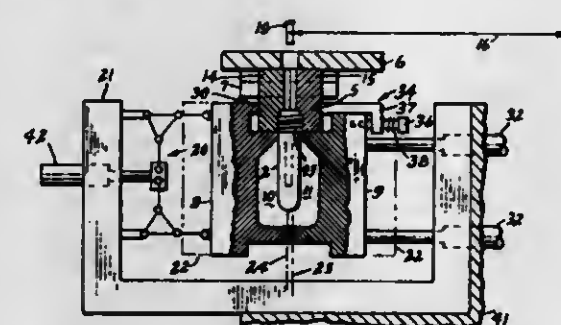
Paul R. Bohart, and Joseph F. Gibbemeyer, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Feb. 1, 1980, Ser. No. 117,497

Int. Cl.<sup>3</sup> B29C 17/07

U.S. Cl. 425—538

10 Claims



1. In an indexing rotary machine for blow molding more than one bottle at a time from a succession of respective preforms of thermoplastic material by moving said preforms while supported only by the neck from a chordally aligned split neck ring into a position between an initially spaced-apart pair of movable blow molds with each preform being aligned with a female cavity in each blow mold, said split neck ring having at least two parts that are movable relative to each other along a radius extending from the axis about which said ring is rotated in an indexing fashion, the improvement of a system for obtaining and keeping alignment between or among said neck ring and said blow molds which comprises:

- a toggle system means for reciprocating one of said blow molds radially relative to said axis between an open position that permits said neck rings with preforms and with bottles blown from such preforms to index in to and away from, respectively, said position between without interfer-

ence with said one blow mold and at least into the intended alignment at a center position;

- a drive means to move the other of said blow molds radially of the machine and into engagement with said one blow mold;
- at least one of said toggle system means and drive means for driving that blow mold linked thereto past a predetermined intended center position to an overcenter position and the other of said toggle system means and drive means for driving the other of said blow molds against the linked blow mold and both blow molds together from said overcenter position until both molds and neck ring parts are aligned for blowing at the intended center position;
- mold contact means on at least one of the aforesaid blow molds, toggle system, and drive means and that one of said neck ring parts closest thereto for establishing contact therebetween after which contact they travel to said overcenter position together; and
- bias means on at least one of said blow molds for biasing said neck ring parts together and the neck ring against the other of said blow molds at least when said blow molds and split neck ring are aligned for blowing.

4,285,659

## MOLD DEVICE FOR AN INJECTION MOLDING MACHINE

Hiroyasu Koike, Daitakubo 1901, Urawa-shi, Saitama-ken, Japan

Continuation-in-part of Ser. No. 837,722, Sep. 29, 1977, abandoned. This application Apr. 19, 1979, Ser. No. 31,609

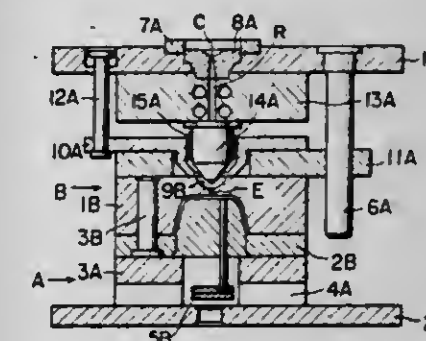
Claims priority, application Japan, Sep. 30, 1976, 51-117604;

May 23, 1977, 52-66024

Int. Cl.<sup>3</sup> B29C 1/03

U.S. Cl. 425—547

5 Claims



1. A mold device for the production of molded articles by an injection molding machine, said machine including a fixed side and movable elements, comprising:

- a mounting portion adapted to utilize a hot runner system by mounting a heater plate on a mounting plate on said fixed side and incorporating a runner nozzle in communication with the runner formed within said heater plate, said runner nozzle having a tip portion and an outlet orifice;
- a mold plate on said fixed side, said mold plate having a runner concave portion formed as a depression in an installing surface portion of said mold plate, said concave portion having an inlet opening opposed to said nozzle orifice of said runner nozzle to receive molten material when flowing from said nozzle orifice;
- said nozzle outlet orifice having an internal diameter and said inlet opening having an internal diameter, said inlet opening internal diameter at least one-third greater than said nozzle orifice internal diameter, whereby a very imprecise lateral alignment is permissible between said nozzle outlet orifice and said inlet opening and a large number of different mold plates may be used interchangeably with said runner nozzle and said fixed side;
- a gate which is in communication with the interior of a mold cavity, opening from the bottom of said runner concave



portion, the inlet to said gate being separated from said nozzle orifice by a distance sufficient to produce a waste sprue corresponding substantially to said concave portion, said waste sprue produced during the molding of each of said articles and separable from said nozzle after the molding of each of said articles; and  
a stripper means movable relative to said nozzle for stripping said waste sprue from said nozzle.

4,285,660

# NOZZLE FOR A PLASTICS INJECTION MOLDING MACHINE, AN EXTRUDER ORIFICE, OR A HOT-CHAMBER TOOL

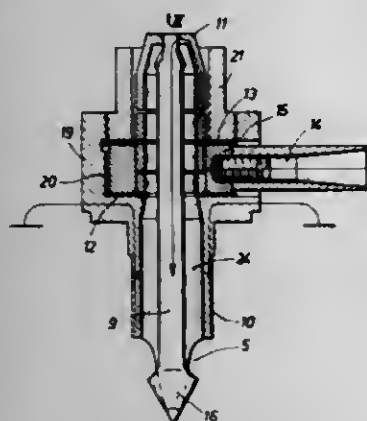
Walter Mueller, Battenberg, Fed. Rep. of Germany, assignor to Ewikon Entwicklung und Konstruktion GmbH & Co. Kommanditgesellschaft, Herford, Fed. Rep. of Germany  
Filed May 22, 1979, Ser. No. 41,514

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 2824971

Int. Cl.<sup>3</sup> B29F 1/03, 1/08

U.S. Cl. 425-549

32 Claims



1. A nozzle for use in plastic injection moulding machines, extruder orifices, hot chamber tools and the like, comprising: a hollow forwardly elongated body with an interior bounded by an interior surface, a forward end in which at least one orifice is located, the orifice communicating with the interior of the body; and a single unitary elongated resistance heating element located within the interior and having an enlarged pointed head adjacent to and projecting in part out of said at least one orifice, the head being so shaped as to have a maximal surface area with the point adjacent said at least one orifice.

4,285,661

# VALVE NOZZLE OF INJECTION MOLDING MACHINE

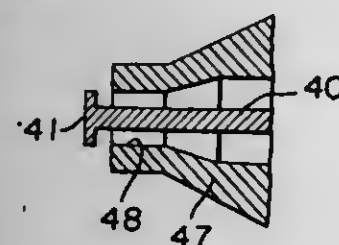
Akira Yotsutsuji; Seichi Ueda, both of Nara, and Kiyoshi Uemura, Sakai, all of Japan, assignors to Osaka City, Osaka, Japan

Filed Nov. 30, 1979, Ser. No. 98,742  
Claims priority, application Japan, Dec. 5, 1978, 53-149701; Oct. 22, 1979, 54-135276

Int. Cl.<sup>3</sup> B29F 1/03

U.S. Cl. 425-563

4 Claims



1. A valve nozzle for an injection molding machine cooperable with a mold cavity, comprising:  
a cylinder;  
a longitudinal bore in said cylinder, said bore having a first

portion of a first predetermined diameter at a first end of said cylinder and a second portion of second predetermined diameter at a second end of said cylinder, said second diameter being smaller than said first diameter;  
an injection molding compound inlet to said bore at said first end;  
an injection molding compound outlet from said bore at said second end, said outlet extending perpendicular to said bore;  
a piston slidable in said bore, said piston having a first portion of said first predetermined diameter at said first end and a second portion of said second predetermined diameter at said second end, said piston including at least one passage extending through said first and second portions;  
a valve stem extending from said piston toward said outlet and extendable into said mold cavity; and  
a valve fixed to said stem adjacent said outlet, said valve forming a disk coaxial with said bore and seating upon said perpendicular outlet.

4,285,662

# GAS BURNER CONTROL MECHANISM

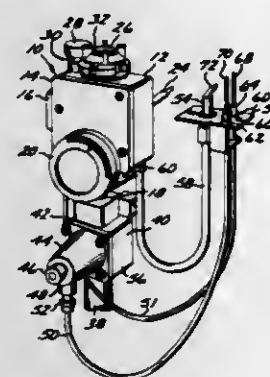
Jay R. Katchka, Cypress, and Marvin M. Graham, Westminster, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 17, 1978, Ser. No. 934,533

Int. Cl.<sup>3</sup> F23Q 9/08

U.S. Cl. 431-53

7 Claims



1. A control system for a gas fired appliance having a main burner and a single pilot burner, said control system comprising:

first and second gas control valves for serial connection in a gas supply line to said main burner of said appliance, said second gas control valve being located downstream of said first gas control valve, each valve having a valve member resiliently biased closed and independent electromagnetic valve member latching means energizable to hold each valve member open, and deenergizable to allow each valve member to close, each of said valves including manual operating means to engage the valve member thereof with its respective latching means;  
conduit means coupled to said gas supply line between said first and second control valves, bypassing said second gas control valve, and in communication with said pilot burner of said appliance to supply gas thereto from said gas supply line;  
thermocouple type flame sensing means;  
bracket means to mount said flame sensing means adjacent said pilot burner for contact by the flame thereof; and  
electrical conductors operatively connecting said flame sensing means to each of the latching means of the respective said first and second gas control valves for energization of said latching means upon heating of said flame sensing means by the flame of said pilot burner to hold open both said valve members of said first and second gas control valves, said latching means of both said first and second gas control valves being deenergized in the absence of said flame whereby both said valve members of

said first and second gas control valves are biased closed and gas flow through both said conduit means and said gas supply line is cut off.

4,285,663

# PROCESS AND APPARATUS FOR THE CONTINUOUS BURNING OF A FUEL

Wilfried Böder, Sulestrasse 23, 3013 Barsinghausen, Fed. Rep. of Germany

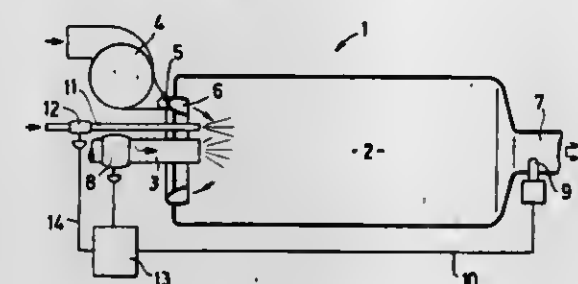
Filed May 14, 1979, Ser. No. 38,896

Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821367

Int. Cl.<sup>3</sup> F23N 5/18

U.S. Cl. 431-76

14 Claims



1. A process for the continuous combustion of a fuel comprising the steps of:  
introducing a flow of combustible fuel into a combustion chamber;  
introducing oxygen-containing gas into said combustion chamber at a predetermined flow rate;  
igniting said fuel in the presence of said oxygen-containing gas, thereby creating an exhaust current after combustion;  
measuring the oxygen content in said exhaust current; and  
altering the rate of flow of said fuel into said combustion chamber, without changing the flow rate of said gas, in response to changes in the measured oxygen content in said exhaust current.

4,285,664

# BURNER FOR A PLURALITY OF FLUID STREAMS

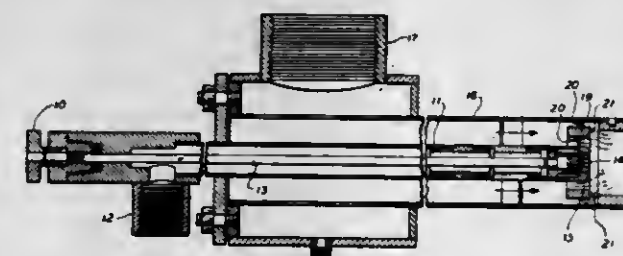
James T. Voorheis, 53 Park La., Essex Fells, N.J. 07021

Filed Apr. 2, 1979, Ser. No. 25,873

Int. Cl.<sup>3</sup> F23Q 9/00

U.S. Cl. 431-284

1 Claim



1. A burner for a plurality of fluid streams comprising,  
(a) a first conduit for fuel,  
(b) a nozzle on the end of the first conduit, to discharge atomized fuel,  
(c) a second conduit for air or gas surrounding the first conduit,  
(d) an annulus in the second conduit,  
(e) the annulus spaced away from the first and second conduits,  
(f) a flat, downstream bluff end on the annulus disposed perpendicular to the longitudinal axis of the first and second conduits,  
(g) the downstream bluff end of the annulus disposed in general registration with the nozzle, whereby a toroidal turbulent eddy of gas and fuel is created,

(h) a third conduit for air or gas surrounding the second conduit,  
(i) a second annulus on the third conduit,  
(j) the second annulus spaced away from the second and third conduits,  
(k) a flat downstream end on the second annulus, perpendicular to the longitudinal axis of the first, second and third conduits,  
(l) the downstream end of the second annulus disposed in general registration with the nozzle, whereby the second annulus further contributes to the toroidal, turbulent eddy of gas and fuel.

4,285,665  
ENGINES

Bernard E. Enga, Maidenhead, England, assignor to Johnson, Matthey & Co., Limited, London, England

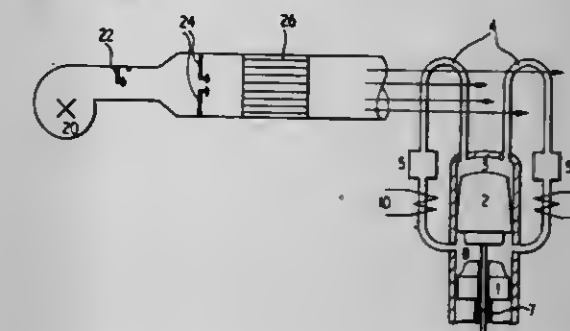
Filed May 4, 1979, Ser. No. 35,828

Claims priority, application United Kingdom, May 8, 1978, 18238/78

Int. Cl.<sup>3</sup> F23D 13/12; F01B 29/10

U.S. Cl. 431-328

7 Claims



1. An external combustion unit of a Stirling engine which includes heater pipes comprising:

(a) a catalytic combustor;  
(b) a pilot burner;  
(c) means for supplying a stream of air to pass said pilot burner in order to heat said air;  
(d) means for supplying fuel to said pilot burner;  
(e) means for injecting additional fuel into the air stream after it has been heated by said pilot burner;  
(f) means for passing the mixture of additional fuel and hot air to said catalytic combustor; and  
(g) means for directing the resulting stream of hot gases leaving the catalytic combustor over the heater pipes of the Stirling engine,  
said catalytic combustor comprising, a temperature stable oxidation resistant monolith which carries a catalyst and which provides catalytic channels for contact with and passage of the mixture of additional fuel and hot air such that catalytic combustion of the fuel takes place but in which a low pressure drop is produced, the monolith being metallic and having a catalyst supported thereon selected from the group consisting of ruthenium, rhodium, palladium, iridium, platinum and alloys of the said metals with each other and with one or more base metals in an amount such that at least 10% by weight of the catalyst is a platinum group metal.

4,285,666

# APPARATUS AND METHOD FOR INCREASING FUEL EFFICIENCY

Chester G. Burton, 8940 Tripoli Dr., Cincinnati, Ohio 45239, and John H. Burton, 51 Kathryn Ave., Florence, Ky. 41042

Continuation-in-part of Ser. No. 850,255, Nov. 10, 1977, abandoned. This application Aug. 20, 1979, Ser. No. 68,166

Int. Cl.<sup>3</sup> F23D 13/12, 19/00, 13/14

U.S. Cl. 431-347

11 Claims

1. Apparatus for increasing the efficiency of a furnace utilizing hydrocarbon fuel, comprising a combustion chamber in



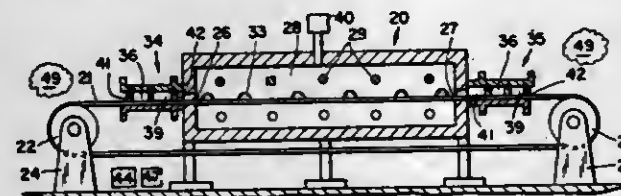
which a flame is produced, a burner extending into said chamber for introduction of a gaseous or vaporized hydrocarbon fuel and oxygen-containing gas into the chamber, means for supplying said hydrocarbon fuel and oxygen-containing gas to said burner, a single stage generally planar reticulated element

irradiated on the outside thereof by sunlight concentrated by the hollow mirror means.

**4,285,668**  
**PRESSURIZED GAS SEAL FOR FURNACE**  
**ATMOSPHERE CONTAINMENT**

Robert D. Pepe, 132 Fremont St., Lowell, Mass. 01850  
Filed Oct. 3, 1979, Ser. No. 81,279

Int. Cl.<sup>3</sup> F27D 7/00, 1/18; F26B 25/00  
U.S. Cl. 432-19 6 Claims



1. The method of sealing the pressurized gas in a heat treatment tunnel against the introduction of air thereinto, or the escape of gas therefrom, by means of a gas seal at each opposite end of the tunnel, each gas seal formed by at least two flow restrictive gates, spaced apart to form at least one gas seal chamber therebetween which comprises the steps of:

establishing and maintaining a predetermined volumetric flow of sealing gas in each said gas chamber at a pressure greater than the pressure of gas in said heat treatment tunnel and greater than ambient atmospheric pressure; and adjusting said gates so that the difference in pressure in said atmosphere, sealing chamber and tunnel causes accelerated flow through the flow restrictive gates to prevent mixing or diffusion of gases.

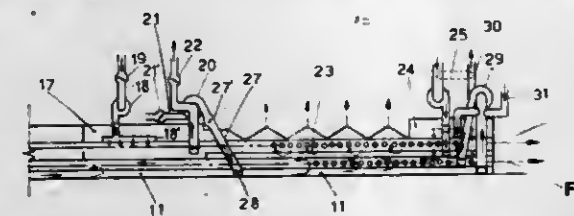
**4,285,669**  
**ROLLER KILN PROVIDED WITH A DRYING TUNNEL,**  
**PARTICULARLY FOR CERAMIC OR REFRACTORY**  
**MATERIALS**

Ulrico Walchbutter, Via Accademia 39, Milan, Italy

Filed Nov. 21, 1979, Ser. No. 96,579

Claims priority, application Italy, Nov. 23, 1978, 30090 A/78  
Int. Cl.<sup>3</sup> F27D 15/02; F27B 3/04; F26B 19/00

U.S. Cl. 432-82 19 Claims



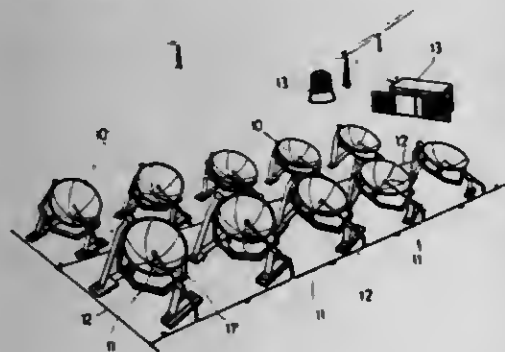
1. A roller tunnel kiln for firing a material to be advanced along a longitudinal axis of the kiln, comprising a first tunnel including a prekiln zone, a firing zone, a first forced cooling zone, and a second forced cooling zone and a plurality of refractory rotary rollers positioned transversely to said axis and constituting a progress plane for the material advanced along said rotary rollers; means for providing hot gases in said first tunnel, so that hot gases are flowing through said first tunnel; a second tunnel for drying the material and extending parallel to said first tunnel along the length thereof and thermally insulated therefrom, said second tunnel including a plurality of transversely positioned rotary rollers constituting a progress plane for the material to be dried and advanced along said rollers; means for introducing ambient air into said first tunnel; discharging means to withdraw a portion of the hot gases from said first tunnel; mixing means for mixing said portion of hot gases received from said first tunnel with a portion of ambient air received from said ambient air introducing means; and means for communicating said mixing means with said second tunnel and adapted to form a current of hot

comprising a high temperature alloy support coated with a platinum-containing catalyst, and means for adjustably positioning said reticulated element relative to said burner in the oxidizing region of said flame adjacent the interface between the oxidizing and reducing regions thereof.

**4,285,667**  
**RECEIVER FOR SOLAR POWER STATIONS**  
Guenther Schmidt, Taufkirchen, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Filed Apr. 2, 1979, Ser. No. 26,181  
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817166

Int. Cl.<sup>3</sup> F24J 3/02  
U.S. Cl. 126-438 11 Claims



1. A receiver for solar power stations, comprising hollow mirror means each having a respective focal point, spherical absorber means operatively positioned substantially in the respective focal point, said spherical absorber means comprising spherical or hemispherical body means having respective surface wall means, distributed circulatory duct means operatively forming part of said surface wall means, and galvanically deposited cover layer means formed over said surface wall means and duct means, said spherical absorber means being

gases at drying temperatures passing through said second tunnel in a direction opposite to that of the material to be dried.

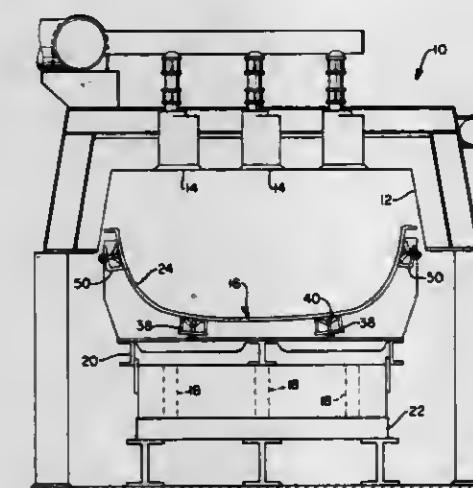
of each tooth tapers uniformly on both sides circumferentially toward a point, whereby the teeth at said one end are tapered substantially conically to a point.

**4,285,670**  
**SHAKER CONVEYOR CONSTRUCTION**  
Henry J. Venetta, 9613 Holland Springs Rd., Warren, Ohio 44484

Filed Dec. 6, 1979, Ser. No. 100,966

Int. Cl.<sup>3</sup> F27D 23/00

U.S. Cl. 432-88 7 Claims



1. In a metal heating apparatus, a plurality of metal deck plates positioned in longitudinally overlapped, aligned relation to form a metal receiving and transmitting conveyor, said deck plates being of substantially flattened U-shape in transverse vertical section, a plurality of metal plate saddles below said deck plates and having recessed upper surfaces contoured to receive said deck plates therein, said saddles extending transversely of said deck plates and supporting the same,

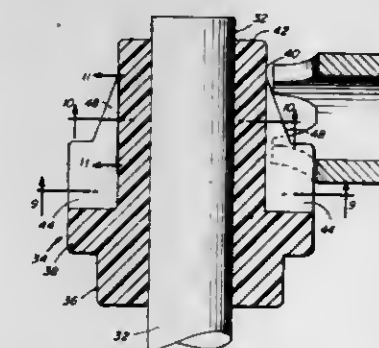
bolt anchor means secured to spaced portions of the lower surfaces of said deck plates, support means secured to and extending between said saddles, and bolt means secured to said support means and engaging said bolt anchor means to secure said deck plates to said saddles.

**4,285,671**  
**CONTRA ANGLE WITH INTERCHANGEABLE GEARED**  
**TOOLS AND THE LIKE**  
Leopold P. Lustig, 304 Greenwood St., Newton Center, Mass. 02159, and Sigrid Bechter, Straasberger Strasse 65, 8000 Munchen 40, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,468

Int. Cl.<sup>3</sup> A61C 1/08

U.S. Cl. 433-126 8 Claims



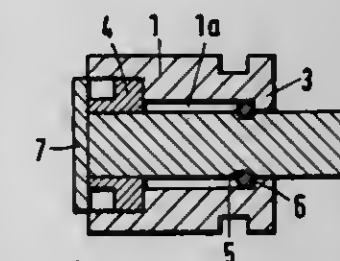
1. A spur gear on a shaft for rotating the shaft around its longitudinal axis, in which gear teeth project radially away from the shaft axis and extend a distance in the axial direction, characterized in that at one end of the gear the teeth taper radially toward the shaft and simultaneously the root thickness

**4,285,672**  
**MORTISE LOCK FOR LOCKING A REMOVABLE**  
**TOOTH-REPLACEMENT PROSTHESIS**  
Wolfgang Gabriel, Ostallee 17, 5500 Trier, Fed. Rep. of Germany

Filed Mar. 28, 1980, Ser. No. 135,161

Int. Cl.<sup>3</sup> A61C 8/00 12 Claims

U.S. Cl. 433-172 12 Claims



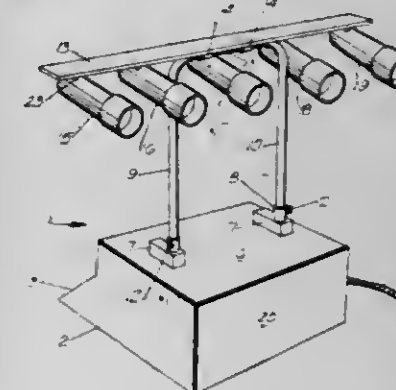
1. In mechanism for locking a dental prosthesis to a keeper fixed in a patient's mouth, such mechanism including a housing adapted to be fixed in the prosthesis and a bolt having a portion received in the housing and slidable relative thereto between a locked position in which one end portion of the bolt projects from the housing for engagement with the keeper to lock the prosthesis in the patient's mouth and an unlocked position in which such bolt one end portion is retracted for disengagement from the keeper to free the prosthesis for removal from the patient's mouth, the improvement comprising the housing having a first end wall forming a flange projecting generally inward toward the bolt portion received in the housing, and an elastic ring encircling the bolt and moved therewith between the locked and unlocked positions of the bolt, said housing first end wall being abutted by said elastic ring in unlocked position of the bolt for limiting retraction of the bolt.

**4,285,673**  
**COLOR DEMONSTRATION DEVICE AND METHOD**  
Mark A. Thomas, 740 Purcell Ave., Cincinnati, Ohio 45205

Filed Apr. 26, 1979, Ser. No. 33,534

Int. Cl.<sup>3</sup> F21V 9/00 10 Claims

U.S. Cl. 434-98 10 Claims



1. A color demonstration and teaching device for illustrating the reflective and absorptive characteristics of objects of various configurations and colors under the influence of illumination of varying intensity and color, said device comprising illumination means for producing directional illumination of preselected color and intensity and visually perceptible target means positioned in the path of said illumination, said illumination means comprising:

a. a base member having means for providing stable support of said illumination means on a planar surface;



- b. means attached to said base member for supporting a plurality of light sources;
- c. red, green and blue light sources for projecting red, green and blue light, respectively, spaced along said support means, each of said light sources including means for projecting a substantially unidirectional stable beam of monochromatic light on the target means;
- d. means for independently selecting the light intensity output of each of said light sources to permit illumination of said target means in a multiplicity of selectable color permutations.

4,285,674

## FLOAT ATTACHMENT FOR A BICYCLE

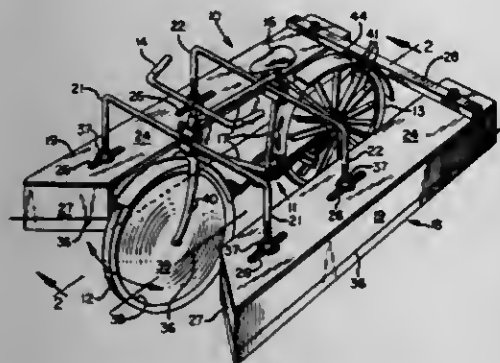
Thomas S. Chew, 2319 11th Ave., Oakland, Calif. 94606

Filed Jan. 7, 1979, Ser. No. 46,453

Int. Cl.<sup>3</sup> B63H 1/00, 16/12

U.S. Cl. 440—12

2 Claims



1. An amphibious attachment capable of fitting a wide variety of sizes and styles of bicycles, comprising:

- a pair of elongated floats spaced apart to accommodate a bicycle frame and wheels between them, the floats extending substantially the entire length of a bicycle and each being unitary and continuous throughout such length;
- a pair of transverse frame members connecting the floats at forward and rearward locations and maintaining the floats rigidly in spaced relationship, each transverse frame member comprising a generally vertical member extending up from each float and a generally horizontal member spanning between and affixed to the tops of the vertical members, each vertical member having a threaded portion extending to its lower end and taller than the height of a float, with two nuts engaged on each threaded portion; the floats each including two longitudinally slotted openings extending through the height of the float, with the threaded portion of one of said vertical members extending through each slotted opening, one nut above and one below the float at each opening, engaged against the top and bottom of the float, so that the relative fore-and-aft position of each transverse frame member with respect to the floats and therefore the separation between the frame members can be adjusted by movement within the slotted openings and so that the height of each transverse frame member with respect to the floats can be adjusted by raising or lowering the nuts, thereby facilitating connection to different sizes and configurations of bicycles;
- centrally positioned front connecting means on the forward transverse frame member for removably connecting it to the front fork-retaining sleeve of the bicycle frame, including means for accommodating various configurations of bicycle frames;
- centrally positioned rear connecting means on the rearward transverse frame member for removably connecting it to a generally upright member of the bicycle frame, below the seat, including means for accommodating various configurations of bicycle frames;
- a rigid circular disc and means for mounting it substantially flush on the front wheel of the bicycle, within the space

encompassed by the front wheel rim, so that the front wheel becomes a steerable rudder; and

a series of impeller vanes and means for mounting them on the rear wheel of the bicycle, so that the rear wheel becomes a propelling means;

whereby the amphibious attachment may be fitted to nearly any bicycle of conventional configuration, adapting it for use in water, suspended by the floats with the front and rear wheels partially submerged, so that the bicycle may be propelled by pedalling and steered by steering of the front wheel.

4,285,675

## MULTI-FUNCTION VARIABLE SPEED DRIVE

Denis M. Kiely, Killarney Hill House, Ardmore Park, Bray, County Wicklow, Ireland

Continuation of Ser. No. 961,166, Nov. 16, 1978 abandoned.

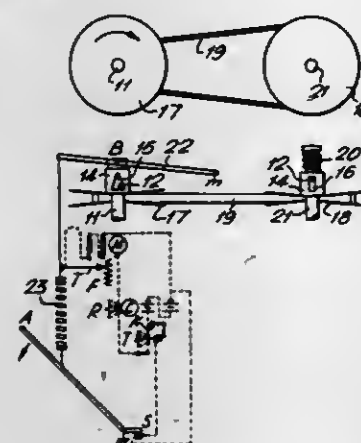
This application Jul. 3, 1980, Ser. No. 165,881

Claims priority, application Ireland, Dec. 12, 1977, 2516/77

Int. Cl.<sup>3</sup> F16H 55/52

U.S. Cl. 474—19

21 Claims



1. A variable speed drive for a battery-powered electric vehicle, the drive comprising a drive pulley of variable effective diameter mounted on a drive shaft, a follower pulley of variable effective diameter mounted on a driven shaft, a flexible belt passing around both pulleys and serving to transmit power from the drive pulley to the follower pulley, means for automatically adjusting the effective diameter of the follower pulley in accordance with that of the drive pulley to maintain the flexible belt under tension, manually-operable accelerator means resiliently coupled to the drive pulley for applying a manually adjustable force thereto tending to increase the effective diameter of the drive pulley and thereby increase the drive ratio to the pulleys, and means mechanically coupling the drive shaft to the drive pulley for automatically applying an opposite force to the drive pulley tending to decrease the effective diameter thereof and thereby decrease the drive ratio of the pulleys, the opposite force having a magnitude which increases with increasing load torque and vice versa, the arrangement being such that a constant drive ratio between the pulleys is obtained when the two opposing forces on the drive pulley are in equilibrium and the drive ratio between the pulleys falls with increasing load and vice versa.

4,285,676

## MECHANICAL BELT TENSIONER CONSTRUCTION

Derald H. Kraft, Canton, Ohio, assignor to Dyneer Corporation, Canton, Ohio

Filed Dec. 17, 1979, Ser. No. 104,439

Int. Cl.<sup>3</sup> F16H 7/12

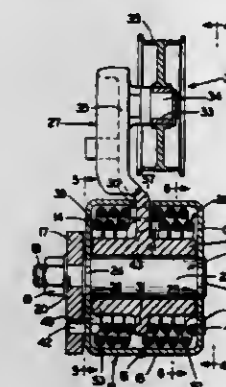
U.S. Cl. 474—135

9 Claims

1. A belt tensioner construction for automatically tensioning an endless belt of the drive system for vehicle accessories, said tensioner construction including:

- (a) a housing adapted to be mounted in a fixed position on a vehicle engine adjacent the drive belt;

- (b) a shaft mounted within the housing;
- (c) lever means pivotally mounted on the shaft and extending generally radially outwardly from the housing;
- (d) pulley means mounted on the lever means and engageable with the drive belt for applying a tensioning force on said belt when the lever means is biased in a belt tensioning direction;
- (e) first and second cylindrical coil springs telescopically mounted on the shaft in an axially spaced relationship with respect to each other on respective sides of the lever means, each of said coil springs terminating in a pair of ends, with one end of each coil spring being fixed to the housing and the other end of each coil spring being fixed to the lever means so that upon pivotal movement of the lever means in a direction opposite the belt tensioning



direction builds up tension in said first and second springs biasing the lever means in the belt tensioning direction; and

- (f) a third cylindrical coil spring having an internal diameter complementary to the outer diameter of the first coil spring telescopically mounted with respect to the shaft and said first spring and concentric thereto, said third spring terminating in a pair of ends with one end being fixed to the housing and the other end being fixed to the lever means so that upon pivotal movement of the lever means in a direction opposite the belt tensioning direction builds up tension in said third spring biasing the lever means in the belt tensioning direction increasing the biasing forces asserted by the first and second coil springs on said lever means.

4,285,677

## METHOD AND APPARATUS FOR THE MANUFACTURE OF CIGARETTE FILTERS CONTAINING PARTICULATE MATERIAL

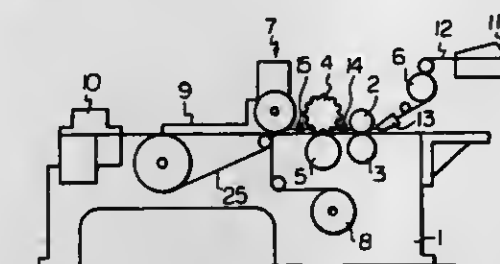
Akira Ito, Tokyo, and Katsuharu Arisaka, Sakai, both of Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Sep. 7, 1979, Ser. No. 73,491

Int. Cl.<sup>3</sup> A24C 5/50

U.S. Cl. 493—43

6 Claims



1. A method for the manufacture of cigarette filters containing particulate material, comprising the steps of: plasticizing a filter material composed of thermoplasticity filaments with plasticizer and converging said filter material;
- continuously feeding said filter material in the axial direction;
- pressing said filter material in the axial direction so as to

make the transverse cross-section thereof a substantially oval shape;

pressing said filter material toward the interior thereof along the shorter diameter of said substantially oval cross-section so that the transverse cross-section of said filter material is changed to a shape wherein two campaniforms are arranged symmetrically and connected to each other; providing pockets at axially spaced positions on said pressed surface of said filter material;

depositing a particulate material in said pockets;

folding and closing said filter material so that the deposited particulate is positioned in the interior of said filter material; and,

wrapping said filter material with wrapping sheets.

4,285,678

## METHOD AND APPARATUS FOR MAKING COMPOSITE FILTER ROD

Desmond W. Molins, London, England, assignor to Molins Limited, London, England

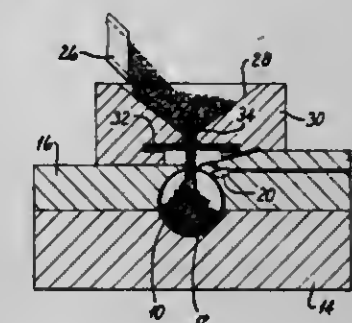
Filed Mar. 19, 1979, Ser. No. 21,814

Claims priority, application United Kingdom, Mar. 23, 1978, 11587/78

Int. Cl.<sup>3</sup> A24C 5/52

U.S. Cl. 493—48

18 Claims



1. A method of making composite filter rod comprising feeding a stream of axially spaced filter portions in an axial direction; feeding a wrapper having a width which is greater than the circumference of said filter portions; partially enclosing the stream in said wrapper so that said wrapper extends more than 180° around the space between adjacent filter portions leaving an opening having a width in the range of 15 to 75% of the diameter of the filter portions, said wrapper being longitudinally folded to produce a horizontal fold or bend line between an inner and an outer part of said wrapper, said inner part extending around said space toward said opening and said outer part extending away from said opening at an angle less than 90° to said inner part at said fold or bend line, and said line defining one side of said opening; introducing loose filtering material into the space between the filter portions through said opening; and converting said opening with said outer part of the wrapper to complete the rod.

4,285,679

## APPARATUS FOR SETTING UP SLIT-BOXES

Peter Wahle, Vellinge, Sweden, assignor to Sandpacma Aktiebolag, Malmö, Sweden

Filed Sep. 13, 1979, Ser. No. 75,236

Claims priority, application Sweden, Sep. 15, 1978, 7809765

Int. Cl.<sup>3</sup> B31B 5/02

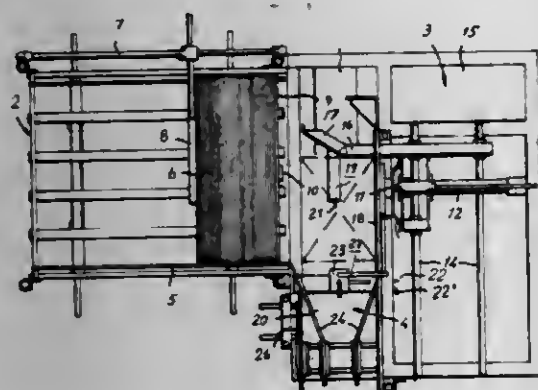
U.S. Cl. 493—125

7 Claims

1. In an apparatus for setting up and bottom closing slit boxes which are supplied to the apparatus as collapsed carton tubes comprising sides and bottom flaps and top flaps integral therewith, said apparatus comprising a support which carries a magazine for the carton blanks, a feeder unit including a suction catcher means for pulling a blank out of the magazine, for setting up the blank to a tubular form and for moving the set up blank along a feeding path, bottom flap closing means pro-



vided along the feeding path of the suction catcher means for bottom closing the carton tube while the latter is moving along the feeding path, means for moving the suction catcher means in a first direction for successively catching and setting up carton blanks from the magazine and for moving the suction catcher means in a second direction along the feeding path while bottom closing the tubular carton blank and for returning the suction catcher means to the initial position thereof to enable catching of a further carton blank from the magazine, the improvement wherein the feeder unit including the suction catcher means carries an expelling means having an expeller arm which is rotatable between a first, inactive position



wherein the expeller arm is located adjacent to the feeding path and a second, active position wherein the expeller arm is located inside the feeding path so as to engage a carton in said path and provide movement thereof independently of said suction means, said expeller arm being connected to the feeder unit at an adjustable distance downstream of the suction catcher means in the direction of movement along the feeding path so as to provide movement of a first carton blank along the feeding path while the suction catcher means moves a second carton blank along the feeding path, the position of the expeller arm being adjusted to said predetermined distance downstream of the suction catcher means.

4,285,680

### CARTON BLANK FEEDING AND GLUE APPLYING APPARATUS

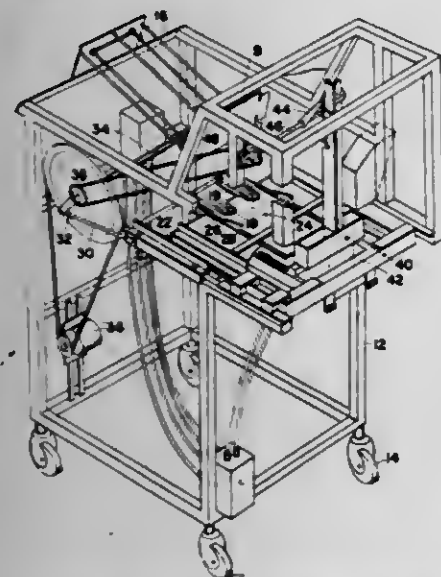
Arthur E. Randles, 4617 S. 3rd Ave., Tucson, Ariz. 85714

Filed Nov. 23, 1979, Ser. No. 96,621

Int. Cl.<sup>3</sup> B31B 3/02, 3/60

U.S. Cl. 493—132

1 Claim



1. In a box forming machine including a generally horizontal slideway with a folding station at the downstream end thereof and glue wheels on a glue wheel shaft rotatable below said slideway in a glue container and having arcuately spaced radial projections thereon having outer surfaces of a common radius

whereby they engage box blanks moving over said slideway to apply thereto spaced patches of glue;

the improvement comprising:

a carriage reciprocable along said slideway;  
drive means connected to said carriage for reciprocating same;  
pusher fingers on said carriage to engage and push a box blank on said slideway to said folding station as said carriage is extended from a retracted position;  
a rack on said carriage to reciprocate therewith; and  
a gear on said glue wheel shaft having a pitch radius equal to the radius of said radial projections;  
said rack meshing with said gear to rotate said glue wheels so that said outer surfaces move at the surface speed of said reciprocating carriage at any given instant.

4,285,681

### TEAR RESISTANT SEPARABLE END-CONNECTED BAGS

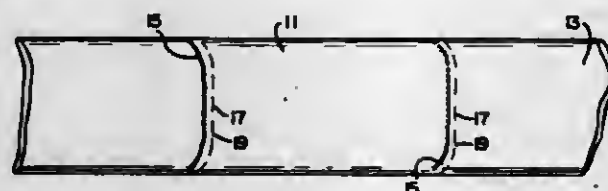
Charles R. Walitalo, Matteson, and Alvin E. Ericson, Chicago, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 872,168, Jan. 25, 1978, abandoned, which is a continuation of Ser. No. 696,227, Jun. 15, 1976, abandoned, which is a division of Ser. No. 527,430, Nov. 26, 1974, abandoned. This application Aug. 29, 1979, Ser. No. 70,883

Int. Cl.<sup>3</sup> B31B 1/14; B32B 31/18, 31/20

U.S. Cl. 493—194

6 Claims



5. A method for making packaging bags of flexible oriented plastic film material comprising the steps of:

- forming a continuous strand of separable end-connected flexible oriented plastic film packaging bags by
- advancing a continuous length of flattened flexible plastic film tubing having opposed walls in contact with each other to a bag forming station;
- forming, at the bag forming station, a heat seal transversely across the flattened flexible plastic film tubing to seal the opposed walls thereof into a bag bottom;
- cutting elongate perforations with a heated blade through said tubing to define interperforation tabs of tubing material linearly aligned with the perforations, tear-directed into the tubing material adjacent said bag bottom, said perforations being substantially parallel to said bag bottom forming heat seal, to form a bag mouth joined to the tubing material adjacent said bag bottom by said interperforation tabs;
- annealing the cut edges of said perforations with said heated blade simultaneously with said cutting;
- repeating the steps (i) and (iv) and
- tear-removing said bags from said continuous strand.

4,285,682

### CARTON ERECTING MACHINE

Edward L. Moss, Orlando, Fla., assignor to Moss Machinery Manufacturers, Inc., Orlando, Fla.

Filed Apr. 25, 1979, Ser. No. 33,210

The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.

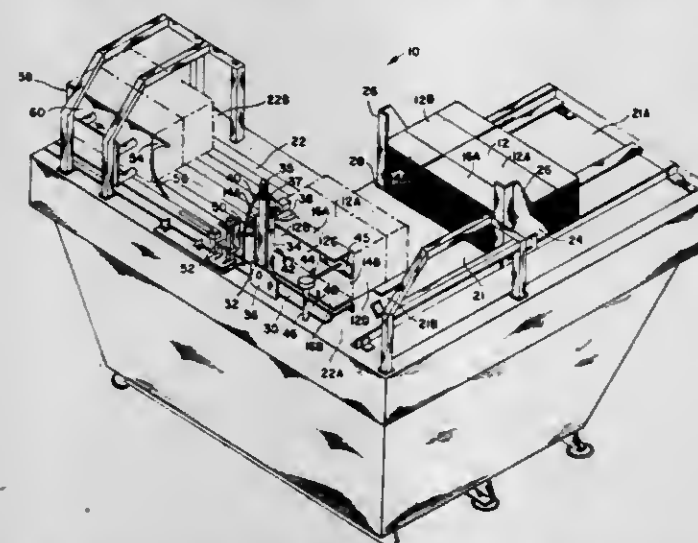
Int. Cl.<sup>3</sup> B31B 1/62, 1/80, 3/02

U.S. Cl. 493—316

12 Claims

1. An apparatus for erecting folded cartons having flaps, comprising in combination:  
a first and a second carton track established in a substantially L-shaped configuration;

each of said first and second tracks having a first and a second end;  
carton magazine means disposed adjacent said first track;  
first track movement means for moving a folded carton on said first track from said carton magazine means to said second track;  
carton erecting means proximate the intersection of said first and second track for erecting the folded carton;  
second track movement means for moving the erected carton from said first end of said second track to said end of said second track;  
flap folding means disposed adjacent said second track for folding the flaps of the carton;  
sealing means proximate said second track for sealing the flaps of the erected carton into a rigid structure;  
first means for driving said first track movement means in a reciprocal movement for serially moving said plurality of



cartons from said first end to said second end of said first track;

second means for driving said second track movement means for serially moving said plurality of cartons from said first end to said second end of said second track;  
means for synchronizing the movement along said first and second tracks;  
one of said first and second track movement means including a first and a second rotatable member space relative to one another;  
flexible means about said rotatable members and having a driving portion on said flexible means for generating a reciprocal movement of said driving portion relative to said track; and  
means cooperating with said driving portion for intermittently and sequentially moving cartons along said track upon rotation of said rotatable members.

4,285,683

### METHOD OF MAKING A DISPLAY MOUNT

Carroll N. Cross, Rte. 2, Box 741, Maitland, Fla. 32751

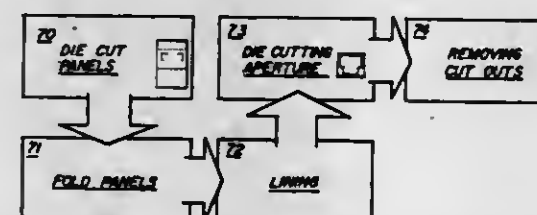
Continuation-in-part of Ser. No. 870,745, Jan. 19, 1978, Pat. No.

4,199,883. This application Jan. 28, 1980, Ser. No. 116,158

Int. Cl.<sup>3</sup> G09F 1/10

U.S. Cl. 493—325

5 Claims



1. A method of making a display mount comprising the steps of:  
cutting a blank of planar material to form a back, an interme-

diating, and a partial face panel, and cutting at least one curved incision into the intermediate panel of three panels formed on said blank;  
superimposing said panels to form face-to-face planar surfaces with said partial face panel extending over at least a portion of said cut incisions in said intermediate panel;  
case binding the front of said superimposed panels with a flexible lining material extending about multiple edges and adhesively attaching said lining material thereto for binding said panels together;  
simultaneously die cutting a generally U-shaped incision in said partial face panel extending to a line inside one edge thereof and cutting a generally inverted U-shape into said intermediate panel co-acting with said incision already made in said intermediate panel; and  
removing the severed portions of said partial panel and said intermediate panel to form a display mount having an inserting passage between the overlapping edges of said face panel and said base panel.

4,285,684

### HEAD FOR SLITTER-CORRUGATOR

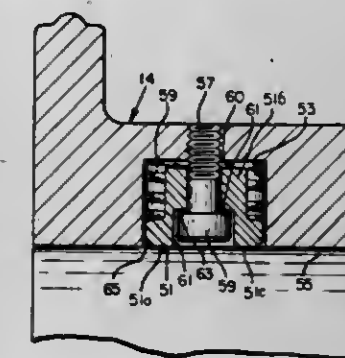
Willis D. Smith, Camas, Wash., assignor to Tidland Corporation, Camas, Wash.

Filed Jul. 24, 1978, Ser. No. 927,569

Int. Cl.<sup>3</sup> B26D 7/26

U.S. Cl. 493—355

7 Claims



1. A head for a sheet slitter-corrugator comprising a ring member slidably fitting on a supporting shaft,  
said ring member having an inner cylindrical surface to be engaged by a clamping means on the shaft for fixedly holding said ring member in a desired position of adjustment,  
and movement-resisting biasing means on said ring member for applying a biasing force between the ring member and supporting shaft when said clamping means is inoperative, to thereby releasably retain said ring member against axial movement whereby to prevent inadvertent movement that might otherwise occur at said head set-up time but permitting axial movement in either direction of said ring along the shaft to facilitate setting up of said ring.

4,285,685

### APPARATUS FOR FORMING LOOPS IN TUBE SECTIONS FOR MAKING SACKS FOR THE PURPOSE OF COMPENSATING FOR DIFFERENT LENGTHS OF SECTIONS

Fritz Achelpohl, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,362

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1978, 2838569

Int. Cl.<sup>3</sup> B31B 1/52

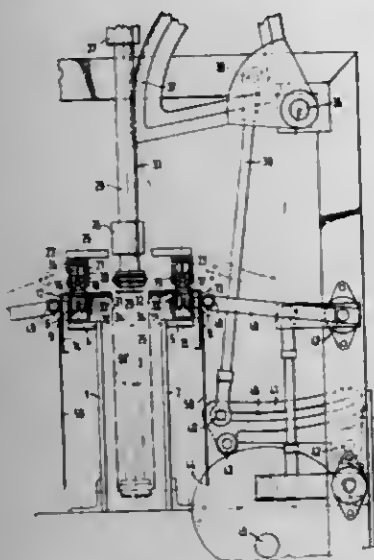
U.S. Cl. 493—406

12 Claims

1. Apparatus for forming loops in transversely fed tube sections for making sacks, comprising two parallel double belt conveyors (10, 16; 11, 17) for clamping the tube sections at both sides at equal spacings from their centre line, a punch (28)

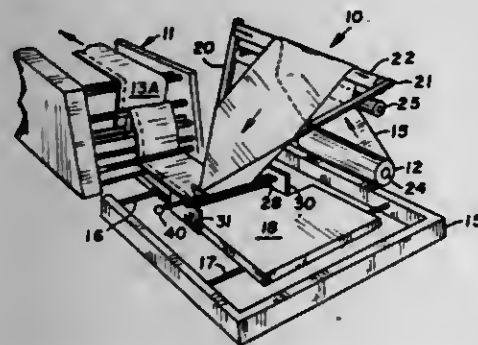


vertically movable in the medial plane (35) between the double belt conveyors (10, 16; 11, 17), means for raising and lowering



said punch, and suckers (29) positioned on the lower end portion of said punch for suction attracting tube sections.

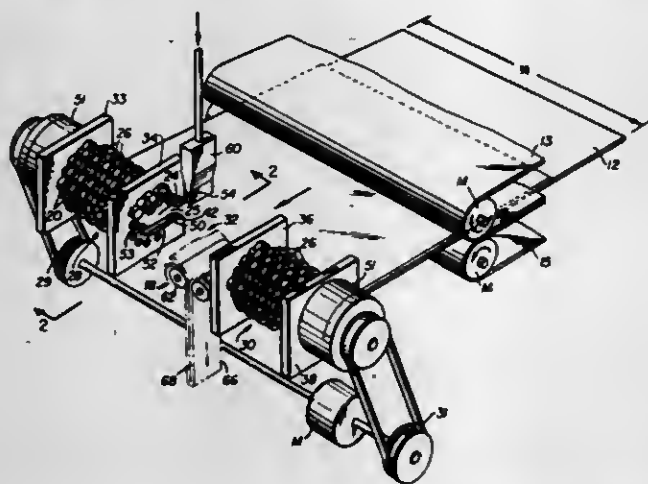
**4,285,686**  
**V-BOARD FOLDER FOR FLEXIBLE PLASTIC FILMS**  
James R. Ambler, Seekonk, Mass., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.  
Filed Oct. 5, 1979, Ser. No. 82,091  
Int. Cl.<sup>3</sup> B31B 1/36  
U.S. Cl. 493—439



1. Sheet folding means comprising a triangular frame structure having an apex over which a web of sheet material is passed forming folds therein and including:
  - (a) frame means, first and second mutually convergent arm member secured to said frames and converging toward an apex adjacent the tip ends thereof, and with the respective tip ends normally being spaced apart to form a lateral gap therebetween;
  - (b) first and second tip plates adapted for mounting upon said first and second mutually converging arm members respectively;
  - (c) said first and second tip plates each being polygons with linear edges, the dimensions of said linear edges being selected so as to span the space between said convergent arm members at the tips of said convergent arm members to form a selected apex point, the arrangement being such that the apex point is disposed generally at a predetermined location projected outwardly from the ends of said convergent arm members; and
  - (d) a gusset forming member being provided, said gusset forming member having a pair of convergent edge surfaces forming an apex, and with said gusset forming mem-

ber being secured to said frame means and adjustably disposed with the apex of said gusset forming member positioned generally within the lateral gap between said projected apex and the linear edges of said tip plates.

**4,285,687**  
**MACHINE FOR FOLDING PLASTIC SHEET MATERIAL**  
James A. McDonald, Palos Heights, Ill., assignor to Union Carbide Corporation, New York, N.Y.  
Filed Jun. 7, 1979, Ser. No. 46,382  
Int. Cl.<sup>3</sup> B65H 45/18  
U.S. Cl. 493—444



1. An improvement in a machine for folding flexible sheet material, such as plastic bags, having rolling means for rolling the material into a substantially cylindrical roll and means for removing the rolled material from said rolling means in a flattened state, and wherein said rolling means comprises a rolling section divided into at least two laterally disposed rolling sub-sections spaced apart so as to provide a predetermined unobstructed open area therebetween, each of said rolling sub-section being arranged in an arc circumscribing a minimum of 270° of a circle for forming a cul-de-sac having an internal moving curved surface on its inward side through a substantial portion of said 270° for driving the material into a roll, each of said sub-sections having inner and outer end plates confining the internal moving surface of each sub-section, said inner end plates on opposite sides of said open area each having an aperture in alignment with said cul-de-sac and a predetermined geometry partially conforming to the shape of said cul-de-sac, with each sub-section having an entrance opening for receiving said material, each inner plate of a sub-section having first planar surfaces facing one another and bonding said open area, said means for removing the rolled material being arranged relative to said open area to establish a discharge path through said open area in a predetermined direction normal to the longitudinal axis of said rolled material, said improvement comprising an extension portion of said moving surface cantilevered from each of said inner plate first planar surfaces into said open area, means interconnecting each extension portion with its respective sub-section to permit synchronous rolling motion of each said extension portion with its respective sub-section, wherein said extension portions provide rolling auxiliary support for said plastic bags as they are being rolled into said substantially cylindrical rolls, with said extension portions being spaced apart from one another to permit said removing means to remove a rolled bag from contact with said sub-sections and extension portions and discharge said rolled bag along said discharge path.

**4,285,688**  
**SADDLE OIL**  
Monte B. Willis, Randolph, Utah, assignor to Leather Life, Inc., Randolph, Utah  
Filed Mar. 28, 1979, Ser. No. 24,670  
Int. Cl.<sup>3</sup> C14C 9/00

- U.S. Cl. 8—94.1 R 5 Claims
1. A leather treating composition consisting of (a) 30–50 parts by weight of a non-drying oil selected from the group consisting of neatsfoot oil, lard oil and a synthetic or petroleum oil having the same non-drying characteristics as neatsfoot oil and lard oil, (b) 20–30 parts by weight of a non-drying vegetable oil selected from the group consisting of olive oil, peanut oil, almond oil, hazelnut oil and peach kernel oil, (c) 10–20 parts by weight of an animal fat selected from the group consisting of beef tallow, bone fat and mutton tallow, (d) 5–10 parts by weight of a natural wax selected from the group consisting of beeswax, spermaceti, caruba candelilla and wool fat and (e) 5–10 parts by weight of a paraffin wax.

**4,285,689**  
**LEATHER TANNING COMPOSITION AND METHOD**  
Marcel Siegler, North Bergen, N.J., assignor to Seton Company, Newark, N.J.  
Filed Jun. 26, 1979, Ser. No. 52,149  
Int. Cl.<sup>3</sup> C14C 3/06, 3/16, 3/08

- U.S. Cl. 8—94.26 36 Claims
1. A leather tanning composition comprising a sufficient amount of the reaction product of:
    - (a) a polyaldehydic compound; and
    - (b) a secondary amine, to increase the shrinkage temperature of a hide.

**4,285,690**  
**NOVEL REACTANTS FOR CROSSLINKING TEXTILE FABRICS**  
Bernard F. North, Rock Hill, S.C., assignor to Sun Chemical Corporation, New York, N.Y.  
Continuation-in-part of Ser. No. 92,630, Nov. 8, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,247  
Int. Cl.<sup>3</sup> D06M 13/34

- U.S. Cl. 8—186 6 Claims
1. A reactant for imparting permanent press properties to a textile containing cellulose fibers which comprises the alkylated product of the reaction of approximately stoichiometric amounts of glyoxal and at least one cyclic urea.

**4,285,691**  
**ALKOXYLATED FATTY AMINES AND POLYAMINES AS RESERVING AGENTS**  
Hermann Egli, Basel, and Emil Engeler, Binningen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland  
Filed Jan. 31, 1980, Ser. No. 117,254  
Claims priority, application Switzerland, Feb. 6, 1979, 1149/79

- Int. Cl.<sup>3</sup> D06P 5/00, 3/87, 5/12, 5/13  
U.S. Cl. 8—455 18 Claims
1. A process for dyeing an anionic dyeable substrate with reserve effects, which process comprises
    - (1) impregnating the substrate with a dyeing liquor containing an anionic dye having a K'-value  $\geq 5$
    - (2) directly thereafter applying locally to the substrate a liquor or paste containing an alkoxylated fatty amine or polyamine having affinity for anionic dyes with a K'-value  $\geq 5$  and
    - (3) subsequently submitting the substrate to a heat treatment to effect fixation of the dye.

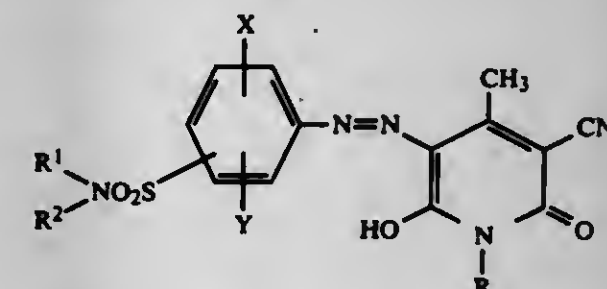
## CHEMICAL

**4,285,692**  
**GRANULAR PREPARATION OF VAT DYESTUFFS AND/OR DISPERSE DYESTUFFS**  
Willy Schiwy, Monheim; Jürgen Schulze, Leverkusen; Ferdinand Hummes, Bergisch-Gladbach; Peter Schulze, Leverkusen; Reinhold Hürle, Cologne; Hans-Heinz Mülla, and Harry Ortmann, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany  
Filed Oct. 4, 1979, Ser. No. 81,968

- Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846149  
Int. Cl.<sup>3</sup> D06P 5/00; C09B 67/00  
U.S. Cl. 8—499 7 Claims
1. Process for the production of granular mixtures of vat dyestuffs and/or disperse dyestuffs, characterized in that liquid or pasty, finished formulations of two or more vat dyestuffs and/or disperse dyestuffs are spray-dried together to form granules.

**4,285,693**  
**DYEING OF SURFACE COATINGS, ORGANIC SOLVENTS AND PETROLEUM PRODUCTS**  
Guenther Lamm, Haseloch, and Johannes Dehnert, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany  
Filed Apr. 8, 1980, Ser. No. 138,405  
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917063

- Int. Cl.<sup>3</sup> D06P 3/00  
U.S. Cl. 8—521 3 Claims
1. A process for dyeing surface coatings, organic solvents and petroleum products, wherein the dye used is a compound of the formula I:



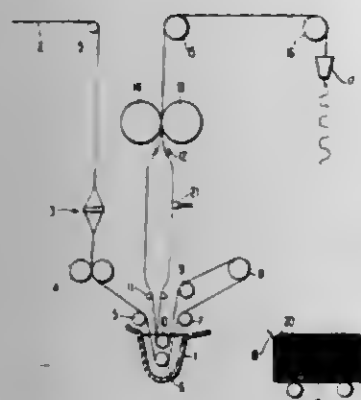
where R is C<sub>1</sub>–C<sub>17</sub>-alkyl, which may or may not be interrupted by oxygen and may or may not be substituted by hydroxyl or phenoxy, or is allyl,  
R<sup>1</sup> is hydrogen or C<sub>1</sub>–C<sub>8</sub>-alkyl,  
R<sup>2</sup> is C<sub>7</sub>–C<sub>12</sub>-alkyl, C<sub>7</sub>–C<sub>12</sub>-alkyl interrupted by oxygen and optionally substituted by hydroxy or phenoxy, or is C<sub>7</sub>–C<sub>11</sub>-aralkyl,  
X is hydrogen, chlorine, methyl or methoxy, and  
Y is hydrogen or methyl.

**4,285,694**  
**COLD PADDING BATCH DYEING PROCESS FOR TUBULAR KNITTED FABRICS**  
Shimpei, Itoh Sulta; Masaru Daimon, and Tadashi Kato, both of Itami, all of Japan, assignors to Nittobo Itamikako Co., Ltd., Itami, Japan  
Filed Dec. 19, 1979, Ser. No. 105,441  
Claims priority, application Japan, Dec. 26, 1978, 53-161532  
Int. Cl.<sup>3</sup> D06P 3/82

- U.S. Cl. 8—532 9 Claims
1. A cold padding batch dyeing process for a tubular knitted fabric of cotton or a cotton blend, comprising: feeding said tubular knitted fabric into a padding tank; inflating said fabric with air by forcing air into said fabric to expand it into a tubular shape; squeezing said fabric at a squeezing rate of 95 to 120% by



passing it between a pair of mangles each having a layer of rubber having a Shore hardness of 55 to 70; and ageing said fabric for at least a period over four hours;



the length of time between entry of said fabric into said padding tank and its departure from said mangles being limited to between 10 and 20 seconds.

4,285,695

#### PROCESS FOR INHIBITING CRUST FORMATION IN REDUCED DYE BATHS

Richard L. Doerr, Orange, and Michael Scardera, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn. Continuation-in-part of Ser. No. 860,539, Dec. 14, 1977, abandoned. This application Oct. 30, 1979, Ser. No. 89,684 Int. Cl.<sup>3</sup> C09B 67/28, 7/00

U.S. Cl. 8—650 14 Claims

1. In an aqueous sodium hydrosulfite composition for reducing vat or sulfur dye in an aqueous dye bath solution, comprising greater than about 10 percent by weight sodium dithionite, at least 1 percent sodium sulfite by weight of sodium dithionite, and stabilized by alkali metal hydroxide, the improvement characterized by including in said composition an effective surface crust inhibiting amount of an anionic surfactant selected from the group consisting of alkyl sulfates, alkyl aryl phosphate esters, N-acyl-N-alkyl taurates,  $\alpha$ -olefin sulfonates, alkyl aryl disulfonates, dodecylated oxydibenzene sulfonates, and mixtures thereof, said effective surface crust inhibiting amount being in the range from about 0.002 to about 4.0 percent by weight of said sodium hydrosulfite composition.

4,285,696

#### DYESTUFFS DERIVED FROM TRIPHENYLMETHANE, THEIR PREPARATION AND USE

Gilbert V. H. Kremer, Erment, Jacques P. E. Pechmeze, Paris, and Robert F. M. Sureau, Enghien les Bains, all of France, assignors to P C U K Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Continuation of Ser. No. 483,184, Jun. 25, 1974, abandoned.

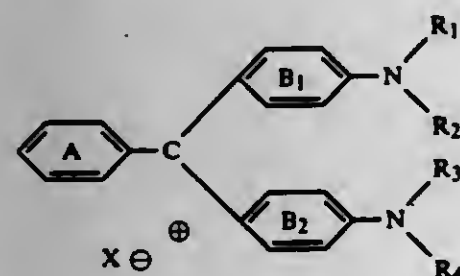
This application Mar. 21, 1977, Ser. No. 779,436

Claims priority, application France, Jul. 6, 1973, 73 24873

Int. Cl.<sup>3</sup> C09B 11/10

U.S. Cl. 8—654

1. Dyestuffs of the formula:



in which R<sub>2</sub> and R<sub>4</sub> which are the same or different each represent a hydrogen atom or an alkyl, hydroxyalkyl or cyanomethyl group, one of the substituents R<sub>1</sub> and R<sub>3</sub> represents the

2,2,2-trifluoroethyl group and the other substituent represents an alkyl group or the 2,2,2-trifluoroethyl group, the ring A is unsubstituted by or substituted by one or 2 chlorine atoms or an alkoxy or alkyl group, the rings B<sub>1</sub> and B<sub>2</sub> are each unsubstituted or substituted by at least one alkyl or alkoxy group and X represents a colourless monovalent anion.

4,285,697

#### FOOD SPOilage INDICATOR

Michael P. Neary, Apt. 934, 825 Calle Mejia, Santa Fe, N. Mex. 87501

Filed Sep. 26, 1978, Ser. No. 945,881

Int. Cl.<sup>3</sup> G01N 33/02, 31/22; C09K 3/34

U.S. Cl. 23—230 LC

3 Claims

1. In a food package, a food spoilage indicator comprising a liquid crystal disposed in a carrier of plastic tape, at least one portion of which is semi-permeable to gases generated in food spoilage, said liquid crystal being selected from the group consisting of cholesteryl or cholestanyl chloride, cholesteryl or cholestanyl bromide, cholesteryl or cholestanyl erucate, cholesteryl or cholestanyl oleyl carbonate, cholesteryl or cholestanyl erucyl carbonate, and cholesteryl or cholestanyl oleate.

4,285,698

#### ANALYSIS OF AFLATOXINS IN PEANUTS BY HIGH PRESSURE LIQUID CHROMATOGRAPH

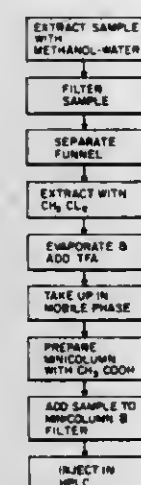
Susan E. Otto, Fenton, and David L. Dunmire, St. Louis, both of Mo., assignors to Peanut Research & Testing Laboratories, Inc., Edenton, N.C.

Filed Apr. 28, 1980, Ser. No. 144,681

Int. Cl.<sup>3</sup> G01N 33/02, 31/08

U.S. Cl. 23—230 B

8 Claims



1. The method of analyzing peanuts and the like for the presence of aflatoxins, comprising the steps of
  - (a) grinding a quantity of said nuts into a paste,
  - (b) mixing said paste with a solution of methanol and water to form a slurry therefrom,
  - (c) filtering said slurry to extract a filtrate therefrom in the form of an aqueous solution,
  - (d) mixing said aqueous solution with a quantity of dichloromethane,
  - (e) extracting said dichloromethane from said aqueous solution to obtain an extract therefrom,
  - (f) evaporating the dichloromethane from said extract to obtain a first residue therefrom
  - (g) mixing said first residue with a quantity of trifluoroacetic acid to form a derivative of said aflatoxins,
  - (h) evaporating said trifluoroacetic acid to obtain a second residue therefrom,
  - (i) mixing said second residue with a solution of tetrahydrofuran and CH<sub>3</sub>COOH to obtain a mobile phase therefrom,
  - (j) filtering said mobile phase through a minicolumn,
  - (k) injecting said mobile phase into a high pressure liquid

chromatograph to separate the aflatoxin components in said mobile phase, and,  
(l) measuring the concentrations of each of said components.

4,285,699

#### ANALYTICAL METHOD AND APPARATUS FOR THE DETERMINATION OF TOTAL NITROGEN CONTENTS IN SAMPLES

Tadamasa Itoh, Toyosaka, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

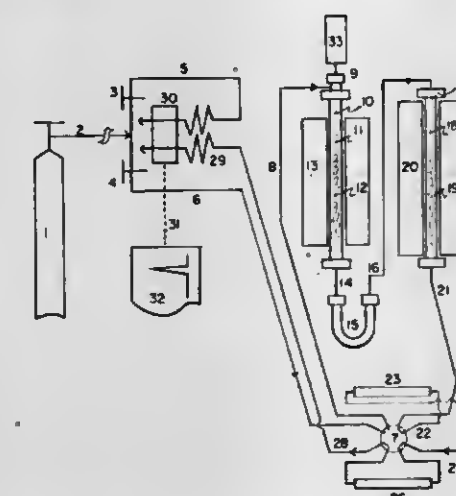
Filed May 16, 1980, Ser. No. 150,693

Claims priority, application Japan, May 23, 1979, 54-64473

Int. Cl.<sup>3</sup> G01N 33/18, 27/18, 31/10, 31/12

U.S. Cl. 23—230 PC

10 Claims



1. An analytical method for the determination of total nitrogen contents in samples, which comprises passing an inert gas stream containing substantially no nitrogen through a first reaction tube which is packed with a decomposition catalyst and an oxidizing agent and is maintained at a temperature of 700° to 1100° C., a condenser, a second reaction tube which is packed with an oxidizing agent and a reducing agent and is maintained at a temperature of 400° to 800° C., a moisture-absorbing tube and a carbon dioxide gas-absorbing tube in this order, introducing a sample to be analyzed into the first reaction tube and sending nitrogen gas coming out of the carbon dioxide gas-absorbing tube to a nitrogen gas analyzer to determine the nitrogen gas.

4,285,700

#### FUEL ENRICHMENT APPARATUS AND METHOD FOR GASEOUS FUEL MIXERS

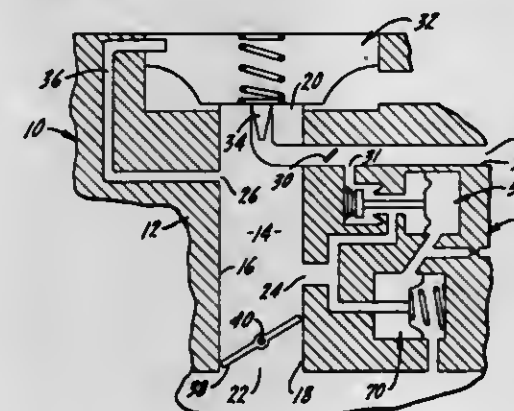
Clarence D. Fox, Decatur, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 27, 1979, Ser. No. 107,689

Int. Cl.<sup>3</sup> F02M 21/04, 13/08, 25/00; B01F 3/02

U.S. Cl. 48—180 C

8 Claims



1. A fuel enrichment apparatus in combination with a gaseous fuel carburetor having a body defining an air induction and mixing passage and including a main fuel supply passage communicable with said air induction and mixing passage, a mov-

able fuel metering cone arranged and disposed with respect to said main fuel supply passage for metering fuel flow there-through in response to pressure changes in said air induction and mixing passage, said air induction and mixing passage including a movable throttle member therein, and a vacuum control port downstream of said throttle, wherein

said fuel enrichment apparatus includes: means defining an auxiliary fuel inlet passage communicating with said main fuel supply passage, means defining an auxiliary fuel port opening into said air induction and mixing passage upstream of said throttle member, means defining an auxiliary fuel exit passage communicating with said auxiliary fuel port, a normally closed auxiliary fuel valve assembly connected between said auxiliary fuel inlet passage and said auxiliary fuel exit passage, including a pressure responsive valve operator engaging an expansion chamber motor having two chambers, one of said chambers communicating with said auxiliary fuel exit passage and arranged for opening said auxiliary fuel valve assembly in response to a predetermined subatmospheric pressure in said auxiliary fuel exit passage, and a restricted vent passage, in communication with the other of said chambers, and a normally closed control valve connected between said auxiliary fuel exit passage and said restricted vent passage, said control valve having an interior space and a diaphragm dividing said space into first and second chambers, wherein one of the chambers is in communication with said vacuum control port to effect movement of the diaphragm in response to a selected vacuum condition downstream of said throttle member so that the other of said chambers provides communication between the auxiliary fuel exit passage and the restricted vent passage.

4,285,701

#### METHOD FOR SEPARATING ISOTOPES USING A VORTEX TUBE

Ralph F. Schlenker, R.R. 4, Indianola, Iowa 50125

Continuation-in-part of Ser. No. 543,232, Jan. 23, 1975, Pat. No.

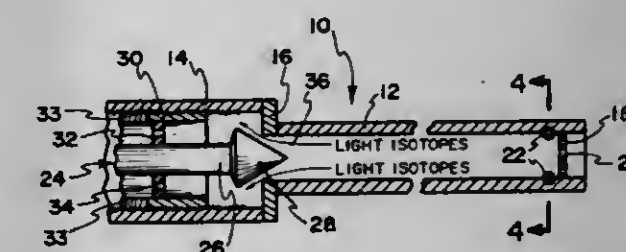
4,093,427. This application Jun. 5, 1978, Ser. No. 912,630

The portion of the term of this patent subsequent to Jan. 6, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> B01D 57/00

U.S. Cl. 55—17

10 Claims



1. A method for separating heavier from light isotopes, comprising: introducing a gaseous feedstock mixture containing relatively light and relatively heavy isotopes under sufficient pressure and temperature into an elongated cylindrical vortex tube in a circumferential fashion so as to impart a swirling action of said mixture within said tube around the longitudinal axis thereof which tends to separate said mixture into a warmer outer stream enriched in lighter isotopes and a cooler inner stream enriched in heavier isotopes; enhancing said thermodynamic separation by axially directing an electromagnetic beam along one stream to excite the vibrational mode of the minority isotope in one stream exclusive of the other ones in said one stream; converting the electromagnetically caused excitation of the minority isotope remaining in said one stream to thermal



translation causing a further migration of the minority isotope into the other stream;  
drawing off said outer stream of said thermodynamically separated swirling mixture adjacent the cylindrical walls of said tube through an outer opening spaced radially outwardly from the longitudinal axis of said tube;  
drawings off the inner stream of said thermodynamically separated swirling mixture through an axial outlet located approximately along the longitudinal axis of said tube.

4,285,702

# METHOD AND APPARATUS FOR THE RECOVERY OF WATER FROM ATMOSPHERIC AIR

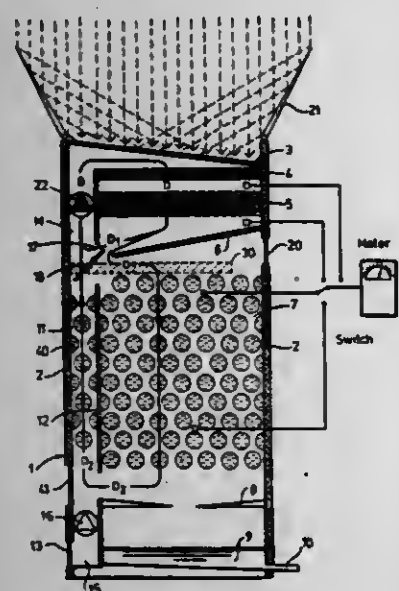
Helmut Michel, Esslingen-Salgries, and Wolfgang Bulang, Eichenau, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg AG, Fed. Rep. of Germany  
Filed Mar. 8, 1979, Ser. No. 18,699

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810241

Int. Cl.<sup>3</sup> B01D 53/04

U.S. Cl. 55—33

22 Claims



1. A method of recovering water from atmospheric air wherein during an adsorption phase, cool, humid air is transported through a water-adsorbent material for adsorption of water vapor therefrom and wherein during a desorption phase warmer, drier air is transported through said adsorbent material for pickup of water from said adsorbent material, said desorption phase comprising the steps of:

- generating a first air stream in a closed-loop path through a heater for heating said first air stream and thence to said adsorbent material and back through heater,
- continuing step (a) for a predetermined time,
- generating a second air stream by diverting a portion of said first air stream for circulation from said adsorbent material through a condenser for yielding water therefrom by condensation, and
- joining said second air stream to said first air stream after passage of said second air stream through said condenser, whereby said second air stream may be heated by said heater and passed through said adsorbent material.

4,285,703

# APPARATUS FOR CLEANING GAS

Robert O. Alexander, Mitcham, England, assignor to Cera International Limited, London, England

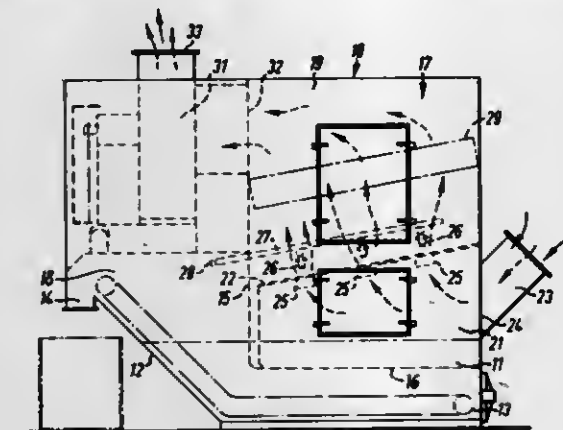
Continuation of Ser. No. 5,552, Jan. 22, 1979, abandoned. This application Apr. 4, 1980, Ser. No. 137,498

Claims priority, application United Kingdom, Jan. 23, 1978, 2703/78

Int. Cl.<sup>3</sup> B01D 47/06

U.S. Cl. 55—228

15 Claims



- Apparatus for cleaning gas, comprising:  
means for directing gas to be cleaned along a path through the apparatus;  
a plurality of spaced cylindrical passages positioned in said path and substantially spaced apart from one another thereby substantially reducing the cross-sectional area thereof and correspondingly significantly increasing the velocity of gas flow therethrough, said passages being arranged such that the total flow of gas through the apparatus is divided among the cylindrical passages;  
a plurality of spray nozzles positioned in said path and arranged in coaxial and longitudinally spaced relationship with respective ones of said passages, each nozzle being adapted to form a conical pattern of liquid spray which is directed within its respective passage, the divergence of each conical spray pattern and the radius of the associated cylindrical passage being such that the spray impinges on the cylindrical wall of the passage at a location axially spaced a substantial distance from an end of the passage adjacent the nozzle and rebounds therefrom to exit from the opposite end of said passage, with substantially no liquid flow through the passages in the direction of gas flow; and  
means for supplying liquid to said nozzles.

4,285,704

# APPARATUS FOR PURIFYING AIR

Georgiy I. Zuzanov, ulitsa Vavilova, 93, kv. 39; Iosif S. Mironkin, Balaklavsky prospekt, 4, korpus 5, kv. 301; Jury N. Tsarik, 9 mikroraiou Teplogo Stana, 2b, kv. 317; Natalia A. Alexandrova, 9 mikroraiou Teplogo Stana, 2b, kv. 218; Sergei N. Kamensky, ulitsa Koshtoyantsa 5, kv. 17, and Evgeny N. Nevedomsky, Nagorny bulvar, 3, kv. 54, all of Moscow, U.S.S.R.

Filed Aug. 10, 1979, Ser. No. 65,548

Claims priority, application U.S.S.R., Aug. 16, 1978, 2654709

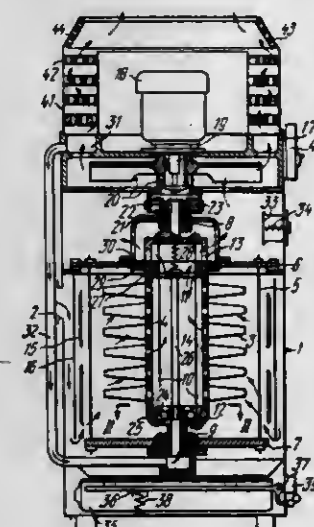
Int. Cl.<sup>3</sup> B01D 50/00

U.S. Cl. 55—274

7 Claims

- An apparatus for separating solid impurities from a fluid, such as air, comprising: a housing, having inlet and outlet chambers, and having mounted thereon in said outlet chamber a spring-loaded plate valve constructed and arranged to admit atmospheric air to said outlet chamber of said housing as desired; a suction port provided in said inlet chamber of said housing for drawing in air; a plurality of perforated sleeves and a socket element including shaft means mounted at each end of said sleeves to form a rotatably mounted cylindrical bellow

sleeve, the upper socket having gas outlet means, and said cylindrical hollow sleeve being rotatably mounted and located in said inlet chamber of said housing; a plurality of filtered elements secured on said perforated sleeves and being mounted between upper and lower plates, having central openings and dividing said housing into said inlet and outlet chambers with the outlet chamber above said upper plate and said inlet chamber residing between said upper and lower plates; fan means including a pressure space and air outlet means disposed above said outlet chamber for drawing off air from within said perforated sleeves which are rotatably mounted between the central openings of said plates; an electric motor having a shaft for rotating said fan means; a cyclone having louvers for preliminary separation of the solid impurities and being positioned around said filter elements and between said filter elements and said housing in said inlet chamber; a centrifugal coupling including a driver element secured to the shaft of said electric



motor and a driven element connected to one of said socket elements and said centrifugal coupling constructed and arranged to intermittently effect an automatic rotatable connection of said plurality of perforated sleeves with said electric motor so that after said electric motor reaches its full rpm value, the driven element of said coupling is disconnected from the driver element of said centrifugal coupling, so that said plurality of filter elements remain stationary while said apparatus is drawing off contaminated air; and a receptacle at the bottom portion of said housing for storing impurities separated from the air by said apparatus, whereby the solid impurities in said air, upon first entering said suction port, and subsequently passing through said cyclone, said filtered elements and said perforated sleeves, are separated therefrom, and the cleaner air, exiting from said end of said perforated sleeve connected to said driven element, enters said outlet chamber and then said pressure space before exiting to the atmosphere.

4,285,705

# APPARATUS FOR INFLUENCING THE BOUNDARY LAYERS AT WALLS

Hans-Joachim Niemann, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Mar. 7, 1979, Ser. No. 18,230

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810444

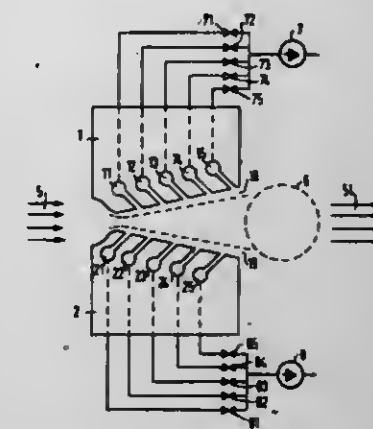
Int. Cl.<sup>3</sup> B01D 51/08

U.S. Cl. 55—277

5 Claims

- Device for influencing boundary layers at walls of flow guidance equipment encasing a fluid flow comprising means

defining collecting channels within the walls for controllably supplying and withdrawing fluid therewith, and means for



defining in the walls fine holes connected to said collecting channels.

4,285,706

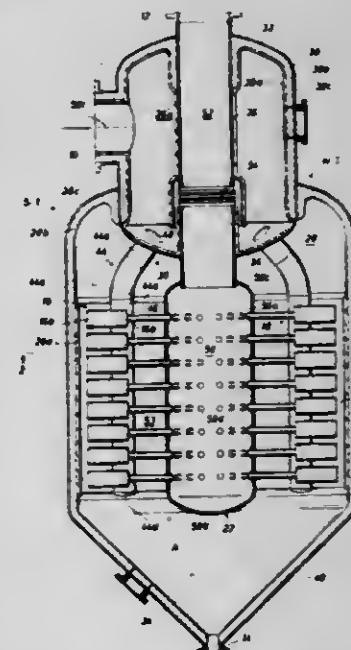
# PARTICULATE FILTRATION DEVICE

Manfred F. Dehne, 14350 Chrisman Rd., Houston, Tex. 77039  
Filed Mar. 20, 1979, Ser. No. 22,284

Int. Cl.<sup>3</sup> B01D 45/12; B04C 5/26

U.S. Cl. 55—343

12 Claims



- A particulate filtration system for receiving particulate laden gas and separating particulate from such particulate laden gas to produce a cleaned gas, comprising:

- a vessel housing including an entry housing section and a main vessel section, said entry housing section having an inlet adapted to receive particulate laden gas and a cleaned gas outlet and said main vessel section having a particulate vessel outlet;
- particulate laden gas transfer means mounted substantially in said main vessel section for transferring particulate laden gas from said entry section into said main vessel section, said particulate laden gas transfer means including a generally cylindrical transfer structure positioned substantially in said main vessel section, and mount means for mounting said generally cylindrical transfer structure within said main vessel section depending from and in fluid communication with said entry housing section for receiving particulate laden gas flowing into said entry housing section;
- a separator assembly positioned in said main vessel section and including a plurality of separator units for separating received particulate laden gas into particulate and cleaned gas, each separator unit including an inlet adapted to



receive particulate laden gas and a particulate outlet and a cleaned gas outlet;  
 cleaned gas transfer means including a generally cylindrical internal housing member;  
 internal mount means mounting said internal housing member in said entry housing section and in said main vessel section for receiving cleaned gas from said cleaned gas outlets of said separator units and directing said cleaned gas outwardly of said cleaned gas outlet of said entry housing section;  
 said internal housing member being positioned in said main vessel section substantially inwardly of said separator units and said generally cylindrical transfer structure;  
 said generally cylindrical transfer structure and said internal housing member cooperating to provide separator support means for mounting said separator units in a circumferential, vertically stacked arrangement with the inlets of said separator units being in fluid communication with said particulate laden gas transfer means and the cleaned gas outlets of said separator units being in fluid communication with said internal housing member; and,  
 particulate transfer means mounted in said main vessel section for transferring particulate from said particulate outlets of said separator units to said main vessel section particulate outlet.

4,285,707

# DUST SEPARATOR FOR SEPARATING DUST FROM FLOWING GASEOUS MEDIA

Haas Pfenniger, Baden, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

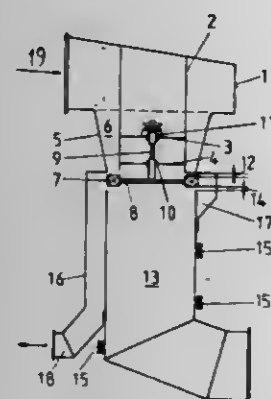
Filed Nov. 21, 1979, Ser. No. 96,332

Claims priority, application Switzerland, Dec. 1, 1978, 12297/78

Int. Cl.<sup>3</sup> B01D 45/12

U.S. Cl. 55—396

2 Claims



2. A dust separator for separating particles from a flowing gaseous media, said separator comprising:  
 a main flow conduit for conducting the gaseous media, means for imparting a swirling motion to the gaseous media within said main conduit;  
 a freely-rotating turbine wheel arranged at an outlet of said main conduit, said wheel including blades on the periphery thereof which are acted upon by air from said main conduit to rotate the turbine wheel;  
 an outlet conduit disposed downstream of said turbine wheel; and  
 an annular channel surrounding said turbine wheel, said channel communicating with said main conduit by means of a first gap situated between the outlet of said main conduit and the inlet of said turbine wheel, and communicating with said outlet conduit by means of a second gap situated between the outlet of said turbine wheel and an inlet of said outlet conduit;  
 said turbine wheel being mounted in an adjustable bearing defining means for adjusting said first gap, said outlet conduit being movable to enable said second gap to be adjusted.

4,285,708

# DE-ETHANIZING MEANS

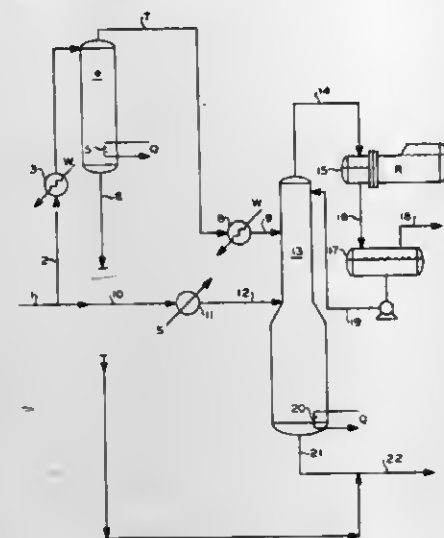
Leo L. Politte, and Stone P. Washer, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Filed Aug. 10, 1979, Ser. No. 65,500

Int. Cl.<sup>3</sup> F25J 3/02

U.S. Cl. 62—28

9 Claims



1. A method for the removal of ethane from a feedstream comprising methane, ethane and higher components which comprises:

- dividing the feedstream into two streams,
- passing one stream to a stabilizer zone to thereby remove the heavier components as bottom and passing the second stream to a de-ethanizer,
- feeding overhead vapor as obtained from the stabilizer to the de-ethanizer and introducing said vapors to the de-ethanizer in a location above the location said second stream is introduced,
- combining the bottoms of the de-ethanizer with the bottoms of the stabilizer at a location outside the de-ethanizer and outside the stabilizer and removing said combined bottoms as de-ethanized product.

4,285,709

# LIQUEFACTOR

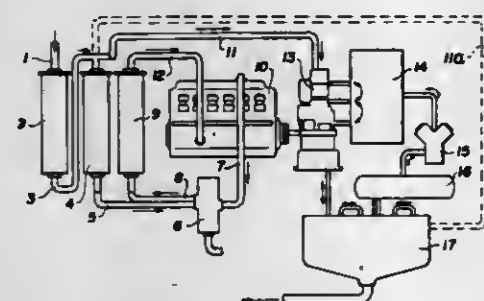
Anker Gram, North Vancouver, Canada, assignor to Cleanair Combustion Systems, Ltd., North Vancouver, Canada

Continuation of Ser. No. 838,195, Sep. 30, 1977, abandoned. This application May 31, 1979, Ser. No. 44,245

Int. Cl.<sup>3</sup> F25J 3/00

U.S. Cl. 62—36

19 Claims



1. An apparatus for purifying and liquifying natural gas comprising:

- a plurality of molecular sieve assemblies for purifying the gas;
- means for liquifying the gas comprising a compressor powered by a motor fueled by a portion of the natural gas;
- a heat exchanger for heating the portion of the natural gas with exhaust gases from the motor; and
- means for periodically changing modes of operation of the sieve assemblies so a first sieve assembly operates on a gas cleaning mode, wherein the natural gas passes through the

first sieve assembly to the means for liquifying, and a second sieve assembly is regenerated during a heating mode, wherein the portion of the gas from the heat exchanger passes through the second sieve assembly to heat the second sieve assembly and purge accumulated impurities, and a cooling mode, wherein the portion of gas flowing to the heat exchanger passes through the second sieve assembly to cool the second sieve assembly;  
 each sieve assembly comprising a plurality of passes each of which has a cross-sectional area which is less than that of the entire sieve assembly to increase the velocity of the portion of gas passing through the sieve assembly so that the portion of gas for fueling the motor is sufficient to regenerate the sieve assemblies.

4,285,710

# CRYOGENIC DEVICE FOR RESTRICTING THE PUMPING SPEED OF SELECTED GASES

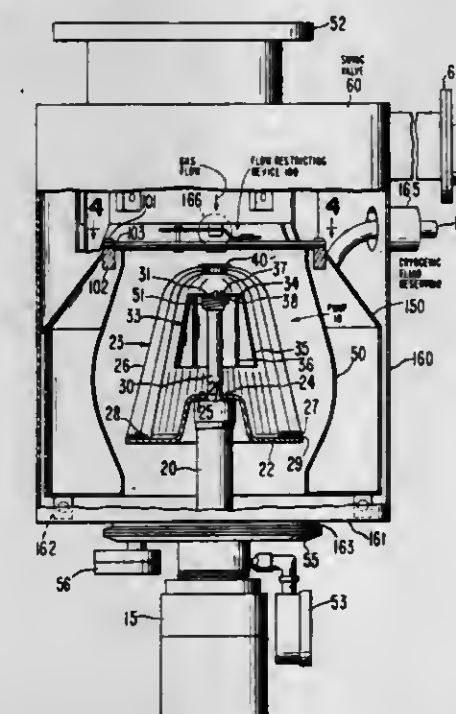
Kimo M. Welch, Mountain View, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 18, 1978, Ser. No. 943,276

Int. Cl.<sup>3</sup> F25J 1/02

U.S. Cl. 62—40

10 Claims



1. Apparatus for removing a first gas from a chamber at a pumping speed which can be varied over a substantial range while removing a second gas from the chamber at a relatively more constant speed, said apparatus comprising conduit means forming a gas flow path and having an inlet opening adapted to communicate with the chamber from which gas is to be pumped, flow restricting means within said conduit means and exposed to gas entering said inlet opening, pumping means for pumping gas which passes through said restricting means, said restricting means being positioned between said pumping means and said inlet opening;

said restricting means comprising stationary wall means positioned across said gas flow path and having solid portions and apertured areas, movable closure means having a plurality of closure segments positioned adjacent said stationary wall means, means for moving said segments toward and away from a position in which said segments cooperate with said stationary solid portions to substantially prevent gas flow through said restricting means, cooling means, structural connecting means interconnecting said stationary wall means and said cooling means and forming a high thermal conductivity path between said stationary wall means and said cooling means, said structural interconnecting means being distinct from said conduit means, and said movable closure means being connected to said stationary wall means by

structural connecting means which are distinct from said conduit means.

4,285,711

# METHOD AND APPARATUS FOR THE PRODUCTION OF GLASS FIBRES

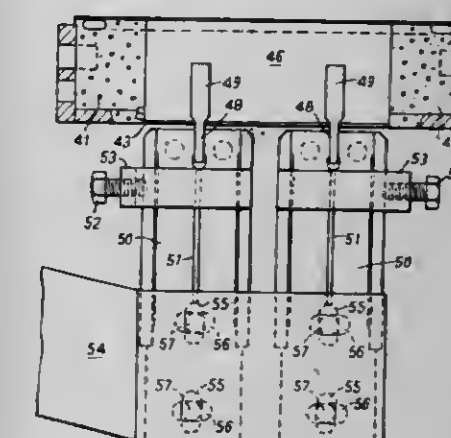
John H. Willis, 501 Drayton Cir., Anderson, S.C. 29621

Filed Feb. 6, 1980, Ser. No. 118,883

Int. Cl.<sup>3</sup> C03B 37/00

U.S. Cl. 65—1

5 Claims



1. In an apparatus for producing glass fibres by flowing a plurality of streams of molten glass through an electrically-heated bushing comprising a metal plate with a plurality of orifices therein, together with means for flowing an electric current through said plate to heat it, the improvement wherein the bushing is provided with at least two electrical terminals spaced apart widthwise of the bushing at each end thereof, together with individually adjustable connector means for each of said terminals, whereby in use the current flowing through each of said terminals is independently adjustable.

4,285,712

# APPARATUS AND METHOD FOR THE PRODUCTION OF GLASS FIBERS

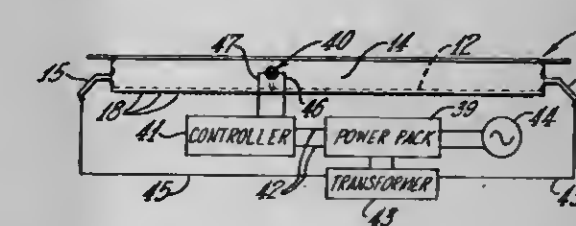
Thomas K. Thompson, Granville, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Oct. 22, 1979, Ser. No. 86,924

Int. Cl.<sup>3</sup> C03B 37/02

U.S. Cl. 65—2

16 Claims



1. Method of producing glass fibers from an electrically heated bushing having a bottom wall with an orifice section for delivery of glass streams for attenuation into fibers comprising:  
 a. attaching a temperature sensing means to the bushing bottom wall in the orifice area;  
 b. sensing the temperature at the orifice section;  
 c. supplying a signal that varies in response to the sensed temperature; and  
 d. indicating that a disruption in fiber production has occurred when the supplied signal is outside a predetermined range.



4,285,713

## METHOD AND APPARATUS FOR FEEDING BATCH MATERIAL

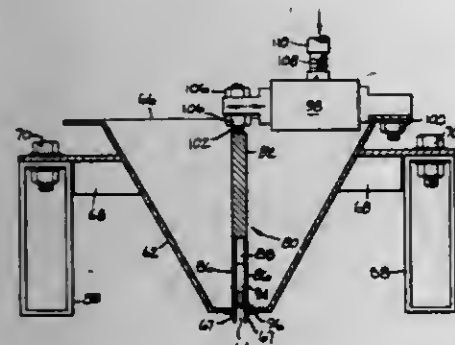
James E. Wilknski, Evergreen, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Jan. 14, 1980, Ser. No. 112,017

Int. Cl.<sup>3</sup> C03B 3/00

U.S. Cl. 65—27

17 Claims



1. Apparatus for depositing particulate material over a desired area, comprising:

- a carriage;
- means for supporting said carriage;
- means for moving said carriage above said area;
- a hopper supported on said carriage, said hopper having an elongated discharge opening;
- feed means disposed within said hopper;
- said feed means having a cavity adjacent one end thereof;
- said cavity having an opening in alignment with said elongated discharge opening;
- said feed means having a plurality of perforations opening into said cavity from each side thereof;
- means connected to the other end of said feed means for vibrating said feed means to cause particulate material to flow through said perforations into said cavity; and
- means for maintaining said opening of said cavity in alignment with said elongated discharge opening so that particulate material flowing into said cavity will flow out of said elongated discharge opening.

16. A method for depositing particulate material over a desired area, comprising:

- supporting a carriage above said area;
- supporting a hopper having a discharge opening upon said carriage;
- filling said hopper with particulate material;
- moving said carriage over said area;
- providing said hopper with a feed means having a cavity therein;
- mounting said feed means so that an opening of said cavity is in alignment with said discharge opening;
- vibrating said feed means to flow particulate material in said hopper into said cavity; and
- maintaining said opening of said cavity in alignment with said discharge opening during the vibration thereof so that said particulate material flows out of said cavity and through said discharge opening onto said area.

4,285,714

## ELECTROSTATIC BONDING USING EXTERNALLY APPLIED PRESSURE

Allen R. Kirkpatrick, Lexington, Mass., assignor to Spire Corporation, Bedford, Mass.

Continuation of Ser. No. 967,165, Dec. 7, 1978, abandoned. This application Mar. 18, 1980, Ser. No. 131,560

Int. Cl.<sup>3</sup> C03B 23/20; C03C 29/00

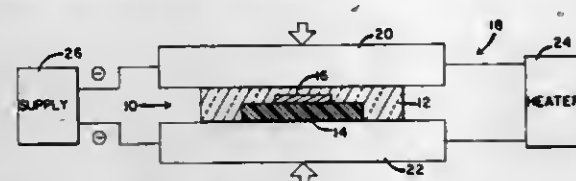
U.S. Cl. 65—40

12 Claims

5. A method for fabricating an electrostatically bonded laminated structure comprising the steps of:

- (a) superimposing a first stratum and a second stratum to form a layered structure, said first stratum being composed of a vitreous material and said second stratum being

- a conductor, semiconductor or a dielectric stratum, at least a portion of a surface of said first stratum in contact with at least a portion of a surface of said second stratum;
- (b) heating said layered structure to a temperature at which said vitreous material deforms;
- (c) exerting a pressure on said layered structure, said first stratum pressed against said second stratum, said surface of said first stratum molded by and conforming to said



surface of said second stratum due to deformation of said vitreous stratum at said temperature and pressure, said surface of said first stratum molded into a surface which is complementary to said surface of said second stratum, whereby said contacting surfaces are in full contact with one another; and

- (d) applying a voltage potential across said layered structure to form an electrostatically bonded, laminated structure.

4,285,715

## CYCLE OF MOLD MOVEMENT WHILE PRESS BENDING GLASS SHEETS

Robert G. Frank, Murraysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

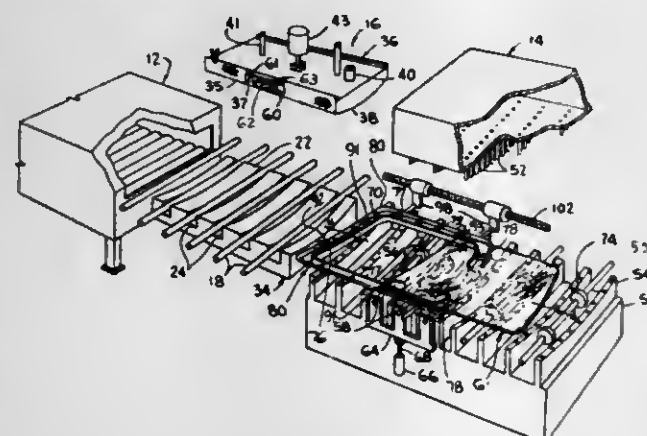
Continuation-in-part of Ser. No. 954,697, Oct. 25, 1978, Pat. No. 4,187,095, which is a continuation-in-part of Ser. No. 78,626, Sep. 25, 1979, Pat. No. 4,252,552. This application Jan. 11, 1980,

Ser. No. 111,511

Int. Cl.<sup>3</sup> C03B 23/03

U.S. Cl. 65—106

19 Claims



1. In the art of shaping glass sheets wherein a heat-softened glass sheet is delivered into a shaping station along a given path of travel, is lifted from said path of travel toward a downwardly facing shaping surface of a vacuum mold and transferred by suction onto said vacuum mold, the improvement comprising maintaining said vacuum mold in a parking position at an elevation not exceeding three thicknesses of said glass sheet above said given path, yet sufficiently high to permit said glass sheet to be delivered to a position beneath said vacuum mold along said given path of travel; lifting said heat-softened glass sheet toward said vacuum mold on a lifting mold having an upwardly facing shaping surface when said glass sheet arrives at said shaping station; simultaneously applying suction to said vacuum mold while starting to lift said lifting mold toward said vacuum mold until said lifted glass sheet is supported against and shaped to conform to said downwardly facing shaping surface; lowering said lifting mold from said vacuum mold when said glass sheet is transferred to said vacuum mold and lifting said vacuum mold a sufficient distance to

allow entry of a ring-like member into said shaping station beneath said vacuum mold and above said given path.

9. Apparatus for shaping a glass sheet comprising a conveyor defining a given path of travel, a furnace for heating said glass sheet to its deformation temperature, a shaping station located downstream of said furnace, said conveyor extending through said furnace and into said shaping station and a cooling station located immediately downstream of said shaping station;

said shaping station comprising a lower lifting mold having an upwardly facing shaping surface, means for moving said lifting mold between a lowered position wherein said upwardly facing shaping surface is located immediately beneath said given path of travel and a lifted position wherein said upwardly facing shaping surface is located immediately above said given path of travel, an upper vacuum mold having a downwardly facing shaping surface that is apertured for drawing suction through the apertures of said shaping surface, and means for moving said upper vacuum mold between a parking position wherein its downwardly facing shaping surface is spaced above said given path of travel by a minimum distance greater than the thickness of said glass sheet and a maximum distance greater than the thickness of said glass sheet and a maximum distance sufficiently closely above said upwardly facing shaping surface of said lifting mold when said lifting mold occupies its lifted position to enable suction drawn through said apertures to lift said glass sheet by suction from said lifting mold and a raised position;

means to control the application of suction through said apertures from the time that said lifting mold starts to move upwardly from its lowered position until after said upper vacuum mold moves upwardly to said raised position;

a ring-like member and means to move said ring-like member from said cooling station in an upstream direction into said shaping station beneath said upper vacuum mold when said vacuum mold occupies its raised position, said raised position being sufficiently above said given path to provide clearance for said ring-like member between said upper vacuum mold and said given path;

means to control said movement of said ring-like member in an upstream direction into said cooling station until said upper vacuum mold has moved upward into said raised position and said lower, lifting mold is not above said given path;

means to control the application of said suction through said downwardly facing shaping surface of said upper vacuum mold until such time as said ring-like member is below said upper vacuum mold; and

means synchronized with the stopping of said suction application to move said ring-like member in a downstream direction into said cooling station and to lower said lifting mold to its lowered position, and, when said ring-like member clears said shaping station, to lower said upper vacuum mold to its parking position to await the arrival of a succeeding glass sheet from said furnace.

4,285,716

## METHOD OF QUENCHING GLASS SHEETS

Sachiro Hono, Muro; Masaki Ijichi, Kyoto; Hiroaki Masunaga, Nagakakyō, and Keiji Hara, Joyn, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Jul. 16, 1979, Ser. No. 57,561

Claims priority, application Japan, Jul. 14, 1978, 53-85177

Int. Cl.<sup>3</sup> C03B 27/04

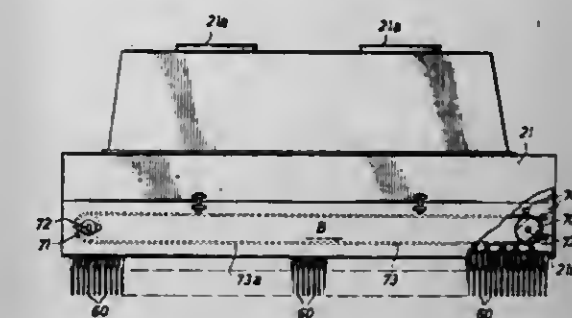
U.S. Cl. 65—114

5 Claims

1. A method of quenching glass sheets characterized in that a heated glass sheet is moved through a quenching section, is blown with air in some portions from a plurality of nozzles during said movement so as to provide rapidly cooled portions and uncooled portions;

wherein the air is intermittently jetted out of nozzles ar-

ranged as opposed to the entire glass sheet moving area in said quenching section, and the air jetting nozzles through which the air is jetted out are opened and closed in turn by advancing baffles so as to coincide with the moving speed and moving direction of said glass sheet by synchronizing said intermittent jetting of air with the movement of said



glass sheet to provide, on the glass sheet surface, portions blown with air and portions blown with no air alternately in the glass sheet advancing direction; and wherein the synchronizing of the jetting is provided by a chain driving the advancing baffles and running in unison with the advancing glass sheet.

4,285,717

## METHOD OF INITIATING OPERATION OF TUBULAR HEAT EXCHANGER FOR PREHEATING PULVEROUS GLASS BATCH

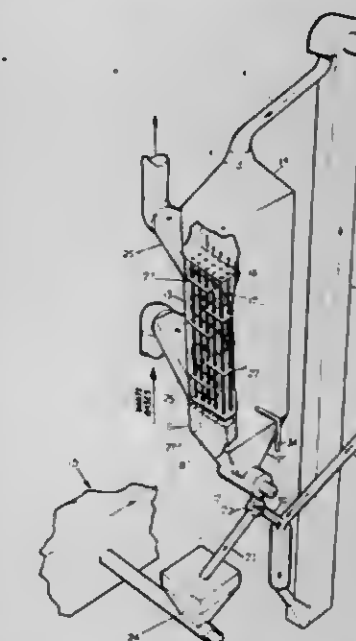
John D. Novak, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 19, 1980, Ser. No. 150,855

Int. Cl.<sup>3</sup> C03B 3/00

U.S. Cl. 65—134

10 Claims



1. The method of initiating the preheating of a pulverous, moisture-containing material such as glass batch, and the like, within a tubular heat exchanger prior to delivery of such material in preheated condition to a melting furnace comprising the steps of introducing the fully-intermixed, pulverous material into the upper region of a tubular heat exchanger, allowing the pulverous material to flow downwardly by gravity through a plurality of open-ended tubes of said heat exchanger, passing the hot waste gases of the melting furnace through said heat exchanger around said open-ended tubes to heat the pulverous material contained therein by indirect heat transfer, recirculating all of the pulverous material rapidly through the tubes of said heat exchanger during start-up while the said pulverous material is heated by contact with the tube inner surfaces, said material being recycled at a substantially-faster flow rate than



when the heat exchanger is subsequently continuously operated to preheat the pulverous material for delivery to said melting furnace.

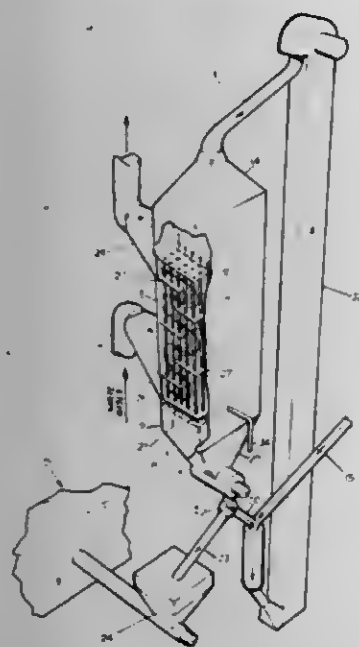
#### 4,285,718 METHOD OF OPERATING TUBULAR HEAT EXCHANGER FOR PREHEATING PULVEROUS GLASS BATCH

Richard G. Mathias, Toledo; John D. Novak, Sylvania; Robert R. Rough, Sr., Toledo; Owen M. Small, and Sigmand Willinger, both of Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 30, 1980, Ser. No. 154,690  
Int. Cl.<sup>3</sup> C03B 3/00

U.S. Cl. 65-134

6 Claims



1. In the process of preheating pulverous moisture-containing material such as glass batch, and the like, within a tubular heat exchanger prior to delivery of such material in preheated, moisture-free condition to a melting furnace, which process includes the steps of allowing the pulverous material to flow downwardly by gravity through a plurality of open-ended tubes of said heat exchanger, passing hot gases through said heat exchanger around said open-ended tubes to heat the pulverous material contained therein by indirect heat transfer, and delivering the preheated pulverous material into the melting furnace, the improvement comprising the step of immediately directing a cooling fluid against the exterior surfaces of the tubes of said heat exchanger upon interruption of flow of said pulverous material through said heat exchanger in order to prevent pluggage of said tubes due to an increased coefficient of friction.

#### 4,285,719 ORGANIC MATERIAL RECYCLING METHOD AND DEVICE

Jeremy F. Criss, 5308 Emerald Dr., Sykesville, Md. 21784  
Continuation-in-part of Ser. No. 878,162, Feb. 15, 1978, abandoned. This application Dec. 31, 1979, Ser. No. 108,551  
Int. Cl.<sup>3</sup> C05F 3/04, 9/04

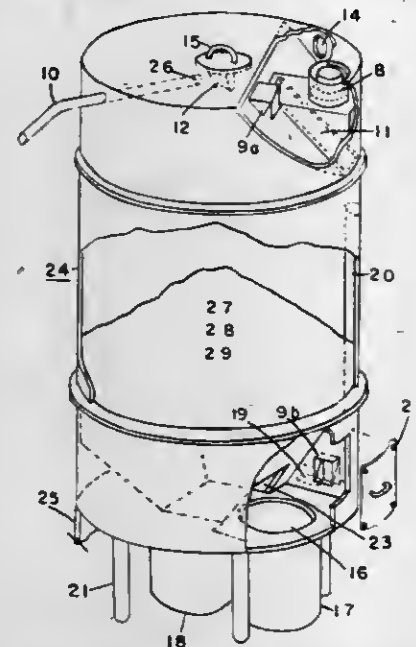
U.S. Cl. 71-13

3 Claims

1. A continuous process for converting human wastes and cellulosic material into a non-odiferous soil-like composted material, to provide means for disposing large quantities of these materials without polluting the environment, comprising the steps of:

- depositing human and liquid wastes in a first chamber;
- depositing water into said first chamber to dilute said human wastes and to clean the surfaces of said first chamber;

- providing a second chamber, said second chamber being connected to said first chamber by valved conduit means;
- filling said second chamber from about 1/10 to about 1/2 full with cellulosic material or with a mixture of cellulosic material and topsoil, the volume ratio of cellulosic material and topsoil being from about 6:1 to about 1:1 when a mixture of cellulosic material and topsoil is used;
- seeding earth worms into said cellulosic material or said mixture of cellulosic material and topsoil in said second chamber;
- transferring said human wastes, diluted in step (b), from said first chamber to said second chamber, said wastes being transferred through said valved conduit means by differential pressure;
- periodically depositing a layer of cellulosic material on



- top of the diluted human waste transferred to said second chamber, the volume ratio of said layer of cellulosic material ranging from about 1:2 to about 3:1 relative to the volume of said diluted human wastes;
- selectively exposing the contents of said second chamber to warm natural air convection at a temperature from about 50° F. to 100° F. and a humidity of from about 30 to about 100%, except when said transferring step (f) is in progress;
- draining excess liquid, if any, from said second chamber;
- allowing the earth worm hatching cycle and rebirth to proceed in said second chamber; and
- periodically removing from the lower portion of said second chamber a soil-like material comprised of worm-reacted human waste, water, cellulosic material, worm capsules, worms and worm castings.

#### 4,285,720 ENCAPSULATION PROCESS AND CAPSULES PRODUCED THEREBY

Herbert B. Scher, Moraga, Calif., assignor to Stauffer Chemical Company, Westport, Conn.  
Continuation of Ser. No. 323,171, Jan. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 234,793, Mar. 15, 1972, abandoned. This application Jul. 7, 1978, Ser. No. 922,473  
Int. Cl.<sup>3</sup> A01N 25/28, 43/00; B01J 13/02

U.S. Cl. 71-88

106 Claims



1. A process of encapsulating water-immiscible material within discrete capsules of polyurea without addition of a second reactant, whereby hydrolysis of an isocyanate mono-

mer to form an amine takes place which in turn reacts with another isocyanate monomer to form polyurea, which comprises the steps:

- providing, at room temperature, a dispersion of (i) a water-immiscible phase comprising the water-immiscible material to be encapsulated and an organic polyisocyanate in (ii) an aqueous phase comprising a solution of water, a surfactant and a protective colloid; and
- heating and maintaining said dispersion in a temperature range of about 40° C. to about 90° C.; whereupon said water-immiscible material is encapsulated within discrete polyurea capsular enclosures directly usable without further separation or purification.

23. Capsules capable of controlled release of encapsulated organic material comprising a thiocarbamate herbicide enclosed in a polyurea microcapsule produced by the process of claim 1.

#### 4,285,721 METHOD OF INCREASING THE YIELDS OF SUGAR OBTAINED FROM SUGARCANE

Sidney B. Richter, Fairlawn, Ohio, assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Oct. 5, 1979, Ser. No. 82,197  
Int. Cl.<sup>3</sup> A01N 43/08

U.S. Cl. 71-88

2 Claims

1. A method for increasing the recoverable sugar in sugarcane which comprises contacting the sugarcane with an effective amount of furfuryl 2-methoxy-3,6-dichlorobenzoate during the period of from about 2 to about 10 weeks before harvest.

#### 4,285,722 IMIDAZOLYL AND TRIAZOLYL COMPOUNDS, COMPOSITIONS CONTAINING THEM AND METHODS OF USING THEM AS PLANT FUNGICIDAL AND GROWTH REGULATING AGENTS

Paul A. Worthington, and Keith P. Parry, both of Maidenhead, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 4, 1979, Ser. No. 36,163

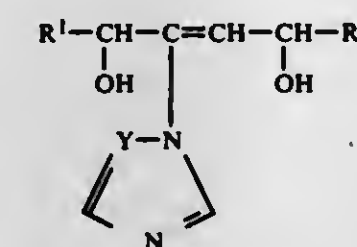
Claims priority, application United Kingdom, May 11, 1978, 18981/78; May 11, 1978, 18982/78

Int. Cl.<sup>3</sup> C07D 233/54, 249/08

U.S. Cl. 71-92

8 Claims

1. A compound of general formula (I)



wherein each of R<sup>1</sup> and R<sup>2</sup>, which may be the same or different, is unsubstituted or methyl-substituted C<sub>3-6</sub> cycloalkyl, unsubstituted or halo-substituted C<sub>1-6</sub> alkyl or unsubstituted or halo-, C<sub>1-4</sub> alkyl-, C<sub>1-4</sub> alkoxy-, phenyl- or nitro-substituted phenyl, and Y is =N- or =CH-; or a fungicidal or plant growth regulating acid addition salt or metal complex thereof wherein said salt is a salt of hydrochloric acid, nitric acid, sulphuric acid, acetic acid, p-toluene sulphonic acid or oxalic acid and said complex is prepared by reacting the uncomplexed compound of formula (I) with a metal salt in a suitable solvent.

#### 4,285,723 SELECTIVE HERBICIDES

David Cartwright, Reading, and David J. Collins, Crowthorne, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 642, Jan. 2, 1979, abandoned.

This application Jul. 12, 1979, Ser. No. 57,005

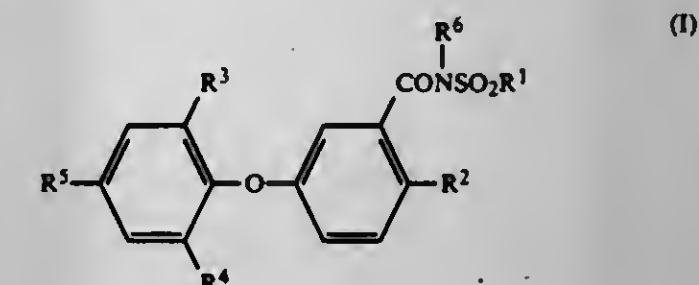
Claims priority, application United Kingdom, Jan. 19, 1978, 2237/78; May 30, 1978, 23772/78

Int. Cl.<sup>3</sup> A01N 41/06; C07C 143/74, 143/78

U.S. Cl. 71-103

9 Claims

1. Herbicidal diphenyl ether compounds of the formula (I)



and salts thereof,

wherein R<sup>1</sup> is an alkyl group of 1 to 6 carbon atoms optionally substituted by one or more fluorine atoms, or by a phenyl group optionally substituted by one or more halogen atoms; R<sup>2</sup> is a hydrogen atom, a fluorine, chlorine, bromine, or iodine atom, or a nitro group; R<sup>3</sup> is a hydrogen atom, a fluorine, chlorine, bromine, or iodine atom, an alkyl group of 1 to 6 carbon atoms, a trifluoromethyl group, or a cyano group; R<sup>4</sup> is a hydrogen atom, a fluorine, chlorine, bromine, or iodine atom, or a trifluoromethyl group; R<sup>5</sup> is a fluorine, chlorine, bromine, or iodine atom or a trifluoromethyl group; and R<sup>6</sup> is a hydrogen atom or an alkyl group of 1 to 4 carbon atoms.

#### 4,285,724 CONTINUOUS PRODUCTION OF FINELY DIVIDED ZIRCONIUM POWDER

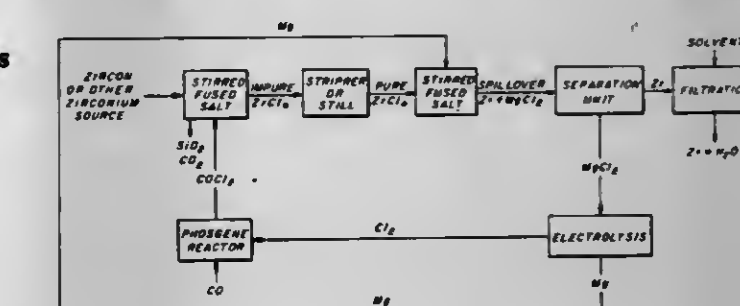
Aaron J. Becker, Monroeville, and Don R. Careatti, Apollo, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 15, 1979, Ser. No. 94,654

Int. Cl.<sup>3</sup> C22B 34/14

U.S. Cl. 75-84.4

12 Claims



1. A process for production of finely divided Zr powder by reaction of ZrCl<sub>4</sub> with Mg, comprising the steps of

- providing a molten salt bath comprising about 5 to 95 mole % ZrCl<sub>4</sub>, about 0 to 45 mole % MgCl<sub>2</sub>, and the remainder KCl, NaCl or mixtures of KCl and NaCl;
- maintaining the bath at a temperature greater than the solidus temperature of the bath and less than the melting point of Mg, said temperature being about 540° to 649° C.;
- feeding gaseous ZrCl<sub>4</sub> to a lower portion of the bath;
- reacting the ZrCl<sub>4</sub> with solid Mg to form MgCl<sub>2</sub> and Zr powder; and
- separating the Zr powder from the bath.



4,285,725\*

## NON-MAGNETIZABLE STEEL CASTING ALLOY, ITS USE AND PROCESS OF MANUFACTURE

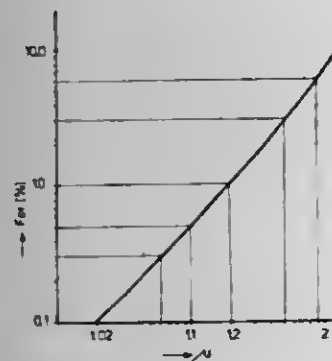
Walter Gysel, Schaffhausen, Switzerland, and Adolf Trantwein, Gottmadingen, Fed. Rep. of Germany, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland  
PCT No. PCT/CH78/00040, 8371 Date Jul. 30, 1979, 8102(e), Date Jul. 23, 1979, PCT Pub. No. WO79/00328, PCT Pub. Date Jun. 14, 1979.

This PCT application filed Nov. 24, 1978, Ser. No. 118,805  
Claims priority, application Switzerland, Nov. 30, 1977, 14647/77; Jan. 24, 1978, 726/78

Int. Cl.<sup>3</sup> C22C 39/20

U.S. Cl. 75-128 A

4 Claims



1. A non-magnetizable steel alloy cast in its final form having the composition

C	max. 0.30%
Si	max. 2.00%
Mn	4.00-20.00%
Cr	10.00-20.00%
Ni	4.00-12.00%
Mo	max. 3.00%
N <sub>2</sub>	0.02-0.20%

with the remainder being iron, having magnetic permeability  $\mu \leq 1.20$ , in large solidification cross sections in the range of 100 to 500 mm in the residual solidification zone, a CrNiMn equivalence factor:  $f = 6.5 - \%Cr - 0.4\%Ni + 0.1 \text{ wt.\%Mn} + 0.075 \text{ wt.\%Cr} - \%Ni + 0.013\%Cr - \%Mn - 0.02\%Ni - \%Mn$ , wherein  $f$  is between -2.5 and -1.5.

4,285,726

## ACTIVE ANTI-CORROSION PIGMENTS BASED ON CALCIUM OXIDE, ALUMINIUM OXIDE AND IRON OXIDE

Franz Hund, and Peter Kresse, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 21,873, Mar. 19, 1979, abandoned. This application Jul. 10, 1980, Ser. No. 168,221

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1978, 2815306

Int. Cl.<sup>3</sup> C09C 1/00, 1/22

U.S. Cl. 106-14.05

14 Claims

1. An anti-corrosion pigment consisting essentially of about 25.0 to 25.5 mole % of CaO and about 75.0 to 97.5 mole % of  $\text{Me}_2\text{O}_3$ , wherein  $\text{Me}_2\text{O}_3$  is  $(1-x)\text{Al}_2\text{O}_3$  and  $x\text{Fe}_2\text{O}_3$ ,  $x$  is from 0 to 1 and up to about 25 mole % of the  $\text{Fe}_2\text{O}_3$  may be replaced by the corresponding quantity of  $\text{Mn}_2\text{O}_3$ , and having a specific surface area according to BET of about 0.1 to 200  $\text{m}^2/\text{g}$  and a percentage weight loss per gram of pigment, as determined by the Thompson corrosion test, of less than about 0.05% per gram of pigment.

4,285,727

## INK COMPOSITIONS FOR INK JET RECODING

Masafumi Uehara, and Mitsuyoshi Itano, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1979, Ser. No. 103,609

Claims priority, application Japan, Dec. 18, 1978, 53-158074

Int. Cl.<sup>3</sup> C09D 11/00

U.S. Cl. 106-22

12 Claims

1. An ink composition for ink jet recording which consists essentially of an aqueous medium, 0.5 to 8% by weight of a water-soluble acid or direct dye, 45 to 70% by weight of a polyhydric alcohol having 2 to 6 carbon atoms, and an amount of potassium carbonate effective to improve the storability of said composition.

4,285,728

## METHOD OF MAKING LOW EXPANSION CRYSTALLIZED GLASS-CERAMICS AND TELESCOPE MIRROR BLANKS MADE THEREBY

Clarence L. Babcock, Toledo; Robert A. Busdiecker, Woodville, and Erwin C. Hagedorn, Oregon, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

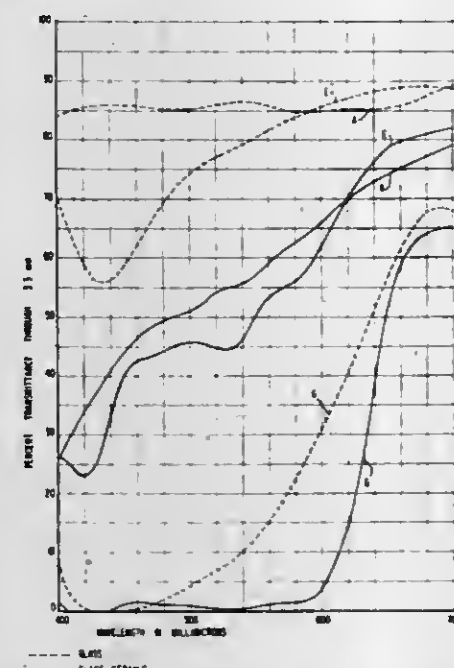
Division of Ser. No. 547,690, Feb. 6, 1975, Pat. No. 4,192,688, which is a continuation of Ser. No. 533,575, Dec. 17, 1974, abandoned, which is a continuation of Ser. No. 269,667, Jul. 7, 1972, abandoned, which is a division of Ser. No. 70,500, Sep. 8, 1970, Pat. No. 3,788,865, which is a continuation of Ser. No. 464,147, Jan. 15, 1965, abandoned, which is a

continuation-in-part of Ser. No. 386,693, Jul. 31, 1964, abandoned. This application Oct. 9, 1979, Ser. No. 83,061

Int. Cl.<sup>3</sup> C03C 3/22, 3/04, 3/20; C03B 32/00

U.S. Cl. 106-39.7

11 Claims



1. A transparent low-expansion at least partially crystalline non-porous glass-ceramic telescope mirror blank formed by thermal in situ crystallization of a thermally crystallizable base glass consisting essentially of the following components in the indicated weight percent limits, based on the total composition:

Component	Weight Percent
SiO <sub>2</sub>	56-70
Al <sub>2</sub> O <sub>3</sub>	18-27
Li <sub>2</sub> O	3.4-4.5
CaO	0-3
ZnO	0-2
B <sub>2</sub> O <sub>3</sub>	0-4
TiO <sub>2</sub>	0-6
ZrO <sub>2</sub>	0-3

-continued

Component	Weight Percent
MgO	0-3
Na <sub>2</sub> O	0-1
P <sub>2</sub> O <sub>5</sub>	0-3
(SiO <sub>2</sub> + Al <sub>2</sub> O <sub>3</sub> )	at least 82
(SiO <sub>2</sub> + Al <sub>2</sub> O <sub>3</sub> + B <sub>2</sub> O <sub>3</sub> + P <sub>2</sub> O <sub>5</sub> )	86-91
(CaO + MgO + ZnO + Na <sub>2</sub> O)	2.5-6
(SiO <sub>2</sub> + Al <sub>2</sub> O <sub>3</sub> + P <sub>2</sub> O <sub>5</sub> + Li <sub>2</sub> O)	no more than 93
TiO <sub>2</sub> + ZrO <sub>2</sub>	2-6

wherein the ratio of  $(\text{CaO} + \text{MgO} + \text{ZnO} + \text{Na}_2\text{O} + \text{B}_2\text{O}_3)$  to  $\text{Li}_2\text{O}$  is less than 2.4 and the ratio of  $\text{SiO}_2$  to  $\text{Al}_2\text{O}_3$  is no more than 3.8 said transparent crystallized glass-ceramic containing as predominant crystalline species lithium-containing crystalline phases selected from the group consisting of beta-eucryptite, beta-spodumene, and mixtures thereof, said glass-ceramic containing a multiple of such crystalline species in random orientation throughout said glass-ceramic and dispersed in a glassy matrix remaining as a result of said in situ crystallization, substantially all of the crystals of said glass-ceramic being of a diameter less than  $\frac{1}{2}$  micron measured across the largest lineal dimension of the crystals, said transparent crystallized glass-ceramic having a coefficient of thermal lineal expansion within the range of from  $10 \times 10^{-7}$  to minus  $10 \times 10^{-7}$  over the temperature range of from 0°-300° C.

5. A method of making an at least partially crystalline, non-porous transparent glass-ceramic article having a substantial thickness of at least one-half inch and having a substantially uniform coefficient of thermal expansion within the range of -10 to  $10 \times 10^{-7}$  per ° C. (0°-300° C.) inch comprises:

making a thermally crystallizable glass melt having a composition consisting essentially of the following components present in the glass in the following weight percent ranges:

Component	Weight Percent
SiO <sub>2</sub>	56-70
Al <sub>2</sub> O <sub>3</sub>	18-27
Li <sub>2</sub> O	3.4-4.5
CaO	0-3
ZnO	0-2
B <sub>2</sub> O <sub>3</sub>	0-4
TiO <sub>2</sub>	0-6
ZrO <sub>2</sub>	0-3
MgO	0-3
Na <sub>2</sub> O	0-1
P <sub>2</sub> O <sub>5</sub>	0-3
(SiO <sub>2</sub> + Al <sub>2</sub> O <sub>3</sub> )	at least 82
(SiO <sub>2</sub> + Al <sub>2</sub> O <sub>3</sub> + B <sub>2</sub> O <sub>3</sub> + P <sub>2</sub> O <sub>5</sub> )	86-91
(CaO + MgO + ZnO + Na <sub>2</sub> O)	2.5-6
(SiO <sub>2</sub> + Al <sub>2</sub> O <sub>3</sub> + P <sub>2</sub> O <sub>5</sub> + Li <sub>2</sub> O)	no more than 93
TiO <sub>2</sub> + ZrO <sub>2</sub>	2-6

wherein the ratio of  $(\text{CaO} + \text{MgO} + \text{ZnO} + \text{Na}_2\text{O} + \text{B}_2\text{O}_3)$  to  $\text{Li}_2\text{O}$  is less than 2.4 and the ratio of  $\text{SiO}_2$  to  $\text{Al}_2\text{O}_3$  is no more than 3.8,

forming a glass article of predetermined size and shape from said glass melt, subjecting the shaped glass to a nucleation temperature range of from minus 30° F. below the annealing point to 250° F. above the annealing point of said glass to form a multiplicity of nuclei therein,

and thereafter subjecting said nucleated glass to an increased temperature for a sufficient period of time to promote in situ crystallization of said glass article the temperature at the outer surface of said thick article being higher than the temperature at the inner portion of said article, maintaining said article at said temperature until the temperature of the inner portion of said article has substantially increased, decreasing the temperature of the outer surface of said thick article until it is relatively cooler than the inner portion of said article,

then continuously repeating the cycle of heating the outer portion of the article to a temperature greater than the

inner portion of the article and subsequently decreasing the temperature of the outer surface to a temperature cooler than the inner portion of said article until a partially crystalline, non-porous, transparent glass-ceramic article is formed containing as predominant crystalline species lithium-containing crystalline phases selected from the group consisting of beta-eucryptite, beta-spodumene, and mixtures thereof,

said glass-ceramic containing a multitude of such crystalline species in random orientation throughout said glass-ceramic and dispersed in a glassy matrix remaining as a result of said in situ crystallization, substantially all of the crystals of said ceramic being of a diameter less than  $\frac{1}{2}$  micron measured across the largest lineal dimension of the crystals,

wherein the said crystallization temperatures to which said thick nucleated glass article is subjected can vary by about 50° to 100° F., said thick transparent crystallized glass-ceramic article which is formed having a substantially uniform coefficient of lineal thermal expansion of from minus 10 to  $10 \times 10^{-7}$  per ° C. (0°-300° C.).

4,285,729

## DENSE CROWN OPTICAL GLASS

Shizao Matsumaru, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 7, 1979, Ser. No. 101,227

Claims priority, application Japan, Dec. 14, 1978, 53-153623

Int. Cl.<sup>3</sup> C03C 3/08, 3/10

U.S. Cl. 106-47 Q

2 Claims

1. Dense crown optical glass having excellent chemical durability, a refractive index  $n_d$  in the range of 1.610-1.625 and an Abbe number  $v_d$  in the range of 57-61, consisting essentially of, in percent by weight:

SiO <sub>2</sub>	26.12
B <sub>2</sub> O <sub>3</sub>	25.86
BaO	30.52
CaO	6.67
Al <sub>2</sub> O <sub>3</sub>	2.81
Li <sub>2</sub> O	8.02

4,285,730

## MOLDABLE GLASSES

Leon M. Sanford, Painted Post, and Paul A. Tick, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 82,150, Oct. 5, 1979,

abandoned. This application Oct. 20, 1980, Ser. No. 198,437

Int. Cl.<sup>3</sup> C03C 3/16

U.S. Cl. 106-47 R

5 Claims

1. An anhydrous glass suitable for being molded or otherwise shaped under pressure at temperatures below about 450° C. having a base composition wherein  $\text{Al}_2\text{O}_3$  is essentially absent consisting essentially, expressed in mole percent as analyzed on the oxide basis, of at least 20% but less than 50%  $\text{P}_2\text{O}_5$ , 15-45%  $\text{R}_2\text{O}$ , wherein  $\text{R}_2\text{O}$  consists of 0-45%  $\text{Li}_2\text{O}$ , 0-20%  $\text{Na}_2\text{O}$ , and 0-10%  $\text{K}_2\text{O}$ , and 0-20%  $\text{RO}$ , wherein  $\text{RO}$  consists of 0-10%  $\text{MgO}$ , 0-15%  $\text{CaO}$ , 0-20%  $\text{SrO}$ , and 0-20%  $\text{BaO}$ , with about 0.3-3% by weight F as analyzed in the final glass.

4,285,731

## LEAD-FREE AND CADMIUM-FREE FRITS

Jaroslava M. Nigra, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 15, 1980, Ser. No. 121,744

Int. Cl.<sup>3</sup> C03C 3/08, 5/00

U.S. Cl. 106-48

2 Claims

1. A frit essentially free from cadmium and lead demonstrat-



ing good glass stability, a coefficient of thermal expansion ( $20^{\circ}$ – $300^{\circ}$  C.) between about  $65\text{--}75 \times 10^{-7}/^{\circ}\text{C.}$ , a viscosity suitable for firing at about  $700^{\circ}$ – $950^{\circ}$  C., and excellent resistance to attack by acids and bases as evidenced by no change of gloss and a weight loss of no more than about 0.02% after immersion for 24 hours at  $96^{\circ}$  C. into an aqueous solution containing 10% by weight citric acid and by no change of gloss and a weight loss of no more than about 0.02% after immersion for 24 hours at  $96^{\circ}$  C. into an aqueous solution containing 0.3% by weight of an alkaline detergent, said frit consisting essentially, expressed in weight percent on the oxide basis as calculated from the batch, of

SiO <sub>2</sub>	35–47
B <sub>2</sub> O <sub>3</sub>	5.5–9
BaO	24–42
TiO <sub>2</sub>	1.5–4
ZrO <sub>2</sub>	6–10
Li <sub>2</sub> O	1–5
MgO	0–5
CaO	0–4
SrO	0–8
ZnO	0–10
Bi <sub>2</sub> O <sub>3</sub>	0–8
MgO + CaO + SrO + ZnO + Bi <sub>2</sub> O <sub>3</sub>	0–10

4,285,733

# CORROSION INHIBITING CONCRETE COMPOSITION

Arnold M. Rosenberg, Potomac, and James M. Caddis, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 18,085, Mar. 6, 1979, abandoned. This application Feb. 22, 1980, Ser. No. 123,741

Int. Cl.<sup>3</sup> C04B 7/02

U.S. Cl. 106—98

10 Claims

1. A method of substantially completely inhibiting the corrosion of metal pieces contained in a reinforced concrete structure comprising

forming an unset concrete composition by substantially uniformly mixing a concrete mixture formed from hydraulic cement, sand, aggregate and water with at least 2 percent calcium nitrite by weight based on the dry weight of the cement content contained in said concrete mixture wherein the concrete composition is capable of exhibiting a compressive strength of at least 5000 psi at 28 days; embedding metal pieces in said unset concrete composition while forming a shaped structure; and permitting said composition to set.

4,285,734

# CHEMICALLY MODIFIED BITUMEN COMPOSITION

Alfred Marzocchi, Michael G. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

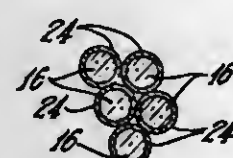
Division of Ser. No. 55,738, Jul. 9, 1979, Pat. No. 4,251,577.

This application Jun. 19, 1980, Ser. No. 160,800

Int. Cl.<sup>3</sup> B32B 11/00; C08L 95/00

U.S. Cl. 106—273 R

5 Claims



1. A chemically modified bitumen composition consisting essentially of the reaction of (a) a bitumen and (b) a chromic complex containing a carboxylate group containing a functional group reactive with the bitumen.

4,285,735

# FRUCTOSE POLYMER MIXTURE

William A. Mitchell, 175 Jacksonville Rd., Lincoln Park, N.J. 07035; Charles E. Mitchell, 1336 Woodcrest Ct., Fort Collins, Colo. 80526, and Pat R. Mitchell, 446 N. Powers, Manteca, Calif. 95336

Filed Mar. 10, 1980, Ser. No. 128,978

Int. Cl.<sup>3</sup> C13L 3/00

U.S. Cl. 127—29

9 Claims

1. The process for extracting a fructose polymer mixture dispersion from dahlia tubers without adding water or heating, comprising

grinding scrubbed dahlia tubers at temperatures of  $2^{\circ}$  to  $40^{\circ}$  C. to about a 10 mesh particle size; and then separating the water solubles from the insoluble fibrous material within no longer than about ten minutes.

4,285,736

# METHOD FOR WASHING BY MEANS OF A ROTATING WASHING EQUIPMENT, AND WASHING DEVICE FOR THE PRACTICE OF THE METHOD

Laszlo Arato, Seebuchstr. 19, CH-6374 Buochs, Switzerland

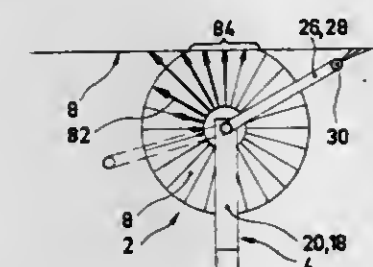
Continuation of Ser. No. 859,237, Dec. 9, 1977, abandoned. This application Jul. 3, 1979, Ser. No. 54,444

Claims priority, application Switzerland, Dec. 17, 1976, 15900/76

Int. Cl.<sup>3</sup> B08B 7/00

U.S. Cl. 134—6

17 Claims



1. A method for washing a surface with a washing device having cleaning bristles which rotate about a hollow shaft comprising the steps of moving the washing device in a first direction relative to the surface to be washed, contacting said surface with the bristles, rotating the washing device relative to said surface in a direction counter to said first direction at the area of contact with said surface, providing a washing liquid, and supplying the washing liquid from said hollow shaft to the rotating washing device only during a limited angle of rotation of each revolution of the device said angle ending just prior to the contact area between the bristles and the surface so that substantially all the washing liquid ejected from the device moves toward said surface.

4,285,737

# METHOD OF CLEANING RAILROAD TRACK

John G. Price, Box 3197, Montgomery, Ala. 36109

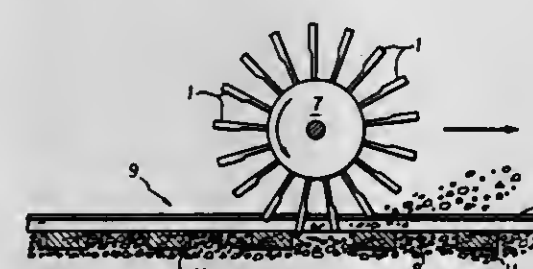
Division of Ser. No. 909,476, May 25, 1978, Pat. No. 4,184,223.

This application Jul. 12, 1979, Ser. No. 57,088

Int. Cl.<sup>3</sup> B08B 1/04

U.S. Cl. 134—6

2 Claims



1. A method of clearing a railway roadbed of loose material comprising the steps of:

- providing a drum with a plurality of radially-projecting elastomeric sweeper elements, each element comprising a unitary stem portion terminating in a knob portion, the knob portion having a substantially larger cross-sectional area than the stem portion and formed as a weighting mass, the stem and knob portions being formed into a unitary structure with the knob portion having a substantially planar forward surface;
- rotating the drum with the radially projecting sweeper bristle elements over the railway roadbed to be cleared so that said forward surface contacts the loose material;
- impacting a centrifugal force on said stem and said knob, wherein the knob portion is imparted with a portion of said centrifugal force proportionally greater than its mass relative to the mass of the stem portion;
- striking the loose material with said knob with sufficient

force to cause the loose material which contacts said knob to be driven away from said element, wherein said centrifugal force and a mass inertia imparted on the elements by said rotating drum enables the bristle elements to move ballast along a railway roadbed.

4,285,738

# CLEANING COMPOSITION FOR CONTACT LENSES

Kazumi Ogata, Toyonaka, Japan, assignor to Senju Pharmaceutical Co., Ltd., Osaka, Japan

Filed Apr. 16, 1979, Ser. No. 29,993

Claims priority, application Japan, Apr. 24, 1978, 53/48392

Int. Cl.<sup>3</sup> B08B 3/08

U.S. Cl. 134—26

10 Claims

1. A composition for cleaning contact lenses contaminated with proteinaceous matter by immersing the lenses in an aqueous hypertonic solution, said composition comprising urea or an acid salt of guanidine in an amount sufficient to make the solution hypertonic, an effective amount of a sulfhydryl group-containing compound to reduce intermolecular or intramolecular S—S bonds in the contaminant proteinaceous matter and a proteolytic enzyme in an amount sufficient to have a synergistic cleaning effect with the urea or the acid salt of guanidine mentioned above.

4. A method for removing proteinaceous deposits on contact lenses which comprises immersing the lenses for a period of time sufficient to clean the lenses at room temperature or under heating, in an aqueous composition comprising urea or an acid salt of guanidine in an amount sufficient to make the composition hypertonic, an effective amount of a reducing agent of the group consisting of a sulfite, a pyrosulfite, a dithionite, sodium borohydride and a reducing organic water-soluble mercapto group-containing compound to reduce intermolecular or intramolecular S—S bonds in the contaminant proteinaceous matter, and rinsing the lenses to remove the urea or the acid salt of guanidine and the reducing agent from the lenses.

4,285,739

# PROCESS OF MANUFACTURING SOLID BODIES OF COPPER-ZINC-ALUMINIUM ALLOYS

Andre E. A. Deruyttere, Louvain; Lucas J. A. E. Delaey; Etienne A. D. Aernoudt, both of Berchem, and Josef R. Roos, Kessel-Lo, all of Belgium, assignors to Leuven Research and Development VZW, Louvain, Belgium

Filed Dec. 21, 1978, Ser. No. 971,695

Claims priority, application Netherlands, Dec. 28, 1977, 7714494

Int. Cl.<sup>3</sup> C22F 1/08

U.S. Cl. 148—11.5 C

27 Claims

1. A process of preparing solid bodies of copper-zinc-aluminum alloys having a  $\beta$ -crystal structure and a fatigue resistance of at least 100,000 cycles for a pseudo-elastic elongation of 0.8 to 1% under a maximum bending load of 250 MN/m<sup>2</sup>, which comprises the steps of providing a pulverulent material which consists essentially of unavoidable impurities, 10–40% by weight of Zn, 1–12% by weight of Al and the balance of Cu, cold compacting this pulverulent material and subsequently hot extruding it to form a solid body.

22. The method of making a Cu-Zn-Al alloy article which exhibits reversible shape memory effect, pseudo-elastic properties and, a fatigue resistance of at least 100,000 cycles for a pseudo-elastic elongation of 0.8 to 1% under a maximum bending load of 250 MN/m<sup>2</sup>, which comprises the steps of:

- providing a pulverulent material which consists essentially of unavoidable impurities, 10–40% by weight of Zn, 1–12% by weight of Al, and the balance Cu in such proportions as will yield an alloy which, at room temperature, is predominantly of  $\beta$ -crystal structure;
- compacting the pulverulent material of step (a) at substantially ambient temperature to provide a coherent mass;
- heating the mass of step (b) to a temperature in the order



of 700°-800° C. and extruding said heated mass to form the article with a density of substantially 100%.

4,285,740

## WRAPPED TANTALUM DIFFUSION BARRIER

Morris S. Young, Murray Hill, N.J., and David C. Larbaestier, Madison, Wis., assignors to Alcoa, Inc., Montvale, N.J. Division of Ser. No. 933,302, Aug. 14, 1978, Pat. No. 4,205,119, which is a continuation-in-part of Ser. No. 920,616, Jun. 29, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,235 Int. Cl.<sup>3</sup> C21D 8/12; H01L 39/00 U.S. Cl. 148-11.5 Q 4 Claims



1. A process for manufacturing a multifilamentary stabilized superconductor of the A<sub>3</sub>B type in which A<sub>3</sub>B is selected from the group consisting of Nb<sub>3</sub>Sn and V<sub>3</sub>Ga, comprising: preparing a billet of Cu and the B material having rods of the A material embedded therein; working this billet to an intermediate shape and size; wrapping the worked billet with a foil of Ta, such that at least one complete layer of Ta is formed around said worked billet; inserting a foil of a softer metal than Ta between any overlapping portions of the Ta foil, so that Ta-to-Ta contact is prevented; enclosing this wrapped assembly in a Cu tube; working this enclosed wrapped assembly to a desired final shape and size; and heat treating the finally formed assembly in order to form the A<sub>3</sub>B compound at the interfaces between the A material and the B material.

4,285,741

## PROCESS FOR PRODUCING HIGH-STRENGTH, LOW YIELD RATIO AND HIGH DUCTILITY DUAL-PHASE STRUCTURE STEEL SHEETS

Takashi Furukawa, Machida, and Kazuo Koyama, Kimitsu, both of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 14, 1979, Ser. No. 48,546

Claims priority, application Japan, Jun. 16, 1978, 53-52801 Int. Cl.<sup>3</sup> C21D 8/02, 9/46

U.S. Cl. 148-12 D

8 Claims

1. In a process for producing a dual-phase structure steel sheet comprising hot rolling a steel containing 0.03 to 0.12% C, not more than 0.8% Si, and 0.8 to 1.7% Mn with the balance being iron and unavoidable impurities, and continuously annealing the hot rolled steel sheet in a range from 730° to 900° C., improvements comprising cooling the continuously annealed steel sheet under the following conditions:

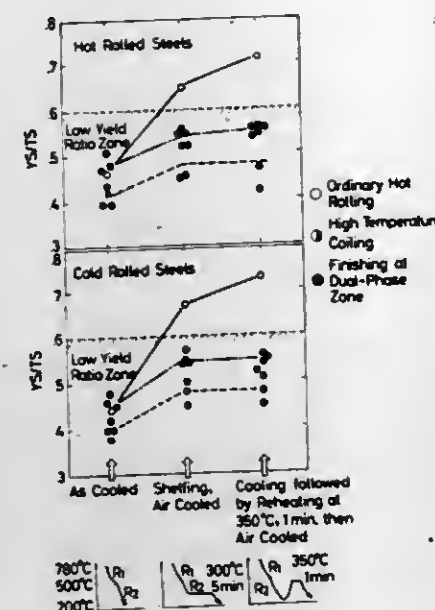
(1)  $1^\circ \text{C./second} \leq R_1 \leq 30^\circ \text{C./second}$  wherein  $R_1$  represents an average cooling rate from the continuous annealing temperature down to an intermediate temperature  $T^\circ \text{C.}$  in the cooling process

(2)  $4^\circ \text{C./second} \leq R_2 \leq 100^\circ \text{C./second}$  wherein  $R_2$  represents an average cooling rate from  $T^\circ \text{C.}$  to a temperature not higher than 200° C.

(3)  $R_1 < R_2$  and

(4)  $420^\circ \text{C.} \leq T \leq 700^\circ \text{C.}$

to obtain high strength, low yield ratio of not over 0.6 and high ductility dual-phase structure steel sheet having a structure



composed mainly of a ferrite phase and a rapidly cooled transformation phase and having excellent formability with a tensile strength of 40 kg/mm<sup>2</sup> or higher.

4,285,742

## HEAT TREATMENT METHOD

Robert G. Bowes, Otley, and Robert D. Chapman, Harrogate, both of England, assignors to BOC Limited, London, England Filed Nov. 29, 1979, Ser. No. 98,577

Int. Cl.<sup>3</sup> C21D 1/48

U.S. Cl. 148-16

10 Claims

1. A method of decarburising ferrous metal comprising the steps of introducing the ferrous metal to be decarburised into a working chamber of a heat treatment furnace, raising the ferrous metal to a temperature at which decarburisation is able to take place, and establishing in the working chamber a decarburising atmosphere by admitting into the chamber inert gas, water and a compound of carbon, hydrogen and oxygen, the relative proportions of water and the compound of carbon, hydrogen and oxygen being such that at the prevailing temperature in the working chamber the atmosphere established therein contains at least about 1% water vapor and decarburises the ferrous metal without forming oxide of the ferrous metal.

4,285,743

## GRANULAR PROPELLANT AND A METHOD OF PRODUCING THE SAME

Kazuhiko Inoue, Aichi, and Fumio Matsui, Handa, both of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan Division of Ser. No. 964,040, Nov. 27, 1978, Pat. No. 4,214,927. This application Sep. 28, 1979, Ser. No. 80,152

Claims priority, application Japan, Nov. 30, 1977, 52-143603 Int. Cl.<sup>3</sup> C06B 45/00

U.S. Cl. 149-2

2 Claims

1. In a method of producing double-base granular propellants, wherein components of a double-base propellant composition consisting mainly of nitroglycerine and nitrocellulose are dissolved in an organic solvent to form a lacquer solution, and the lacquer solution is dispersed in water and formed into granules, an improvement comprising using an organic solvent, which does not react with a polyfunctional isocyanate, as the solvent to prepare an aqueous dispersion of the lacquer solution containing the above described components of the double-base propellant composition, mixing the aqueous dispersion with a polyfunctional isocyanate while stirring, and further stirring the resulting mixture together with an aqueous solution of a protective colloid to form the nitrocellulose into

a three-dimensional structure by the crosslinking reaction of the polyfunctional isocyanate and concurrently to form granules.

4,285,744

## PROCESS FOR THE REPRODUCTION OF OIL PAINTINGS OR SIMILARLY TEXTURED IMAGES

Emil Rudolf, and Manfred Rudolf, both of Adelstetten 8, 8229 Airing 1, Fed. Rep. of Germany

Filed Nov. 26, 1980, Ser. No. 97,415

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851875

Int. Cl.<sup>3</sup> B29C 27/04; B44C 1/20; B44F 11/02

U.S. Cl. 156-59

6 Claims



1. In a process for the reproduction of oil paintings or similarly surface-textured images by initially forming a relief form on the original, removing the relief form from the original, and forming a reinforced smooth thermoplastic color film imprinted in a manner corresponding to the original; wherein the reinforced film and relief form are aligned, and the film being thereafter deformed by heat until the surface texture of the film corresponds to the original through the use of the relief form, said process being characterized in that:

- said reinforced colored film consists of a material capable of being heated dielectrically at high frequency radiation and a reinforcement ply;
- said reinforcement ply consists of a woven webbing having a coating thereon, said coating being capable of being dielectrically heated by high frequency radiation and capable of being welded to the surface of said color film;
- said process being further characterized in that said reinforcing ply is placed on the back surface of said color film and subjected to high frequency radiation until heated dielectrically, and wherein the back surface of the reinforcing ply is exposed to a pressure equalizing plate fabricated from closed-cell foam synthetic resinous material which is substantially immune to dielectric heating.

4,285,745

## METHOD OF DETERMINING OPTICAL QUALITY OF A LAMINATED ARTICLE

Aloysius W. Farabaugh, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1979, Ser. No. 62,832

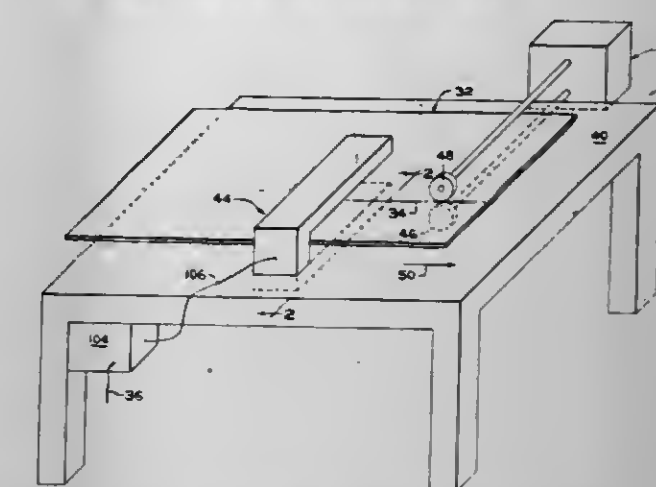
Int. Cl.<sup>3</sup> B32B 31/12, 17/10; G01N 21/32

U.S. Cl. 156-64

10 Claims

1. In a method of making a transparent laminate, wherein the method includes the step of laminating at least one sheet to a plastic sheet, wherein the improvement comprises the steps of: generating an optical profile of the plastic sheet prior to the lamination step; altering portions of the optical profile of the plastic sheet to be affected by the laminating step to provide an altered

optical profile which is the expected optical contribution of the plastic sheet to the laminate; and



practicing the laminating step using a plastic sheet determined to have an acceptable altered optical profile.

4,285,746

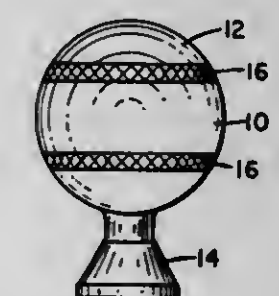
## METHOD OF DECORATING SEASONAL ORNAMENTS

Ronald G. DePuy, Corning, and George W. Stevens, Elmira, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 360,952, May 16, 1973, abandoned. This application Aug. 29, 1975, Ser. No. 609,076 Int. Cl.<sup>3</sup> B32B 5/18, 1/00; B29C 27/00

U.S. Cl. 156-79

2 Claims



1. An improved method of simultaneously decorating seasonal ornaments and applying a protective band thereto comprising the steps of applying a heat-activated adhesive along portions of the outer surface of a tube of heat shrinkable material, cutting said tube of heat shrinkable material transversely of its longitudinal extent into a plurality of tubular bands each having heat-activated adhesive thereon, positioning one of said tubular bands about the outer surface of a curvilinear seasonal ornament to be decorated, applying heat to said ornament and said band and heat shrinking said band about the outer surface of said ornament while simultaneously activating said heat-activated adhesive, and applying decorative material to said heat activated adhesive after said band has formed a shrink fit on said ornament to adhere such decorative material only upon those portions of the band having said heat-activated adhesive.

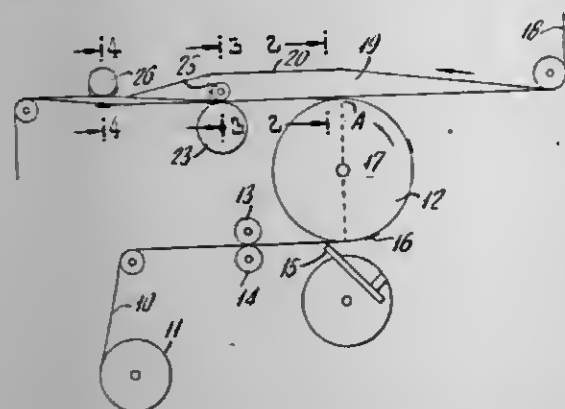
2. An improved method of simultaneously decorating seasonal ornaments and applying a protective band thereto comprising the steps of applying a thermally expandable coating along the outer surface of a tube of heat shrinkable material, cutting said tube of heat shrinkable material transversely of its longitudinal extent into a plurality of tubular bands each having a thermally expandable coating thereon, positioning one of said tubular bands about the outer surface of a curvilinear seasonal ornament to be decorated, applying heat to said ornament and band and simultaneously heat shrinking said band about the outer surface of said ornament while expanding said coating on said band to provide a protective surface on said ornament with a three dimensional decoration.



4,285,747

# METHOD FOR MANUFACTURING A PRODUCT HAVING ELASTIC MEANS DISPOSED IN THE TRANSVERSE DIRECTION

John F. Rega, Milltown, N.J., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.  
Division of Ser. No. 86,219, Oct. 18, 1979, Pat. No. 4,240,866.  
This application Apr. 7, 1980, Ser. No. 137,938  
Int. Cl.<sup>3</sup> A61F 13/16; A32B 31/10; B32B 31/18  
U.S. Cl. 156—164 19 Claims



9. The method of manufacturing disposable diapers having stretchable waistband portions comprising: moving diaper stock comprising continuous and co-extensive pervious and impervious web surfaces having spaced apart absorbent pads disposed therebetween, said webs being secured together along their longitudinal side margins and in spaces between said absorbent pads, in a plane; displacing the central longitudinal portion of the stock out of said plane while maintaining the longitudinal side portions of the stock in said plane; continuously feeding spaced apart, individual, discrete, unstretched elastic members adjacent the surface of the stock in alternate spaces between absorbent pads with the ends of each elastic member being disposed adjacent opposite longitudinal side margins of the stock and the center of said elastic member spanning the central longitudinal portion of the stock; adhering the unstretched end portion of said elastic member to the surface of the respective side portions of the stock; diverging the longitudinal side portions with respect to each other to return the stock to at least its original plane to stretch the center portion of the elastic member and adhere it to the surface of the stock; and transversely severing the diaper stock in the spaces between absorbent pads to produce individual disposable diapers.

4,285,748

# SELFBONDED NONWOVEN FABRICS

Hazael E. Booker, Barrie L. Davies, Alfred J. Hughes, and Charles J. Shimalla, all of Charlotte, N.C., assignors to Fiber Industries, Inc., New York, N.Y.  
Division of Ser. No. 881,472, Feb. 27, 1978, Pat. No. 4,211,816, which is a continuation-in-part of Ser. No. 776,565, Mar. 11, 1977, abandoned. This application Dec. 26, 1979, Ser. No. 107,228  
Int. Cl.<sup>3</sup> B32B 31/00; D02G 3/00; D04H 3/08  
U.S. Cl. 156—167 4 Claims



1. An improved process for preparing a fabric having an Elmendorf tear strength (ASTM D-1424), T, of at least 6 lb.

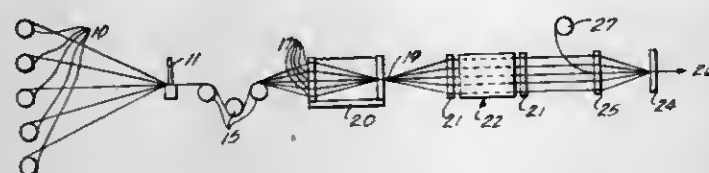
and a normalized grab tensile strength, G, of at least 120 lb. (ASTM D-1117) for a 140 gm/meter<sup>2</sup> fabric, and the value of the product T×G being at least 1,200 by a process comprising the steps of melt spinning sheath/core heterofilaments, drawing the spun filaments, laying the drawn filaments to form an unbonded web, and thereafter bonding the web by the application of heat and pressure to form a selfbonded nonwoven fabric without using solvents that are relatively non-volatile at the bonding conditions, wherein the improvement comprises:

- melt spinning sheath/core heterofilaments, wherein said sheath is high density polyethylene having a solid state density in the range from 0.930 to 0.965 gm/cc and having a melt flow index from 1 to 50 as measured by ASTM D-1238, and wherein said high density polyethylene comprises from 5 to 30 weight percent of said heterofilament;
- drawing said spun heterofilaments at a draw ratio within the range 2.0 to 6.0, at a temperature up to 120° C.; and
- bonding said unbonded web at a temperature of from 120° to 155° C. at a nip stress in the range of 50 to 140 pounds per square inch, whereby said sheaths are softened.

4,285,749

# FABRICATION OF FIBER REINFORCED RESIN STRUCTURES

Kenneth M. Stiles, San Dimas, Calif., assignor to Sea Log Corporation, Pasadena, Calif.  
Continuation-in-part of Ser. No. 854,411, Nov. 23, 1977, Pat. No. 4,168,194, which is a continuation-in-part of Ser. No. 824,039, Aug. 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 744,029, Dec. 12, 1976, abandoned. This application Apr. 26, 1979, Ser. No. 33,800  
The portion of the term of this patent subsequent to Sep. 18, 1996, has been disclaimed.  
Int. Cl.<sup>3</sup> B32B 17/00; B29C 25/00  
U.S. Cl. 156—180 6 Claims



- A process for the production of fiber reinforced resin structures which comprises, under tension:
  - coating a plurality of continuous fibers with a liquid heat curable thermosetting resin composition at a resin temperature below the temperature at which cure of the thermosetting resin is initiated;
  - passing the resin coated fibers through a plurality of in series elongated radiant heating zones, each having at least one heated internal surface, each heating zone being spaced from each other and from at least one interposed cold shaping die which is relatively narrow with respect to the length of a radiant heat zone and having a structure shaping orifice, the internal surfaces of the heating zone being in spaced relation to the resin coated fibers, said radiant heating zones raising the applied resin by radiation and convection to a temperature sufficient to reduce the viscosity of the resin relative to the introduction viscosity of the resin to the radiant heating zone and initiate partial cure of the resin;
  - drawing the fibers and resin through the orifices of each cold shaping die between each radiant heating zone at a die temperature between each radiant heating zone at a die temperature substantially below the temperature at which curing of the resin is initiated;
  - drawing the resin coated fibers through at least one cold shaping die following the last of said radiant heating zones, said die being at a temperature substantially below the temperature at which cure of the resin is initiated, the

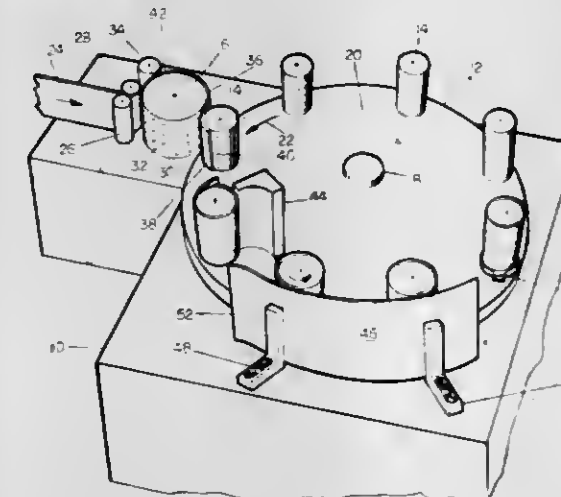
resin being at the gel point at or prior to contact with the final die;

- passing the resin coated fibers from the final cold shaping die through at least one curing zone providing internal heating surfaces in spaced relation from the resin coated fibers for a time sufficient for the resin to achieve a hard gelled surface;
- passing, in the substantial absence of oxygen, the resin coated fibers having the hard gelled surface through at least one molten metal bath maintained at a temperature from about 95° C. to the anaerobic degradation temperature of the resin for a time sufficient to achieve essentially complete cure of the resin of fiber reinforced resin structure.

4,285,750

# METHOD FOR PRODUCING A PLASTIC SLEEVE

Edward A. DeMartino, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio  
Filed Jul. 23, 1979, Ser. No. 59,726  
Int. Cl.<sup>3</sup> B29D 23/10; B65C 9/04  
U.S. Cl. 156—218 4 Claims



- In the method of making a tubular sleeve of thermoplastic sheet material including the steps of;
  - feeding a strip of sheet stock to a winding apparatus which includes a rotatable turret;
  - severing said strip into individual rectangular blanks each having a leading edge and a trailing edge;
  - forming each of said blanks into a cylindrically shaped sleeve by wrapping it around a mandrel;
  - overlapping the trailing edge of said blank so that it is exterior of the leading edge of said blank;
  - applying a softening medium to the edges of said blank, the improvement in the method of making a sleeve comprising the additional steps of;
  - moving said mandrel and its exteriorly positioned blank past an arcuate sealing plate, and
  - ironing the overlapped edges of said blank by the relative movement and contact between said sealing plate and said blank whereby the overlapped softened edges fuse together to form a smooth seam.

4,285,751

# METHOD OF FORMING AN IMPROVED BATTERY SEPARATOR

Stewart C. Feinberg, Columbia; Christian B. Lundsager, Ashton; Joseph T. Lundquist, Jr., Columbia, and Robert A. Balouskus, Sykesville, all of Md., assignors to W. R. Grace & Co., New York, N.Y.  
Division of Ser. No. 38,007, May 10, 1979, Pat. No. 4,224,393.  
This application Feb. 29, 1980, Ser. No. 127,172  
Int. Cl.<sup>3</sup> B29D 7/00; H01M 2/16  
U.S. Cl. 156—242 7 Claims

- A process of forming a battery separator comprising (a)

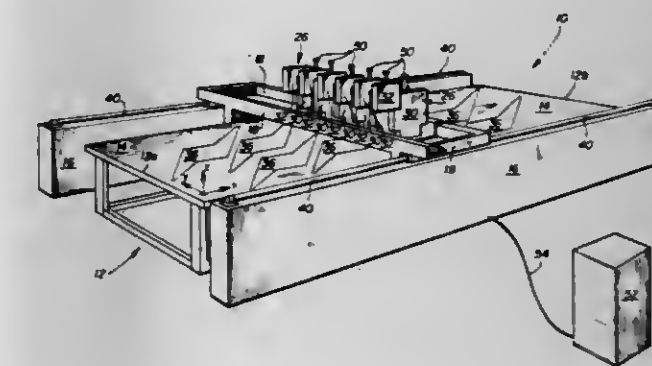
forming a substantially uniform mixture of a thermoplastic rubber formed of a styrene/elastomer/styrene block copolymer having styrene to elastomer weight ratio of from about 15/85 to 40/60 and an inert filler having an average particle size of from about 0.01 to 10 microns, wherein the volume ratio of block copolymer to filler is from 1:0.15 to 1:0.6; (b) subjecting said mixture to a combination of stress forces and elevated temperature sufficient to disrupt the thermoplastic domains of said block copolymer; and shaping said mixture into a sheet of less than about 10 mils thickness.

4,285,752

# AUTOMATIC TAPE LAY-UP SYSTEM

Bobby L. Higgins, Dallas, Tex., assignor to Camaco, Inc., Richardson, Tex.  
Filed Mar. 13, 1980, Ser. No. 130,034  
Int. Cl.<sup>3</sup> B32B 31/04 24 Claims

U.S. Cl. 156—250

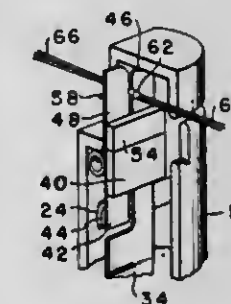


- An automatic tape laying system for depositing tape in a lay-up on a work surface comprising:
  - a tape supply reel for storing tape;
  - cutting means for cutting tape;
  - tape transport means for transporting tape from said tape supply reel to said cutting means;
  - tape deposit means pivotable between first and second positions for continuously receiving tape in said first and second positions from said cutting means; and
  - said tape being received in said tape deposit means first position for deposit along a first direction on the work surface and said tape being received in said tape deposit means second position for deposit along a second direction on the work surface.

4,285,753

# SYNTHETIC YARN DEVICE

William P. Warthen, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.  
Filed Sep. 10, 1979, Ser. No. 73,733  
Int. Cl.<sup>3</sup> B26F 3/08; B32B 31/18  
U.S. Cl. 156—251 4 Claims



- A self-contained apparatus to sever the tails of at least two tied yarns with a knot therein comprising: a housing; a source



of power in said housing; a pair of flexible conductive members mounted in said housing operably associated with said source of power and spaced from one another, a resistance heater means connected to both of said conductive members, a slot in said housing adjacent the space between said conductive members to allow a tied yarn to be placed between said conductive members and means operably associated with said source of power and said conductive members to supply power to said heater means when said conductive members are bent by the engagement of the knot of said tied yarns.

4,285,754

# METHOD AND APPARATUS FOR PRODUCING PLANAR ELEMENTS IN THE CONSTRUCTION OF SURFACES AND BODIES

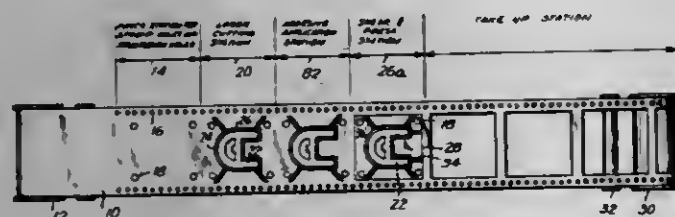
Paul DiMatteo, Huntington, N.Y., assignor to Solid Photography Inc., Melville, N.Y.

Filed Nov. 5, 1979, Ser. No. 91,143

Int. Cl.<sup>3</sup> B32B 31/18

U.S. Cl. 156—264

12 Claims



1. A method for producing planar elements for construction of a surface, comprising the steps of: feeding material with substantially parallel surfaces into a processing path; applying at least one reference location hole through said material within a predetermined area of said material for registering positions of planar elements relative to each other when stacked; cutting a predetermined contour through said material for subsequent removal of a predetermined planar element from said material; applying a cut through said material and spaced from said planar element for producing a blank carrying said planar element, said cut enclosing said planar element and having a closed cutting line; removing said blank from said material; collecting the material remaining after said blank has been removed, said contour being cut along a cut path in which tabs are left for supporting said planar elements, said tabs connecting said planar element to said blank; stacking blanks in predetermined relationship to each other through registration of said reference location hole; and severing said tabs after stacking said blanks for separating the planar elements from the blanks to form said surface of stacked elements, said reference location hole being applied before said planar element and blank are detached from said material, said planar elements being stacked to a depth dependent on the characteristics of said surface.

4,285,755

# ADHESIVE COMPOSITION AND METHOD

Gerhardt Piester, Oberursel, and Heinz G. Gilch, Leimen, both of Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.

Continuation of Ser. No. 885,080, Mar. 9, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 75,904

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1977, 2711748

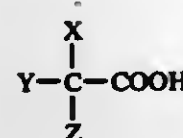
Int. Cl.<sup>3</sup> B29C 19/00; C09J 5/00

U.S. Cl. 156—294

21 Claims

1. A method of bonding metal surfaces by use of an anaerobic adhesive composition consisting essentially of a polymerizable acrylic monomer, an organic peroxide selected from the group consisting of benzoyl peroxide; 2,5 dimethyl-2,5-di(t-butylperoxy)hexane; 1,1 di-t-butylperoxy-3,3,5-trimethylcyclohexane; dialcyl peroxide and mixtures of these and an acidic substance characterized in that the acidic substance is a

halogenated aliphatic monocarboxylic acid according to the general formula



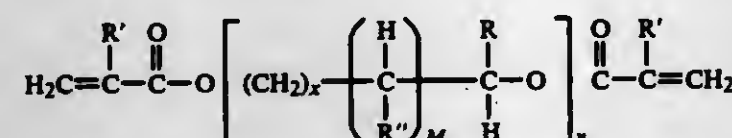
in which

(i) each of X, Y and Z is Cl or Br or

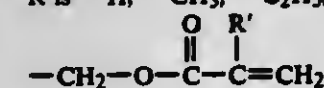
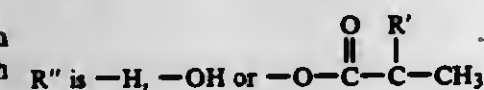
(ii) Z is H or R (where R is a methyl or ethyl group), and each of X and Y is Cl or Br or

(iii) each of Y and Z is H or R and X is Cl.

17. An anaerobic adhesive composition consisting essentially of a polymerizable acrylate monomer of the general formula



where:

R is —H, —CH<sub>3</sub>, —C<sub>2</sub>H<sub>5</sub>, —CH<sub>2</sub>OH orR' is —H, —Cl, —CH<sub>3</sub> or —C<sub>2</sub>H<sub>5</sub>

and n is 0 or 1, x is an integer from 1 to 8 and y is an integer from 1 to 20, a peroxide which is 2,5 dimethyl-2,5-di(t-butylperoxy)hexane and an acidic substance selected from the group consisting of trichloroacetic acid, dichloroacetic acid, or tribromoacetic acid.

4,285,756

# ADHESION OF POLYAMIDE OR POLYESTER CORDS TO EPDM RUBBER

Otto C. Elmer, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Jul. 7, 1980, Ser. No. 166,633

Int. Cl.<sup>3</sup> B29H 9/00; C08L 61/12

U.S. Cl. 156—334

12 Claims

7. A method for adhering a polyamide or polyester reinforcing element to an ethylene-propylene-non conjugated diene rubbery polymer (EPDM) compound which comprises treating said element with an aqueous alkaline dispersion of about 10 to 35% by weight of solids consisting essentially of on a dry weight basis 100 parts by weight of a rubbery polybutadiene and a water-soluble thermosetting phenolic-aldehyde resin in an amount of from about 10 to 40 parts by weight, heating said treated element at a temperature of from about 300° to 525° F. for from about 150 to 25 seconds to remove essentially all of the water from said dispersion and to provide said element with a heat set adhesive in an amount of from about 3 to 17% by weight (dry) based on the weight of said reinforcing element, combining said dried and heat set adhesive containing reinforcing element with an unvulcanized vulcanizable ethylene-propylene-non conjugated diene rubbery polymer (EPDM) compound and vulcanizing the same.

4,285,757

# TAPE END JOINING APPARATUS

Elzo Mori, 145-7, 3-Chome, Okubo-Cho, Moriguchi-Shi, Osaka, Japan (573)

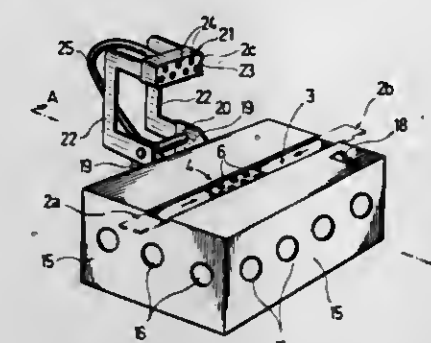
Filed Apr. 2, 1979, Ser. No. 26,347

Claims priority, application Japan, Apr. 4, 1978, 53-40676

Int. Cl.<sup>3</sup> B31F 5/06; G03D 15/04

U.S. Cl. 156—350

2 Claims



1. A tape end joining apparatus comprising a casing having an inlet chamber that is internally provided with pneumatically attracting means and has an upper surface area engraved with a tape guide groove having at least a part thereof forming a light permeable tape joining portion bored with a plurality of vents to said inlet chamber, and a source of light below said tape joining portion, an air pressure detector arranged to detect a lowering of air pressure in said inlet chamber, and a switch, responsive to said air pressure detector, for lighting said source of light when tape ends in said groove cover said vents.

4,285,758

# BONDING APPARATUS FOR THERMOPLASTIC COATED MATERIALS

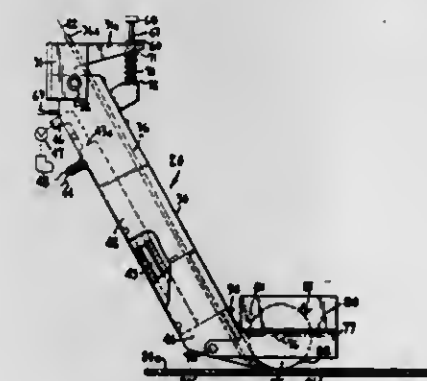
Victor H. Clausen, and Charles E. Asbury, Jr., both of Vancouver, Wash., assignors to H. B. Fuller Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 42,350, May 25, 1979, abandoned. This application Mar. 26, 1980, Ser. No. 134,098

Int. Cl.<sup>3</sup> B32B 31/00

U.S. Cl. 156—498

38 Claims



1. Applicator apparatus for bonding a continuous thermoplastic-adhesive coated core material to a substrate moving over a reactive surface, comprising:

(a) heated guide means defining a heated passageway terminating at an output orifice, for guiding a continuous length of thermoplastic-adhesive coated core material through said passageway and for heating said material as it proceeds through said passageway such that the temperature of said material leaving said output orifice attains the melting flow-point temperature of said adhesive coating;

(b) a bonding shoe mounted to said guide means, and having a generally planar bonding surface adjacent said output orifice across and in engagement with which said heated continuous material passes upon leaving said orifice;

(c) means for heating said shoe;

(d) mounting means for pivotally mounting said guide means and said bonding shoe about a mounting axis such that said shoe bonding surface cooperatively addresses and lies substantially coplanar with said reactive surface, whereby said continuous material leaving said output orifice is sandwiched between said shoe bonding surface and a substrate moving over said reactive surface; and

(e) biasing means operatively connected with said guide means for controllably applying a force to said guide means and said bonding shoe, about said mounting axis, to control the bonding force exerted by said shoe bonding surface in the direction toward said reactive surface, thereby controlling the bonding force exerted on said continuous material as it is pressed into a substrate moving over the reactive surface.

4,285,759

# APPARATUS FOR STRIPPING A COVER SHEET

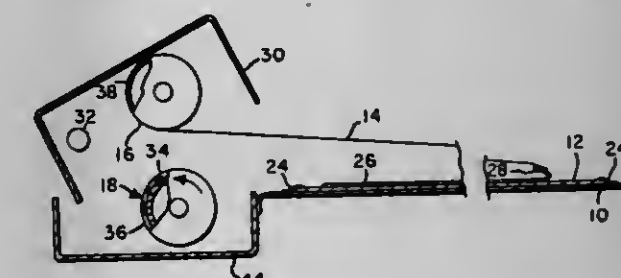
Richard B. Allen, Waterbury, Conn., and Thomas E. Patten, South Amboy, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 19, 1979, Ser. No. 95,300

Int. Cl.<sup>3</sup> B32B 31/16

U.S. Cl. 156—584

6 Claims



1. An apparatus comprising:

a support having a top surface on which a film including a cover sheet can be fixed in a stationary relationship with respect to a stripping roll;

an elongated stripping roll mounted for rotation about an axis parallel to said top surface;

a leader in the form of a thin sheet having opposed ends, one of said ends being attached to said roll, the other of said ends being adapted for attachment to an edge of a cover sheet remote from said roll; and

drive means coupled to the roll for rotating said roll to apply an even, steady tension to said leader as said leader is wrapped thereon thereby stripping the cover sheet from a fixed film.

4,285,760

# ZONE PURIFICATION OF CYLINDRICAL INGOTS

Jon H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 25, 1979, Ser. No. 88,270

Int. Cl.<sup>3</sup> C30B 13/14

U.S. Cl. 156—617 H

3 Claims

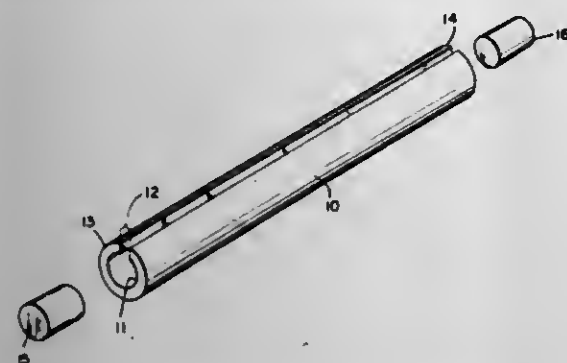
1. A zone refining process for substantially removing impurities from a mixed thallium halide material which comprises:

(a) containing a charge of the material in a cylindrical cavity defined by a container maintained substantially horizontal and having a volume expansion space along the length of said container and above said cavity, said volume expansion space having a width no wider than that necessary to retain a substantially round cross-section of said charge following zone refining;

(b) traversing from one end of said charge to another at least once a zone of a predetermined elevated temperature sufficient to melt a portion of said material, thereby sweeping impurities to one end of said charge; and



(c) accomodating expanded material in said volume expansion space, whereby pressure buildup is eliminated, fractures and other damage to the zone refined material or its container are minimized and said substantially round cross-section is retained.



tures and other damage to the zone refined material or its container are minimized and said substantially round cross-section is retained.

4,285,761

# PROCESS FOR SELECTIVELY FORMING REFRACTORY METAL SILICIDE LAYERS ON SEMICONDUCTOR DEVICES

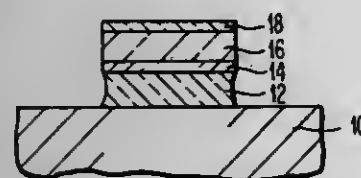
Joseph J. Fatula, Jr., Beacon, N.Y., and Stanley Roberts, Shelburne, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 30, 1980, Ser. No. 164,464

Int. Cl.<sup>3</sup> H01L 21/24, 21/306

U.S. Cl. 156-628

8 Claims



1. A method of forming and defining a refractory metal silicide layer on a substrate comprising, providing a blanket layer of SiO<sub>2</sub> on said substrate, depositing a blanket layer of polycrystalline Si over said layer of SiO<sub>2</sub>, defining a pattern in said polycrystalline Si layer thereby exposing selected areas of said layer of SiO<sub>2</sub>, depositing a blanket layer of refractory metal silicide on said substrate over said layers of SiO<sub>2</sub> and said polycrystalline Si, heating the composite substrate in an oxidizing environment to a temperature and for a time to thermally oxidize the metal silicide layer overlying said polycrystalline Si to form an upper layer of SiO<sub>2</sub>, and to convert the metal silicide layers overlying the SiO<sub>2</sub> layer to a metal, rich SiO<sub>2</sub> layer, exposing the oxidized surface of said substrate to an etchant that selectively etches said metal rich silicon dioxide layer to thereby expose said blanket layer of SiO<sub>2</sub>.
2. The method of claim 1 wherein said metal of said refractory metal silicide is a metal selected from the group consisting of tungsten, niobium, molybdenum and tantalum, and mixtures thereof.
3. The method of claim 2 wherein subsequent to the etching of the oxidized metal silicide, the sidewalls of the remaining metal silicide areas are thermally oxidized to form SiO<sub>2</sub> films on the sidewalls.

4,285,762

# PLASMA ETCHING OF AMORPHOUS SILICON (SE-35)

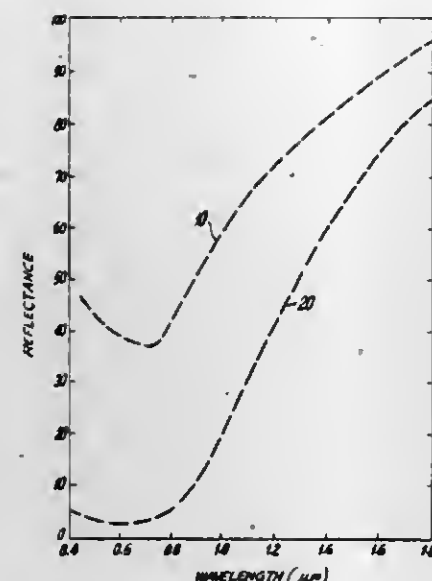
Theodore D. Moustakas, Berkeley Heights, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 31, 1979, Ser. No. 108,417

Int. Cl.<sup>3</sup> H01L 21/306

U.S. Cl. 156-643

10 Claims



1. A method for selectively etching amorphous silicon comprising:
  - (a) depositing a layer of amorphous silicon into a substrate;
  - (b) heating said layer to a temperature between about 150° C. and about 350° C. and concurrently exposing said silicon layer to an ionized plasma containing hydrogen wherein the exposed silicon is etched.

4,285,763

# REACTIVE ION ETCHING OF III-V SEMICONDUCTOR COMPOUNDS

Larry A. Coldren, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 29, 1980, Ser. No. 116,541

Int. Cl.<sup>3</sup> H01L 21/306

U.S. Cl. 156-643

3 Claims



1. A process for etching InP, GaAs and their alloys in which a plasma is ignited between two electrodes and the substrates are placed on the cathode electrode to which rf power is applied, characterized in that the gas is a mixture of Cl<sub>2</sub> and O<sub>2</sub> maintained at a pressure of between 1-10 millitorr, and the rf power is applied with a power density of between 0.1-1.0 watts/cm<sup>2</sup> of cathode area.

4,285,764

# METHOD AND APPARATUS FOR PRODUCING CORRUGATED COMBINED BOARD

Nazzareno Salvi, S. Pietro Val Lemina, Italy, assignor to Beloit Corporation, Beloit, Wis.

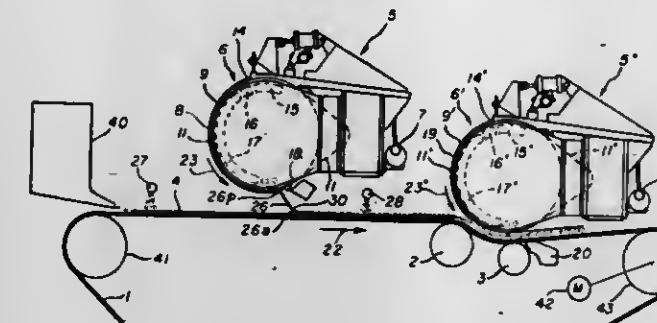
Filed Apr. 9, 1979, Ser. No. 28,279

Claims priority, application Italy, Apr. 11, 1978, 67801 A/78

Int. Cl.<sup>3</sup> B31F 1/20

U.S. Cl. 162-132

6 Claims



1. Apparatus for the continuous production of multi-ply corrugated combined board, having at least a bottom linerboard and a top linerboard with an intermediate corrugating medium from corresponding slurries of aqueous pulp fiber stock, comprising, in combination:

a looped foraminous forming wire for traveling and receiving an aqueous slurry of pulp fibers to form a bottom linerboard thereon;  
 means for supplying an aqueous slurry of pulp fibers to the foraminous forming wire;  
 means for forming a corrugating medium from a dilute aqueous slurry of pulp fibers, said means including a first foraminous surface for traveling, a former for supplying the aqueous slurry of pulp fibers to the first foraminous surface and means for removing the water from the slurry of pulp fibers through the first foraminous surface to form the corrugating medium having an inner surface disposed thereon and an outer surface; means for receiving the corrugating medium traveling on the first foraminous surface and producing corrugations therein, said means for producing the corrugations being disposed relative to the forming wire such that the outer surface of the traveling corrugating medium is thereafter brought into contact with the bottom linerboard;  
 means for forming a top linerboard from a dilute aqueous slurry of pulp fibers, said means including a second foraminous surface for traveling, a former for supplying the aqueous slurry of pulp fibers to the second foraminous surface and means for removing the water from the slurry of pulp fibers through the second foraminous surface to form the top linerboard having an inner surface disposed thereon and an outer surface, said second foraminous surface disposed to urge the outer surface of the top linerboard into contact with the corrugating medium web;  
 means for bonding the corrugating medium to the top and bottom linerboards to thereby form the corrugated combined board on the forming wire from aqueous slurries of pulp fibers;  
 said first foraminous surface travels at a linear speed which is faster than the linear speed of the forming wire whereby the corrugated corrugating medium is traveling at the same speed as the bottom linerboard when they come into contact.

4,285,765

# SLIME CONTROL COMPOSITIONS AND METHODS OF USING THE SAME

John D. Pera, and Betty S. Johnson, both of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Filed Sep. 24, 1980, Ser. No. 190,125

Int. Cl.<sup>3</sup> D21H 3/02

U.S. Cl. 162-161

8 Claims

1. A synergistic microbiocidal composition comprising 10 to 90 parts by weight of 2-(thiocyanomethylthio)benzothiazole and 90 to 10 parts by weight of 2,2-dibromo-3-nitropropionamide.

4,285,766

# PRESS METHOD IN A PAPER MACHINE

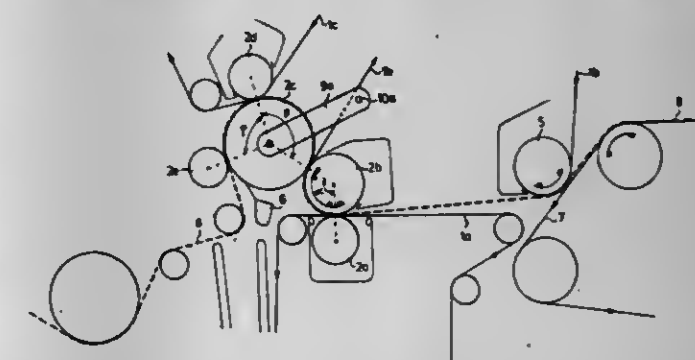
Matti Kankaanpää, Espoo, Finland, assignor to Valmet OY, Finland

Continuation-in-part of Ser. No. 790,209, Apr. 25, 1977, Division of Ser. No. 310,805, Nov. 30, 1972, abandoned. This application Oct. 5, 1979, Ser. No. 82,063

Int. Cl.<sup>3</sup> D21F 1/32

U.S. Cl. 162-199

20 Claims



1. A method in a paper machine press section for dewatering a wet paper or paperboard web by threading the web through at least three nips of the press section, the web being supported by the surface of a felt or a roll at all times, comprising the steps of:

detaching the web from the paper machine forming wire by means of a first felt loop and a pick-up roll operating within said first felt, and adhering the web onto the lower outer surface of said first felt loop by means of suction prevailing in the suction sector of said pick-up roll;  
 transferring the web which adheres to the lower surface of said first felt loop primarily by adhesion forces and without any substantial support from below to a first dewatering press nip of the press section which nip is formed by and between an upper foraminous suction roll and a second water receiving lower roll;  
 threading a second felt loop into the first dewatering press nip so that said second felt comes into contact with the web adhered on the first felt not until substantially in region of said first press nip;  
 pressing the web in the first dewatering press nip between the first felt and the second felt while applying between the press rolls a first linear pressure to dewater the web simultaneously in two directions through both sides of the web;  
 detaching the web from contacting the second felt by means of suction prevailing inside said upper suction roll;  
 treating the second felt after having left the first nip by felt conditioning means and threading it back to the first nip in said manner;  
 adhering the web by suction on the surface of the first felt wrapping said suction roll on a sector following the first nip, said sector corresponding to a central angle of 90 to 160 degrees of the suction roll and so transferring the web to a second dewatering press nip formed by said suction press roll and by a smooth surface plain press roll;  
 pressing the web in said second nip using a second linear



pressure so as to dewater the web through the one side facing the first felt;  
 detaching the web from the first felt utilizing the adhesion force of the surface of said plain press roll and adhering the web on last mentioned surface;  
 treating the first felt after having left the second nip by its felt conditioning means and threading the first felt back to wrap said pick-up roll;  
 transferring the web adhered on the surface of said plain press roll, to a third nip formed by said plain press roll and a fourth press roll which fourth roll is a water receiving roll so that the travel of the web while proceeding adhered to the plain roll surface from the second nip to the third nip corresponds to a central angle of 70-160 degrees of the plain roll;  
 threading a third felt into said third nip and pressing the web in said third dewatering press nip using a third linear pressure so as to dewater the web through its one side facing the third felt; and  
 transferring the web, which beginning from the second nip, is continuously adhered to the surface of said plain press roll after said third nip, to a following web processing phase.

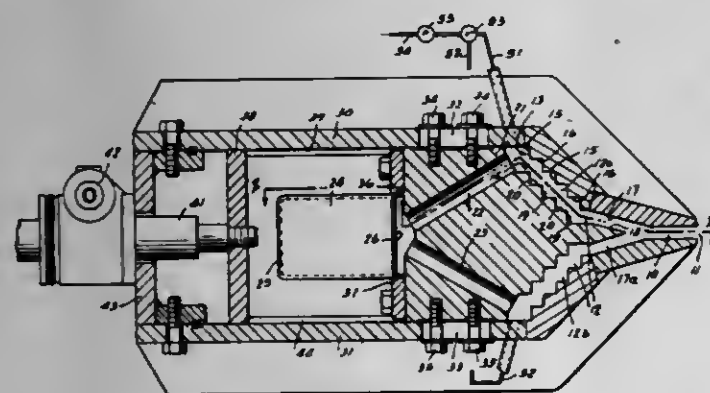
4,285,767

**HEADBOX HAVING ADJUSTABLE FLOW PASSAGES**  
 Robert E. Page, Davis, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 13, 1978, Ser. No. 886,278  
 Int. Cl.<sup>3</sup> D21F 1/02, 1/06

U.S. Cl. 162-216

4 Claims



1. A headbox for supplying a stock such as a generated liquid foam suspension of fibers or a high consistency paper making stock to a forming surface for forming a fibrous web comprising in combination:

- an elongate slice nozzle having an opening through which a stock is ejected for being deposited on a traveling forming surface;
- a slice chamber leading to the slice nozzle and having first and second slice flow passages converging toward said slice nozzle, and through which passages the stock flows to said slice nozzle;
- a movable block in said slice chamber having convergently related surfaces defining said flow passages on each side of the block between the block and complementary stationary chamber wall portions;
- each of said convergently related surfaces and complementary stationary chamber wall portions in each of said flow passages having complementary modulating step configuration cooperative to define a series of restrictions in each flow passage so that the stock flows in continuously changing directions through each of the flow passages for the continuous regeneration of foam or fine scale turbulence of high consistency stock;

means for moving said block rectilinearly for increasing or decreasing the cross sectional flow area of each of said slice flow passages and said restrictions substantially

equally for increasing or decreasing the flow volume therethrough;  
 header chamber means connected to supply stock to said passages; and  
 supply passage means extending from said header chamber means through said movable block and communicating with said flow passages upstream from said modulating step configuration.

4,285,768

**APPARATUS FOR DEWATERING FIBER SUSPENSION FOR PRODUCING A WEB OF FIBER**

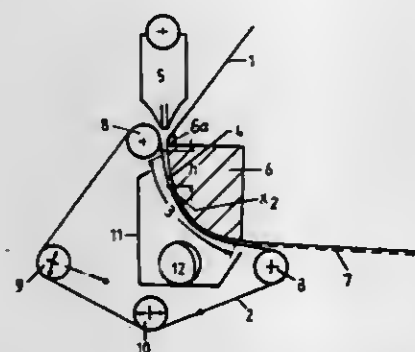
Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Volth GmbH, Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 46,661  
 Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826158

Int. Cl.<sup>3</sup> D21F 9/00

U.S. Cl. 162-301

10 Claims



1. Apparatus for dewatering a suspension of fibers comprising:

- a first strip movable through a dewatering region; first support means for moving said first strip on a convex pathway through the dewatering region and for maintaining longitudinal tension of said first strip; said first support means comprising a stationary support which is convexly curved and over and with respect to which said first strip is moved; said first support means including means for moving said first strip over said stationary support;
- a second strip movable together with said first strip through the dewatering region; second support means for moving said second strip along a concave pathway through the dewatering region and for moving said second strip spaced from said first strip and for also maintaining the longitudinal tension of said second strip;
- at least one said strip being water permeable;
- for eliminating pressure gradients in the suspension held between said strips passing through the dewatering region, said second support means being shaped for maintaining the radius of curvature of said second strip at a value at which the radius of curvature at every point along said second strip substantially is:

$$R [m] = \frac{S \left[ \frac{N}{m} \right]}{p_0 [Pa] + \rho \left[ \frac{kg}{m^3} \right] \cdot g \left[ \frac{m}{sec^2} \right] \cdot h [m]}$$

where S is the tension of said second strip established by said second support means therefor;  $p_0$  is the dynamic pressure of the suspension in the intake between said strips where the suspension first contacts both said strips;  $\rho$  is the density of the suspension; g is the acceleration due to gravity; h is the actual vertical height or distance between the point on said second strip at which the radius is being measured and the point on

said second strip at which the suspension first contacts both said strips.

4,285,769

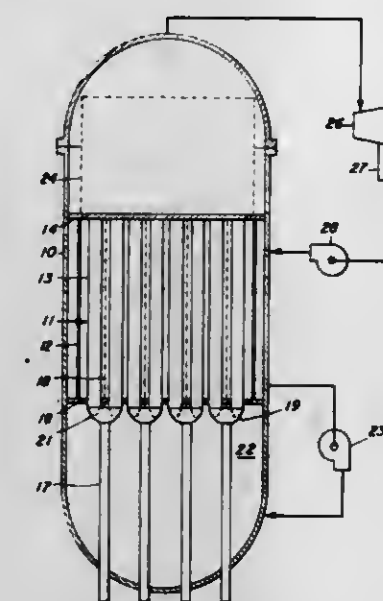
**CONTROL CELL NUCLEAR REACTOR CORE**

Steven R. Specker, San Jose; Craig D. Sawyer, Los Gatos; Russell L. Crowther, Saratoga, all of Calif.; Bennett J. Gittick, Rockville, Md.; Kenneth V. Walters, Kennewick, Wash.; Robert E. Brown, and Larry E. Fennern, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Oct. 19, 1978, Ser. No. 952,846  
 Int. Cl.<sup>3</sup> G21C 19/20

U.S. Cl. 176-30

33 Claims



1. A method of fueling and operating a nuclear reactor core having a plurality of cells wherein each cell includes a plurality of individually replaceable fuel assemblies surrounding a selectively insertable control rod and wherein said reactor is shut down after each successive cycle of periodic operation for replacement of a fraction of the fuel assemblies of said core, comprising the steps of:

- (1) designating a pattern of two kinds of cells in said core, namely, a set of control cells and a set of non-control cells wherein said control cells are separated from one another by at least one non-control cell;
- (2) placing fuel assemblies of relatively high reactivity fuel in said non-control cells, the design thereof being particularly adapted for subsequent use in said control cells, said higher reactivity being sufficient for a residence time of said fuel assemblies in said core of n cycles of operation (n being greater than 1);
- (3) placing fuel assemblies in said control cells of fuel of lower reactivity than that of said non-control cells, the design thereof being particularly adapted for use in said control cells;
- (4) operating said reactor core throughout a cycle of operation with the control rods of said non-control cells substantially withdrawn from said core and with the control rods of at least some of said control cells selectively inserted in said core to control the power level thereof;
- (5) shutting down said reactor for refueling of said core at the end of said cycle;
- (6) removing all of the fuel assemblies from each of said control cells;
- (7) replacing all of the fuel assemblies removed from said control cells with irradiated fuel assemblies moved from said non-control cells which fuel assemblies have resided in said core n-1 cycles;
- (8) inserting in said non-control cells unirradiated fuel assemblies at least equal in number to the irradiated fuel assemblies moved into said control cells, the enrichment of said unirradiated fuel assemblies providing a reactivity suffi-

cient for a residence time in said core of n cycles of operation; and  
 (9) operating said reactor core through successive cycles of operation in accordance with steps (4)-(8).

4,285,770

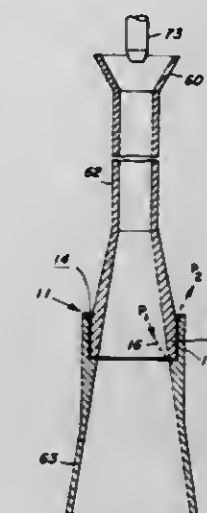
**JET PUMP WITH LABYRINTH SEAL**

Lawrence L. Chi, Fremont, and Alvydas A. Kudirka, La Crescenta, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jul. 12, 1979, Ser. No. 56,813  
 Int. Cl.<sup>3</sup> G21C 19/28

U.S. Cl. 176-65

3 Claims



1. In a nuclear reactor having at least one jet pump for circulating coolant through the core of said reactor, said jet pump including a mixer section and a diffuser section joined by a slip joint having an annular clearance space, the improvement comprising a series of spaced cavities forming a labyrinth seal in said annular space to reduce leakage flow of coolant through said space whereby flow induced vibration of said jet pump is reduced to an acceptable level.

4,285,771

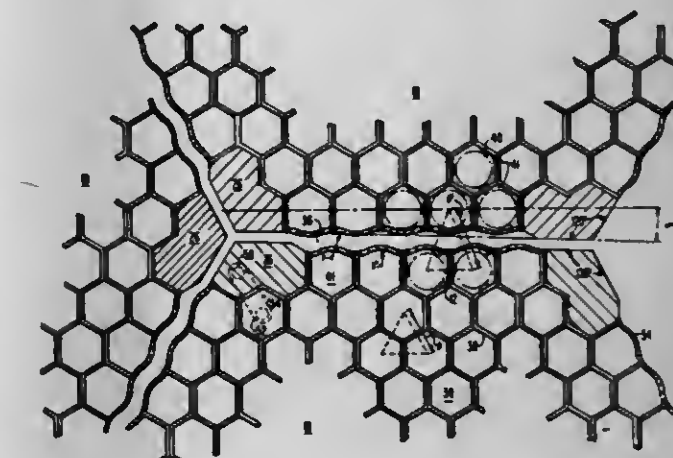
**NUCLEAR CORE AND FUEL ASSEMBLIES**

Robert E. Down, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 22, 1979, Ser. No. 13,939  
 Int. Cl.<sup>3</sup> G21C 3/30

U.S. Cl. 176-76

13 Claims



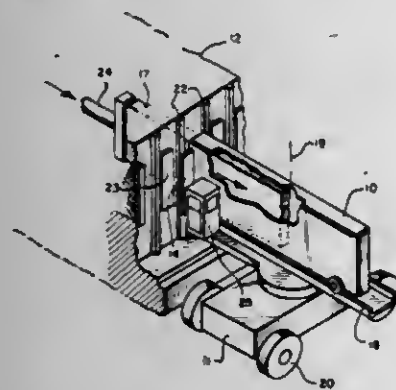
1. An assembly for a core of a fast flux fluid cooled nuclear reactor comprising a plurality of elongated coextending rods, having nuclear material, said rods being arranged in a first array and a plurality of support members generally coextensive with said rods being arranged in a second array, said first and second arrays being rotated a preselected angle relative to one another.



4,285,772

## METHOD AND APPARATUS FOR HANDLING AND DRY QUENCHING COKE

Edward S. Kress, Grace La., Brimfield, Ill. 61517  
Continuation-in-part of Ser. No. 9,784, Feb. 6, 1979, abandoned.  
This application Jan. 23, 1980, Ser. No. 110,351  
Int. Cl.<sup>3</sup> C10B 39/02, 39/14, 39/12  
U.S. Cl. 201—39 12 Claims



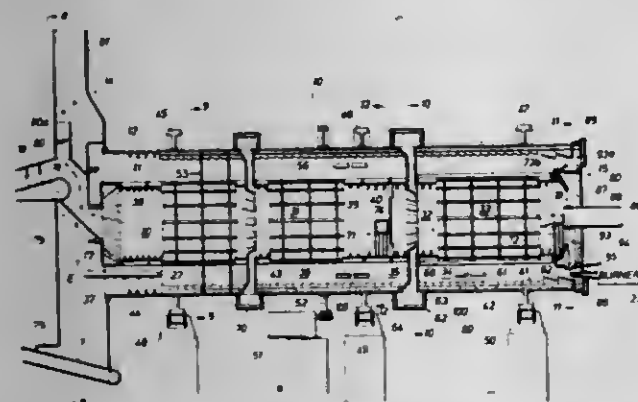
1. A coke box for dry quenching a charge of coke from a horizontal discharge coke oven comprising:

- (a) a receiving chamber formed of sheet metal panels and having a cross section, volume and surface area substantially equal to that of a charge of coke, the receiving chamber being integrally closed on five sides and open on one end;
- (b) means for selectively closing the open end of the receiving chamber for enclosing the coke within the coke box to substantially isolate the coke from atmospheric oxygen and external cooling media; and
- (c) means for distributing cooling media over the surfaces of the receiving chamber for indirectly cooling an enclosed charge of coke through the surfaces of the receiving chamber.

4,285,773

## APPARATUS AND PROCESS FOR RECOVERY OF HYDROCARBON FROM INORGANIC HOST MATERIALS

William Taciuk, Calgary, Canada, assignor to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada  
Continuation of Ser. No. 34,098, Apr. 27, 1979, abandoned, which is a continuation of Ser. No. 828,119, Aug. 26, 1977, abandoned, which is a continuation-in-part of Ser. No. 603,044, Aug. 8, 1975, abandoned. This application Oct. 25, 1979, Ser. No. 88,133  
Int. Cl.<sup>3</sup> C10B 1/10, 7/00  
U.S. Cl. 202—100 1 Claim



1. An apparatus for thermally treating a heavy hydrocarbon-containing liquid, said apparatus containing a charge of particulate solids, comprising:

- a substantially horizontal inner tube defining an inner processing area therein extending throughout its length, said

area being a substantially open cylindrical space free of auger-type advancing means;  
an outer tube circumscribing the inner tube along a substantial portion of the latter's length, said tubes being rigidly connected for rotation together and cooperating to form between them a substantially open annular space free of auger-type advancing means, said tubes having corresponding first and second ends, the annular space providing a combustion zone at the second end;  
a stationary first end assembly connected with the outer tube for substantially sealing the latter's first end;  
a stationary second end assembly connected with the outer tube for substantially sealing the latter's second end;  
means, associated with the outer tube, for rotatably supporting the tubes;  
means, associated with the outer tube, for rotating the tubes;  
means, carried internally by each of the tubes, for advancing particulate solids along a path extending through the inner processing area from first to second ends and the annular space from second to first ends, said means comprising surface means protruding inwardly without extending across the width of the inner tube, thereby leaving the inner processing area substantially open, said means being oriented generally longitudinally relative to the tube involved;

lifting means, carried internally by the outer tube, for repeatedly lifting and dropping particulate solids being advanced through the annular space, said means comprising surface means protruding inwardly without extending across the width of the inner tube, thereby leaving the annular space substantially open;  
means, extending into the annular space, for introducing heated oxygen-bearing gas into the combustion zone to support combustion therein, to heat the solids passing therethrough, and to supply supplemental heat to said solids if required;

transfer means, connected with the inner tube at its second end, for transferring particulate solids from the inner processing area to the combustion zone, said means being adapted to cooperate with the solids being transferred to prevent significant gas movement between said area and said zone;

end means, connected with the inner tube at its first end, for sealing said end, said end means including recycle means, connecting the first end of the annular space with the first end of the inner processing area, for returning at least a portion of the particulate solids, being advanced through the annular space, back into said area, said recycle means being adapted to cooperate with the solids to prevent significant gas movement between the inner processing area and the annular space;

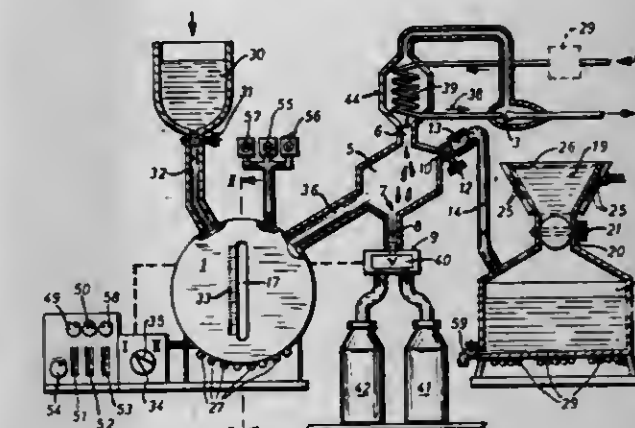
means, extending through one of the end assemblies, for introducing solids as required;  
means, extending through one of the end assemblies into the inner processing area, for depositing the liquid onto particulate solids being advanced therethrough;  
first means, extending through one of the end assemblies into the inner processing area, for withdrawing hydrocarbon vapors from said area;

second means, separate from the first means and associated with one of the end assemblies, for withdrawing combustion gases from the annular space and maintaining therein a negative pressure relative to atmospheric pressure;  
and means for controlling the first and second withdrawal means to maintain substantially equal pressures in the inner processing area and the annular space;  
whereby coke, generated in the inner processing area and carried by the particulate solids, may be burned in the combustion zone while being lifted and dropped to heat said solids, and the product hot solids may be recycled into the inner processing area wherein they are gently tumbled by rotation of the inner tube to vaporize hydrocarbons deposited thereon and form coke, and the atmospheres in the inner area and the combustion zone are kept

4,285,775

## APPARATUS FOR THE RECOVERY OF XYLENOL AND/OR PARAFFIN

Wolfgang Hamann, Felsenkellerweg 3., D-6333 Braunfels, Fed. Rep. of Germany  
Filed Jun. 3, 1980, Ser. No. 155,957  
Int. Cl.<sup>3</sup> B01D 3/02  
U.S. Cl. 202—160 10 Claims



1. An apparatus for the recovery of xyleneol mixed with water, alcohol, tissue or other substances and for the recovery of paraffin and similar substances mixed with xyleneol and solids comprising a first evaporator tank for receiving a xyleneol mixture, a second evaporator tank having an inlet and a funnel with a filter connected to said inlet to receive paraffin having foreign matter therein, said funnel having means thereon for heating said funnel to melt solid paraffin therein, means for selectively controlling the temperature and pressure in said first and second evaporator tanks, a condenser connected to said first evaporator tank and selectively connected to said second evaporator tank to receive vapors from said evaporator tanks, a distributor having a selectively operable control valve connected to said condenser to receive condensate therefrom, first and second collector tanks connected to said distributor, means for selectively operating said control valve to connect one of said first and second collector tanks to said condenser through said distributor so that each of the collector tanks will receive selectively a predetermined condensate, and a control unit having a two-stage control dial, one of said stages adjusts the temperature and pressure in said first evaporator tank to evaporator water and alcohol and to open the control to one of said collector tanks, the second of said stages adjusts the temperature and pressure in said first evaporator tank to evaporate xyleneol and to open the control valve to the other of said collector tanks.

4,285,776

## DESALINATION SYSTEM

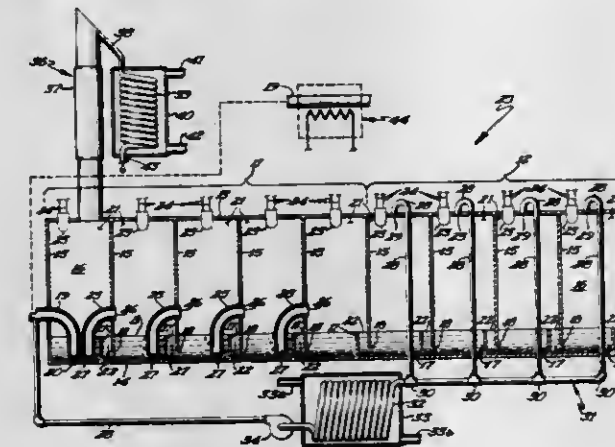
George Atwell, 891 St. Gabriel Ave., St. Norbert, Manitoba, Canada  
Filed Nov. 6, 1979, Ser. No. 91,704  
Claims priority, application United Kingdom, May 17, 1978, 20135/78  
Int. Cl.<sup>3</sup> B01D 3/02  
U.S. Cl. 202—187 3 Claims

1. A desalination system for contaminated water comprising in combination a sealed enclosure, an evaporation chamber within said enclosure, a vacuum pump connected between said evaporation chamber and said enclosure for maintaining constant negative pressure within said chamber and means conveying the contaminated water to the interior of said evaporation chamber, evaporated water vapour passing through said vacuum pump and condensing within said enclosure externally of said evaporation chamber and discharge means in said enclosure for the condensed water collected therein, said evaporation chamber being concentrically located within said enclosure, said means conveying the contaminated water to said evaporation chamber including a tank within said enclosure

4,285,774

## MICROWAVE DISTILLATION

A. H. J. Rajamannan, Minneapolis, Minn., assignor to Agrohol Systems, Inc., Minn.  
Filed Jun. 30, 1980, Ser. No. 164,250  
Int. Cl.<sup>3</sup> B01D 3/16; C07C 31/08  
U.S. Cl. 202—154 3 Claims

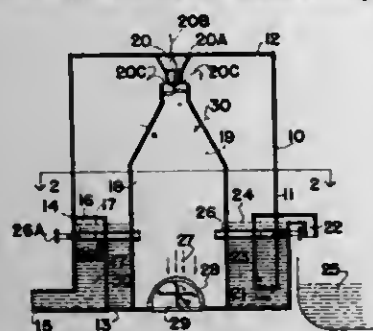


1. An apparatus for continuously producing concentrated alcohol from beer, comprising:

- a plurality of similar concentrator cells and a plurality of similar salvage cells arranged in side-by-side inline relation and each cell being adapted to contain a predetermined amount of liquid beer, one of said concentrator cells being disposed adjacent one of said salvage cells,
- a supply conduit connected to the first upstream concentrator cell for supplying liquid beer thereto,
- means defining a passage between adjacent concentrator cells, between adjacent salvage cells and between said one concentrator and salvage cells to permit liquid beer to flow from each cell to the next adjacent downstream cell in response to the volume of beer reaching a predetermined level in each cell,
- a plurality of microwave units each being positioned in one of said concentrator and salvage cells, each unit producing microwave emissions to heat the beer and cause the alcohol to boil and vaporize,
- means defining a fluid conduit between each adjacent concentrator cell, said fluid conduit having one end thereof located above the level of beer in one concentrator cell and having the other end thereof located below the level of beer in the adjacent upstream concentrator cell whereby gaseous alcohol is bubbled continuously in an upstream direction through the fluid conduits and through the liquid beer for collection into the first concentrator cell,
- a plurality of collector pipes each communicating with one of said salvage cells and with each other for collecting gaseous alcohol and water vapor from said salvage cells,
- a conduit for returning said gaseous alcohol and water vapor for recycling through the concentrator cells,
- a concentrator column communicating with the upper end of said first upstream concentrator cells to concentrate the gaseous alcohol emanating from said first concentrator cell,
- and a condenser for condensing the gaseous alcohol to a liquid solution containing approximately 95% alcohol and approximately 5% water.



surrounding said evaporation chamber and spaced therefrom, means to selectively remove solids from the base of said evaporation chamber while substantially maintaining said constant



negative pressure, said last mentioned means taking the form of an air lock communicating between said evaporation chamber and externally of said enclosure and maintaining a seal to said evaporation chamber.

4,285,777

### PROCESS FOR THE PURIFICATION OF BENZALDEHYDE

Cornelis Jongema, Oirsbeek, Netherlands, assignor to Stamcarbon, B.V., Geleen, Netherlands

Filed Feb. 28, 1980, Ser. No. 125,662

Claims priority, application Netherlands, Mar. 2, 1979, 7901670

Int. Cl.<sup>3</sup> B01D 3/34

U.S. Cl. 203—32

13 Claims

1. Process for the purification of impure benzaldehyde including odiferous impurities comprising the steps of:

- (a) treating impure benzaldehyde including odiferous impurities with hydrogen in the presence of a hydrogenation catalyst at conditions of temperature and pressure sufficient to selectively hydrogenate said impurities without hydrogenating said benzaldehyde; and
- (b) distilling said treated benzaldehyde.

4,285,778

### PROCESS FOR THE MANUFACTURE OF HALOGENATED HYDROCARBONS

John Crosby, Altrincham, and Bernard W. H. Terry, Manchester, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 15, 1980, Ser. No. 149,987

Claims priority, application United Kingdom, Jul. 13, 1979, 24523/79

Int. Cl.<sup>3</sup> B01D 3/10

U.S. Cl. 203—48

7 Claims

1. A process for the manufacture of 2,2-dichloro-5-methyl-1,1,1-trifluorohex-4-ene which comprises continuously distilling a mixture of 5-methyl-2,2,4-trichloro-1,1,1-trifluorohexane, dimethylformamide and lithium bromide, collecting a distillate comprising dimethylformamide, 5-methyl-2,2,4-trichloro-1,1,1-trifluorohexane, 2,2-dichloro-5-methyl-1,1,1-trifluorohex-4-ene and hydrohalide salts of dimethylene, precipitating the chlorofluorocarbons from the distillate by adding water to the distillate and isolating the 2,2-dichloro-5-methyl-1,1,1-trifluorohex-4-ene from the precipitated chlorofluorocarbon mixture by distilling said mixture.

4,285,779

### METHOD OF MAKING A FLUID CIRCUIT DEVICE

Tatsuhide Shiga, Zushi; Yoshihiro Tsuruoka, and Motoo Suzuki, both of Yokohama, all of Japan, assignors to Honeywell Inc., Minneapolis, Minn.

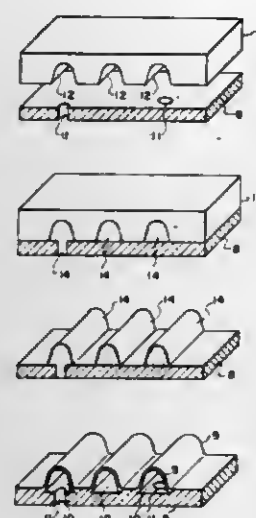
Filed May 9, 1979, Ser. No. 37,421

Claims priority, application Japan, May 24, 1978, 53/60917

Int. Cl.<sup>3</sup> C25D 1/02, 5/02

U.S. Cl. 204—9

5 Claims



1. A method for making a fluid circuit device including the steps of preparing a base plate with holes in predetermined locations, preparing a mould in which grooves are formed corresponding in size, shape and pattern of the fluid circuit, placing the mould on the surface of the base plate in a predetermined position with the holes in the base plate being aligned with respective ones of the grooves in the mould, filling the grooves in the mould with a soluble substance through the holes in the base plate, allowing the soluble substance to solidify, removing the mould from the base plate while leaving the soluble substance on the base plate, depositing a metallic plating on the surface of the solidified soluble substance and the base plate and removing the soluble substance from the base plate through the holes in the base plate.

4,285,780

### METHOD OF MAKING A MULTI-LEVEL CIRCUIT BOARD

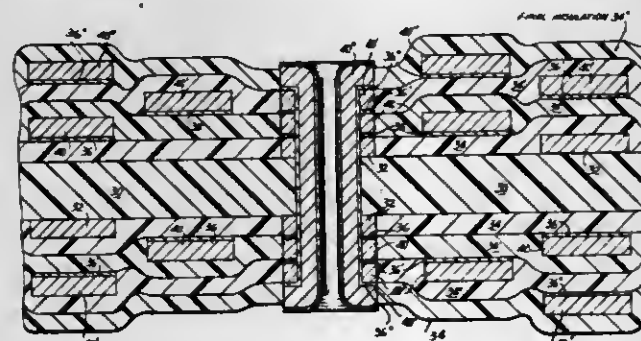
Herbert I. Schachter, 86 Campbell St., New Hyde Park, Long Island, N.Y. 11040

Filed Nov. 2, 1978, Ser. No. 957,291

Int. Cl.<sup>3</sup> C25D 5/02

U.S. Cl. 204—15

8 Claims



1. A method for making a multi-level printed circuit board comprising the steps of: forming a first level of circuitry on at least one side of a substrate, applying an insulating covering or layer over the entire surface of said substrate and circuitry except in certain locations where no covering or layer is applied so as to define a first number of predetermined areas, forming a thin adherent conductive coating over all exposed surfaces, applying a temporary mask over the conductive coating except in a second number of predetermined areas,

which define a circuit pattern on a second level on said side of said substrate, forming in one step both copper conductive areas including at least some copper circuitry in said second predetermined areas, and where said predetermined areas at any level are coincidental, metallurgical bonds creating interconnections between levels of circuitry; and removing said temporary mask and said adherent conductive coating directly underlying said mask.

4,285,783

### COATING FOR METAL SHELVING AND METHOD OF APPLYING SAME

Gerald J. Giza, Wilkes-Barre, and John H. Welsch, Moscow, both of Pa., assignors to Metropolitan Wire Corporation, Wilkes-Barre, Pa.

Filed Jul. 6, 1979, Ser. No. 55,341

Int. Cl.<sup>3</sup> C25D 5/48

U.S. Cl. 204—35 N

11 Claims

1. A method of coating a metal shelving, comprising the steps of:

- (a) cleaning a metal shelving surface;
- (b) electrodepositing, in succession, on said metal surface two metallic layers, the first layer being of nickel and the second layer being of chromium;
- (c) treating the thus deposited chromium layer by means to enhance adhesion between the chromium layer and a final outer layer of epoxy resin, said means including:
  - (i) cleaning the chromium surface with an iron phosphate-detergent mixture;
  - (ii) spray cold water rinsing the thus cleaned surface; and
  - (iii) subjecting the cold water rinsed surface to a hot water rinse;
- (d) applying onto the thus treated chromium layer an epoxy resin of low opacity; and
- (e) curing the said resin to obtain said coating on said metal shelving.

4,285,781

### METAL SUPPORT FOR AN ELECTRONIC COMPONENT INTERCONNECTION NETWORK AND PROCESS FOR MANUFACTURING THIS SUPPORT

Jean Le Rouzic, 23, rue de Bourgogne, 22300 Lannion; Loic Demeure, Route de Pleumeur, 22700 Perros-Guirec, and Yvon Le Roux, Le Rhu-Servel, 22300 Lannion, all of France

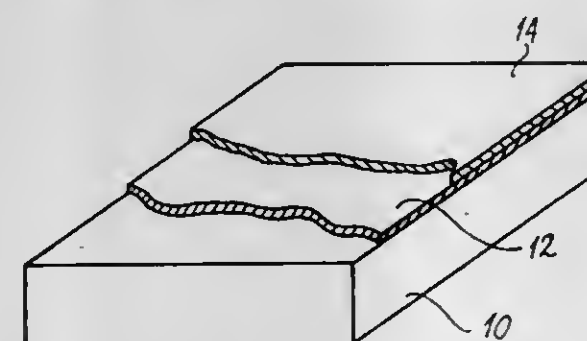
Filed Jun. 3, 1980, Ser. No. 156,263

Claims priority, application France, Jun. 15, 1979, 79 15398

Int. Cl.<sup>3</sup> C25D 11/04

U.S. Cl. 204—15

8 Claims



1. In a support for an electronic component interconnection network, a metal substrate coated with a layer of aluminium of granular structure, whose thickness may vary between a few microns and a few tens of microns, this layer being anodized.

4,285,782

### METHOD FOR PROVIDING URANIUM WITH A PROTECTIVE COPPER COATING

Forrest B. Waldrop, Powell, and Edward Jones, Knoxville, both of Tenn., assignors to The United States of America as represented by The United States Department of Energy, Washington, D.C.

Filed Aug. 6, 1980, Ser. No. 175,813

Int. Cl.<sup>3</sup> C25D 5/32

U.S. Cl. 204—32 R

6 Claims

1. A method for providing an adherent, protective coating of copper on a uranium article comprising the steps of removing oxides and other surface contaminants from the surface of the uranium article, etching the uranium article in a chloride ion bath, pickling the uranium article in an acid bath, electrodepositing a flash layer of porous copper on the uranium article in a copper cyanide bath, heating the copper-layered uranium article in air or an inert atmosphere to a temperature below the melting temperature of copper and sufficient to volatilize and drive off through the porous flash layer volatile material entrapped under the flash layer, and thereafter electrodepositing on the flash layer of copper an adherent and essentially non-porous layer of copper in a bright acid copper bath.

4,285,784

### PROCESS OF ELECTROPLATING A PLATINUM-RHODIUM ALLOY COATING

David R. Filian, Fort Washington, and Cheryl L. Manger, Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jul. 10, 1980, Ser. No. 168,822

Int. Cl.<sup>3</sup> C25D 3/66

U.S. Cl. 204—39

10 Claims

1. A process of electroplating a platinum-rhodium alloy coating of predetermined composition and predetermined thickness on a metal substrate, the composition being substantially uniform throughout the coating, said process comprising the steps of:

- (a) immersing a first anode made of platinum metal and immersing a selective ion transport membrane containing a cathode and a first portion of a moisture-free, molten cyanide bath, into a second portion of the molten cyanide bath; said second portion being a selected quantity; and the molten cyanide bath containing a cyanide salt selected from the group consisting of sodium cyanide and a mixture of potassium cyanide and sodium cyanide;
- (b) electrolytically dissolving the anodic platinum metal into said second portion of the molten cyanide bath, using a current density of from about 1 to less than 25 ma/cm<sup>2</sup>, whereby the resulting platinum bath contains a predetermined quantity of said platinum metal;
- (c) repeating the procedure of steps (a) and (b) employing rhodium metal in place of platinum metal, and a current density of from about 1 to less than 50 ma/cm<sup>2</sup>, whereby the resulting rhodium bath contains a predetermined quantity of said rhodium metal;
- (d) combining a selected weight of said platinum bath with a selected weight of said rhodium bath to produce a mixed bath having a predetermined ratio of platinum to rhodium;
- (e) immersing a second anode made of platinum or rhodium metal, a metal cathode and a stable reference electrode into the molten mixed bath; said metal cathode functioning as said metal substrate; and
- (f) without agitating the molten mixed bath, electroplating platinum and rhodium onto said metal cathode, using a predetermined electrical charge, and alternating said platinum anode with said rhodium anode, as said second anode, while monitoring and controlling the deposition



potential of said metal cathode, whereby there is obtained said platinum-rhodium alloy coating, said coating substantially corresponding in composition to the metal composition of the molten mixed bath; wherein each of said steps is carried out in a dry, inert gas environment.

4,285,785

## METAL PRODUCING METHOD

Daniel A. Sullivan, Jr., Upper Burrell Township, Westmoreland County, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 18, 1979, Ser. No. 85,856  
Int. Cl.<sup>3</sup> C25C 3/00, 3/04, 3/06, 3/26

U.S. Cl. 204-64 R

6 Claims

1. In a method for producing metal by electrolysis of a metal compound dissolved in a molten solvent, electrolysis of the metal compound yielding metal and gas, the improvement comprising carrying out the electrolysis in a bipolar mode with a bed of conductive pebbles to create a three phase system of metal, gas, and molten solvent.

4,285,786

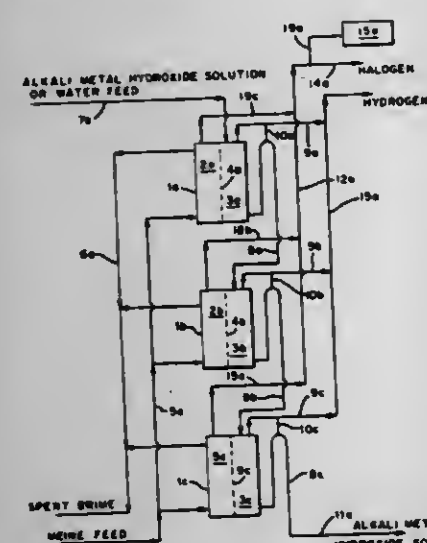
## APPARATUS AND METHOD OF MONITORING TEMPERATURE IN A MULTI-CELL ELECTROLYZER

Eric H. Larson, Marcellus, N.Y., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed May 9, 1980, Ser. No. 148,344  
Int. Cl.<sup>3</sup> C25B 1/34, 1/02, 9/00

U.S. Cl. 204-98

16 Claims



1. In a process for making halogen gas and alkali metal hydroxide by electrolysis of an aqueous alkali metal halide brine in a bank of two or more electrolytic cells, each cell containing an anode and a cathode and being separated into an anode compartment and a cathode compartment, wherein (a) the halide brine is introduced into an anode compartment; (b) halogen gas produced at an anode is withdrawn from the anode compartments by a common halogen gas collection means; (c) depleted halide brine is removed from the anode compartments through common depleted brine collection means; (d) water or dilute alkali metal hydroxide is fed to a cathode compartment; (e) alkali metal hydroxide is withdrawn through a common alkali metal hydroxide collection means from the cathode compartments; and (f) hydrogen gas produced at a cathode is withdrawn through a common hydrogen gas collection means, the improvement which comprises monitoring temperature in the bank by monitoring a output signal of a single temperature sensing means placed in the common gas collection means for hydrogen or halogen gas.

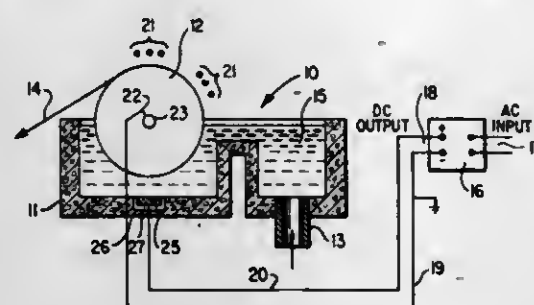
4,285,787  
ELECTROCHEMICAL CORROSION PROTECTION OF STAINLESS STEEL BLEACH PLANT WASHERS

Andrew Garner, Pointe Claire, Canada, and Laurent H. Laliberte, Mobile, Ala., assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

Filed Mar. 20, 1980, Ser. No. 132,011  
Int. Cl.<sup>3</sup> C23F 13/00

U.S. Cl. 204-147

4 Claims



1. A method of electrochemically protecting by cathodic polarization a partly submersed, rotating, stainless steel drum in a vat containing a corrosive oxidizing chloride containing bleach liquor which comprises impressing a protection potential to said stainless steel drum at a predetermined voltage in the range of -600 to +400 mV<sub>Ag/AgCl</sub> said predetermined voltage being sufficiently low to draw said stainless steel into a passive corrosion protection zone but not sufficiently low to draw it into a zone of uniform corrosion.

4,285,788

## FAMILY OF COMPOUNDS CROSSLINKABLE BY PHOTON IRRADIATION

Armand Eranian; Jean-Claude Dubois; Maryse Gazard, and Francoise Barre, all of Paris, France, assignors to Thomson-CSF, Paris, France

Division of Ser. No. 882,169, Feb. 28, 1978. This application  
Ang. 20, 1979, Ser. No. 67,905

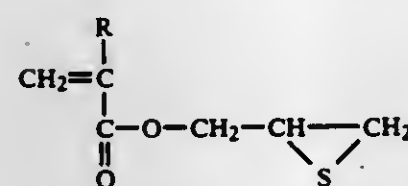
Claims priority, application France, Mar. 4, 1977, 77 06441  
Int. Cl.<sup>3</sup> C08F 8/00, 8/34; C08J 3/24

U.S. Cl. 204-159.16

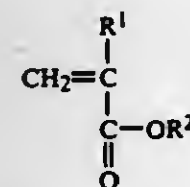
8 Claims

1. A copolymer composition crosslinkable by ultraviolet light rays into a 3-dimensional network, said composition comprising, as the cross-linkable monomers:

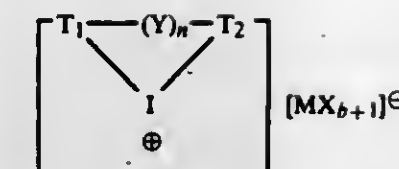
(i) from 40 to 80% by weight of 2,3 epithiopropyl alkyl acrylate monomer units of the formula:



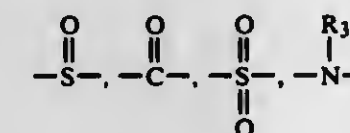
wherein R is hydrogen or a C<sub>1</sub> to C<sub>4</sub> alkyl; and  
(ii) from 60 to 20% by weight of vinyl monomer units of the formula:



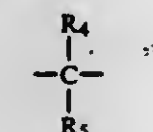
wherein R<sup>1</sup> is hydrogen or an alkyl group of the formula C<sub>n</sub>H<sub>2n+1</sub>, where n is an integer from 1 to 10 and R<sup>2</sup> is a C<sub>1</sub> to C<sub>5</sub> alkyl group, together with  
(iii) an ultraviolet-initiating amount of an aryl iodonium salt of the formula:



wherein n is 0 or 1, T<sub>1</sub> and T<sub>2</sub>, which are the same or different, are aromatic groups containing from 4 to 20 carbon atoms, Y is:



where R<sub>3</sub> is hydrogen, alkyl or acyl or



where R<sub>4</sub> and R<sub>5</sub>, which may be the same or different, are hydrogen, a C<sub>1</sub> to X<sub>4</sub> alkyl or a C<sub>2</sub>-C<sub>4</sub> alkenyl, M is Fe, Sn, Sb, Bi, B, P or As X is a halogen atom, and b is an integer from 1 to 5.

4,285,789

## CATIONIC ELECTRODEPOSITION PROCESS

Yoshimichi Kobayashi, Yokohama; Yukio Tsuge, Kawasaki; Susumu Hirako, and Hideaki Kuniwa, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,621

Claims priority, application Japan, Feb. 26, 1979, 54/21665  
Int. Cl.<sup>3</sup> C25D 13/06

U.S. Cl. 204-181 C

9 Claims

1. In a cationic electrodeposition for coating an electric conductive substrate as a cathode with an electrodeposition-coating composition containing a resin; an improvement characterized in that said resin is a resin having hydroxyl group, tertiary amino groups, quaternary ammonium groups and blocked isocyanate groups which are reactive with hydroxyl group at an elevated temperature which is obtained by reacting

- a polyisocyanate;
- a polyhydroxyl compound;
- a hydroxyl compound having tertiary amino group;
- a hydroxyl compound having quaternary ammonium group; and
- a monofunctional blocking agent, under conditions such that hydroxyl group of (b), (c) and (d) and the blocking group of (e) react with isocyanate group of (a) and the reaction product of the isocyanate group and of (e) is not disassociated, the proportions of (c) and (d) being such that the ratio of nitrogen atoms of the quaternary ammonium groups are 0.1 to 95 mole % of total nitrogen atoms of the tertiary amino groups and quaternary ammonium groups.

4,285,790

## SENSOR FOR OXYGEN-COMBUSTIBLES GAS MIXTURES

Arnold O. Isenberg, Forest Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 20, 1980, Ser. No. 132,197

Int. Cl.<sup>3</sup> G01N 27/56, 27/58

U.S. Cl. 204-195 R

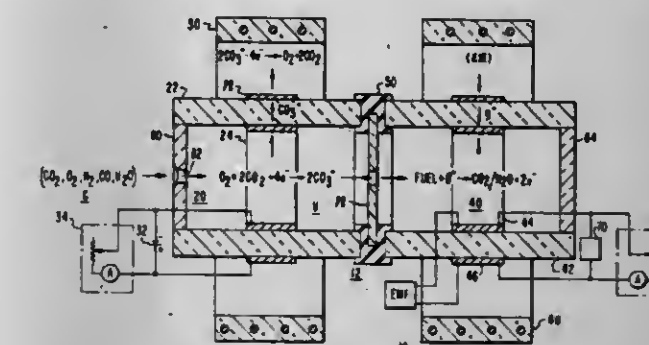
8 Claims

1. An oxygen sensor apparatus for measuring the oxygen content of an oxygen/combustibles gas mixture wherein said

gas mixture includes CO<sub>2</sub>, or the combination of CO<sub>2</sub> and water vapor, in excess of O<sub>2</sub>, comprising:

a molten carbonate electrochemical cell including a molten carbonate electrolyte consisting of a eutectic carbonate mixture impregnated in a porous support and first and second electrodes disposed on opposite surfaces of said molten carbonate electrolyte;

means for supplying an oxygen/combustibles gas mixture containing CO<sub>2</sub>, or the combination of CO<sub>2</sub> and water vapor, in excess O<sub>2</sub> in contact with the first electrode



surface of said molten carbonate electrolyte, said first electrode being a non-catalytic electrode; means for transporting CO<sub>2</sub> and a corresponding amount of O<sub>2</sub> from said gas mixture through said molten carbonate electrolyte to the second electrode surface of said molten carbonate electrolyte to deplete the oxygen present in said gas mixture, said transport of CO<sub>2</sub> and O<sub>2</sub> producing a molten carbonate electrochemical cell current; and means for measuring said cell current as an indication of the oxygen content of said gas mixture.

4,285,791

## ELECTRODE SYSTEM

Hartmut Schmidt-Rabenau, Hamburg, and Hans-Werner Berger, Jersbek, both of Fed. Rep. of Germany, assignors to Eppendorf Geratebau Netherler + Hinz GmbH, Hamburg, Fed. Rep. of Germany

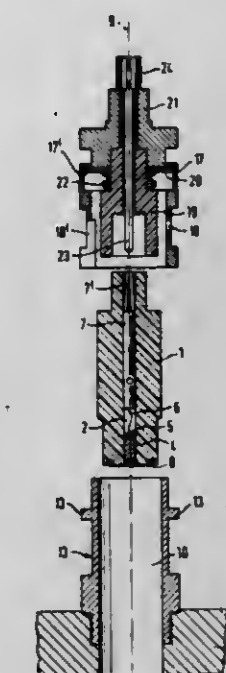
Filed Jul. 3, 1980, Ser. No. 165,728

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927361

Int. Cl.<sup>3</sup> G01N 27/30

U.S. Cl. 204-195 M

5 Claims



1. An electrode system comprising means defining a bore of a measuring chamber, an electrode member which can be introduced into said bore with a selectively sensitive membrane disposed in its front end and an electrical conductor extending from said membrane rearwardly through the elec-



trode member, a holding member which can be engaged with said bore defining means for securing said electrode member upon insertion in said bore, characterized in that said holding member comprises an inner body which engages said electrode member, and a connecting portion which engages said bore defining means and wherein said connecting portion can be moved to a limited extent in the axial direction of said holding member and electrode member against spring pressure and can be rotated about the longitudinal axis of the holding member.

4,285,792

# PORTABLE PH METER FOR EFFLUENTS HAVING A SELF-CLEANING ELECTRODE CHAMBER

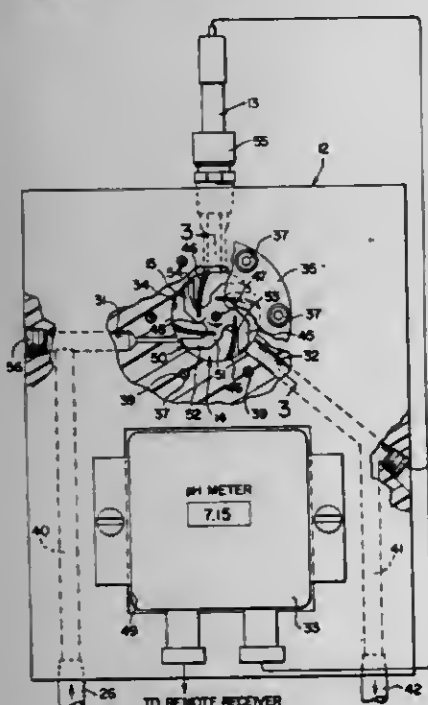
Edward L. McGandy, Shaker Heights, Ohio, assignor to Standard Oil Company (Ohio), Cleveland, Ohio

Filed Jul. 30, 1980, Ser. No. 173,777

Int. Cl.<sup>3</sup> G01N 27/38

U.S. Cl. 204—195 R

9 Claims



1. A self-cleaning apparatus for the monitoring of pH in an effluent process stream, comprising:  
means for sampling the effluent process stream;  
housing means for supporting a pH electrode, said housing means including electrode chamber means into which said pH electrode extends, said electrode chamber means receiving said effluent process stream sample from said means for sampling; and,  
means for automatically, continuously cleansing said pH electrode and said electrode chamber means, said means for cleansing entirely powered by the impingement of said effluent process stream sample upon said means for cleansing.

4,285,793

# SLIDE-BACK TYPE INTERCELL BUS BAR CONNECTOR

Steven J. Specht, Mentor, Ohio, and Morton S. Kircher, Clearwater, Fla., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 7, 1979, Ser. No. 101,386

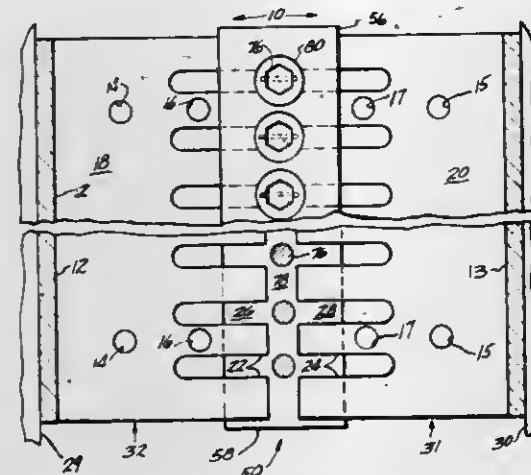
Int. Cl.<sup>3</sup> C25B 9/04

U.S. Cl. 204—253

30 Claims

1. A cell connector system for electrically connecting and disconnecting a first electrolytic cell adjacent to a second electrolytic cell in series, wherein said system is comprised of:  
(a) a cathode terminal attached electrically to said first cell and projecting towards said second cell,  
(b) an anode terminal attached electrically to said second cell and projecting towards said cathode terminal,  
(c) each of said terminals having a top side and a bottom side and an outer portion,

(d) at least one of said terminals having multiple lateral recesses in said outer portion,  
(e) a conductive first member overlapping one of said outer sides and said portion of each of said terminals,  
(f) a second member overlapping the other of said sides and said outer portion of each of said terminals,  
(g) a plurality of fastener means aligned laterally with said recesses for connecting said first member and said second member; and



(1) for pressing said first member and said second member into tight electrical contact with said terminals, whereby current flows between said terminals through said conductive first member, and  
(2) means for sliding said fastening means into said recesses towards one of said electrolytic cells and for moving said members towards one of said electrolytic cells when said members are not pressed into tight electrical contact with said terminals, thereby disengaging said first conductive member from one of said terminals.

4,285,794

# ANNULAR ELECTRODES FOR SHUNT CURRENT ELIMINATION

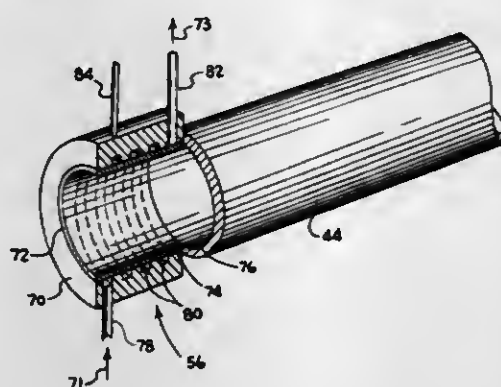
Richard J. Bellows, Patrick G. Grimes, both of Westfield, and Chester W. Elspass, Plainfield, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 19, 1980, Ser. No. 122,706

Int. Cl.<sup>3</sup> C25B 9/04; C25C 7/00; C25B 11/00, 11/12

U.S. Cl. 204—260

17 Claims



1. A protective annular electrode for providing a substantially uniform current density along a common manifold of an electrochemical device for reducing or otherwise eliminating undesirable shunt currents in said electrochemical device, comprising:  
an annular sleeve;  
means for passing current through said sleeve;  
a first means for passing a fluid material through said sleeve;  
a second means for passing a fluid material through said sleeve; and

an inner liner disposed within said sleeve for selectively passing a material to the exclusion of other materials.

4,285,795

# ELECTROLYSIS APPARATUS

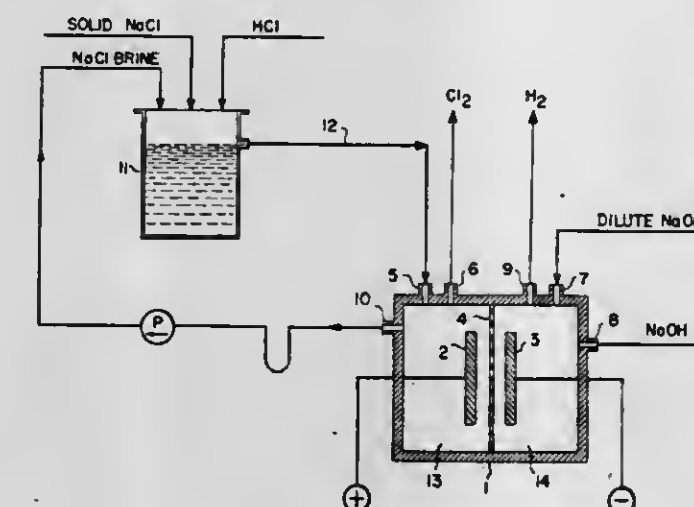
Edward H. Cook, Jr., Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 387,098, Aug. 9, 1973, which is a continuation-in-part of Ser. No. 212,171, Dec. 27, 1971. This application Apr. 18, 1975, Ser. No. 569,521

Int. Cl.<sup>3</sup> C25B 9/00, 13/08

U.S. Cl. 204—266

4 Claims



1. An electrolysis cell comprising a housing, an anode, a cathode, a diaphragm member consisting essentially of a cationactive permselective membrane substantially impervious to liquids and gases, said diaphragm member consisting essentially of a sulfostyrenated perfluoroethylene propylene polymer, said diaphragm member separating said anode and said cathode thereby forming an anode compartment and a cathode compartment, said anode compartment having outlet means for the removal of gaseous products formed at the anode, inlet means for introducing an acidified, saturated alkali metal chloride brine into said anode compartment, a second outlet means for removing depleted brine from said anode compartment and brine replenishing means in communication with both said inlet means and said second outlet means, such that depleted brine is removed from the anode compartment through said second outlet means, passed through said replenishing means wherein it is resaturated and acidified and reintroduced into the anode compartment through said inlet means, and said cathode compartment containing a liquid inlet, a liquid outlet and an outlet for the gaseous products formed at the cathode.

4,285,796

# ELECTROLYSIS ELECTRODE

Glean E. Stoner, and George L. Cahen, Jr., both of Charlottesville, Va., assignors to The University of Virginia, Charlottesville, Va. and Research Corporation, New York, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,155

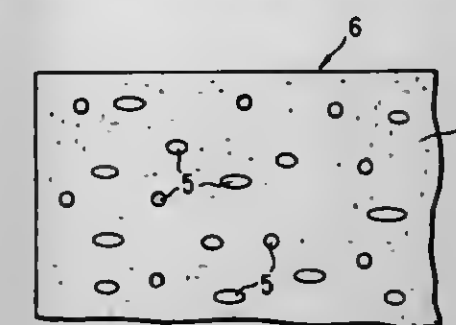
Int. Cl.<sup>3</sup> C25B 11/02, 11/04

U.S. Cl. 204—290 R

4 Claims

1. An electrode, which comprises:  
an electrically conductive current collector; and  
a working surface containing a multiplicity of conductive islands in a non-conducting matrix wherein the majority of said islands are in electrically conductive contact with said current collector wherein the average size of said conductive islands ranging from 3–30  $\mu\text{m}$  and the average spacing between said conductive islands ranging from 3–50  $\mu\text{m}$  are of the same order of magnitude as the diffusion layer of the solution intended to be treated when said electrode is immersed into said solution, said surface hav-

ing fixed thereto on the non-conducting matrix thereof, an enzyme, thereby rendering said electrode capable of si-



multaneously effecting enzymatic and electrolytic reactions.

4,285,797

# CATHODE FOR THE ELECTROLYTIC TREATMENT OF ALKALI HALIDE

Masakatsu Wagu, Makoto Fukuda, and Shiroy Suzuki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

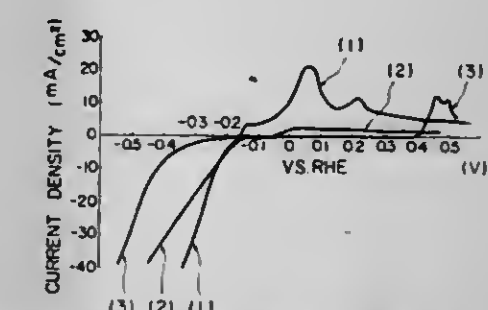
Filed May 23, 1979, Ser. No. 41,783

Claims priority, application Japan, May 24, 1978, 53/61044

Int. Cl.<sup>3</sup> C25B 11/08

U.S. Cl. 204—290 R

1 Claim



1. A cathode electrode for use in the electrolysis of alkali halide, said cathode electrode comprising a mass of one of copper and copper alloy subjected to mechanical grinding by blasting with solid particles of 0.1–1,000 microns in their particle sizes so as to achieve a mechanically ground surface, the latter being coated with one of rhodium and rhodium alloy coated layer.

4,285,798

# METHOD OF PRODUCING AN ELECTRODE

Mitsuo Yoshida, Akira Nakamura, Keiichi Ohmure, and Atsuo Ono, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 23, 1979, Ser. No. 96,888

Claims priority, application Japan, Nov. 24, 1978, 53-144235

Int. Cl.<sup>3</sup> C25B 11/10; B05D 5/12

U.S. Cl. 204—290 F

11 Claims

1. A method of producing an electrode which comprises applying to the surface of a corrosion-resistant electroconductive core material a solution of at least one metal salt capable of forming an electroconductive substance by heat treatment, and subjecting the resulting coated core material to a heat treatment in a heating zone, said heat treatment comprising continuously elevating the temperature of said resulting coated core material to about 400° to 700° C. over a period of time of about 5 minutes to 2 hours while blowing air into the heating zone at a rate of at least about 0.8 m<sup>3</sup>/hr per 1 m<sup>2</sup> of the projective area of the core material and rapidly removing gaseous products being produced from the surface of said heat treated coated core material.

11. An electrode produced according to the method of claims 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10.



4,285,799

ELECTRODES FOR ELECTROLYTIC PROCESSES,  
ESPECIALLY METAL ELECTROWINNING

Vittorio de Nora, Nassau, The Bahamas; Antonio Nidola, Milan, Italy, and Placido M. Spaziant, Lugano, Switzerland, assignors to Diamond Shamrock Technologies, S.A., Geneva, Switzerland

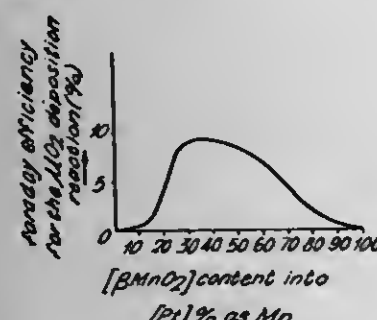
PCT No. PCT/EP79/00020, 8371 Date Nov. 28, 1979, §102(e) Date Nov. 26, 1979, PCT Pub. No. WO79/00840, PCT Pub. Date Oct. 18, 1979.

This PCT application filed, Ser. No. 97,345  
Claims priority, application United Kingdom, Mar. 28, 1978, 12054/78

Int. Cl.<sup>3</sup> C25B 11/08, 11/16, 1/00

U.S. Cl. 204—290 F

5 Claims



1. An electrode for electrolytic processes, comprising an electrically-conductive corrosion-resistant substrate having an electrocatalytic coating, characterized in that the coating contains a mixture of at least one platinum group metal and manganese dioxide dispersed in one another throughout the coating in a ratio of from 8:2 to 3:7 by weight of the platinum group metal(s) to the manganese metal of the manganese dioxide.

4,285,800

GAS PLASMA REACTOR FOR CIRCUIT BOARDS AND  
THE LIKE

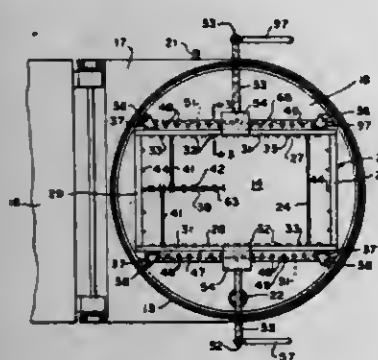
Joseph M. Welty, Hayward, Calif., assignor to Branson International Plasma Corp., Hayward, Calif.

Filed Apr. 18, 1979, Ser. No. 31,055

Int. Cl.<sup>3</sup> C23F 1/00

U.S. Cl. 204—298

3 Claims



1. In a gas plasma reactor for treating printed circuit boards: a housing defining a reaction chamber, gas inlet and outlet means communicating with the chamber, first and second racks connected electrically to ground and having a plurality of spaced apart generally parallel bars for engaging opposing edges of the printed circuit boards to hold the boards in spaced parallel-relationship in the region between the racks, a pair of generally planar electrodes oriented in a position generally perpendicular to the surfaces of the circuit boards and positioned outside the region between the racks, each of said electrodes comprising a plurality of spaced apart rods aligned between the bars of the racks and connected electrically together, and means for energizing the electrodes to ionize the gas to form a plasma in the region between the electrodes and the racks.

4,285,801

## ELECTROPHORETIC DISPLAY COMPOSITION

Anne A. Chiang, Cupertino, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 20, 1979, Ser. No. 77,416

Int. Cl.<sup>3</sup> C25D 13/00; G02F 1/01

U.S. Cl. 204—299 R

3 Claims

1. An electrophoretic display composition comprising particles suspended in a liquid, at least a portion of said particles being at least partially coated with a highly fluorinated polymeric material of highly fluorinated organic compounds having chains longer than C<sub>8</sub>, said polymeric material being a dispersant, a charge control agent or a matrix for a charge control agent.

4,285,802

## ZINC-NICKEL ALLOY ELECTROPLATING BATH

George B. Rynne, 223 15th St., NE., Atlanta, Ga. 30309

Filed Feb. 20, 1980, Ser. No. 123,109

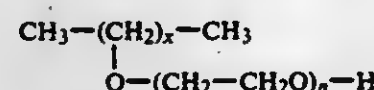
Int. Cl.<sup>3</sup> C25D 3/56

U.S. Cl. 204—43 Z

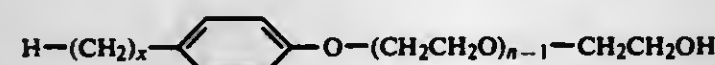
10 Claims

1. An aqueous bath for producing a bright zinc-nickel alloy electroplated deposit having superior corrosion resistance, said bath comprising, on a per liter basis:

- a soluble zinc containing compound providing 10–100 grams of zinc as metal and selected from the group consisting of zinc chloride and zinc oxide;
- a soluble nickel salt providing 0.01–10 grams of nickel as a metal, said soluble nickel salt being nickel chloride;
- an ammoniated electrolyte providing 1–10 grams of ammonium ions, said ammoniated electrolyte being ammonium chloride;
- a non-ammoniated electrolyte selected from the group consisting of potassium chloride and sodium chloride, said non-ammoniated electrolytes providing 25–300 grams of chloride ions;
- 5–50 grams of a non-ionic polyoxy alkylated surfactant selected from the group consisting of: nonionic block copolymers of ethylene oxide and linear alcohols having the following structural formula;



wherein x is an integer from 9 to 15 and n is an integer from 10 to 50;  
nonionic block copolymers of ethylene oxide and phenol alcohols having the following structural formula;



wherein x is an integer from 6 to 15 and n is an integer from 10 to 50;  
nonionic block copolymers of ethylene oxide and monoe-thanol amine coconut fatty acid condensate having a total molecular weight of about 475 and an ethylene oxide content of about 46 weight percent thereof;  
alkoxylated alkyl phenols, alkoxylated alkyl naphthols, alkoxylated aliphatic monohydric alcohols, alkoxylated polyoxpropylene glycols, alkoxylated 2,4,7,9-tetramethyl-5-decyne-4,7-diol, alkoxylated ethylene diamine, alkoxylated fatty acids, alkoxylated amides, alkoxylated esters; and

(f) 0.05–4 grams of an aromatic aldehyde, said bath having a pH of 3.0–6.9.

4,285,803

CATALYTIC SLURRY PROCESS FOR BLACK OIL  
CONVERSION

Richard Braun, Hoffman Estates; Russell W. Johnson, Villa Park, and John G. Gatsis, Des Plaines, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jan. 24, 1980, Ser. No. 115,305

Int. Cl.<sup>3</sup> C01G 9/16

U.S. Cl. 208—48 AA

14 Claims

1. In a process for the conversion of an asphaltene-containing hydrocarbonaceous charge stock which comprises the steps of:

- forming a reactive slurry of said charge stock, hydrogen and a finely divided catalyst containing at least one metal component from the metals of Groups V-B, VI-B and VIII of the Periodic Table;
- reacting said slurry at hydrocarbon conversion conditions including a pressure above about 100 psig and a temperature above about 400° F.; and,
- recovering a hydrocarbonaceous product; the improved method of reducing the formation of coke and other undesirable deposits in the process, which comprises effecting said reaction of the slurry in admixture with from about 0.0001% to about 1% by weight, based on the hydrocarbonaceous charge stock, of a solids dispersant comprising an oil-soluble HCl salt of the condensation product, formed at a temperature of from about 20° C. to about 150° C., of equimolar amounts of an epihalohydrin compound and an alkyl amine having from about 12 to about 40 carbon atoms per molecule, from about 1% to about 20% of the amino nitrogen in said condensation product being neutralized with HCl.

4,285,804

PROCESS FOR HYDROTREATING HEAVY  
HYDROCARBONS IN LIQUID PHASE IN THE  
PRESENCE OF A DISPERSED CATALYST

Yves Jacquin, Serres; Michel Davidson, Levesinet, and Jean-Francois Le Page, Ruell Malmaison, all of France, assignors to Institut Français du Pétrole, Ruell-Malmaison, France

Filed May 19, 1980, Ser. No. 150,825

Claims priority, application France, May 18, 1979, 79 12,933

Int. Cl.<sup>3</sup> C10G 45/06

U.S. Cl. 208—48 R

13 Claims

1. A process for hydrotreating an asphaltene-containing hydrocarbon oil charge stock, comprising the steps of:

- admixing said hydrocarbon oil charge stock with hydrogen and fresh catalyst, said catalyst comprising at least one metal compound whose metal component is selected from groups Vb, VIb, VIIb and the iron group of group VIII, the amount of said metal compound, expressed as metal, relative to said hydrocarbon oil charge stock being from 20 to 500 ppm by weight;
- passing the resultant mixture from step (a) through a heating zone comprising a heated surface, said mixture being maintained in said heating zone at a temperature of from 350° to 470° C. for from 15 to 180 seconds;
- introducing the heated mixture from step (b) into a hydrotreating reaction zone, introducing a recycle catalyst suspension as hereinafter defined into said reaction zone, and maintaining the resultant hydrotreatment reaction mixture in said reaction zone at a temperature of from 350° to 470° C. and a pressure of from 50 to 200 bars for from 0.1 to 4 hours, the introduction of said recycle catalyst suspension providing said hydrotreatment reaction mixture with from 1,000 to 20,000 ppm by weight of said metal catalyst component, expressed as metal, relative to the weight of said hydrocarbon oil charge stock used in step (a);
- fractionating the hydrotreated reaction mixture from step (c) into at least one gas phase and at least one phase comprising a slurry of said catalyst in hydrotreated hydrocarbon oil;
- fractionating said slurry from step (d), and separately

recovering a hydrotreated hydrocarbon oil product fraction and a catalyst fraction, at least a portion of the recovered catalyst fraction being suspended in a hydrocarbon oil recycle carrier and the suspension being supplied at a temperature lower than 350° C. to step (c) as said recycle catalyst suspension.

4,285,805

TIME-DELAY PROCESS AND CONTROL SYSTEM FOR  
ELECTROSTATIC FILTER

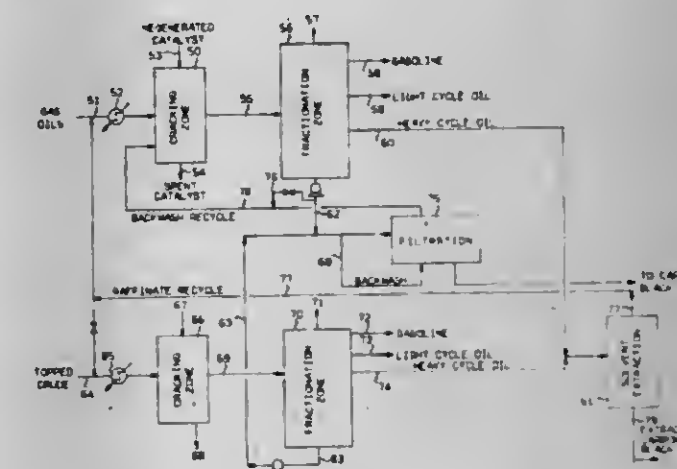
Albert F. Stegeman, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 20, 1980, Ser. No. 132,199

Int. Cl.<sup>3</sup> C10G 9/16, 9/32

U.S. Cl. 208—113

13 Claims



11. A catalytic cracking process comprising: passing a feed hydrocarbon to a cracking zone wherein it is catalytically converted to hydrocarbons having a lower boiling range than the feed hydrocarbon; passing a cracking product comprising lower-boiling hydrocarbons and catalyst particles to a fractionation zone and withdrawing a plurality of boiling-range fractions; withdrawing a slurry oil containing catalyst particles from the lower portion of the fractionation zone; passing the slurry oil to a filtration zone comprising at least one electrostatic filter having a filter bed of high electrical resistivity, a slurry inlet valve, a product outlet valve, a backflush inlet valve, and a backflush outlet valve; means to apply a voltage gradient across the filter bed and with means to control the application of the voltage gradient; first actuation means to close the slurry inlet valve and the product outlet valve and open the backflush inlet valve and the backflush outlet valve and to actuate the switch means to interrupt the voltage; second actuation means to close the backflush inlet valve and the backflush outlet valve and open the slurry inlet valve and the product outlet valve and to actuate the switch to reestablish the voltage gradient, the second activation means including delay means to cause the opening of the second valve means to be delayed for a finite time after actuation of the switch; passing the slurry oil through the electrostatic filter having a voltage gradient applied across the filter bed, thereby removing catalyst particles from the slurry oil; periodically actuating the first actuation means and passing a backflush fluid through the filter bed with sufficient velocity to remove a substantial portion of the collected catalyst particles; thereafter actuating the second activation means and resuming the passage of slurry oil through the electrostatic filter; and withdrawing a filtered product stream from the filtration zone.



4,285,806

## CATALYST AND PROCESS FOR CONVERSION OF HYDROCARBONS

John Mooi, Homewood, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.  
Division of Ser. No. 889,689, Mar. 24, 1978, abandoned, which is a division of Ser. No. 699,005, Jun. 21, 1976, Pat. No. 4,253,939.  
This application May 8, 1980, Ser. No. 147,900  
Int. Cl.<sup>3</sup> B01J 29/12; C10G 9/16, 11/18, 47/28

U.S. Cl. 208—120

38 Claims

1. In a hydrocarbon conversion process for converting a sulfur-containing hydrocarbon feedstock which comprises (1) contacting said feedstock with solid particles capable of promoting the conversion of said feedstock at hydrocarbon conversion conditions in at least one reaction zone to produce at least one hydrocarbon product and to cause deactivating sulfur-containing carbonaceous deposit to be formed on said solid particles, thereby forming deposit-containing particles; (2) contacting said deposit-containing particles with an oxygen-containing vapor medium at conditions to combust at least a portion of said carbonaceous deposit in at least one regeneration zone to thereby regenerate at least a portion of the hydrocarbon conversion catalytic activity of said solid particles and to form a regeneration zone flue gas containing at least one sulfur-containing carbonaceous deposit combustion product; and (3) repeating steps (1) and (2) periodically, the improvement which comprises, circulating between said reaction zone and said regeneration zone in intimate admixture with said solid particles, a minor amount of discrete entities comprising at least one material capable of associating with sulfur trioxide at the conditions of step (2) and capable of disassociating with sulfur trioxide at the conditions of step (1), thereby associating at least a portion of said sulfur-containing combustion product with said discrete entities in said regeneration zone and disassociating at least a portion of said sulfur-containing combustion product from said discrete entities in said reaction zone to form  $H_2S$  which exits said reaction zone with said hydrocarbon product, provided that said discrete entities prior to introduction into said reaction zone-regeneration zone system are more attrition resistant than said solid particles.

4,285,807

## LUBRICATING OIL HYDROTREATING PROCESS

John J. Stanulonis, Pittsburgh; Joseph A. Tabacek, New Kensington, and Roger F. Vogel, Butler, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

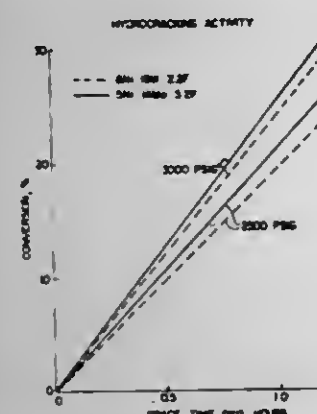
Filed Sep. 4, 1979, Ser. No. 72,232

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> C10G 45/04, 45/60, 17/00; B01J 37/00

U.S. Cl. 208—216 R

13 Claims



1. A process for hydrotreating a lubricating oil feedstock, which comprises contacting said feedstock and hydrogen under hydrotreating conditions with a catalyst formed by a process which consists essentially of contacting a refractory oxide support comprising between about 10 and about 75 weight percent silica with an impregnating solution consisting essentially of an aqueous, alkaline solution said solution consisting essentially of  $NH_4^+$ ,  $Ni^{++}$ ,  $Mo^{+VI}$  and  $F^-$  in amounts

sufficient to produce a supported catalyst composite containing between about 2 and about 8 weight percent nickel, between about 8 and about 25 weight percent molybdenum and between about 1 and about 5 weight percent fluorine based upon the total catalyst composite, using the one-step, incipient wetness technique, said  $Ni^{++}$  and  $F^-$  being supplied from nickel fluoride, and thereafter heating said impregnated support to a temperature sufficient to drive off ammonia and deposit nickel, fluorine and molybdenum on said support.

4,285,808

## TRUCK MIXER WASHOUT RECLAIM SYSTEM

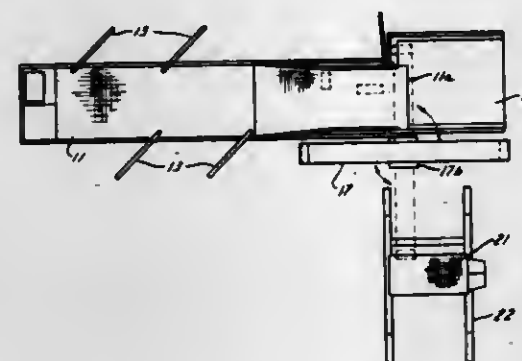
Robert J. Horton, Wauwatosa, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Nov. 13, 1980, Ser. No. 206,600

Int. Cl.<sup>3</sup> B03B 5/64, 7/00; B03D 3/00

U.S. Cl. 209—17

6 Claims



4. In a system for reclaiming the unused mixed concrete ingredients and the washout water by which such ingredients have been removed from their containers and for receiving the same for their storage and reuse, said system including a settling tank, inclined means for the removal of the settled material from the tank and having an elevated discharge end, a graded area directly below said discharge end, an aggregate and sand receiver spaced from said graded area, an inclined belt conveyor having a lower loading end, an upper discharge end and a support frame, and a base for said belt conveyor having bearing means for the limited pivotal movement of the conveyor about a vertical axis and between operative and inoperative positions whereby in said operative position the discharge end of the conveyor is above said receiver and the lower end is above said graded area and below said discharge end and in said inoperative position the lower end of the conveyor is alongside said graded area.

4,285,809

## ROTOR FOR SEDIMENTATION FIELD FLOW FRACTIONATION

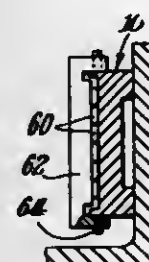
Charles H. Dilks, Jr., Newark; Joseph J. Kirkland, Wilmington, and Wallace W. Yau, Newark, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 29, 1980, Ser. No. 125,853

Int. Cl.<sup>3</sup> B03B 5/00

U.S. Cl. 209—155

6 Claims



1. An apparatus for separating particulates suspended in a

fluid medium according to their effective masses, said apparatus having an annular cylindrical channel with a cylinder axis, said channel being sufficiently thin in the radial dimension to effect laminar flow therein, means for rotating said channel about said axis, means for passing said fluid medium circumferentially through said channel, and means for introducing said particulates into said medium for passage through said channel, the improvement wherein

said channel is generally rectangular in crosssection and has a width to thickness aspect ratio lying in the range 3-50 to 1.

4,285,810

## METHOD AND APPARATUS FOR FIELD FLOW FRACTIONATION

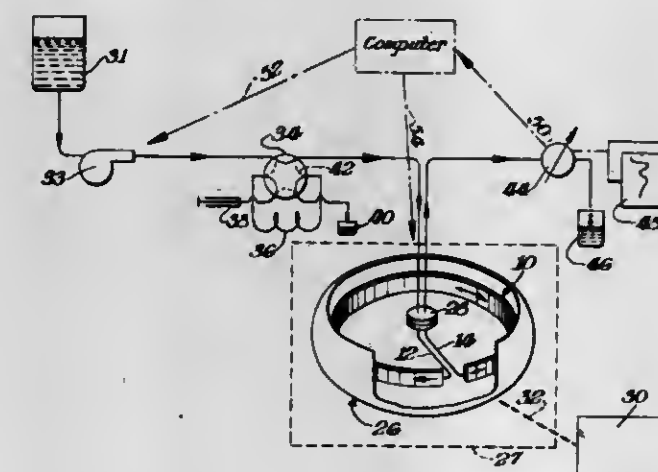
Joseph J. Kirkland, Wilmington, and Wallace W. Yau, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 125,851, Feb. 29, 1980, abandoned. This application Mar. 26, 1980, Ser. No. 134,288

Int. Cl.<sup>3</sup> B03B 5/00

U.S. Cl. 209—155

17 Claims



9. In an apparatus for separating particulates, including macromolecules and particles, suspended in a fluid medium, said apparatus having a narrow flow channel, means for establishing a force field across said channel that influences a characteristic of said particulates, means for passing said fluid medium through said flow channel, means for introducing a sample of said particulate into said fluid medium for passage through said flow channel, the improvement wherein said field-establishing means includes programming means for decreasing the field strength exponentially as a function of time to reduce the separation time and better equalize particle size separation.

4,285,811

## PURIFICATION OF FORMALDEHYDE BY SEPARATION

Tetsuya Miyake, Tokyo; Kunihiko Takeda, Yokohama; Naoki Miyata, Kawasaki; Tatsushi Saeki, Yokohama, and Maomi Seko, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 760,218, Jan. 17, 1977, Pat. No. 4,137,054.

This application Jan. 29, 1979, Ser. No. 7,527

Claims priority, application Japan, Jan. 22, 1976, 51/5447

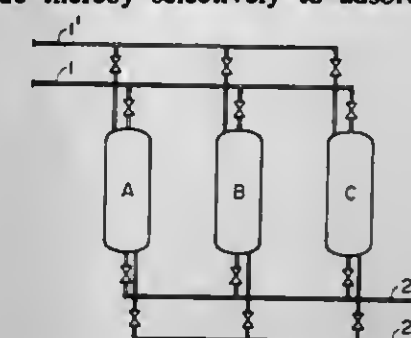
Int. Cl.<sup>3</sup> B01D 15/00

U.S. Cl. 568—422

17 Claims

1. A process for purification of formaldehyde by separation, which comprises contacting with adsorbents selected from the group consisting of type A synthetic zeolites wherein the exchangeable cations contain at least one of the Group IA, from the fourth to the sixth period, and Group IIA, the sixth period, of the Periodic Table of Elements a solution containing

water, formaldehyde and a stabilizer against polymerization of formaldehyde thereby selectively to adsorb water on said



adsorber and to leave a stream enriched in formaldehyde and containing the stabilizer.

4,285,812

## STORM DRAINAGE SYSTEMS

Richard J. Stoltz, 8 Lancefield Crescent, Bramalea, Ontario, Canada (L6S 2R2)

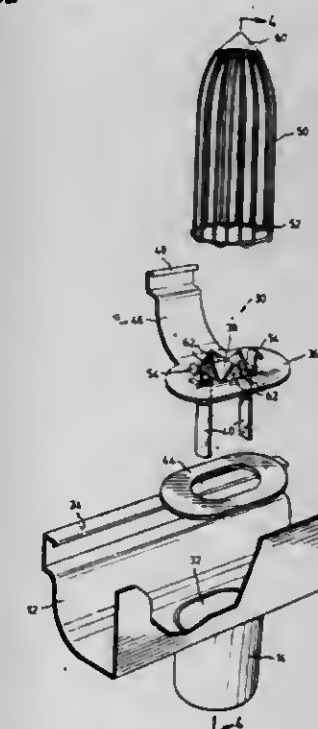
Division of Ser. No. 964,247, Nov. 27, 1978, Pat. No. 4,216,760.

This application Mar. 28, 1980, Ser. No. 134,910

Int. Cl.<sup>3</sup> E02B 9/04

U.S. Cl. 210—162

10 Claims



1. A device for restricting the rate at which water drains from an eavestrough into a downspout, the downspout having an input opening communicating with the eavestrough, said device comprising:

- a cover proportioned to fit within said eavestrough and to extend in an outwardly overlying relationship with respect to the input opening to substantially cover the input opening to prevent full flow discharge of water from the eavestrough through the input opening into the downspout,
- a drainage passage opening through said cover to permit water to pass therethrough, said drainage passage having a cross-sectional area which is substantially less than that of the input passage of the downspout in association with which it is to be used such that flow through the drainage passage is restricted to a flow which is substantially less than the full flow capacity of the input opening thereby to effect a substantial reduction in the rate of run-off from the eavestrough to its associated downspout in use,
- mounting means for mounting the cover in an operable position within an eavestrough, said mounting means comprising leg means depending from and arm means projecting upwardly from the cover, the leg means being proportioned to fit within the input passage of the down-



spout and the arm means being adapted to interlock with the eavestrough to prevent withdrawal of the legs from the input passage of the downspout and the legs cooperating with the downspout to prevent lateral displacement of the drainage passage with respect to the input passage of the downspout.

4,285,813

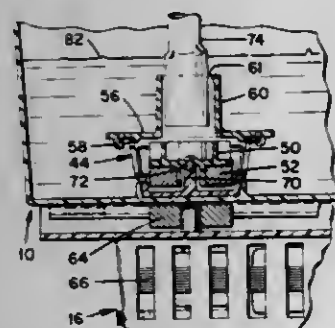
## AQUARIUM FILTRATION APPARATUS

James B. Stewart, Randolph, Township, Morris County, N.J.; Klaus W. Woltmann, New York, N.Y.; Edwin E. Faris, Wyckhoff, and Sheldon P. Schmidt, Paramus, both of N.J., assignors to Metaframe Corporation, Elmwood Park, N.J. Continuation of Ser. No. 890,365, Mar. 27, 1978, abandoned. This application Jun. 28, 1979, Ser. No. 53,112

Int. Cl.<sup>3</sup> E04H 3/20

U.S. Cl. 210-169

13 Claims



1. In an aquarium filtration apparatus, the combination comprising:  
a generally trough-shaped filter housing having an open top and a bottom;  
a bracket means for suspending said filter housing on an aquarium edge;  
an impeller type suction means within said housing fixedly positioned relative to the bottom thereof;  
intake tube means extending from within said housing over said bracket means and having one end thereof in fluid communication with said suction means and the other end thereof configured for immersing beneath the water level of the aquarium, said suction means having an inlet aperture engaging said one end of said intake tube means in spaced relation therewith to define an annular shaped bypass passageway, said suction means and passageway being so constructed and configured that with water within said filter housing above said inlet aperture, said suction means is generally self-priming by drawing water from within said filter housing through said passageway thereby generating sufficient intake suction to draw water and any trapped air from said intake tube means into said filter housing and that in normal operation said suction means is generally free of cavitation effects, said impeller means generating sufficient suction for drawing said one end of said intake tube into abutment with said impeller means after said self-priming is effected for providing a fluid seal between said filter housing and said impeller inlet opening; and  
means on said housing for generally fixedly position said intake tube means relative to said housing.

4,285,814

## FILTER BAG CLAMP ASSEMBLY

Howard W. Morgan, Jr., Michigan City, Ind., assignor to Filter Specialists, Inc., Michigan City, Ind. Filed Dec. 31, 1979, Ser. No. 108,587

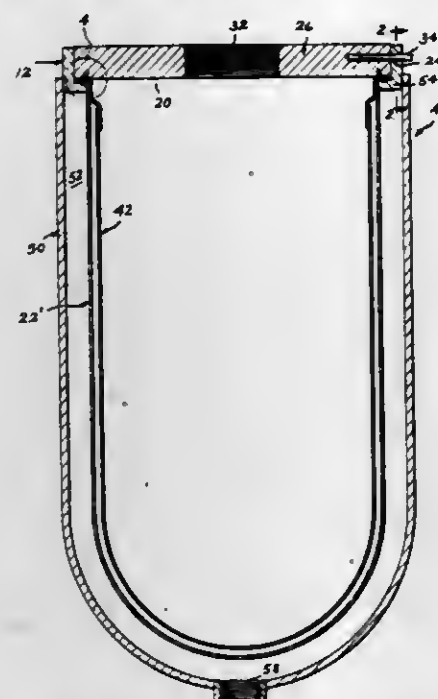
Int. Cl.<sup>3</sup> B01D 29/26

U.S. Cl. 210-315

4 Claims

1. A bag clamp assembly for use in a liquid filter, said assembly comprising a ring, said ring being defined by an outer wall and an inner wall, said inner wall including a lower annular flange extending radially inwardly from the inner wall, a cap fittable within said ring, said cap having a substantially solid

body and including a lateral circumferential edge, said cap body including inner and outer faces and having a bore there-through extending from said inner face to said outer face, said bore constituting a liquid inlet, one of said ring outer wall and said cap lateral edge carrying a plurality of pin means extending radially therefrom, the other of said ring outer wall and said cap lateral edge having a plurality of lock slots formed



therein, said pin means for co-operating with said lock slots to secure said cap to said ring with its lower face spaced from the ring flange when the cap is fitted into the ring, and a removable filter bag including reticulated side walls and having an open end defined by a shape-retaining liquid impervious marginal part, said bag open end positioned under said cap bore with said bag marginal part compressively retained between said cap lower face and said ring flange.

4,285,815

## VACUUM FILTER BELT APPARATUS

Emilio Gallottini, Lodi Milano, Italy, assignor to Esml B.V., Amsterdam, Netherlands

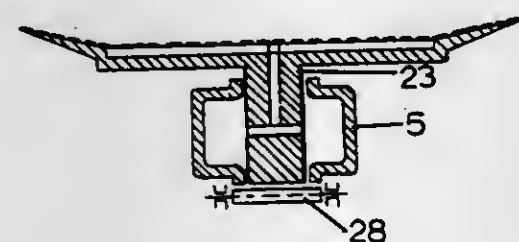
Filed Oct. 12, 1979, Ser. No. 84,142

Claims priority, application Netherlands, Oct. 20, 1978, 7810506

Int. Cl.<sup>3</sup> B01D 33/04

U.S. Cl. 210-400

9 Claims



1. In a vacuum filter belt apparatus comprising a continuous belt movable by driving means along a continuous path which includes an operative path portion at which the upper face of the belt is concave, the belt having a relatively thick central portion which is sealed to at least one vacuum chamber located below the belt at said operative path portion and having a slot in its upper side, there being passages extending from the upper surface of the belt through the relatively thick central portion of the belt to within the vacuum chamber to communicate the upper surface of the belt with the vacuum chamber, whereby suction filtering of material on the belt is effected, the improvement that the vacuum chamber has a slot in its lower side beneath said slot in its upper side and that the said thick central

portion of the belt extends through both said slots to beneath the vacuum chamber, there being seals provided at both said slots to seal the vacuum chamber and there being support means for the said thick central portion beneath the vacuum chamber.

4,285,816

## DEWATERING SYSTEM

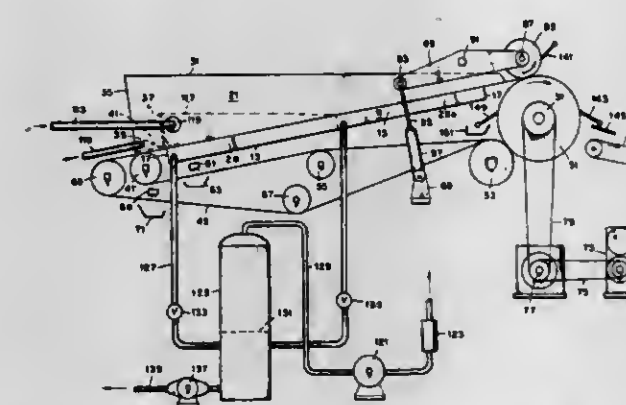
Charles A. Lee, Knoxville, Tenn., assignor to Fairchild, Incorporated, Beckley, W. Va.

Filed Mar. 4, 1980, Ser. No. 127,186

Int. Cl.<sup>3</sup> B01D 33/04

U.S. Cl. 210-401

9 Claims



8. A system for separating solids from a slurry containing liquids and solids comprising in combination:  
an elongated plate having spaced apart openings there-through, said plate being disposed at an angle to the horizontal with one end higher than the other,  
a first endless screen, said first screen being woven with a coarse mesh from filaments of relatively large diameter with a satin weave to provide elongated knuckles on one side of the screen which are oriented in the machine direction of said first screen,  
one run of said first screen being trained over and supported for sliding movement on the upper surface of said plate from its lower end to its upper end, the elongated knuckles oriented in the machine direction being in contact with said plate,  
a second endless screen, said screen being woven with a fine mesh from filaments of relatively small diameter with a satin weave to provide elongated knuckles on one side of the screen which are oriented in the machine direction of said second screen,  
one run of said second screen being supported upon the run of said first screen which is supported on said plate, the side of said second screen which includes the elongated machine direction knuckles being out of contact with first screen,  
means for forming a pond of the slurry over a portion of the run of said second screen at its lower end, means for moving said screens as a unit over said plate from its lower end toward its upper end including a first roll over which said screens are trained, said first roll being disposed at the upper end of said plate,  
a second roll engaging said screens on said first roll to form a nip, said nip being positioned upstream relative to the direction of movement of said screens from the highest point on said first roll,  
means for biasing said first and second rolls together to apply pressure at said nip,  
a vacuum chamber on the side of said plate opposite the side supporting said first screen, said vacuum chamber extending over the openings in said plate,  
means for drawing a vacuum on said vacuum chamber, and  
means for removing solids from the surface of said second roll and from said second screen.

4,285,817

## DISC SECTOR

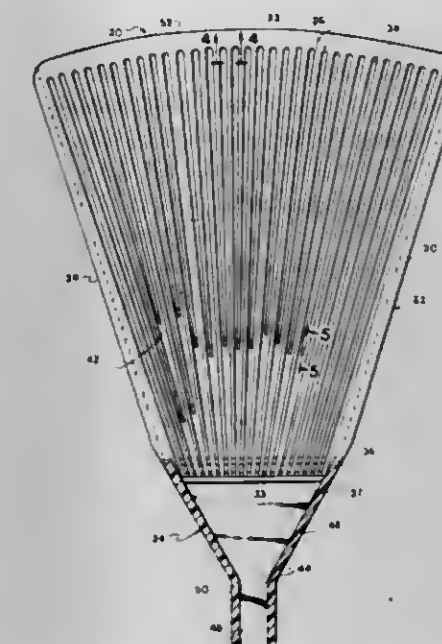
Kenneth E. Barthelemy, West Warwick, R.I., assignor to Albany International Corp., Menands, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,550

Int. Cl.<sup>3</sup> B01D 33/00

U.S. Cl. 210-486

11 Claims



1. A sector for a disc-shaped filter comprising:  
a substantially sector-shaped element having a pair of opposed sides, a pair of opposing edges including a leading edge and a trailing edge converging toward each other and terminating in a neck at one end and diverging in the other direction to terminate in an arcuate outer edge;  
an arrangement of flow paths on each side and positioned to direct filtrate toward the neck;  
the element adapted to be interconnected with a plurality of similar sections to form a disc-shaped filter and adapted to be interconnected with pressure differential means so that when a filter medium is mounted thereon, filtrate collected therethrough will be directed to the neck for removal; and  
the flow paths being a predetermined non-symmetrical arrangement of channels in the outer surface of each side with the channel arrangement adjacent the leading edge being different from the channel arrangement adjacent the trailing edge including a greater number of channels ending adjacent the arcuate outer edge between the center line of the element and the trailing edge than between the center line of the element and the leading edge and the channels being of predetermined size to facilitate accommodation of different amounts of filtrate on different portions of the element and maintain a predetermined pressure differential condition as the element passes through the material to be filtered and to provide streamlined and low turbulence flow through the channels with controlled direction and without significant back-flow between channels.

4,285,818

## PROCESS OF TREATING WASTEWATER WITH OXYGEN

Josef Muskat, Aarbergen, Fed. Rep. of Germany, assignor to Passavant-Werke Michelbacher Huette, Fed. Rep. of Germany

Filed Jun. 11, 1979, Ser. No. 47,062

Int. Cl.<sup>3</sup> C02F 3/26

U.S. Cl. 210-614

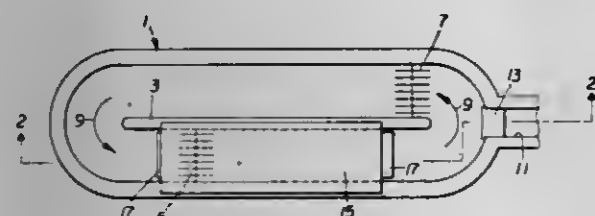
15 Claims

1. In a process for treating wastewater with oxygen, wherein oxygen of a higher concentration than atmospheric oxygen is contacted at least intermittently with the water surface and introduced into the wastewater through an agitation of said



water surface, the improvement comprising the treatment of at least part of the total volume of a circulating horizontal course of the wastewater by carrying out alternately at least two of the following three modes of operation:

- surface aerating the wastewater using atmospheric air,
- oxygenating the wastewater in at least one section of said course under a gas-filled compartment defined by a cover over said one section while maintaining atmospheric pressure above the wastewater under said compartment, and
- oxygenating the wastewater in said one section of said course under said compartment while maintaining positive pressure above the wastewater under said compartment, with the operating modes alternating with each other in



response to variations in the oxygen content of the wastewater and/or the oxygen concentration in said gas-filled compartment with the wastewater being exposed to the introduction of gas only in said one section of said course and being exposed to the atmosphere on the remainder of said course and with said one section being the only part of said course covered by a cover and the wastewater is retained in said course for a period sufficiently long to allow the volume of said wastewater to pass beneath said cover several times, and wherein in any of the operating modes carried out the introduction of oxygen and air into the water is controlled by control means to maintain the oxygen content of the wastewater within a range defined by a preselected upper limit and a preselected lower limit.

4,285,819

## FUNCTIONAL MAGNETIC MICROSPHERES

Shiao-Ping S. Yen; Alan Rembaum, and Robert F. Landel, all of Altadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jan. 28, 1980, Ser. No. 116,093  
Int. Cl.<sup>3</sup> B01D 53/16

U.S. Cl. 210-679

15 Claims

1. A composition comprising functional magnetic microsphere particles having a diameter from 100 angstroms to 1000 microns consisting essentially of:

- magnetic granules having a diameter less than 50 angstroms containing a coating of a water insoluble chitosan, said particles containing at least 0.1% by weight of metal.

4,285,820

## PROCESS FOR THE TREATMENT OF A WASTE LIQUID CONTAINING BORON COMPOUNDS AND ORGANIC COMPOUNDS

Mikio Akune, Yokosuka, Japan, assignor to Nittetu Chemical Engineering Ltd., Tokyo, Japan

Filed Dec. 11, 1979, Ser. No. 102,558

Claims priority, application Japan, Dec. 22, 1978, 53-157607  
Int. Cl.<sup>3</sup> C02F 1/02; C01B 35/06

U.S. Cl. 210-774

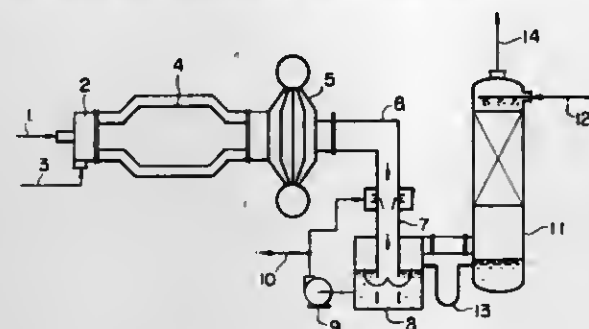
6 Claims

1. A process for the treating of a waste liquid containing boron compounds and organic compounds, comprising: combusting the waste liquid in a combustion zone at a temperature exceeding 1000° C. but not exceeding 1500° C. in the presence of steam to produce a combustion gas, said steam being present in an amount providing a molar ratio of steam to boron components calculated as boron oxide of at least 30:1, to thereby shift to the right the following reaction:



in said combustion zone, and so that substantially all boron components contained in said combustion gas are present as gaseous metaboric acid;

introducing said combustion gas into a heat recovery zone to



cool said combustion gas by indirect heat exchange with a heatable fluid so that said combustion gas is not cooled to a temperature below 400° C.; introducing said cooled combustion gas into a contact zone to bring said cooled combustion gas into direct contact with water, whereby the metaboric acid is converted into boric acid; and withdrawing a portion of the liquid in said contact zone to recover boric acid.

4,285,821

## FILTERING METHOD

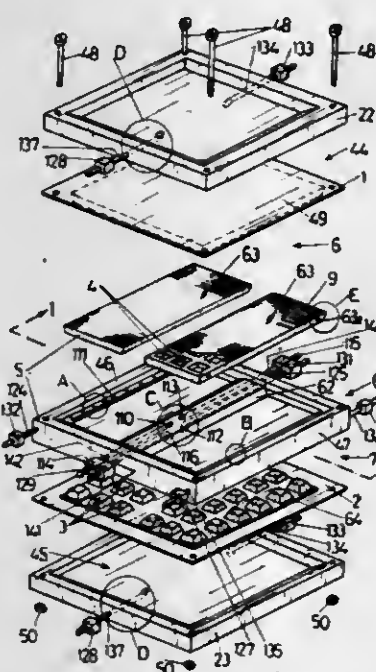
Edwin Hiesinger, Jenaback; Klaus Keplinger, and Hermann Nesler, both of Innsbruck, all of Austria, assignors to Inkomag, Basel, Switzerland

Division of Ser. No. 907,628, May 19, 1978, abandoned. This application Aug. 1, 1979, Ser. No. 62,747

Claims priority, application Austria, May 20, 1977, 3609/77  
Int. Cl.<sup>3</sup> B01D 37/02

U.S. Cl. 210-777

3 Claims



1. A method of filtering which comprises:

- partitioning a filter chamber with a fluid-permeable planar support fabric into a single upstream compartment and a single downstream compartment, said planar support fabric forming a horizontal partition;
- entraining onto said support fabric in said upstream compartment a particulate filter-aid layer by suspending particles of a filter-aid material in a carrier medium, introducing said carrier medium into said upstream compartment, and passing said carrier medium through said fabric whereby said particles form said layer;
- discharging the carrier medium of step (b) from said chamber downstream of said support fabric, and removing

any residues of the carrier medium completely from said chamber by a displacement fluid so that removal of carrier medium from said upstream compartment is completed prior to complete removal of carrier medium from said downstream compartment;

- introducing a filterable medium into said upstream compartment, and passing said filterable medium through said layer and said support fabric from said upstream compartment to said downstream compartment, thereby depositing impurities contained in said filterable medium on said layer and enabling pure filtrate to enter said downstream compartment;
- discharging the filterable medium of step (d) from said upstream compartment and discharging the pure filtrate downstream from said downstream compartment, and then drawing any residues of said filterable medium completely from said chamber by introducing said displacement fluid so that removal of such residues from said upstream compartment is completed prior to complete removal of the residues from the downstream compartment;
- thereafter introducing a washing medium into said chamber and to the downstream side of said fabric and thereby backwashing said layer from said fabric and entraining material of said layer backwashed from said fabric out of said upstream compartment with the washing medium;
- discharging the washing medium used in step (f) from said chamber and removing any residues of said washing medium completely from said chamber by said displacement fluid; and
- thereafter repeating steps (b) through (g).

4,285,822

## PROCESS FOR PREPARING A SULFURIZED MOLYBDENUM-CONTAINING COMPOSITION AND LUBRICATING OIL CONTAINING THE COMPOSITION

Louis deVries, Greenbrae, and John M. King, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 28, 1979, Ser. No. 52,697

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> C10M 1/32, 1/38, 1/44, 1/54

U.S. Cl. 252-46.4

16 Claims

1. A process for preparing a sulfurized molybdenum-containing composition which comprises (1) reacting an acidic molybdenum compound and a basic nitrogen compound selected from the group consisting of a succinimide, carboxylic acid amide, hydrocarbyl monoamine, hydrocarbyl polyamine, Mannich base, phosphonamide, thiophosphonamide, phosphoramidate, dispersant viscosity index improver, or mixtures thereof, in the presence of a polar promoter, to form a molybdenum complex wherein from 0.01 to 2.00 atoms of molybdenum are present per basic nitrogen atom, and the promoter is present in the ratio of 0.01 to 50 mols of water per mol of molybdenum; and (2) reacting said complex with carbon disulfide, in an amount to provide 0.1 to 4.0 atoms of sulfur per atom of molybdenum, to form a sulfur- and molybdenum-containing composition.

4,285,823

## DIESEL LUBRICANT CONTAINING 5-AMINO TETRAZOLES

Rodney L. Sung, Fishkill, and Benjamin H. Zoleski, Beacon, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

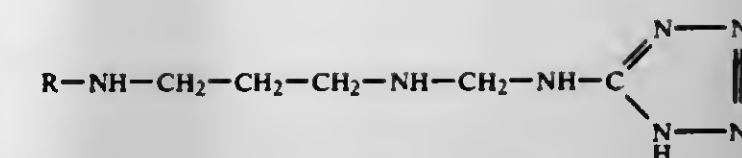
Filed Jan. 4, 1980, Ser. No. 109,701

Int. Cl.<sup>3</sup> C10M 1/32

U.S. Cl. 252-50

3 Claims

1. A diesel lubricant composition comprising a diesel lubricating oil and a silver corrosion-inhibiting amount of at least one compound of the formula:



wherein R is a straight chain alkyl having from 12 to 18 carbon atoms in the chain.

4,285,824

## HYDROXYALKYL HYDROXY-AROMATIC CONDENSATION PRODUCTS AS FUEL AND LUBRICANT ADDITIVES

Charles P. Bryant, Enclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

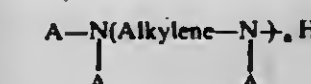
Continuation-in-part of Ser. No. 5,623, Jan. 22, 1979, Pat. No. 4,205,960, which is a division of Ser. No. 901,173, Apr. 28, 1978, Pat. No. 4,163,730, which is a division of Ser. No. 678,101, Apr. 19, 1976, Pat. No. 4,108,784, which is a continuation-in-part of Ser. No. 459,750, Apr. 9, 1974, abandoned. This application Feb. 22, 1980, Ser. No. 123,613

Int. Cl.<sup>3</sup> C10M 1/24

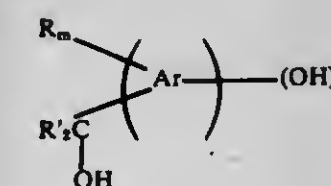
U.S. Cl. 252-56 D

46 Claims

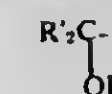
1. A post-treated product made by a process which comprises reacting a mono- or polyhydric alcohol, an epoxide, a C<sub>1-30</sub> monoamine, or a polyamine of the formula



wherein each A is independently a hydrogen atom, a hydrocarbyl group of up to 30 carbon atoms or a hydroxy-substituted hydrocarbyl group of up to about ten carbon atoms containing one or two hydroxy groups, "Alkylene" is a divalent alkylene group of about one to ten carbon atoms and n is an average of integers between one and ten, and mixtures thereof, with a condensation product made by the process comprising reacting (A) at least one alpha hydroxy aromatic compound of the general formula



wherein Ar is a hydrocarbyl aromatic nucleus of 6 to about 30 carbon atoms, or an analog of such an aromatic nucleus substituted with 1 to 3 lower alkoxy, lower alkylthio, chloro, or nitro substituents, each R is a nonfused hydrocarbyl group of about 25 to about 700 carbon atoms, each R' is independently a hydrogen atom, an alkyl group of 1 to 36 carbon atoms, or a halogen-substituted alkyl group of 1 to about 36 carbon atoms, n is 1 to 3 and m is 1 to 5 with the provisos that (i) the total number of carbon atoms in the R' groups does not exceed 36 and (ii) where m exceeds 1, one of the R groups can also be a



group, with (B) at least one hydrocarbyl, alpha-beta olefinically unsaturated compound selected from the group consisting of C<sub>2-40</sub> nitriles, C<sub>2-40</sub> carboxylic acids and anhydrides, esters, amides and ammonium and metal salts of said C<sub>2-40</sub> carboxylic acids, the reaction of (A) with (B) resulting in the formation of carbon-to-carbon bond, said bond including the carbon of at least one R'<sub>2</sub>C- group.





4,285,825

**METHOD OF PRODUCING MAGNETIC COATING MATERIAL FOR MAGNETIC RECORDING MEDIA**  
Yukihiro Isobe, Saku; Masashi Hayama, Usada, and Kenji Hirabayashi, Tokyo, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

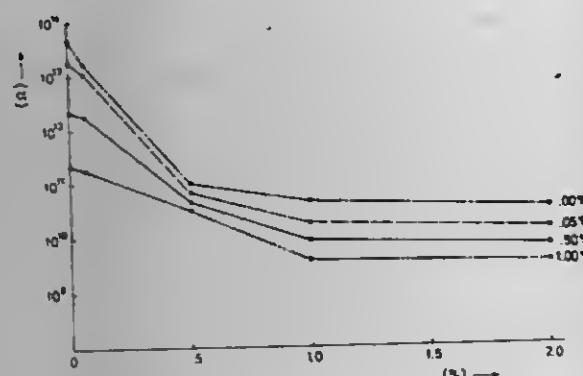
Filed Oct. 11, 1979, Ser. No. 83,913

Claims priority, application Japan, Oct. 12, 1978, 53/124690

Int. Cl.<sup>3</sup> H01F 1/00, 1/26; C04B 35/04

U.S. Cl. 252-62.54

3 Claims



1. A method of producing a magnetic coating material for magnetic recording media, which comprises the steps of charging a mixture of a magnetic powder and a binder composition containing from about 0.1 to about 2.0% of an abrasive and from about 0.05 to about 1.0% of a betaine type ampholytic antistatic agent, both on the basis of the amount of a magnetic powder, together with steel balls and dispersing said mixture; said abrasive having a hardness of not lower than 6 on Mohs' scale.

4,285,826

**TOILET SOAP BARS IMPARTING IMPROVED MOISTURING AND SKIN FEEL CHARACTERISTICS**  
Richard J. Bertozzi; Joseph M. Pavelek, Jr., and Daniel S. Wood, all of Phoenix, Ariz., assignors to Armour-Dial, Inc., Phoenix, Ariz.

Filed Apr. 14, 1980, Ser. No. 140,502

Int. Cl.<sup>3</sup> C11D 9/26, 9/46

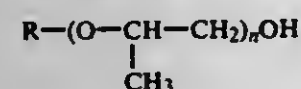
U.S. Cl. 252-117

11 Claims

1. A toilet soap which, when applied to the skin, reduces transpirational water loss and imparts a good skin feel, said soap comprising

- from about 60% to 95% by weight of an anhydrous soap base composition consisting essentially of salts of fatty acids having from 12 to 18 carbon atoms, said salts being selected from the group consisting of alkali metal, ammonium or alkanolamine;
- from about 5% to 25% moisture;
- from about 0.02% to 5% of a polyoxyethylene polymer of the formula  $H(OCH_2CH_2)_nOH$  where  $n$  has an average value from 2000 to 90,000; and
- from about 0.1% to 15% of a polymeric material selected from the group consisting of

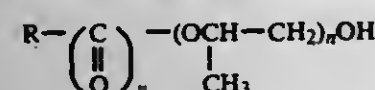
(1) polypropoxylated materials of the formula



where

$n$  has an average value of from 9 to 50, and  $R$  is a hydrocarbon radical having from 3 to 6 carbon atoms,

(2) polypropoxylated materials of the formula

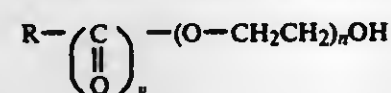


where

$n$  has an average value of from 9 to 50,

$R$  is a hydrocarbon radical having from 7 to 35 carbon atoms, and  $y$  is 0 or 1,

(3) polyethoxylated materials of the formula



where

$n$  has an average value from 9 to 50,

$R$  is a hydrocarbon radical having from 3 to 35 carbon atoms, and  $y$  is 0 or 1, and

(4) mixtures thereof,

4,285,827

**EMULSIFIED FILM FORMING POLYMER AND METHYLENE CHLORIDE/WATER PAINT STRIPPER**  
Sidney G. Wyatt, Mitcham, England, assignor to R.J. Hamer Limited, Mitcham, England

Filed Aug. 16, 1979, Ser. No. 67,170

Claims priority, application United Kingdom, Aug. 24, 1978, 34545/78

Int. Cl.<sup>3</sup> C11D 7/50, 7/44, 7/30

U.S. Cl. 252-165

6 Claims

1. A paint stripper comprising an aqueous emulsion of methylene chloride, a film forming polymer selected from the group consisting of acrylic polymers, vinyl acrylic polymers, vinyl acetate polymers, and vinyl acetate copolymers, a cellulose gum soluble in the methylene chloride and a water soluble cellulose gum.

4,285,828

**PRODUCTION OF A POROUS ALUMINUM MATRIX FOR THE NEGATIVE ELECTRODE OF A GALVANIC LITHIUM ALUMINUM METAL SULFIDE ELEMENT**  
Reinhard Knödler, Kriftel, and Gotthold Böhme, Oberursel, both of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 4, 1979, Ser. No. 45,405

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2829094

Int. Cl.<sup>3</sup> H01M 4/66

U.S. Cl. 252-182.1

7 Claims

1. Process for the production of a porous aluminum matrix for the negative electrode of a galvanic cell, in the unchanged state, having aluminum and metal lithium sulfide elements or electrodes, which comprises thoroughly mixing aluminum powder with a salt, which is soluble in water and which serves as an expanding agent, the grain size of the mixture of aluminum powder and fine expanding agent being less than or equal to 50  $\mu$ m, then adding coarser particles having a particle size of about 100 to 500  $\mu$ m of the expanding agent to the mixture of aluminum powder and fine salt, hot pressing the resultant mixture at a temperature of 150° to 300° C. and a pressure of at least 500 bar, an aluminum matrix forming, and dissolving the expanding agent out of the resultant aluminum matrix with water, whereby the porous aluminum matrix is formed.

4,285,829

**LIQUID-CRYSTALLINE DIELECTRIC**  
Rudolf Eidenschink, Dieburg; Ludwig Pohl, Darmstadt; Georg Weber, Erzhause, and Fernando Del Pino, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jul. 20, 1979, Ser. No. 59,346

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832112

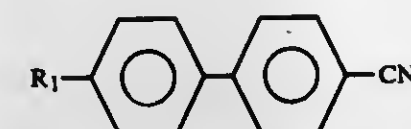
Int. Cl.<sup>3</sup> C09K 3/34; C02F 1/13

U.S. Cl. 252-299.63

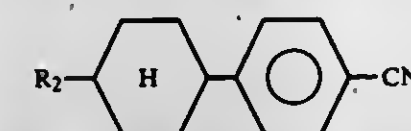
8 Claims

1. A liquid-crystalline dielectric having a positive dielectric

anisotropy comprising at least one biphenyl derivative of the formula

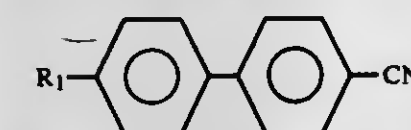


wherein  $R_1$  is alkyl of 1-4 C atoms or alkoxy of 1-3 C atoms, and at least one phenylcyclohexane derivative of the formula

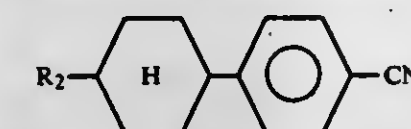


wherein  $R_2$  is alkyl of 1-4 C atoms, in a weight ratio of 3:1 to 1:3, said dielectric containing at least four of said biphenyl and phenylcyclohexane derivatives combined.

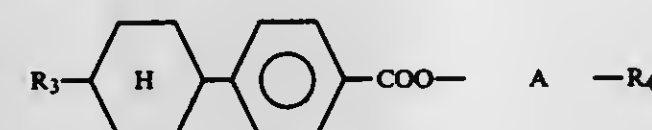
2. A liquid-crystalline dielectric having a positive dielectric anisotropy comprising at least one biphenyl derivative of the formula



wherein  $R_1$  is alkyl of 1-4 C atoms or alkoxy of 1-3 C atoms, and at least one phenylcyclohexane derivative of the formula



wherein  $R_2$  is alkyl of 1-4 C atoms, in a weight ratio of 3:1 to 1:3, and further comprising a cyclohexane derivative of the formula



wherein the ring A is 1,4-disubstituted phenyl or cyclohexane and  $R_3$  and  $R_4$  are each straight-chain alkyl of 1-8 C; or, if ring A is phenyl,  $R_4$  is also alkoxy or alkanoyloxy, of up to 8 C atoms in each case, or CN.

4,285,830

**METHOD AND APPARATUS FOR RECONDITIONING WASTE SOLUTIONS OF THE NUCLEAR INDUSTRY WHICH CONTAIN AMMONIUM NITRATE**

Burkhardt Müller, Übach-Paleo, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 964,906

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753368; Nov. 11, 1978, 2849050

Int. Cl.<sup>3</sup> G21F 9/14

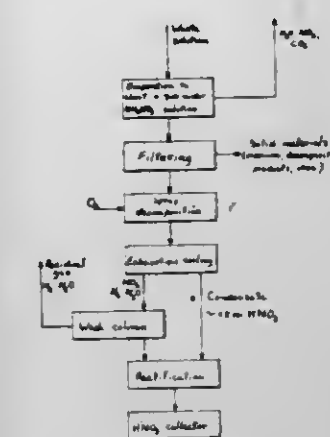
U.S. Cl. 252-301.1 W

12 Claims

1. A method of treating waste solutions which are produced during the production of fuel and breeder material for nuclear reactors and which contain about 60 weight percent ammonium nitrate which method comprises the steps of:

- continuously spraying waste solution containing about 60% ammonium nitrate into an ammonium nitrate decomposition furnace for essential decomposition; and
- subjecting the decomposition products formed during said spraying step to condensation to enable separation of said decomposition products into a liquid and a gaseous phase; and

supplying a quantity of oxygen, equivalent to the NO component of the decomposition products, to the ammonium nitrate decomposition zone.



4,285,831

**PROCESS FOR PRODUCTION OF ACTIVATED CARBON FIBERS**

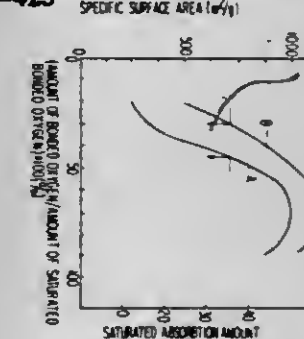
Masatoshi Yoshida, Mishima, and Minoru Hirai, Shizuoka, both of Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan  
Continuation-in-part of Ser. No. 785,888, Apr. 8, 1977. This application Apr. 23, 1979, Ser. No. 32,193

Claims priority, application Japan, Oct. 5, 1976, 51/118989

Int. Cl.<sup>3</sup> B01J 37/00; D01F 9/12; D02G 3/00

U.S. Cl. 252-423

19 Claims



1. A process for producing activated carbon fibers of high adsorption capacity which contain about 80 to about 90 weight percent carbon, about 3 to about 15 weight percent nitrogen, about 2 to about 10 weight percent oxygen and less than 1 weight percent hydrogen, which comprises oxidizing an acrylonitrile based polymer which is a homopolymer of acrylonitrile, a copolymer containing about 60% by weight or more acrylonitrile, or a mixture of polymers such that about 60% by weight or more of acrylonitrile is present in the mixture, in an oxidizing atmosphere at a temperature of about 200° C. to about 300° C. while applying a tension to the fiber until the amount of bonded oxygen reaches about 65% to about 95% of the saturated amount of bonded oxygen of the fiber, wherein the tension applied is such that the shrinkage of the fiber during oxidation reaches about 70% to about 90% of the degree of free shrinkage at the same temperature, and then activating the fiber, wherein activation is by heating the oxidized fiber in a gas selected from CO<sub>2</sub>, NH<sub>3</sub>, steam or a mixture thereof at a temperature of about 700° C. to about 1,000° C. for 1 minute to 3 hours while the fiber is allowed to shrink freely, to thereby provide a specific surface area to said carbon fiber of from 300 m<sup>2</sup>/g to 2,000 m<sup>2</sup>/g, a tensile strength of about 20 to about 80 Kg/mm<sup>2</sup>, a tensile elongation of about 0.5 to 3% and a tensile modulus of about 1,500 to about 5,000 Kg/mm<sup>2</sup>.

15. An activated carbon fiber containing about 80 to about 90 wt% carbon, about 3 to about 15 wt% nitrogen, about 2 to about 10 wt% oxygen and less than about 1 wt% hydrogen, said activated carbon fiber having a specific surface area of about 300 to about 2,000 m<sup>2</sup>/g, a tensile strength of about 20 to about 80 Kg/mm<sup>2</sup>, a tensile elongation of about 0.5 to 3% and a tensile modulus of about 1,500 to about 5,000 Kg/mm<sup>2</sup>.



4,285,832

**METHOD OF RECOVERING RESIDUAL VEGETABLE OIL CONTAINED IN SPENT BLEACHING CLAY AND PROCESSING THE BLEACHING CLAY FOR REUSE**  
George O. Orth, Jr., 10612 Riviera Pl. Northeast, Seattle, Wash. 98125

Filed Aug. 11, 1980, Ser. No. 176,990

Int. Cl.<sup>3</sup> B01J 20/30, 20/14, 20/28; C11B 13/04

U.S. Cl. 252-424

12 Claims

1. A method of recovering residual vegetable oils contained in spent bleaching clay used in refining such vegetable oils, comprising:

mixing the spent clay containing the residual oil with an organic binder, water, and a plastic clay, forming the composition into a plurality of shaped particulate solids of suitable size for solvent extraction of the vegetable oil therefrom,

extracting the residual oil from the particulate solids with an extraction solvent for the vegetable oil, the shaped particulate solids retaining the spent bleaching clay in the bonded state and preventing the spent bleaching clay particles from being carried into the extraction solvent and oil.

11. A method of recovering residual vegetable oil contained in spent bleaching clay used in the refining of such oil, comprising:

mixing the spent bleaching clay containing the vegetable oil with 0.2-5 percent by weight of an organic binder selected from the group consisting of water-soluble gums and resins, 10-35 percent by weight water, and 5-20 percent of a plastic clay,

forming the composition into a plurality of shaped particulate solids of suitable size for solvent extraction, removing substantially all of the water therefrom, and extracting the residual oil from the shaped particulate solids with an extraction solvent, the shaped particulate solids holding the spent bleaching clay therein in the bonded state and preventing the solids from being carried into the oil being extracted.

12. The method of claim 11, including heating the shaped particulate solids remaining after extraction to a temperature sufficient to char the carbon contained therein, resulting in an activated carbon/clay composition.

4,285,833

**CATALYST, ITS PRODUCTION AND A PROCESS FOR THE POLYMERIZATION OF BUTADIENE**

Manfred Beck, Odenthal, and Gottfried Pampus, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 19, 1980, Ser. No. 131,679

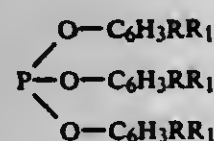
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 2911262

Int. Cl.<sup>3</sup> C08F 4/70

U.S. Cl. 252-428

5 Claims

1. A catalyst consisting of (a) a cobalt compound, (b) an aluminium organic compound, (c) water and (d) a phosphite, characterised in that the phosphite is a compound corresponding to the formula (1):



in which

R represents a C<sub>3</sub>-C<sub>20</sub> alkyl radical, andR<sub>1</sub> represents hydrogen or a C<sub>1</sub>-C<sub>6</sub> alkyl radical.

4,285,834

**DUAL, INDEPENDENTLY SUPPORTED CATALYST MIXTURES**

Kirby Lowery, Jr., and Fred L. Vance, Jr., both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 31, 1979, Ser. No. 108,896

Int. Cl.<sup>3</sup> C08F 4/02, 4/62, 4/64

U.S. Cl. 252-429 C

9 Claims

1. A catalyst mixture of at least two independently supported catalysts comprising (1) at least one inorganic halide supported Ziegler catalyst containing titanium, vanadium or mixture thereof and (2) at least one inorganic oxide supported-chromium containing catalyst.

4,285,835

**CATALYST FOR ALKYLATING AROMATICS WITH OLEFINS**

Stephen M. Kovach, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 55,221, Jul. 5, 1979, abandoned, Division of Ser. No. 860,503, Dec. 14, 1977, abandoned. This application Aug. 25, 1980, Ser. No. 180,965

Int. Cl.<sup>3</sup> B01J 21/02, 21/04, 23/14, 23/34

U.S. Cl. 252-432

5 Claims

1. A catalyst for alkylating aromatic hydrocarbons with an olefinic hydrocarbon comprising:

(a) between about 0.1 and about 4% by weight of metal oxides selected from the group consisting of the oxide of tin or lead, mixture of oxides of tin and lead, and mixture of oxides of tin, lead, and manganese; and

(b) between about 0.5 and about 15% by weight of boria, both impregnated on an alumina support.

4,285,836

**IMPREGNATING SOLUTION FOR HYDROTREATING CATALYST MANUFACTURE AND PRODUCTION THEREOF**

John J. Stanulonis, Pittsburgh; Joseph A. Tabacek, New Kensington, and Roger F. Vogel, Butler, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

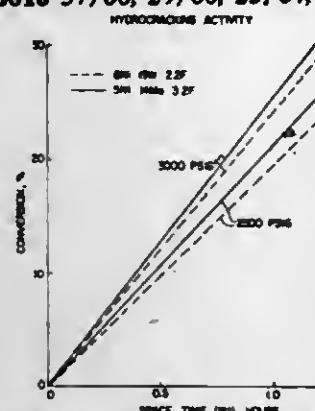
Filed Sep. 4, 1979, Ser. No. 72,241

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.<sup>3</sup> B01J 37/00, 29/00, 23/64, 27/24

U.S. Cl. 252-438

14 Claims



1. A process for the formation of an aqueous, alkaline impregnating solution for the one-step impregnation of nickel and molybdenum onto a catalyst support, which process consists essentially of admixing

(A) nickel fluoride, and

(B) an ammoniacal solution of Mo<sup>+VI</sup>, to form an impregnating solution consisting essentially of NH<sub>4</sub><sup>+</sup>, F<sup>-</sup>, Ni<sup>++</sup> and Mo<sup>+VI</sup> in amounts sufficient to produce a supported catalyst composite containing between about 2 and about 8 weight percent nickel, between about 8 and about 25 weight percent molybdenum and between about 1 and about 5 weight percent fluorine based upon the total catalyst composite when using the one-step, incipient wetness technique.

4,285,837

**CATALYST FOR STEAM REFORMING OF HYDROCARBONS**

Nobuhiro Sato, Nagoya; Yoshinobu Yamaguchi, Seto; Hitoshi Kodama, Nagoya; Isamu Koshidama, Nagoya; Nanahiko Kitano, Nagoya, and Shigeharu Tsumami, Inazawa, all of Japan, assignors to Fujimi Kenmazu Kogyo Co., Ltd., Nishikasugai and Toyo Engineering Corporation, Tokyo, both of Japan

Filed Apr. 9, 1980, Ser. No. 138,810

Claims priority, application Japan, Apr. 18, 1979, 54-47471

Int. Cl.<sup>3</sup> B01J 21/04, 23/74

U.S. Cl. 252-466 J

4 Claims

1. In a catalyst for the steam reforming of hydrocarbons comprising porous aluminum oxide as a porous carrier and a nickel component as an active catalyst component, the improvement which comprises: in said porous carrier (1) the pore volume provided by pores having pore diameters in the range of from 60 to 120 Angstrom units is not less than 0.35 ml/g, and (2) the pore volume provided by pores having pore diameters of more than 120 Angstrom units is not less than 0.1 ml/g, said carrier containing not less than 98% by weight of aluminum oxide and having said nickel component deposited thereon in an amount in the range of from 10 to 30% by weight, calculated as nickel oxide, based on the total weight of the catalyst.

4,285,838

**METHOD OF PRODUCING PLATE-SHAPED CATALYST UNIT FOR NOX REDUCTION OF EXHAUST GAS**

Nobuyoshi Ishida; Yoshihide Kondo; Kunihiko Konishi, and Hiroyuki Kamio, all of Hiroshima, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1978, Ser. No. 966,945

Claims priority, application Japan, Dec. 8, 1977, 52-146583; Dec. 8, 1977, 52-146584

Int. Cl.<sup>3</sup> B01J 21/06, 23/22, 23/28, 35/02

U.S. Cl. 252-469

14 Claims

1. A method of producing a plate-shaped catalyst unit for NOx reduction of exhaust gas, wherein molten metal is sprayed upon surfaces of a metal plate to allow the molten metal to accumulate thereon to form rough surfaces, and the rough surfaces thus obtained are deposited with a catalyst containing titanium and at least another catalytic material for NOx reduction of exhaust gas whereby the catalyst is firmly secured on the rough surfaces.

4,285,839

**VARISTORS WITH UPTURN AT HIGH CURRENT LEVEL**

Joe Wong, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 875,116, Feb. 3, 1978, abandoned. This application Jul. 26, 1979, Ser. No. 60,920

Int. Cl.<sup>3</sup> H01B 1/06

U.S. Cl. 252-519

16 Claims

1. A method of producing doped zinc oxide varistor powder useful in forming sintered varistors comprising the steps of: (A) dissolving a conductivity increasing dopant in a solvent; (B) forming a slurry by thoroughly mixing zinc oxide powder with the solvent containing the dopant to the extent necessary to achieve the selected concentration of dopant; (C) removing the solvent from the slurry, whereby the zinc oxide powder particles are coated with the dopant; and (D) heating the coated zinc oxide powder particles for a time and at a temperature sufficient to cause thermal diffusion of the dopant into the zinc oxide powder particles, but not at a temperature high enough to initiate zinc oxide grain growth.

4,285,840

**DETERGENT COMPOSITIONS**

Rene Fricker, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 936,730, Aug. 25, 1978, abandoned. This application Feb. 5, 1980, Ser. No. 118,714

Claims priority, application Switzerland, Jan. 25, 1980, 613/80; Jan. 25, 1980, 614/80

Int. Cl.<sup>3</sup> C11D 1/72, 3/30, 3/33, 3/44

U.S. Cl. 252-546

16 Claims

1. An aqueous detergent composition comprising from 70% to 85% water and, as the active component thereof, from 15% to 30% of a mixture consisting essentially of:

(A) 3 to 6 parts by weight of nitrilotriacetic acid or ethylenediamine tetraacetic acid in free acid or salt form;

(B) 2 to 11 parts by weight of a nonylphenol polyglycol ether having an average of 8 to 12 glycol units per molecule;

(C) 5 to 15 parts by weight of mono-, di- or tri- ethanol-amine;

(D) 1 to 3 parts by weight of a block copolymer of propylene oxide and ethylene oxide containing an average of 28 to 32 propylene oxide units per molecule to which an average of 8 to 12% by weight of ethylene oxide units are copolymerized;

(E) 0 to 3 parts by weight of a C<sub>8</sub> to C<sub>14</sub> branched chain, primary alcohol; and

(F) 0 to 1 parts by weight of a water-soluble, silicone oil, and, as an optional solvent component thereof, from:

(G) 10 to 40 parts, based on the total weight of the aqueous mixture of active components, of an aliphatic or aromatic hydrocarbon, a chlorinated hydrocarbon, or a mixture thereof; or

(H) 5 to 20 parts, based on the total weight of the aqueous mixture of active components, of a C<sub>1</sub> to C<sub>3</sub> alcohol or a water-soluble glycol, or a mixture of solvent components (G) and (H), with the proviso that when solvent component (G) is absent, active component (B) is present in an amount of from 2 to 6 parts by weight.

4,285,841

**HIGHLY CONCENTRATED FATTY ACID CONTAINING LIQUID DETERGENT COMPOSITIONS**

Christian R. Barrat, Meise; Jean Wevers, Mazensele, and Robertus J. C. Koster, Grimbergen, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 12, 1980, Ser. No. 148,615

Claims priority, application United Kingdom, May 16, 1979, 17133/79

Int. Cl.<sup>3</sup> C11D 1/12

U.S. Cl. 252-559

12 Claims

1. A highly concentrated homogeneous liquid detergent composition comprising

(a) from about 35% to about 75% by weight of a ternary active system consisting essentially of:

(i) anionic synthetic surface-active salt selected from the group consisting of sulfonates and sulfates having an alkyl radical containing from about 8 to about 22 carbon atoms and wherein the neutralizing cation is selected from the group consisting of sodium, potassium, lithium, amines and substituted amines;

(ii) ethoxylated nonionic surface-active agent derived from alcohols having from 8 to 24 carbon atoms and having from 2 to about 14 moles of ethylene oxide per mole of hydrophobic moiety;

(iii) from about 8% to about 20% by weight of the composition of fatty acid having from about 10 to 18 carbon atoms;

(b) phase regulant which is selected from the group consisting of lower aliphatic alcohols having from 2 to 6 carbon atoms and 1 to 3 hydroxyl groups, esters of diethylene glycol and lower aliphatic monoalcohols having from 1 to 4 carbon atoms, and detergent hydrotropes; and water;



wherein the weight ratio of (i) to (ii) is in the range from about 10:1 to 2:1, and the total amount (weight %) of (i) + (ii) is greater than the total amount (weight %) of (iii), said composition having a pH at 20° C. in the range of from 6.0 to 7.5.

4,285,842

# METHOD FOR PRODUCING A FIBROUS FIRE PROTECTION AGENT

Alfons K. Herr, Stutensee, Fed. Rep. of Germany, assignor to Kataflox Patentverwaltungs-Gesellschaft mbH, Karlsruhe, Fed. Rep. of Germany

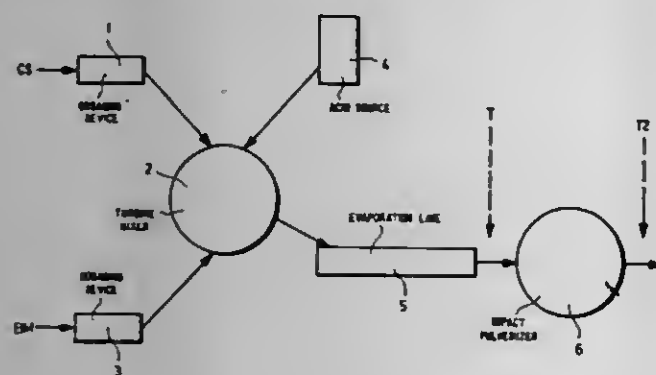
Filed Jul. 17, 1979, Ser. No. 58,320

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1978, 2831633

Int. Cl.<sup>3</sup> C09D 5/18; C09K 3/28

U.S. Cl. 252-607

13 Claims



1. A method for producing a fibrous fire protection agent composed of a fibrous material with boric acid particles adhering to its surface, comprising: providing a wet mass of such fibrous material having a moisture content of up to 80 percent by weight; intimately mixing in a mixer that mass of material with a quantity of powdered boron mineral material; spraying a quantity of concentrated sulfuric acid into the mixer during said mixing step to form a granulate; feeding the resulting granulate onto an evaporation line; and withdrawing the granulate from the evaporation line and comminuting the granulate in an impact pulverizer to form it into the fibrous fire protection agent.

4,285,843

# WOOD CHIP BOARD AND PROCESS FOR THE PREPARATION THEREOF

Herbert Mayerhoffer, Vienna, Austria, assignor to Osterreichische Holz-Werke Aktiengesellschaft, Vienna, Austria

Filed Apr. 21, 1980, Ser. No. 141,844

Claims priority, application Austria, Apr. 23, 1979, 3040/79

Int. Cl.<sup>3</sup> C08L 1/02

U.S. Cl. 260-17.3

12 Claims

1. A wood chip board the binder of which is an aminoplast, in which the amount of solid resin binder in the area of the board surfaces is less than about 8% by weight of the absolutely dry calculated chip material in the board surface, and the amount of solid resin binder in the area of the center of the board calculated as a wt. percentage based on the absolutely dry chip material present at the center, is equal to or greater than in the board surfaces.

4,285,844

# AQUEOUS COATINGS BASED ON COPOLYMERS WITH A MIXTURE OF POLYMERIC POLYOL AND BISPHENOL-PROPYLENE OXIDE ADDUCT

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Jan. 10, 1980, Ser. No. 111,077

Int. Cl.<sup>3</sup> C08L 33/06

U.S. Cl. 260-23 EP

8 Claims

1. A low temperature-curing aqueous coating composition

comprising water having dispersed therein with the aid of a volatile base, an acidic solution copolymer of:

- (1) monoethylenically unsaturated monomers, including about 2% to about 20% of carboxylfunctional monomer based on the weight of the copolymer; with
- (2) a mixture of ethylenically unsaturated esters of:
  - (A) ethylenically unsaturated fatty acids with
  - (B-1) organic solvent and water insoluble polymeric polyol and
  - (B-2) water insoluble bisphenol-propylene oxide adduct polyol,

there being a total of more than two moles of unsaturated fatty acid per mol of said polymeric polyol, and said bisphenol-propylene oxide polyol constituting from 10% to 125% of the weight of said polymeric polyol.

4,285,845

# UNSATURATED POLYESTER RESINS

Robert F. Russell, Wellingborough, England, assignor to Scott Bader Company Limited, Wellingborough, England

Filed Aug. 3, 1979, Ser. No. 63,134

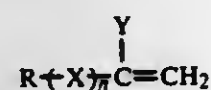
Claims priority, application United Kingdom, Aug. 8, 1978, 32554/78; Feb. 1, 1979, 3499/79

Int. Cl.<sup>3</sup> C08L 67/06, 91/08

U.S. Cl. 260-28 R

10 Claims

1. An unsaturated polyester resin composition for ambient temperature open lay-up moulding containing styrene as an agent for cross-linking during curing, a waxy compound selected from the group consisting of stearyl stearate and paraffin, and 0.1 to 5% by weight of at least one compound which is present to allow said waxy compound to be present in amounts which restrict styrene evaporation, which compound is theoretically capable of taking part in the cross-linking reaction and is of the formula



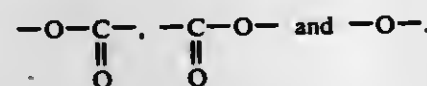
wherein

Y is selected from the group consisting of hydrogen and methyl,

R is selected from the group consisting of straight and branched-chain and unsubstituted and, substituted aliphatic C<sub>6</sub>-C<sub>24</sub> hydrocarbons,

n is a value selected from zero and 1 and

X is selected from the group consisting of



4,285,846

# FLATTED WATER-REDUCIBLE COATING COMPOSITIONS AND METHOD FOR PRODUCING SAME

John F. Hardy, Andover; Donald P. Kintz, Westford, and Vaughn W. Taylor, Lynn, all of Mass., assignors to Cabot Corporation, Boston, Mass.

Filed Apr. 28, 1980, Ser. No. 144,345

Int. Cl.<sup>3</sup> C08L 67/02, 63/00

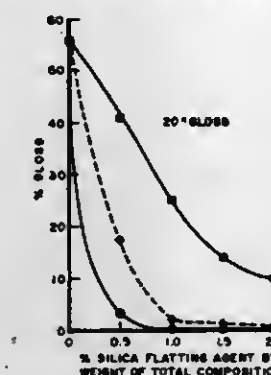
U.S. Cl. 260-29.2 E

15 Claims

1. In a method for preparing a water-reducible coating composition comprising the steps of preparing a mill paste of the coating solids, including a water-miscible film forming resin, and thereafter letting down said mill paste with a predominantly aqueous solvent comprising at least 75 percent by weight of water, the improvement which comprises:

flattening the composition by admixing therewith an aqueous dispersion of a finely-divided particulate silica flattening

agent during or subsequent to said let-down of said mill paste, the quantity of said silica flattening agent so admixed



being between about 0.25 and about 5 percent by weight of the total composition.

4,285,847

# POLYMERIZATION PROCESS AND PRODUCT

Vincent W. Ting, Boulder, Colo., assignor to SCM Corporation, Cleveland, Ohio

Filed Apr. 11, 1979, Ser. No. 29,106

Int. Cl.<sup>3</sup> C08L 63/00

U.S. Cl. 260-29.2 EP

46 Claims

1. A process for addition polymerizing through its ethylenic unsaturation a quantity of Q parts by weight of addition polymerizable ethylenically unsaturated monomer in an aqueous medium using free radical initiation which comprises:

- (a) incorporating a quantity Q of an ethylenically unsaturated addition polymerizable monomer and initiator therefor, in an aqueous, liquid reaction medium that is a dispersion in an aqueous vehicle of a resinous dispersoid of at least 0.3 Q to about 20 Q or more of at least one ionized polymer comprising a graft copolymer having a backbone including aliphatic carbon atoms on which an ionizable addition polymer side chain is bonded by a carbon-to-carbon bond in place of a hydrogen atom that is bonded thereto in the ungrafted state, said graft copolymer being formed by grafting at least one addition polymerizable monomer, including ionizable monomer, onto a polymer substrate selected from the group consisting of: homopolymers and copolymers of vinyl chloride; homopolymers and copolymers of acrylic monomers; hydrocarbon resins from butadiene, styrenes, and coumaroneindenes; polyurethanes; polyesters; and aromatic epoxy resins; to form at least one side chain bonded by carbon-to-carbon grafting to one of said backbone carbons, the ionization being on the side chain, and from zero up to about 20 Q of at least one other polymer that is selected from said group and that is not appreciably ionic in nature, thereby providing an initial reaction medium having a continuous aqueous liquid phase and polymeric dispersed phase, said reaction medium also including an amount up to 200% by weight of said resinous dispersoid of an organic liquid that is miscible with water and that comprises a solvent for at least some of the solids of said dispersoid;
- (b) polymerizing said monomer at a temperature at least as high as about room temperature and under pressure sufficient for keeping the continuous aqueous phase in a liquid state, and in the presence of a sufficient amount of said initiator for causing addition polymerization of said monomer at said temperature;

the amount of water initially present in said aqueous vehicle and any amount of water that is added during said addition polymerization being sufficient for keeping the solids content of the reaction mixture from step (b) above from exceeding about 60% by weight of the reaction mixture at any time.

4,285,848

# WOOD ADHESIVE FROM PHENOL, FORMALDEHYDE, MELAMINE AND UREA

Charles H. Hickson, New Albany, Ind., assignor to Borden, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 929,527, Jul. 31, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,529

Int. Cl.<sup>3</sup> C08G 14/08, 14/10; C08L 61/14, 61/28

U.S. Cl. 260-29.3

7 Claims

1. A wood adhesive composition prepared from phenol, formaldehyde, melamine, and urea in a molar proportion per 1 mole of phenol of between about 6 and 8.24 moles of formaldehyde, between about 1 and 1.6 moles of melamine, and between about 1.6 and 3.3 moles of urea, said composition prepared by the steps of:

- (a) charging said phenol and said formaldehyde into a reactor held under condensing and basic conditions;
- (b) adding said melamine to said reactor, and adjusting and maintaining condensing conditions to a pH of between about 8.5 and 9.5 at a temperature of between about 85° and 100° C. until all of said melamine is condensed indicated by the contents of said reactor being clear; and
- (c) adding said urea to said reactor and maintaining urea condensing conditions until the condensate product in said reactor has a water tolerance of between about 70% and 180%.

4,285,849

# AMIDATION REACTION PRODUCTS OF POLYAMINES AND POLYCARBOXYL CONTAINING MATERIALS AND COATING COMPOSITIONS CONTAINING SAME

Rostyslaw Dowbenko, Gibsonia; Karl F. Schimmel, Verona, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 27, 1979, Ser. No. 97,619

Int. Cl.<sup>3</sup> C08L 61/10, 61/20

U.S. Cl. 260-29.6 NR

31 Claims

1. An ungelled amidation product containing primary amine groups, secondary amine groups or a mixture thereof and carboxyl groups obtained by the reaction of (1) a polyamine containing aliphatic amine groups and having at least one ether group with (2) a polycarboxyl-containing material selected from the group consisting of an acrylic resin, polyester resin, polyamide resin, or mixture thereof and wherein the carboxyl content of the polycarboxyl-containing material ranges from about 0.5 milliequivalents to about 12 milliequivalents of carboxyl per gram.

4,285,850

# ADHESION OF POLYAMIDE OR POLYESTER CORDS TO RUBBER

Terry C. Neubert, Kent, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 32,071, Apr. 23, 1979, Pat. No. 4,251,409.

This application Mar. 3, 1980, Ser. No. 126,744

Int. Cl.<sup>3</sup> C08L 51/00, 39/08

U.S. Cl. 260-29.6 RB

3 Claims

1. A composition of matter comprising an aqueous alkaline dispersion of a rubbery graft low gel vinyl pyridine copolymer consisting essentially of

- (a) a core of a copolymer of butadiene-1,3 and styrene in the parts by weight ratio of butadiene-1,3 to styrene of about 40:60 to 60:40 and having a gel content of from about 0 to below 40% and
- (b) a shell of a copolymer of butadiene-1,3 and a vinyl pyridine and having a gel content of from about 0 to below 70% and
- (c) wherein in said graft copolymer the total amount of said monomers is from about 47 to 69% by weight of butadiene-1,3, from 23 to 52% by weight of styrene and from 1 to 8% by weight of the vinyl pyridine.



4,285,851

## PROCESS FOR CONTROLLED GELATION OF POLYMERIC SOLUTION (C-974)

Henry S. Makowski, Scotch Plains, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research &amp; Engineering Co., Florham Park, N.J.

Filed Apr. 3, 1980, Ser. No. 136,834

Int. Cl.<sup>3</sup> C08L 23/32

U.S. Cl. 260—29.6 SQ

31 Claims

1. A process for increasing the low shear solution viscosity which includes the steps of:

(a) dissolving an amine terminated polyalkylene oxide neutralized sulfonated polymer in a solvent to form a polymeric solution, a concentration of said amine terminated polyalkylene oxide neutralized sulfonated polymer in said polymer solution being about 0.1 to about 20 wt. % a viscosity of said polymeric solution being about 10 to about 5,000 cps; and

(b) adding about 1 to about 500 volume % water to said solution, said water being immiscible with said polymeric solution, the viscosity of said solution or suspension increasing upon the addition of said water to at least 50,000 cps.

4,285,852

## ANISOTROPIC WHOLLY AROMATIC POLYESTER DERIVED FROM 4-HYDROXY-4'-CARBOXY AZOBENZENE AND PROCESS FOR PREPARATION

Anthony J. East, Madison, N.J., assignor to Celanese Corporation, New York, N.Y.

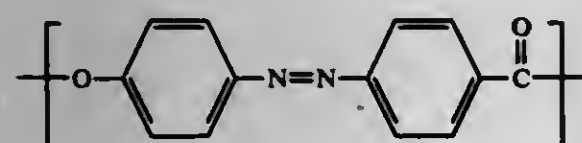
Filed Jan. 4, 1980, Ser. No. 109,575

Int. Cl.<sup>3</sup> C08G 63/02

U.S. Cl. 260—37 R

47 Claims

1. A wholly aromatic polyester capable of forming an anisotropic melt comprising the recurring unit:



which may include substitution of at least one hydrogen atom present upon an aromatic ring with said optional substitution if present being selected from the group consisting of an alkyl radical of 1 to 4 carbon atoms, an alkoxy radical of 1 to 4 carbon atoms, halogen, and mixtures thereof.

4,285,853

## CRACK-RESISTANT EPOXY RESIN MOLDING COMPOSITION WITH WOLLASTONITE

Bruno Schreiber, Aesch, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 6, 1979, Ser. No. 72,952

Claims priority, application Switzerland, Sep. 18, 1978, 9724/78

Int. Cl.<sup>3</sup> C08L 63/02

U.S. Cl. 260—37 EP

7 Claims

1. An epoxy resin moulding composition consisting of an epoxy resin which contains more than 1 epoxide equivalent per kg of epoxy resin and is solid at room temperature, a solid anhydride hardener in an amount such that the number of anhydride groups per epoxy group is 1.5 to 0.5, and one or more fillers in an amount between 50 and 80% by weight, based on the moulding composition, wherein

(a) the epoxy resin is one based on diglycidyl ethers of bisphenols,

(b) the hardener is an anhydride of a dicarboxylic acid, and

(c) at least half of the total amount of filler consists of wollastonite.

4,285,854

## ELASTOMER TIRE FILLING MATERIAL

Kunio Kageyama, Tokohama, and Tetsuo Hayashi, Hiratsuka, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,428

Claims priority, application Japan, Jun. 20, 1979, 54-77711; Feb. 26, 1980, 55-23238

Int. Cl.<sup>3</sup> C08G 18/62

U.S. Cl. 260—37 N

7 Claims

1. A tire filling material comprising an elastomer obtained by reacting (A) a prepolymer having a terminal isocyanate group with (B) a curing agent composed of a compound having a terminal hydroxyl or amino group at a ratio satisfying a requirement represented by the following formula (I):

$$0.7 \leq \frac{A}{B} \leq 1.3 \quad (I)$$

wherein A stands for the number of NCO groups in the prepolymer (A) and B stands for the number of OH or NH<sub>2</sub> groups in the curing agent (B),

said prepolymer (A) containing a product obtained by reacting (C) a polymer containing at least a diene polymer having a terminal hydroxyl group and a molecular weight lower than 10,000 with a diisocyanate compound at a ratio satisfying a requirement represented by the following formula (II):

$$1.6 \leq \frac{D}{C} \leq 3.0 \quad (II)$$

wherein D stands for the number of NCO groups in the diisocyanate compound and C stands for the number of OH groups in the polymer (C).

4,285,855

## FIRE-RETARDANT POLYCARBONATE COMPOSITION Toshimasa Tokuda, Iyo, Japan, assignor to Teijin Chemicals Ltd., Tokyo, Japan

Division of Ser. No. 958,487, Nov. 7, 1978, Pat. No. 4,222,910.

This application Mar. 19, 1980, Ser. No. 131,852

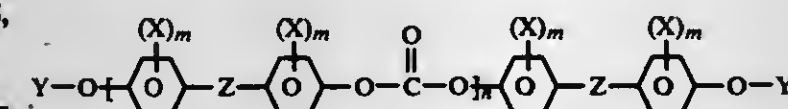
Claims priority, application Japan, Nov. 10, 1977, 52-134107; Dec. 21, 1977, 52-152969; Jan. 19, 1978, 53-3749; Aug. 16, 1978, 53-99017; Aug. 16, 1978, 53-99018

Int. Cl.<sup>3</sup> C08K 5/42; C08L 81/08, 69/00

U.S. Cl. 260—45.75

9 Claims

1. A fire retardant resin composition comprising  
(1) a polycarbonate which is the reaction product of a dihydric phenol with either phosgene or a carbonic acid diester, and  
(2) as a fire retardant, at least one compound selected from the group consisting of compounds of the formula



wherein X represents a halogen atom, m is an integer of 0 to 4, Y independently represents a hydrogen atom, an aliphatic or aromatic group containing 1 to 20 carbon atoms, or the group —R—SO<sub>3</sub>M in which R represents an alkylene group containing 1 to 10 carbon atoms and M represents an alkali metal or an alkaline earth metal, at least one of the Y groups being the group —R—SO<sub>3</sub>M, and Z represents an alkylene or alkylidene group containing 1 to 9 carbon atoms, a cycloalkylene or cycloalkylidene group containing 5 to 15 carbon atoms, O, S, SO, SO<sub>2</sub>, CO or CO<sub>2</sub>, and n is a number of 1 to 200.

4,285,856

## ORGANO-TIN COMPOUNDS, PROCESS FOR THEIR PREPARATION AND THEIR USE

Wolfgang Wehner, Zwingenberg, and Gerd Abeler, Darmstadt, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 6, 1980, Ser. No. 118,898

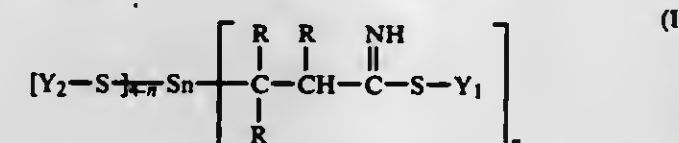
Claims priority, application Switzerland, Feb. 14, 1979, 1467/79

Int. Cl.<sup>3</sup> C07F 7/22; C08K 00/00

U.S. Cl. 260—45.75 S

9 Claims

1. A compound of the formula (I)



in which the radicals R independently of one another are hydrogen or C<sub>1</sub>-C<sub>14</sub> alkyl and Y<sub>1</sub> and Y<sub>2</sub> are both identical and are C<sub>1</sub>-C<sub>20</sub> alkyl, C<sub>2</sub>-C<sub>20</sub> alkenyl, C<sub>5</sub>-C<sub>8</sub> cycloalkyl, C<sub>6</sub>-C<sub>10</sub> cycloalkylalkyl, C<sub>6</sub>-C<sub>14</sub> aryl, which is unsubstituted or substituted by C<sub>1</sub>-C<sub>8</sub> alkyl, or C<sub>7</sub>-C<sub>20</sub> aralkyl or —(CH<sub>2</sub>)<sub>m</sub>—COO (C<sub>1</sub>-4 alkyl), or if Y<sub>1</sub> is —(CH<sub>2</sub>)<sub>m</sub>—COO—(C<sub>1</sub>-4 alkyl), Y<sub>2</sub> can also be the group —(CH<sub>2</sub>)<sub>m</sub>—COO(C<sub>5</sub>-20 alkyl), and in which m is a number from 1 to 6 and n is 1 or 2.

4,285,857

## CYCLIC ANALOGUES OF CALLIDINE

Günar I. Chipens, ulitsa Apes, 12, kv. 81; Felix K. Mutulis, ulitsa Bikerniekn, 77, kv. 52; Olga E. Lando, ulitsa Berzupes, 31a, kv. 21, and Natalia V. Myshlyakova, ulitsa Gorkogo, 33, kv. 18, all of Riga, U.S.S.R.

Filed Sep. 26, 1979, Ser. No. 78,950

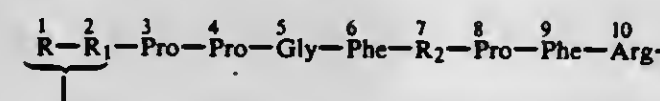
Claims priority, application U.S.S.R., Sep. 29, 1978, 2699155

Int. Cl.<sup>3</sup> C07C 103/52

U.S. Cl. 260—112.5 R

5 Claims

1. Cyclic analogues of callidine of the formula:



wherein Pro is a moiety of L-proline, Gly - that of glycine, Phe is a moiety of L-phenylalanine; Arg - that of L-arginine; R is a residue of α- or ω-lysine or arginine; R<sub>1</sub> is a residue or α- or ω-lysine or arginine; R<sub>2</sub> is L-serine, and the carbonyl group of arginine is connected with either R or R<sub>1</sub> by means of a covalent peptide bond using the ω-amino group of the R or R<sub>1</sub> located at 1 or 2 position of callidine.

4,285,858

## VASOPRESSIN ANALOGS

Joseph H. Cort, New York, N.Y., and Alan Fischman, New Haven, Conn., assignors to Mt. Sinai School of Medicine of the City University of N.Y., New York, N.Y.

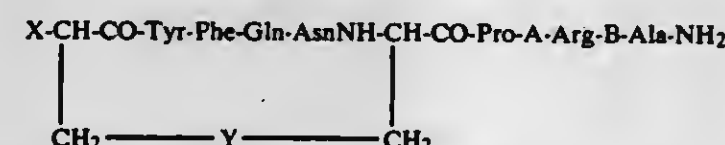
Filed Oct. 30, 1979, Ser. No. 89,510

Int. Cl.<sup>3</sup> C07C 103/52; A61K 37/00

U.S. Cl. 260—112.5 R

6 Claims

1. A vasopressin analog having the general schematic formula:



wherein X is selected from the group consisting of H and NH<sub>2</sub> and Y is selected from the group consisting of —S—S—,

—CH<sub>2</sub>S— and —SCH<sub>2</sub>— and A=L when B=D and A=D when B=L.

4,285,859

## AZO COMPOUNDS USEFUL IN A PHOTOGRAPHIC DYE DIFFUSION TRANSFER PROCESS

Rainer Kitzing, Ingatstone; Brian R. D. Whitear, Brentwood; William E. Long, Brentwood; David L. R. Reeves, Brentwood, and Glean P. Wood, Brentwood, all of England, assignors to Ciba-Geigy AG, Switzerland

Filed Feb. 23, 1979, Ser. No. 14,778

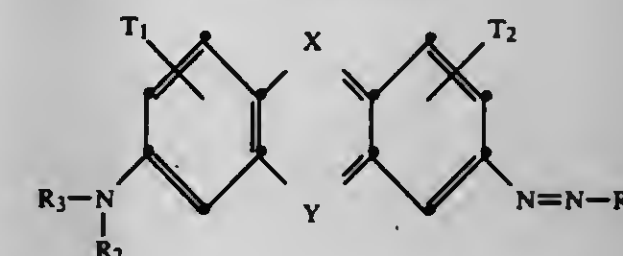
Claims priority, application United Kingdom, Feb. 28, 1978, 7788/78

Int. Cl.<sup>3</sup> C09B 29/06, 29/08, 29/24, 29/36

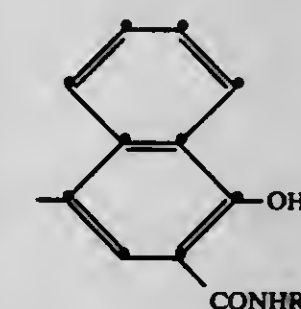
U.S. Cl. 260—152

15 Claims

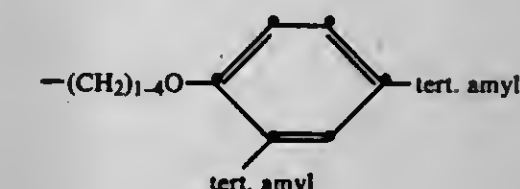
1. An azo dye of the general formula



where X is N or CR<sub>4</sub> where R<sub>4</sub> is a hydrogen atom, alkyl having 1 to 4 carbon atoms, phenyl, phenyl substituted by carboxyl, alkyl having 1 to 4 carbon atoms, hydroxy or halogen, Y is S<sup>+</sup>, N<sup>+</sup>R<sub>5</sub>, O<sup>+</sup> or N where R<sub>5</sub> is alkyl having 1 to 4 carbon atoms, phenyl, phenyl substituted by alkyl having 1 to 4 carbon atoms, halogen, hydroxy or carboxyl, R<sub>1</sub> is a group of the formula



wherein R<sub>6</sub> is a group of the formula



R<sub>2</sub> and R<sub>3</sub> are each hydrogen atoms or alkyl groups having 1 to 4 carbon atoms, or R<sub>2</sub> and R<sub>3</sub> together with the nitrogen atom complete a 5- or 6-membered heterocyclic ring, or one of R<sub>2</sub> and R<sub>3</sub> can be hydrogen and the other of R<sub>2</sub> and R<sub>3</sub> can be phenyl, and T<sub>1</sub> and T<sub>2</sub> represent hydrogen atoms, alkyl having 1 to 4 carbon atoms, amino groups, halogen or form a benzan-related ring.



4,285,860

## TRISAZO OR TETRAKISAZO DYES CONTAINING A HETEROCYCLIC GROUP

Guenter Hansen, Ludwigshafen; Hans J. Kolbinger, Gruenstadt; Horst Scheuermann, Ludwigshafen, and Georg Zeldler, Dannstadt-Schauernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

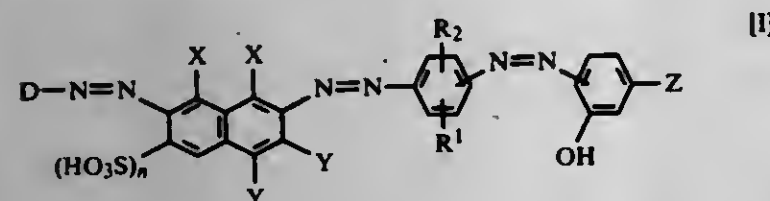
Filed Jan. 16, 1980, Ser. No. 112,635

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1979, 2903588

Int. Cl.<sup>3</sup> C09B 31/22, 31/30, 33/22, 33/28

U.S. Cl. 260-152 2 Claims

I. A polyazo dye which in the form of the free acid corresponds to the formula

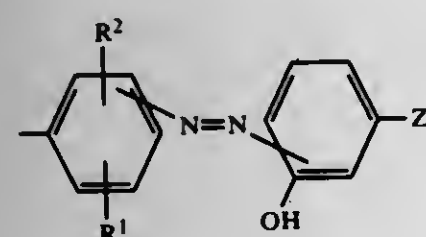


where

D is selected from the group consisting of phenyl; phenyl substituted by chlorine, bromine, C<sub>1</sub>-C<sub>4</sub>-alkyl, C<sub>1</sub>-C<sub>4</sub>-alkoxy, phenoxy, C<sub>1</sub>-C<sub>4</sub>-alkylsulfonyl, trifluoromethyl, carboxyl, hydroxysulfonyl, carbamoyl, sulfamoyl, mono- or di-C<sub>1</sub>-C<sub>8</sub>-alkyl substituted carbamoyl or sulfamoyl,



phenylazo, or phenylazo substituted by chlorine, C<sub>1</sub>-C<sub>4</sub>-alkoxy or hydroxysulfonyl; naphthyl substituted by hydroxysulfonyl; and



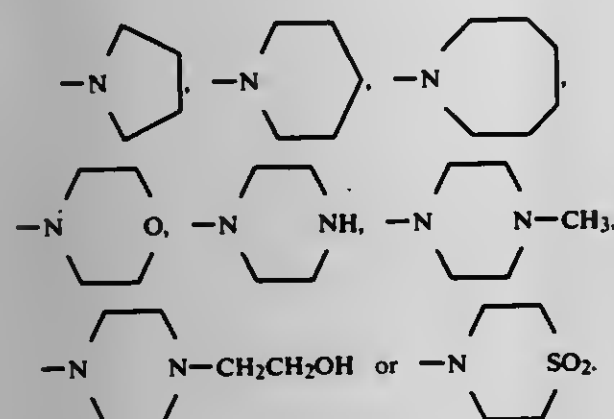
n is 0 or 1.

R<sup>1</sup> is hydrogen, chlorine, bromine, methyl, ethyl, methoxy, ethoxy, carboxyl, trifluoromethyl, methylsulfonyl, ethylsulfonyl or hydroxysulfonyl.

R<sup>2</sup> is hydrogen, chlorine, bromine, methyl, methoxy, carbamoyl or sulfamoyl.

one X is hydroxyl and the other X is amino, Y is hydrogen or hydroxysulfonyl, but at least one Y is hydroxysulfonyl and

Z is



4,285,861

## SULFONATED NAPHTHO[1,2]TRIAZOLE AZO BARBITURIC ACID DERIVATIVES

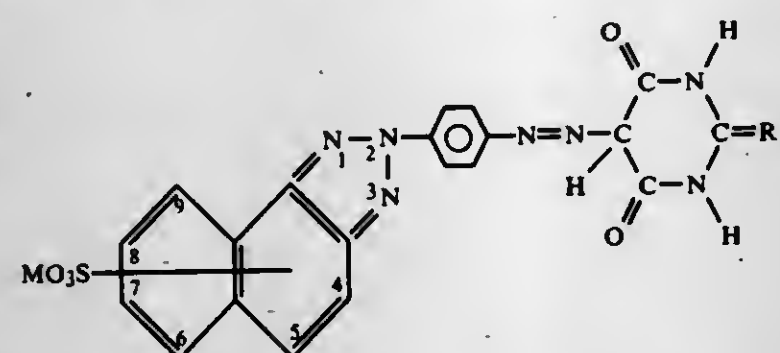
David A. Brode, Birdsboro, and Howard L. Smith, Douglassville, both of Pa., assignors to Crompton & Knowles Corporation, New York, N.Y.

Filed Aug. 17, 1979, Ser. No. 67,324

Int. Cl.<sup>3</sup> C09B 29/036, 29/52; D21D 3/00; D21H 3/80

U.S. Cl. 260-154 5 Claims

1. The compound having the structure:



wherein M is H, Na, K, Li, N(R)<sub>3</sub>H and R is H, alkyl and lower hydroxalkyl and R<sub>1</sub> is oxygen, sulfur, imino, lower alkylimino, cyanoimino and carbamoylimino.

4,285,862

## PROTEIN ISOLATE PRODUCT

E. Donald Murray, Winnipeg; Chester D. Myers, Ajax, and Larry D. Barker, Cobourg, all of Canada, assignors to General Foods, Limited, Toronto, Canada

Continuation-in-part of Ser. No. 972,202, Dec. 22, 1978, abandoned, which is a continuation of Ser. No. 832,036, Sep. 12, 1977, Pat. No. 4,169,090. This application Oct. 3, 1979, Ser. No. 81,484

Int. Cl.<sup>3</sup> A23J 1/12, 1/14

U.S. Cl. 260-123.5 11 Claims

1. A substantially undenatured protein isolate product containing at least about 90% by weight of protein (as determined by Kjeldahl nitrogen  $\times 6.25$ ) and in the form of an amorphous protein mass which is formed by settling the solid phase from an aqueous dispersion of protein micelles consisting of homogeneous amphiphilic protein moieties and formed from at least one plant protein source material, said product having substantially no lipid content, substantially no lysinoalanine content and substantially the same lysine content as the storage protein in the source material.

4,285,863

## PIGMENT COMPOUNDS AND METHOD OF PREPARATIONS

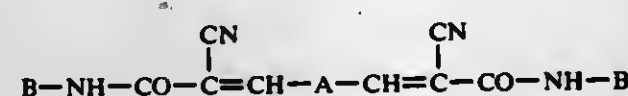
Roggero Battisti; Francesco Casagrande, both of Novara, and Giovanni Bausani, Treviso, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jun. 25, 1979, Ser. No. 51,443

Claims priority, application Italy, Jun. 26, 1978, 24947 A/78 Int. Cl.<sup>3</sup> C09B 43/00, 56/00, 57/00; D06P 1/44

U.S. Cl. 260-176 1 Claim

1. A bis-methinic pigment compound having the formula



wherein: A is selected from the group consisting of phenylene, 2,5-dimethoxyphenylene, 2,5-dichlorophenylene, naphthylene, diphenyl and anthracylene, and B is selected from the group consisting of azobenzene, azotoluene, 2-methoxy-5-benzani-

lide, 2-methoxy-3',4'-chloroazobenzene, 2-hydroxy-5-methylbenzene; 2-methoxy-5-benzoylamino-benzene, 2-methoxy-5-ureido-benzene, 2-chloro-5-carboxy-benzene, 2,4-dichlorobenzene, 2,5-dimethoxy-4-chloro-benzene, benzothiazole, 1-(3-chlorophenyl)-pyrazole, 1-(3,4-dichlorophenyl)-pyrazole, indazole, 2,4-dimethoxybenzene, 4-dimethyl-amino-benzene, benzimidazolone, 2-methoxy-5-acetylamino-benzene and 2-methoxy-benzene.

4,285,864

## DISULFONIC

## PHENYL-AZO-NAPHTHYL-AZO-PHENYL ALKOXY DYES FOR POLYAMIDES

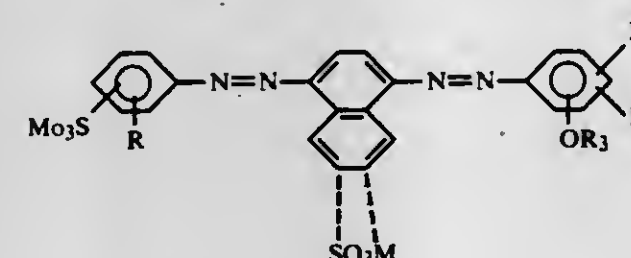
James F. Feeman, Wyomissing, Pa., assignor to Crompton & Knowles Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 80,135, Oct. 12, 1970, abandoned, and Ser. No. 457,828, Apr. 4, 1974, abandoned. This application Mar. 17, 1976, Ser. No. 667,678

Int. Cl.<sup>3</sup> C09B 31/062; D06P 1/39, 3/16, 3/24

U.S. Cl. 260-191 8 Claims

1. A compound having the structure:



wherein R represents -H, -CH<sub>3</sub> or -Cl; R<sub>1</sub> represents -H or -CH<sub>3</sub>; R<sub>2</sub> represents -H, -CH<sub>3</sub> or -OCH<sub>3</sub>; R<sub>3</sub> represents -CH<sub>3</sub> or -C<sub>2</sub>H<sub>5</sub> and M represents -H, -Li, -Na, -K or -N-(R<sub>4</sub>)<sub>4</sub> wherein R<sub>4</sub> represents the same substituent or different substituents selected from the following: -H, -CH<sub>2</sub>-CH<sub>2</sub>OH, -CH<sub>2</sub>CH(OH)CH<sub>3</sub> or -CH<sub>2</sub>CH<sub>2</sub>OCH<sub>2</sub>-H<sub>2</sub>OH.

4,285,865

## PROCESS FOR THE PREPARATION OF HALOGENATED 15-HYDROXY-E-HOMOEURNANE COMPOUNDS

Csaba Szantay; Lajos Szabo; György Kalaus; Lajos Dancs; Tibor Keve, and Ferenc Drexler, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

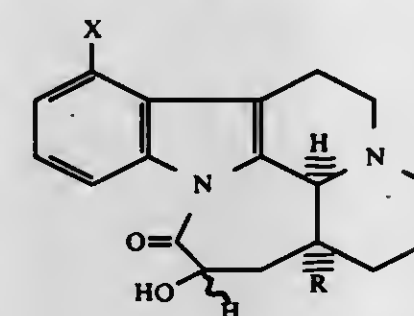
Filed Aug. 5, 1980, Ser. No. 175,385

Claims priority, application Hungary, Aug. 6, 1979, RI 721

Int. Cl.<sup>3</sup> C07D 487/14, 487/16

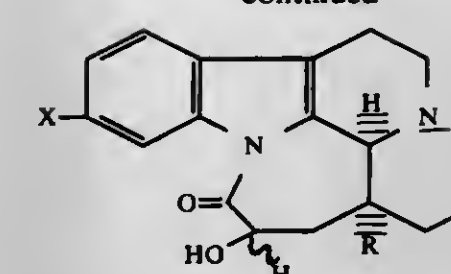
U.S. Cl. 260-239.3 P 4 Claims

1. A process for the preparation of a racemic or optically active compound of the formulae (Ia) or (Ib),



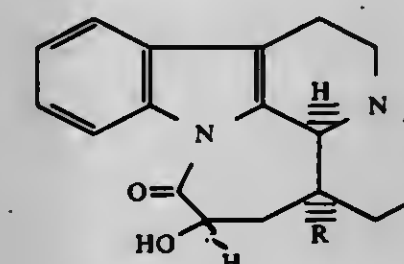
(Ia)

-continued



(Ib)

wherein R is C<sub>1-6</sub> alkyl and X is halogen, which comprises reacting a racemic or optically active 15-hydroxy-E-homoeurnane derivative of the formula (II),



(II)

wherein R is as defined above; or an acid addition salt thereof, with a halogenating agent.

4,285,866

## CYCLIC PERKETALS AND THEIR USE FOR CROSS-LINKING HIGH DENSITY POLYETHYLENE

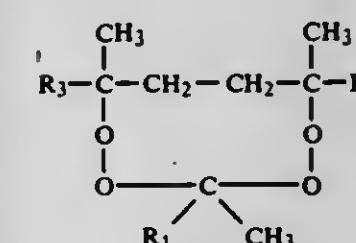
Ronald L. Pastorino, Larkspur, and Roger N. Lewis, Martinez, both of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Division of Ser. No. 688,874, May 21, 1976, which is a continuation-in-part of Ser. No. 591,783, Jan. 30, 1975, abandoned. This application Feb. 28, 1977, Ser. No. 772,407

Int. Cl.<sup>3</sup> C07D 323/00

U.S. Cl. 260-338 5 Claims

1. An organic peroxide of the formula:



wherein each of R<sub>2</sub> and R<sub>3</sub> is selected from methyl and ethyl and R<sub>1</sub> is an alkyl carboxylate ester group of up to about 10 carbon atoms in which the acid moiety of the ester is bonded to the ring carbon atom.

4,285,867

## PHARMACOLOGICALLY ACTIVE 4-[2-HYDROXY-4-(SUBSTITUTED)PHENYL]NAPHTHALEN-2(1H)-ONES AND 2-OLS, DERIVATIVES THEREOF AND INTERMEDIATES THEREFOR

Michael R. Johnson, Gales Ferry, and Lawrence S. Melvin, Jr., Ledyard, both of Conn., assignors to Pfizer Inc., New York, N.Y.

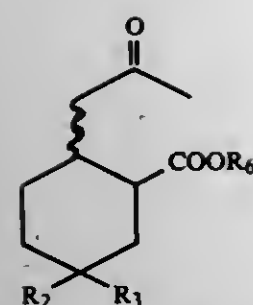
Filed Sep. 19, 1980, Ser. No. 189,402

Int. Cl.<sup>3</sup> C07D 321/00

U.S. Cl. 260-338 1 Claim

1. A compound having the formula





wherein  $R_6$  is hydrogen or  $C_{1-4}$  alkyl; and  $R_2$  and  $R_3$  taken together are alkylenedioxy having from two to four carbon atoms.

4,285,868

## PREPARATION OF GAMMA-BUTYROLACTONES

El-Ahmadi 1. Heiba, Princeton, and Ralph M. Dessan, Edison, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 336,857, Feb. 28, 1973, Pat. No. 4,175,089, which is a continuation-in-part of Ser. No. 30,582, Apr. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 714,447, Mar. 20, 1968, abandoned. This application Aug. 25, 1977, Ser. No. 827,654.

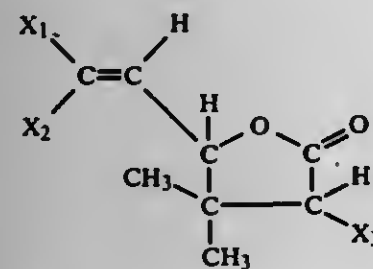
The portion of the term of this patent subsequent to Nov. 20, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> C07D 307/32

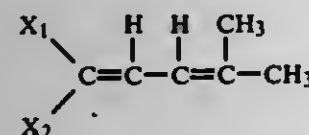
U.S. Cl. 260—343.6

10 Claims

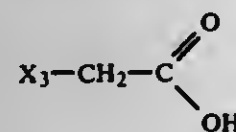
1. A method for the production of a gamma-butyrolactone having the structure



wherein  $-X_1$  and  $-X_2$  are substituents individually selected from the group consisting of  $-Cl$ ,  $-Br$ ,  $-CN$ ,  $-COCH_3$ , and  $-COOAlk$  wherein  $Alk$  is an alkyl group with up to six carbon atoms, and  $-X_3$  is selected from the group consisting of hydrogen,  $-CH_3$ ,  $-C_2H_5$ ,  $-CN$  and  $-COOH$ , which comprises: reacting, under reaction conditions, a diene having the structure



wherein  $-X_1$  and  $-X_2$  are as hereinabove described, with a carboxylic acid having the structure



wherein  $-X_3$  is as hereinabove described, in the presence of a stoichiometric amount of tetravalent cerium or trivalent manganese salt; and recovering said gamma-butyrolactone.

4,285,869  
19-HYDROXY-6-HYDROXY-7A-HOMO-PGI<sub>1</sub> COMPOUNDS

John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,811, Jul. 5, 1979, Pat. No. 4,225,508.

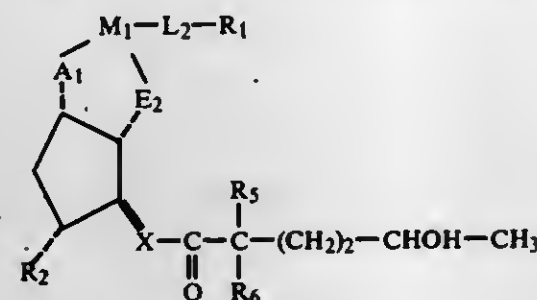
This application Mar. 3, 1980, Ser. No. 126,479

Int. Cl.<sup>3</sup> C07D 311/02

U.S. Cl. 260—345.2

2 Claims

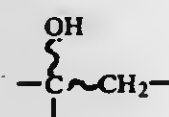
1. A prostacyclin-type compound of the formula



wherein  $A_1$  is  $-O-$  (oxa) and  $E_2$  is  $-CH_2CH_2-$ ; wherein  $L_2$  is

- (1)  $-(CH_2)_j-$ , wherein  $j$  is one to 4, inclusive,
- (2)  $-(CH_2)_q-CF_2-$ , wherein  $q$  is one, 2, or 3; or
- (3)  $-CH=CH-$ ;

wherein  $M_1$  is



wherein  $Q$  is oxo,  $\alpha$ -H; $\beta$ -H,  $\alpha$ -OH; $\beta$ -R<sub>4</sub>, or  $\alpha$ -R<sub>4</sub> $\beta$ -OH, wherein  $R_4$  is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein  $R_1$  is

- (1)  $-COOR_3$ ,
  - (2)  $-CH_2OH$ ,
  - (3)  $-CH_2N(R_7)(R_8)$ ,
  - (4)  $-CO-N(R_7)(R_8)$ ,
  - (5)  $-CO-NH-SO_2-R_{15}$ , or
  - (6) tetrazolyl,
- wherein  $R_3$  is
- (a) hydrogen,
  - (b) alkyl of one to 12 carbon atoms, inclusive,
  - (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
  - (d) aralkyl of 7 to 12 carbon atoms, inclusive,
  - (e) phenyl,
  - (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;
  - (g)  $-(Ph)-CO-CH_3$ ,
  - (h)  $-(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH_3$ ,
  - (i)  $-(p-Ph)-NH-CO-(p-Ph)$ ,
  - (j)  $-(p-Ph)-NH-CO-CH_3$ ,
  - (k)  $-(p-Ph)-NH-CO-NH_2$ ,
  - (l)  $-(p-Ph)-CH=N-NH-CO-NH_2$ ,
  - (m)  $\beta$ -naphthyl,
  - (n)  $-CH_2-CO-R_{16}$ ,

wherein  $-(Ph)-$  is inter-phenylene and  $-(p-Ph)-$  is inter-para-phenylene or para-phenyl;

wherein  $R_{16}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

- (a) a pharmacologically acceptable cation; wherein  $R_7$  and  $R_8$  are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein  $R_{15}$  is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl-substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxy-carbonyl of 2 to 4 carbon atoms, inclusive, wherein  $R_2$  is hydrogen, hydroxyl, or hydroxymethyl, wherein  $R_5$  and

$R_6$  are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of  $R_5$  and  $R_6$  is fluoro only when the other is hydrogen or fluoro, and

wherein  $X$  is

- (1)  $\text{trans-CH=CH-}$ ,
- (2)  $\text{cis-CH=CH-}$ ,
- (3)  $-C=C-$ , or
- (4)  $-CH_2CH_2-$ .

4,285,870

## PROCESS FOR CONTINUOUSLY SEPARATING PHTHALIC ANHYDRIDE FROM THE REACTION GASES OF THE CATALYTIC OXIDATION OF O-XYLENE AND/OR NAPHTHALENE

Gerhard Kennecke, Geyen; Anton Klopfer, Cologne, and Lothar Sterck, Hürth, all of Fed. Rep. of Germany, assignors to Davy International Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 106,503

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2855629

Int. Cl.<sup>3</sup> C07D 307/89

U.S. Cl. 260—346.7

15 Claims

1. In the process for the continuous separation of phthalic anhydride from the reaction gas of the catalytic oxidation of o-xylene and/or naphthalene whereby said reaction gas is treated with organic absorbents in an absorption zone, the absorbents, which are enriched with phthalic anhydride, are withdrawn from the absorption zone, absorbents are generated by separation of the phthalic anhydride therefrom and are returned to the absorption zone, the improvement which comprises treating the reaction gas in a first absorption stage with a liquid mixture comprising benzoic acid and phthalic anhydride, and in at least one additional absorption stage with a liquid, maleic anhydride-based absorbent containing from 0 to about 85% by weight phthalic anhydride.

4,285,871

## PROCESS FOR CONTINUOUSLY SEPARATING PHTHALIC ANHYDRIDE FROM THE REACTION GASES OF THE CATALYTIC OXIDATION OF O-XYLENE AND/OR NAPHTHALENE

Gerhard Kennecke, Geyen; Anton Klopfer, Cologne, and Lothar Sterck, Hürth, all of Fed. Rep. of Germany, assignors to Davy International Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 107,052

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855630

Int. Cl.<sup>3</sup> C07D 307/89

U.S. Cl. 260—346.7

11 Claims

1. In the process for the continuous separation of phthalic anhydride from the reaction gas of the catalytic oxidation of o-xylene and/or naphthalene whereby said reaction gas is treated with an organic absorbent in an absorption zone, the absorbent, which is loaded with phthalic anhydride is withdrawn from the absorption zone, the absorbent is separated from said phthalic anhydride, and the separated absorbent is returned to the absorption zone, the improvement which comprises treating the reaction gas with a maleic anhydride-based absorbent containing from 0 to about 85% by weight phthalic anhydride.

4,285,872

## METHOD FOR PRODUCING GLYCIDYL (METH)ACRYLATE

Rippe Tanabe, Nishinomiya; Yuji Yokoyama, Kobe, and Jiro Hirano, Takatsuki, all of Japan, assignors to Nippon Oil and Fats Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 910,529, May 30, 1979, abandoned.

This application Aug. 1, 1979, Ser. No. 62,621

Claims priority, application Japan, Jan. 6, 1977, 52/65849

Int. Cl.<sup>3</sup> C07D 301/00

U.S. Cl. 260—348.12

6 Claims

1. A method for producing glycidyl methacrylate or glycidyl acrylate, which comprises using a metal salt, selected from the group consisting of potassium, sodium, and calcium salts, of a fatty acid having from 2 to 22 carbon atoms, as a catalyst in an ester interchange reaction of methyl methacrylate or methyl acrylate and glycidol, wherein the molar ratio of methyl methacrylate or methyl acrylate to glycidol is 15:1 to 2:1, the reaction being carried out at a temperature of 40°–100° C. under reduced pressure while introducing a small amount of air into the reaction mixture, by-product methanol being continuously removed as an azeotropic mixture with an excess amount of methyl methacrylate or methyl acrylate.

4,285,873

## ADRENERGIC BLOCKING AGENTS

Kenneth E. Fahrenholtz, Bloomfield; Robert W. Guthrie, Saddle Brook; Richard W. Kierstead, North Caldwell, and Jefferson W. Tilley, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

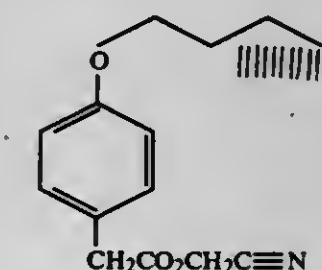
Division of Ser. No. 73,051, Sep. 6, 1979, Pat. No. 4,247,710, which is a division of Ser. No. 875,966, Feb. 8, 1978, Pat. No. 4,202,978. This application Aug. 22, 1980, Ser. No. 180,245

Int. Cl.<sup>3</sup> C07D 303/46, 303/38

U.S. Cl. 260—348.45

1 Claim

1. The compound of the formula



4,285,874

## 1-ISOCYANATO-ANTHRAQUINONES

Rudolf Braden, Odenthal-Scheuren, and Rütger Neeff, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 12, 1979, Ser. No. 74,690

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842539

Int. Cl.<sup>3</sup> C07C 101/80, 103/75, 118/02

U.S. Cl. 260—376

4 Claims

1. A process for the preparation of a 1-isocyanato-anthraquinone, comprising introducing an anthraquinone into phosgene or a solution of phosgene in an inert anhydrous solvent at  $-10^\circ$  to  $50^\circ$  C., heating the reaction mixture to  $100^\circ$  to  $200^\circ$  C. while passing phosgene through it, and subsequently expelling phosgene and hydrogen chloride from the reaction mixture with an inert medium which is gaseous under the reaction conditions.











a concave mold surface, said convex and concave mold surfaces being plated with a metal selected from hard chromium and nickel, said convex mold surface having a radial outer concave portion terminating in a first circumscribing edge and said concave mold surface terminating in a radial second circumscribing edge; mating said male and female sections along said first and second circumscribing edges with line contact to thereby provide a mold cavity between said male and female sections; molding a silicone resin material in said mold cavity to form said contact lens, said molding step comprising molding the peripheral edge of said contact lens in said radial outer concave portion so as to prevent the formation of irregularities on the edge of the molded lens; and heating the mold in hot water to a temperature of between 80° C. and 100° C. until the silicone resin material within the mold is cured.

4,285,891

# METHOD OF REMOVING FISSION GASES FROM IRRADIATED FUEL

Lane A. Bray, Richland; Allyn L. Boldt, Kennewick, and Harold H. Van Tuyl, Richland, all of Wash., assignors to Exxon Nuclear, Inc., Bellevue, Wash.

Filed Dec. 31, 1979, Ser. No. 108,376  
Int. Cl.<sup>3</sup> G21C 21/00

U.S. Cl. 264—0.5

11 Claims

1. A method for removing volatile fission products from irradiated fuel which comprises (a) passing hydrogen in the presence of an inert gas by said fuel which is heated to a temperature of at least about 1000° C. for a sufficient time to remove a significant portion of said fission products and (b) passing an inert gas alone by said fuel while at said elevated temperature.

4,285,892

# PROCESS FOR TAPERING SYNTHETIC FIBERS AT THE END PORTION THEREOF

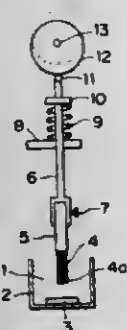
Yasuhiro Betruda, Fujisawa; Yoshio Taguchi, Chibi, and Yasuo Takashashi, Chigasaki, all of Japan, assignors to Shinwa Seisakusho Co., Ltd., Kanagawa, Japan

Filed Feb. 22, 1980, Ser. No. 123,617

Claims priority, application Japan, Mar. 1, 1979, 23619/79  
Int. Cl.<sup>3</sup> B06B 3/00

U.S. Cl. 264—23

21 Claims



1. A process for tapering synthetic fibers at the end portion comprising the steps of:  
inserting the end portions of synthetic fibers at a predetermined velocity into an etching liquid capable of etching or dissolving the fibers while effecting supersonic vibration to the etching liquid,  
withdrawing the synthetic fibers at a predetermined velocity from the etching liquid while effecting supersonic vibration thereto, the insertion and withdrawal being alternately repeated to taper the fibers at said end portions, and then  
immersing the thus tapered synthetic fibers in a washing liquid while effecting supersonic vibration thereto to wash said tapered fibers.

# METHOD AND DEVICE FOR FORMING PLASTIC CELLULAR MATERIAL IN A MOLD FROM A FOAMABLE LIQUID REACTION MIXTURE

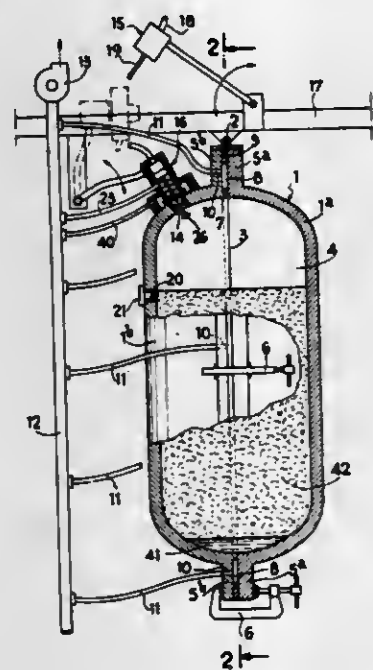
Andre Contastin, Severac-le-Chateau, France, assignor to Industries et Techniques d'Ameublement, Severac-le-Chateau, France

Filed Jun. 4, 1979, Ser. No. 44,490

Claims priority, application France, Jun. 13, 1978, 78 18325  
Int. Cl.<sup>3</sup> B29D 27/04

U.S. Cl. 264—54

15 Claims



1. Method for producing an object having a cellular structure in a mold, comprising two pivotally connected half-shells having a common joint plane and each having a shape corresponding to a part of the outer shape of the object to be produced, one of said half-shells having at least an aperture therein, said method comprising pivotally joining said half-shells together along said joint plane so as to form a closed mold cavity, pouring through said aperture a liquid mixture which is the precursor of a polymer material to be foamed to produce the finished object, said mixture being free from any blowing agent acting by evaporation, thereafter momentarily obturating said aperture, subsequently applying a vacuum through said aperture for establishing and maintaining a subatmospheric pressure in said mold cavity so as to allow the expansion of said mixture, said vacuum being maintained from the time of obturation until the foamed mixture is polymerized, releasing the vacuum from the mold and stripping the object from the mold.

4,285,894

# MN-ZN SINGLE CRYSTALLINE FERRITE HEAD AND A METHOD OF MAKING THE SAME

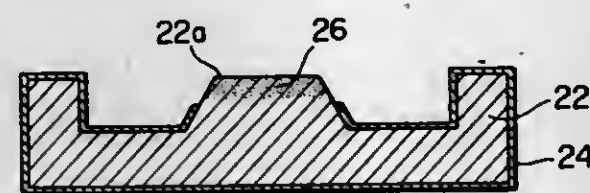
Hisashi Watanabe, Yokohama; Yoshiteru Urino, Tokyo, and Shinichi Aotsu, Urawa, all of Japan, assignors to Akai Electric Company Limited, Tokyo, Japan

Filed Mar. 8, 1979, Ser. No. 18,768

Claims priority, application Japan, Mar. 13, 1978, 53-28873  
Int. Cl.<sup>3</sup> C04B 35/36

U.S. Cl. 264—61

5 Claims



1. A method of making a magnetic head for magnetic tape

recording and reproducing apparatus, said magnetic head including at least one head core, at least a part of which, where an air gap is formed, is made of Sn substituted Mn-Zn single crystalline ferrites, which comprises:

disposing a coating over whole surfaces of an Sn substituted Mn-Zn single crystalline ferrite head core block, from which said part is made, except for a region where said air gap is to be formed, said coating masking said whole surfaces so as to prevent the formation of SnO<sub>2</sub> when the head core block is treated at 1,100° C.-1,200° C. under an atmosphere with an oxygen density of less than 3%; and treating said ferrite head core block at 1,100° C.-1,200° C. under an atmosphere with an oxygen density of less than 3% so that SnO<sub>2</sub> is precipitated substantially only at said region where said air gap is to be formed.

4,285,895

# METHOD OF DENSIFYING A REACTION BONDED SILICON NITRIDE ARTICLE

John A. Mangels, Flat Rock, and Gerald J. Tenenhouse, Oak Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 23,426, Mar. 23, 1979, abandoned. This application Sep. 24, 1979, Ser. No. 78,129

Int. Cl.<sup>3</sup> C04B 35/58

U.S. Cl. 264—65

11 Claims

1. A method of densifying a reaction bonded silicon nitride article which comprises:  
packing the reaction bonded silicon nitride article in a packing mixture consisting of silicon nitride powder and a densification aid;  
subjecting the reaction bonded silicon nitride article and packing mixture to a nitrogen gas pressure sufficient to prohibit a significant volatilization of silicon nitride at a sintering temperature; and  
heating the reaction bonded silicon nitride article, packing mixture and nitrogen gas present to a sintering temperature above 1700° C. for a time sufficient to permit migration of said densification aid into the reaction bonded silicon nitride article and a sintering of that article whereby the strength of the reaction bonded silicon nitride article is increased.

4,285,896

# ISOSTATIC MOLDING PROCESS AND SEAL

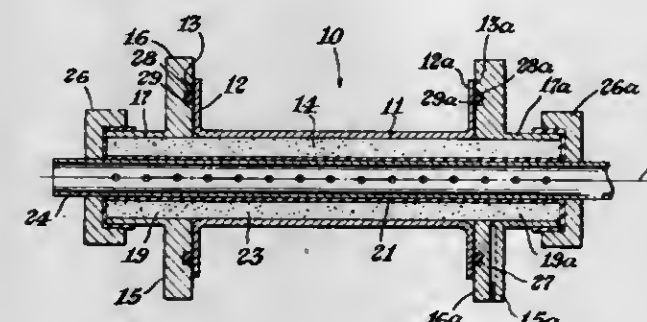
Arnold B. Miller, Pinconning, and Herman F. Casper, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 6, 1977, Ser. No. 803,923

Int. Cl.<sup>3</sup> B29C 3/00

U.S. Cl. 264—127

4 Claims



1. In a process for the isostatic forming of plastic liners within hollow bodies having generally flat-faced flanges disposed about openings thereof, the method comprising providing a flanged hollow body to be lined, the body having at least one generally flat-faced flange, the flange having a generally radially extending planar surface and a centrally disposed opening therein, disposing within the body a powder to be compacted to form a lining, disposing a flexible membrane within the body and the powder to be compacted, the flexible

membrane maintaining the powder in a desired position, supporting and sealing the membrane adjacent the flanged opening of the article with a flanged end cap, hydraulically sealing the flexible member to said end cap and subsequently immersing the body in a hydraulic liquid and applying pressure thereto sufficient to compact the powder to a desired degree, subsequently removing the end cap and flexible member to provide a compacted-powder lined body, the improvement which comprises providing an end cap having an annular recess formed in a mating surface thereof, the recess having a radial cross-sectional configuration which is generally rectangular, disposing a generally resilient liquid impervious annular sealing member within said groove, the annular sealing member having a radial, generally rectangular configuration such that when the sealing member is disposed within the groove, the sealing member projects therefrom and when the flanges of the end cap and article to be lined are forced into contact, the sealing ring is deformed to fill the groove and any adjacent irregularities in the flange of the body to be lined.

4,285,897

# WATER-BASED ANTI-BLEMISH PAINT

Moneeb Zakaria, LaGrange, and Manuel Slovinsky, Woodridge, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Division of Ser. No. 2,484, Jan. 11, 1979, Pat. No. 4,253,994, which is a continuation-in-part of Ser. No. 894,779, Apr. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 732,260, Oct. 14, 1976, abandoned. This application Jan. 2, 1980, Ser. No. 155,904

Int. Cl.<sup>3</sup> B29H 21/04, 5/02; C08L 9/10

U.S. Cl. 264—130

3 Claims

1. A method for preventing blemishes formed during the manufacture of tires which comprises coating the outside of tires prior to shaping and curing with a thin coating of an anti-blemish paint composition which comprises:

Ingredients	% By Weight
Water	65-85
Surfactant	0.1-2
Carbon black	10-25
Particulate lubricant	1-8
Aqueous latex containing 15-80% by weight of particles selected from the group consisting of natural rubber, synthetic rubber and mixtures thereof	2-10

4,285,898

# PROCESS FOR THE MANUFACTURE OF MONOFILAMENTS

Hans-Joachim Hoppe, Obernburg, and Karl Ostertag, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzoona Incorporated, Asheville, N.C.

Filed Sep. 21, 1979, Ser. No. 77,839

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2840988

Int. Cl.<sup>3</sup> D01D 5/00

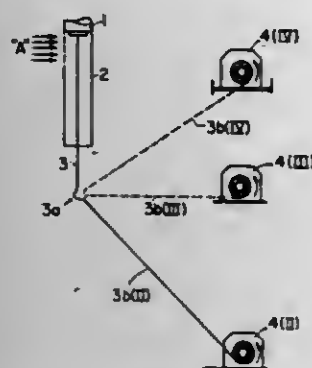
U.S. Cl. 264—176 F

8 Claims

1. A process for manufacturing a monofilament yarn selected from the group of synthetic polymers consisting of polyamides, polyesters and polyolefins, comprising the steps of melt spinning a polymer substantially vertically downward into a cooling gaseous atmosphere to form a monofilament,



inducing a natural yarn deflection into the downward path of the monofilament and thereafter drawing the monofilament to



a winding device laterally displaced from the spinning point at a speed of at least 2,750 meters per minute.

4,285,899

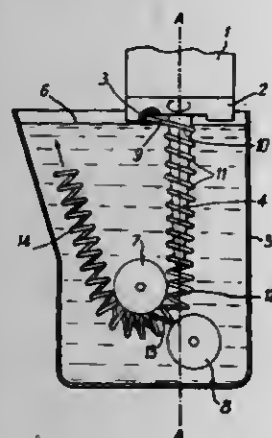
**METHOD AND APPARATUS FOR MAKING HELICAL PLASTIC MEMBERS, AND THE MEMBERS PRODUCED**  
Michel Pavy, Wattignies, and Rene Casaert, Lille, both of France, assignors to Nortene, Lille, France

Filed May 9, 1979, Ser. No. 37,934

Claims priority, application France, May 17, 1978, 78 14586  
Int. Cl.<sup>3</sup> B29C 17/02

U.S. Cl. 264—180

10 Claims



1. A method of making a plastic material helical member comprising the steps of, continuously extruding into a liquid, hot plastic material generally horizontally from an extrusion orifice located near the surface of the liquid, while simultaneously rotating the extrusion orifice relative to the liquid about a generally vertical axis spaced from the extrusion orifice to form a helical plastic material shape about said axis, causing said helical shape to stabilize in the liquid, and removing the so formed helical member from the liquid.

9. Apparatus for forming a helical plastic member comprising an extruder having an extrusion orifice rotatable about a generally vertical axis spaced from the orifice while plastic material is extruded through the orifice; means to rotate said orifice; a tank containing liquid below the extrusion orifice; said extrusion orifice comprising means for extruding the plastic material generally horizontally about said axis and into said liquid while said orifice is rotating, to form a helical plastic shape, and means in said tank for extracting the helical shaped member.

4,285,900

**PROCESS FOR MANUFACTURING MODACRYLIC FIBERS HAVING HIGH LUSTER, THERMAL STABILITY AND FLAME RESISTANCE**

Giorgio Cazzaro, Saronno; Antonio Cavallaro, Cesano Maderno; Antonio Salan, Saronno, and Giancarlo Matera, Monza, all of Italy, assignors to Seta Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Feb. 27, 1980, Ser. No. 125,236

Claims priority, application Italy, Mar. 9, 1979, 20850 A/79  
Int. Cl.<sup>3</sup> D01F 6/18

U.S. Cl. 264—182

6 Claims

1. A method of preparing flame-resisting modacrylic fibers containing pentavalent antimony oxide, characterized in that the antimony oxide is suspended in a mixture of water and an organic solvent selected from dimethylformamide and dimethylacetamide wherein the percent by weight of water in the suspension ranges from 20% to 40%, and that the suspension is then mixed with the viscose solution of modacrylic polymeric material to be spun.

4,285,901

**METHOD OF MAKING AN INSULATED METAL MOLD**  
Akira Yotsutsuji, 462-37, 6-chome, Isokabe, Kashiba-cho, Kitakatsuragi-gun, Nara-ken; Seiichi Ueda, 20-2, Daianji, Tawaramoto-cho, Shiki-gun, Nara-ken, and Hiroyuki Iwami, 29-20, Nagisahigashi-machi, Hirakata-shi, Osaka-fu, all of Japan

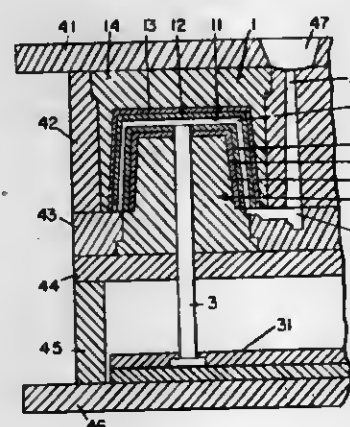
Division of Ser. No. 922,310, Jul. 6, 1978, Pat. No. 4,225,109.

This application Jan. 27, 1979, Ser. No. 52,824

Int. Cl.<sup>3</sup> B29C 1/02

U.S. Cl. 264—225

17 Claims



1. A method of making an insulated metal mold comprising a molding surface defining the cavity of a mold for high pressure injection molding thermoplastic resin and having a metal layer providing the molding surface, a metal backing member, and a layer of heat-insulating means sandwiched between the metal layer and the backing member, wherein the method comprising the steps of:

- (1) preparing a master mold conforming to the shape of a specified portion of the article to be molded,
- (2) forming a thin metal layer over the master mold in conformity with the shape of the master mold; said metal layer having a thickness of approximately 0.001 mm to 3 mm so that the injected molten thermoplastic resin rapidly heats the metal layer to a temperature sufficient to prevent a solid layer from being formed by the injected molten thermoplastic resin on the cavity surface,
- (3) forming a layer of heat-insulating means over the thin metal layer; said heat-insulating means comprising a thermosetting resin composition and controlling heat transmission from the metal layer to the backing member so that when the metal layer is heated to a selected temperature, the selected temperature is first maintained for a sufficient period of time to prevent a solid layer from being formed on the cavity surface by the injected molten resin during injection of the molten thermoplastic resin

into the cavity, after which the metal layer cools to a temperature sufficiently to solidify the molten thermoplastic resin within a predetermined time after filling the mold cavity therewith, and said heat-insulating means also comprising at least one member selected from the group consisting of inorganic filler, metal powder filler, and fibrous filler; the inorganic filler consisting of a powder of at least one material selected from the group consisting of glass, silica, calcium carbonate, talc, clay and alumina, the metal powder filler consisting of a powder of at least one metal selected from the group consisting of aluminum, aluminum alloy, copper and copper alloy; and the fibrous filler consisting of at least one material selected from the group consisting of glass fiber, carbon fiber, asbestos fiber and whisker,

(4) forming a backing member over the heat-insulating layer, and

(5) removing the master mold from the thin metal layer after forming the backing member.

4,285,902

**METHOD OF MOLDING A RE-ENFORCED ARTICLE**  
Joseph Braverman, Jerusalem, Israel, assignor to Rotoplas Ltd., Israel

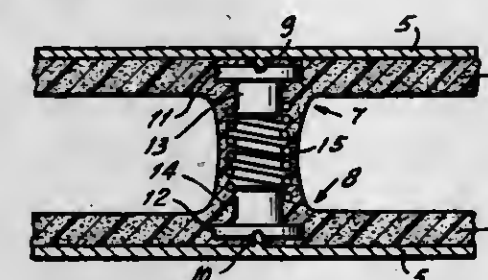
Filed Nov. 30, 1978, Ser. No. 965,142

Claims priority, application Israel, Dec. 5, 1977, 53548

Int. Cl.<sup>3</sup> B29D 3/02; B28C 5/04

U.S. Cl. 264—229

7 Claims



1. A method of molding an article having a pair of spaced walls in a mold formed by a pair of spaced mold walls, wherein the molded article is strengthened and is able to compensate for shrinkage deformation, comprising the steps:

- (a) releasably attaching a first member to one mold wall;
- (b) releasably attaching a second member to the other mold wall in alignment with but spaced from the first member;
- (c) connecting the two spaced members together by yielding means including a coil spring;
- (d) while the first and second members are releasably attached to their respective mold walls and the yielding means is connecting them, introducing molding material between the two mold walls so as to form the article with the two members and the yielding means embedded in the molding material,
- (e) then releasing the two members from their respective releasable attachments to the mold walls; whereby, as the molded article solidifies, it is freed from the mold walls to deform as it shrinks and the yielding means yields to accommodate subsequent shrinkage deformation of the article while the embedded inserts and yielding means help strengthen the molded article.

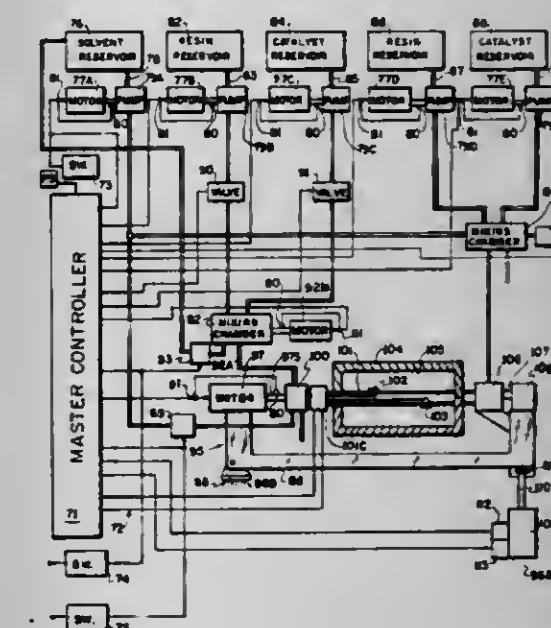
4,285,903

MOLDING SYSTEM

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840  
Continuation-in-part of Ser. No. 828,747, Aug. 29, 1977, abandoned, which is a continuation of Ser. No. 645,628, Dec. 31, 1975, abandoned, which is a continuation-in-part of Ser. No. 547,621, Feb. 6, 1975, Pat. No. 4,043,721, which is a continuation of Ser. No. 300,248, Jan. 24, 1972, Pat. No. 3,875,275, which is a continuation of Ser. No. 744,048, Jul. 11, 1968, abandoned. This application Jan. 3, 1980, Ser. No. 109,188  
Int. Cl.<sup>3</sup> B29C 5/04

U.S. Cl. 264—310

14 Claims



1. A method of molding large articles of manufacture comprising:

supporting a closed cavity rotational casting mold for simultaneous movement about a plurality of axes, providing a plurality of streams of fluent molding material from respective reservoirs thereof located at fixed locations next to said mold, power driving said closed mold to cause it to execute controlled simultaneous movement about said plurality of axes,

simultaneously flowing said plurality of streams of fluent molding material to respective different portions of the cavity of said mold while the mold is in multi-axis motion so as to distribute respective materials from said separate streams about different portions of said mold and to cause such materials to unite and to predeterminedly occupy said mold cavity as an integral body of molding material, solidifying the materials disposed in said different portions of said mold cavity to form a unitary article of the material flowed to said different portions of the cavity of said mold while the mold is in multi-axis movement.

10. A method of molding comprising: simultaneously generating first and second streams of different molding materials, controlling the flow of said molding materials through separate passageways to respective inlets to the cavity of a mold to cause each molding material to occupy a different portion of the mold cavity and when predetermined quantities of each molding material have been delivered to respective portions of the mold through its inlet, terminating the flow of molding material through its passageway and causing the molding materials in the mold to solidify and to form a unitary article composed of respective portions formed of said different molding materials flows in said first and second streams.



4,285,904

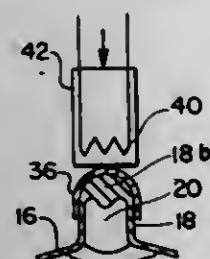
METHOD AND APPARATUS FOR SEALING  
CENTRIFUGE TUBESKeazo Ishimaru, San Jose, and Thomas D. Sharples, Atherton,  
both of Calif., assignors to Beckman Instruments, Inc., Fullerton,  
Calif.

Filed Jan. 5, 1978, Ser. No. 912,696

Int. Cl.<sup>3</sup> B29C 24/00

U.S. Cl. 264—322

19 Claims



1. A method for closing a filler passage formed in a neck protruding from the opening in the end of a substantially closed centrifuge tube, the neck being formed of a heat fusible material, comprising:

- supporting said centrifuge tube in an upright position with said filler neck protruding upwardly;
- placing a heat conductive cap over the open end portion of said neck, said cap having an inner cavity closely confining the outer surface of the end portion of said neck therein;
- applying heat to said heat conductive cap sufficient to melt the confined end portion of said neck;
- applying pressure to said cap moving said cap in a direction along the longitudinal axis of said neck thereby causing progressive portions of said neck to melt and fold inwardly into the filler passage therein;
- removing said heat and pressure from said cap so that said cap cools and the melted material in said filler passage of said neck solidifies therein completely closing said filler passage; and
- removing said cap from said neck.

11. Apparatus for closing a passage formed in a filler neck protruding from the opening in the end of a substantially closed centrifuge tube after said tube has been filled with sample, the neck being formed of a heat fusible material, comprising:

- means adapted to engage the outer surface of said centrifuge tube for supporting said centrifuge tube in an upright position with said filler neck protruding upwardly;
- a cap formed of a high heat conductivity material having a cavity adapted to closely fit the circumference of said filler neck, said cap adapted to be positioned over the end portion of said filler neck to confine said end portion of said neck within said cavity;
- means for applying heat to said cap member for raising the temperature thereof to the fusion temperature of said material forming said neck;
- pressure applying means movable upwardly and downwardly in a direction substantially along the axis of said filler passage, said pressure applying means adapted to apply pressure downwardly against said cap so that, when said cap is heated to the fusion temperature of said neck, progressive portions of said neck melt and said cap is forced downwardly so that the sidewalls of said filler neck fold inwardly into said filler passage and form a molten mass closing said filler passage;
- clamping means adapted to grasp said neck at some predetermined position above the upper end of said centrifuge tube to maintain said neck in a substantially upright position as pressure and heat are applied to said cap; and
- means for retracting said pressure applying means and interrupting said heat applying means thereby permitting said cap to cool and said molten mass to solidify within the filler passage of said neck of said centrifuge tube.

4,285,905

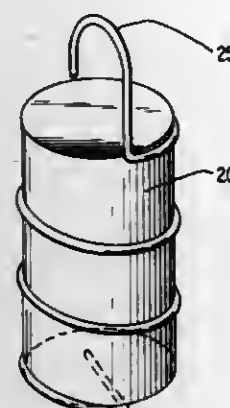
METHOD AND ARTICLE FOR DISPERSING A  
VOLATILIZABLE COMPOUND IN AN ENVIRONMENTRichard Felt, Avant, Inc., 633 Skokie Blvd., Northbrook, Ill.  
60062

Filed Oct. 10, 1980, Ser. No. 195,823

Int. Cl.<sup>3</sup> A61L 9/01, 9/02, 9/04

U.S. Cl. 422—4

38 Claims



1. A solid unitary article for dispersing a volatilizable compound consisting essentially of
- from about 25 to 30 wt. % initially particulate calcium sulfate having a loose bulk density of from about 0.85 to 0.95 gm/cm<sup>3</sup>;
  - about 25 to 30 wt. % initially particulate calcium sulfate having a loose bulk density of from about 0.70 to 0.75 gm/cm<sup>3</sup>;
  - about 2 to 4 wt. % initially particulate hydrous calcium sulfate having a loose bulk density of from about 0.75 to 0.85 gm/cm<sup>3</sup>;
  - about 0.5 to 1 wt. % emulsifier;
  - about 6 to 7 wt. % volatilizable compound; and
  - about 30 to 35 wt. % water.

4,285,906

## ROTATABLE DETECTOR

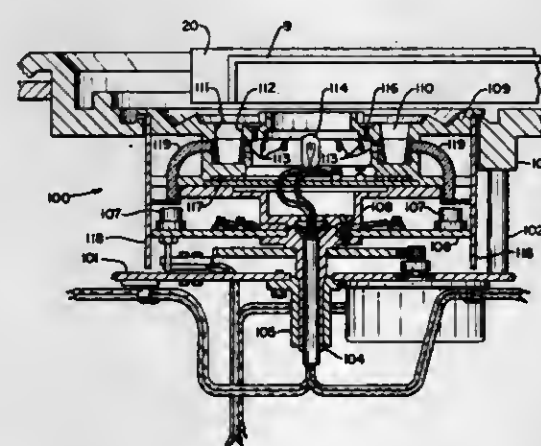
Robert J. Meltzer, Long Valley, and Donald H. Hansen, Convent Station, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 11, 1979, Ser. No. 38,040

Int. Cl.<sup>3</sup> G01N 21/82, 21/27, 21/03, 33/06

U.S. Cl. 422—64

3 Claims



1. A rotatable detection unit in an instrument for supporting a cuvette tray having a plurality of samples to be evaluated by the instrument, which comprises a horizontal mount carried by said instrument, a rotatable, hollow shaft extending vertically through said mount, said hollow shaft having an axis, a circular printed circuit board fixed to one end of said shaft and rotatable therewith, a plurality of light detectors spaced equidistant adjacent the periphery of said circuit board, a hollow, metal, receptacle means having an annular groove adapted to receive the cuvette portion of the tray, said annular groove being concentric to said axis, a spacer connecting said receptacle to

said circuit board for rotation therewith, a light source positioned on said axis in a plane passing through said annular groove, a plurality of light passages extending radially in said plane through said receptacle to said annular groove for illuminating a respective plurality of samples, light attenuating means for providing a substantially equal amount of light exiting each of said passages, a plurality of light pipes, each of said plurality of light pipes being adapted to conduct light received from a respective sample to a respective one of said plurality of light detectors and drive means to selectively rotate said shaft.

4,285,907

PIPETTE SYSTEM FOR THE VOLUMETRIC  
EXTRACTION AND LINEAR DEPOSITION OF A  
SUSPENDED MATERIAL

Bernhard Hugemann, Frankfurt am Main, and Guenter von Sengbusch, Koenigstein, both of Fed. Rep. of Germany, assignors to Battelle Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 24, 1979, Ser. No. 69,332

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1978, 2837319

Int. Cl.<sup>3</sup> B01L 3/02

U.S. Cl. 422—100

10 Claims



1. Pipette system for the volumetric extraction and linear deposition of a suspended material, in particular cells or particles, said pipette system consisting essentially of a capillary containing a piston inserted therein in such a way as to prevent the passage of liquids, characterized in that a projection is mounted on or is part of the rim forming the orifice of said capillary, said projection only extending partway around the circumference of said rim, said projection not extending past the rim in any manner into the region of said orifice, said projection having a groove extending along the entire length of said projection and reaching right to the tip of said projection, said groove in said projection not extending past the rim into the region of said orifice, the width of said projection determining the width of the deposition regardless of the diameter of said capillary, even when the deposition of the suspension onto a slide or the like does not involve contact with said slide, the inner diameter of said rim of said orifice being equal to the inner diameter of said orifice throughout the rest of the entire capillary region into which the suspended material is drawn, and the end surface of said piston is flat and perpendicular to the axis of movement of said piston.

4,285,908

## CATALYST REGENERATION APPARATUS

Gregory J. Thompson, Waukegan, and Anthony G. Vickers, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 908,301, May 22, 1978, Pat. No. 4,197,189. This application Dec. 7, 1979, Ser. No. 101,295

Int. Cl.<sup>3</sup> B01J 8/32, 8/44; F27B 15/08, 15/10

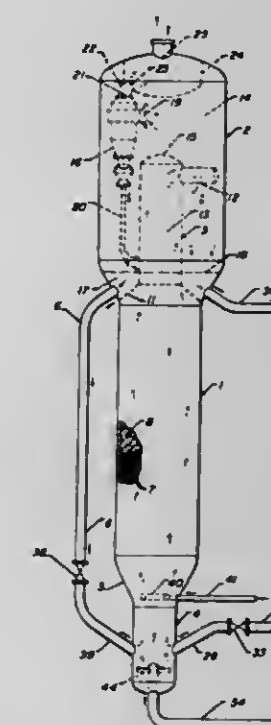
U.S. Cl. 422—143

1 Claim

1. A regeneration apparatus for regenerating spent catalyst with a regeneration gas supplied to said apparatus via inlets

consisting essentially of a primary and secondary fluidizing gas inlet which comprises a combination of:

- (a) a vertical mixer zone having at the lower portion thereof a spent catalyst inlet, a regenerated catalyst inlet and a secondary fluidizing gas inlet for passage of a minor portion of said fluidizing gas, and having at the upper portion thereof an outlet for passage of a mixture of spent and regenerated catalyst;
- (b) a relatively dense-phase fluidized bed catalyst chamber having at least twice the diameter of said mixer zone and having at the bottom thereof an inlet means for receiving a mixture of spent and regenerated catalyst, and having a regenerated catalyst and spent regeneration gas outlet means at the top portion of said chamber for removal of regenerated catalyst and spent regeneration gas in admixture from said chamber;
- (c) a frusto-conical transfer section possessing a primary regeneration gas inlet and a relatively dense-phase fluidized bed in open communication with said mixer zone and said chamber discharging upwardly from said mixer zone



and upwardly into said chamber, said frusto-conical transfer section having the smallest horizontal cross section perimeter adjacent to said mixer zone outlet and wherein said transfer section possesses multiple perforations at the lowermost portion of the same for passage of a major portion of said regeneration gas, thereby constituting said primary gas inlet, located above said spent catalyst, said regenerated catalyst and said fluidizing gas inlets of said mixer zone;

- (d) a regenerated catalyst receiving zone in communication with said chamber outlet means, said receiving zone containing a spent-regeneration-gas outlet means for the withdrawal of spent regeneration gas from said regeneration apparatus, an upper regenerated-catalyst outlet means for the withdrawal from said regeneration apparatus of a portion of regenerated catalyst and a regenerated-catalyst recycle conduit connected to said mixer zone by means of said regenerated catalyst inlet for the passage of a portion of said regenerated catalyst from said receiving zone through said conduit and said inlet to said mixer zone.



4,285,909

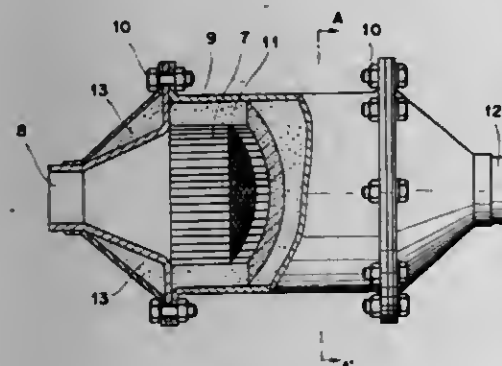
## CATALYST ASSEMBLY FOR CLEANING AN EXHAUST GAS

Shinichiro Mizusawa, Okazaki; Hideaki Akamatsu, Toyota; Fumiyoshi Noda, Toyota, and Yuji Watanabe, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 834,815, Sep. 19, 1977, abandoned, which is a continuation of Ser. No. 360,039, May 14, 1973, abandoned. This application Jun. 18, 1980, Ser. No. 160,630 Claims priority, application Japan, May 13, 1972, 47-47518 Int. Cl.<sup>3</sup> B01J 8/02; F01N 3/28, 7/14

U.S. Cl. 422-179

8 Claims



1. An assembly comprising in combination
  - (a) an outer casing having gas inlet and gas outlet sections,
  - (b) a honeycomb type catalyst unit mounted within said outer casing, the outer walls of said catalyst unit being located a spaced distance inwardly from the interior walls of said outer casing so as to form an annular space therebetween, said catalyst unit having passageways extending therethrough to accommodate the flow of engine exhaust gas into one end and out of the other,
  - (c) a cured cellular ceramic mass completely filling said annular space between said casing and said catalyst unit, said cellular ceramic mass exerting both an outward force toward the interior walls of said casing and an inward force against the exterior walls of said catalyst unit by virtue of the fact that an uncured cellular ceramic mass was introduced into said annular space and then expanded in situ and cured in situ after introduction into said annular space.

4,285,910

## CHEMICAL REACTOR, FLOW DISTRIBUTOR, SYSTEM AND METHOD

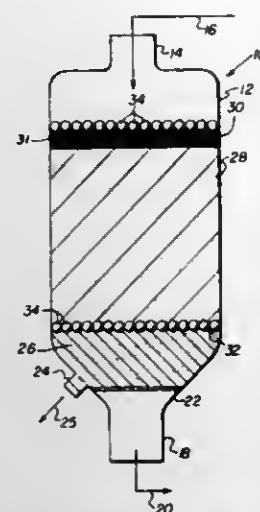
Alvin B. Kennedy, Jr., P.O. Box 282, Angleton, Tex. 77515  
Filed Oct. 22, 1979, Ser. No. 87,014  
Int. Cl.<sup>3</sup> B01J 8/02, 19/02, 19/24

U.S. Cl. 422-219

17 Claims

1. A system for inhibiting plugging of fluid reactants flowing through a chemical reactor, comprising:
  - (a) a bed of catalytic material mounted in said reactor for affecting the rate of chemical change in the incoming fluid reactants;
  - (b) a bed of chemically inert material mounted in said reactor for supporting said bed of catalytic material;
  - (c) a layer of chemically inert material covering said bed of catalytic material;
  - (d) a plurality of chemically inert flow distributors embedded in the receiving surface of said layer of chemically inert material; and
  - (e) each of said flow distributors being constructed from objects of substantially chemically inert material intercon-

nected to one another for creating voids and interstices which provide passageways therethrough, the passage-



ways permitting the reactants to pass into the bed of catalytic material beneath its receiving surface.

4,285,911

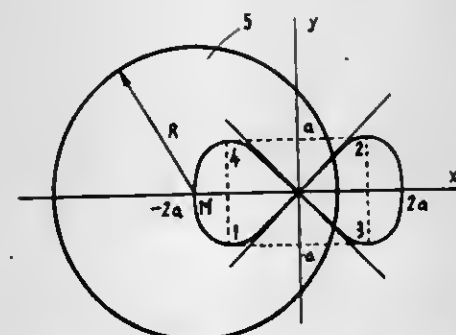
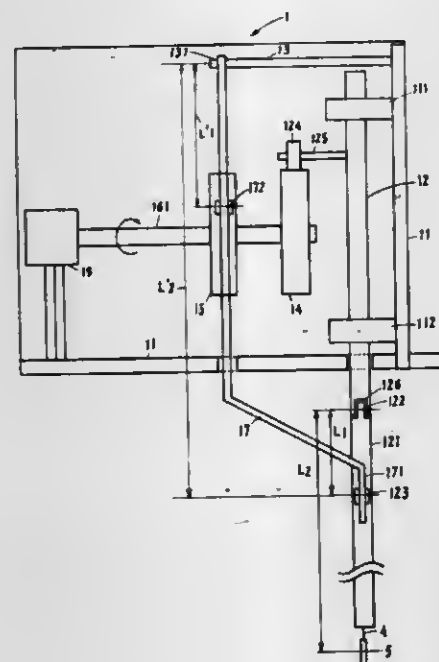
## DEVICE FOR GROWING A CRYSTALLINE LAYER ON A SUBSTRATE

Lucien C. De Brouckere, Blankenberge, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.  
Division of Ser. No. 916,335, Jun. 15, 1978, Pat. No. 4,247,360.  
This application Jun. 16, 1980, Ser. No. 159,535

Claims priority, application Belgium, Jun. 17, 1977, 2/56006  
Int. Cl.<sup>3</sup> C30B 15/30, 35/00

U.S. Cl. 422-249

5 Claims



1. A device for growing a crystalline layer on a substrate from a liquid medium, said substrate being moved with respect to said liquid medium during layer growth such that the direc-

tion of rotation of said substrate with respect to a fixed point is reversed and causing at least one point of said substrate to move in a loop-shaped path, said device comprising:

- a mechanism to impart two substantially rectilinear movements to said substrate to cause said movement thereof including
- a slidably mounted bar to which one of said two rectilinear movements is imparted, said bar having a prolonged part hingedly connected thereto, said prolonged part having the other of said two rectilinear movements imparted thereto.

4,285,912

## RECOVERY OF BISMUTH FROM CHLORIDE PROCESS SOLUTIONS

Charles M. Flynn, Jr., Reno; Thomas G. Carnahan, Sparks, and Roald E. Lindstrom, Reno, all of Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sep. 11, 1980, Ser. No. 186,090

Int. Cl.<sup>3</sup> C01G 29/00

U.S. Cl. 423-43

8 Claims

1. A method for the separation of bismuth from a complex chloride solution having a pH of about 0.5 to 2.5, and obtained by leaching with chloride reagents ores containing bismuth and high concentrations of other metals, said solution comprising over 20 g/l copper, over 20 g/l iron and about 0.3 to 0.5 g/l bismuth, said method comprising adding to said complex chloride solution at least a stoichiometric amount of a precipitating agent selected from the group consisting of hexamminecobalt (III) salts and hexamminechromium (III) salts soluble in said solution to precipitate said bismuth as a hexamminecobalt (III) bismuth salt or a hexamminechromium (III) bismuth salt and separating said precipitate from said solution.

4,285,913

## PROCESS OF MAKING MANGANOUS SULPHATE SOLUTION WITH LOW LEVEL IMPURITY OF POTASSIUM FOR MANUFACTURE OF ELECTROLYTIC MANGANESE DIOXIDE

Vasantlal B. Soni, Bombay, and Krishnasami Swaminathan, Calcutta, both of India, assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 25, 1980, Ser. No. 143,632

Int. Cl.<sup>3</sup> C01G 45/10

U.S. Cl. 423-50

6 Claims

1. A process for making a manganese sulphate solution with low level impurity of potassium which can be used to make electrolytic manganese dioxide for battery use, from manganese ores containing high potassium impurity which comprises adding reduced manganese ore (MnO) to spent electrolyte containing Mn, H<sub>2</sub>SO<sub>4</sub> and water soluble ferric ions till a pH of 1 to 2 is achieved, digesting the mixture at a temperature of at least 60° C. to 90° C. for a period of 1 to 4 hours, and then adding additional reduced manganese ore (MnO) till a pH of 4 to 6 is reached followed by separating the MnSO<sub>4</sub> solution obtained from the precipitated material.

4,285,914

## RECOVERY OF LITHIUM FROM LOW-GRADE ORES

Charles F. Davidson, Layton, Utah, assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 30, 1980, Ser. No. 116,697

Int. Cl.<sup>3</sup> C01D 3/08

U.S. Cl. 423-179.5

5 Claims

1. A process for recovering lithium from clays comprising
  - (1) admixing the clay with CaO or CaCO<sub>3</sub> and
  - (2) reacting the mixture with a chlorinating agent comprising a gaseous H<sub>2</sub>O-HCl mixture at a temperature of about 450° to 950° C. for a time sufficient to convert a major amount of the lithium in the

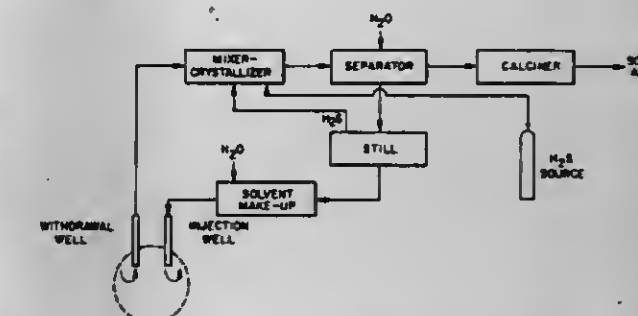
clay to water-soluble lithium chloride, and subsequently water leaching said lithium chloride from the clay.

4,285,915

## RECOVERY OF ALKALI VALUES FROM TRONA ORE

Jerome Saldick, Princeton, and Bernard Cohen, Trenton, both of N.J., assignors to Intermountain Research and Development Corp., Green River, Wyo.  
Filed Apr. 23, 1980, Ser. No. 142,918  
Int. Cl.<sup>3</sup> C22B 26/10; C01D 7/00; F21B 43/28  
U.S. Cl. 423-206 T

19 Claims



1. A method for recovering alkali values from trona which comprises

- (i) contacting the trona with an aqueous solvent containing from about 3 to about 8% by weight sodium sulfide;
- (ii) maintaining the solvent in contact with the trona for a period sufficient to solubilize at least a portion of the trona as sodium carbonate whereby sodium sulfide is converted into sodium hydrosulfide;
- (iii) separating at least a portion of the resulting solution containing sodium carbonate and sodium hydrosulfide from the trona; and
- (iv) recovering alkali values from the separated solution.

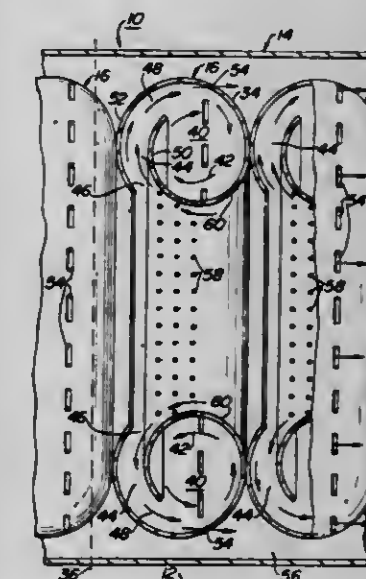
4,285,916

## EXHAUST GAS POLLUTION CONTROL SYSTEM

C. Robert Baisden, 11127 Willow Bottom Dr., Columbia, Md. 21044  
Division of Ser. No. 937,787, Aug. 29, 1978. This application  
Apr. 28, 1980, Ser. No. 144,022  
Int. Cl.<sup>3</sup> F01N 3/10

U.S. Cl. 423-212

7 Claims



1. An exhaust gas pollution control system for reducing exhaust gas audio levels, particulate and chemical waste materials emitted to the atmosphere subsequent to exhaust gases passing from a combustion chamber, comprising:
  - (a) a housing element extending in a longitudinal direction having an inlet section for entrance of said gases passing from said combustion chamber;
  - (b) at least one exhaust gas purification separation element



inserted within said housing element, said exhaust gas purification element forming a generally donut-shaped contour having a central passageway and being of open contour for introduction of said exhaust gases internal said exhaust gas purification element adjacent said central passageway, said exhaust gas purification element defining a predetermined contour wall member having (1) particulate ejection openings formed through said predetermined contour wall member, said particulate ejection openings being positionally located at a substantially maximum radial distance when taken with respect to said central passageway for introduction of said particulate material into said housing element, and, (2) gaseous ejection openings formed through said predetermined contour wall member being positionally located substantially adjacent said central passageway for reintroduction of said exhaust gases into said central passageway; and,

(c) means for increasing the velocity of said exhaust gases from said central passageway upon introduction of said exhaust gases internal said exhaust gas purification element, said predetermined contour wall member being formed of a catalytic conversion material composition.

5. A method for reducing exhaust gas audio levels, particulate and chemical waste materials emitted to the atmosphere subsequent to exhaust gases passing from a combustion chamber, including the steps of:

- introducing said exhaust gases into a central passageway of an exhaust gas purification element having an open contour donut shape;
- directing a portion of said exhaust gases internal said exhaust gas purification element from said central passageway;
- catalytically converting said exhaust gases within said exhaust gas purification element;
- circumferentially transporting said exhaust gases within said exhaust gas purification element;
- increasing the velocity of said portion of said exhaust gases directed into said exhaust gas purification element when taken with respect to a velocity of said exhaust gas within said central passageway;
- ejecting particulate matter through particulate ejection openings formed through a wall of said gas purification element, said particulate ejection openings being located at a substantially maximum radial distance when taken with respect to said central passageway; and,
- reintroducing a portion of said exhaust gases within said exhaust gas purification element to said central passageway through gaseous ejection openings formed through said wall of said gas purification element, said gaseous ejection openings being located substantially adjacent said central passageway.

4,285,917

#### METHOD FOR REMOVAL OF HYDROGEN SULFIDE FROM SOUR GAS STREAMS

Stuart R. Knight, San Diego, Calif., assignor to Bayside Holding Corp., Paramount, Calif.

Filed Jul. 31, 1980, Ser. No. 174,193

Int. Cl.<sup>3</sup> B01D 53/34; F25J 3/00; F01K 25/14

U.S. Cl. 423-224

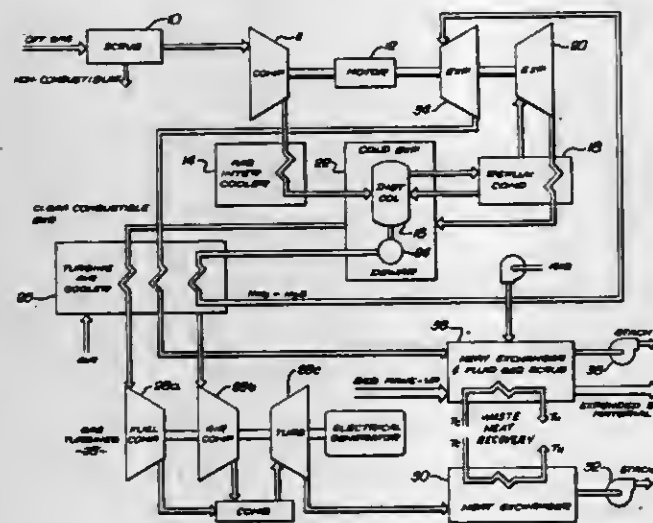
10 Claims

1. A method for removal of hydrogen sulfide from a sour gas stream containing hydrogen sulfide, combustible and non-combustible gaseous components, the method comprising the steps of:

- scrubbing a majority of said non-combustible gaseous components from said sour gas stream;
- compressing the remainder of said stream derived from step (a) to a pressure within a range of from about 230 psia to about 250 psia;
- effecting a separation by cryogenic liquifaction of hydrogen sulfide and gaseous components of similar critical temperature from said stream derived from step (b) and storing the separated hydrogen sulfide and gaseous com-

ponents of similar critical temperature in an insulated storage vessel;

- expanding the unstored remainder of said stream derived from step (c) in an adiabatic manner to substantially recover available work of compression from said stream;
- combining the expanded stream derived from step (d) with air and effecting combustion thereon in a combustion unit whereby resultant energy is utilized to drive a gas turbine engine;



- flowing the stored hydrogen sulfide and gaseous components of similar critical temperature derived from step (c) through an expander to substantially recover available work of compression; and
- combining the expanded hydrogen sulfide and gaseous components of similar critical temperature derived from step (f) with air and effecting combustion thereof in a combustion unit having a fluidized bed scrub, to substantially convert hydrogen sulfide to sulfur dioxide and to scrub said sulfur dioxide from resultant combustion gases.

4,285,918

#### REGENERATIVE CO<sub>2</sub> ABSORBENT

Paul R. Gustafson, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 25, 1980, Ser. No. 124,204

Int. Cl.<sup>3</sup> B01D 53/34

U.S. Cl. 423-228

1 Claim

1. A process for the extraction of CO<sub>2</sub> from the breathing air of a submarine comprising: creating an effective amount of an aqueous solution of 3-amino-1,2-propanediol; contacting the exhausted breathing air with the aqueous solution in order to extract CO<sub>2</sub> from the air; separating the regenerated air from the aqueous solution and the CO<sub>2</sub> gases dissolved therein; separating the dissolved CO<sub>2</sub> gas constituents from the aqueous solution, thereby producing a regenerated aqueous solution; reusing the regenerated aqueous solution for the removal of additional CO<sub>2</sub> by continually repeating the above cycle.

4,285,919

#### METHOD OF PREPARING A METAL-CATION-DEFICIENT CRYSTALLINE BOROSILICATE

Marvin R. Klotz, Batavia, and Stephen R. Ely, West Chicago, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 26, 1978, Ser. No. 973,178

Int. Cl.<sup>3</sup> C01B 35/10

U.S. Cl. 423-277

10 Claims

1. A method for preparing a metal-cationdeficient borosilicate, which method comprises: (1) preparing a mixture con-

taining an oxide of silicon which is substantially free of metal cations, an oxide of boron, ammonium hydroxide, alkylammonium cation or a precursor of an alkylammonium cation, and water; and (2) maintaining said mixture at suitable reaction conditions to effect formation of said borosilicate, said reaction conditions comprising a reaction temperature within the range of about 25° C. (77° F.) to about 300° C. (572° F.), a pressure of at least the vapor pressure of water at the reaction temperature, and a reaction time that is sufficient to effect crystallization.

4,285,920

#### SOLVENT EXTRACTION PROCESS FOR PREPARING PURIFIED PHOSPHORIC ACID AND SODIUM PHOSPHATE SALTS

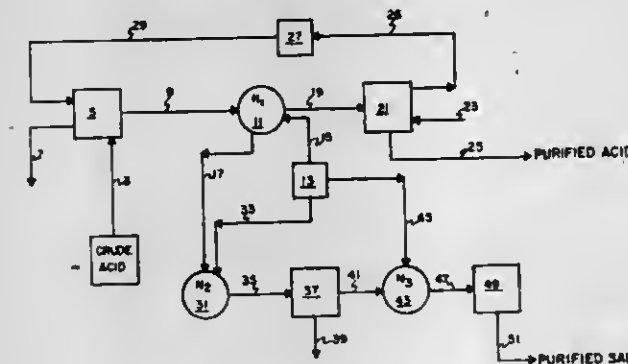
Avtar S. Jassal, Katonah, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 8, 1979, Ser. No. 92,598

Int. Cl.<sup>3</sup> C01B 25/01

U.S. Cl. 423-305

9 Claims



1. A process for concurrently preparing purified phosphoric acid and phosphate salts which comprises the steps of:

- extracting crude phosphoric acid with a nonaqueous solvent to give a phosphoric acid enriched organic solvent phase; (B) contacting the phosphoric acid enriched organic solvent phase of step (A) with aqueous neutralizing agent containing alkaline sodium salts selected from the group consisting of sodium carbonate, sodium bicarbonate, sodium sesquicarbonate, sodium hydroxide, or mixtures thereof; wherein the volume ratio of said aqueous neutralizing agent to said organic solvent is from about 1:50 to about 1:300 and the alkaline sodium salt content of said neutralizing agent is an amount effective to convert from about 15% to about 35% of the phosphoric acid in the solvent phase from step (A) to sodium phosphate salts; said contact resulting in (I) a purified organic solvent phase containing a major portion of the phosphoric acid originally present in the solvent phase from step (A), and (II) a partially neutralized aqueous raffinate phase;
- reextracting the purified solvent phase of step (B) with water or dilute phosphoric acid to release a purified phosphoric acid product;
- neutralizing aqueous raffinate phase of step (B) to a pH in the range of 4 to 6 with an alkaline sodium salt selected from the group consisting of sodium carbonate, sodium bicarbonate, sodium sesquicarbonate, sodium hydroxide, or mixtures thereof in an amount effective to precipitate a major portion of polyvalent cations dissolved in said raffinate;
- separating the precipitate formed in step (D) from the aqueous raffinate to give a precipitate-free aqueous raffinate;
- neutralizing the precipitate-free aqueous raffinate of step (E) to a pH of at least 8 with sodium hydroxide or sodium hydroxide in combination with an alkaline sodium salt selected from the group consisting of sodium carbonate, sodium bicarbonate or sodium sesquicarbonate to form a purified solution of phosphate salts.

4,285,921

#### PROCESS FOR PREPARATION OF WET PHOSPHORIC ACID

Armand Mamourian, Ales, Francois Bousquet, Paris, and Jacques Helgorsky, Freppillon, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 923,793, Jul. 12, 1978, abandoned. This application Dec. 28, 1979, Ser. No. 107,845

Claims priority, application France, Jan. 12, 1978, 78 00771 Int. Cl.<sup>3</sup> C01B 25/16

U.S. Cl. 423-321 S

8 Claims

1. In a process for the preparation of purified phosphoric acid from wet, raw phosphoric acid containing sulphate and fluoride components said sulphate component for sulphuric acid by contacting the raw phosphoric acid with a substantially water immiscible aliphatic C<sub>4</sub>-C<sub>8</sub> alcohol to form an aqueous phase and an organic liquid phase containing extracted phosphoric acid, some sulphate ions and fluorides, separating the organic liquid phase from the aqueous phase, contacting the separated organic phase with an aqueous solution containing calcium ion to precipitate out sulphate ion, as calcium sulphate, containing the remaining organic phase with an aqueous phase whereby phosphoric acid transfers from the organic phase to the aqueous phase with some of the fluoride in the form of HF or SiF<sub>4</sub> thereby to provide an aqueous solution of phosphoric acid substantially free of cationic impurities and partially defluorinated, the improvement in which the aqueous solution is treated with water vapor or hot gas thereby to produce a defluorinated aqueous solution having a ponderal ratio of F/P<sub>2</sub>O<sub>5</sub> of less than 10 ppm.

4,285,922

#### METHOD OF PREPARING CRYSTALLINE ZEOLITE

Costandi A. Audeh, Princeton, N.J., and Ernest W. Valyocik, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 10, 1979, Ser. No. 73,765

Int. Cl.<sup>3</sup> C01B 33/20, 33/28

U.S. Cl. 423-329

10 Claims

1. A method for preparing a synthetic crystalline zeolite material having a constraint index between 1 and 12 and a SiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> ratio greater than 15 which comprises preparing a reaction mixture containing a source of an alkali metal oxide, an oxide of silicon, an oxide of aluminum, RNO, and water, and having a composition, in terms of mole ratios of oxides, falling within the following ranges:

$$\begin{aligned} \text{SiO}_2/\text{Al}_2\text{O}_3 &= 5 \text{ to } \infty \\ \text{H}_2\text{O}/\text{SiO}_2 &= 5 \text{ to } 200 \\ \text{OH}^-/\text{SiO}_2 &= 0 \text{ to } 1.0 \\ \text{M}/\text{SiO}_2 &= 0.01 \text{ to } 3.0 \\ \text{RNO}/\text{SiO}_2 &= 0.01 \text{ to } 2.0 \end{aligned}$$

wherein M is an alkali or alkaline earth metal and RNO 1-alkyl, 4-aza, 1-azonia-bicyclo(2,2,2)octane, 4-oxide, halide and maintaining said mixture under crystallization conditions until crystals of said zeolite are formed.

4,285,923

#### MANUFACTURE OF CALCIUM NITRITE SOLUTIONS WITH LOW NITRATE CONTENT

Samuel L. Bean, Jamestown; Philip F. Seeling, North Syracuse; Robert J. Hoffman, Liverpool, and William W. Low, Syracuse, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Nov. 15, 1978, Ser. No. 960,820

Int. Cl.<sup>3</sup> C01B 21/20

U.S. Cl. 423-385

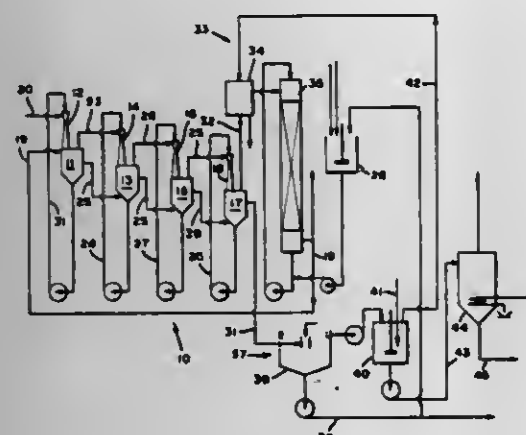
10 Claims

1. A process of producing an aqueous calcium nitrite solution low in calcium nitrate comprising the steps of:

- feeding an aqueous lime slurry of about 10-20 weight percent calcium hydroxide to at least two absorption reactors in series;
- feeding into the first absorption reactor a gaseous mixture



of nitrogen oxide gases having a percent state of oxidation of about 40-50% according to the formula



$$\text{percent state of oxidation} = \frac{\text{mols } e\text{NO}_2}{\text{mols NO} + \text{mols } e\text{NO}_2} \times 100$$

where  $e\text{NO}_2$  is determined by adding two times the number of mols of  $\text{N}_2\text{O}_4$  to the number of mols of  $\text{NO}_2$ ;

- feeding the gaseous effluent from each absorption reactor to the next absorption reactor in cocurrent flow with the lime slurry;
- contacting the inlet gas of each absorption reactor with lime slurry at a rate wherein the local molar ratio of calcium hydroxide to nitrogen oxides is at least about 20; and
- maintaining at least about 2 weight percent calcium hydroxide and below about 22 weight percent calcium nitrite in the slurry in each absorption reactor.

#### 4,285,924 SEPARATION OF ACIDS

Michael W. T. Pratt, Bingley, England, assignor to National Research Development Corp., London, England  
Filed Apr. 3, 1980, Ser. No. 136,954  
Claims priority, application United Kingdom, Apr. 4, 1979, 11855/79

Int. Cl.<sup>3</sup> C01B 21/46

U.S. Cl. 423-390

12 Claims

1. A method for the separation of nitric acid from a mixture of nitric acid with one or more of phosphoric, sulphuric or hydrochloric acids, in which the nitric acid is selectively extracted from a first phase comprising the acid mixture into a second phase by an amine nitrate.

#### 4,285,925 PROCESS FOR THE CONVERSION OF LIGHT ASH TO ABSORPTIVE LOW BULK DENSITY ALKALI PRODUCTS

Ruston P. Poacha, Syracuse, N.Y., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.  
Filed Aug. 16, 1978, Ser. No. 934,137  
Int. Cl.<sup>3</sup> C01D 7/12, 7/14, 7/00

U.S. Cl. 423-425

7 Claims

1. A method for the conversion of anhydrous sodium carbonate particles having a bulk density between about 500 and 650 g/l, into free-flowing, absorptive particles of Wegscheider's Salt, having a bulk density between about 275 and 320 g/l, which comprises the steps of:

- continuously contacting said anhydrous sodium carbonate particles, in a reaction zone, with between greater than about 1.0 and not more than about 1.20 of the stoichiometric amount of water required for the formation of sodium carbonate monohydrate;
- agitating the exothermic reaction mixture so produced until the temperature of the dry free-flowing hydrated particles is less than about 35° C.;
- contacting said dry hydrated particles having a tempera-

ture of no more than about 35° C. with substantially moisture-free carbon dioxide gas whereby the exothermic nature of the contact causes the temperature of the contacted particles to exceed 35° C. and continuing said contact until the rate of absorption of said gas by said particles decreases;

- externally heating the particles from step (c) until the temperature thereof is at least about 85° C., while continuously contacting said particles with a gaseous mixture comprising from about 30 to 75 weight percent water and



from about 70 to about 25 weight percent carbon dioxide and maintaining the reaction temperature between about 90° and 105° C. until the reaction mixture so produced contains at least about 85 weight percent Wegscheider's Salt product;

- continuously removing the product particles from said reaction zone; and
- continuously recovering the Wegscheider's Salt product particles having a free-moisture content of less than about 5 weight percent.

#### 4,285,926 START-UP OF CARBON BLACK PROCESS

Paul J. Cheng, and King L. Mills, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.  
Filed Oct. 30, 1979, Ser. No. 89,420  
Int. Cl.<sup>3</sup> C01B 31/02; C09C 1/48

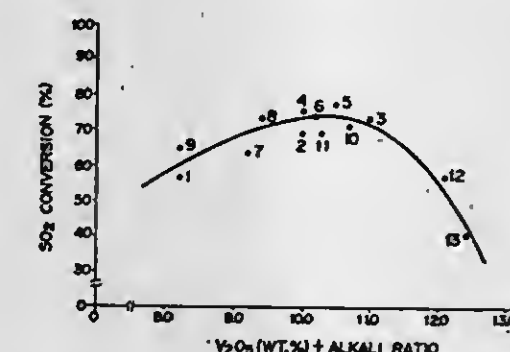
U.S. Cl. 423-450

14 Claims

1. A method for starting-up a carbon black production process, in which smoke produced by a carbon black furnace is quenched to terminate the reaction and is thereafter cooled, at least in part, by indirect heat exchange with water, comprising:

- initially quenching said smoke with a quench fluid to a temperature substantially below a predetermined temperature of introduction into said heat exchange step said predetermined temperature being between about 1800° F. and about 2000° F.; and
- reducing the magnitude of said quenching over an extended period of time until said smoke is being quenched to a temperature substantially equal to said predetermined temperature whereby the heat transfer coefficient of said smoke is improved.

4,285,927  
PRODUCTION OF SULFURIC ACID USING A  $\text{K}_2\text{SO}_4$ ,  $\text{V}_2\text{O}_5$ , DIATOMACEOUS EARTH CATALYST  
Haruichi Hara, Toyonaka; Toshihide Kanzaki, Takatsuki; Hisanao Motomuro, and Akiyoshi Adachi, both of Suita, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan  
Division of Ser. No. 689,807, May 25, 1976, abandoned. This application Aug. 29, 1977, Ser. No. 828,594  
Claims priority, application Japan, May 29, 1975, 50-63492  
Int. Cl.<sup>3</sup> C01B 17/74, 17/98; B01J 27/02, 29/16  
U.S. Cl. 423-535 7 Claims



1. A process for the production of sulfuric acid comprising subjecting a gas containing 12 to 25% by volume of sulfur dioxide and more than the stoichiometric amount of molecular oxygen to gas phase catalytic oxidation reaction in the presence of a catalyst which consists of vanadium pentoxide, potassium sulfate and diatomaceous earth, wherein the ratio of  $\text{K}_2\text{O}(\text{mol})/\text{V}_2\text{O}_5(\text{mol})$  is 3.8 to 5.5,  $\text{V}_2\text{O}_5$  content is 5.5 to 7.5% by weight and the sum of the value of said ratio and the  $\text{V}_2\text{O}_5$  content (% by weight) is 9.3 to 11, said reaction being carried out at a temperature of at least 420° C. in the catalyst layer inlet and at a temperature of at most 800° C. in the catalyst layer outlet.

4,285,928  
CONTRAST COMPOSITION FOR ANGIOGRAPHY  
Juro Wada, 40-1, Haramachi-1-chome, Shinjuku-ku, Tokyo, Japan, and Toshinari Itaka, Tokyo, Japan, assignors to Juro Wada, Tokyo, Japan  
Filed Jan. 15, 1980, Ser. No. 112,275  
Claims priority, application Japan, Jan. 25, 1979, 54-7437  
Int. Cl.<sup>3</sup> A61K 49/04

U.S. Cl. 424-5

2 Claims

1. A physiologically isotonic contrast composition for angiography comprising an emulsion containing an organic iodine compound as X-ray contrast agents and a perfluorocarbon compound having oxygen carrying ability, the organic iodine compound being at least one of sodium iodomethane sulfonate, 3,5-diido-4-pyridone-N-acetic acid diethanolamine, 3,5-diido-4-pyridone-N-acetic acid-N-methylglucamine salt, sodium 3-acetylaminio-2,4,6-triiodobenzoate, sodium 3-acetamido-2,4,6-triiodo-5-N-methyl acetamido benzoate, mixture of methyl glucamine salt and sodium salt of diatriazolate, sodium-5-acetamido-N-2,4,6-triiodo-isophthalamate, methyl glucamine-5-acetamido-2,4,6-triiodoisophthalamate or 3-acetamido methyl-5-acetamido-2,4,6-triiodobenzoic acid methyl glucamine salt and methylglucamine salt of iodamine, the perfluorocarbon compound being a mixture comprising 95 to 50 parts by weight of at least one member of the group consisting of perfluorodecalin and perfluoromethyldecylines and 5 to 50 parts by weight of at least one of perfluorotripropylamine, perfluoro-N,N-dibutylmonomethylamine, perfluoro-N,N-diethylpentylamine, perfluoro-N,N-dipropylbutylamine, perfluoro-tripropylamine, perfluoro-N,N-diethylcyclohexylamine, perfluoro-N-butylpiperidine, perfluoro-N-pentylmorpholine, perfluoro-N-hexylmorpholine, perfluoro-N-heptylmorpholine, and perfluoroadamantane, the concentration of the organic iodine compound being 5 to 80% (W/V) and the concentration of the perfluoro-carbon compound being 5 to 30% (W/V), the

ratio of the organic iodine compound to the perfluoro-carbon compound being from 0.17:1 to 16:1, and the perfluorocarbon compound in the emulsion having a particle size of 0.05 to 0.3  $\mu$ .

4,285,929  
TYPE II INTERFERON AND AGENTS THEREOF  
Kaname Sugimoto, and Shokichi Yuen, both of Okayama, Japan, assignors to Shin Ashida, Hyogo and Ken Hayashibara, Okayama, both of Japan  
Continuation-in-part of Ser. No. 5,585, Jan. 22, 1979. This application Jan. 7, 1980, Ser. No. 109,861  
Claims priority, application Japan, Jan. 18, 1979, 54/4544  
The portion of the term of this patent subsequent to Jan. 30, 1998, has been disclaimed.  
Int. Cl.<sup>3</sup> A61K 45/02, 39/00

U.S. Cl. 424-85

10 Claims

1. A process for preparing human-specific Type II interferon, comprising:  
transplanting Type II interferon-producing established human cells into a non-human warm-blooded animal body;  
multiplying the transplanted cells in a warm-blooded animal body;  
exposing the multiplied human cells to the action of Type II interferon inducer in vivo or in vitro to induce Type II interferon; and  
purifying and separating the induced Type II interferon.

4,285,930  
ANTIGENS COMPRISING IMMUNOSTIMULANT ADJUVANTS AND THEIR USE IN IMMUNOTHERAPY  
Vilas V. Likhite, 317 Marlborough St., Boston, Mass. 02116  
Continuation of Ser. No. 858,847, Dec. 8, 1977, abandoned. This application Nov. 13, 1979, Ser. No. 93,171  
Int. Cl.<sup>3</sup> A61K 39/10, 39/00

U.S. Cl. 424-92

6 Claims

1. An antigen conjugate useful in the production of relatively large titers of antibodies specific thereto, which antigen conjugate comprises an immunostimulant adjuvant consisting essentially of a primary antigen of a killed strain of *B. pertussis* mutant strain NRRL B-11,232 coupled by a diisocyanate-coupling agent to a secondary antigen comprising living adenocarcinoma tumor cells.

4,285,931  
E. COLI ENTEROTOXIN VACCINE FOR VETERINARY AND HUMAN USE

Guadalupe A. Limjuco, Scotch Plains; Yashwant D. Karkhanavala, Fanwood, and Dennis J. Carlo, South Amboy, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.  
Division of Ser. No. 873,181, Jan. 30, 1978, Pat. No. 4,220,584.  
This application Feb. 15, 1980, Ser. No. 122,092  
Int. Cl.<sup>3</sup> A61K 37/02, 39/02

U.S. Cl. 424-92

2 Claims

1. A method of immunizing against *E. coli* induced diarrhea comprising administering to humans or animals from 25  $\mu$ g to 1,000  $\mu$ g of the enterotoxin isolated from *E. coli* culture filtrate having a molecular weight of 10,000-13,000 when determined by gel filtration or by sucrose density gradient; containing 90% protein, 2% hexose, no 2-keto deoxy octonic acid; being a homogeneous single chain protein with N-terminal alanine when determined by the dansylation method and SDS-acrylamide electrophoresis; and showing no activity in the limulus lysate assay.



4,285,932

# ENZYME DERIVATIVES FOR USE IN THE TREATMENT OF VENOUS THROMBOSIS

Richard A. G. Smith, Dorking, England, assignor to Beecham Group Limited, England

Filed Aug. 20, 1979, Ser. No. 68,205

Claims priority, application United Kingdom, Sep. 7, 1978, 35960/78

Int. Cl.<sup>3</sup> A61K 37/48; C07C 103/52; C07G 7/00; C12N 9/70, 9/68, 9/99

U.S. Cl. 424—94

28 Claims

1. A pharmaceutical composition for treatment of Venous thrombosis which comprises a pharmaceutically acceptable carrier together with an in vivo fibrinolytic enzyme as defined herein wherein the catalytic site essential for fibrinolytic activity is blocked by a group which is removable by hydrolysis at a rate such that the pseudo-first order rate constant for hydrolysis is in the range  $10^{-6} \text{ sec}^{-1}$  to  $10^{-3} \text{ sec}^{-1}$  in isotonic aqueous media at pH 7.4 at 37° C.

4,285,933

# PROCESS FOR CONCENTRATING BLOOD COAGULATION FACTOR XIII DERIVED FROM HUMAN PLACENTAE

Tanekazu Fukushima, Kobe, and Satoshi Funakoshi, Katano, both of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Nov. 2, 1979, Ser. No. 91,245

Claims priority, application Japan, Nov. 7, 1978, 53/136996

Int. Cl.<sup>3</sup> A61K 35/48

U.S. Cl. 424—105

1 Claim

1. A process for concentrating a blood coagulation Factor XIII derived from human placenta consisting essentially of

- (1) recovering an extract with a physiologically saline solution from human placenta;
- (2) removing precipitate from the solution by centrifugation;
- (3) adding ammonium sulfate to the supernatant in a concentration of 20 to 30% (W/V);
- (4) recovering the supernatant and removing the precipitate therefrom;
- (5) adding ammonium sulfate to the supernatant in a concentration of 45 to 55% (W/V) to recover precipitate;
- (6) dissolving the precipitate into a phosphate buffer solution of pH 6 to 9 containing about 0.005 M of EDTA;
- (7) adding alkylene-oxide polymer of copolymer having a molecular weight of 2,000 to 20,000 which is selected from the group consisting of polyethylene oxide homopolymer, polypropylene oxide homopolymer and ethylene oxidepropylene oxide-copolymer in a concentration of 4 to 0% W/V;
- (8) removing the formed precipitate and recovering the supernatant;
- (9) adding the above-mentioned alkylene-oxide polymer or copolymer to the supernatant in a concentration of 20 to 30% (W/V);
- (10) recovering the precipitate formed and dissolving it into a phosphate buffer of pH 6 to 9;
- (11) heat-treating the collected precipitate for 9 to 11 hours at 55° to 65° C. in an aqueous solution of a neutral amino acid, monosaccharide, sugar alcohol or a mixture of two or more thereof in a concentration of 10 to 20% (W/V) thereby to inactivate hepatitis virus;
- (12) contacting the resulting solution with a DEAE-cross-linked dextran which had been equilibrated to pH of 6 to 9 thereby to absorb blood coagulation Factor XIII;
- (13) eluting the blood coagulation Factor XIII with an about 0.05 M phosphate buffer containing about 0.5 M NaCl;
- (14) subjecting the collected eluate to dialysis, sterilizing filtration and freeze-drying.

4,285,934

# TREATMENT FOR HERPES VIRUS

James E. Tinnell, 3121 S. Maryland Pkwy, #11/200, Las Vegas, Nev. 89109

Continuation-in-part of Ser. No. 57,453, Jul. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 879,085, Feb. 21, 1978, abandoned. This application Jun. 23, 1980, Ser. No. 162,252

Int. Cl.<sup>3</sup> A61K 33/22, 35/78, 31/60

U.S. Cl. 424—148

2 Claims

2. A method for treatment of herpes virus lesions in a human host comprising topically applying to the lesions an effective amount of a composition comprising boric acid, tannic acid and salicylic acid in the weight ratio of about 7:7:3.

4,285,935

# DEHYDROPEPTIDE COMPOUNDS, THEIR PRODUCTION AND THEIR MEDICAL USE

Eugen Etschenberg, Cologne; Haireddin Jacobi, Leichlingen, and Wolfgang Opitz, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 23, 1980, Ser. No. 114,468

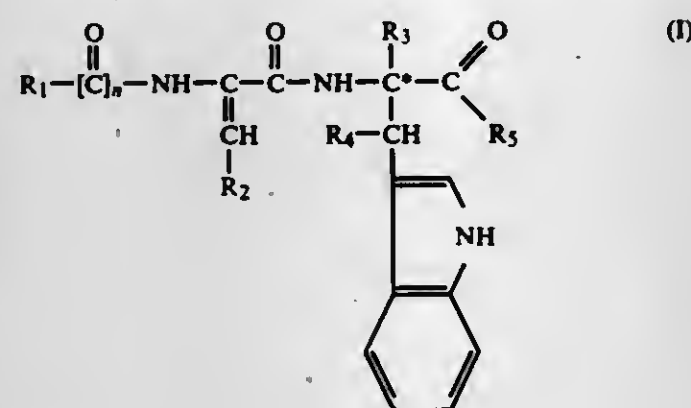
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1979, 2904512

Int. Cl.<sup>3</sup> A61K 37/00; C07C 103/52

U.S. Cl. 424—177

15 Claims

1. A compound which is a dehydropeptide of the formula



or a salt thereof, in which

R<sub>1</sub> denotes a hydrogen atom, an optionally substituted alkyl, alkenyl, aralkyl, aralkenyl aryl, alkoxy group or a heterocyclic ring,

R<sub>2</sub> denotes a phenyl radical which is optionally substituted by alkyl, aryl, alkoxy, hydroxyl, nitro, amino, acylamino or halogen,

R<sub>3</sub> and R<sub>4</sub> both denote a hydrogen atom, or together denote an additional bond between the two carbon atoms,

R<sub>5</sub> denotes a hydroxyl group or an optionally substituted alkoxy, aralkoxy or amino group and

n is 1 or 0,

and in which, when R<sub>3</sub> and R<sub>4</sub> both denote a hydrogen atom, the centre of asymmetry C\* at the substituent R<sub>3</sub> is in the racemate form, or in the D-form or L-form.

4,285,936

# METHOD FOR PRODUCING A VACCINE AGAINST BACTERIAL INFECTIONS CAUSED BY PSEUDOMONAS AERUGINOSA

Gerald B. Pier, Brookline, Mass., and Jerald C. Sadoff, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 10, 1979, Ser. No. 101,620

Int. Cl.<sup>3</sup> A61K 31/70; C08B 37/00; A61K 39/104

U.S. Cl. 424—180

5 Claims

1. Method for isolating a nontoxic, nonpyrogenic polysac-

charide antigen from the crude slime of *Pseudomonas aeruginosa* comprising the steps of:

- a. adding about 1% by volume of a 10% cetyltrimethylammonium bromide solution to said slime to form a mixture which is allowed to stand for about 30 minutes to permit precipitation of nucleic acids;
- b. removing the nucleic acids precipitated in step a. by centrifugation;
- c. adding about 80% by volume of a 95% ethanol to the product of step b. to cause precipitation;
- d. collecting the precipitate formed in step c. by centrifugation and dissolving it in phosphate buffered saline;
- e. subjecting the product formed in step d. to the same treatment given to said slime by repeating steps a., b. and c. then collecting a second precipitate in the manner provided for in step d.;
- f. subjecting the precipitate collected in step e. to acetic acid hydrolysis followed by heating at around 90° C. for about 18 hours and allowing to cool to room temperature;
- g. centrifuging the cooled product formed in step f. to separate the lipid polysaccharides from the acetic acid supernate;
- h. extruding the acetic acid supernate formed in step g. with chloroform to remove residual lipid polysaccharides;
- i. subjecting the polysaccharides products formed in step h. to alcoholysis to precipitate the polysaccharides from the aqueous layer and separating said polysaccharides by centrifugation;
- j. dissolving the polysaccharide products in phosphate buffered saline, digesting with nucleases to remove nucleic acids and extracting the remaining protein therefrom with phenol;
- k. mixing the polysaccharide product of step j., cooling and maintaining at a temperature of 4° C. for about 12 hours;
- l. centrifuging the product of step k. to separate and remove the aqueous layer from the phenol layer;
- m. subjecting the water layer formed in step l. to alcoholysis and separating the polysaccharides from the aqueous layer by centrifugation;
- n. dissolving the polysaccharides of step m. in phosphate buffered saline and applied to a 2.6×100 cm column of Sephadex G-100 equilibrated in phosphate buffered saline;
- o. combining the void volume fractions and subjecting to alcoholysis to precipitate the polysaccharides; and
- p. isolating the polysaccharides having a molecular weight of from 100,000 to 300,000 daltons in the void volume by dissolving the polysaccharides of step o. in water and desalting on a 1.5×60 cm column of Sephadex G-50 equilibrated with a liquid selected from the group of distilled water and phosphate buffered saline having a pH of about 7.2.

3. Method of inducing immunity in a host to challenge by *Pseudomonas aeruginosa* organisms by inoculating said host with a therapeutically effective amount of polysaccharide antigen prepared according to claim 1.

4,285,937

# NOVEL ANDROSTADIENE-17-CARBOXYLIC ACID ESTERS

Jaroslav Kalvoda, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 936,285, Aug. 23, 1978, abandoned, which is a continuation of Ser. No. 770,155, Feb. 18, 1977, abandoned. This application Oct. 30, 1979, Ser. No. 89,677

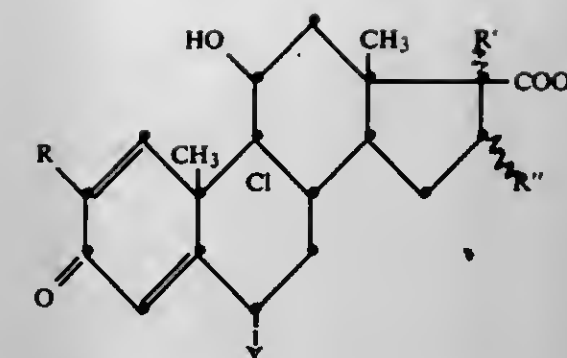
Claims priority, application Switzerland, Feb. 24, 1976, 2253/76

Int. Cl.<sup>3</sup> C07J 3/00; A61K 31/56

U.S. Cl. 424—243

16 Claims

1. Esters of androstadiene-17-carboxylic acids of the formula



wherein R' represents a hydroxyl group which is esterified with a lower aliphatic carboxylic acid having not more than 7 carbon atoms, R'' represents a methyl group in the alpha- or beta-position or the methylene group, R is H or Cl, and Y represents a hydrogen, chlorine or fluorine atom, with the proviso that Y is only Cl or F, when R is H and that the androstadiene-17-carboxylic acid ester group is derived from an aliphatic alcohol, so that said group contains not more than 6 carbon atoms.

10. An antiinflammatory pharmaceutical preparation which contains an antiinflammatory effective amount of a compound according to claim 1, together with a pharmaceutical carrier.

4,285,938

# 7,8-DIHYDROXY-1-(SULFAMYLPHENYL)-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINE DERIVATIVES

Francis R. Pfeiffer, Cinnaminson, N.J., assignor to SmithKline Corporation, Philadelphia, Pa.

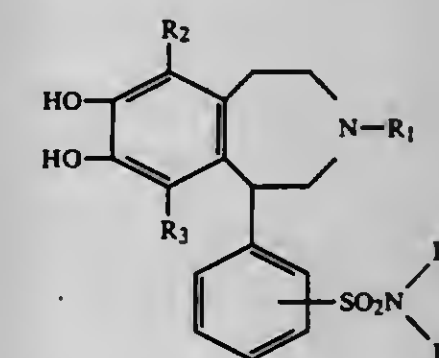
Filed Oct. 11, 1979, Ser. No. 83,874

Int. Cl.<sup>3</sup> A61K 31/33, 31/36, 31/335; C07D 223/16

U.S. Cl. 424—244

17 Claims

1. A compound of the formula:



in which:

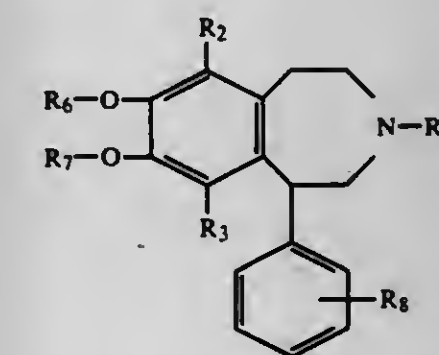
R<sub>1</sub> is hydrogen, lower alkyl of 1-4 carbons or allyl;

R<sub>2</sub> is hydrogen, halo or lower alkyl of 1-4 carbons;

R<sub>3</sub> is hydrogen, or when R<sub>2</sub> is other than hydrogen, halo or lower alkyl of 1-4 carbons; and

R<sub>4</sub> and R<sub>5</sub> are hydrogen or lower alkyl of 1-4 carbons; together with pharmaceutically acceptable acid addition salts thereof.

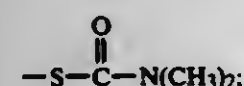
8. A compound of the formula:



in which:



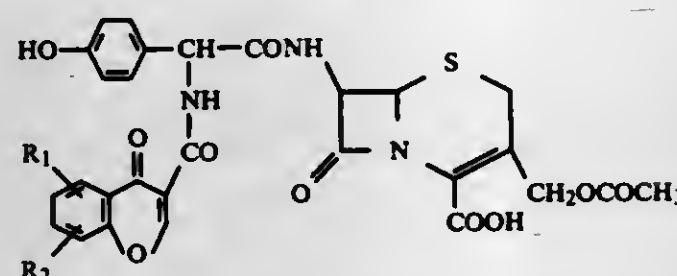
R<sub>1</sub>' is allyl, lower alkyl of 1-4 carbons, trichloroacetyl, benzyloxycarbonyl, trifluoroacetyl or benzyl;  
R<sub>2</sub> is hydrogen, halo or lower alkyl of 1-4 carbons;  
R<sub>3</sub> is hydrogen or, when R<sub>2</sub> is other than hydrogen, halo or lower alkyl of 1-4 carbons;  
R<sub>6</sub> and R<sub>7</sub> are lower alkyl of 1-4 carbons or, when taken together, methylene or ethylene; and  
R<sub>8</sub> is —SO<sub>3</sub>H, —SO<sub>2</sub>Cl, —SO<sub>2</sub>Br, —S—CH<sub>2</sub>C<sub>6</sub>H<sub>5</sub> or



together with acid addition salts thereof acceptable for use as chemical intermediates.

**4,285,940**  
**CEPHALOSPORIN DERIVATIVES, AND ANTIBACTERIAL DRUGS COMPRISING SAID DERIVATIVES**  
Yoshimasa Machida, Wako; Isao Saito, Chofu; Seichiro Nomoto, Tokyo; Shigeto Negi, Kodaira; Hironori Ikuta, Tokyo, and Kyosuke Kitoh, Kawagoe, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan  
Filed Apr. 7, 1980, Ser. No. 137,754  
Claims priority, application Japan, Nov. 19, 1979, 54-148834  
Int. Cl.<sup>3</sup> C07D 501/26

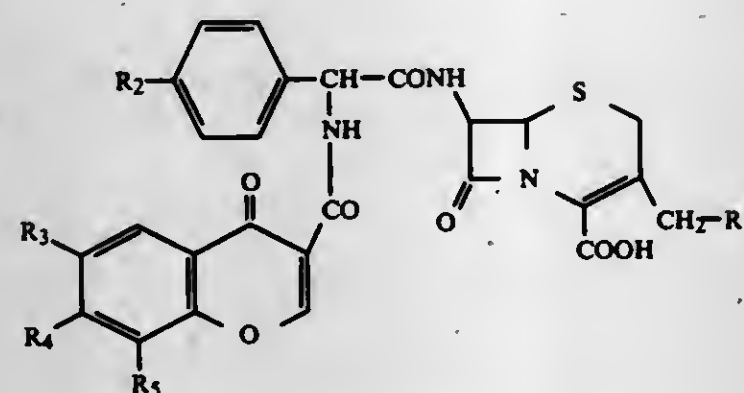
U.S. Cl. 424-246 7 Claims  
1. A cephalosporin derivative of the formula



wherein R<sub>1</sub> and R<sub>2</sub> each represents hydroxyl, acetoxy, propionyloxy or benzyloxy or a pharmaceutically acceptable salt thereof.

**4,285,941**  
**CEPHALOSPORIN COMPOUNDS AND ANTIBACTERIAL DRUGS CONTAINING THE SAME**  
Yoshimasa Machida, Wako; Isao Saito, Chofu; Seichiro Nomoto, Tokyo; Shigeto Negi, Kodaira; Takeo Kanai, Honjo; Kyosuke Kitoh, Kawagoe; Kanemasa Katsu, Chofu; Yukio Ohya, Koganei, and Takeshi Nagasu, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan  
Filed Apr. 14, 1980, Ser. No. 142,160  
Claims priority, application Japan, Jan. 26, 1979, 54/79631  
Int. Cl.<sup>3</sup> C07D 501/36

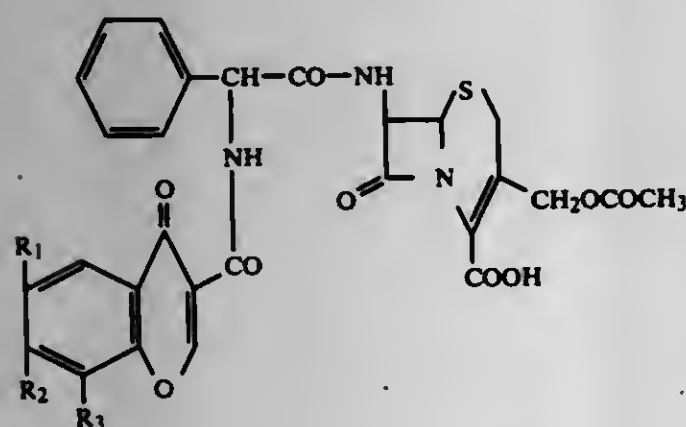
U.S. Cl. 424-246 18 Claims  
1. A cephalosporin compound of the formula:



wherein R<sub>1</sub> represents a nitrogen-containing heterocyclic-thio group, the nitrogen-containing heterocyclic group of which is selected from the group consisting of pyrrolyl, pyridyl and its N-oxide, imidazolyl, pyrazolyl, pyrimidinyl, pyridazinyl, 1H-1,2,4-triazolyl, 4H-1,2,4-triazolyl, 1H-1,2,3-triazolyl, 2H-1,2,3-triazolyl, 1H-tetrazolyl, 2H-tetrazolyl, thiazolyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,3,4-thiadiazolyl, oxazolyl, 1,3,4-oxadiazolyl, 1,2,5-oxadiazolyl, morpholino, benzothiazolyl, and benzoxazolyl, said heterocyclic groups being unsubstituted or substituted by methyl, ethyl, propyl, isopropyl, amino, dimethylaminoethyl, dimethylaminomethyl, diethylaminoethyl, carboxymethyl or carboxyethyl, R<sub>2</sub> represents hydrogen or hydroxy, and R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub> each represents hydrogen, hydroxy, acetoxy, propionyloxy or benzyloxy or a pharmaceutically acceptable salt thereof.

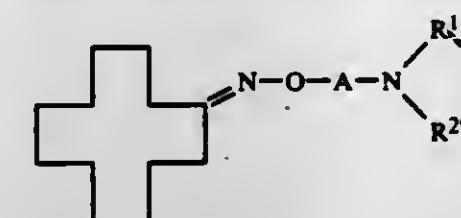
**4,285,939**  
**CEPHALOSPORIN DERIVATIVES, AND ANTIBACTERIAL DRUGS CONTAINING THE DERIVATIVES**  
Yoshimasa Machida, Wako; Isao Saito, Chofu; Motosuke Yamanaka, Urawa; Seichiro Nomoto, Tokyo; Shigeto Negi, Kodaira; Kyosuke Kitoh, Kawagoe; Kanemasa Katsu, Chofu; Yukio Ohya, Koganei; Takeshi Suzuki, and Kyoko Koizumi, both of Abiko, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan  
Filed Apr. 7, 1980, Ser. No. 137,753  
Claims priority, application Japan, Apr. 9, 1979, 54-42023  
Int. Cl.<sup>3</sup> C07D 501/20

U.S. Cl. 424-246 6 Claims  
1. A cephalosporin derivative of the formula



wherein R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> each represents hydroxy, acetoxy, propionyloxy, or hydrogen, provided that two or three of R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are not hydrogen at the same time or a non-toxic salt thereof.

**4,285,942**  
**CYCLODODECANONE OXIMES**  
Zoltan Budai, Aranka Lay nee Konya; Tibor Mezei; Katalin Grasser; Lajza Petocz; Erika Kiszely, and Ibolya Kosoczy, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyezeti Gyar, Budapest, Hungary  
Filed Dec. 3, 1979, Ser. No. 99,507  
Claims priority, application Hungary, Dec. 19, 1978, EE 2614  
Int. Cl.<sup>3</sup> C07C 131/02; A61K 31/15, 31/535  
U.S. Cl. 424-248.56 5 Claims  
1. A cyclododecane derivative of the general formula

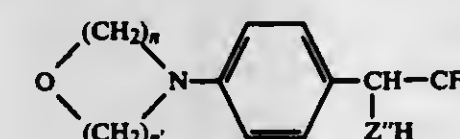


wherein R<sup>1</sup> and R<sup>2</sup> represent independently from each other a hydrogen atom, a C<sub>1-6</sub> alkyl group or a C<sub>3-8</sub> cycloalkyl group, or R<sup>1</sup> and R<sup>2</sup> form together with the nitrogen atom to which they are attached a morpholine or piperazine, and said ring may be optionally substituted by a C<sub>1-3</sub> alkyl or a benzyl group; and A represents a C<sub>2-6</sub> straight or branched alkylene chain, or an optically active isomer or pharmaceutically acceptable acid addition salt thereof.

3. A pharmaceutical composition having spasmolytic, local anesthetizing and nicotine-lethality inhibiting effect, containing a pharmaceutically effective amount of a cyclododecane derivative as claimed in claim 1 as the active agent, and a pharmaceutically acceptable excipient therefor.

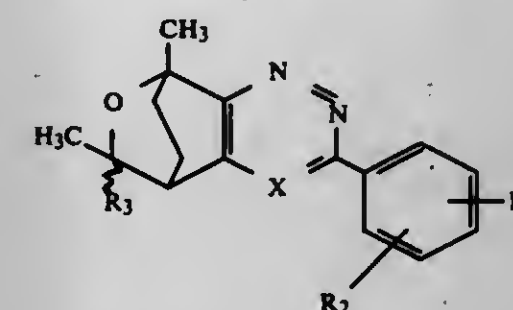
**4,285,943**  
**NOVEL PHARMACEUTICAL COMPOSITIONS INCORPORATING AN ARYLTRIFLUOROETHANOL**  
Michel Vincent, Bagneux; Georges Remond, Versailles, and Jacques Bure, Neuilly-sur-Seine, all of France, assignors to Science Union Et Cie, Suresnes, France  
Filed Nov. 2, 1979, Ser. No. 90,636  
Claims priority, application France, Nov. 3, 1978, 78 31096  
Int. Cl.<sup>3</sup> A61K 27/00, 31/33, 31/445, 31/495

U.S. Cl. 424-244 9 Claims  
1. A pharmaceutical composition incorporating as active ingredient an effective analgesic, antipyretic or anti-inflammatory amount of an aryltrifluoroethanol of the formula

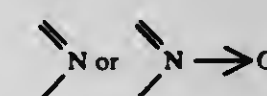


wherein  
n and n' are each 2; and  
Z' is oxygen; or a therapeutically compatible acid addition salt thereof; in admixture with a pharmaceutically-acceptable carrier or vehicle.

**4,285,944**  
**PYRANO[4,3]-AS-TRIAZINES AND CORRESPONDING 4-OXIDES**  
Gregory B. Bennett, Mendham, NJ, assignor to Sandoz, Inc., E. Hanover, N.J.  
Continuation of Ser. No. 65,279, Aug. 9, 1979, abandoned, which is a continuation of Ser. No. 957,189, Nov. 2, 1978, abandoned.  
This application Apr. 10, 1980, Ser. No. 139,109  
The portion of the term of this patent subsequent to Oct. 14, 1997, has been disclaimed.  
Int. Cl.<sup>3</sup> C07D 491/08; A61K 31/53  
U.S. Cl. 424-249 18 Claims  
1. A compound of the formula



wherein  
R<sub>1</sub> and R<sub>2</sub> each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl, straight chain lower alkoxy, amino, nitro or trifluoromethyl, and  
R<sub>3</sub> represents hydrogen or lower alkyl, and  
X represents



provided that  
(i) when one of R<sub>1</sub> and R<sub>2</sub> represents nitro, the other is other than nitro or trifluoromethyl;  
(ii) when R<sub>1</sub> and R<sub>2</sub> represent trifluoromethyl, they are on other than adjacent carbon atoms; and  
(iii) when R<sub>1</sub> and R<sub>2</sub> represent t-butyl, they are on other than adjacent carbon atoms, and  
(iv) when one of R<sub>1</sub> and R<sub>2</sub> is trifluoromethyl and the other is t-butyl, they are on other than adjacent carbon atoms.  
17. A method of inducing sleep which comprises administering a sleep-inducing effective amount of a compound according to claim 1.

**4,285,945**  
**ANTITHROMBOTIC PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE**  
Sberrill J. Slichter, 5201 SW. Canada Dr., Seattle, Wash. 98126  
Filed Sep. 17, 1979, Ser. No. 76,510  
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 2904736  
Int. Cl.<sup>3</sup> A61K 31/505

U.S. Cl. 424-251 3 Claims  
1. An antithrombotic pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an antithrombotic effective amount of a mixture of 2,6-bis-(diethanolamino)-4-piperidino-pyrimido [5,4-d] pyrimidine and sulfinpyrazone wherein the weight ratio of 2,6-bis-(diethanolamino)-4-piperidino-pyrimido [5,4-d] pyrimidine and sulfinpyrazone is 1:2.



4,285,946

4-AMINO-2-UREIDO (OR  
-THIOUREIDO)-PYRIMIDINE-5-CARBOXYLIC ACID  
ANILIDES

Klaus-Dieter Kampe, Bad Soden am Taunus, and Erhold Granzer, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

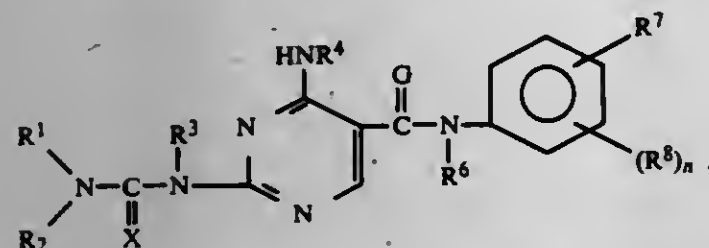
Filed Dec. 7, 1979, Ser. No. 101,160

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1978, 2853220

Int. Cl.<sup>3</sup> A61K 31/505; C07D 239/48, 403/12

U.S. Cl. 424-251 9 Claims

1. A 4-amino-2-ureido (or -thioureido)-pyrimidine-5-carboxylic acid anilide of the formula



or a physiologically acceptable acid addition salt thereof, wherein

X is oxygen or sulfur,

R<sup>1</sup> is hydrogen, (C<sub>1</sub>-C<sub>3</sub>)-alkyl, or phenyl;

R<sup>2</sup> taken alone is hydrogen, (C<sub>1</sub>-C<sub>10</sub>)-alkyl, (C<sub>3</sub>-C<sub>4</sub>)-alkenyl, (C<sub>4</sub>-C<sub>8</sub>)-cycloalkyl, phenyl, phenylalkyl having 1 or 2 carbon atoms in the alkyl portion, or is phenyl or such phenylalkyl mono- or di-substituted in the benzene ring by (C<sub>1</sub>-C<sub>3</sub>)-alkyl, halogen, or (C<sub>1</sub>-C<sub>4</sub>)-alkoxy, or substituted by trifluoromethyl, methoxycarbonyl, ethoxycarbonyl, or methylenedioxy;

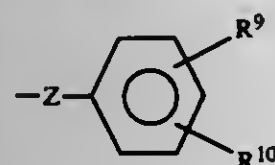
R<sup>3</sup> taken alone is hydrogen, (C<sub>1</sub>-C<sub>3</sub>)-alkyl, or phenyl;

R<sup>2</sup> and R<sup>3</sup> taken together are -(CH=CH)-, linear or branched (C<sub>2</sub>-C<sub>8</sub>)-alkylene, or such alkylene substituted by (C<sub>2</sub>-C<sub>4</sub>)-alkenyl, by phenyl, or by phenyl substituted by chlorine, bromine, methyl, ethyl, methoxy, or ethoxy;

R<sup>4</sup> is hydrogen or (C<sub>1</sub>-C<sub>3</sub>)-acyl;

R<sup>6</sup> is hydrogen, (C<sub>1</sub>-C<sub>3</sub>)-alkyl, (C<sub>3</sub>-C<sub>4</sub>)-alkenyl, benzyl, phenyl, benzyl mono- or di-substituted in the benzene ring by chlorine or methoxy, or phenyl substituted by methyl, chlorine, or by methyl and chlorine;

R<sup>7</sup> taken alone is hydrogen, (C<sub>1</sub>-C<sub>3</sub>)-alkyl, (C<sub>3</sub>-C<sub>4</sub>)-alkenyl, (C<sub>5</sub>-C<sub>6</sub>)-cycloalkyl, phenyl, halogen, trifluoromethyl, (C<sub>1</sub>-C<sub>4</sub>)-alkylthio, (C<sub>1</sub>-C<sub>2</sub>)-alkoxycarbonyl, cyano, acetamino, amino, nitro, carboxyl, (C<sub>1</sub>-C<sub>4</sub>)-alkoxy or



wherein

Z is oxygen, sulfur,



-CH<sub>2</sub>-, or -CH<sub>2</sub>CH<sub>2</sub>-, and

R<sup>9</sup> and R<sup>10</sup>, which are the same or different, are hydrogen, fluorine, chlorine, bromine, (C<sub>1</sub>-C<sub>3</sub>)-alkyl, (C<sub>1</sub>-C<sub>2</sub>)-alkoxy, acetamino, (C<sub>1</sub>-C<sub>2</sub>)-alkoxycarbonyl, or carbonyl;

R<sup>8</sup> is fluorine, chlorine, bromine, methyl, (C<sub>1</sub>-C<sub>2</sub>)-alkoxy, or trifluoromethyl;

n is 0, 1, 2, or 3;

and if n is 1, then

R<sup>7</sup> and R<sup>8</sup>, taken together, may be methylenedioxy or ethylenedioxy.

6. A pharmaceutical composition for treating disturbances in the lipometabolism, said composition comprising an amount of a compound or salt as in claim 1 effective to affect the lipometabolism together with a pharmaceutically-acceptable carrier therefor.

4,285,947

## ALDEHYDE ADDUCTS OF TRIAMTERENE

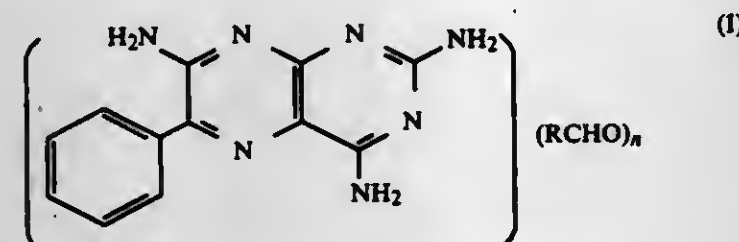
Takara Higuchi, and Anand C. Burman, both of Lawrence, Kans., assignors to INTERX Research Corporation, Lawrence, Kans.

Filed Jan. 12, 1980, Ser. No. 113,313

Int. Cl.<sup>3</sup> C07D 475/08

U.S. Cl. 424-251 60 Claims

1. An aldehyde adduct of triamterene having the formula:



wherein R is selected from the group consisting of:

hydrogen;

alkyl of 1 to 20 carbon atoms;

cycloalkyl of 3 to 8 carbon atoms;

phenyl;

naphthyl;

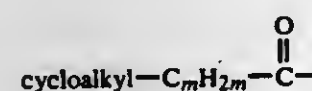
alkenyl of 2 to 20 carbon atoms;

alkynyl of 2 to 20 carbon atoms;

cycloalkenyl of 4 to 8 carbon atoms;

alkanoyl having 1 to 22 carbon atoms;

alkanoyl having one or two double bonds and having 4 to 22 carbon atoms;



having a total of 4 to 10 carbon atoms of which 3 to 7 are ring atoms in the cycloalkyl portion and wherein m is zero, one or two and cycloalkyl is unsubstituted or is substituted by 1 or 2 lower alkyl groups;

phenoxyacetyl;

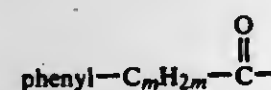
1-naphthalenecarbonyl;

2-naphthalenecarbonyl;

2-pyridinecarbonyl;

3-pyridinecarbonyl;

4-pyridinecarbonyl;



wherein m is zero, one or two and phenyl is unsubstituted or is substituted by 1 to 3 substituents, each of which may be alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, halo, trifluoromethyl, dialkylamino having 2 to 8 carbon atoms or alkanoylamino having 1 to 6 carbon atoms;

substituted phenyl and naphthyl having 1 to 3 substituents, which may be the same or different, each of which is selected from the group consisting of lower alkylthio, lower alkyl, halo, lower alkoxy, nitro, cyano, lower alkanoyl, lower carbalkoxy, di(lower alkyl)amino, lower alkanoyloxy, lower haloalkyl, lower alkylsulfonyl, hydroxy, lower hydroxyalkyl, amino, lower alkanoylamino,

4,285,949

VINCAMINE DERIVATIVES, THEIR PREPARATION  
AND THERAPEUTICAL USE

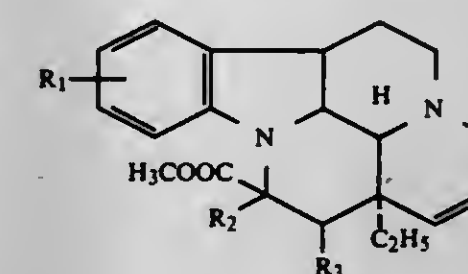
Jean A. A. J. Hannart, Chauxmont-Gistoux, Belgium, assignor to Omnicem Societe Anonyme, Brussels, Belgium

Filed Dec. 11, 1978, Ser. No. 968,147

Int. Cl.<sup>3</sup> A61K 31/445; C07D 461/00

U.S. Cl. 424-256 5 Claims

1. A process for preparing a compound of the formula



in which:

R<sub>1</sub> represents a chlorine atom in the 10-position

R<sub>2</sub> and R<sub>3</sub> represent together an additional carbon-carbon bond which comprises the steps of:

(a) reacting tabersonine with hydrochloric acid in solution in an alcohol for 2-4 days at room temperature in the presence of a peracid selected from the group consisting of m-chloroperbenzoic acid, perphthalic acid and p-nitroperbenzoic acid,

(b) heating the resulting compound of formula 1 wherein R<sub>2</sub> and R<sub>3</sub> represent respectively OH and H in formic acid at 99%.

3. A compound of formula 1 as defined in claim 1 being 10-chloro dehydro-14,15 apovincamine (or 10-chloro Δ<sub>14,15</sub> apovincamine).

4. A pharmaceutical composition for use in human and veterinary medicine in treating cardio circulatory, cerebrovascular and respiratory insufficiencies, containing an effective amount of about 1 to 200 mg of an active ingredient comprising at least the compound of formula 1 as defined in claim 1 together with a pharmaceutically acceptable carrier.

5. A method of treating cardiocirculatory, cerebrovascular and respiratory insufficiency comprising daily administration to a patient in need of such treatment of a pharmaceutical composition comprising 3 mg to 600 mg daily dosage of the vincamine derivative as defined in claim 1 in its base or salt form together with a pharmaceutically acceptable excipient.

4,285,948

N-ARYL-N'-(1,4,5,6-TETRAHYDROPYRIMIDINE-2-  
YL)UREAS AS ANTIHYPERTENSIVES

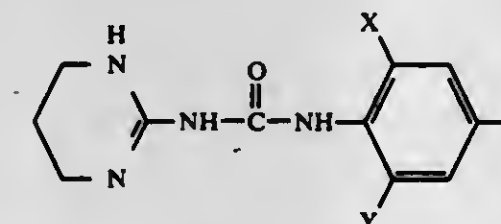
Chris R. Rasmussen, Ambler, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Filed Jun. 16, 1980, Ser. No. 159,988

Int. Cl.<sup>3</sup> A61K 31/505; C07D 239/02

U.S. Cl. 424-251 6 Claims

1. A method which comprises administering to a hypertensive animal, a therapeutically-effective antihypertensive amount of a compound selected from the group consisting of (a) an N-(phenyl)-N'-(1,4,5,6-tetrahydropyrimidin-2-yl)urea having the formula:



wherein Z is H or F; X and Y are each independently selected from the group consisting of Br, Cl, F, CH<sub>3</sub>, CF<sub>3</sub> and OCH<sub>3</sub>; and (b) a pharmaceutically-acceptable salt thereof.

4,285,950

10-HALO-E-HOMOEURNANE DERIVATIVES, A  
PROCESS FOR THE PREPARATION THEREOF, A  
PROCESS FOR THE USE THEREOF AS  
VASODILATORS, AND VASODILATING  
COMPOSITIONS THEREOF

Csaba Szantay, Lajos Szabo, György Kalász, Lajos Dancsi, Tibor Keve, and Ferenc Drexler, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

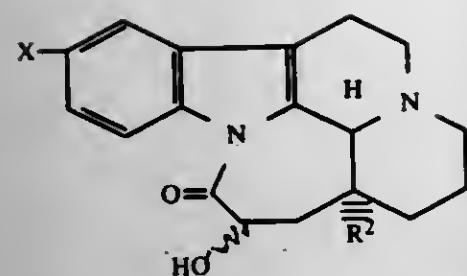
Filed Aug. 5, 1980, Ser. No. 175,383

Claims priority, application Hungary, Aug. 13, 1979, RI 723  
Int. Cl.<sup>3</sup> C07D 471/22; A61K 31/395

U.S. Cl. 424-256 7 Claims

1. A compound of the formula (1),





wherein R<sup>2</sup> is C<sub>1-6</sub> alkyl and X is halogen, or a pharmaceutically acceptable acid addition salt, an epimer or an optically active derivative thereof.

7. A vasodilating method of treatment which comprises administering to an animal subject an amount of a compound as defined in claim 1 effective to produce vasodilation or an epimer, optically active component or a pharmaceutically acceptable acid addition salt thereof.

4,285,951

### 2,2-DIMETHYL-5-(2,5-DIMETHYLPHENOXY)PENTYL ESTER OF 3-PYRIDINE CARBOXYLIC ACID AND USE AS AN ANTI-ATHEROSCLEROTIC AGENT

Milton L. Hoeft, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 7, 1979, Ser. No. 73,334  
Int. Cl.<sup>3</sup> A61K 31/44; C07D 213/55

U.S. Cl. 424-263

3 Claims

1. The compound which is the 2,2-dimethyl-5-(2,5-dimethylphenoxy)pentyl ester of 3-pyridine carboxylic acid, and the pharmaceutically-acceptable acid-addition salts thereof.

3. A method of treating a mammal suffering from atherosclerosis which comprises administering to said mammal an anti-atherosclerotic effective amount of a compound as defined in claim 1, and the pharmaceutically-acceptable acid-addition salts thereof.

4,285,952

### PYRIDYL, THIAZOLYL AND ISOTHIAZOLYL ALKYL BISAMIDINES

Graham J. Durant, Welwyn Garden City, and Peter D. Miles, Hitchin, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

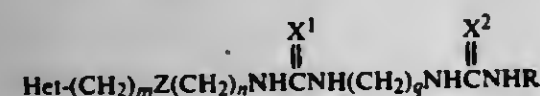
Division of Ser. No. 902,145, May 2, 1978, Pat. No. 4,212,875.  
This application Nov. 13, 1979, Ser. No. 93,366  
Claims priority, application United Kingdom, May 5, 1977, 18891/77

Int. Cl.<sup>3</sup> A61K 31/44, 31/425; C07D 213/54, 213/60, 277/30, 277/32, 275/05

U.S. Cl. 424-263

11 Claims

1. A compound of the structure



in which

Het is a 5- or 6-membered fully unsaturated heterocycle containing at least one nitrogen atom, said heterocycle being pyridine optionally substituted by lower alkyl, trifluoromethyl, hydroxymethyl, halogen, hydroxy, lower alkoxy or amino; or thiazole or isothiazole which are attached at a ring carbon and which are optionally substituted by lower alkyl, trifluoromethyl, hydroxymethyl, halogen or lower alkoxy;

Z is sulphur or methylene;

m is 0, 1 or 2, n is 2 or 3, and m+n is 3 or 4;

R is hydrogen or lower alkyl;

each of X<sup>1</sup> and X<sup>2</sup> is sulphur, a nitromethylene group CHNO<sub>2</sub>, or an imino group NY; where Y is hydrogen, hydroxy, lower alkyl, cyano or carbamoyl CONH<sub>2</sub>; and

q is from 2 to 12;

in the form of the free base or its pharmaceutically-acceptable acid addition salts.

11. A method of blocking histamine H<sub>2</sub>-receptors which comprises administering to an animal in need thereof in an effective amount to block said receptors a compound of claim 1.

4,285,953

### INHIBITION OF BIOSYNTHESIS OF TRIGLYCERIDES BY CERTAIN

#### N-β-PHENETHYL-N-PYRIDYLALKYLAMINES

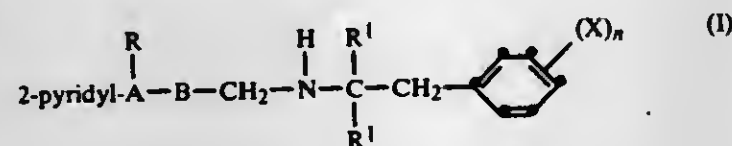
George R. Haynes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 117,160, Jan. 31, 1980, abandoned. This application Nov. 3, 1980, Ser. No. 202,996  
Int. Cl.<sup>3</sup> A61K 31/44

U.S. Cl. 424-263

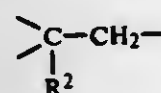
1 Claim

1. A method for inhibiting biosynthesis of triglycerides in swine which comprises administering, to a pig in need of such treatment, orally or parenterally, an effective amount of a compound of the formula:



wherein

(a) the bridging fragment >A-B- is one of



and >C=CH-;

(b) R is 2-pyridyl or



(c) each of R<sup>1</sup> is hydrogen or methyl;

(d) R<sup>2</sup> is hydrogen or hydroxyl;

(e) n is zero or one;

(f) X is halogen or alkyl of one to three carbon atoms;

(g) m is zero or one;

(h) Y is alkyl of one to three carbon atoms, and their physiologically acceptable acid addition salts.

4,285,954

### PESTICIDAL S-PYRIDYL THIOESTERS OF PHENYLBUTANOIC ACIDS AND DERIVATIVES THEREOF

Thomas L. Brown, Mountain View, and Clive A. Henrick, Palo Alto, both of Calif., assignors to Zeecon Corporation, Palo Alto, Calif.

Filed Nov. 19, 1980, Ser. No. 208,469

Int. Cl.<sup>3</sup> C07D 213/83, 405/12; A61K 31/44

U.S. Cl. 424-263

6 Claims

1. A compound of the following formula (A):

4,285,956

### XANTHENE AND THIOXANTHENE DERIVATIVES, COMPOSITIONS THEREOF AND TREATMENT THEREWITH

Niels Lassen, Gentofte; Klaus P. Bøges, Lyngby; Peter B. Hansen, Allerød; Jørn L. M. Baus, Bjæverskov, and Allan J. Bigler, Copenhagen, all of Denmark, assignors to Kefalas A/S, Copenhagen-Valby, Denmark

Filed May 3, 1979, Ser. No. 35,735

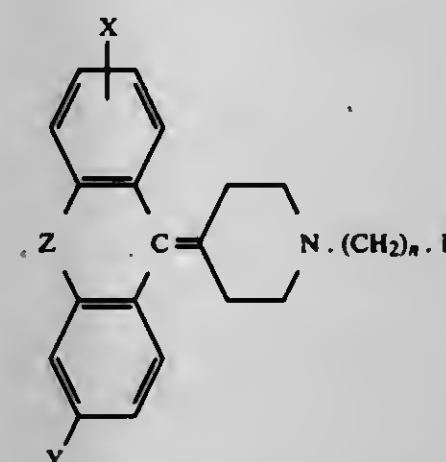
Claims priority, application United Kingdom, May 12, 1978, 19310/78

Int. Cl.<sup>3</sup> A61K 31/445; C07D 405/04, 409/04; A01N 43/40; C07D 279/00

U.S. Cl. 424-267

15 Claims

1. A compound selected from the group consisting of (1) a xanthene- and thioxanthene derivatives of the formula:



wherein

X is selected from the group consisting of halogen, an alkyl group with from one to four carbon atoms inclusive, an alkoxy group with from one to four carbon atoms inclusive, a methylthio group, a methylsulfonyl group, a dimethylsulphamoyl group, a trifluoromethyl group and an acetyl group;

Y is selected from the group consisting of hydrogen, fluorine and a methyl group;

Z is selected from the group consisting of oxygen and sulphur;

n is an integer from zero to three inclusive, and

R is selected from the group consisting of a cycloalkyl group with from four to six carbon atoms inclusive in the ring, substituted with from one to four substituents selected from optionally esterified hydroxy or hydroxymethyl groups, methyl groups, amino groups, acetamino groups, mesylamino groups and oxo groups, any esterified hydroxy group present being an ester of an aliphatic carboxylic acid having from ten to twenty-two carbon atoms inclusive, with the proviso that methyl is present only when one of the other named substituents is also present, and

(2) a non-toxic pharmaceutically acceptable acid addition salt thereof.

4,285,957

### 1-PIPERIDINE-ALKANOL DERIVATIVES, PHARMACEUTICAL COMPOSITIONS THEREOF, AND METHOD OF USE THEREOF

Albert A. Carr; Joseph E. Dufini, both of Cincinnati, Ohio, and George J. Wright, Richmond, Va., assignors to Richardson-Merrell Inc., Wilton, Conn.

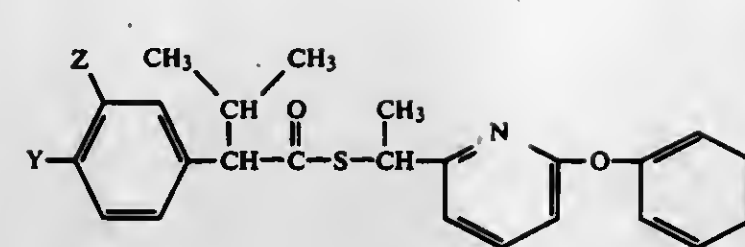
Division of Ser. No. 28,813, Apr. 10, 1979. This application Oct. 14, 1980, Ser. No. 196,505

Int. Cl.<sup>3</sup> C07D 211/22; A61K 31/445; C07D 211/70

U.S. Cl. 424-267

6 Claims

1. A compound of the formula



wherein,

Y is hydrogen, lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms, bromo, chloro, difluoromethoxy, trifluoromethoxy or trifluoromethyl; and

Z is independently selected from the values of Y; or Y and Z together form a methylenedioxy or a difluoromethylene-dioxy group.

5. A method for controlling insects or acarids which comprises applying to the locus a pesticidally effective amount of a compound of claim 1.

4,285,955

### 1,4-DIHYDROPYRIDINE CARBOXYLIC ACIDS

Egbert Wehinger, Velbert, and Friedrich Bossert, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 12, 1979, Ser. No. 84,338

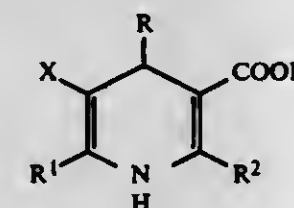
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1978, 2847237; May 26, 1979, 2921429

Int. Cl.<sup>3</sup> C07D 213/22, 211/80; A61K 31/44

U.S. Cl. 424-266

15 Claims

1. A compound of the formula

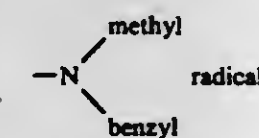


or a salt thereof, in which

R denotes a 2-nitrophenyl radical, a 3-nitrophenyl radical, a 2-trifluoromethylphenyl radical, a 2-chlorophenyl radical or a 2-methylmercaptopyridyl radical,

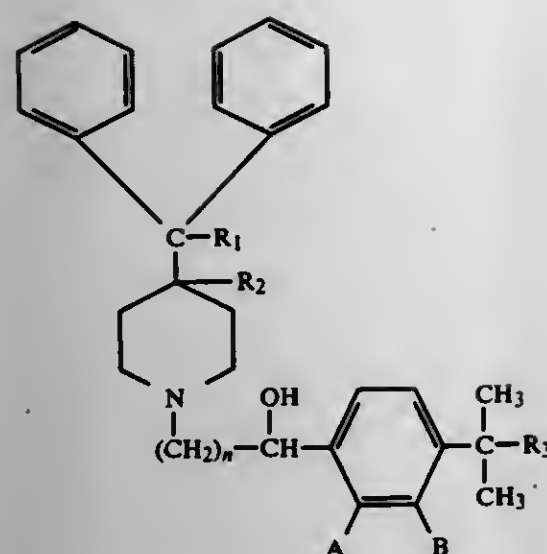
R<sup>1</sup> and R<sup>2</sup> denotes methyl groups and

X denotes COOH or COOR<sup>4</sup>, whereby R<sup>4</sup> denotes a straight-chain, branched or cyclic alkyl radical with up to 6 carbon atoms, which is optionally interrupted by an oxygen atom in the chain or is substituted by 1 to 2 trifluoromethyl groups or by an



but R<sup>4</sup> is only a methyl or isobutyl radical when R denotes a 2-nitrophenyl radical.





wherein  $R_1$  represents hydrogen or hydroxy;  $R_2$  represents hydrogen; or  $R_1$  and  $R_2$  taken together form a second bond between the carbon atoms bearing  $R_1$  and  $R_2$ ;  $n$  is an integer of from 1 to 5;  $R_3$  is  $-\text{CH}_3$ , or  $-\text{CH}_2\text{OH}$ ; each of  $A$  and  $B$  is hydrogen or hydroxy; with the provisos that at least one of  $A$  or  $B$  is hydrogen and one of  $A$  or  $B$  is other than hydrogen when  $R_3$  is  $-\text{CH}_3$ ; and pharmaceutically acceptable salts and individual optical isomers thereof.

6. A method of treating allergic reactions in a patient in need thereof which comprises administering to said patient an anti-allergically effective amount of a compound of claim 1.

4,285,958

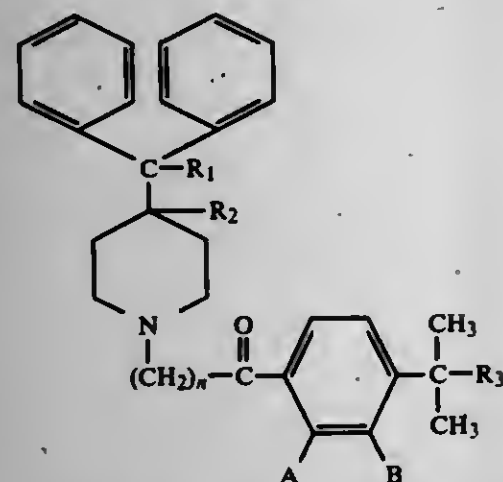
#### 1-PIPERIDINE-ALKYLENE KETONES, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHOD OF USE THEREOF

Albert A. Carr; Joseph E. Dolfini, both of Cincinnati, Ohio, and George J. Wright, Richmond, Va., assignors to Richardson-Merrell Inc., Wilton, Conn.

Division of Ser. No. 28,872, Apr. 10, 1979. This application Oct. 14, 1980, Ser. No. 196,951

Int. Cl.<sup>3</sup> C07D 211/70; A61K 31/445; C07D 211/22  
U.S. Cl. 424-267 12 Claims

1. A compound of the formula



wherein  $R_1$  is hydrogen or hydroxy;  $R_2$  is hydrogen; or  $R_1$  and  $R_2$  taken together form a second bond between the carbon atoms bearing  $R_1$  and  $R_2$ ;  $n$  is an integer of from 1 to 5;  $R_3$  is  $-\text{CH}_3$ , or  $-\text{CH}_2\text{OH}$ ; and  $A$  and  $B$  are individually hydrogen or hydroxy; with the provisos that at least one of  $A$  or  $B$  is hydrogen, and one of  $A$  or  $B$  is other than hydrogen when  $R_3$  is  $-\text{CH}_3$ ; and pharmaceutically acceptable acid addition salts thereof.

12. A method of treating allergic reactions in a patient in need thereof which comprises administering to said patient an anti-allergically effective amount of a compound of claim 1.

4,285,959  
3-(N-1,3,4-THIAZOLYL-2)-AMINOALKYL-ALKYL-ACRYLATES AND USE THEREOF AS BACTERICIDES  
Karl Gützi, Basel; Hanspeter Baumann, Reinach, both of Switzerland; Walter Kunz, Manchester, England, and Bernhard Gloor, Pratteln, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

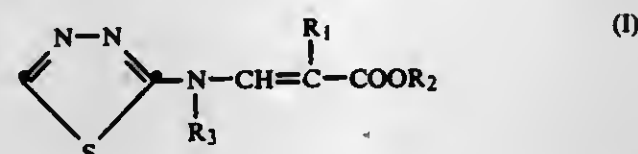
Filed May 7, 1980, Ser. No. 147,457

Claims priority, application Switzerland, May 18, 1979, 4670/79; Apr. 14, 1980, 2857/80

Int. Cl.<sup>3</sup> A01N 43/82; C07D 285/08, 417/12

U.S. Cl. 424-270 12 Claims

1. A compound of the formula



wherein  $R_1$  is hydrogen or  $\text{C}_1$ - $\text{C}_4$  alkyl;  $R_2$  is  $\text{C}_1$ - $\text{C}_4$  alkyl; and  $R_3$  is hydrogen or the group  $-\text{CO}-\text{R}_4$  in which  $\text{R}_4$  is methoxymethyl,  $\text{C}_3$ - $\text{C}_6$  cycloalkyl,  $\text{C}_1$ - $\text{C}_4$  alkyl optionally mono- or poly-substituted by chlorine,  $\text{C}_2$ - $\text{C}_4$  alkenyl optionally mono- or poly-substituted by chlorine, furyl, thienyl, pyridyl or phenyl, the pyridyl or phenyl groups each being optionally mono- to tetra-substituted by one or more members selected from the group consisting of  $\text{C}_1$ - $\text{C}_4$  alkyl, chlorine, cyano and nitro.

6. A composition for controlling and/or preventing attack by phytopathogenic bacteria, said composition containing, as active component, a bactericidally effective amount of a compound according to claim 1 together with one or more inert carriers or diluents.

4,285,960

#### PENICILLIN COMPOSITIONS

Harry Ferres, Horsham, England, assignor to Beecham Group Limited, England

Continuation of Ser. No. 800,281, May 25, 1977, abandoned.

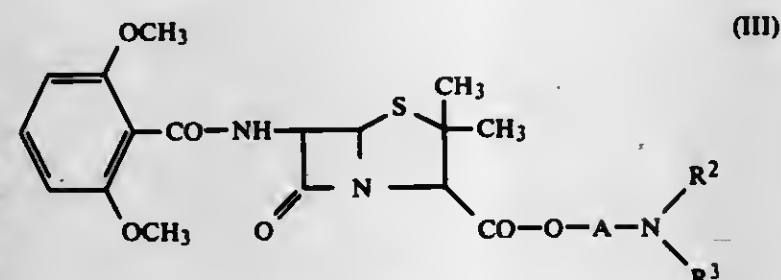
This application Sep. 14, 1978, Ser. No. 942,293

Claims priority, application United Kingdom, Jun. 11, 1976, 24219/76

Int. Cl.<sup>3</sup> A61K 31/43

U.S. Cl. 424-271 6 Claims

1. A method for the treatment of bacterial infections in humans comprising orally administering to a human in need thereof a composition of a pharmaceutically acceptable carrier together with an antibacterially effective amount of a methicillin ester of formula (III):



or a pharmaceutically acceptable acid addition salt thereof, wherein  $A$  is  $\text{C}_1$ - $\text{C}_6$  alkylene unsubstituted or substituted by methyl or ethyl, and  $R^2$  and  $R^3$  are the same or different and each is  $\text{C}_1$ - $\text{C}_6$  alkyl, the composition being in oral dosage form.

4,285,961

#### BASIC THIOETHERS

Helmut Prücher, Heppenheim; Jürgen Uhl, Seeheim; Hans-Adolf Kurmeier, Darmstadt; Volkmar Rudolph, Seeheim, and Helmut Wahlig, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

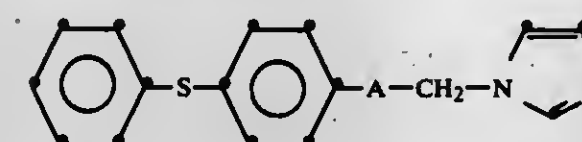
Continuation of Ser. No. 926,350, Jul. 20, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 82,456

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732750

Int. Cl.<sup>3</sup> A61K 31/415; C07D 233/20

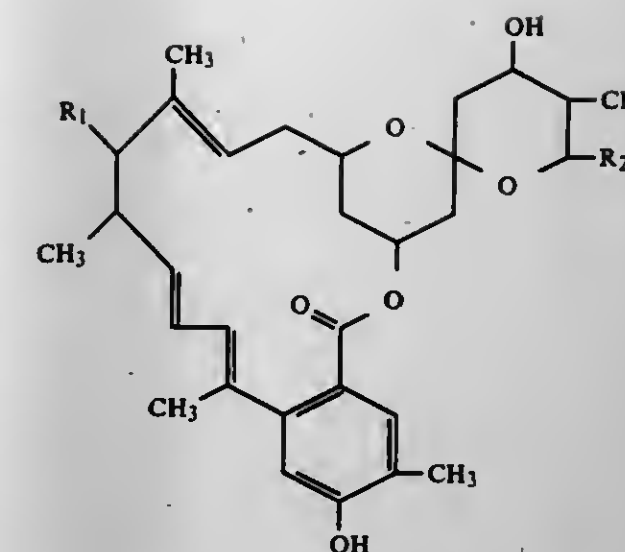
U.S. Cl. 424-273 R 7 Claims

1. A thioether of the formula



wherein  $A$  is  $-\text{CH}=\text{CH}-$ ,  $-\text{CH}=\text{C}(\text{CH}_3)-$  or  $-\text{CH}_2-\text{CH}(\text{CH}_3)-$ .

5. A pharmaceutical composition comprising an antimicroorganismally effective amount of a thioether of claim 1 and a pharmaceutically acceptable carrier.



wherein (a)  $R_1$  is  $-\text{OH}$  and  $R_2$  is sec-butyl; (b)  $R_1$  is  $=\text{O}$  and  $R_2$  is sec-butyl; (c) and  $R_1$  is  $-\text{OH}$  and  $R_2$  is iso-propyl.

9. A method for the treatment of parasitic infections which comprises administering to an animal infected with parasitic infection, an effective amount of a compound of claim 1 or 5.

4,285,964

#### SALTS OF (+)-CATECHINE, THEIR PREPARATION AND USE, AND COMPOSITIONS CONTAINING THESE SALTS

Paul Niebes, Grez Dolceau; Andras Vincze, Brussels; Joseph Roba, Ciermont-Houyet; Georges Lambelin, Brussels; Daniel Matagne, Tavier; Etienne Hanon, and Michel Franz, both of Brussels, all of Belgium, assignors to Continental Pharma, Brussels, Belgium

Filed Aug. 30, 1979, Ser. No. 71,076

Int. Cl.<sup>3</sup> A61K 31/35; C07D 311/62

U.S. Cl. 424-283 13 Claims

1. A salt of (+)-catechin which is the reaction product of (+)-catechin with at least one basic amino-acid selected from the group consisting of L-lysine and L-arginine.

2. A hydrosoluble double salt of (+)-catechin which is the reaction product of (+)-catechin, a basic amino-acid selected from the group consisting of L-lysine and L-arginine and another acid selected from the group consisting of hydrochloric acid, ascorbic acid, acetic acid and citric acid.

6. A pharmaceutical composition for the treatment of diseases of the articular cartilage comprising, as active product, an effective amount of at least one hydrosoluble double salt of (+)-catechin as claimed in claim 2, in association with a suitable excipient.

4,285,965

#### COMBATING PESTS WITH 2-CARBOXYMETHYL-3-CARBOXY-CHROMONES AND ESTERS

Hans-Joachim Kabbe; Paul-Ernst Frohberger, both of Leverkusen, and Peter Roessler, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 39,620, May 16, 1979, abandoned, which is a division of Ser. No. 918,129, Jun. 22, 1978, Pat. No. 4,189,498.

This application Dec. 17, 1979, Ser. No. 104,223

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1977, 2731566

Int. Cl.<sup>3</sup> A61K 31/35; C07D 311/24

U.S. Cl. 424-283 6 Claims

1. A compound of the formula

4,285,963

#### NOVEL DERIVATIVES OF C-076 COMPOUNDS

Byron H. Arison, Watchung; Robert T. Goegelman, Linden, and Vincent P. Gallo, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

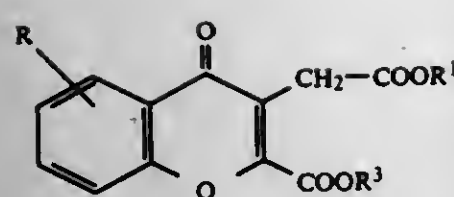
Filed Aug. 7, 1980, Ser. No. 175,615

Int. Cl.<sup>3</sup> A61K 31/365; C07D 493/20, 313/06

U.S. Cl. 424-279 9 Claims

1. A compound having the formula:





in which

$\text{R}$  is chlorine or methoxy, and  
 $\text{R}^3$  is hydrogen or methyl.

6. An arthropodocidal or fungicidal composition containing as active ingredient an arthropodocidally or fungicidally effective amount of a compound according to claim 1 in admixture with a diluent.

4,285,966

## CERTAIN 15-EPI-PROSTACYCLINS

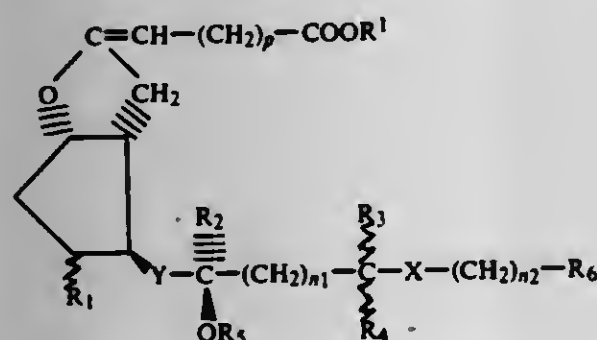
Carmelo Gandolfi, Milan; Carlo Passarotti, Gallarate; Alessandro Andreoni, Cologno Monzese; Angelo Fumagalli, Monza; Franco Faustini, and Roberto Cesaroni, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba, S.p.A., Milan, Italy  
 Filed Oct. 30, 1978, Ser. No. 955,631

Claims priority, application Italy, Nov. 25, 1977, 30029 A77  
 Int. Cl. C07D 307/935; A61K 31/557

U.S. Cl. 424—285

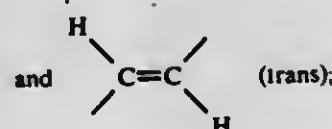
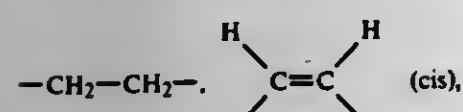
12 Claims

1. A 15-epi compound of the formula



wherein

$\text{R}^1$  is hydrogen or  $\text{C}_1\text{--C}_6$  alkyl;  
 $p$  is zero or an integer of 1-7;  
 $\text{R}_1$  is hydroxy,  $\text{C}_1\text{--C}_6$  alkoxy, benzyloxy, or acyloxy;  
 $\text{Y}$  is chosen from the group:



$\text{R}_2$  is hydrogen,  $\text{C}_1\text{--C}_6$  alkyl or  $\text{C}_2\text{--C}_6$  alkenyl;

$\text{R}_5$  is hydrogen or  $\text{C}_1\text{--C}_6$  alkyl;

$n_1$  and  $n_2$ , whether the same or different, are zero or an integer of 1 to 6;

$\text{R}_3$  and  $\text{R}_4$ , whether the same or different, are hydrogen,  $\text{C}_1\text{--C}_6$  alkyl or may form a



group with a carbon atom to which they are bound;

$\text{X}$  is chosen from  $-\text{O}-$  or  $-\text{S}-$ ;

$\text{R}_6$  is a substituent chosen from (a)  $\text{C}_1\text{--C}_4$  alkyl, (b) a  $\text{C}_3\text{--C}_9$  cycloalkyl,  $\text{C}_3\text{--C}_9$  cycloalkenyl, norbornyl, or adamantyl

radical each of which radicals may be substituted by one or more  $\text{C}_1\text{--C}_6$  alkyl or  $\text{C}_1\text{--C}_6$  alkoxy groups; and a pharmaceutically or veterinarily acceptable salt thereof.  
 7. Method of inhibiting platelet aggregation in a patient in need of such inhibition, said method comprising administering to said patient a therapeutically effective amount of a compound of claim 1.

4,285,967

## COSMETIC PREPARATION FOR REDUCING REDNESS OF BLEMISHES

Joseph Gubernick, Port Washington; Joseph Rosenstreich, Merrick, both of N.Y., and Lois A. Clapp, Hackensack, N.J., assignors to Estee Lauder Inc., New York, N.Y.

Continuation of Ser. No. 920,931, Jan. 30, 1978, abandoned.

This application Feb. 4, 1980, Ser. No. 118,053

Int. Cl. A61K 31/135, 31/215

U.S. Cl. 424—289

19 Claims

1. A cosmetic composition for reducing the redness of skin blemishes comprising from about 20 to 40 weight percent water and from 60 to 80 weight percent ethanol; from about 0.1 to about 1.0 weight percent of a phenylephrine hydrochloride vasoconstrictor; and from about 0.25 to 3.0 weight percent of an astringent selected from the group consisting of metallic astringent compounds and organic acids, all weight percents based on the total weight of the composition.

4,285,968

## PESTICIDAL CONCENTRATE WITH STABILIZING AGENT

Wayne B. Rose, Merriam, Kans., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Feb. 21, 1978, Ser. No. 879,187

Int. Cl. A01N 47/10

U.S. Cl. 424—300

4 Claims

1. A pesticidal concentrate comprising o-isopropoxyphenyl methylcarbamate and citric acid or a salt thereof dissolved in a liquid water soluble dispersion medium selected from the group consisting of methanol, ethanol, isopropanol, dipropylene glycol monomethyl ether, and polyethylene glycol, the amount of the dispersion medium being sufficient to assure dissolution of substantially all of the carbamate at room temperature and, the amount of the citric acid or salt thereof being sufficient, when the concentrate is diluted to result in a pesticidally effective amount of the carbamate with water, to result in an aqueous solution having a pH of 7.0 or less.

4,285,969

## PYRETHROIDS

Remo Galli, Dresano; Franco Gozzo, San Donato Milanese; Ottorino Palla, Crema, and Angelo Longoni, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Mar. 4, 1980, Ser. No. 127,118

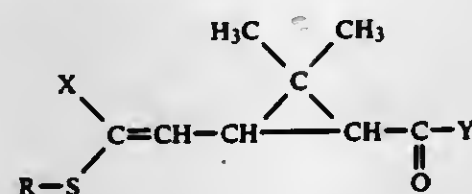
Claims priority, application Italy, Mar. 9, 1979, 20853 A/79

Int. Cl. A01N 53/00; C07C 61/35, 69/743, 121/75

U.S. Cl. 424—304

19 Claims

1. Compounds of general formula:

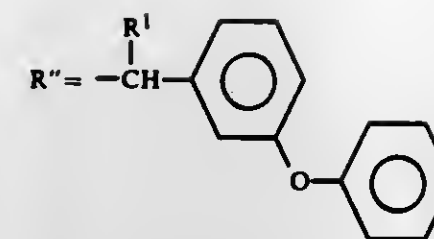


wherein:

$\text{R} = \text{C}_1\text{--C}_4$  alkyl

$\text{X} = \text{halogen}$

$\text{Y} = \text{OR}''$  and



wherein  $\text{R}^1 = \text{H}$  or  $\text{CN}$ .

9. Method for fighting infestations by insects characterized in that an effective insecticidal amount of one or more of the compounds of claim 1 are applied as such or in the form of suitable compositions on the zone in which insect control is desired.

4,285,970

## N-PHENETHYLAMINOPROPIOPHENONES AS LIPOGENESIS INHIBITORS

George R. Haynes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

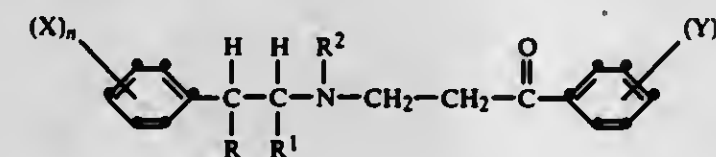
Division of Ser. No. 115,467, Jan. 25, 1980. This application Jul. 21, 1980, Ser. No. 170,345

Int. Cl. A61K 31/275, 31/12

U.S. Cl. 424—304

1 Claim

1. A method of inhibiting lipogenesis in a mammal, which comprises administering, to a mammal in need of such treatment, orally or parenterally a lipogenesis inhibiting amount of a compound of the formula:



wherein

$\text{R}$  is hydrogen or hydroxyl;

$\text{R}^1$  is hydrogen or methyl;

$\text{R}^2$  is hydrogen or methyl;

$n$  is zero, one or two;

$\text{X}$  is hydroxyl, with the proviso that when  $n$  is one, the hydroxyl moiety is bonded to the carbon atom at the 4-position in the phenyl ring, and when  $n$  is two, the hydroxyl moieties are bonded to the carbon atoms in the 3- and 4-positions of the phenyl ring;

$m$  is one;

$\text{Y}$  is one of

nitro;

hydroxyl;

alkyl;

alkoxy;

alkylthio;

alkanoylamino;

alkenoylamino;

3-(dialkylamino)alkyleneoxy;

2-(dialkylamino)alkyleneoxy, and their pharmacologically acceptable acid addition salts.

4,285,971

## NOVEL HALOGENATED PHENOL ESTERS, ANTIMICROBIAL COMPOSITIONS CONTAINING THEM AND THEIR USE

Rene Muntwyler, Hofstetten, Switzerland, assignor to Ciba-Gelgy Corporation, Ardley, N.Y.

Filed Jul. 30, 1979, Ser. No. 62,192

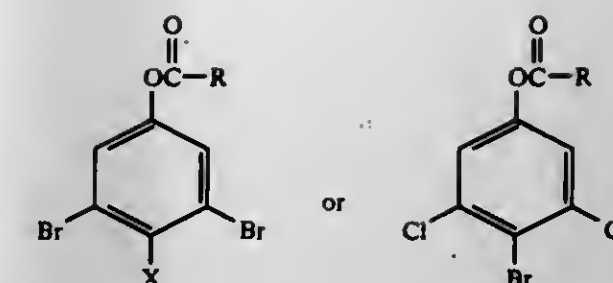
Claims priority, application Switzerland, Aug. 8, 1978, 8473/78

Int. Cl. A01N 37/02, 37/06, 37/10; C07C 69/76

U.S. Cl. 424—308

9 Claims

1. A halogenated phenol ester of the formula



wherein  $\text{X}$  represents chlorine or fluorine and  $\text{R}$  represents hydrogen, alkyl of 1 to 22 carbon atoms, alkenyl of 2 to 22 carbon atoms, benzyl which is unsubstituted or substituted by chlorine or bromine atoms, or phenyl which is unsubstituted or substituted by 1 or more substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, carboxyl, chlorine and bromine.

7. An antimicrobial composition containing a microbiocidally effective amount of one or more of the phenol esters defined in claim and a carrier therefor 1.

4,285,972

## METHOD OF TREATING SCOURS

Billy J. Chou, Paoli; John Yelovsky, Warrington, and Richard L. Riley, North Wales, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

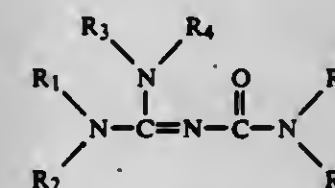
Filed Aug. 13, 1979, Ser. No. 65,982

Int. Cl. A61K 31/17, 31/155

U.S. Cl. 424—326

26 Claims

1. A method of treating scours in calves, lambs, piglets or foals which comprises administering to the afflicted animal an effective amount of an anti-scouring agent of the formula:



wherein one of  $\text{R}_1$  and  $\text{R}_5$  is phenyl, phenyl in which one or more of the hydrogens is substituted by halo, lower alkyl, halo lower alkyl, nitro, lower alkoxy, hydroxy, aryl lower alkoxy, acyloxy, cyano, halo lower alkoxy, or lower alkyl sulfonyl; aralkyl, pyridyl, or pyridyl having one or more of the hydrogens replaced by lower alkyl, lower alkoxy, halo, halo lower alkyl, amino, nitro, hydroxy, cyano, carboxyl or lower alkyl sulfonyl; and the other of  $\text{R}_1$  and  $\text{R}_5$  is hydrogen, lower alkyl, lower alkoxy, lower alkenyl, cyclo lower alkenyl, cyclo lower alkyl, aralkyl, lower alkynyl, halo alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl, cyano lower alkyl, amino lower alkyl, mono or di-lower alkyl amino lower alkyl, carbamoyl lower alkyl, mono or di-carbamoyl lower alkyl, lower alkoxy carbamoyl lower alkyl, aralkoxy carbamoyl lower alkyl, acyl lower alkyl, alkyl sulfonyl or aralkyl sulfonyl;  $\text{R}_2$  and  $\text{R}_6$  are each independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, lower alkenyl, cyclo lower alkenyl, cyclo lower alkyl, aralkyl, lower alkynyl, halo alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl, cyano lower alkyl, amino lower alkyl, mono or di-lower alkyl amino lower alkyl, carbamoyl lower alkyl, mono or di-carbamoyl lower alkyl, lower alkoxy carbamoyl lower alkyl, aralkoxy carbamoyl lower alkyl, acyl lower alkyl, alkyl sulfonyl or aralkyl sulfonyl; and when  $\text{R}_1$  is phenyl, phenyl substituted as above, aralkyl, pyridyl or pyridyl substituted as above,  $\text{R}_5$  together with  $\text{R}_6$  and the nitrogen to which  $\text{R}_5$  and  $\text{R}_6$  are attached may form a 5 or 6 membered heterocyclic ring which may include 0 to 2 additional hetero atoms which may be either oxygen, nitrogen or sulfur; and when  $\text{R}_5$  is phenyl, phenyl substituted as above,  $\text{R}_1$  and  $\text{R}_2$  together with the nitrogen to which they are attached may be a 5 or 6 membered



heterocyclic ring which may include 0 to 2 additional hetero atoms which may be either oxygen, nitrogen or sulfur; and R<sub>3</sub> and R<sub>4</sub> are each independently hydrogen, lower alkyl, lower alkoxy, lower alkenyl, lower alkynyl, cyclo lower alkyl or aralkyl; and their pharmaceutically acceptable acid addition salts.

4,285,973

# LIQUID COMPOSITION FOR APPLICATION TO THE SKIN

Diane B. Edwards, Carol Stream, Ill., assignor to Alberto-Culver Company, Melrose Park, Ill.

Filed Jul. 20, 1979, Ser. No. 59,441  
Int. Cl.<sup>3</sup> A61K 7/48

U.S. Cl. 424—358

5 Claims

1. A protective skin lotion composition in the form of an oil-in-water emulsion, the dispersed oil phase comprising an admixture of cosmetic emollient oils and forming from 5 to 35% by weight of said composition, the continuous water phase comprising from 95 to 65% by weight of said composition containing quaternary ammonium cellulose ether polymer in the amount of 0.05 to 3.0% based on the weight of said composition, wherein the improvement comprises increasing the skin retention of the cellulose polymer by also incorporating in said water phase from 0.3 to 3.0% of lactate salt based on the weight of said composition, said lactate salt being selected from the class consisting of sodium lactate, potassium lactate, and ammonium lactate, the pH of said water phase being in the range from 5.0 to 6.0, and incorporating in the oil phase from 0.5 to 4.0% of an oil-soluble quaternary ammonium salt based on the weight of said composition, said quaternary salt being selected from the class consisting of the chloride salt of a dimethyl di-aliphatic quaternary and the sulfate salt of a dimethyl di-aliphatic quaternary in which the aliphatic groups contain from 12 to 18 carbons.

4,285,974

# INTAKE LIMITING LIQUID FEED SUPPLEMENT FOR CATTLE

Norman L. Betz, St. Louis, Mo.; Kent J. Lanter, Belleville, Ill., and Danny L. Williams, Manchester, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Continuation of Ser. No. 930,787, Aug. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 849,741, Nov. 9, 1977, abandoned. This application Dec. 10, 1979, Ser. No. 101,665. The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.<sup>3</sup> A23K 1/02

U.S. Cl. 426—2

20 Claims

1. An intake limiting liquid feed supplement for cattle containing an intake limiting composition, said feed supplement comprising a liquid carbohydrate medium, said intake limiting composition being present in an amount effective to limit intake of said supplement, consisting essentially of an acidulated unsaponified fat selected from the group consisting of coconut oil, corn oil, cottonseed oil, palm oil, palm kernel oil, soybean oil, tallow, and grease which has been acidulated at a temperature of at least about 220° F. with an acid.

4,285,975

# PRODUCTION OF BREWER'S WORT

Paul R. Glenister, Chicago, Ill., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jan. 29, 1980, Ser. No. 116,574  
Int. Cl.<sup>3</sup> C12C 7/00, 9/00

U.S. Cl. 426—29

2 Claims

1. A process for preparing brewer's wort which consists essentially of:

(a) forming at 82° to 88° C. an aqueous mash containing from 23 to 40 weight percent malted cereal and from 60 to 77

weight percent unmalted cereal, said weight percents based on the total weight of such malted and unmalted cereals, and also containing an amount of starch liquefying thermostable alpha amylase produced by *Bacillus licheniformis* effective to substantially liquify the starch;

(b) maintaining the mash at such temperature until a substantial amount of the cereal starch has been liquefied;

(c) cooling the mash to a temperature of 60° to 65° C.;

(d) adding malted cereal to the mash wherein the total unmalted and malted cereals added in steps (a) and (d) consist of 55 to 70 weight percent unmalted cereal and 30 to 45 weight percent malted cereal, said weight percents based on the initial total weight of such added cereals, and maintaining the resulting mixture at 60° to 65° C. until a substantial amount of the cereal starch has been saccharified;

(e) raising the temperature of the mash to a value from 72 to 76° C. and maintaining the mash at this temperature until the starch has been completely converted, and

(f) separating brewer's wort from the mash obtained from step (e).

4,285,976

# METHOD FOR ACCELERATING AUTOLYSIS OF YEAST

Cavit Akin, and Rose M. Murphy, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 23, 1979, Ser. No. 96,789

Int. Cl.<sup>3</sup> A23L 1/28; A23J 1/18; C12C 11/34; C12N 1/06

U.S. Cl. 426—60

13 Claims

1. In a process for autolyzing yeasts wherein a yeast slurry is incubated at a temperature of from about 40° to about 60° C. to solubilize the yeast cell materials, the improvement comprising incubating the yeast slurry for from about 2 to about 16 hours in admixture with an additive selected from the group consisting of thiamine, pyridoxine, and a combination of thiamine and pyridoxine at a concentration of at least 0.01 weight percent.

4,285,977

# PROCESS FOR PREPARING CARBONATED LIQUIDS

Milton Yezek, Clover, S.C., and Joan M. Adams, Fairview, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 10, 1979, Ser. No. 83,734

Int. Cl.<sup>3</sup> A23L 2/00, 2/40

U.S. Cl. 426—67

8 Claims

1. A method of carbonating water which comprises contacting water with carbonated ice initially at substantially normal atmospheric pressure in a closed pressure vessel, the carbonated ice containing at least 25 ml of carbon dioxide per gram of ice, the amount of carbonated ice being sufficient to create a superatmospheric pressure in said vessel and provide carbonated water containing at least three volumes of carbon dioxide.

4,285,978

# METHOD FOR DECORATING BAKED GOODS AND THE LIKE

Sharon L. Quinlivan, 13302 Finsbury Ct., Laurel, Md. 20811

Continuation of Ser. No. 22,627, Mar. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 904,030, May 8, 1978, abandoned. This application Aug. 21, 1980, Ser. No. 180,003

Int. Cl.<sup>3</sup> A23G 3/28

U.S. Cl. 426—87

17 Claims

1. An improved method of decorating baked goods prepared from uncooked dough, comprising the steps of:

providing a volume of relatively plastic uncooked unleavened dough having a smooth, generally planar upper surface and adapted, upon cooking, to form edible baked goods whose surfaces are neither flaky nor checked;

providing a transfer medium having a pre-printed design formed on at least one surface thereof by an edible, water-soluble ink;

applying the transfer to said upper surface of said dough;

supplying moisture to the transfer to cause the ink to leach out onto the surface of the dough; and thereafter baking the dough; whereby a baked good is produced bearing thereon a design corresponding to the design upon said transfer medium.

4,285,979

# BREAD MAKING PROCESS AND PRODUCT THEREOF PARTICULARLY WELL SUITED FOR FREEZING AND REHEATING

Edmund F. Izzi, 8500 Magnolia Dr., Lanham, Md. 20801

Continuation-in-part of Ser. No. 910,892, May 30, 1978,

abandoned. This application Jun. 3, 1980, Ser. No. 155,972

Int. Cl.<sup>3</sup> A21D 6/00

U.S. Cl. 426—94

18 Claims

1. A method of making a bread product comprising the steps of:

- preparing a bread dough;
- forming the bread dough into a substantially flat sheet having two opposed planar major surfaces and a predetermined thickness between said major surfaces;
- frying the dough sheet to only partially cook the same for a period of time sufficient to seal said surfaces but insufficient to permit substantial distortion of said planar major surfaces or to permit said dough sheet to separate internally thereof into different layers separated by air; and
- baking the dough subsequent to frying to substantially complete the cooking thereof to obtain a cooked dough sheet with a crisp outer shell and a moist, bread-like interior and substantially the same shape as the originally formed dough sheet.

4,285,980

# METHOD FOR PREPARING MOLDED POULTRY PRODUCT

Reuben Lewis, 105-52 Flatlands 7th St., Brooklyn, N.Y. 11236

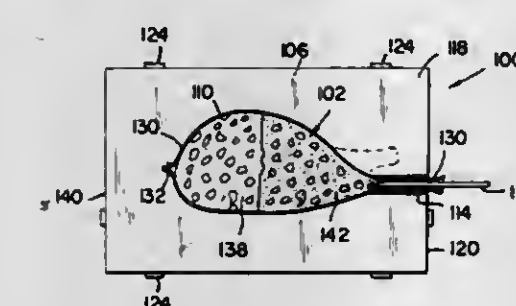
Continuation-in-part of Ser. No. 33,132, Apr. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 885,516,

Mar. 13, 1978, abandoned. This application May 30, 1980, Ser. No. 155,148

Int. Cl.<sup>3</sup> B65D 81/34; A23L 1/315

U.S. Cl. 426—249

6 Claims



1. A method of producing a cooked poultry product comprising:

- providing a flexible stretchable bag having a closed end and an open end and placing the closed end of the flexible stretchable bag within the internal contour of assembled and clamped sectional members of a mold, said internal contour forming a cavity the configuration of which is a whole cooked poultry product comprising a breast portion and leg portions the bag being positioned substantially within the cavity, said open end being disposed adjacent an access hole in the assembled mold;
- placing the mold on an end disposed away from the access hole and inserting a filling tube into said flexible bag through said access hole in the assembled mold and into the open end of the bag;
- pressing a first meat comprising a white meat through the filling tube at the open end of said bag so that the forced meat causes the bag to stretch so that a first portion of the

bag contacts a first portion of the mold contour corresponding to and substantially filling the breast portion of the poultry;

d. pressing a second meat comprising a dark meat through the filling tube at the open end of said bag, onto the first meat, so that a second portion of the bag contacts a second portion of the mold contour corresponding to and filling the leg portions;

e. closing the open end of the bag after the bag is stretched to the mold contour; and

f. then heating the mold so as to cook the meat within the bag confined to the internal mold contour, further comprising retaining the stretched and filled bag in the mold during heating so that the final form is set prior to opening the mold, and expansion of the meat in the bag due to cooking causes the meat to more completely take the form of the internal contour of the mold, whereby the cooked meat is in the form of a whole cooked poultry with the white meat in the breast portion and the dark meat in the leg portion.

4,285,981

# LIQUID SEASONING COMPOSITIONS III

Paul H. Todd, Jr., and Howard E. Haley, both of Kalamazoo, Mich., assignors to Kalsec, Inc., Kalamazoo, Mich.

Filed Feb. 28, 1980, Ser. No. 125,425

Int. Cl.<sup>3</sup> A23L 1/221

U.S. Cl. 426—250

17 Claims

1. A homogeneous liquid condimental composition, useful in flavoring or coloring foods and beverages and which is dispersible in both oil and water, consisting essentially of

- (1) lecithin,
- (2) tartaric acid esters of mono- and diglycerides, and
- (3) one or more condiments selected from edible flavorings and edible colorings, the ratio by weight of (1) plus (2) to (3) being at least 1:4.

4,285,982

# PROCESS FOR ENHANCING THE SUNLIGHT STABILITY OF ANTHOCYANIC PIGMENTS

Guillermo A. Iacobucci, and James G. Sweeny, both of Atlanta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 70,971, Aug. 30, 1979, abandoned. This application Mar. 10, 1980, Ser. No. 128,463

Int. Cl.<sup>3</sup> A23L 1/272

U.S. Cl. 426—250

27 Claims

1. A process for the production of a photostable anthocyanic colorant composition comprising combining an anthocyanic pigment and a photoprotective agent selected from the group consisting of sulfonated polyhydroxyflavonols, poly(hydroxyalkyl)flavonols, sulfonated polyhydroxyflavones, sulfonated polyhydroxyiso-flavones, and sulfonated aurones, the molar ratio of said photoprotective agent to said anthocyanic pigment being not less than 1:1.

4,285,983

# FIXING VOLATILE FLAVORING AGENT IN STARCH HYDROLYSATE

Albert V. Saldarini, Nutley, and Robert Doerig, Fort Lee, both of N.J., assignors to Nords, Incorporated, East Hanover, N.J.

Filed May 2, 1979, Ser. No. 35,349

Int. Cl.<sup>3</sup> A23L 1/226, 1/222

U.S. Cl. 426—534

9 Claims

1. A process for fixing a volatile flavoring agent selected from at least one member of the group consisting of acetaldehyde and an essential oil in a carrier matrix material of starch hydrolysates having a dextrose equivalent not greater than about 28 to impart a dry free flowing particulate configuration to said carrier fixed flavoring agent comprising:

- (a) providing an aqueous liquid containing said flavoring agent wherein when said flavoring agent comprises acetal-



dehyde said acetaldehyde is dissolved in water and when said flavoring agent comprises an essential oil said essential oil is emulsified as a discontinuous phase in said water, with said water in said aqueous liquid being present in an amount sufficient to dissolve the carrier material when converted to a droplet configuration and contacted with said carrier material while in particulate form at a temperature at which the process is conducted and wherein the viscosity of said aqueous liquid is not greater than about 200 cps at the temperature at which the process is conducted,

- (b) impinging droplets of said aqueous liquid containing said flavoring agent onto the surface of a bed of free flowing carrier particles whereby a portion of the carrier particles is dissolved into the aqueous portion of said aqueous liquid to form a saturated solution of the carrier material in said droplets and in a manner sufficient to substantially avoid the coalescence of the droplets,
- (c) allowing a portion of the water contained in the saturated droplets to evaporate thereby forming a continuous film of the carrier material on the surface of said droplets,
- (d) separating the resulting filmed droplets from the carrier particles after said filmed droplets have set to a particulate form which is maintained when contacted with similar filmed droplets and before the remainder of the water present therein passes through the droplet film surface to the extent that the carrier particles remaining in the carrier bed are wet thereby and caused to agglomerate, and
- (e) drying the separated filmed droplets to allow the remainder of the water present therein to preferentially pass through the film surface.

4,285,984

#### FLAVORING WITH DIALKYLAMINO-ALKYLENE MERCAPTANS AND SULFIDES

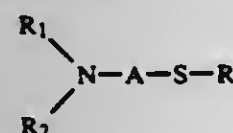
Ulrich Huber, Zurich, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.  
Continuation of Ser. No. 821,128, Aug. 2, 1977, abandoned. This application Jun. 4, 1979, Ser. No. 45,523  
Claims priority, application Austria, Aug. 9, 1976, 5900/76; Switzerland, Jun. 17, 1977, 7462/77

Int. Cl.<sup>3</sup> A23L 1/226, 1/231

U.S. Cl. 426-535

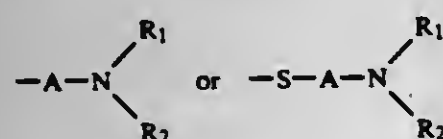
16 Claims

1. A flavoring composition for foodstuffs containing from about 1 ppm to about 10 percent of at least one virtually pure compound having the formula



wherein:

R<sub>1</sub> and R<sub>2</sub> each represent a C<sub>1-3</sub> alkyl group,  
A represents an alkylene group of from one to four carbons  
R represents hydrogen, methyl, ethyl, formyl, acetyl propionyl or a group of the formula



to impart a roast, meat, cheese, fish, poultry, vegetable-like, or mushroom-like taste, and at least one other compatible flavoring agent.

4,285,985

#### PROCESS FOR ENHANCING THE SUNLIGHT STABILITY OF RUBROLONE

Guillermo A. Iacobucci, and James G. Sweeny, both of Atlanta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.  
Filed Mar. 25, 1980, Ser. No. 133,676

Int. Cl.<sup>3</sup> A23L 1/272

U.S. Cl. 426-540

13 Claims

1. A pigment composition comprising rubrolone and quercetin-5'-sulfonate.

4,285,986

OLIGOPEPTIDES DERIVED FROM COLLAGEN  
Gheorghe Cloca, Belleview, and Marcel Slegler, North Bergen, both of N.J., assignors to Seton Company, Newark, N.J.

Filed Jan. 21, 1980, Ser. No. 113,694

Int. Cl.<sup>3</sup> A23J 1/10

U.S. Cl. 426-657

7 Claims

1. A method of preparing oligopeptides from collagen comprising:
  - treating natural insoluble collagen with an aqueous solution of a member selected from the group consisting of a mixture of an alkali earth metal hydroxide and an alkali metal hydroxide; and an alkali metal hydroxide in the presence of an agent which prevents overswelling of the collagen, said treatment removing substantially all of the hair and fat from the collagen;
  - removing non-collagenous material by treating the dehaired and defatted collagen with an aqueous solution of a solvent for said non-collagenous material;
  - neutralizing the collagen;
  - removing residual salts from said collagen;
  - beating the collagen under pressure in the presence of water to hydrolyze polypeptide chains to form oligopeptides; and
  - recovering substantially pure oligopeptides having a molecular weight between about 5,000 and 20,000.

4,285,987

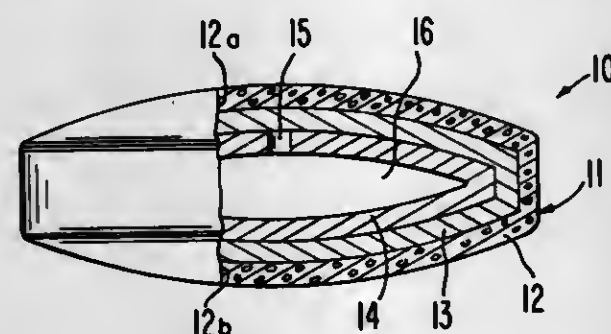
#### PROCESS FOR MANUFACTURING DEVICE WITH DISPERSION ZONE

Atul D. Ayer, Mountain View, and Felix Theeuwes, Los Altos, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.  
Continuation of Ser. No. 953,906, Oct. 23, 1978, Pat. No. 4,200,098. This application Nov. 1, 1979, Ser. No. 90,492

Int. Cl.<sup>3</sup> A61M 7/00

U.S. Cl. 427-3

15 Claims



1. A process for manufacturing a drug delivery device, which process comprises the steps of:
  - (a) pressing a drug formulation into a shaped, solid mass;
  - (b) coating the mass with a composition comprising a semipermeable polymer permeable to the passage of fluid and impermeable to the passage of drug to form a semipermeable wall surrounding a compartment housing the formulation;
  - (c) drilling an outlet passageway in the semipermeable wall of a predetermined size for osmotically pumping the formulation through the passageway;
  - (d) coating the semipermeable wall with a layer of a member

soluble in fluid that enters the device and is selected from the group consisting of a salt, a carbohydrate, and mixtures thereof, which layer separates the semipermeable wall from a microporous wall, said microporous wall formed by;

- (e) coating the layer with a composition comprising a microporous polymer to form a microporous wall surrounding the layer, thereby forming the device.

4,285,988

#### STAINED GLASS PHOTOMASKS AND METHOD OF MAKING BY ELECTRODEALKALIZATION

Fred M. Ernsberger, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

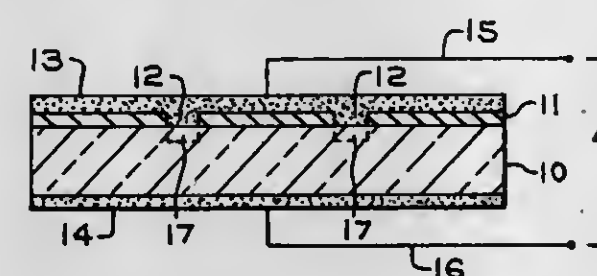
Continuation of Ser. No. 856,144, Nov. 30, 1977, abandoned.

This application Jul. 25, 1979, Ser. No. 60,422

Int. Cl.<sup>3</sup> B05D 5/12, 1/36

U.S. Cl. 427-12

11 Claims



1. A method for making a stained glass photomask comprising the steps of:
  - applying a nonconductive masking film of organic photoresist onto a surface of a glass substrate containing alkali ions;
  - photographically exposing and developing the photoresist masking film, thereby producing a pattern of apertures through the masking film;
  - imposing a direct current electric field across the glass substrate and the apertured masking film in a direction substantially normal to said surface of the glass substrate, with the masking film side as anode, and simultaneously heating the glass substrate to at least 100° C., thereby migrating alkali metal ions out of surface portions of the glass directly underlying the apertures in the masking film toward the interior of the glass so as to yield a pattern of alkali metal on depleted areas at said surface of the glass substrate, while the masking film maintains the alkali metal ion content essentially unchanged in the remaining surface portions of the glass substrate lying directly thereunder;
  - removing the masking film from said surface of the glass substrate;
  - bringing a source of stain-producing cations into contact with said surface of the glass substrate under ion migrating conditions, thereby migrating the stain-producing cations into said remaining surface portions of the glass substrate, and insubstantial migration of the stain-producing ions occurs in said alkali metal ion depleted surface portions; and
  - heating the glass substrate in the presence of a reducing agent to reduce and agglomerate the migrated stain-producing cations within the glass, thereby rendering the stain-producing cation migrated surface portions of the glass substantially opaque to radiation of a given wave length while said alkali metal ion depleted surface portions remain substantially transparent to said radiation.

4,285,989

#### ELECTROGRAPHIC RECORDING MATERIAL, METHOD OF MAKING AND USING

Walter J. Wilkinson, Wilbraham, and Irving Serlin, Springfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed May 11, 1979, Ser. No. 38,049

Int. Cl.<sup>3</sup> B05D 1/04

U.S. Cl. 427-14.1

12 Claims

12. A method of electrographic recording comprising forming an electrostatic charge pattern on an electrically insulating layer of an electrographic recording medium developing the charge pattern by application of a toner and fixing the toner by heat or pressure, wherein the electrically insulating layer comprises an intimate blend of a polymeric binder and up to 500 parts by weight of a finely divided pigment per 100 parts by weight of polymeric binder, wherein the polymeric binder comprises from about 50 to about 95 parts by weight of a poly(vinyl acetal), from about 5 to about 50 parts by weight of an alkoxyethyl polyaminotriazine and from about 0 to about 30 parts by weight of an oligomer of styrene or  $\alpha$ -methylstyrene of molecular weight in the range of about 300 to about 500.

4,285,990

#### METHOD FOR COATING A SELECTED PORTION OF THE INTERNAL NECK SURFACE OF A CRT

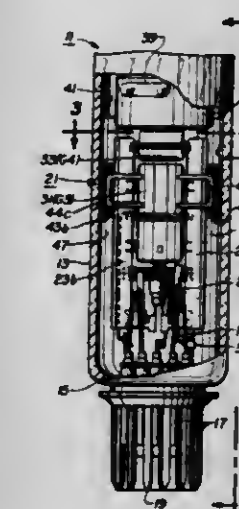
Karl G. Hernqvist, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 25, 1980, Ser. No. 172,220

Int. Cl.<sup>3</sup> H01J 29/00

U.S. Cl. 427-39

9 Claims



1. A method for coating a selected portion of the internal surface of the neck of a CRT, said neck housing an electron-gun assembly including at least two electrically-insulating support rods, each of said rods having a rod surface that is opposite and closely spaced from said internal neck surface, each of said rod surfaces and the rod-opposed neck surface that is opposite thereto defining a bead channel, said method comprising:
  - (a) providing in said neck at least one source of chromium metal for each of said bead channels, each source being spaced from and within line-of-sight of at least a portion of the rod-opposed neck surface defining said channel,
  - (b) evacuating said CRT to a low gas pressure,
  - (c) and then releasing chromium metal vapor from said source into said bead channel towards said rod-opposed neck surface; whereby chromium metal deposits as a layer on said rod-opposed neck surface.



4,285,991

## METHOD FOR PRODUCING PRINTED CIRCUITS

Klaus Gedrat; Hans-Jürgen Ehrich; Hartmut Mahlkow, and Joachim Wolff, all of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany  
Filed May 15, 1980, Ser. No. 150,174

Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920940

Int. Cl.<sup>3</sup> B05D 5/12; C23F 1/02

U.S. Cl. 427—97

17 Claims

1. A method of producing printed circuits of the type wherein basis material is coated with copper which material is drilled, purified, activated, reduced and after-treated, wherein the circuit image is applied by printing the copper with a resist after covering of all areas not belonging to the circuit intended to be produced, wherein the improvement comprises covering the exposed copper of the so-pretreated basis material with a layer of metal selected from the group consisting of nickel, cobalt and nickel-cobalt through treatment with a chemical bath of said metal; removing the resist; etching the copper exposed by removal of the resist; covering the circuit image negatively with a solder prevention lacquer but leaving the soldering eyes and bore holes exposed; and providing the exposed eyes and bore holes with a copper layer through treatment with a chemical copper bath.

4,285,992

## PROCESS FOR PREPARING IMPROVED SILVERED GLASS MIRRORS

Charles Q. Buckwalter, Jr., Benton, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 28, 1980, Ser. No. 115,868

Int. Cl.<sup>3</sup> B05D 1/36, 1/34; C03C 17/38; G02B 5/08

U.S. Cl. 427—165

7 Claims

1. In the method for preparing silvered mirrors of glass, wherein one surface of the glass is scrubbed with a slurry of an abrasive to clean the surface, a solution of a soluble compound of tin or palladium is applied to the cleaned surface to sensitize the glass, and the sensitized surface is contacted simultaneously with a solution of a soluble silver compound and one or more solutions of caustic and reducer which together with the silver solution react to precipitate a layer of silver on the sensitized surface of the glass, a layer of copper is applied over the layer of silver, and a layer of paint is applied over the layer of copper, the improvement which comprises applying a solution of a soluble compound of lanthanide rare earth ions to the cleaned surface of the glass before the silver is precipitated on the sensitized surface whereby the layer of silver has increased resistance to delamination from the surface of the glass in the presence of moisture.

4,285,993

## ANTI-CORROSIVE STRUCTURE ANCHOR ASSEMBLY

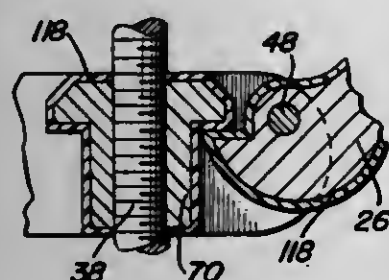
John H. Green, Sr., P.O. Box 1146, Crane, Tex. 79731

Filed Mar. 30, 1979, Ser. No. 25,593

Int. Cl.<sup>3</sup> B05D 3/02; E21D 20/00; E02D 5/74

U.S. Cl. 427—195

9 Claims



1. A method for protecting an earth anchor system from electrolytic oxidative corrosion, said anchor system including

a fastening means for anchoring attachment of an above-ground structure and an anchoring means attached to the fastening means for gripping retention below ground level of said fastening means, the method including the steps of: removing all oil, grease and loosely adhering deposits from said anchor means; blast cleaning said anchor means with an abrasive material; heating said anchor means to a temperature of approximately 400° F.; applying a fusion-bondable one-part heat curable dihydrazide cured, thermosetting powdered epoxy coating to said anchor means; curing said powdered epoxy at a temperature of approximately 400° F.; and cooling said anchor means to room temperature.

4,285,994

## PROCESS FOR PRODUCTION OF FREE FLOWING DUST-FREE PIGMENTS

Roy W. J. Pearce, Newcastle; John Carbert, Stoke-on-Trent, and John P. K. MacDonald, Newcastle, all of England, assignors to Johnson, Matthey & Co., Limited, London, England  
Continuation of Ser. No. 934,091, Aug. 15, 1978, abandoned.  
This application Jul. 3, 1980, Ser. No. 165,643

Claims priority, application United Kingdom, Aug. 17, 1977, 34543/77

Int. Cl.<sup>3</sup> B05D 7/00

U.S. Cl. 427—222

2 Claims

1. A process for the production of a free-flowing and relatively dust-free pigment composition which comprises tumbling together in the presence of up to 5% by weight of an oil or surfactant selected from the group consisting of dimethyl siloxane polymers and silicone fluids, hydrocarbon oils, polyethylene glycols with molecular weights ranging from 200 to 400 and compounds formed by the esterification of a primary alcohol with a fatty acid ranging from C<sub>3</sub> to C<sub>20</sub> and having a viscosity between 1.0 and 30,000 centistokes (1) a finely divided spray chilled polymeric wax binder consisting essentially of substantially spherical particles of polymer selected from the group consisting of polyolefin, polyvinyl chloride, polyvinyl acetate, polyacrylonitrile, polystyrene, polymethylmethacrylate, polybutadiene and copolymers thereof having a particle size distribution within the range 50–5000 microns diameter and (2) a powdered pigment present in an amount between 70 and 95% by weight, continuing the tumbling for a time sufficient for substantially all of the pigment to be coated onto or to be absorbed by the polymeric wax binder as substrate to form substantially spherical particles ranging in size from 0.2 mm up to 5.0 mm in diameter.

4,285,995

## PROCESS FOR INCREASING ALLOYING RATE OF GALVANIZED COATING ON STEEL

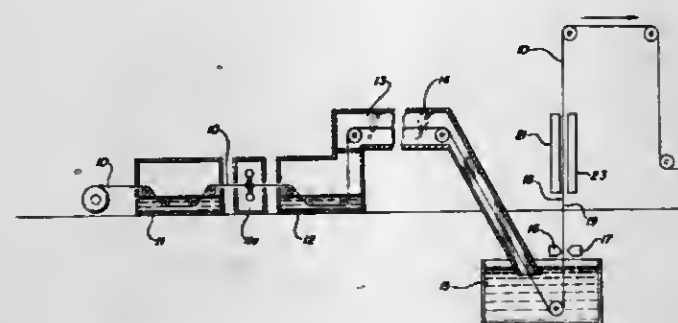
David W. Gomersall, Valparaiso, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed Mar. 10, 1980, Ser. No. 128,649

Int. Cl.<sup>3</sup> C23C 1/02

U.S. Cl. 427—383.9

16 Claims



1. A process of forming a zinc-iron alloy coating on at least

4,285,998

## REINFORCED THERMOPLASTIC FILM SHEET

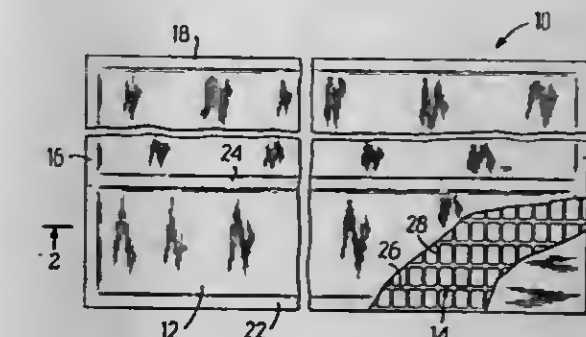
Raymond J. Thibodeau, Wayzata, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Continuation of Ser. No. 708,338, Jul. 26, 1976, abandoned. This application May 3, 1978, Ser. No. 902,490

Int. Cl.<sup>3</sup> B32B 1/04, 3/10

U.S. Cl. 428—35

13 Claims



one lateral surface of a ferrous metal strip which comprises; applying a coating of metallic copper to at least one lateral surface of a clean ferrous metal strip, heating the strip in a non-oxidizing atmosphere to a temperature sufficient to effect diffusion of a portion of said copper coating into said strip while leaving a surface film of metallic copper on said one lateral surface, applying a coating of metallic zinc over at least said film of metallic copper, and heating said strip to transform said zinc coating on at least said one lateral surface into a zinc-iron alloy coating free of unalloyed metallic zinc in the surface thereof.

4,285,996

## POLYOXYALKYL AMINE-POLYISOCYANATE REACTION PRODUCTS AS COAGULATION AGENTS FOR BINDING AGENT DISPERSIONS

Hans Gerber, Strenggigassli, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 940,069, Sep. 5, 1978, abandoned. This application Jun. 7, 1979, Ser. No. 46,478  
Claims priority, application Switzerland, Sep. 6, 1977, 10851/77

Int. Cl.<sup>3</sup> C08G 71/04; C08L 75/08

U.S. Cl. 427—389.9

43 Claims

1. In a process for producing a non-woven fabric wherein a non-woven fibrous web is impregnated with an aqueous binding agent dispersion suitable for use in the production of non-woven fabrics and containing a non-ionic and/or an anionic dispersing agent and a coagulation agent, the improvement which comprises employing as the coagulation agent a polyurethane having a weight average molecular weight from 500 to 20,000 which is the reaction product of

(i) a polyoxyalkylated aliphatic amine containing d nitrogen atoms, where d is 1 to 5, and where d is greater than 1, each nitrogen atom is connected with the next by a (C<sub>2</sub>-4)alkylene moiety and from d+1 to d+2 polyoxy(C<sub>2</sub>-4)alkylene units, with the proviso that the molecule contains C<sub>2</sub>oxyalkylene units and C<sub>3</sub> and/or C<sub>4</sub>oxyalkylene units with the C<sub>3</sub> and/or C<sub>4</sub> units forming the majority of oxyalkylene units, and with the further proviso that when the number of polyoxyalkylene units is d+1, the other group bound to a nitrogen atom is a (C<sub>1-6</sub>) alkyl group, and

(ii) from 0.1 mols to 2 mols per mol of (i) but not exceeding the stoichiometric amount of a polyisocyanate, which reaction product is optionally in quaternized form and, is present in an amount of, from 0.5 to 50 parts by weight per 100 parts of binder solids, followed by drying the web.

4,285,997

## WOOD STABILIZING/TREATING COMPOSITIONS AND METHOD

Ramesh C. Vasishth, Danville, Calif., and Dodwell P. De Silva, Vancouver, Canada, assignors to Envirosol Systems International, Ltd., Orinda, Calif.

Filed Nov. 5, 1979, Ser. No. 91,029

Int. Cl.<sup>3</sup> B05D 3/02

U.S. Cl. 427—393

15 Claims

1. A method for treating wood to enhance its properties comprising: contacting the wood to be treated with sufficient water dilutable resin formed from at least one vinyl monomer in a solvent consisting essentially of water to deposit an effective amount of said resin in the cell walls of said wood, said resin containing molecules having a molecular weight of less than about 1000 and of a size which can enter the free space in said cell walls in the presence of said solvent in an amount sufficient to stabilize the wood, and having a minimum film forming temperature not greater than ambient, and converting the resin in said cell walls to a water insoluble form at ambient conditions.

4,285,999

## METHOD AND APPARATUS INVOLVING ADHESIVE BACKED PHOTOGRAPHS

Anthony Olivieri, 23 Quaker La., Dedham, Mass. 02026, and Anthony Macrina, 47 Henry Ave., Melrose, Mass. 02176

Division of Ser. No. 871,784, Jan. 24, 1978, Pat. No. 4,201,613.

This application Dec. 10, 1979, Ser. No. 102,245

Int. Cl.<sup>3</sup> A61F 13/02

U.S. Cl. 428—40

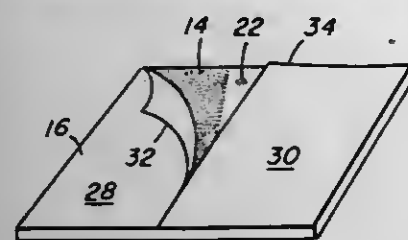
10 Claims

1. An adhesive backed photographic print comprising: (a) a processed photographic print having finished and unfinished surfaces on opposite faces; (b) first pressure sensitive adhesive means on certain areas of said unfinished surface, the remaining area of said unfinished surface being free of adhesive; (c) second pressure sensitive adhesive means in said adhesive free area on said unfinished surface, said second pressure



sensitive adhesive means isolated from said first pressure sensitive adhesive means;

(d) a release web superposed on said first and second pressure sensitive adhesive means and on said adhesive free area, said release web having a pair of tabs adjacent said



adhesive free area, said tabs defining gripping members for removing said release web and exposing said first and second pressure sensitive adhesive means, said second pressure sensitive adhesive means operative to hold said release web flat against said adhesive free area.

4,286,000

## PLASTIC PREFORM

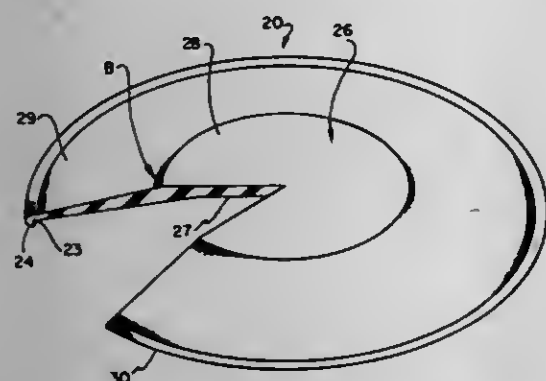
John F. Dye, Muncie, and Earl L. Lowe, Winchester, both of Ind., assignors to Ball Corporation, Muncie, Ind.

Filed Oct. 25, 1979, Ser. No. 88,229

Int. Cl.<sup>3</sup> B32B 3/02, 1/04; B29C 23/00

U.S. Cl. 428-64

11 Claims



1. An oriented polymeric preform for making an open mouth container comprising a base defined by an inner circular portion having a predetermined radius and an outer circular portion situated parallel to said inner circular portion and spaced therefrom, said outer portion having a greater radius than said inner portion, an outwardly extending annular member integral with said base and tapering therefrom, said member having a thickness adjacent the circumference of said inner and outer circular portions which is substantially greater than any other portion of the preform so as to offer a reservoir of polymeric material, said annular member forming an angle of inclination with said outer circular portion of between about 2° to about 30°, and a flange integral with the annular member and extending radially outwardly and having a cross-section configuration of substantially the rim of the finished container.

4,286,001

PROCESS FOR THE PRODUCTION OF INDUSTRIAL PARTS OF SYNTHETIC MATERIAL COMPRISING A RIGID PORTION SURMOUNTED BY A FLEXIBLE PORTION AND THE INDUSTRIAL PART PRODUCED BY SAID PROCESS

Giuliano Frau, Mareil sur Mauldre, France, assignor to Les Manufactures de Saint Marcel, France

Filed Nov. 13, 1979, Ser. No. 93,069

Claims priority, application France, Sep. 27, 1979, 79 24118

Int. Cl.<sup>3</sup> B32B 3/02, 3/04

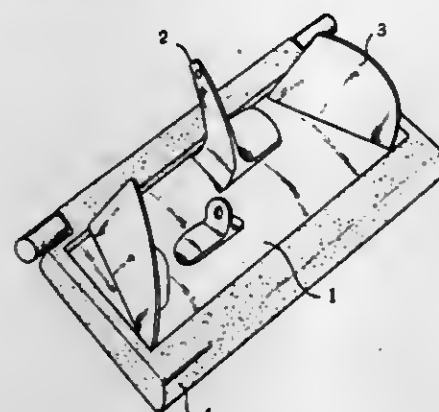
U.S. Cl. 428-68

10 Claims

1. Process for production of an industrial component which

comprises a portion of rigid material partly surrounded by a portion of flexible material, including the steps of:

making a model of said rigid portion;  
producing a first mould from said model;  
adding to the model additional material shaped and dimensioned to correspond to the shape and dimension of said flexible portion;  
producing a second mould from said model with said additional material thereon;



placing said first mould in an injection moulding machine and injecting material to produce said rigid portion;  
removing said rigid portion from said first mould;  
inserting said rigid portion in said second mould;  
placing said second mould with said rigid portion inserted therein in a casting machine; and  
casting flexible material and uniting it to said rigid portion to produce said industrial component.

4,286,002

## URINATION COLLECTION PAD

Sylvia Y. Strong, 5434 Hillcrest Dr., Los Angeles, Calif. 90043

Filed Nov. 29, 1979, Ser. No. 98,474

Int. Cl.<sup>3</sup> B32B 29/00

U.S. Cl. 428-74

2 Claims



1. A urination collection pad designed to be used by bed ridden individuals, said pad adapted to be located between the buttock area of the individual and the mattress of the bed, said pad comprising:

a bottom layer adapted to be located against the mattress, said bottom layer being non-liquid permeable;  
a liquid absorbent layer located on said bottom layer, said liquid absorbent layer comprising shredded paper;  
an encasing layer of material located against said liquid absorbent layer on the side opposite said bottom layer, said encasing layer being attached to said bottom layer and located about the periphery of said liquid absorbent layer, said encasing layer permitting passage of liquid therethrough; and  
a soft resilient layer of material attached upon said encasing layer and substantially covering such, said soft resilient layer being secured to said encasing layer by means of an overlapping flange, said overlapping flange binding together the periphery of said soft resilient layer and the periphery of said encasing layer and the periphery of said bottom layer, said soft resilient layer of material comprising quilted cloth, whereby said soft resilient layer is to be in direct contact with the individual's skin to facilitate comfortable contact therewith.

4,286,003

## THIN POLYURETHANE FOAM BACKED RUG

Kenneth B. Higgins, LaGrange, Ga., and Edgar H. Pittman, Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 952,518, Oct. 18, 1978, abandoned.

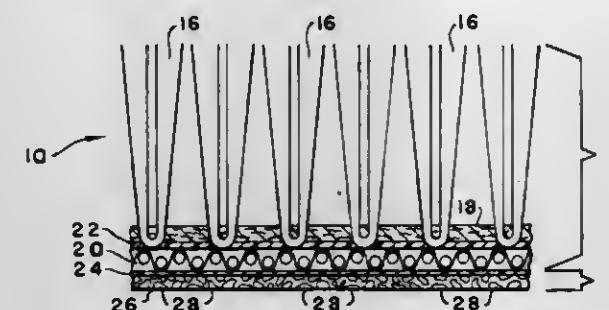
This application Dec. 3, 1979, Ser. No. 99,975

Int. Cl.<sup>3</sup> B32B 3/02, 33/00

U.S. Cl. 428-95

3 Claims

U.S. Cl. 428-167



1. An area rug comprising: a carpet layer and a thin open-cell polyurethane material bonded to said carpet layer by an adhesive, said open-cell polyurethane material being of from 0.02 inches in thickness to 0.040 inches in thickness with a density of 1.75±0.30 pounds per cubic foot, said open-cell polyurethane having 70-45 pores per square inch and when slit having a plurality of substantially semicircular openings in the side thereof away from the pile surface of said carpet layer, said thin open-cell polyurethane material having a thickness of no more than 10% of the thickness of said carpet layer.

4,286,004

## ANTISTATIC POLYURETHANE FOAMS AND CARPET BACKINGS MADE THEREFROM

Kurt Dahmen, Mönchen-Gladbach, and Siegfried Pfabe, Geldern, both of Fed. Rep. of Germany, assignors to Chemische Fabrik, Stockhausen, Fed. Rep. of Germany

Filed May 7, 1980, Ser. No. 147,694

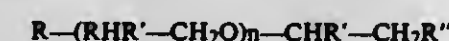
Claims priority, application Fed. Rep. of Germany, May 17, 1979, 2919975

Int. Cl.<sup>3</sup> C08G 18/14; B32B 27/18, 27/40

U.S. Cl. 428-95

15 Claims

1. A process for rendering antistatic polyurethane foams comprising incorporating in the foam in amounts of about 5-30 weight % based on the polyurethane an antistatic agent of the formula



in which R and R'' each independently is a linear or branched alkoxy radical with 1 to 22 carbon atoms, an alkaryloxy radical with 10 to 18 carbon atoms, an aliphatic acyloxy radical with 1 to 18 carbon atoms, or a halogen radical, R' is hydrogen or a methyl radical, and n is a whole number from 2 to 20.

8. A polyurethane foam containing as an antistatic additive a terminally esterified or etherified polyalkylene oxide adduct of the general formula



in which

R and R'' each independently is a linear or branched alkoxy radical with 1 to 22 carbon atoms, an alkaryloxy radical with 10 to 18 carbon atoms, an acyloxy radical with 1 to 18 carbon atoms, or a halogen radical, R' is hydrogen or a methyl radical, and n is a whole number from 2 to 20.

10. A polyurethane foam according to claim 8, wherein the antistatic additive is present in about 10 to 20 weight % based on the polyurethane.

4,286,005

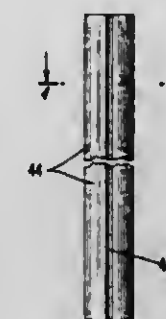
## INK RESERVOIR ELEMENT FOR USE IN A MARKING INSTRUMENT, AND METHOD AND APPARATUS FOR PRODUCING SAME

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Filed Mar. 5, 1979, Ser. No. 17,106

Int. Cl.<sup>3</sup> B32B 3/30; B43K 5/02

6 Claims



1. An ink reservoir element for use in a marking instrument, comprising a coherent sheet of flexible thermoplastic fibrous material compatible with formic acid compacted together and bonded into a dimensionally stable rod-shaped body, said fibrous material being composed of an interconnecting network of randomly arranged, highly dispersed, continuous-filament thermoplastic fibers which are bonded together at the filament junction; at least one surface of said sheet being uniformly embossed with a series of parallel grooves extending longitudinally with respect to said rod-shaped body, forming capillaries capable of transporting ink which extend longitudinally from end to end of the finished element.

4,286,006

## CORRUGATED MATERIAL

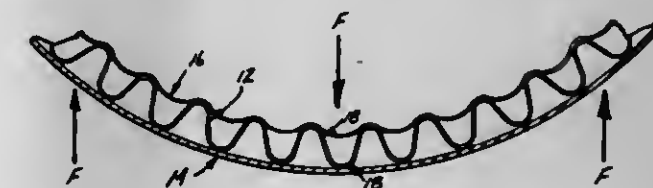
Lester B. Boelter, Edina, Minn., assignor to Boelter Industries, Inc., Winona, Minn.

Filed Jan. 26, 1977, Ser. No. 762,410

Int. Cl.<sup>3</sup> B32B 3/28, 29/00

U.S. Cl. 428-182

12 Claims



1. A corrugated packaging material comprising, in combination:

(a) a layer of single faced corrugated board including  
(i) a fluted medium having a plurality of upper presented surfaces alternating with a plurality of upper spans, and a plurality of lower presented surfaces alternating with a plurality of lower spans, said alternating presented surfaces and spans defining a plurality of flutes extending parallel to each other, and  
(ii) a first facing affixed to said medium along each lower presented surface; and  
(b) a second facing affixed to said medium along each upper presented surface, said second facing being substantially non-extensible in a direction transverse to the direction in which said flutes run; wherein  
(c) said first facing has a much greater ability to transmit compressive forces across a spanning length thereof without buckling than said second facing.



4,286,007

## REPAIR PATCH FOR CONTAINER AND LORRY SHEETS

Willi Oellerking, Schleswig, Fed. Rep. of Germany, assignor to Schleswiger Tawerksfabrik Christian Oellerking, Schleswig, Fed. Rep. of Germany

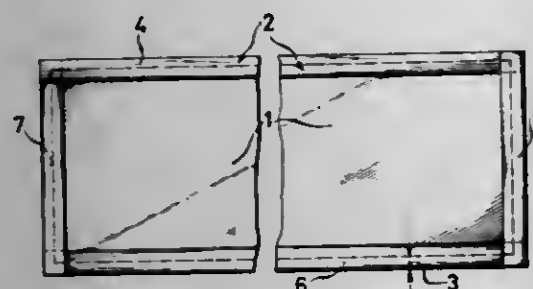
Filed Feb. 21, 1979, Ser. No. 13,251

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807439

Int. Cl.<sup>3</sup> B32B 3/06, 35/00

U.S. Cl. 428—194

4 Claims



1. A repair patch for use in repairing damaged areas in protective cover sheets for loading openings of containers, lorries, or the like utilized in international goods transportation wherein, to satisfy customs regulations, a sealing strip must be attached around the periphery of the patch and overlapping the patch and the cover sheet and embossed with a relief pattern so that once the patch has been applied to the cover sheet, any tampering with the patch will be readily discoverable, said repair patch comprising:

- a piece of fabric having outer and inner surfaces and peripheral edges defining an area of predetermined size and shape for covering the damaged area in the cover sheet;
- a coating of a weldable plastic material on at least the inner surface of said piece of fabric for welding the fabric to the cover sheet over the damaged area; and
- an elongate sealing strip of an embossable, weldable thermoplastic material connected to the outer surface of said piece of fabric and extending around the periphery thereof, with portions of the sealing strip projecting outwardly beyond said peripheral edges of the fabric to form a circumferential outwardly projecting margin for welding to the cover sheet when the piece of fabric is positioned over the damaged area of the cover sheet and said weldable coating is secured to the cover sheet.

4,286,008

## DRY RELEASE TRANSFERS

Kenneth J. Reed, London, and Alan L. Lythgoe, Hythe, both of England, assignors to E. T. Marler Limited, Wimbledon, England

Filed Jul. 19, 1978, Ser. No. 926,077

Claims priority, application United Kingdom, Jul. 20, 1977, 30430/77

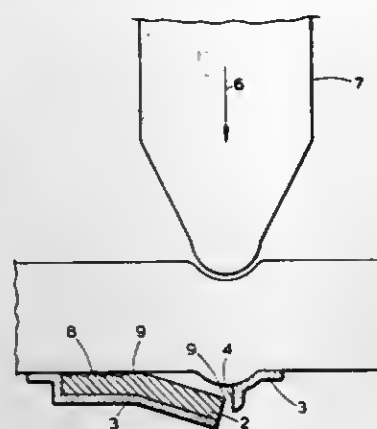
Int. Cl.<sup>3</sup> B32B 3/00, 27/14

U.S. Cl. 428—195

21 Claims

1. A dry release transfer which comprises:
  - (a) a flexible light-transmitting carrier sheet,
  - (b) a design layer releasably adhered thereto, said design layer comprising a flexible solid cross-linked polymer produced by photopolymerisation of a viscous liquid ink containing not more than 20% of volatile solvent printed on the carrier sheet,
  - (c) said ink prior to photopolymerisation consisting essentially of one or more ethylenically unsaturated monomers and prepolymers containing pendant or terminal acryloyl or methacryloyl groups,
  - (d) said photopolymerisation having been effected by exposure of the entire liquid ink layer to actinic radiation, whereby the liquid layer is rapidly converted to a flexible cross-linked solid design layer, said design layer possessing stress-resisting properties which resist deformation by

a mechanical disrupting force, such as a stylus, applied to the carrier sheet and enables the design layer to be re-



leased from the carrier sheet and enables the design layer to be released from the carrier sheet without fracturing the design layer.

4,286,009

## COMPOSITE SOLAR ABSORBER COATINGS

Edward M. Griest, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

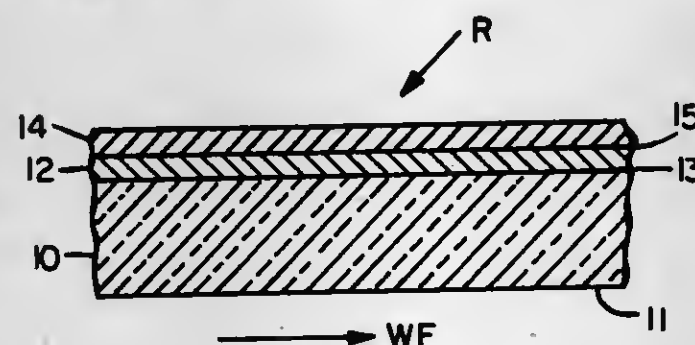
Continuation of Ser. No. 878,225, Feb. 16, 1978, abandoned.

This application Dec. 3, 1979, Ser. No. 99,902

Int. Cl.<sup>3</sup> B32B 15/00

U.S. Cl. 428—212

7 Claims



1. A composite coating for a solar collector absorber wherein solar radiation impinges on one surface of the absorber, and said absorber is adapted to transfer energy so received from the impinging solar radiation in the form of sensible heat to a working fluid in communication with a delivery surface of the absorber comprising:

- a smooth surface absorber substrate;
- a first coating of solar radiation absorbing metal oxides, said metal oxides selected from a group consisting of antimony doped tin oxide, tin doped indium oxide and iron oxide; and a second coating of infrared radiation reflecting metal oxides, said second coating metal oxides selected from a group consisting of antimony doped tin oxide, fluorine doped tin oxide and tin doped indium oxide, said first and second coatings being deposited so as to form a composite on at least one of the other and the substrate in an order of deposition such that the first coating lies in back of the second coating with respect to impinging solar radiation such that the composite exhibits an absorptivity characteristic  $\alpha$  of at least 0.85 for the solar radiation range of about 0.2 to about 2.0 micrometers and an emissivity characteristic of less than 0.2 for energy in the infrared range of about 2.0 to about 20 micrometers.

4,286,010

## INSULATING MICA PAPER AND TAPES THEREOF

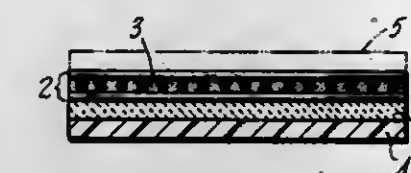
Ronald W. Staley, Barrington, and Jonathan W. Roberts, Dover, both of N.H., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Oct. 5, 1979, Ser. No. 82,250

Int. Cl.<sup>3</sup> B32B 27/14, 25/02

U.S. Cl. 428—215

5 Claims U.S. Cl. 428—266



1. An electrical insulation tape comprising:
  - (a) a sheet of mica paper impregnated with 10 to 35% by weight of a B-staged polybutadiene polymer;
  - (b) a woven glass scrim next to the mica paper;
  - (c) a block copolymer sealing layer selected from the group consisting of an isoprene-butadiene and styrene-butadiene next to the glass scrim; and
  - (d) a polyethyleneterephthalate sealing layer next to the mica on that side of the mica opposite the glass scrim.

4,286,011

## POLYESTER FILMS WITH IMPROVED PROCESSABILITY AND TEAR RESISTANCE

Andrew H. Wong, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 30, 1978, Ser. No. 891,599

Int. Cl.<sup>3</sup> B32B 27/36; C08J 5/18

U.S. Cl. 428—220

12 Claims

1. A tear resistant polyester film consisting essentially of a homogeneous blended mixture of polyethylene terephthalate (PET) resin and sufficient polytetramethylene terephthalate (PTMT) resin so as to increase the tear strength of the film by at least 10% more than that exhibited by either PET or PTMT, said film being heat set at a temperature in the range of about 160° C. to 220° C. and having a thickness between about 6.3 micrometers and about 500 micrometers.

4,286,012

## LONG WETTING TIME WOVEN FABRIC

Howard M. Zins, Manchester, and Edward L. Morris, Jr., St. Louis, both of Mo., assignors to Angelica Corporation, St. Louis, Mo.

Filed Dec. 17, 1979, Ser. No. 104,105

Int. Cl.<sup>3</sup> D03D 13/00

U.S. Cl. 428—252

22 Claims

13. A woven fabric which, prior to the application of any finish thereto, has an air permeability greater than eight-tenths (0.8) of a cubic foot per minute of air per square foot of area with a pressure differential as small as one half (1/2) of an inch of water, a wetting time longer than one-half of a minute, and an ability to withstand a hydrostatic pressure greater than eight (8) centimeters of water, and which comprises plural-ply ends that have a count greater than one hundred and twenty-five (125) per inch but less than one hundred and eighty (180) per inch, and picks that have a count greater than sixty-five (65) per inch but less than eighty-one (81) per inch, said woven fabric having a cotton content in the range of forty percent to sixty percent (40%–60%) and having a polyester content in the range of sixty percent to forty percent (60%–40%).

4,286,013

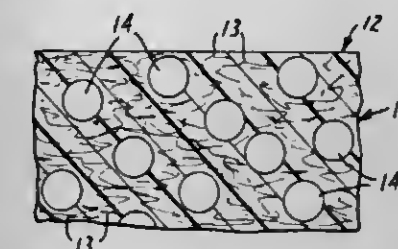
## FLAME BARRIER

Minoo J. Daroga, Woodbury, and Robert E. Jones, Minneapolis, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Aug. 29, 1980, Ser. No. 182,685

Int. Cl.<sup>3</sup> B32B 7/00

11 Claims



1. A sheet useful as a flame barrier comprising a backing having thereon a coating comprising from 50 to 70% by weight of a cured diorganopolysiloxane gum, from 1 to 10% by weight of a fibrous filler, from 20 to 45% by weight of hollow glass microspheres, and from 1 to 5 parts by weight of a curing agent per 100 parts by weight of said diorganopolysiloxane gum, wherein said sheet is substantially free from components which volatilize below 350° C., and wherein said sheet has a weight of, at most, 0.06 g/cm<sup>2</sup>.

4,286,014

## COMPOSITE SHEET MATERIAL

Minoro Tanaka, Gifu; Kenkichi Yagi, Kyoto, and Kitao Shimizu, Kobe, all of Japan, assignors to Toray Industries, Incorporated, Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,578

Claims priority, application Japan, Jan. 31, 1978, 53-88858; Jun. 28, 1978, 53-77358

Int. Cl.<sup>3</sup> B32B 27/00; C08K 5/34

U.S. Cl. 428—290

16 Claims

1. A composite sheet material comprising a fibrous sheet which is impregnated and/or is coated with a polyurethane elastomer; wherein said polyurethane elastomer comprises the reaction product of

- (A) a polymeric diol having a molecular weight of about 800–5000,
- (B) a mixture of organic diisocyanates comprising
  - (a) about 2–70 mole % aliphatic diisocyanate not having a direct bond between an aromatic ring and an isocyanato group, and
  - (b) substantially the balance comprising an aromatic diisocyanate having a direct bond between an aromatic ring and an isocyanato group; and
- (C) a chain extender comprising hydrazine and/or a derivative thereof having the formula (I):



(I)

wherein R is a substituent selected from the group consisting of hydrogen, an alkyl group having 1–12 carbon atoms, an aryl group, an aralkyl group, an acyl group containing an amino group and groups having the formula  $-\text{A}-(\text{Z})_n-\text{NHNH}_2$ , wherein A is a substituent selected from the group consisting of CO, CS and SO<sub>2</sub>, Z is a substituent selected from the group consisting of an alkylene group, an arylene group, an aralkylene group,  $-\text{NH}-$ ,  $-\text{NHNH}-$ ,  $-\text{OYO}-$  and  $-\text{NHNH}-$ , wherein Y is a difunctional organic group having 1–12 carbon atoms and n is 0 or 1; and said chain extender also including another chain extender having two functional groups comprising amino and/or hydroxy groups, wherein about 30–80% of the carbon atoms which are







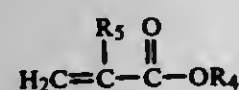
from 3 to 12 weight percent based on the combined weight of n, x, y and z; x represents from 8 to 25 percent based on the combined weight of n, x, y and z; y represents from 45 to 89 weight percent based on the combined weight of n, x, y and z; z represents from 0 to 44 weight percent based on the combined weight of n, x, y and z; the sum of the numerical value of n+x+y+z is always exactly 100 and the groups n, x, y and z are present in a heterogeneous relative position, and (2) a member of the group consisting of ammonia, hydrazine, a low boiling primary aliphatic amine and a low boiling secondary aliphatic amine, said salt being soluble in water in the pH range of from about 5 to 8; and (e) combinations thereof; in situ encapsulating said soluble or dispersible particle by: spraying into the earth's atmosphere said solution containing said soluble or dispersible particle from a spray apparatus, and immediately thereafter;

evaporating said solvent in said earth's atmosphere, and coacervating during the passage from said spraying apparatus to an earth target said polymer and said particle in said earth's atmosphere so that said polymer substantially encapsulates said particle, and

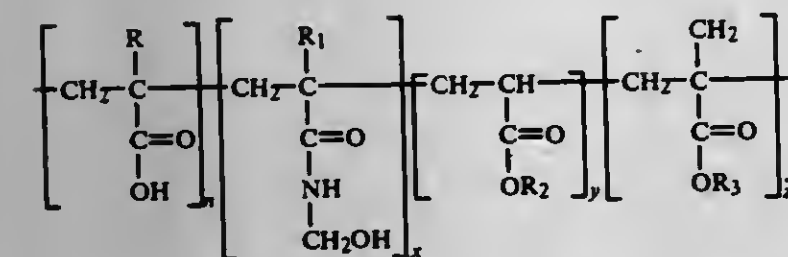
concurrently and directly applying said encapsulated particle to an earth target.

60. An in situ self-encapsulating polymericcontaining solution for concurrent and direct application to an earth target, comprising by weight, based upon the total weight of said solution

from about 0.3 percent to about 25 percent of a polymer, from about 35 percent to about 99 percent of a solvent, and from about 1 percent to about 40 percent of a particle, said polymer selected from the group consisting of (a) a polyvinyl acetate, (b) a polyvinyl ether wherein said repeating unit has from 3 to 10 carbon atoms, (c) an acrylic polymer or a copolymer made from monomers having the formula



where  $R_4$  is hydrogen or an alkyl, cycloalkyl, aryl, or aralkyl having from 1 to 30 carbon atoms and  $R_5$  is hydrogen or an alkyl, cycloalkyl, aryl, or aralkyl having from 1 to 12 carbon atoms; (d) the salt of (1) an interpolymer having the structure



wherein R and  $R_1$  are members of the group consisting of hydrogen and methyl;  $R_2$  is a member of the group consisting of methyl, ethyl, propyl and butyl;  $R_3$  is a member of the group consisting of methyl and ethyl; n represents from 3 to 12 weight percent based on the combined weight of n, x, y and z; x represents from 8 to 25 percent based on the combined weight of n, x, y and z; y represents from 45 to 89 weight percent based on the combined weight of n, x, y and z; z represents from 0 to 44 weight percent based on the combined weight of n, x, y and z; the sum of the numerical value of n+x+y+z is always exactly 100 and the groups n, x, y and z are present in a heterogeneous relative position, and (2) a member of the group consisting of ammonia, hydrazine, a low boiling primary aliphatic amine and a low boiling secondary aliphatic amine, said salt being soluble in water in the pH range of from about 5 to 8; and (e) combinations thereof;

said particle being soluble or dispersible in said solvent; said solvent being a compound in which said polymer is soluble; and

a small amount of weight based upon the total weight of the solution of an adhesive agent so that upon the in situ formation of an encapsulated particle from said solution and the concurrent and direct application of said encapsulated particle to an earth target, said adhesive agent improves the tackiness of said encapsulated particle to said target.

#### 4,286,021 POWDER COATINGS CONTAINING COPOLYMER CONTAINING ISOBORNYL METHACRYLATE AS MELT FLOW MODIFIER

William H. Brendley, Jr., Hatboro, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

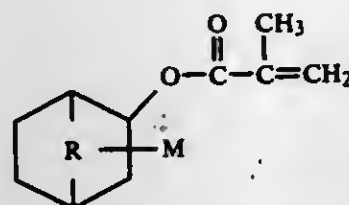
Continuation of Ser. No. 108,996, Jan. 22, 1971, abandoned. This application May 16, 1975, Ser. No. 578,289

Int. Cl.<sup>3</sup> B05D 1/04, 1/06, 3/02

U.S. Cl. 428-413

11 Claims

1. A method of coating an article comprising the steps of applying a layer of a fusible polymeric powder to the article, the powder being a mixture of (A) about 3 to 10 parts by weight of a melt flow-modifying copolymer of about 40 percent to 60 percent by weight of a compound of the formula



where R is selected from the group consisting of  $-CH_2-$ ,  $-CH(CH_3)-$ , and  $-C(CH_3)_2-$ , and M is selected from the group consisting of a hydrogen atom and at least one methyl group, and 40 percent to 60 percent by weight of a comonomer in the form of styrene, vinyl toluene, or at least one ester of acrylic acid or methacrylic acid and an aromatic, monocyclic aliphatic, or open chain aliphatic alcohol or alkoxy alcohol having from 1 to about 18 carbon atoms, or combinations thereof, said copolymer having an average molecular weight of from 1,000 to 8,500, and (B) 90 to 97 parts by weight of a coating resin selected from the group consisting of cellulose esters, nylons, epoxies, silicones, polysulfides, polycarbonates, polysulfones, polyphenylene oxide, polyimides, polyxylylenes, polyolefins, polyvinylhalides, acrylic ester polymers, chlorinated polyethers, and polyhaloolefins, fusing the layer while on the article, and cooling the article.

#### 4,286,022 COATING OF FINE PARTICLES IN POLYURETHANE BLOCK COPOLYMER BINDER

Russell L. Vermillion, Hastings, and William A. Bennett, North Oaks, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 4,816, Jan. 19, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 181,129

Int. Cl.<sup>3</sup> B32B 27/40; B05D 5/12

U.S. Cl. 428-423.1

14 Claims

1. In a coating comprising fine particles and a binder on a substrate, the improvement comprising: said binder primarily comprises a hydroxyl-terminated polyurethane block copolymer comprising

polyester or polyether segments, each having an average molecular weight of 200-3000, short-chain aliphatic segments, 10-100 mole percent of which contain tertiary and/or quaternary nitrogen, and symmetrical, unbranched, aromatic urethane segments interconnecting the polyester or polyether and short-chain

aliphatic segments the terminal hydroxyls being connected to said short-chain aliphatic segments.

6. Process for applying to a substrate a coating of fine particles and binder comprising the steps of

- inter-reacting in solution excess soluble symmetrical, unbranched, aromatic diisocyanate with hydroxyl-terminated polyester or polyether having an average molecular weight of 200-3000 to provide a mixture of isocyanate-capped polyurethane and unreacted aromatic diisocyanate,
- chain-extending the mixture with short-chain aliphatic diol, 10-100 mole percent of which contains tertiary nitrogen to produce a soluble hydroxylterminated polyurethane block copolymer,
- mixing said polyurethane block copolymer with fine particles and sufficient volatile vehicle to provide a coat-able dispersion wherein the weight of the particles exceeds that of the copolymer,
- coating said dispersion onto a substrate, and
- drying the coating.

#### 4,286,023 ARTICLE OF MANUFACTURE, THE CROSS-LINKED PRODUCT OF A SEMI-CONDUCTIVE COMPOSITION BONDED TO A CROSSLINKED POLYOLEFIN SUBSTRATE

Lucio Ongchin, New Fairfield, Conn., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 729,096, Oct. 4, 1976, Pat. No. 4,246,142. This application Sep. 2, 1980, Ser. No. 183,069

Int. Cl.<sup>3</sup> B32B 27/08; H01B 1/06

U.S. Cl. 428-516

11 Claims

1. An article of manufacture comprising the crosslinked product of a vulcanizable semi-conductive composition consisting essentially of (A) an ethylene copolymer selected from the group consisting of an ethylene-alkyl acrylate copolymer containing from about 15 to 45 percent by weight of alkyl acrylate based on the total weight of said copolymer, said alkyl acrylate being selected from the group consisting of the  $C_1$  to  $C_8$  alkyl esters of acrylic acid and methacrylic acid, and an ethylene-vinyl acetate copolymer containing from about 15 to 45 percent by weight of vinyl acetate based on the total weight of said copolymer, (B) a butadiene-acrylonitrile copolymer containing from about 10 to about 50 percent by weight of acrylonitrile based on the total weight of said copolymer, (C) conductive carbon black, and (D) a peroxide crosslinking agent, wherein the weight ratio of (A) to (B) in said composition is 1:9 to 9:1, wherein the weight ratio of (C) to the sum weight of (A)+(B) in said composition is 0.1 to 1.5 and wherein (D) is present in an amount of from about 0.2 to about 5 percent by weight based on the total weight of the composition, said crosslinked product being directly bonded to a cross-linked polyolefin substrate.

#### 4,286,024 TRANSPARENT HIGH TEMPERATURE RESISTANT ALUMINUM SILICON OXIDE MONOLITHIC MEMBER OR COATING

Bulent E. Yoldas, Churchill, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 28, 1980, Ser. No. 144,749

Int. Cl.<sup>3</sup> C04B 39/12, 35/10, 35/14

U.S. Cl. 428-446

7 Claims

1. A high-temperature-resistant transparent monolithic member or coating on a substrate, said member or coating consisting of aluminum and silicon in an atom ratio of about 2:1 in reacted oxide form, said member or coating having been formed by reacting precursor alkoxides of aluminum and silicon in the presence of water to form a clear solution, gelling the reacted precursors, drying the gel in the form of a monolithic member or a coating, and heating the dried material at a

predetermined temperature and time sufficient to evolve all residual hydrogen and carbon and residual water and to sub-

stantially eliminate porosity to form said monolithic member or coating on a substrate.

#### 4,286,025 DETECTOR FOR THERMOLUMINESCENCE DOSIMETRY

Zigurd A. Grant, ulitsa Kokles, 6, kv. 15; Maiga M. Grube, ulitsa Slokas, 183, kv. 100, and Vitaly L. Gotlib, ulitsa Raunas, 39/2, kv. 10, all of Riga, U.S.S.R.

Filed Mar. 12, 1979, Ser. No. 19,745

Int. Cl.<sup>3</sup> C01D 1/30, 3/24, 7/24, 7/40

U.S. Cl. 428-542

9 Claims

1. A detector for thermoluminescence dosimetry comprising an ionic compound in the shape of a pellet consisting of a plurality of single-crystal particles bonded together by intramolecular forces arising from the heating of said ionic compound to a temperature above its melting point, followed by controlled cooling.

3. A method for manufacturing a detector consisting of a plurality of single-crystal particles bonded together by intramolecular forces for thermoluminescence dosimetry comprising the operations: maintaining the starting powdered ionic compound in vacuum or an inert atmosphere at a temperature higher than the melting point of said starting compound until complete melting thereof, producing a pellet from said melt, cooling said melt to a temperature 150° C. to 200° C. below its melting point, the cooling being effected at a rate of 0.5 to 2 degrees per second.

#### 4,286,026 ARTICLE FOR IMPLANTING RADIOACTIVE METAL ON A SUBSTRATE

Nathan H. Cook, Cambridge, Mass., and Krishnamoorthy Sabramanian, Inkster, Mich., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

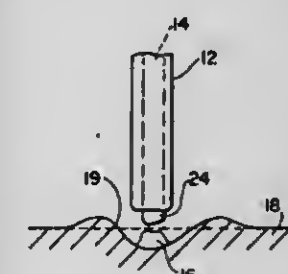
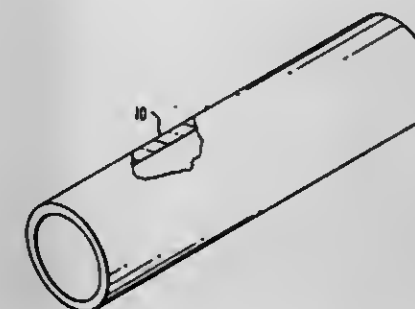
Division of Ser. No. 913,763, Jun. 8, 1978. This application Aug. 14, 1979, Ser. No. 66,329

Int. Cl.<sup>3</sup> B23K 35/22; B32B 15/02

U.S. Cl. 428-607

3 Claims

1. A wire suitable for implanting a radioactive metal in an amount of between about  $10^{-8}$  and  $10^{-11}$  curies in a metal surface which comprises a radioactive metal core having a diameter between about 0.0005 and 0.002 inch and a radioactivity of between about 0.05 and 0.01 curie per gm, said core being surrounded by a conductive metal sheath having a thick-





ness between about 0.001 and 0.002 and a conductivity greater than the core.

4,286,027

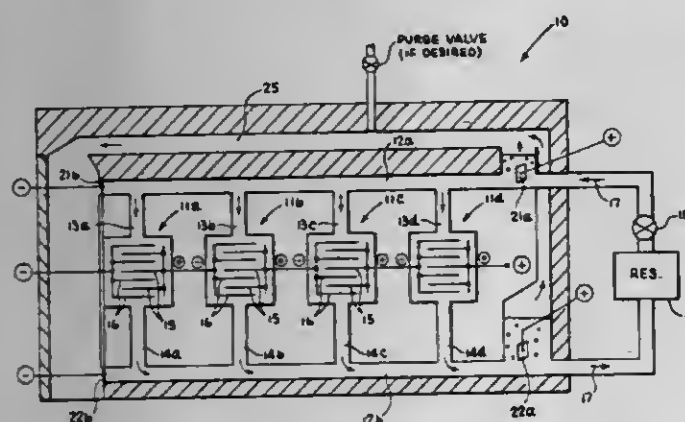
# SHUNT CURRENT PROTECTION FOR CIRCULATING ELECTROLYTE IN MONOPOLAR BATTERY SYSTEMS (BAT-81)

Joseph A. Shropshire, and Patrick G. Grimes, both of Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 28, 1980, Ser. No. 144,679  
Int. Cl.<sup>3</sup> H01M 8/24

U.S. Cl. 429-18

14 Claims



I. A monopolar aqueous battery system, comprising:

- a plurality of cells electrically connected at least in part in series and connected hydraulically at least in part in parallel;
- means defining a hydraulic pathway for an aqueous electrolyte common to at least two of said cells, wherein an electrical electrolytic conductive bypass path is formed through shared electrolyte around said cells, whereby undesirable shunt currents can arise in said shared aqueous electrolyte;
- means for circulating said aqueous electrolyte between said cells; and
- means defining a REDOX reaction for said aqueous electrolyte wherein water is electrically consumed and replaced, whereby the composition of said aqueous electrolyte remains substantially constant, including means for applying a protective current through at least a part of said conductive bypass path through said shared electrolyte in a direction which is the same as the shunt currents through said shared electrolyte and of a magnitude which effectively at least reduces said shunt currents.

4,286,028

# SNAP-THROUGH ANTI-IGNITION VENT CAP FOR LEAD ACID STORAGE BATTERIES

Joseph I. Heiser, Wyomissing Hills, and Edgar M. Erb, Lancaster, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Continuation of Ser. No. 34,416, Apr. 30, 1979, and a continuation-in-part of Ser. No. 879,461, Feb. 21, 1978, which is a division of Ser. No. 744,647, Nov. 24, 1976, Pat. No. 4,086,395, which is a continuation-in-part of Ser. No. 593,546, Jul. 7, 1975, abandoned. This application Dec. 26, 1979, Ser. No. 107,113. The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.

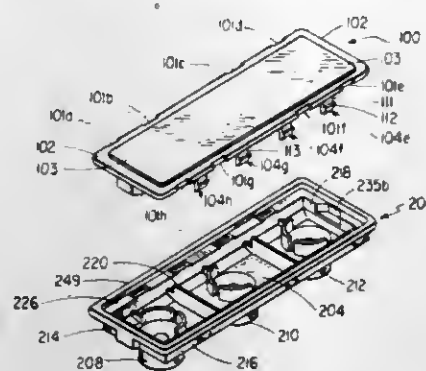
Int. Cl.<sup>3</sup> H01M 2/12

U.S. Cl. 429-82

7 Claims

- A battery vent for use on an electric storage battery to sealingly engage at least one opening of said battery and to vent battery gases to the atmosphere, said vent comprising: means for providing fluid communication between said opening of said battery and the atmosphere, said means

comprising a plurality of slit means for preventing the transmission of ignition from the atmosphere through said



slit means, at least one of said slit means being defined in at least one underneath surface of said vent.

4,286,029

# DIVALENT SILVER OXIDE FOR USE IN PRIMARY CELL AND MANUFACTURING METHOD THEREOF

Kaoru Murakami, Hirakata; Mitsugu Okahisa, Kyoto; Tomohiko Arita, and Kumano, Hiroshi, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 83,937, Oct. 11, 1979, Pat. No. 4,231,889, which is a continuation-in-part of Ser. No. 935,314, Aug. 21, 1978, abandoned. This application May 22, 1980, Ser. No.

152,429

Claims priority, application Japan, Aug. 19, 1977, 52/99666; Feb. 24, 1978, 53/21393; Feb. 24, 1978, 53/21394

Int. Cl.<sup>3</sup> H01M 4/34

U.S. Cl. 429-219

3 Claims



- A silver-II oxide cell having a negative electrode comprising zinc and a positive electrode comprising silver-II oxide, said silver-II oxide being produced by reacting at least one member selected from the group consisting of silver salts and Ag<sub>2</sub>O, a persulfate and an alkaline metal hydroxide, said silver-II oxide having an X-ray diffraction spectrum with a peak value relative intensity higher than 100 at face (200) (face interval d=2.79 Å) and at face (111) (face interval d=2.76 Å) and having a peak value relative intensity higher than 10 at face (313) (face interval d=1.39 Å) and at face (400) (face interval d=1.39 Å) on the assumption that peak value intensity at face (111) (face interval d=2.41 Å) is 100 and said silver-II oxide having degree of oxidation within the range from 96 to 100%, with particle surface area thereof being smaller than 0.5 m<sup>2</sup>/g.

4,286,030

# THERMOSET RESIN IMPREGNATED WEB AND PROCESS OF MAKING

Charles B. Moore, North Quincy, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Feb. 6, 1980, Ser. No. 118,701

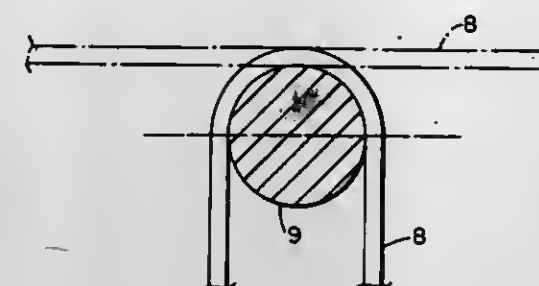
Int. Cl.<sup>3</sup> H01M 2/16

U.S. Cl. 429-253

27 Claims

- A fibrous web containing thermoset resin, said web comprising about 15 to about 95% by fiber weight of cellulosic

fiber; about 5 to about 85% by fiber weight of thermoplastic synthetic pulp fiber; and at least about 5% by weight of thermoset resin based on the weight of the fiber, said thermoset resin having been at least partially cured at a temperature above the melting or Vicat softening or shrinking by more than 5% temperature of said thermoplastic synthetic pulp and thereafter said web being fracture resistant as determined by cutting



said web into strips 15 cm wide by 15 cm long and bending said strips over a 2.5 cm diameter mandrel to the extent of engaging 1/2 of the mandrel circumference without fracture in repetitions of at least 90 out of 100 repetitions using a separate strip for each repetition, said at least partial curing of said thermoset resin in the same quantity in an all cellulosic fiber web of the same weight and thickness resulting in fracture in at least 50 out of 100 repetitions when subjected to said determination.

4,286,031

# ELECTROSTATIC MULTICOLOR COMPOSITE PRINTING METHOD AND APPARATUS

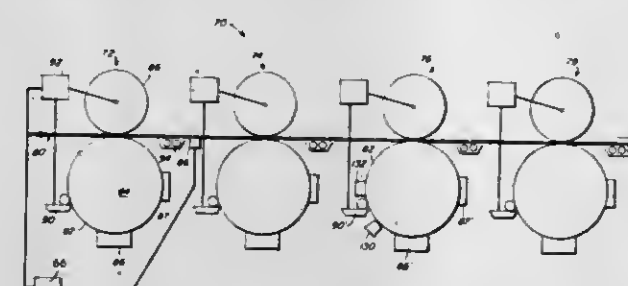
Manfred R. Kuehnle, Lexington, and Jurgen Kruse, Acton, both of Mass., assignors to Coulter Stork U.S.A., Inc., Chicago, Ill. Continuation of Ser. No. 918,165, Jun. 22, 1978, abandoned.

This application Jul. 24, 1980, Ser. No. 171,736

Int. Cl.<sup>3</sup> G03G 15/16

U.S. Cl. 430-44

16 Claims



- Apparatus for printing a composite pattern repeatedly upon a continuously moving substrate, said pattern being made up of registered impressions of different images having different colors, said apparatus comprising:

- a plurality of uniformly spaced image printing stations, each being substantially similar in construction and adapted to produce a different color impression successively upon a substrate,
- means for moving an elongate substrate linearly through the apparatus from station to station,
- each station comprising:
  - a rotating master sleeve, said sleeve having an image thereon in the form of a component of a composite image,
    - said sleeve being an electrophotographic member including an outer coating of photoconductive material,
    - said image being a fixed dielectric toner image which has been electrostatically formed on said outer coating,
  - means for charging and toning said fixed dielectric toner image with a secondary toner to achieve a second-

ary toned image of said fixed toner image which is developed but not fixed,

- means for transferring the secondary toned image to a surface of the substrate while the substrate is moving through said station,
- means for fixing the transferred image to said substrate surface before said substrate moves to the next following station to achieve an imprinted impression of a certain color,
- and means for removing from said sleeve any excess toner which is not transferred to said substrate surface if any had remained,

D. the master sleeve at each station carrying a different image, the stations being arranged continuously successively to repeat the imprinting superimposed in registration on the substrate as it passes through the apparatus, each sleeve being rotatable at a peripheral speed the same as the linear speed of the substrate moving through each station whereby the transferred image on the substrate is in registry with the immediately prior applied transferred and fixed image whereby to achieve a continuous series of the same composite image along the substrate as it leaves the apparatus.

12. Method of printing composite color images on an elongate substrate wherein the colored images are produced repeatedly and spaced along the substrate and each is composed of a plurality of impressions of different color which comprises:

- providing a plurality of printing stations, each station being arranged to produce an impression of a different color,
  - providing at each station a master sleeve of electrophotographic material and rotating the sleeve continuously while simultaneously moving the substrate through the station, the peripheral speed of the sleeve being the same as the linear speed of the substrate, each master sleeve carrying a different semipermanent fixed dielectric toner image thereon capable of being reproduced as the said impression, the master sleeve at each station being identical in size and configuration to the master sleeves at all stations
  - forming a secondary unfixed toner image at each station upon the fixed toner image during each said master sleeve rotation,
  - transferring the secondary unfixed toner image to the surface of said substrate from each master sleeve as the substrate passes said each station successively,
  - fixing each transferred unfixed toner image on said substrate as the substrate moves and before the substrate reaches the next station,
- whereby the impressions from each station after the first station are applied successively to said substrate superposed and in registration.

4,286,032

# ELECTROPHOTOGRAPHIC PROCESS AND APPARATUS THEREFOR

Michio Ito, Kawasaki; Nobuo Kitajima, Toride; Masanao Kasai, Tokyo, and Shunichi Ishihara, Kodaira, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1979, Ser. No. 31,592

Claims priority, application Japan, Apr. 27, 1978, 53-50629; Jan. 31, 1979, 54-10178

Int. Cl.<sup>3</sup> G03G 16/00

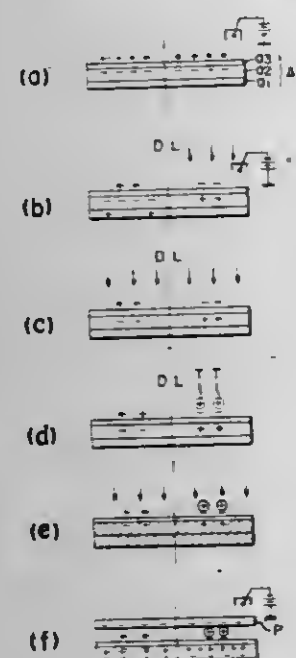
U.S. Cl. 430-55

10 Claims

- An electrophotographic process using a photosensitive member for repeated image formations, wherein the photosensitive member essentially comprises a conductive layer, a photoconductive layer of a particular polarity type material, and an insulating layer, said process comprising the steps of: forming an electrostatic latent image on the photosensitive member;



applying a developer to the latent-image-bearing photosensitive member;  
subjecting the developer-bearing photosensitive member to an additional processing step including applying a corona discharge to the photosensitive member of a polarity



which is the same as the polarity type of said photoconductive layer, and exposing the photosensitive member to light, thereby preventing the corona discharge from affecting the subsequent latent image formations on the photosensitive member.

4,286,033

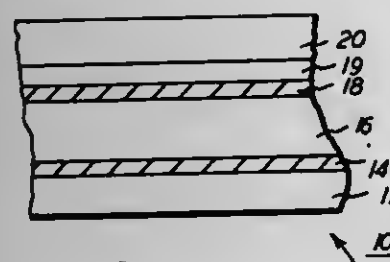
#### TRAPPING LAYER OVERCOATED INORGANIC PHOTOSENSITIVE DEVICE

James H. Neyhart; George A. Brown, both of Penfield; Lloyd A. Relyea, Webster; Merlin E. Scharfe, and Heinz W. Pinsler, both of Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 5, 1980, Ser. No. 127,177  
Int. Cl.<sup>3</sup> G03G 5/082, 5/14

U.S. Cl. 430—58

4 Claims



1. A layered inorganic photosensitive device which comprises

- a substrate;
- a layer of hole injecting material capable of injecting holes, this layer being comprised of trigonal selenium, the hole injecting layer having a thickness of from about 0.5 microns to about 10 microns;
- a hole transport layer in operative contact with the hole injecting layer, this layer being comprised of a halogen doped selenium arsenic alloy, where in the percentage by weight of selenium present is from about 99.5 percent to about 99.9 percent, the percentage by weight of arsenic present is from about 0.1 percent to about 0.5 percent, and the halogen is present in an amount of from about 10 parts per million, to about 200 parts per million, the hole transport layer having a thickness of from about 5 microns to about 60 microns;
- a charge generating layer overcoated on the hole transport layer comprised of an inorganic photoconductive

material, the charge generating layer having a thickness of from about 0.1 microns to about 5 microns;

- a hole trapping layer contained on the generating material, the hole trapping layer being comprised of a halogen doped selenium arsenic alloy wherein the amount of selenium present by weight ranges from about 95 percent to about 99.9 percent, the amount of arsenic present ranges from about 0.1 percent to about 5 percent, and the amount of halogen present ranges from about 10 parts per million to 200 parts per million, the hole trapping layer having a thickness of from about 0.01 microns about 5 microns, and;
- a layer of electrically insulating organic resin overlying the hole trapping layer.

4,286,034

#### PHOTOCONDUCTIVE STRUCTURES

Andrew A. Turnbull, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 11, 1979, Ser. No. 83,921

Claims priority, application United Kingdom, Oct. 26, 1978, 41981/78

Int. Cl.<sup>3</sup> G03G 5/04

U.S. Cl. 430—63

2 Claims

1. A photoconductive structure comprising an electrically insulating substrate, an evaporated metal electrode pattern on said substrate, a 60 to 150 nm thick polyimide film overlying said substrate and said electrode pattern, and a sintered cadmium selenide layer on said polyimide film.

4,286,035

#### HALOGEN DOPED SELENIUM-TELLURIUM ALLOY ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

Hideyo Nishizima; Hideaki Ema, both of Numazu; Hiroshi Tamura, Fujisawa, and Hideki Akiyoshi, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

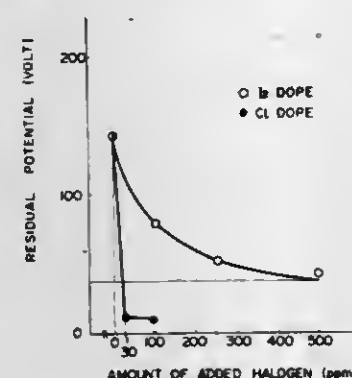
Filed May 28, 1980, Ser. No. 153,963

Claims priority, application Japan, May 31, 1979, 54-66780

Int. Cl.<sup>3</sup> G03G 5/04

U.S. Cl. 430—85

6 Claims



1. An electrophotographic photoconductor comprising an electroconductive base and a photosensitive layer formed thereon, said photosensitive layer comprising a selenium-tellurium alloy with a concentration of tellurium in the range of 5 to 20 wt. % and halogen, with a concentration in the range of 5 to 500 ppm, selected from the group consisting of fluorine, chlorine, bromine and iodine, in said photosensitive layer, the concentration of tellurium near said electroconductive base being at 5 wt. % or more and being uniform or increasing in the direction toward the surface of said photosensitive layer and the ratio of the concentration of tellurium near said electroconductive base to the concentration of tellurium near the surface of said photosensitive layer being 65 to 100:100.

2. An electrophotographic photoconductor comprising an electroconductive base and a photosensitive layer formed thereon, said photosensitive layer comprising a selenium-tellurium alloy with a concentration of tellurium in the range of 5 to 20 wt. % and halogen, with a concentration in the range

of 5 to 500 ppm, selected from the group consisting of fluorine, chlorine, bromine and iodine, in said photosensitive layer, the concentration of tellurium near said electroconductive base being at 5 wt. % or more and being uniform or increasing in the direction toward the surface of said photosensitive layer and the ratio of the concentration of tellurium near said electroconductive base to the concentration of tellurium near the surface of said photosensitive layer being 80 to 100:100.

4,286,036

#### PROCESS FOR REVERSAL DEVELOPMENT

Roelof R. Hendriksma, Panningen, Netherlands, assignor to Océ-Nederland B.V., Venlo, Netherlands

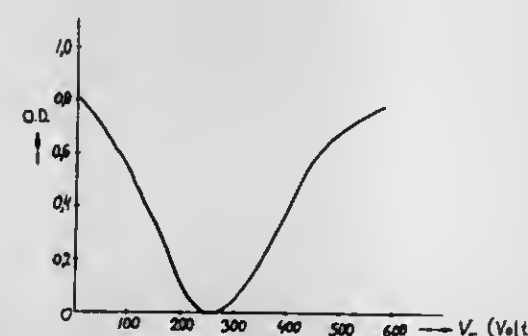
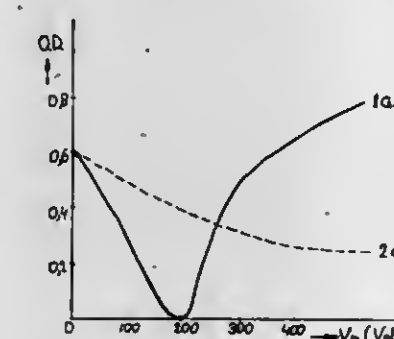
Filed Apr. 3, 1980, Ser. No. 136,838

Claims priority, application Netherlands, Apr. 2, 1979, 7902539

Int. Cl.<sup>3</sup> G03G 13/09

U.S. Cl. 430—100

17 Claims



1. In a process for reversal development which comprises forming an electrical potential pattern by uniformly charging and thereafter imagewise exposing to light a photoconductive layer on a conductive support and developing said pattern into a visible image by contacting the surface of said layer with magnetizable and inductively attractable toner powder carried on a conductive surface of a magnetic brush development device, said conductive surface being provided with an electrical potential suited for charging particles of said powder so as to deposit them on exposed image areas of said pattern by reversal development, the improvement which comprises effecting said charging of the photoconductive layer only to a charge level sufficiently below the breakdown voltage of said layer and so related to the potential on said conductive surface that the contact between said layer surface and the toner powder is insulating during the development of the potential pattern, said charge level being such that when said photoconductive layer uniformly charged to said level is contacted with said powder in a series of tests differing from one another by variations of a potential ( $V_r$ ) applied to said conductive surface, the respective resulting values of the optical density (OD) of the toner powder deposited on said layer are represented by a graph having at least approximately the shape of a V with the lowest region thereof representing an OD value of zero or nearly zero.

11. A process for reversal development which comprises uniformly charging a photoconductive layer on a conductive support by means of a scorotron the grid of which comprises 5 to 10 wires per cm, thereafter exposing said layer to light so as

to form on said layer a potential pattern, and developing the potential pattern into a visible image by contacting the surface of said layer with magnetizable, inductively attractable toner powder carried on a conductive surface of a magnetic brush developing device with said conductive surface impressed by a unidirectional direct current to an electrical potential suited for charging particles of said powder so as to deposit them on exposed image areas of said pattern by reversal development, said powder having a resistivity of between  $10^6$  and  $10^{10}$  ohm.cm and its particle sizes being in the range of 5 to 30 microns, said charging being effected up to a charge level of said layer amounting at most to 35 to 75% of its breakdown voltage and so related to said impressed potential that the apparent surface voltage of said layer, corrected for dark decay, is approximately the same after as before the development of said charge pattern, said impressed potential being at a value 0.8 to 1.5 times that of the apparent surface voltage applied to said layer by said charging.

4,286,037

#### ELECTROSTATIC IMAGE ONE-COMPONENT ELECTRICALLY CONDUCTIVE THERMOPLASTIC RESIN CONTAINING POWDERED DEVELOPER PREPARED BY COAGULATION IN EMULSION

Adrianus M. P. Hectors, Tegelen, and Gerardus J. Crommen-tuyn, Lottum, both of Netherlands, assignors to Océ-van der Grinten N.V., Venlo, Netherlands

Division of Ser. No. 757,629, Jan. 7, 1977, Pat. No. 4,146,494.

This application Sep. 5, 1978, Ser. No. 939,852

Claims priority, application Netherlands, Jan. 23, 1976, 7600686

Int. Cl.<sup>3</sup> G03G 9/08

U.S. Cl. 430—107

19 Claims

4. Process for preparing a developer powder consisting essentially of thermoplastic resin particles containing additive material finely dispersed therein and having a specific resistance of between approximately  $10^5$  and  $10^{11}$  ohm.cm, which process comprises forming an aqueous emulsion of minute thermoplastic resin particles by emulsion-polymerization of at least one monomer in an aqueous medium in the presence of an emulsifier that provides in said medium an ion that will react with a second ion to form a substantially water-insoluble quaternary ammonium salt; while stirring vigorously, adding said emulsion gradually to a water-miscible coagulant liquid that will coagulate the emulsion-polymerized resin particles of said emulsion and contains in solution a substance which provides said second ion, thereby coagulating said minute particles into resin coagula of substantially greater size having trapped and uniformly distributed therein fine particles of said quaternary ammonium salt formed in situ by reaction of said ions in the coagulation mixture; and thereafter separating said coagula from the liquid of the coagulation mixture.

16. Developer powder comprising electrically conductive thermoplastic resin particles prepared by the process of claim 4, said particles having a specific resistance of between approximately  $10^5$  and  $10^{11}$  ohm.cm and consisting essentially of dried coagula of emulsion-polymerized thermoplastic resin particles having distributed therein substantially uniformly throughout the coagula, with or without other fine additive particles, fine precipitated-in-situ particles of a substantially water-insoluble electrically conductive quaternary ammonium salt.

4,286,038

#### POSITIVE TONERS CONTAINING ALKYL PICOLINIUM COMPOUNDS

Chin H. Lu, and Peter F. Erhardt, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 12, 1979, Ser. No. 19,692

Int. Cl.<sup>3</sup> G03G 9/14

U.S. Cl. 430—108

4 Claims

1. A dry developer composition comprised of 92 percent by weight of a styrene butadiene copolymer resin or a styrene/n-



butyl methacrylate copolymer resin, 2 percent by weight of cetyl picolinium chloride or cetyl picolinium bromide 6 percent by weight of carbon black, and a carrier material containing a steel core which is coated with a polyvinylidene fluoride resin.

4,286,039

# METHOD AND APPARATUS FOR REMOVING EXCESS DEVELOPING LIQUID FROM PHOTOCONDUCTIVE SURFACES

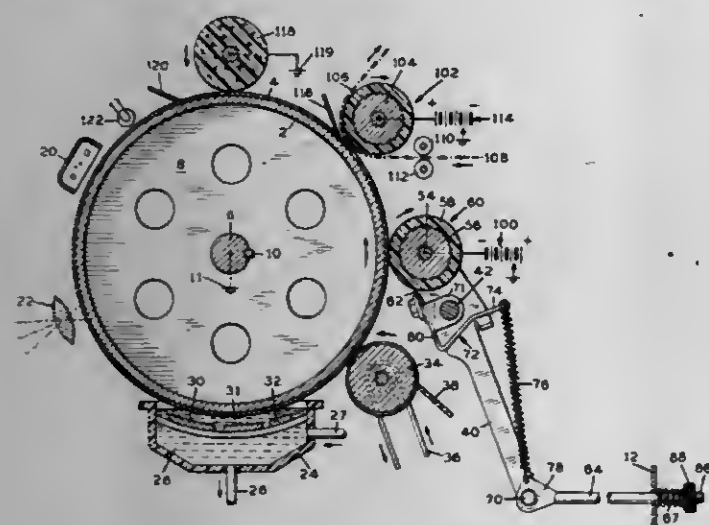
Benzion Landa, Edmonton, Canada; Ronald Swidler, Palo Alto, and Kenneth W. Gardiner, Menlo Park, both of Calif., assignors to Savin Corporation, Valhalla, N.Y.

Filed May 15, 1979, Ser. No. 39,373

Int. Cl.<sup>3</sup> G03G 15/10

U.S. Cl. 430—119

10 Claims



1. In a method of removing excess developing liquid from a photoconductive surface bearing an electrostatic image which has been developed by a liquid developer comprising an insulating liquid having charged toner particles disseminated there-through, the improvement comprising contacting the photoconductive surface with a compressible conductive polyurethane roller having a Shore A hardness of less than 45 and a resistivity of less than  $10^9$  ohm-centimeters, impressing the roller with a fixed potential relative to ground of the polarity corresponding to the polarity of the charge on the charged toner particles in the developing liquid, and rotating said roller so the relative motion between its surface and the surface of the photoconductor bearing the liquid-developed electrostatic image is substantially zero whereby to remove excess liquid from the surface of the photoconductor bearing the developed electrostatic image.

4,286,040

# PROCESS FOR PREPARING AN ELECTROPHOTOGRAPHIC ELEMENT

Gerard J. E. H. van Lomm, Tegelen, Netherlands, assignor to Océ-Nederland B.V., Venlo, Netherlands

Filed Aug. 9, 1979, Ser. No. 65,359

Claims priority, application Netherlands, Aug. 14, 1978, 7808418

Int. Cl.<sup>3</sup> G03G 5/06

U.S. Cl. 430—127

23 Claims

1. A process for preparing an electrophotographic element that comprises an electrically conductive support and a photoconductive layer containing a photosensitive azo-compound dispersed in a film-forming polymeric binder, which comprises synthesizing the photosensitive azo-compound in situ by reaction between a diazonium compound and an azo-coupling component in a layer of the film-forming polymeric binder on the support.

4,286,041

# COMPOSITION AND PROCESS FOR DEVELOPING DIAZOTYPE MATERIAL

Wilhelmus J. M. van de Vorle, Venlo, Netherlands, assignor to Océ-van der Grinten, Venlo, Netherlands

Continuation of Ser. No. 853,683, Dec. 8, 1977, abandoned. This application Mar. 1, 1979, Ser. No. 16,443

Claims priority, application Netherlands, Dec. 10, 1976, 7631744

Int. Cl.<sup>3</sup> G03C 1/58, 5/22, 5/34

U.S. Cl. 430—149

16 Claims

1. In a composition for developing diazotype material, comprising an aqueous solution of an azo-coupling component comprising phloroglucinol and a buffering agent in an amount sufficient to give said solution a pH between 5.5 and 8, the improvement comprising that said solution also contains, in addition to said buffering agent, a sorbic compound selected from the group consisting of sorbic acid, alkali metal, ammonium, and magnesium salts of sorbic acid and mixtures of the same, said sorbic compound being present in an amount sufficient to shift toward neutrally black the hue of the dyestuff formed by reaction of said solution with a diazonium salt of which the in vitro coupling activity is higher than that of p-diazo-o-chloro-diethylaniline.

4,286,042

# LIGHT REFLECTING LAYER FOR COLOR DIFFUSION TRANSFER PHOTOGRAPHIC SYSTEM

Nobuo Sakai; Hiroshi Hayashi; Masaharu Toriuchi, and Kazunobu Katoh, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 6, 1979, Ser. No. 46,127

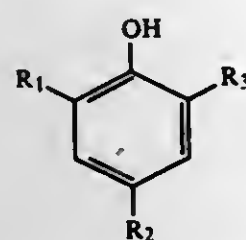
Claims priority, application Japan, Jan. 6, 1978, 53/68198

Int. Cl.<sup>3</sup> G03C 1/40, 7/00, 1/10, 5/54

U.S. Cl. 430—216

17 Claims

8. In a diffusion transfer color photographic material comprising a photosensitive element containing at least one silver halide photographic emulsion and at least one dye image forming material, an image receiving element and means for discharging an alkaline processing solution containing a silver halide development agent and a light reflecting layer comprising a white pigment dispersed in a binder and additionally containing at least one compound represented by the formula (I):



(I)

wherein R<sub>1</sub> represents an alkyl group having 1 to 9 carbon atoms, R<sub>2</sub> represents an alkyl group having 1 to 5 carbon atoms, and R<sub>3</sub> represents an alkyl group having 1 to 9 carbon atoms or a benzyl group.

4,286,043

# NEGATIVE-WORKING DRY PEEL APART PHOTOPOLYMER ELEMENT WITH POLYVINYLFORMAL BINDER

Harvey W. Taylor, Jr., Sayre, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1980, Ser. No. 152,118

Int. Cl.<sup>3</sup> G03C 1/72, 1/94, 1/68

U.S. Cl. 430—253

8 Claims

1. A negative-working dry peel apart photopolymerizable element consisting essentially of a support, a cover sheet and therebetween a layer of photopolymerizable composition having a dry thickness of at least 0.0005 mm and an optical density in the actinic region of not more than 0.7, the photopolymeriz-

able composition consisting essentially of (1) at least two halogen-free polymeric organic binders, (2) a free radical generating, addition polymerization initiator or initiator system activatable by actinic radiation, and (3) at least one ethylenically unsaturated monomer having a boiling point above 100° C. at normal atmospheric pressure and at least one terminal ethylenic group capable of forming a high polymer by free radical initiated, chain-propagated, addition polymerization, the monomer being present in a quantity in excess of the absorptive capacity of the binders for the monomer so that a thin layer of substantially free monomer is present at least on the surface of the photopolymerizable layer at the interface between the layer and the cover sheet, the adhesion of the photopolymerizable layer to the cover sheet being greater before polymerization than it is to the support whereas after polymerization the adhesion of said layer to the support is greater than it is to the cover sheet, at least one of the support or cover sheet being transparent to actinic radiation, the improvement being that the ratio of binder components to monomeric component is 0.5 to 1.0 to 3.0 to 1.0, at least one of the polymeric organic binders contains 0.5 to 40.0 percent by weight of polyvinylformal based on the total weight of polymeric binder present and is incompatible so as to be present as a dispersed phase in the layer to provide an appreciable reduction in cohesive strength of the photopolymerizable layer as compared to when the incompatible binder is not present in the layer.

4,286,044

# SILVER HALIDE PHOTOGRAPHIC MATERIALS

Yuji Mihara; Haruo Takei; Noriyuki Inoue; Tadashi Ikeda, and Kenichi Kuwabara, all of Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 8, 1980, Ser. No. 176,442

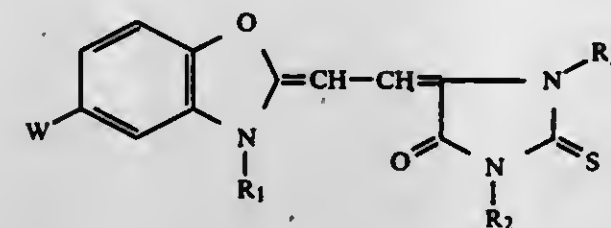
Claims priority, application Japan, Aug. 8, 1979, 54/100858

Int. Cl.<sup>3</sup> G03C 1/08

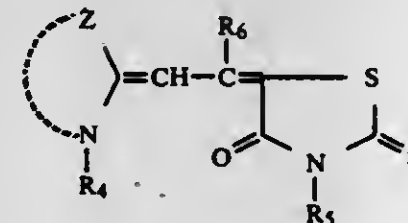
U.S. Cl. 430—264

8 Claims

1. A silver halide photographic material comprising a support having coated thereon a silver halide emulsion layer containing at least one sensitizing dye represented by the following formula (I) and at least one sensitizing dye represented by the following formula (II):



wherein R<sub>1</sub> represents a sulfoalkyl group, a carboxyalkyl group, a sulfoaralkyl group, or a carboxyaralkyl group; the alkyl moiety of said groups having up to 4 carbon atoms; R<sub>2</sub> represents a substituted or unsubstituted alkyl group or an aryl group; R<sub>3</sub> represents  $-(CH_2)_{n1}CONH(CH_2)_{m1}OH$  or  $-(CH_2)_{n2}O(CH_2)_{m2}OH$ , wherein m<sub>1</sub>, m<sub>2</sub>, n<sub>1</sub>, and n<sub>2</sub> each represents an integer of 1 to 7, m<sub>1</sub>+n<sub>1</sub> and m<sub>2</sub>+n<sub>2</sub> being, however, 8 or less and W represents a hydrogen atom, a halogen atom, a substituted or unsubstituted alkyl group, an alkoxy group, or a substituted or unsubstituted phenyl group;



wherein Z represents a non-metallic atomic group necessary for completing a thiazolidine ring or a 4-thiazoline ring; R<sub>4</sub> and R<sub>5</sub> each represents a substituted or unsubstituted alkyl group,

an allyl group, or a substituted or unsubstituted phenyl group; at least one of said R<sub>4</sub> and R<sub>5</sub> being a sulfoalkyl group or a carboxyalkyl group; and R<sub>6</sub> represents a hydrogen atom, a substituted or unsubstituted alkyl group or a substituted or unsubstituted phenyl group.

6. The silver halide photographic material of claim 1, wherein said silver halide photographic material is a lith-type material.

4,286,045

# IMAGE FORMING MATERIALS AND IMAGE FORMING PROCESS

Akira Nahara; Yoshihiro Ono; Tomizo Namiki; Shigeo Harada; Yuzo Mizobuchi, and Tomoaki Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 26,713, Apr. 3, 1979, which is a continuation of Ser. No. 818,912, Jan. 25, 1977, abandoned. This application Nov. 15, 1979, Ser. No. 94,618

Claims priority, application Japan, Jul. 28, 1976, 51-90495

Int. Cl.<sup>3</sup> G03F 7/02; G03C 1/00

U.S. Cl. 430—270

28 Claims

1. In an image forming material comprising a support having thereon a layer composed of a Ge-S composition or a Ge-S-X composition, wherein X represents at least one element selected from the group consisting of Al, Si, Mg, Ti, V, Mn, Co, Ni, Sn, Zn, Pd, Se, Te, Fe, I, P and O, which undergoes a structural change capable of being detected optically, electrically or chemically upon exposure imagewise to light, wherein the improvement comprises:

said Ge-S or Ge-S-X composition layer is continuous and has a thickness of at least 300 Å, and

said Ge-S composition or said Ge-S-X composition contains at least one element selected from the group consisting of Ag and Cu in an amount of more than two atoms of Ag and/or Cu based on 100 atoms of the Ge-S composition or the Ge-S-X composition, wherein the amount is sufficient to improve the moisture stability of the composition and the Ag and/or Cu is dispersed in the composition.

4,286,046

# PROCESS FOR PREPARATION OF MULTICOLOR SURPRINT PROOFS WITH SILICA OVERCOAT

Abraham B. Cohen, Springfield, and Roxy Fan, East Brunswick, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 4, 1979, Ser. No. 45,245

Int. Cl.<sup>3</sup> G03C 5/00

U.S. Cl. 430—272

12 Claims

1. In a process for preparing a multicolor proof with improved image sharpness comprising a surprint having at least two nonplanar, nonsilver halide colored photoimaged elements on a support, the improvement comprising (a) coating on said photoimaged surprint at least one layer of colloidal silica from a substantially aqueous dispersion containing colloidal silica particles in a range of 10 to 60% by weight of solids wherein the colloidal silica has an average particle diameter of less than 500 nm and at least 75% of the solids of said dispersion are silica, and (b) drying the layer to a dried coating weight of at least 20 mg/dm<sup>2</sup>.

4,286,047

# PRESSURE-SENSITIVE ADHESIVE SUSCEPTIBLE TO ULTRAVIOLET LIGHT-INDUCED DETACKIFICATION

Richard E. Bennett, Hudson, Wis., and Mary A. Hittner, Little Canada, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 25, 1979, Ser. No. 60,276

Int. Cl.<sup>3</sup> G03C 1/68

U.S. Cl. 430—280

10 Claims

1. Normally tacky and pressure-sensitive adhesive having an



epoxy equivalent value of about 400-900 and including an effective amount of ionic photoinitiator selected from the group consisting of radiation-sensitive aromatic onium salts of Group Va or VIa; onium catalysts of Group Va, VI or VIIa, diaryl halonium salts containing Group Va metal hexafluorides and triaryl sulfonium complex salts capable of promoting the polymerization of oxirane rings, whereby said adhesive is readily detackified by exposure to actinic radiation.

4,286,048

# PHOTOCROSSLINKABLE COMPOSITIONS FOR SCREEN PRINTING STENCILS

Richard E. Merrill, Wakefield, and Arthur A. Massucco, Natick, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Division of Ser. No. 99,617, Dec. 3, 1979, which is a division of Ser. No. 970,196, Dec. 18, 1978, Pat. No. 4,209,582, which is a continuation-in-part of Ser. No. 770,272, Feb. 22, 1977, abandoned. This application Sep. 11, 1980, Ser. No. 186,200

Int. Cl.<sup>3</sup> G03C 1/68, 5/00

U.S. Cl. 430-284

25 Claims



1. An article of manufacture suitable for use in the formation of screen printing stencils, comprising in combination

- (a) a temporary support; and
- (b) an ultraviolet cross-linkable film removably affixed to said temporary support, said film comprising a uv-initiated crosslinking promoter, an ultraviolet initiator, and a block copolymer formed of blocks of a copolyacrylate and a polyurethane, said copolyacrylate comprising a copolymer of a hydroxy-containing acrylate and a second acrylate component which comprises one or more esters of a non-hydroxy-containing acrylic acid or methacrylic acid or mixtures thereof; said film in its cross-linked form being further characterized as resistant to both water-based and oil-based printing inks.

4,286,049

# METHOD OF FORMING A NEGATIVE RESIST PATTERN

Saburo Imamura, Shungo Sagawara, and Hirotugu Sato, all of Mito, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Jul. 3, 1979, Ser. No. 54,430

Claims priority, application Japan, Jul. 10, 1978, 53-83842

Int. Cl.<sup>3</sup> B05D 3/06; G03C 5/16

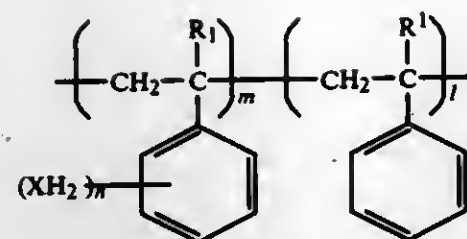
U.S. Cl. 430-296

9 Claims

1. A method of forming a negative resist pattern which comprises the steps of:

- (a) depositing a polymer film sensitive to high energy beams on a substrate;
- (b) exposing the polymer film to high energy beams applied by deep ultraviolet rays, X-rays, electron beams or gamma rays in a prescribed pattern to crosslink the exposed portions of the film; and
- (c) removing the portions of the film other than the cross-linked portions with a solvent,

wherein the polymer is formed of components expressed by the general structural formula:



wherein

X is the same or different groups selected from the group consisting of halogens and groups of the formula



wherein R<sub>2</sub> is a hydrogen atom or methyl group; R<sub>1</sub> is a hydrogen atom or methyl group; n is an integer of 1, 2 or 3; and l+m are each an integer and the total of all the l and m integers in the polymer are in the range of 50 to 50,000, and m/m+l ≥ 0.2.

4,286,050

# METHOD OF EXPOSING AND DEVELOPING A HOMOPOLYMER RESIST

Richard J. Himics, Trumbull, Conn.; Michael Kaplan, Franklin Township, Mercer County, and Nitin V. Desai, Somerset, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 959,847, Nov. 13, 1975, This application Jul. 22, 1980, Ser. No. 171,050

Int. Cl.<sup>3</sup> G03C 5/00, 1/71

U.S. Cl. 430-296

7 Claims



1. In a method of recording information whereby a resist material is exposed to radiation, said resist material becoming more insoluble in a developer solvent where impinged upon by the radiation and the resist material is developed with the developer solvent so as to remove the soluble portions thereof, the improvement which comprises employing as the resist material a film consisting essentially of a homopolymer of 1-aza-5-acryloxymethyl-3,7-dioxabicyclo[3.3.0]octane.

4,286,051

# METHODS OF ENGRAVING WORKPIECE SURFACES BY ETCHING

Ulrich Wagner, Röntgenstr. 2, D 7110 Öhringen, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 96,016

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1978, 2851101

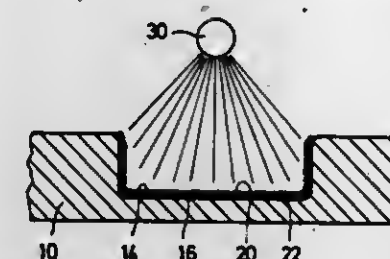
Int. Cl.<sup>3</sup> G03C 5/00

U.S. Cl. 430-323

3 Claims

1. A method of engraving an arbitrarily curved or plane surface of a workpiece by etching, comprising applying a photographic lacquer layer to the surface of the workpiece to be etched, depositing on the photographic lacquer layer a thin flexible support foil which carries a dissolvable pattern made of a dye opaque to light with the pattern bearing side of the foil

on the photographic lacquer layer, transferring the pattern to the photographic lacquer layer, first removing the support foil, then exposing the photographic lacquer layer to light through the pattern, removing the exposed or unexposed regions of the



photographic lacquer layer, and treating the surface of the workpiece with an etching agent so that the regions not covered by the lacquer layer on the workpiece are subjected to etching.

4,286,052

# METHOD FOR MAKING STAINED GLASS PHOTOMASKS USING STABILIZED GLASS

Fred M. Ernsberger, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 10, 1980, Ser. No. 110,952

Int. Cl.<sup>3</sup> B05D 3/14, 3/02

U.S. Cl. 430-330

10 Claims

1. In a method of producing a precise stained pattern in a sheet of glass wherein a source of stained-producing ions is applied to a surface of a transparent sheet of glass having an established fictive temperature, stain-producing ions are migrated from said source into patterned areas of the glass sheet, and the glass sheet is then heated to a staining temperature range at which the migrated ions develop coloration within the glass sheet and at which the glass sheet remains essentially uncrystallized, and during said heating step a difference between the established fictive temperature of the glass sheet and the staining temperature range leads to undesirable dimensional changes in the glass sheet, the improvement comprising: prior to the application of the source of stain-producing ions onto the glass sheet, reducing the difference between the fictive temperature of the glass sheet and the staining temperature range by subjecting the glass sheet to a preliminary heat treatment at a temperature at which the fictive temperature of the glass sheet is substantially changed in the direction of the staining temperature range and essentially no crystallization of the glass sheet occurs, whereby dimensional stability of the glass sheet during the subsequent color development heat treatment step is improved.

4,286,053

# PROCESS FOR FORMING DYE IMAGES

Wataru Ishikawa, Ryosuke Satoh, Kiyoshi Yamashita, Tugumoto Usui, and Katsunori Kato, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,452

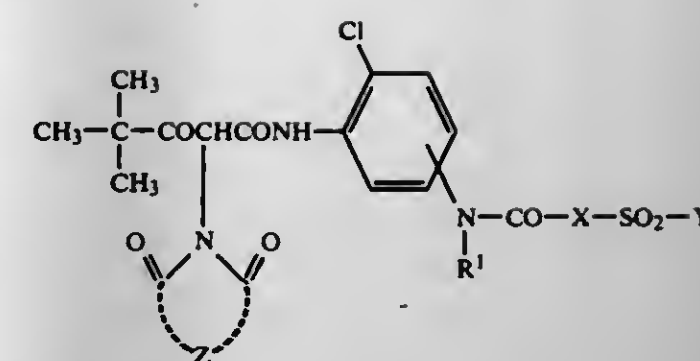
Claims priority, application Japan, Nov. 24, 1978, 53/145024

Int. Cl.<sup>3</sup> G03C 7/00

U.S. Cl. 430-389

13 Claims

1. A process for forming yellow dye images comprising developing an imagewise exposed light-sensitive silver halide photographic material with a developer containing an aromatic primary amine type developing agent in the presence of a yellow coupler represented by the following general formula (I):



wherein R<sup>1</sup> represents a hydrogen atom or an alkyl group, aryl group or heterocyclic group, which may individually have a substituent, X represents an alkylene, arylene, aralkylene or divalent organic group represented by the following general formula (II) -A-V-B- which may individually have a substituent, Y represent an alkyl group; aryl group or heterocyclic residue, which may individually have a substituent, Z represents a non-metal atomic group necessary for forming in cooperation with -CO-N-CO- a 5- or 6-membered ring,

wherein A and B individually represent an alkylene, a arylene or aralkylene group, which may individually have a substituent, and V represents a divalent linking group.

4,286,054

# LIGHT SENSITIVE, COLOR PHOTOGRAPHIC SILVER HALIDE COMPOSITIONS WITH DIR-COUPERS

Horst Englemann, Wolfen; Rainer Redmann; Monika Bethke, both of Dessau; Christa Melz, Dellitzsch; Gerd West; Jürgen Mistol, both of Dessau, and Udo Sydow, Leipzig, all of German Democratic Rep., assignors to VEB Filmfabrik Wolfen, Wolfen, German Democratic Rep.

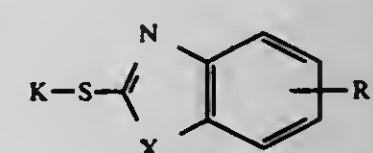
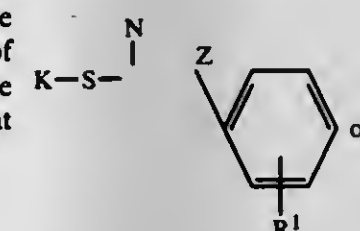
Filed May 29, 1980, Ser. No. 154,245

Int. Cl.<sup>3</sup> G03C 1/40

U.S. Cl. 430-544

15 Claims

1. A light-sensitive, color photographic material including at least one silver halide emulsion layer containing a DIR-coupler being a compound of the formula



in which

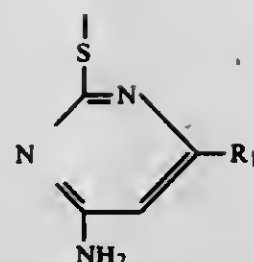
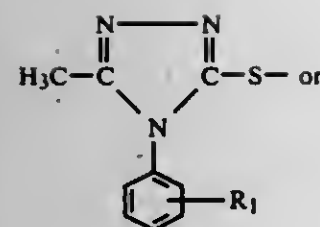
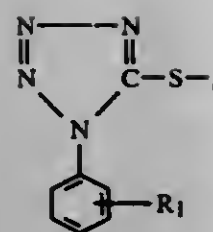
K is a substituted acylacetanilide-, 1-aryl-pyrazolone-(5)-, 1-naphthol- or phenol- structure, Z is an atom or atom group for the completion of a heterocyclic 5- or 6-member ring

X is O, S, or NR<sup>2</sup>

R<sup>1</sup> is a hydroxyl, carboxyl, sulfamido or sulfo group, in which a hydrogen atom may be substituted by an ammonium or a metal ion, and

in the case of formula (I) the hydrophilic substituted inhibitor splittable group is a moiety of the following structure





4,286,055

# PROCESS FOR THE PREPARATION OF MONODISPERSE PHOTOGRAPHIC SILVER HALIDE EMULSIONS OF IMPROVED SENSITIVITY

Ralf-Udo P. Forster, and Rolf H. F. Metzger, both of Dreieich, Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 3, 1980, Ser. No. 126,295

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932650

Int. Cl.<sup>3</sup> G03C 1/02

U.S. Cl. 430—567

6 Claims

1. A process for the preparation of a monodisperse silver halide emulsion of improved sensitivity, by the steps of

- precipitating a monodisperse silver chloride or silver chloride-bromide emulsion,
- converting this emulsion to a silver bromide or silver bromide-iodide emulsion by mixing it with a conversion solution of a bromide or a bromide-iodide mixture at elevated temperature, and
- chemically ripening the converted emulsion, characterized in that the chemical ripening is carried out in the presence of a sulfur sensitizer at a pH value between 8 and 9.5.

4,286,056

# METHOD FOR MAKING THERAPEUTIC ENZYME COMPOSITIONS

Thomas J. Andary, Fountain Valley; L. Raymond Berkebile, Santa Anna; William R. Thomas, Laguna Niguel, and Daphne C. Tse, Westminster, all of Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jan. 28, 1980, Ser. No. 116,187

Int. Cl.<sup>3</sup> C12Q 3/00; C12N 9/74

U.S. Cl. 435—3

19 Claims

1. In a method wherein a prothrombin complex-containing blood protein fraction is activated under conditions which produce enzymatically active blood clotting factors, the improvement comprising

- selecting at least one of said proenzyme activating conditions which is to be varied to control the degree of activation;
- prior to the completion of activation, determining the magnitude of the condition needed to activate the fraction to a predetermined degree of activation;
- setting the condition to said magnitude; and
- conducting the activation of the fraction in accordance

with said condition; and (e) terminating the activation at said predetermined degree of activation.

19. A method of making an activated prothrombin complex which comprises

- dissolving a paste of Cohn fraction IV-1;
- adsorbing the clotting factors in the fraction onto calcium phosphate;
- eluting the clotting factors from the calcium phosphate;
- determining the nonactivated partial thromboplastin (NAPT) and factor VIII correctional times of the step (c) eluate;
- where the nonactivated partial thromboplastin (NAPT) and factor VIII correctional times determined in step (d) are respectively greater than about 200 seconds and more than about 89 seconds, removing aliquots of the eluate and activating them for different periods of time;
- assaying the nonactivated partial thromboplastin (NAPT) time for each aliquot;
- determining the activation period which yields an nonactivated partial thromboplastin (NAPT) time of about from 70-100 seconds;
- activating the remaining bulk of the step (c) eluate under substantially the same conditions as were used to activate the step (e) aliquots;
- assaying the nonactivated partial thromboplastin (NAPT) time of the bulk at regular intervals before the end of the activation period determined in step (g);
- terminating the activation of the bulk when the nonactivated partial thromboplastin (NAPT) time is about from 70 to 100 seconds;
- concentrating the activated prothrombin complex by precipitation from polyethylene glycol (PEG);
- dissolving the polyethylene glycol (PEG) precipitate in an aqueous solution containing about from 1 to 2 units of heparin/ml; and
- lyophilizing the dissolved precipitate.

4,286,057

# METHOD AND REAGENT FOR THE DETERMINATION OF CREATINE KINASE

Karl Wulff, Weilheim; Fritz Stähler, Tutzing, and Wolfgang Grüber, Tutzing-Unterzeismering, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Sandhofer, Fed. Rep. of Germany

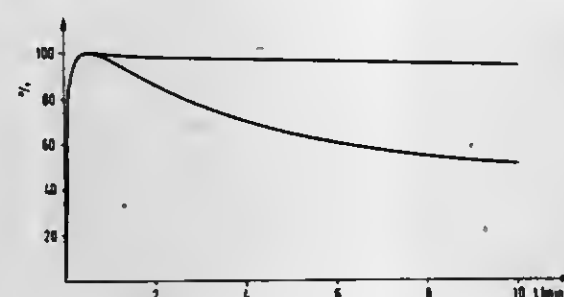
Filed Feb. 28, 1980, Ser. No. 125,381

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, 2908054

Int. Cl.<sup>3</sup> C12Q 1/66

U.S. Cl. 435—8

13 Claims



1. In a method for the determination of creatine kinase by the reaction of creatine phosphate with adenosinediphosphate with the formation of adenosine triphosphate, transformation of the latter with luciferin and oxygen in the presence of luciferase and diadenosine pentaphosphate with the formation of oxyluciferin and adenosine monophosphate, and measurement of the light emitted thereby, the improvement comprising performing the reaction at adenosine diphosphate substrate saturation concentration in the presence of 1 to 10 millimoles per liter of AMP, at pH values of 5.8 to 7.5, with at least 50 units per test of luciferase.

4,286,058

# ENZYMATIC CONVERSION OF HIGH MOISTURE SHEAR EXTRUDED AND GELATINIZED GRAIN MATERIAL

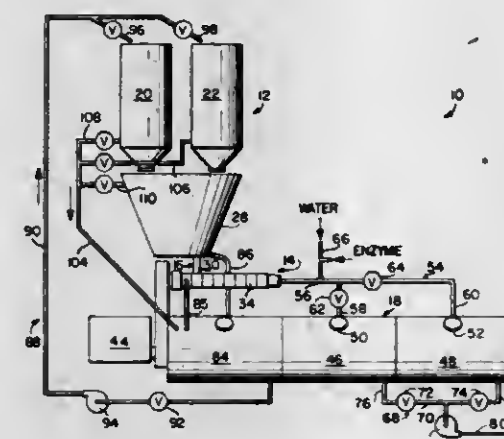
Lavon G. Wenger; Galen J. Rokey, both of Sabetha, Kans., and Itamar Ben-Gera, Antwerp, Belgium, assignors to Wenger Manufacturing, Sabetha, Kans.

Filed Nov. 6, 1979, Ser. No. 91,798

Int. Cl.<sup>3</sup> C12P 19/14

U.S. Cl. 435—99

11 Claims



1. A method of producing sugars from a starch-bearing material, comprising the steps of:

- providing a quantity of a starch-bearing grain material; soaking said material in an aqueous medium, said aqueous medium being present at a level of at least about 100%, based upon the weight of said material taken as 100%, until said material is substantially permeated with said aqueous medium and moisturized to a level of at least about 80% of the saturation level of the material;
- passing said permeated and moisturized wet material into the inlet of the barrel of an elongated extruder equipped with a rotatable material-conveying screw and an apertured, flow-restricting extrusion die plate;
- rotating said screw in order to move said wet material along the length of said barrel, subjecting said wet material to elevated temperatures and pressures during passage thereof along the length of said barrel, and subjecting said wet material to mechanical shear and passing the wet material through the aperture of said die plate to gelatinize at least about 95% of the gelatinizable fraction of the wet material passed through said aperture and give at least a portion of the gelatinized material a conversion time of no more than about 45 minutes; and
- adding an enzyme to said gelatinized material without drying of the gelatinized material to convert at least a portion of the gelatinized material to said sugars.

4,286,059

# POLYSACCHARIDE AND BACTERIAL FERMENTATION PROCESS FOR ITS PREPARATION

Kenneth Sak Kang, La Jolla; George T. Veeder, III, and Danny D. Richey, both of San Diego, all of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 806,801, Jun. 15, 1977, abandoned, which is a continuation of Ser. No. 725,595, Sep. 22, 1976, abandoned, which is a continuation of Ser. No. 616,739, Sep. 25, 1975, abandoned, which is a division of Ser. No. 373,724, Jan. 26, 1973, Pat. No. 3,933,788, which is a continuation-in-part of Ser. No. 197,941, Nov. 11, 1971, abandoned. This application Nov. 4, 1977, Ser. No. 848,533

Int. Cl.<sup>3</sup> C12P 19/04; C12N 1/20; C12R 1/01, 1/22

U.S. Cl. 435—101

8 Claims

1. The process for preparing Heteropolysaccharide 10, the heteropolysaccharide containing about 3% protein and about 97% carbohydrate, the carbohydrate portion of which contains about 19% of a uronic acid, about 39% glucose, about 29% galactose and about 13% fucose, said heteropolysaccha-

ride being compatible with Methylene Blue chloride dye, that comprises cultivating under submerged aerobic conditions at a temperature of about 28° to about 35° C. a heteropolysaccharide producing strain of *Klebsiella pneumoniae* or a heteropolysaccharide producing mutant thereof in an aqueous nutrient medium containing as a source of carbon hydrolyzed starch having a dextrose equivalent of about 20-35, a source of nitrogen, a source of magnesium and a source of phosphorus, until substantial viscosity has been imparted to said medium, and recovering the heteropolysaccharide.

7. An aqueous nutrient medium containing a Heteropolysaccharide 10 producing strain of *Klebsiella pneumoniae* or a heteropolysaccharide 10 producing mutant thereof and as a source of carbon hydrolyzed starch having a dextrose equivalent of about 20-35, a source of nitrogen, a source of magnesium and a source of phosphorus.

4,286,060

PROCESS FOR PRODUCTION OF AN AMINO ACID  
Nina V. Gluschenko, Grazhdansky prospekt, 31, korpus 1, kv. 114, Leningrad; Vasily N. Bukin, Leninsky prospekt, 13, korpus 1, kv. 74, Moscow; Martin E. Beker, Zveyas, 4, Riga; Leonid V. Dmitrenko, prospekt Morisa Toreza, 9, kv. 393; Varvara A. Utenkova, ulitsa Matroza Zheleznyaka, 51, kv. 70, both of Leningrad; Mariya A. Kuzmina, Leningradskaya oblast, ulitsa I Maya, 3, kv. 31, Sestroretsk; Lidia S. Kutseva, Moskovskaya oblast, ulitsa Svobody, 8, Malakhovka; Natalia M. Bazdyreva, ulitsa Usievicha, 25, korpus 3, kv. 407, Moscow; Gunar K. Liepinsh, Fr. Gailya, 13, kv. 2; Eleonora B. Trusle, Lielgabalu, 2, kv. 25, both of Riga, and Tamara A. Pavlova, prospekt Shvernika, 16, kv. 69, Leningrad, all of U.S.S.R.

Filed Apr. 20, 1979, Ser. No. 31,754

Int. Cl.<sup>3</sup> C12P 13/14, 13/08, 13/04

U.S. Cl. 435—110

6 Claims

1. A process for producing an amino acid, by means of submerged cultivation of an amino acid producing microorganism in a nutrient medium comprising nitrogen, mineral salts, and a mixture of hexose and pentose monosaccharides obtained by percolation hydrolysis of cellulose-containing plant raw materials, purified to remove substantially all furfural and containing oxymethyl furfural and lignogummin substances in an amount of 1-3% by weight of said monosaccharides.

4,286,061

# METHOD FOR CONTINUOUS CULTURING OF MICROBES

Ralph A. Messing, Horseheads; Robert A. Oppermann, Painted Post; Lynn B. Simpson, Corning, and Milton M. Takeguchi, Big Flats, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 939,190, Sep. 5, 1978, abandoned. This application Jan. 23, 1980, Ser. No. 162,582

Int. Cl.<sup>3</sup> C12N 11/14

U.S. Cl. 435—176

10 Claims

1. A method for the continuous culturing of microbes in a plug-flow reactor which comprises the steps of:

- supplying medium to microbes immobilized on a porous inorganic support at a rate sufficient to maintain such microbes substantially in a logarithmic growth state and
- removing microbe-containing effluent from the immobilized microbes at a rate equal to the medium supply rate, wherein the microbes are selected from the group consisting of bacteria, yeasts, and fungus-like organisms; such reactor is operated continuously in a substantially plug-flow mode; the immobilized microbes are substantially covered by said medium; and such porous inorganic support has a controlled porosity such that at least 70% of the pores, on a pore size distribution basis, have a pore diameter,
  - in the case of bacteria, at least as large as the smallest



major dimension of the microbes but less than about five times the largest major dimension of the microbes;  
b. in the case of yeasts, at least as large as the smallest dimension of the microbes but less than about four times the largest dimension of the microbes; and  
c. in the case of fungus-like organisms, at least as large as the smallest major dimension of the microbes but less than about sixteen times the largest major dimension of the microbes.

4,286,062

**PROCESS FOR PRODUCING AN ENZYME PREPARATION TO TENDERIZE MEAT PRODUCTS**  
Leonid I. Stekolnikov, Lipetskaya ulitsa, 26, kv. 13; Boris A. Sevastyanov, Leninsky prospekt, 36, kv. 165, both of Moscow; Gennady G. Shilov, prospekt Lenina, 121, kv. 56, Rostov-na-Donu; Anatoly A. Belousov, Sosinskaya ulitsa, 6, kv. 46, Moscow, and Nikolai D. Mamonov, ulitsa Maljuginol, 156, kv. 109, Rostov-na-Donu, all of U.S.S.R.

Filed Nov. 14, 1979, Ser. No. 94,325

Claims priority, application U.S.S.R., Nov. 22, 1978, 2687905  
Int. Cl.<sup>3</sup> C12N 9/96

U.S. Cl. 435—188

6 Claims

1. Method of producing an enzyme meat tenderizing agent, which comprises comminuting the testes of slaughtered animals, extracting the thus-comminuted testes with acidulated water of a pH and in an amount sufficient to obtain a mixture having a pH value of 4.5-4.7, separating an aqueous solution from the thus obtained mixture, said aqueous solution containing hyaluronidase, adding an albumin-containing substance to said aqueous solution in an amount such that the ratio of said albumin-containing substance to the testes of the slaughtered animals is between about 0.04-1.6:10-15, thus forming a suspension, subjecting the thus-formed suspension to concentration by evaporation at a maximum temperature of 25° C., thus obtaining a concentrate of the enzyme meat tenderizing agent, and drying the thus obtained concentrate.

4,286,063

**METHOD FOR PRODUCING THROMBOLYTIC PREPARATION**

Tadakazu Suyama, Kyoto, Japan, assignor to The Green Cross Corporation, Osaka, Japan

Filed Dec. 19, 1979, Ser. No. 105,116

Claims priority, application United Kingdom, Dec. 21, 1978, 49638/78

Int. Cl.<sup>3</sup> C12N 9/72

U.S. Cl. 435—215

3 Claims

1. In a method for producing a thrombolytic preparation from a fresh urine or a crude urokinase solution which consists essentially of (1) adsorbing urokinase on a selected adsorbent, (2) eluting and recovering the adsorbed urokinase, (3) heat-treating the recovered urokinase solution at a temperature of 50° to 70° C. for 8 to 12 hours, and (4) subjecting the heat-treated solution to dialysis, the improvement comprising carrying out the heat-treatment step at pH 6 to 8 and carrying out the dialysis step at pH 5.5 to 12 to recover urokinase having a molecular weight of 54,000±10,000.

4,286,064

**PROCESS FOR ISOLATING ACTIVE DEBRIDING AGENT FROM BROMELAIN**

William Galbraith, Newark, Del., assignor to Riker Laboratories, Inc., Northridge, Calif.

Filed Nov. 5, 1979, Ser. No. 91,041

Int. Cl.<sup>3</sup> C12N 9/50, 9/48

U.S. Cl. 435—219

15 Claims

1. A process for isolating a product from crude bromelain useful in debriding divitalized tissue in mammals comprising the steps of:

A. suspending the crude bromelain in a solution of a weakly

basic buffer having a pH of about 8 to 10.5 to selectively solubilize the active components;  
B. separating the undissolved solids from the solution; and  
C. removing a substantial portion of the small molecules having a molecular weight of about 10,000 or less from said solution.

4,286,065

**APPARATUS FOR CULTIVATION OF MICROORGANISMS ON GRANULAR NUTRIENT MEDIUM**

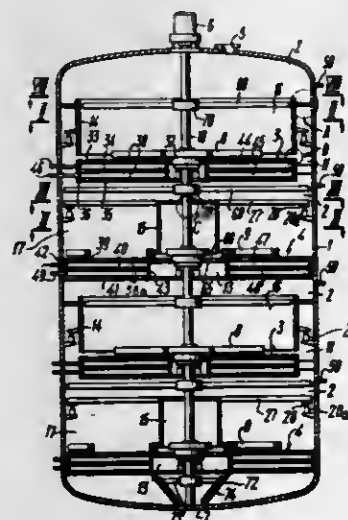
Kalust A. Kalunians, mikroraiion Kapotnya, kvartal 4, 3, kv. 34.; Valentin G. Kozhemyakin, Leninsky prospekt, 85, korpus 6, kv. 45.; Irina M. Gracheva, ulitsa Panfilova, 18a, kv. 39., and Ljudmila I. Voino, ulitsa Kiprenskogo, 14, kv. 1., all of Moscow, U.S.S.R.

Filed Nov. 19, 1979, Ser. No. 95,667

Int. Cl.<sup>3</sup> C12M 1/06

U.S. Cl. 435—315

5 Claims



1. An apparatus for cultivating microorganisms on a granular nutrient medium, comprising: a fluid tight vessel which houses: a vertical arrangement of perforated partitions dividing said vessel height-wise into a plurality of sections, said partitions being a first kind and a second kind alternatingly arranged height-wise of the vessel; the first kind including discs mounted to define an annular gap with the housing of said vessel, and the second kind including flat rings with a central opening, sealingly secured on the housing of said vessel, the annular gaps between the housing of said vessel and the central openings of the flat rings defining ducts for the passage of the nutrient medium into the underlying sections; cylindrical shells overlying each of said perforated partitions and defining in each respective section intermediate accumulators of the nutrient medium, wherein each said shell is mounted for vertical displacement, to define selectively a passage between said respective perforated partition and said shell for advancing the nutrient medium toward said ducts; and means for selective vertical reciprocation of said cylindrical shells; a drive shaft extending along the axis of said vessel; blade-type agitators accommodated in each said section of the drive shaft above said perforated partitions, that is, above said discs and flat rings; the blades of said agitators overlying said discs having a positive angle of curvature, to advance the nutrient medium from said intermediate accumulators toward said annular gaps; the blades of said agitators overlying said flat rings having a negative angle of curvature, to advance the nutrient medium from said intermediate accumulators toward the central opening of said flat rings; a loading port at the top of said vessel; a discharge port at the bottom of said vessel; connections for inlet and outlet gas flow communicating with said sections of said vessel.

4,286,066

**CONTINUOUS FERMENTATION AND DISTILLATION APPARATUS**

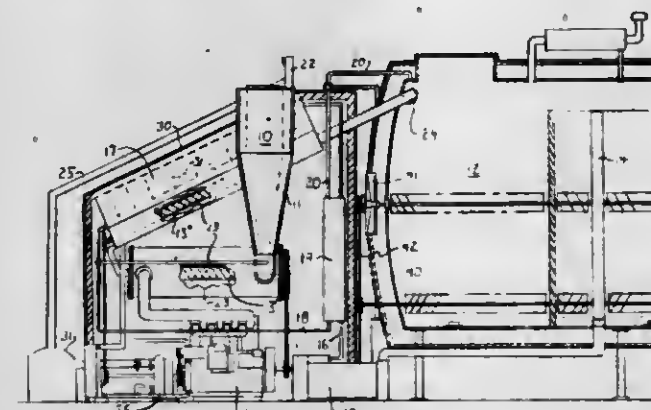
Robert S. Butler, and Lance B. Crombie, both c/o Crombie-Butler Corp., 1306 W. CO Rd. F., St. Paul, Minn. 55112

Filed Jun. 24, 1980, Ser. No. 162,660

Int. Cl.<sup>3</sup> C12M 1/02

U.S. Cl. 435—316

7 Claims



1. Apparatus for continuously fermenting a moist particulate feed and distilling the fermentation product comprising, a hopper for supplying a moist particulate feed containing a component convertible to fermentable sugar, a fermentation tank, pressure-locked auger means for forcing said feed from said hopper into said tank, means to progressively remove liquor from within said tank, means for separating solids from said removed liquor to produce a beer, a distillation column operatively connected to said means for separating solids for distilling said beer, a combustion engine for powering said auger and said means for separating solids, said engine having an exhaust surrounding an inlet section of said auger to help heat said feed and thereby produce fermentable sugar within said auger, and said auger including a section passing from said exhaust to said tank in heat exchange relation to said distillation column to provide heat for distillation.

4,286,067

**ARTICLE OF MANUFACTURE COMPRISING SEMIPERMEABLE POLYMER AND DEXTRAN DERIVATIVE**

Felix Theeuwes, Los Altos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 953,489, Oct. 23, 1978, Pat. No. 4,203,440.  
This application Dec. 6, 1979, Ser. No. 100,932

Int. Cl.<sup>3</sup> C08J 5/18

U.S. Cl. 521—27

2 Claims



1. An article of manufacture useful for fabricating a device for delivering a beneficial agent to a fluid environment at a controlled rate over a prolonged period of time, comprising a film formed of a semipermeable polymer selected from the group consisting of cellulose acrylate, cellulose diacrylate, and cellulose triacrylate having distributed therein a multiplicity of particles formed of a dextran substituted with a member selected from the group consisting essentially of diethylaminoethyl, diethyl (2-hydroxypropyl)-aminoethyl, carboxymethyl, and sulphopropyl.

4,286,068

**CATALYST AND PROCESS FOR OXIDATION OF ORGANIC SUBSTRATES BY HYDROGEN PEROXIDE**

Frank Mares, Whippany, and Stephen E. Jacobson, Succasunna, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris Co., N.J.

Continuation of Ser. No. 929,376, Jul. 31, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 144,073

Int. Cl.<sup>3</sup> C08J 9/36

U.S. Cl. 521—53

6 Claims

1. An improved porous polymer in granular or bead form and useful for catalyzing oxidation by hydrogen peroxide, consisting essentially of phenyl or pyridyl groups, being linked together in polyphenylene, or pendant from a polymethylene backbone which is crosslinked by a divinylarylene at least some of which phenyl or pyridyl groups are substituted on the ring by arsenic groups; wherein the improvement comprises freedom from nitrogenous and oxygen-containing substituents on the aromatic rings of said polymer thereby achieving high stability toward hydrogen peroxide, such that the polymer can be reused repeatedly to catalyze oxidation by hydrogen peroxide, and can be separated in solid form from the product mixture in liquid form, without substantial loss of arsenic content; and wherein the said arsenic groups are —AsPh(OR), —As(OR)<sub>2</sub>, —AsPh(O)(OH), —As(O)(OH)<sub>2</sub> or a mixture thereof, "R" being hydrocarbyl.

4,286,069

**METHOD OF MAKING EXPANDABLE STYRENE-TYPE BEADS**

James E. Millington, Lanesberg, and Stelvio Papetti, Leominster, both of Mass., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Oct. 28, 1980, Ser. No. 201,659

Int. Cl.<sup>3</sup> C08J 9/16

U.S. Cl. 521—56

5 Claims

1. A method of making expandable styrene-type polymer beads wherein the polymer beads are impregnated after the substantial completion of the polymerization, in an aqueous suspension medium comprising a suspending agent and about 0.005-0.3%, based on the weight of water, of nonionic surfactant which is a copolymer of propylene oxide and ethylene oxide having an HLB number of 8-18 and an average molecular weight of at least 1,000, and then washed with water and dried.

4,286,070

**FIRE-RETARDANT, RUBBER-MODIFIED, MONOCARBOXYLIC ACID COPOLYMERS**

Adolph V. DiGiulio, and Jack N. Bauer, both of Pittsburgh, Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Filed May 7, 1980, Ser. No. 147,035

Int. Cl.<sup>3</sup> C08J 9/06, 9/12

U.S. Cl. 521—88

7 Claims

1. A process for making fire-retardant foams consisting of blending a mixture of (a) a rubber-modified copolymer of 5 to 40 weight percent of a rubber selected from the group consisting of homopolymers of conjugated dienes, copolymers of said dienes with up to 50 weight percent of one or more



monoolefinically unsaturated monomers, ethylene-propylene-diene terpolymer rubbers, acrylate-diene copolymer rubbers and mixtures thereof and 95-60 weight percent of a copolymer of 70 to 95 mole percent of a monovinyl aromatic monomer and 5 to 30 mole percent of an ethylenically unsaturated monocarboxylic acid monomer; (b) from 0.5 to 10 percent by weight of water; (c) from 10 to 20 parts per hundred parts of copolymer of an at least tri-brominated diphenylether; and (d) 4 to 8 parts per hundred parts of copolymer of a metal oxide synergist for the ether until an intimate blend is obtained; heating the blend to a temperature of between 125° and 190° C. under sufficient pressure to prevent foaming of the blend; releasing the pressure to allow the blend to expand to a foam of density between 1 and 10 pounds per cubic foot; and cooling the resultant foam to room temperature.

4,286,071

# SELF-EXTINGUISHING FINE PARTICULATE EXPANDABLE STYRENE POLYMERS

Josef K. Rigler, Recklinghausen; Hans-Josef Ratajczak, Marl; Horst Leithäuser, Marl, and Karl Trukenbrod, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Jan. 30, 1980, Ser. No. 116,842

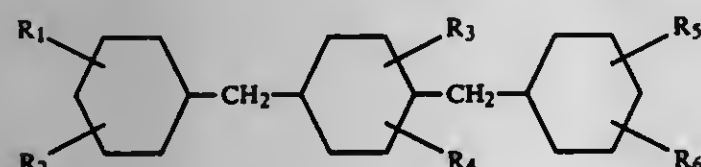
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1979, 2906336

Int. Cl.<sup>3</sup> C08J 9/14

U.S. Cl. 521-96

9 Claims

1. In a particulate molding composition for the production of foamed articles consisting essentially of a mixture of a polymerized styrene monomer or styrene monomer in admixture with comonomers, an expanding agent, an organic bromine compound and a synergist, the improvement comprising said synergist, comprising a hydrocarbon soluble in monomeric styrene and forming stable radicals at temperatures above 300° C. in a concentration of about 0.1 to 3% by weight based on said polymerized styrene, said hydrocarbon selected from compounds having the general formula



wherein R<sub>1</sub> to R<sub>6</sub> are hydrogen, halogen, alkyl, cycloalkyl or aryl groups.

4,286,072

# NOVEL POLYISOCYANURATE CATALYSTS

Edward E. McEntire, and Robert L. Zimmerman, both of Austin, Tex., assignors to Texaco Development Corp., White Plains, N.Y.

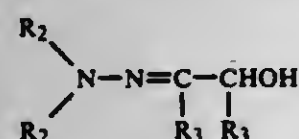
Division of Ser. No. 85,147, Oct. 15, 1979, abandoned. This application Jul. 21, 1980, Ser. No. 170,459

Int. Cl.<sup>3</sup> C08G 18/14

U.S. Cl. 521-118

8 Claims

1. In a process for preparing a polymer containing recurring isocyanurate and urethane linkages, which polymer comprises the reaction product of a polyol and an aromatic polyisocyanate, while utilizing an isocyanurate group formation catalyst; the improvement which comprises employing as said isocyanurate catalyst a compound falling within the following structural formula:



where R<sub>1</sub> and R<sub>2</sub> are independently selected from alkyl groups of less than about 3 carbon atoms or where R<sub>1</sub> and

R<sub>2</sub> together comprise cycloalkyl or morpholino groups and where R<sub>3</sub> is hydrogen or alkyl groups containing less than about 3 carbon atoms.

4,286,073

# URETHANE CATALYSIS

Charles G. Coe, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 28, 1980, Ser. No. 172,892

Int. Cl.<sup>3</sup> C08G 18/14

U.S. Cl. 521-126

12 Claims

1. Stable pre-mix compositions reactable with organic isocyanates for preparation of polyurethane foams, said compositions comprising an active hydrogen-containing compound as determined by the Zerewitinoff reaction, water and an organotin catalyst, said catalyst being hydrolytically stable and corresponding to the general formula



wherein R is an alkyl radical of 1 to 8 carbon atoms, R' is an alkyl, phenyl or alkyl phenyl radical of 1 to 8 carbon atoms and n is 1 or 2.

4,286,074

# AMINE-TERMINATED GRAFT COPOLYMER DISPERSIONS AND POLYURETHANES PREPARED THEREFROM

John E. Davis, Woodhaven, and Moses Cener, Trenton, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Apr. 4, 1980, Ser. No. 137,194

Int. Cl.<sup>3</sup> C08G 18/14, 18/63

U.S. Cl. 521-137

22 Claims

1. A graft polymer dispersion prepared by the in situ polymerization in the presence of an effective amount of a free radical initiator, an ethylenically unsaturated monomer or mixture of monomers in the amount of from 1 to 60 parts of monomer or mixture of monomers per 100 parts of the dispersion product in an amine-terminated polyoxyalkylene polyether polymer.

15. A polyurethane prepared by the reaction of an organic polyisocyanate with a graft polymer dispersion prepared by polymerizing in the presence of an effective amount of a free radical initiator, an ethylenically unsaturated monomer or mixture of monomers in the amount of from 1 to 60 parts of monomer or mixture of monomers per 100 parts of the dispersion product in an amine-terminated polyoxyalkylene polyether polymer.

4,286,075

# POLYARYLATE CONTAINING BLENDS

Lloyd M. Robeson, Whitehouse Station, N.J., and George A. Skoler, White Plains, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 163,977

Int. Cl.<sup>3</sup> C08L 67/00, 67/02, 67/08

U.S. Cl. 525-68

39 Claims

1. A molding composition comprising a blend of:

- a polyarylate derived from a dihydric phenol and a mixture of isophthalic acid and terephthalic acid, of which more than about 65 mole percent is terephthalic acid,
- a polyarylate derived from a dihydric phenol and a mixture of terephthalic acid and isophthalic acid, of which more than about 70 mole percent is isophthalic acid, and
- at least one thermoplastic polymer compatible therewith.

4,286,076

# PROCESS FOR STABILIZING ACRYLONITRILE POLYMER SPINNING SOLUTIONS

Karl-Heinz David; Alfred Nogaj, and Heinrich Rinkler, all of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,727

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832212

Int. Cl.<sup>3</sup> C08K 5/09; C08L 33/20, 33/02

U.S. Cl. 525-221

7 Claims

1. A process for the stabilization of a spinning solution of an acrylonitrile polymer and a solvent which comprises adding from 0.005 to 0.5 percent, based on the quantity of polymer, of at least one stabilizer selected from 2-phosphonobutane-1,2,4-tricarboxylic acid, 2,4-diphosphonobutane-1,2-dicarboxylic acid, polyacrylic acid or polymaleic acid to the spinning solution.

4,286,077

# WEATHER RESISTANT ADHESIVE COMPOSITION

David J. St. Clair, and Earle E. Ewins, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 21, 1980, Ser. No. 142,312

Int. Cl.<sup>3</sup> C08F 279/02

U.S. Cl. 525-232

13 Claims

1. A weather resistant pressure sensitive adhesive composition possessing excellent oxidative and UV stability along with improved tack and reduced melt viscosity comprising:

- 100 parts by weight of a selectively hydrogenated block copolymer component comprising an A'B' block copolymer and a multiblock copolymer having at least two end blocks A and at least one mid block B wherein the A' and A blocks are monoalkenyl arene polymer blocks and the B' and B blocks are substantially completely hydrogenated conjugated diene polymer blocks, the number average molecular weight of the A' and A blocks are between about 3,000 and about 7,000, the monoalkenyl arene content of the multiblock copolymer is between about 7% and about 22% by weight and the weight ratio between the A'B' block copolymer and the multiblock copolymer is about 0:100 to about 75:25;
- about 50 to about 350 parts by weight of a tackifying resin compatible with block B; and
- about 0 to about 100 parts by weight of a plasticizer.

4,286,078

# PROCESS FOR THE CONTINUOUS MANUFACTURE OF VINYL CHLORIDE POLYMERS

Franz Bötsch, Burgkirchen, and Helmut Kraus, Burghausen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 891,192, Mar. 29, 1978, abandoned.

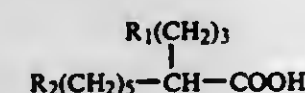
This application Jul. 30, 1979, Ser. No. 62,043

Int. Cl.<sup>3</sup> C08F 14/06, 259/04

U.S. Cl. 525-317

4 Claims

1. In a process for the continuous manufacture of homo- or copolymers or graft polymers of vinyl chloride containing at least 85% by weight relative to the total polymer of polymerized vinyl chloride units, in aqueous emulsion, in the presence of at least one water-soluble catalyst; from 1.5 to 3.5% by weight relative to the monomers used of at least one water-soluble emulsifier; the improvement consisting essentially of using as water-soluble emulsifier a mixture of (1) at least one water-soluble salt of an aliphatic, saturated monocarboxylic acid of the formula



in which R<sub>1</sub> and R<sub>2</sub>, being identical or different, each are a saturated, linear or branched alkyl having from 1 to 5 carbon

atoms, and (2) at least one sodium, potassium or ammonium salt of a monoalkylsulfuric acid ester the alkyl radical of which is saturated, linear or branched and contains from 8 to 18 carbon atoms, in an amount of from 25 to 85% by weight, relative to the total amount of emulsifier employed.

4,286,079

# CURABLE COMPOSITION

Masao Onizawa, Ohmlya, Japan, assignor to Sanyo Trading Co., Inc., Japan

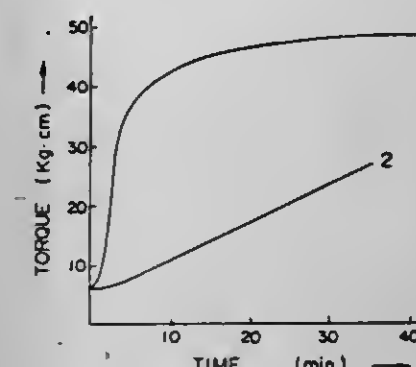
Division of Ser. No. 923,402, Jul. 10, 1978. This application Dec. 31, 1979, Ser. No. 108,785

The portion of the term of this patent subsequent to Dec. 5, 1995, has been disclaimed.

Int. Cl.<sup>3</sup> C08F 8/34, 8/32

U.S. Cl. 525-346

3 Claims



1. A curable composition comprising a chlorinated polyethylene, a sulfur-curable rubber with or without a vinyl chloride resin, sulfur with or without a sulfur donor, and at least one amino acid selected from the group consisting of lysine, ornithine, arginine and proline.

4,286,080

# EXTRUSION PROCESS FOR THE PREPARATION OF POLYURETHANE UREAS

Bernd Quiring, Leverkusen; Wolfgang Wenzel, Bergisch Gladbach; Georg Niederdelmann; Hans Wagner, both of Dormagen, and Wilhelm Goyert, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 20, 1980, Ser. No. 161,613

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1979, 2925944

Int. Cl.<sup>3</sup> C08G 18/08, 18/63

U.S. Cl. 525-455

10 Claims

1. A process for the continuous preparation of polyurethane ureas by reacting, either all at one time or stepwise, a reaction mixture comprising:

- one or more polyisocyanates;
- one or more compounds having an average of at least 1.8 Zerewitinoff-active hydrogen atoms and a molecular weight of from 400 to 10,000;
- water in a quantity of from 0.07 to 40% by weight, based on the sum of Zerewitinoff-active compounds (B), (C) and (D); optionally with
- other compounds having one or more Zerewitinoff-active hydrogen atoms and having a molecular weight of from 32 to 400; and optionally
- monoisocyanates;

further characterized in that the equivalent ratio of component (B) to the sum of components (C) and (D) is from 5:1 to 1:30, the molar proportion of component (C) amounts to at least 5% of the sum of (C) and (D) and the equivalent ratio of isocyanate groups to all the Zerewitinoff-active hydrogen atoms, including water, is below 1.1:1, further characterized in that said reaction is carried out in hot screw extruders, comprising:

- multishaft extruders with self-cleaning screws and kneading elements;



- (b) introducing components (A), (B) and optionally (D) and (E) into said hot screw extruder;
- (c) introducing component (C) into said screw-extruder, where the temperature in those extruders is between 120° and 280° C., thereby transferring component (C) into the gaseous phase;
- (d) adjusting pressure and temperature in the reaction zone of the extruders as to keep component C into the gaseous phase;
- (e) adjusting the temperature in the extrusion zone so as to subject the extrudate to a pressure of at least 10 bar.
10. A process as claimed in claim 1 or 2, wherein said polyurethane urea is prepared in the presence of one or more other thermoplasts.

4,286,081

# ELECTROLYTE IN THE EMULSION POLYMERIZATION PROCESS FOR PRODUCING VINYL DISPERSION RESINS

Bela K. Mikofalvy, Avon Lake, and James W. Turner, Bay Village, both of Ohio, assignors to The BF Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 84,849, Oct. 15, 1979, abandoned, which is a continuation of Ser. No. 955,817, Oct. 30, 1978, abandoned. This application Dec. 20, 1979, Ser. No. 105,694

Int. Cl.<sup>3</sup> C08F 14/06

U.S. Cl. 526—74

23 Claims

1. A process for producing polymers of vinyl and vinylidene halides and copolymers thereof with each other or either with up to 80% by weight of one or more polymerizable olefinic monomers having at least one terminal  $\text{CH}_2=\text{C}$  grouping, comprising forming a monomer premix containing the monomer or monomers to be polymerized, the aqueous reaction medium, from about 0.01% to about 0.5% by weight of a free radical yielding catalyst based on the weight of 100 parts of monomer or monomers being polymerized, from about 0.05% to about 6.0% by weight of at least one fugitive gas producing electrolyte based on the weight of the monomer or monomers, from about 0.5% to about 4.0% by weight based on the weight of the monomer or monomers, of an emulsifier for the polymerization system selected from the group consisting of salts of saturated fatty acids containing from 8 to 20 carbon atoms, sulfate and sulfonate type soaps of from  $\text{C}_{12}$  to  $\text{C}_{20}$  alkyl or aryl hydrocarbons, and mixtures of said emulsifiers, mixing said premix at a temperature below the reactivity of the catalyst or catalysts employed, passing said premix to a reaction zone, emulsion polymerizing said premix in said zone at a temperature in the range of about 30° C. to about 70° C., maintaining the pH in the reaction zone in the range of about 7.0 to about 12.0 until the reaction is complete, removing the polymer emulsion from said reaction zone and filtering the same to recover the polymer and friable aggregates of polymer, drying the polymer and friable aggregates of polymer while removing the electrolyte therefrom, and lightly crushing said friable aggregates to form individual spheres of polymer particles, and wherein polymer buildup in said reaction zone is reduced.

4,286,082

# ABSORBENT RESIN COMPOSITION AND PROCESS FOR PRODUCING SAME

Tsunao Tsubakimoto; Tadao Shimomura, both of Toyonaka; Yoshio Irie, Ashiya, and Yoshihiko Masuda, Suita, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo & Co., Ltd., Osaka, Japan

Filed Apr. 7, 1980, Ser. No. 137,640  
Claims priority, application Japan, Apr. 6, 1979, 54/41125;  
Dec. 27, 1979, 54/169368

Int. Cl.<sup>3</sup> C08F 2/18

U.S. Cl. 526—240

18 Claims

1. A process for producing an absorbent resin composition, which comprises copolymerizing in aqueous solution a mixture of 100 parts by weight of an acrylate salt monomer (B) com-

posed of 0 to 50 mol% of acrylic acid and 50 to 100 mol% of an alkali metal acrylate and 0.001 to 5 part by weight of a crosslinkable monomer (C) having 2 to 4 groups selected from  $\text{CH}_2=\text{CHCO}-$ ,  $\text{CH}_2=\text{C}(\text{CH}_3)\text{CO}-$  and  $\text{CH}_2=\text{CH}-\text{CH}_2-$  in the molecule in the presence of at least one surface-active agent (A) selected from water-soluble surface-active agents and water-dispersible surface-active agents in the presence of a water-soluble radical polymerization initiator while maintaining the initial concentration of said mixture at 25% by weight to saturation; and drying the resulting gel-like hydrous polymer under heat.

10. A process for producing an absorbent resin composition, which comprises copolymerizing in aqueous solution a mixture of 100 parts by weight of an acrylate salt monomer (B) composed of 0 to 50 mol% of acrylic acid and 50 to 100 mol% of an alkali metal acrylate and 0.001 to 5 part by weight of a crosslinkable monomer (C) having 2 to 4 groups selected from  $\text{CH}_2=\text{CHCO}-$ ,  $\text{CH}_2=\text{C}(\text{CH}_3)\text{CO}-$  and  $\text{CH}_2=\text{CH}-\text{CH}_2-$  in the molecule in the presence of at least one surface-active agent (A) selected from water-soluble surface-active agents and water-dispersible surface-active agents in the presence of a water-soluble radical polymerization initiator while maintaining the initial concentration of said mixture at 25% by weight to saturation, drying the resulting gel-like hydrous polymer under heat, followed by pulverization, and then blending the resulting resin powder (D) with 0.01 to 10 parts by weight, per 100 parts by weight of the powder, of ultramicroscopic silica (E) having a specific surface area, measured by the Brunauer-Emmett-Teller method, of at least about  $50 \text{ m}^2/\text{g}$  and a particle diameter of not more than about 0.05 micron.

4,286,083

# METHOD OF PREPARING POLYESTER CARBONATES

John E. Kochanowski, Stockbridge, Mass., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 755,352, Dec. 29, 1976, abandoned. This application Apr. 30, 1979, Ser. No. 34,338

Int. Cl.<sup>3</sup> C08G 63/64; C08L 69/00

U.S. Cl. 528—173

13 Claims

1. A process for the preparation of a copolyester containing both carboxylate and carbonate groups, said copolyester having reduced coloration, comprising concurrently reacting, in the presence of a catalytic amount of a tertiary amine and an inorganic base, a carbonyl halide; a difunctional carboxylic acid; and an excess of a molar equivalent, based on the carboxylic acid, of a dihydroxy compound; which reaction is carried out in an aqueous medium comprising a water immiscible solvent wherein said inorganic base is present in an amount sufficient to maintain the reaction medium at a pH between about 4.5 and 8.5 until the carboxylic acid is consumed and thereafter increasing the amount of said inorganic base to a level sufficient to raise the pH of said reaction medium to between about 9 and 11.5 until the completion of the reaction.

4,286,084

# PROCESS FOR PREPARING POLYCARBONATE USING CERTAIN NITROGEN-CONTAINING HETEROCYCLIC COMPOUNDS AS CATALYSTS

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 28, 1979, Ser. No. 107,720

Int. Cl.<sup>3</sup> C08G 63/62

U.S. Cl. 528—199

11 Claims

1. An interfacial polymerization process for preparing high molecular weight aromatic polycarbonates which comprises reacting, under interfacial polycarbonate-forming conditions, a dihydric phenol with a carbonate precursor in the presence of a catalytic amount of from about 0.01 to about 10 weight percent based on the weight of said dihydric phenol of a catalyst selected from a 5 to 8 membered heterocyclic compound characterized in that (i) the ring contains only carbon and nitrogen atoms; (ii) the ring contains at least two nitrogen

atoms and at least one carbon atom; and (iii) the ring is aromatic in character and contains a maximum amount of olefinic unsaturation wherein the ring members are unsubstituted or substituted with at least one substituent group selected from the group consisting of alkyl, substituted alkyl, alkenyl, substituted alkenyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, alkaryl, and aralkyl radicals, with the proviso that if said substituent group is bonded to a ring nitrogen atom, said substituent group is selected from alkyl, substituted alkyl, alkenyl, substituted alkenyl, cycloalkyl, substituted cycloalkyl, and aralkyl radicals.

4,286,085

# PROCESS FOR PREPARING POLYCARBONATES USING SUBSTITUTED PYRIDINE CATALYSTS

Donald B. G. Jaquiss, New Harmony; Victor Mark, Evansville, and Lawrence C. Mitchell, Mt. Vernon, all of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 28, 1979, Ser. No. 107,729

Int. Cl.<sup>3</sup> C08G 63/62

U.S. Cl. 528—199

7 Claims

1. An interfacial polymerization process for preparing high molecular weight polycarbonates which comprises reacting, under interfacial polycarbonate-forming conditions, a dihydric phenol with a carbonate precursor in the presence of a catalytic amount of a compound selected from the group consisting of substituted pyridines and substituted pyridine salts, said catalytic amount is present from about 0.01 to about 10 weight percent based on the weight of said dihydric phenol.

4,286,086

# PROCESS FOR PREPARING POLYCARBONATE USING STERICALLY HINDERED SECONDARY AMINE CATALYSTS

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

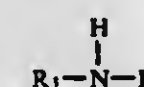
Filed Dec. 28, 1979, Ser. No. 107,892

Int. Cl.<sup>3</sup> C08G 63/62

U.S. Cl. 528—199

9 Claims

1. An interfacial polymerization process for preparing a high molecular weight aromatic polycarbonate which comprises reacting, under interfacial polycarbonate-forming conditions, a dihydric phenol with a carbonate precursor in the presence of a catalytic amount of a sterically hindered secondary amine, or its acid addition salt, of the formula



wherein R is selected from the group consisting of  $\text{C}_5$  to  $\text{C}_{30}$  linear alkyl radicals, substituted  $\text{C}_3$  to  $\text{C}_{30}$  linear alkyl radicals,  $\text{C}_3$  to  $\text{C}_{30}$  branched alkyl radicals, substituted  $\text{C}_3$  to  $\text{C}_{30}$  branched alkyl radicals,  $\text{C}_5$  to  $\text{C}_{30}$  linear alkenyl radicals, substituted  $\text{C}_5$  to  $\text{C}_{30}$  linear alkenyl radicals,  $\text{C}_3$  to  $\text{C}_{30}$  branched alkenyl radicals, substituted  $\text{C}_3$  to  $\text{C}_{30}$  branched alkenyl radicals,  $\text{C}_3$  to  $\text{C}_{12}$  cycloaliphatic radicals, substituted  $\text{C}_3$  to  $\text{C}_{12}$  cycloaliphatic radicals, heterocyclic ring radicals containing 3 to 12 ring carbon atoms and one atom selected from the group consisting of oxygen and sulfur, substituted heterocyclic ring radicals containing 3 to 12 ring carbon atoms and one atom selected from the group consisting of oxygen and sulfur,  $\text{C}_7$  to  $\text{C}_{20}$  aralkyl radicals, and substituted  $\text{C}_7$  to  $\text{C}_{20}$  aralkyl radicals; and  $\text{R}^1$  is selected from the group consisting of  $\text{C}_1$  to  $\text{C}_{30}$  alkyl radicals, substituted  $\text{C}_1$  to  $\text{C}_{30}$  alkyl radicals,  $\text{C}_3$  to  $\text{C}_{12}$  cycloaliphatic radicals, substituted  $\text{C}_3$  to  $\text{C}_{12}$  cycloaliphatic radicals,  $\text{C}_2$  to  $\text{C}_{30}$  alkenyl radicals, substituted  $\text{C}_2$  to  $\text{C}_{30}$  alkenyl radicals, heterocyclic ring radicals containing 3 to 12 ring carbon atoms and one atom selected from the group consisting of oxygen and sulfur, substituted heterocyclic ring radicals containing 3 to 12 ring carbon atoms and one atom selected from

the group consisting of oxygen and sulfur,  $\text{C}_7$  to  $\text{C}_{20}$  aralkyl radicals, and substituted  $\text{C}_7$  to  $\text{C}_{20}$  aralkyl radicals.

4,286,087

# CHITIN POWDER AND PROCESS FOR MAKING IT

Paul R. Austin, Wilmington, and Charles J. Brine, Newark, both of Del., assignors to University of Delaware, Newark, Del.

Filed Sep. 21, 1979, Ser. No. 77,831

Int. Cl.<sup>3</sup> C08B 37/08

U.S. Cl. 536—20

6 Claims

1. A process of making a dispersible chitin powder which comprises the sequential steps of  
(a) dispersing a particulate chitin in a mixture of phosphoric acid and a lower aliphatic alcohol,  
(b) heating said dispersion to hydrolyze the chitin to the desired lower molecular weight,  
(c) removing the hydrolyzed chitin from the dispersion,  
(d) redispersing the hydrolyzed chitin in water by mixing same with 5 to 25% water and subjecting the mixture to high speed shear forces,  
(e) removing the water from the dispersion by drying said sheared hydrolyzed chitin,  
(f) grinding the dried sheared hydrolyzed chitin to the desired particle size.

4,286,088

# PROCESS FOR PREPARING 7-AMINOCEPHALOSPORINS

Susumu Tsushima; Norichika Matsumoto, both of Osaka, and Masayasu Kato, Ashiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 5, 1978, Ser. No. 966,654

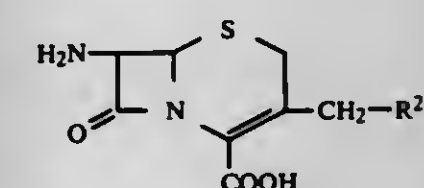
Claims priority, application Japan, Dec. 12, 1977, 52/149718;  
Dec. 14, 1977, 52/151105

Int. Cl.<sup>3</sup> C07D 501/04

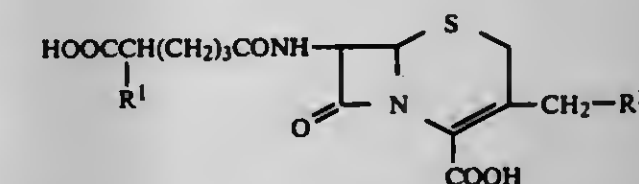
U.S. Cl. 544—16

11 Claims

1. A process for preparing a compound of the formula:



wherein  $\text{R}^2$  is 3-oxobutyryloxy group, 1-methyl-1H-tetrazol-5-ylthio group or 1-(2-dimethylaminoethyl)-1H-tetrazol-5-ylthio group, or its salt which comprises reacting a compound of the formula:



wherein  $\text{R}^1$  is an amino group which may be protected and  $\text{R}^2$  is the same as defined above or its salt with an acetyl or propionyl halide at  $-10^\circ \text{C}$ . to  $-50^\circ \text{C}$ ., then with an imino halide-forming agent to be converted to an imino halide, which is further reacted with a lower alcohol to be converted to an imino ether, and subjecting the imino ether to solvolysis.



4,286,089

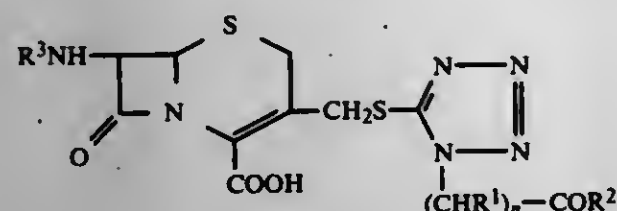
7-ACYL-3-(SUBSTITUTED TETRAZOLYL)  
THIOMETHYLCEPHALOSPORINS

David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Dec. 27, 1974, Ser. No. 536,760

Int. Cl.<sup>3</sup> C07D 501/56, 501/50; A61K 31/545; C07D 257/04  
U.S. Cl. 544—27 11 Claims

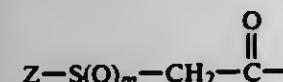
I. A compound of the formula:



in which:

each individual R<sup>1</sup> is hydrogen or lower alkyl of from one to four carbon atoms;

n is one to ten;

R<sup>2</sup> is hydroxy, amino, lower alkylamino or di(lower)alkylamino, each alkyl having from one to four carbon atoms; andR<sup>3</sup> is an acyl group of the formula:

where:

Z is methyl, trifluoromethyl, trifluoroethyl or pyridyl; and  
m is zero to two,  
or a non-toxic pharmaceutically acceptable salt thereof.

4,286,090

## NOVEL TETRAZOLO [4,5-C][1,2,3]BENZOTRIAZINES

Thomas C. Britton, Portage, Mich., and Eugene R. Wagner, Carmel, Ind., assignors to The Dow Chemical Company, Midland, Mich.

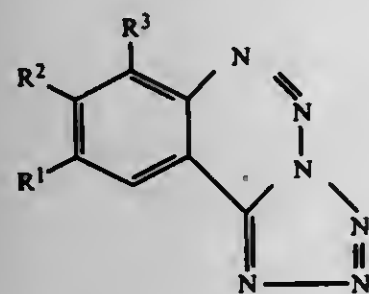
Filed Feb. 15, 1980, Ser. No. 121,758

Int. Cl.<sup>3</sup> C07D 487/04

U.S. Cl. 544—184

4 Claims

I. A tetrazolo[4,5-C][1,2,3]benzotriazine compound of the formula

wherein R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup> independently represent hydrogen, lower alkyl, lower alkoxy, halo, trihalomethyl, or nitro and halo refers to fluoro, chloro, and bromo.

4,286,091

SYNTHESIS OF PYRIDAZINONE PHARMACEUTICAL  
INTERMEDIATES USING DIKETENE REACTANT

Russell M. Bimber, Painesville; Russell Buchman, Madison; Michael F. DePompei, Mentor, and Larry J. Powers, Madison, all of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

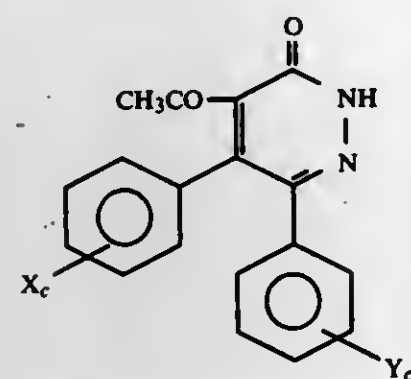
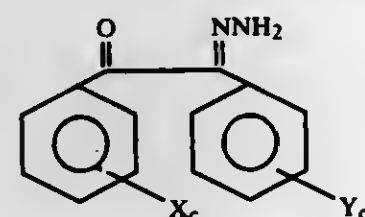
Filed May 19, 1980, Ser. No. 151,395

Int. Cl.<sup>3</sup> C07D 237/14

U.S. Cl. 544—239

21 Claims

I. A process for the preparation of a compound of the general formula

wherein X<sub>c</sub> and Y<sub>c</sub> are the same or different and are independently selected from the group consisting of halogen, C<sub>1</sub>—C<sub>4</sub> alkyl and C<sub>1</sub>—C<sub>4</sub> alkoxy where c is 0, 1 or 2; which comprises reacting a monohydrazone of the formulawherein X<sub>c</sub> and Y<sub>c</sub> are defined as above, with diketene.

4,286,092

5-AMINO-4-CHLORO-2-PHENYL-3(2H)-PYRIDAZI-  
NONE FREE FROM5-CHLORO-4-AMINO-2-PHENYL-3(2H)-PYRIDAZI-  
NONE, AS A SELECTIVE WEED-KILLER

Raimondo Motta, Milan, Italy, assignor to Oxon Italia S.p.A., Milan, Italy

Filed Jun. 19, 1979, Ser. No. 49,654

Claims priority, application Italy, Jun. 22, 1978, 24857 A/78  
Int. Cl.<sup>3</sup> C07D 237/22

U.S. Cl. 544—241

6 Claims

I. Process for obtaining 5-amino-4-chloro-2-phenyl-3(2H)-pyridazinone (PCA) free from 5-chloro-4-amino-2-phenyl-3(2H)-pyridazinone (ISO-PCA) starting from commercial Pyrazon, that is from a mixture of the said two isomeric compounds, characterised in that commercial Pyrazon is treated with a mineral acid of suitable concentration, said concentration being suitable to dissolve the ISO-PCA but very little of the PCA, thereby to form a suspension of PCA in a solution of ISO-PCA, and thereafter filtering said suspension to remove PCA in the form of particles from said solution.

4,286,093

9-CYCLOHEXYL-2-ALKOXY-9H-ADENINE PROCESS  
Davis L. Temple, Jr., Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

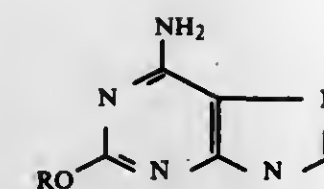
Filed Feb. 25, 1980, Ser. No. 124,190

Int. Cl.<sup>3</sup> C07D 473/18

U.S. Cl. 544—276

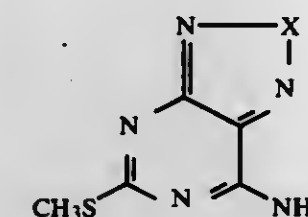
3 Claims

I. A process for preparing 9-cyclohexyl-2-alkoxy-9H-adenine derivatives of Formula I

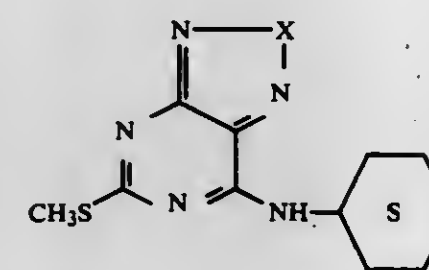


which comprises the consecutive steps of:

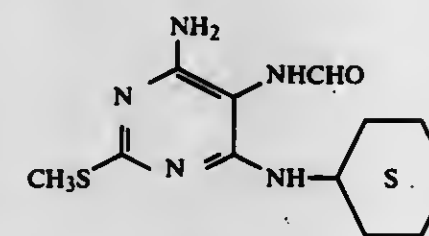
(1) reacting a diazolo[3,4-d]pyrimidine of Formula II wherein X is oxygen or sulfur



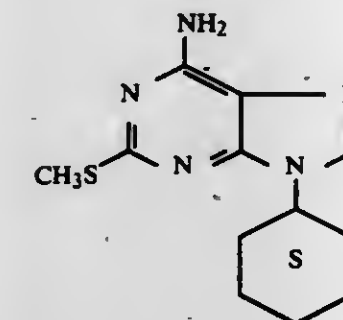
with 1 to 2 equivalents of cyclohexylamine in an inert reaction solvent at a temperature ranging from 20°–130° to produce the diazolo[3,4-d]pyrimidine of Formula III wherein X is oxygen or sulfur;



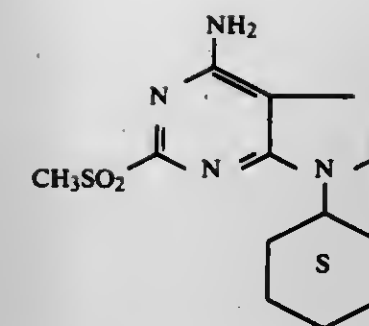
(2) reductively formylating III in 50–100% formic acid employing, when X is oxygen, catalytic hydrogenation with palladium-on-carbon catalyst or when X is sulfur, Raney nickel, to produce the formylated compound of Formula IV;



(3) cyclizing IV with alkali metal hydroxide to produce the adenine derivative of Formula V;



(4) oxidizing V in an inert solvent to produce sulfone VI;



(5) displacing the methylsulfone radical of VI with an alkali metal alkoxide of the formula RO-alk wherein alk represents sodium or potassium and R is 1 to 6 carbon atoms inclusive in an inert reaction solvent to produce a 2-alkoxy-9-cyclohexyladenine of Formula I.

4,286,094

PREPARATION OF A PIGMENTARY FORM OF  
PERYLENE-3,4,9,10-TETRACARBOXYLIC ACID  
DIIMIDE

Helmut Hoch, and Heinrich Hiller, both of Wachenheim, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 24, 1979, Ser. No. 69,546

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837731

Int. Cl.<sup>3</sup> C07D 471/06; C09B 3/18

U.S. Cl. 546—37

11 Claims

I. A process for the preparation of a pigmentary form of perylene-3,4,9,10-tetracarboxylic acid diimide, which gives brilliant, transparent and reddish colorations; wherein crude perylenetetracarboxylic acid diimide is formed into the leuco compound by reaction with an alkali metal dithionite in the presence of an alkali metal hydroxide and said leuco compound is then oxidized in an aqueous suspension either in the presence of a surfactant at from 20° to 100° C. or with exposure to shearing forces in the presence of a surfactant at from 20° to 100° C.

4,286,095

## 4-ARYLPYRIDINE DERIVATIVES

(IV) Rudolf Kubela, Cote St. Luc; Philip D. Edwards, Chateauguay, and Lisa A. Hughes, Ville de Lery, all of Canada, assignors to Canada Packers Inc., Toronto, Canada

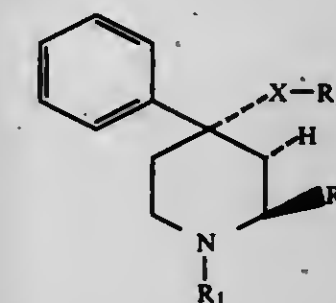
Continuation-in-part of Ser. No. 876,702, Feb. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 711,886, Aug. 5, 1976, abandoned. This application May 1, 1979, Ser. No. 34,972

Int. Cl.<sup>3</sup> C07D 211/52

U.S. Cl. 546—213

10 Claims

I. A 4-phenyl piperidine having the formula:



wherein

R<sub>1</sub> is a straight chain lower alkyl group;  
R<sub>2</sub> is —COCH<sub>3</sub>, —COC<sub>2</sub>H<sub>5</sub> or





R<sub>3</sub> is  $-\text{OCOCH}_3$ ,  $-\text{OCOC}_2\text{H}_5$ ,  $-\text{OCO-cycloalkyl}$ , or  $-\text{OCOC}_6\text{H}_4-\text{Z}$ ;

wherein Z is hydrogen, lower alkyl, lower alkoxy or chlorine, and X is oxygen; or an addition salt thereof with a pharmaceutically acceptable organic acid or inorganic acid.

4,286,096

## TWO PHASE PROCESS FOR THE PREPARATION OF AZOLE AND AZOLINE DISULFIDES

Stanley J. Brois, Wantage, England, and Antonio Gutierrez, Hamilton Square, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 771,183, Feb. 23, 1977, Pat. No. 4,155,910, which is a division of Ser. No. 555,375, Mar. 5, 1975, Pat. No. 4,039,552. This application Dec. 18, 1978, Ser. No. 970,230  
Int. Cl.<sup>3</sup> C07D 285/08, 285/12, 277/74, 263/58

U.S. Cl. 548-130

5 Claims

1. A process for the preparation of di-, tri- and tetra-sulfide azoles or azolines comprising the sulfur chloride induced coupling of an olefin, sulfur chloride, and sulfur chloride being S<sub>x</sub>Cl<sub>2</sub> wherein x=1-3 and an alkali metal or alkaline earth metal salt of a thiol substituted heterocyclic pentatomic azole or azoline, said metal salt and said sulfur chloride forming a thiosulfonyl chloride intermediate, said reaction being carried out in a stirred medium comprising an organic phase and an aqueous phase at a temperature of from about 0° to about 90° C., and recovering said product.

4,286,097

## CARBOXYLIC ACID DIANHYDRIDES BASED ON TRIMELLITIC ANHYDRIDE

Jürgen Habermeyer, Pfeffingen; Eduard Knecht, and Rudolf Gisler, both of Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 16, 1979, Ser. No. 58,224

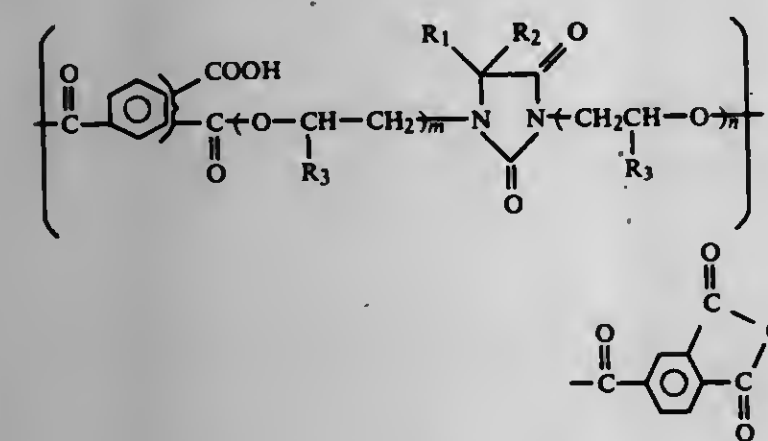
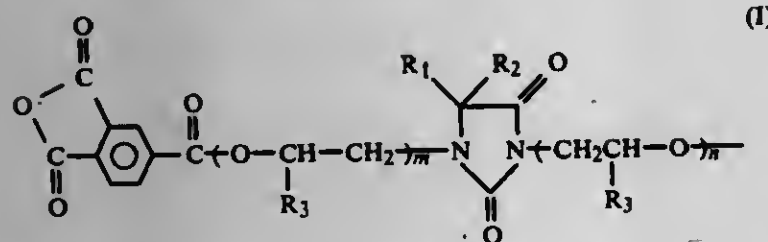
Claims priority, application Switzerland, Jul. 28, 1978, 8146/78

Int. Cl.<sup>3</sup> C07D 405/14

U.S. Cl. 548-309

5 Claims

1. A dianhydride of the formula I



in which formula x is nought or a number from 1 to 10, m and n are each a number from 1 to 4 and R<sub>1</sub> and R<sub>2</sub> are each an alkyl

having 1 to 5 C atoms, or R<sub>1</sub> and R<sub>2</sub> together are the pentamethylene radical, and R<sub>3</sub> is a hydrogen atom or methyl.

4,286,098

## PROCESS FOR THE PREPARATION OF CHIRAL HYDANTOINS

Reinhard Sarges, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

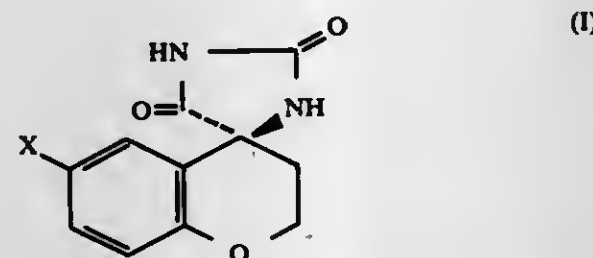
Filed Mar. 28, 1980, Ser. No. 135,137

Int. Cl.<sup>3</sup> C07D 491/107

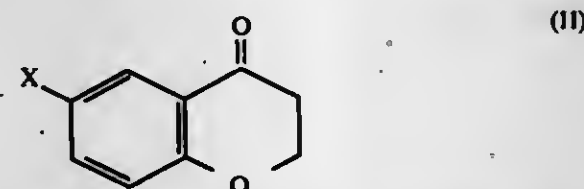
U.S. Cl. 548-309

4 Claims

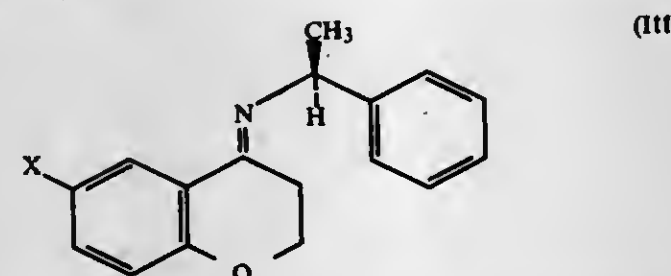
1. The process for preparing a chiral hydantoin of the formula



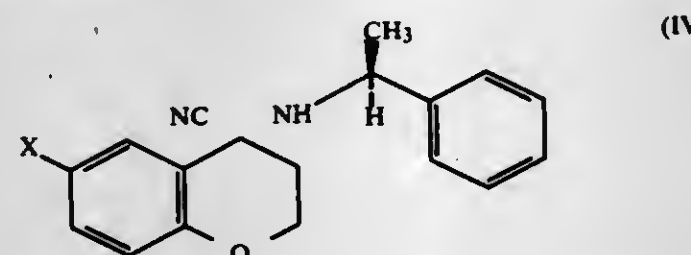
wherein X is chloro or fluoro, from the corresponding halochromanone of the formula



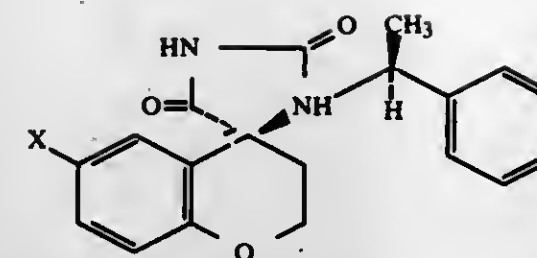
which comprises the sequence of dehydrative coupling of the chromanone with S-(+)-alpha-methylbenzylamine to form the imine of the formula



adding the elements of hydrogen cyanide to the imine in an anhydrous organic solvent to selectively form and crystallize the chiral nitrile of the formula



condensing the nitrile with chlorosulphonyl isocyanate in a reaction-inert solvent, followed by cyclization and hydrolysis in aqueous acid to form the alpha-methylbenzylhydantoin of the formula



and solvolysing the alpha-methylbenzylhydantoin in a strong acid to the chiral hydantoin of formula I.

4,286,099

## SULFOLENE HYDROGENATION

Martin E. Nash, and Edward E. Huxley, both of Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 12, 1980, Ser. No. 120,811

Int. Cl.<sup>3</sup> C07D 333/48

U.S. Cl. 549-87

15 Claims

1. In a process for producing a sulfolene compound wherein a feed comprising a sulfolene compound containing sulfur dioxide and other sulfur-containing catalyst poisons is catalytically hydrogenated in the presence of a hydrogenation catalyst, the improvement comprising pretreating said feed prior to hydrogenation by contacting same in the presence of hydrogen with a used and/or at least partially spent Raney nickel catalyst which contains some degree of scavenging activity under liquid phase conditions and at a temperature in the range of about 10° to about 70° C. and a hydrogen pressure from about 100 to about 7,000 kPa sufficient to substantially remove and/or render innocuous said catalyst poisons.

4,286,100

## 9-DEOXY-9-METHYLENE-19-OXO-PGF<sub>1</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

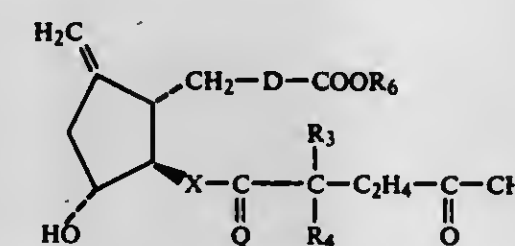
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,217

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 560-121

4 Claims

1. A compound of the formula



wherein D is

- (1)  $(\text{CH}_2)_3-(\text{CH}_2)_g-\text{CH}_2-$ , or
- (2)  $(\text{CH}_2)_3-(\text{CH}_2)_g-\text{CF}_2-$ ;

wherein

g is zero, one, two, or three;

wherein

Q is  $\alpha\text{-OH}\beta\text{-R}_5$  or  $\alpha\text{-R}_5\beta\text{-OH}$ , wherein R<sub>5</sub> is hydrogen or methyl;

wherein

R<sub>6</sub> is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,
- (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
- (g)  $-(\text{p-Ph})-\text{CO}-\text{CH}_3$ ,
- (h)  $-(\text{p-Ph})-\text{NH}-\text{CO}-(\text{p-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,
- (i)  $-(\text{p-Ph})-\text{NH}-\text{CO}-(\text{p-Ph})-$ ,

- (j)  $-(\text{p-Ph})-\text{NH}-\text{CO}-\text{CH}_3$ ,
- (k)  $-(\text{p-Ph})-\text{NH}-\text{CO}-\text{NH}_2$ ,
- (l)  $-(\text{p-Ph})-\text{CH}=\text{N}-\text{NH}-\text{CO}-\text{NH}_2$ ,
- (m)  $\beta\text{-naphthyl}$ ,
- (n)  $-\text{CH}_2-\text{CO}-\text{R}_{28}$ ,

wherein

(p-Ph) is para-phenyl or inter-para-phenylene, wherein

R<sub>28</sub> is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein

R<sub>3</sub> and R<sub>4</sub> are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R<sub>3</sub> and R<sub>4</sub> is fluoro only when the other is hydrogen or fluoro; and

wherein

X is cis- or trans- $\text{CH}=\text{CH}-$ .

4,286,101

## PROCESS FOR PREPARING TEREPHTHALIC ACID

Hiroshi Hashizume, Kitakyushu, and Sigeki Harada, Nakama, both of Japan, assignors to Mitsubishi Chemical Industries Ltd., Fukuoka, Japan

Filed Oct. 12, 1979, Ser. No. 84,153

Claims priority, application Japan, Oct. 19, 1978, 53-128709

Int. Cl.<sup>3</sup> C07C 51/42

U.S. Cl. 562-487

7 Claims

1. In a process for preparing terephthalic acid of high purity by reacting p-xylene with molecular oxygen in an acetic acid solvent in the presence of a catalyst containing at least one heavy metal and bromine, the improvement comprising the steps of:

- (i) introducing p-xylene and molecular oxygen into a first reaction zone kept at a temperature of 180°-230° C. to oxidize at least 95% by weight of the p-xylene into terephthalic acid thereby forming a terephthalic acid-containing slurry;
- (ii) introducing the terephthalic acid-containing slurry from the first reaction zone into a second reaction zone kept at a temperature 2°-30° C. below the temperature of the first reaction zone in which the terephthalic acid-containing slurry is subjected to post-oxidation with molecular oxygen without supplying p-xylene, whereby oxidation intermediates present in the mother liquor of the slurry are oxidized; and,
- (iii) introducing the terephthalic acid-containing slurry from the second reaction zone into a third reaction zone kept at a temperature of at least 230° C. in which the terephthalic acid-containing slurry is subjected again to post-oxidation with molecular oxygen without supplying p-xylene, whereby at least a part of the terephthalic acid crystals in the slurry are dissolved and those oxidation intermediates occluded in the terephthalic acid crystals are oxidized, and subjecting the resulting reaction mixture to crystallization and then to solid-liquid separation to recover terephthalic acid.

4,286,102

## 13,14-DIDEHYDRO-INTER-OXA-11-DEOXY-19-OXO-PGE<sub>1</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,958

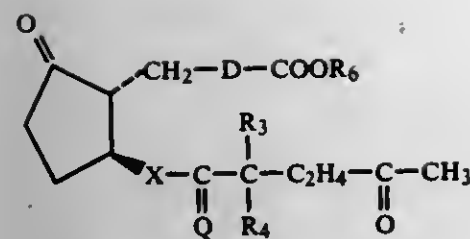
Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

4 Claims

1. A compound of the formula





wherein D is

- (1)  $(CH_2)_3-O-CH_2-$ ,
- (2)  $(CH_2)_2-O-(CH_2)_2-$ , or
- (3)  $-CH_2-O-(CH_2)_3-$ ;

wherein Q is  $\alpha-OH:\beta-R_5$  or  $\alpha-R_5:\beta-OH$ , wherein  $R_5$  is hydrogen or methyl; wherein  $R_6$  is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,
- (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

- (g)  $-(p-Ph)-CO-CH_3$ ,
- (h)  $-(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH_3$ ,
- (i)  $-(p-Ph)-NH-CO-(p-Ph)$ ,
- (j)  $-(p-Ph)-NH-CO-CH_3$ ,
- (k)  $-(p-Ph)-NH-CO-NH_2$ ,
- (l)  $-(p-Ph)-CH=N-NH-CO-NH_2$ ,
- (m)  $\beta$ -naphthyl,
- (n)  $-CH_2-CO-R_{28}$ ,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein  $R_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein  $R_3$  and  $R_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $R_3$  and  $R_4$  is fluoro only when the other is hydrogen or fluoro; and wherein X is  $-C\equiv C-$ .

## 4,286,103

13,14-DIDEHYDRO-INTER-OXA-11-DEOXY-19-OXO-PGF<sub>1</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

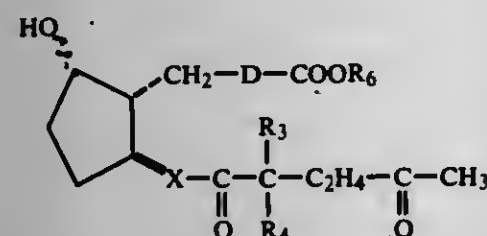
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,959

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

4 Claims

1. A compound of the formula



wherein D is

- (1)  $(CH_2)_3-O-CH_2-$ ,
- (2)  $(CH_2)_2-O-(CH_2)_2-$ , or
- (3)  $-CH_2-O-(CH_2)_3-$ ;

wherein Q is  $\alpha-OH:\beta-R_5$  or  $\alpha-R_5:\beta-OH$ , wherein  $R_5$  is hydrogen or methyl;

wherein  $R_6$  is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

- (g)  $-(p-Ph)-CO-CH_3$ ,
- (h)  $-(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH_3$ ,
- (i)  $-(p-Ph)-NH-CO-(p-Ph)$ ,
- (j)  $-(p-Ph)-NH-CO-CH_3$ ,
- (k)  $-(p-Ph)-NH-CO-NH_2$ ,
- (l)  $-(p-Ph)-CH=N-NH-CO-NH_2$ ,
- (m)  $\beta$ -naphthyl,
- (n)  $-CH_2-CO-R_{28}$ ,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein  $R_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmaceutically acceptable cation;

wherein  $R_3$  and  $R_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $R_3$  and  $R_4$  is fluoro only when the other is hydrogen or fluoro; and

wherein X is  $-C\equiv C-$ .

## 4,286,104

13,14-DIDEHYDRO-INTER-OXA-9-DEOXY-9-METHYLENE-19-OXO-PGF<sub>1</sub> COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

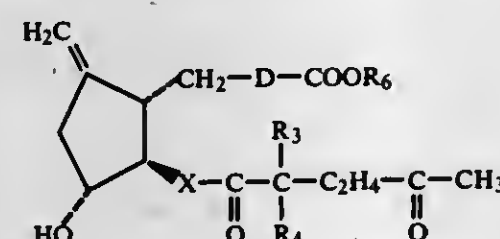
Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,032

Int. Cl.<sup>3</sup> C07C 177/00

U.S. Cl. 562-503

4 Claims

1. A compound of the formula



wherein D is

- (1)  $(CH_2)_3-O-CH_2-$ ,
- (2)  $(CH_2)_2-O-(CH_2)_2-$ , or
- (3)  $-CH_2-O-(CH_2)_3-$ ;

wherein Q is  $\alpha-OH:\beta-R_5$  or  $\alpha-R_5:\beta-OH$ , wherein  $R_5$  is hydrogen or methyl;

wherein  $R_6$  is

- (a) hydrogen,
- (b) alkyl of one to 12 carbon atoms, inclusive,
- (c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
- (d) aralkyl of 7 to 12 carbon atoms, inclusive,
- (e) phenyl,
- (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
- (g)  $-(p-Ph)-CO-CH_3$ ,
- (h)  $-(p-Ph)-NH-CO-(p-Ph)-NH-CO-CH_3$ ,
- (i)  $-(p-Ph)-NH-CO-(p-Ph)$ ,
- (j)  $-(p-Ph)-NH-CO-CH_3$ ,
- (k)  $-(p-Ph)-NH-CO-NH_2$ ,
- (l)  $-(p-Ph)-CH=N-NH-CO-NH_2$ ,
- (m)  $\beta$ -naphthyl,
- (n)  $-CH_2-CO-R_{28}$ ,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein  $R_{28}$  is phenyl, p-bromophenyl, p-biphenyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein  $R_3$  and  $R_4$  are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of  $R_3$  and  $R_4$  is fluoro only when the other is hydrogen or fluoro; and wherein X is  $-C\equiv C-$ .

## 4,286,105

## PROCESS FOR THE PREPARATION OF ANTIOXIDANT AMIDES

Dane K. Parker, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

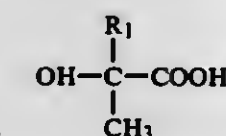
Filed Nov. 9, 1979, Ser. No. 92,820

Int. Cl.<sup>3</sup> C07C 102/04

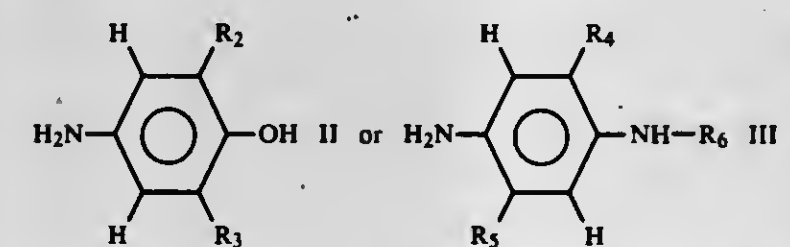
U.S. Cl. 564-205

7 Claims

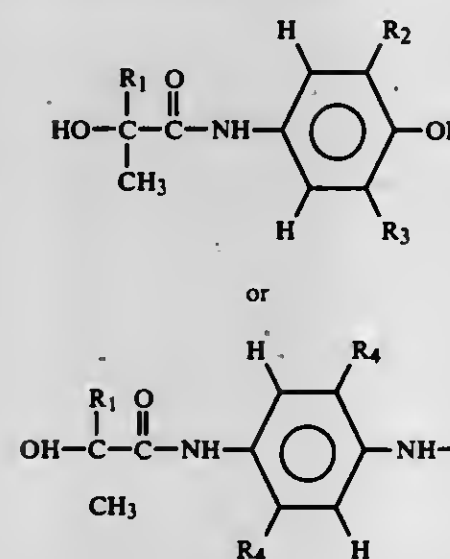
1. An improved process for the synthesis of a  $\alpha,\beta$  unsaturated aryl amides comprising reacting an organic acid having general formula I:



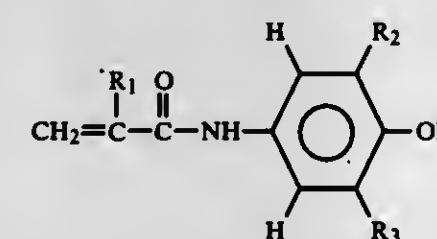
wherein  $R_1$  is selected from the group consisting of hydrogen, methyl or phenyl radicals; with an aryl amine selected from one of the following structural formulae:



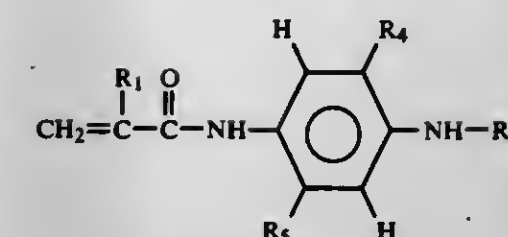
wherein  $R_2$  and  $R_3$  are the same or different alkyl radicals selected from the group consisting of isopropyl, secondary butyl, tert-butyl, tert-pentyl or tert-hexyl;  $R_4$  and  $R_5$  are the same or different radicals selected from the group consisting of hydrogen, methyl or ethyl; and  $R_6$  is selected from a phenyl radical or an alkyl substituted phenyl radical with one to three same or different alkyl substituents selected from either methyl or ethyl radicals; to produce a hydroxy aryl amide having one of the following structural formulae:



wherein  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$ , and  $R_6$  are defined as above, and (B) dehydrating, through use of concentrated sulfuric acid at a temperature of 98°-110° C. in at least a 1 to 1 molar ratio, the hydroxy aryl amide to form an  $\alpha,\beta$  unsaturated amide having one of the following structural formulae:



-continued  
or



wherein  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$  and  $R_6$  are defined as above.

## 4,286,106

N-[ $\omega$ -(DIMETHYLAMINO)ALKYL]-3,4'-DICHLOROPROPIONANILIDES

Michael P. Kane, and Jacob Szmuszkovicz, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich. Continuation-in-part of Ser. No. 934,239, Aug. 16, 1978, Pat. No. 4,180,522, which is a continuation of Ser. No. 838,767, Oct. 3, 1977, abandoned, which is a continuation of Ser. No. 746,863, Dec. 2, 1976, abandoned. This application Jul. 30, 1979, Ser. No. 61,569

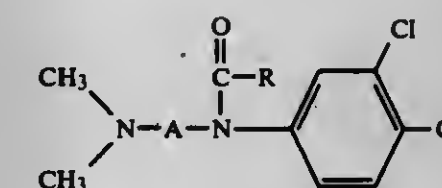
The portion of the term of this patent subsequent to Dec. 25, 1996, has been disclaimed.

Int. Cl.<sup>3</sup> C07C 103/75

U.S. Cl. 564-220

9 Claims

1. A compound of formula I



wherein A is alkylene of 4 to 5 carbon atoms, inclusive; wherein R is ethyl, cyclopropyl or vinyl, or the pharmaceutically acceptable acid addition salts thereof.

## 4,286,107

## SILVER CATALYSTS USED TO PREPARE POLYAMINOPOLYPHENYLMETHANES

Edward T. Marquis, and Lewis W. Watts, Jr., both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 2, 1980, Ser. No. 193,325

Int. Cl.<sup>3</sup> C07C 85/18

U.S. Cl. 564-332

3 Claims

1. A method of preparing diaminodiphenylmethane and higher homologues thereof which comprises the step of condensing aniline and formaldehyde in the presence of a silver tungstate catalyst.

## 4,286,108

## PROCESS FOR PREPARING HYDRAZINES

Hans Osborg, 80 Longview Rd., Port Washington, N.Y. 11050

Filed Oct. 17, 1979, Ser. No. 85,882

Int. Cl.<sup>3</sup> C07C 109/04

U.S. Cl. 564-464

13 Claims

1. A process for preparing anhydrous hydrazine and hydrocarbyl-substituted hydrazines, which comprises: reacting a tertiary hydrazinium halide with a compound selected from the group consisting of an alkali metal amide, an alkaline earth metal amide, a hydrocarbyl-substituted alkaline earth metal amide and a hydrocarbyl-substituted alkaline earth metal amide, in the presence of a non-aqueous inert carrier.



4,286,109

## HIGH DENSITY FUEL COMPOSITIONS

Richard V. Norton, Dublin, and Dennis H. Fisher, Westerville, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Jul. 31, 1980, Ser. No. 174,078

Int. Cl.<sup>3</sup> C10L 1/04

U.S. Cl. 585—14

6 Claims

1. A high density fuel composition consisting essentially of (a) from 70-95 weight percent of exo-tetrahydro dicyclopentadiene; (b) from 4-25 weight percent of the tetrahydro derivative of an oligomer selected from the group consisting of a co-trimer of cyclopentadiene and methylcyclopentadiene, a trimer of cyclopentadiene, a trimer of methylcyclopentadiene, and mixtures thereof; and (c) from 1-7 weight percent of a C<sub>5</sub>-C<sub>7</sub> alkane, cycloalkane or mixtures thereof.

4,286,110

## SEPARATION OF PRODUCTS OF HF ALKYLATION

Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Filed Jan. 17, 1980, Ser. No. 112,886

Int. Cl.<sup>3</sup> C07C 2/56

U.S. Cl. 585—719

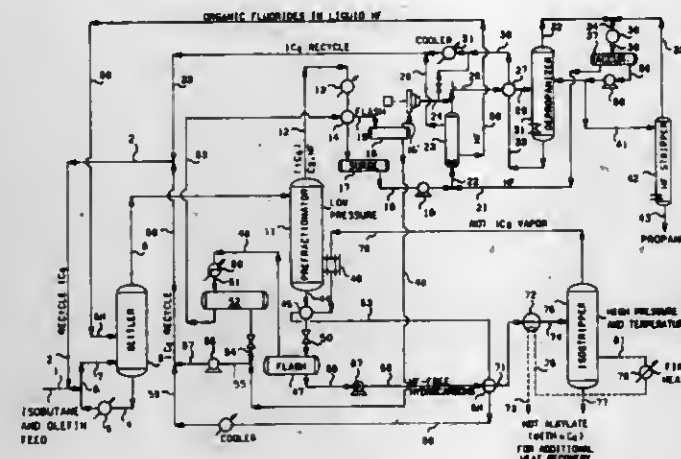
6 Claims

1. A process for treating the reactor effluent hydrocarbon phase from an alkylation zone in which isoparaffin and olefin are contacted in the presence of HF catalyst to form alkylate product, said method comprising:

- (1) separating hydrocarbon phase from the reaction effluent;
- (2) separating said hydrocarbon phase in a fractionator to produce a bottoms stream comprising isoparaffin, paraffin,

and alkylate product and an overhead stream comprising isoparaffin, paraffin, and HF;

- (3) flashing said bottoms stream to produce a flashed vapor enriched in isoparaffin and a liquid enriched in alkylate as compared to said bottoms stream;



- (4) cooling said flashed vapor to produce a condensed liquid; and
- (5) indirectly contacting said overhead stream with said condensed liquid thereby cooling said overhead stream and heating said condensed liquid.

## ELECTRICAL

4,286,111

## APPARATUS FOR INTERCONNECTING A POWER SUPPLY TO AN ELECTRODE WITHIN A CHAMBER CONTAINING FLUID MAINTAINED AT A HIGH TEMPERATURE AND PRESSURE

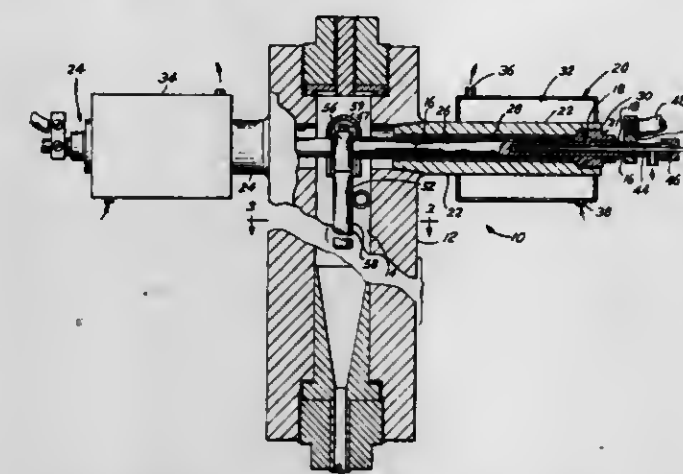
Lester G. Massey, Moreland Hills, Ohio; David A. George, Park Forest, Ill.; Robert I. Brabets, Lombard, Ill., and William A. Abel, Joliet, Ill., assignors to CNG Research Company, Cleveland, Ohio

Filed Mar. 6, 1980, Ser. No. 127,737

Int. Cl.<sup>3</sup> B02C 19/18; H01B 17/30; H05B 3/60

U.S. Cl. 174—15 BH

7 Claims



1. An apparatus for passing an electrical current to an electrode within a vessel, said vessel containing a fluid at a high temperature and a high pressure, comprising, in combination: at least a pair of housings secured to said vessel and extending outwardly therefrom, each housing having an external open end; at least a single conductor passing through said housings and said vessel and extending beyond said external open ends, said conductor being electrically connected to said electrode and having an orientation with respect to said vessel whereby a pressure imbalance upon said conductor is substantially avoided; sealing means for sealing said external open ends of said housings about said conductor to substantially avoid leakage of said fluid therethrough, said sealing means including an elastomeric seal; and cooling means for cooling said sealing means; said housings and said cooling means cooperatively defining temperature control means for maintaining the temperature of said elastomeric seal to substantially avoid thermal softening thereof.

4,286,112

## MESSAGE PREPARATION TIMING APPARATUS

Gary A. Weiss, Los Angeles, Calif., assignor to Pacesetter Management Corp., Los Angeles, Calif.

Filed May 9, 1980, Ser. No. 148,107

Int. Cl.<sup>3</sup> G07C 1/10; H04L 15/24; H04M 15/18

U.S. Cl. 178—23 R

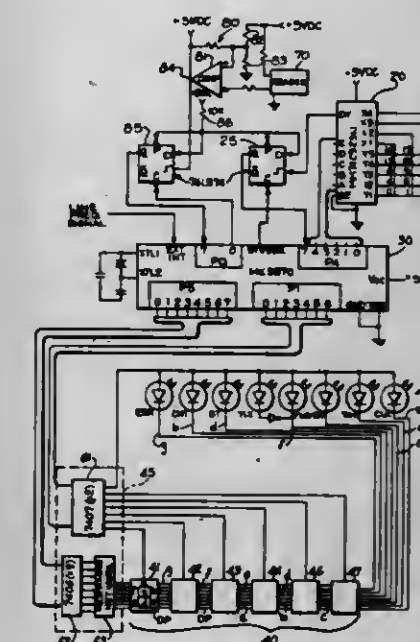
13 Claims

12. In a teleprinter communications network of the type having teletypewriter consoles for transmitting and receiving messages over such a network, and wherein a plurality of consoles each include a tape perforating and reading device for preparing messages for being transmitted, the improvement comprising:

- an apparatus for use with said teleprinter consoles that include said tape perforating and reading device, the apparatus having means adapted to continually sense the occurrence of message characters on a perforated tape being generated by said device while a message is being prepared for subsequent transmission and to generate an electrical signal representative of each such occurrence, the apparatus further comprising:

a keyboard having means for selecting one of a plurality of

transmission rates each of which corresponds to a known period of time for transmitting a message character; a microcomputer connected to said keyboard and to said sensing means and having a register for accumulating a count corresponding to the number of character occurrence signals produced by said sensing means, and having a memory device pre-programmed to store therein tables of message transmission times including at least one table for each transmission rate in said plurality, each such table having a plurality of signal codes representative of said



transmission times and arranged in known correspondence to said register count; said microcomputer being responsive to said rate selecting means of said keyboard and to said accumulating count of said register to fetch from said memory device the particular signal code that is indicative of the time required to transmit the number of characters represented by said character count at the selected transmission rate; and a digital display device connected to said microcomputer for receiving said fetched signal code for displaying said transmission time.

4,286,113

## TELEPHONE SYSTEM EAVESDROPPING DEVICE

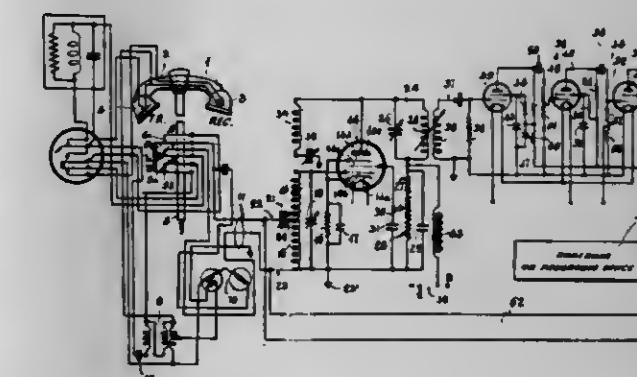
Eugene J. Cronin, 5 Cedar Ct., Menlo Park, Calif. 94025

Filed Feb. 2, 1953, Ser. No. 334,440

Int. Cl.<sup>3</sup> H04K 1/00

U.S. Cl. 179—1 MN

15 Claims



13. The method of remotely picking up sound vibrations on a telephone subscribers circuit of the type including a telephone microphone and receiver and a cutoff switch including contacts movable from a closed position to a capacitatively aligned open position which consists in impressing high frequency currents on the telephone subscribers circuit from a remote location for effecting an electrically conductive path through the contacts in said circuit in either the capacitatively aligned open position of the contacts or the closed position



thereof, and reproducing at the remote location modulations incident to sound vibrations picked up by the telephone microphone.

4,286,114

## TWO-WIRE RESISTANCE BRIDGES FOR PRIVATE LINE CIRCUITS

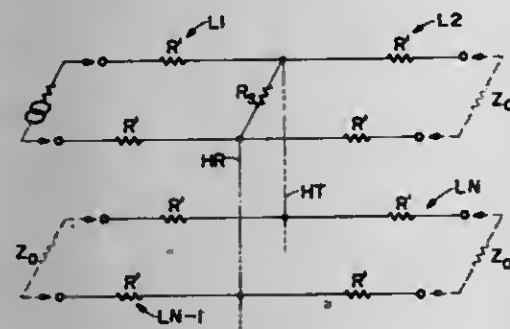
John E. Dannebaum, Jr., and Bill E. Johnson, both of Portland, Oreg., assignors to Bejed, Inc., Portland, Oreg.

Filed Feb. 12, 1980, Ser. No. 120,840

Int. Cl.<sup>3</sup> H04B 1/58; H04M 3/56

U.S. Cl. 179—1 CN

3 Claims



1. A 2-wire multileg resistance branching network for interconnecting a plurality of voiceband telecommunication lines in a system having standardized input and output line levels, said network comprising

electrical conductor means forming a pair of common junctions,

at least three substantially identical 2-conductor signal transmission legs, each including a pair of input-output terminals and a pair of resistors, one resistor in each leg being connected between one terminal of that leg and one of said junctions, the other resistor in each leg being connected between the other terminal of that leg and the other of said junctions, and

a shunt resistance connected between said junctions, said leg resistors all being of substantially the same value, said shunt resistance having a value selected to provide a network attenuation ratio substantially equal to the difference in said standardized levels.

4,286,115

## SYSTEM FOR RECOGNIZING WORDS CONTINUOUSLY SPOKEN ACCORDING TO A FORMAT

Hiroaki Sakoe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

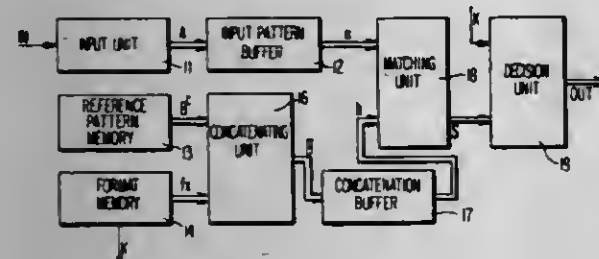
Filed Jul. 18, 1979, Ser. No. 58,598

Claims priority, application Japan, Jul. 18, 1978, 53-87849

Int. Cl.<sup>3</sup> G10L 1/00

U.S. Cl. 179—1 SD

4 Claims



1. A system for recognizing an input pattern feature vector time sequence  $A(0, I)$  consisting of a certain number  $I$  of first through  $I$ -th input pattern feature vectors representative of an input word sequence consisting of first through  $k$ -th ( $K$  being representative of a predetermined integer) input word units selected from first through  $K$ -th word sets, respectively, as one of a plurality of reference word sequences, each word set consisting of at least one reference word unit selected from

first through  $N$ -th ( $N$  being representative of a predetermined number) reference word units  $B^n + s$  ( $n$  being representative of each of 1 through  $N$ ), each reference word sequence consisting of first through  $K$ -th reference word units selected from the respective word sets, said system comprising:

input pattern buffer memory means for memorizing at least a preselected plurality of successive input pattern feature vectors at one time;

reference pattern memory means for memorizing said reference word units as a plurality of reference pattern feature vector time sequences, respectively, and for producing said reference word units successively in a predetermined order;

similarity measure calculating means connected to said input pattern buffer memory means and said reference pattern memory means for calculating a plurality of elementary similarity measures  $S(p, q, n)$ 's between a plurality of elementary partial patterns  $A(p, q)$ 's and the successively produced reference word units, each partial pattern being segmented from said input pattern feature vector time sequence at a pair of smaller-numbered and greater-numbered segmentation points  $p$  and  $q$  so as to consist of  $(p+1)$ -th through  $q$ -th input pattern feature vectors;

format memory means for memorizing a format defined by said word sets;

word set specifying means connected to said format memory means for successively specifying said word sets in a prescribed order to make said format memory means produce the reference word units of the specified word sets; and

matching means connected to said similarity measure calculating means, said format memory means, and said word set specifying means for carrying out pattern matching between a plurality of specific partial pattern concatenations and said plurality of reference word sequences to decide said one reference word sequence by finding a maximum of sums of individual similarity measures  $S(p(k-1), p(k), n(k))$ 's ( $k$  being representative of each 1 through  $K$ ) with each individual similarity measure selected, while a  $k$ -th word set is specified, from said plurality of elementary similarity measures with each reference word unit  $B^n(k)$  selected from said  $k$ -th word set and with a  $k$ -th specific partial pattern  $A(p(k-1), p(k))$  in each specific partial pattern concatenation selected from said plurality of elementary partial patterns.

4,286,116

## DEVICE FOR THE PROCESSING OF VOICE SIGNALS

Jean-Claude B. Sadou, Paris, France, assignor to Thomson-CSF, Paris, France

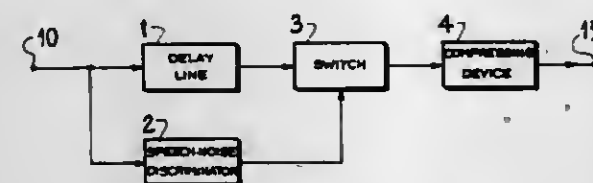
Filed Sep. 25, 1979, Ser. No. 78,805

Claims priority, application France, Sep. 29, 1978, 78 27922

Int. Cl.<sup>3</sup> H04B 15/00

U.S. Cl. 179—1 P

3 Claims



1. Apparatus for processing input signals which comprise voice signals and, during periods of voice inactivity, unwanted noise signals, said apparatus functioning to remove substantially all of said noise signals and comprising:

(a) means, connected to the source of said input signals, for generating a control signal only when said input signals comprise voice signals;

(b) switching means, connected between the source of said input signals and the output of the apparatus and con-

trolled by said control signal, for closing a path between said source and said output;

(c) a delay line interposed between the source of said input signals and the input to said switching means, said delay line having a delay  $T$ , substantially equal to the response time of said control signal generating means; and

(d) an amplitude compression device in the path between the source of said input signals and said output, downstream of said delay line.

4,286,117

## DANGER ALARM SYSTEM

Karlheinz Schreyer, Wolfratshausen, and Peer Thilo, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

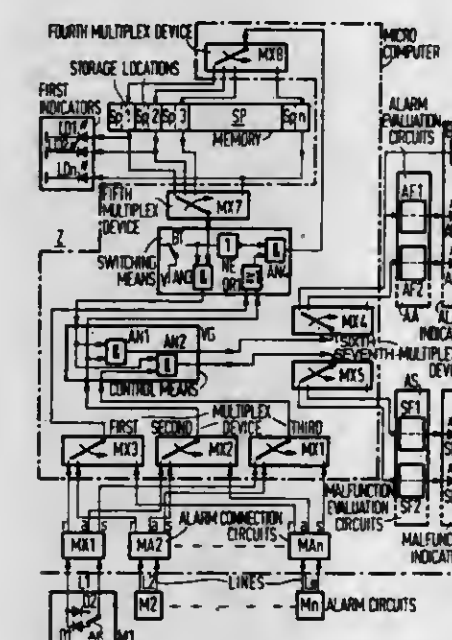
Filed Apr. 13, 1979, Ser. No. 29,831

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817053

Int. Cl.<sup>3</sup> H04M 11/04

U.S. Cl. 179—5 R

9 Claims



1. A danger alarm system comprising:

a plurality of alarm circuits operable to provide first signals representing a quiescent condition and second signals representing an alarm condition;

a plurality of signal lines each connected to a respective alarm circuit;

a plurality of alarm connection circuits each connected to a respective signal line and each having three outputs and each operable to provide a rest signal at a first output in response to a first signal, an alarm signal at a second output in response to a second signal and a malfunction signal at a third output in response to the absence of the first and second signals;

a memory including a plurality of storage locations each including an input and an output and each assigned to and operable to store the busy and non-busy state of a respective line;

a plurality of first indicators each connected to said output of a respective storage location and operable in response to a busy state to indicate seizure of the respective line; and a plurality of synchronously operable multiplex devices, first, second and third ones of said multiplex devices sequentially connected to said alarm connection circuits to read said first, second and third outputs, respectively, of said plurality of alarm connection circuits,

said memory comprising:

input means including a fourth one of said multiplex devices sequentially connectable to said inputs of said memory;

switching means connected between said first and second multiplex devices and said fourth one of said multiplex devices and selectively operable in a first mode to pass

said rest and alarm signals as busy state signals to said memory and in a second mode to block the passage of said rest signals to said memory,

output means including a fifth one of said multiplex devices connected to read the outputs of said memory and connected to said switching means, and

control means connected to said second and third multiplex devices and to said switching means, including first and second outputs, and operable in response to conjunct busy state and alarm signals to provide the alarm signal at said first output and in response to conjunct busy state and malfunction signals to provide the malfunction signal at said second output.

4,286,118

## DATA DISTRIBUTION SYSTEM FOR PRIVATE AUTOMATIC BRANCH EXCHANGE

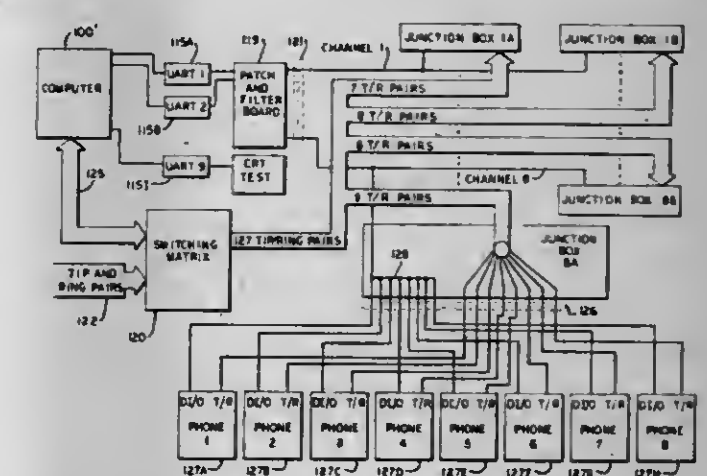
Joseph H. Mehaffey, Atlanta, and Aleksander Szlam, Marietta, both of Ga., assignors to Solid State Systems, Inc., Marietta, Ga.

Filed Jul. 2, 1979, Ser. No. 54,146

Int. Cl.<sup>3</sup> H04M 1/56, 3/64; H04Q 3/56, 3/64

U.S. Cl. 179—18 AD

7 Claims



1. In a private branch telephone exchange including a switching matrix for connecting a plurality of incoming trunk pairs to a plurality of stations, a controller responsive to the state of said switching matrix for storing a plurality of connection signals, each of said plurality of connection signals corresponding to connection of a particular one of said plurality of trunk pairs to a particular one of said plurality of stations, the improvement of:

a data distribution system comprising at least one data communication channel connecting said controller to at least two of said plurality of stations;

address defining means associated with each of said plurality of stations for providing a unique station address for each of said plurality of stations connected to said data communication channel;

said controller further comprising an addressing means for providing a plurality of addressing signals, one at a time, to said data communication channel, each of said addressing signals being followed in time by one of a plurality of data signals, said plurality of data signals corresponding to one of said plurality of connection signals; and a display and control means associated with each of said plurality of stations for causing a display to provide a visible indication corresponding to said one of a plurality of connection signals in response to said plurality of data signals;

said display and control means comprising an addressable memory connected to said display responsive to a first particular one of said plurality of data signals to load a first address of said addressable memory, and further responsive to subsequent data signals of said plurality of data



signals to load sequential addresses of said addressable memory.

4,286,119

# ARRANGEMENT FOR CONCENTRATING PULSE CODE MODULATION PROCESSING CIRCUITS IN A DIGITAL TELEPHONE OFFICE

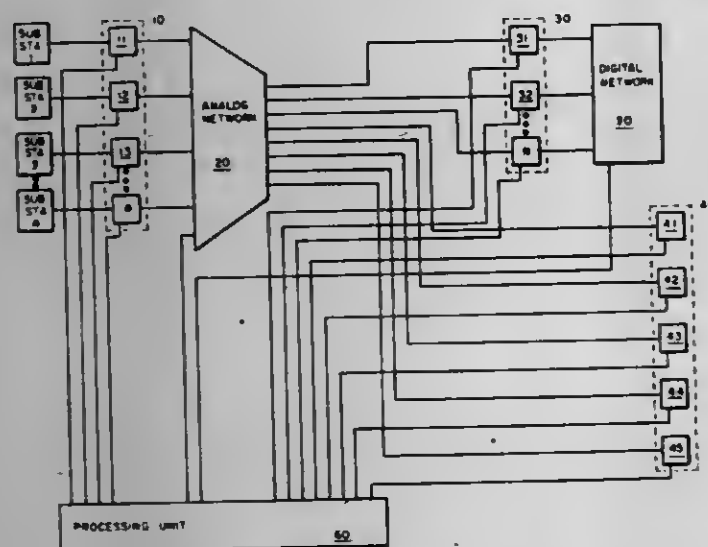
David J. Stelte, Lombard, and Alex W. Kobylar, Chicago, both of Ill., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Nov. 9, 1979, Ser. No. 92,873

Int. Cl.<sup>3</sup> H04Q 3/60

U.S. Cl. 179—18 FC

11 Claims



1. An arrangement for concentrating pulse code modulation processing circuitry in a digital switching system, including a plurality of subscriber stations each operated to generate off-hook signals, said arrangement comprising:

a plurality of line supervisory means each connected to an associated one of said subscriber stations, each operated in response to said off-hook signal to generate a supervisory signal;

a processing unit connected to said plurality of line supervisory means, operated in response to said plurality of supervisory signals to generate a plurality of supervisory enable signals and a plurality of modulation enable signals;

connection means connected to said plurality of line supervisory means;

a plurality of pulse code modulation means connected to said processing unit, each operated in response to an associated one of said modulation enable signals to connect to said connection means;

each of said plurality of line supervisory means further operated in response to an associated one of said supervisory enable signals to connect to said connection means; and

said connection means operated in response to connection of said line supervisory means and said pulse code modulation means to connect said line supervisory means to said pulse code modulation means.

4,286,120

# CURRENT REGULATED PULSE DIALER CIRCUIT

John D. Sublette, Huntsville, Ala., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Oct. 15, 1979, Ser. No. 84,960

Int. Cl.<sup>3</sup> H04M 1/31

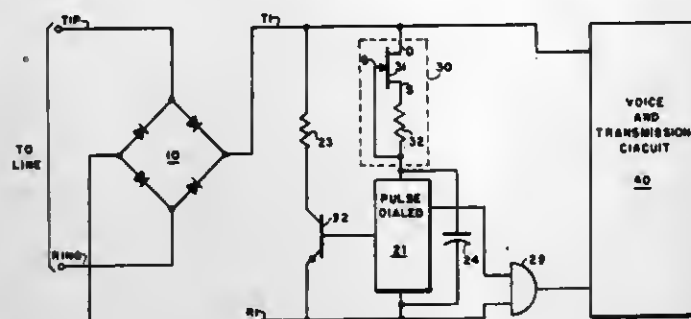
U.S. Cl. 179—90 K

5 Claims

1. A current regulated pulse dialer circuit for use in a pulse dialing telephone, including digit signaling means and a line connection, said pulse dialer circuit comprising:

pulse dialing means connected to said digit signaling means and to said line connection, operated in response to a digit signal to decode said digit signal and generate pulses, representative of said digit on said line connection; and

a current regulator connected to said pulse dialing means and to said line connection operated to increase the impedance across said line connection through said pulse dialing means.



4,286,121

# TELEPHONE LINE CUTOVER APPARATUS AND SWITCH

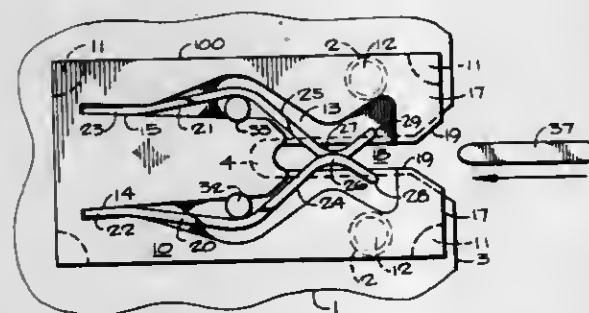
Edward J. Olszewski, Ottawa; Dieter H. Hundrieser, Manotick, and Harold J. Ostapovitch, Lachine, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 25, 1979, Ser. No. 88,011

Int. Cl.<sup>3</sup> H04Q 1/14

U.S. Cl. 179—98

4 Claims



1. A manual switch apparatus in combination with an equipment frame having a back plane including back plane conductors, a plurality of circuit board locations distributed across a face of the back plane, each of the circuit board locations for removably lodging a circuit board therein, substantially perpendicular to the face of the back plane, and for providing electrical connections between the circuit board and a predetermined plurality of the back plane conductors, the manual switch apparatus comprising:

an elongated control member of a length more than spanning the plurality of circuit board locations;

a plurality of aligned slot formations distributed across and carried adjacent said face of the back plane, for removably retaining the elongated control member adjacent the circuit board locations;

a switch means, having first and second states, mounted at a predetermined location on each of a plurality of circuit boards lodgable within the plurality of circuit board locations, each switch means including at least one switch member for contacting the elongated control member;

whereby, upon insertion of each one of the plurality of circuit boards into the equipment frame, the associated switch means is mechanically switched to said second state in response to contact of the switch member against the elongated control member, and whereby removal of the elongated control member is restricted to a direction substantially in parallel relationship with the face of the back plane, such removal causing each of the switch means to be switched from the second state to the first state through sequential loss of contact by said switch members with the elongated control member.

4,286,122

# ACOUSTIC ELECTRICAL CONVERSION DEVICE WITH AT LEAST ONE CAPACITOR ELECTRET ELEMENT CONNECTED TO AN ELECTRONIC CIRCUIT

Wilhelmus H. Iding, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

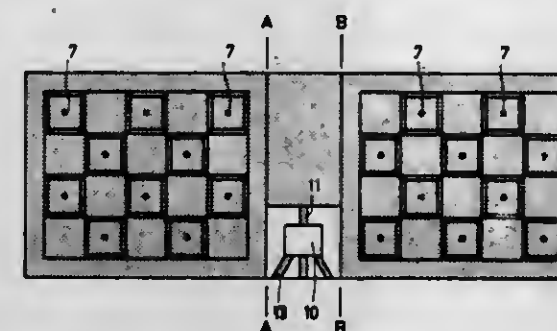
Filed Mar. 13, 1979, Ser. No. 20,152

Claims priority, application Netherlands, Mar. 13, 1978, 7802688

Int. Cl.<sup>3</sup> H04R 19/00, 21/02

U.S. Cl. 179—111 E

20 Claims



1. A device for the conversion of acoustic vibrations into electrical oscillations and vice versa, comprising at least one capacitor electret element provided with at least one foil of a dielectric polymer material with at least one electrode in the form of a metal layer arranged thereon, a diaphragm with a second electrode disposed thereon, said one foil comprising one surface part lying inside the electret element and a second surface part of the foil extending beyond the electret element, and an integrated semiconductor device disposed on said second surface part of the foil and with the metal layer being electrically connected to one terminal of the semiconductor device via a conductor which is disposed mainly on the second surface part of said one foil.

4,286,123

# BRIDGE AMPLIFIER

Peter F. Blomley, Bishop's Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

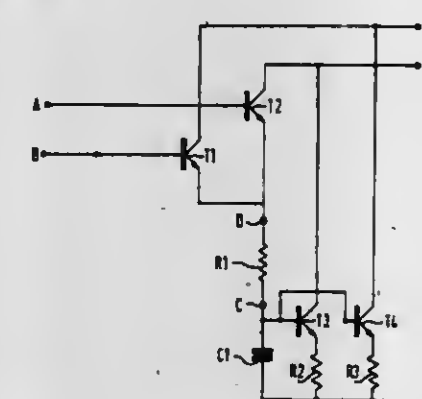
Filed Mar. 15, 1979, Ser. No. 20,647

Claims priority, application United Kingdom, Nov. 8, 1978, 43602/78

Int. Cl.<sup>3</sup> H03F 3/62

U.S. Cl. 179—170 T

13 Claims



1. A bidirectional amplifier adapted to be connected to a two-wire line and to signal generating and receiving circuits, wherein said amplifier receives power from said line and wherein said amplifier is adapted such that current flows in the same direction from said circuits regardless of the polarity of said two-wire line, said amplifier comprising:

first and second common points; first, second, third and fourth transistor means each having first, second and third terminals; said first terminals of said first and fourth transistors being coupled to one line of said two-wire line, said first ter-

nals of said second and third transistors being coupled to the other line of said two-wire-line;

said second terminals of said first and second transistors being coupled to said first common point;

said third terminals of said third and fourth transistors being coupled to said second common point;

first resistive means coupled to said first and second common points such that input signals from said two-wire line are reproduced across said first resistive means with the same relative polarity between said first and second common points;

first means coupling said first and second common points to said receiving circuits;

second means coupling said third terminals of said first and second transistor means to said signal generating circuits such that input signals from said signal generating circuits are reproduced on said two-wire line;

a third common point;

second resistive means connected between said second terminal of said third transistor means and said third common point; and

third resistive means connected between said second terminal of said fourth transistor means and said third common point; and

capacitor means connected between said second and third common points, said third common point providing a direct voltage output point.

4,286,124

# ARRANGEMENT FOR SECURING PANELS TO A CONSOLE

Baruch Guttman, 15 Hatanaim St., Benay Beraq, Israel

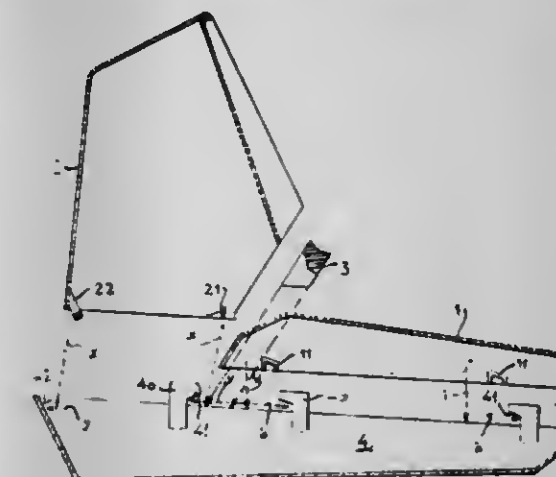
Filed Jul. 17, 1979, Ser. No. 58,373

Claims priority, application Israel, May 16, 1979, 57314

Int. Cl.<sup>3</sup> H04M 1/02; H05K 5/02

U.S. Cl. 179—179

4 Claims



1. In an apparatus having a base, at least two covering panels and means for securing such panels against relative displacement, the improvement wherein said means for securing comprise projections having oblique contact faces, wherein said base has parts which correspond to said projections to interengage matingly with said projections, and including an elongated, profiled member provided which in cross section defines an angle which corresponds with an angle at which said two panels extend relative to one another, said elongated member being wedgeably insertable between said two panels in space defined between them to exert pressure on said two panels urging said projections and said parts into mating position preventing disengagement.



4,286,125

**ELECTRIC SWITCH WITH TWO SWITCHING PARTS ACTING AT DIFFERENT TIMES**

Alois Schöffeler, and Uwe Stratmann, both of Spaichingen, Fed. Rep. of Germany, assignors to J & J Marquardt, Fed. Rep. of Germany

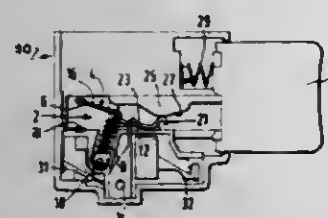
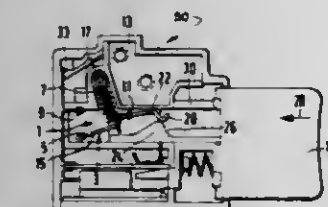
Filed Sep. 6, 1979, Ser. No. 72,829

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 2838934

Int. Cl.<sup>3</sup> H01H 19/00

U.S. Cl. 200—6 B

8 Claims



1. An electric switch comprising a switch housing having a first chamber, a first contact arm in said housing chamber, bearing means pivotally supporting said first contact arm in said housing, said first contact arm having a first lever arm portion with a first movable contact thereon and an opposite second lever arm portion, a first fixed contact in said housing opposite to said first movable contact in a position to be engaged by said first movable contact when said first contact arm is pivoted, a loading spring mounted in said housing and connected to said first lever arm portion biasing said first lever arm portion in a direction to move said first movable contact into engagement with said first fixed contact, an actuator mounted in said housing for movement and having a first cam portion engageable with said second lever arm portion which in the first position of said actuator holds said first contact arm in a first operating position with said first movable contact spaced away from said first fixed contact, said actuator being movable so that said first cam portion permits rotation of said first contact arm under biasing of said spring to hold said first movable contact in electrical contacting engagement with said first fixed contact, said housing having a second chamber, a second contact arm pivotally mounted in said second chamber and having a first lever arm portion with a second movable contact thereon, said housing having a second fixed contact in said second chamber, said second contact arm having an opposite second lever arm portion, said actuator including a second cam portion engageable with said second lever arm portion of said second contact arm and holding said second lever arm portion of said second contact arm so that said second movable contact is out of engagement with said second fixed contact, a second loading spring connected to said first lever arm portion of said second contact arm, said second cam portion of said actuator permitting faster movement of said second contact arm than said first contact arm so that said second contact arm is moved to engage said second fixed contact with said second movable contact faster than said first movable contact engages said first fixed contact.

4,286,126

**IGNITION SWITCH**

Werner E. Berginski, Werdohl-Eveling, Fed. Rep. of Germany, assignor to Firma Leopold Kostal, Lüdenscheid, Fed. Rep. of Germany

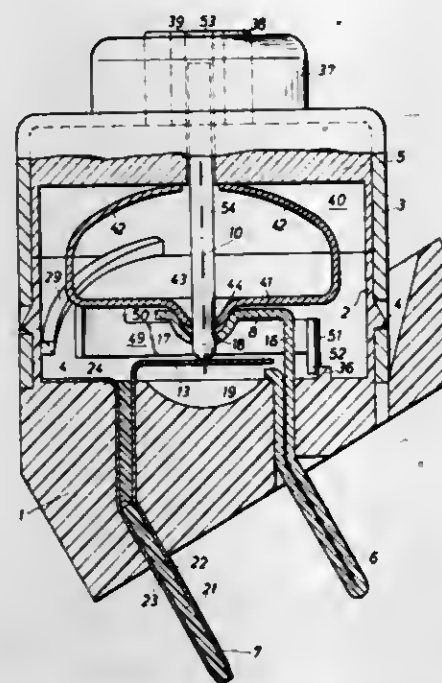
Filed Jun. 11, 1979, Ser. No. 47,334

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827400

Int. Cl.<sup>3</sup> H01H 19/00, 27/00

U.S. Cl. 200—11 C

16 Claims



1. In an ignition switch having a socket plate provided with a generally circular array of contacts and a central contact, and a switching wheel rotatable in a forward direction about an axis coincident with the axis of said array, said switching wheel including contact springs sequentially engageable with the contacts of said array when said wheel is rotated in said forward direction and a central contact engaging the central contact of said socket plate, the improvement comprising: said central contacts being in the form of spherical shell segments, one nested within the other.

4,286,127

**PRESSURE MEDIUM ACTUATED SWITCH**

Willi Quitoschinger, Maybachstrasse 6, 7120 Bissingen, Fed. Rep. of Germany

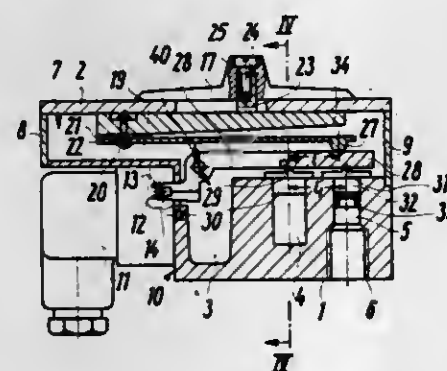
Filed Aug. 23, 1979, Ser. No. 69,060

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837739

Int. Cl.<sup>3</sup> H01H 35/38

U.S. Cl. 200—83 J

34 Claims



1. A pressure medium actuated switch for operating a switch element, the switch including actuating means adapted to be acted upon by a pressure medium and actuating a switch element upon reaching a predetermined switching point, characterized in that the actuating means includes a first lever means

4,286,129

**KEYBOARD HAVING SUDDEN TRIP TACTILE EFFECT KEYS**

Julien Petit, Paris, France, assignor to Orega Electronique et Mecanique, France

Filed Nov. 20, 1979, Ser. No. 96,007

Claims priority, application France, Nov. 24, 1978, 78 33291  
Int. Cl.<sup>3</sup> H01H 21/40, 13/22

U.S. Cl. 200—159 B

4 Claims



operatively connected with the switching element, means pivotally mounting the first lever means for movement about a pivot axis extending transversely with respect to a longitudinal axis of said first lever means, an operating element operatively connected with said first lever means and applying a first force thereto, a leaf spring means applying a second force to said first lever means that acts in a direction opposing said first force when it moves, counter bearing means mounted so as to be displaceable by the leaf spring means and transmitting said second force to said first lever means, and moveable means displaceably mounting said leaf spring means and said counter bearing means so as to be displaceable longitudinally of the first lever means toward and away from said pivot axis and so as to alter the magnitude of a torque produced by said second force relative to an opposite torque produced by said first force.

4,286,128

**ELECTRIC GAS-SWITCH**

Stanislaus Ruffieux, Baden, and Ekkehard Schade, Wettingen, both of Switzerland, assignors to BBC Brown, Boveri & Company Ltd., Baden, Switzerland

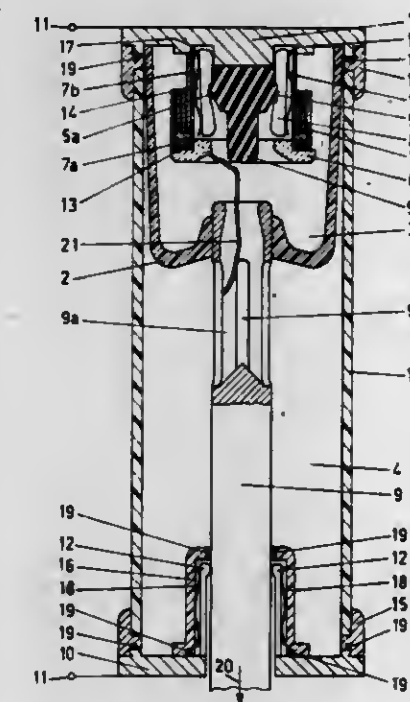
Filed Apr. 17, 1978, Ser. No. 897,150

Claims priority, application Switzerland, Apr. 29, 1977, 5349/77

Int. Cl.<sup>3</sup> H01H 33/70, 33/82

U.S. Cl. 200—148 R

9 Claims



1. An electric gas-switch, comprising:  
a sealed switching chamber;  
a partition which divides the switching chamber into an arc chamber and an additional chamber;  
a central pin fixed within the arc chamber and having a free end, the central pin being of an electrically insulating material;  
a first switch part stationary with respect to the switching chamber which at least partially embraces the central pin;  
a coil which surrounds the first switch part and through which coil a cut-off current flows;  
an annular intermediate electrode which surrounds the central pin at a distance and is in close proximity to the free end of the central pin; and  
a second switch part having a free end in the shape of a nozzle, the second switch part being movable with respect to the first, stationary switch part and having a plurality of apertures providing communication between the arc chamber and the additional chamber, the nozzle of the second switch part surrounding the free end of the central pin when the second switch part contacts the first switch part.

4,286,130

**LOW VOLTAGE CIRCUIT BREAKER WITH SUBDIVIDED INSULATING HOUSING**

Werner Troebel, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

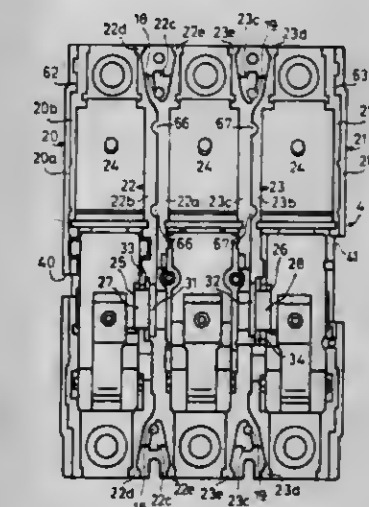
Filed Jan. 17, 1979, Ser. No. 4,207

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1978, 2802554

Int. Cl.<sup>3</sup> H01H 9/02

U.S. Cl. 200—303

6 Claims



1. In a low voltage circuit breaker having an insulating



material housing divided into an upper part and a lower part along a parting gap and having partitions between adjacent breaker pole channels meeting at the parting gap, the partitions overlapping each other stepwise, each breaker pole channel comprising a pole path having a terminal, a stationary switch contact, a movable switch contact, a flexible connector, means for opening the contacts, and a second terminal, there being a drive shaft for actuating the movable switch contacts coupled to a mechanism located in one of the pole channels, the improvement comprising:

the entire length of the partitions of the upper part and of the lower part having step-wise overlap with each other and substantially the entire length of the outer walls of both housing parts having stepwise overlap with each other, interruptions of the overlap in the region of the two outer walls being arranged in staggered relation to each other.

4,286,131

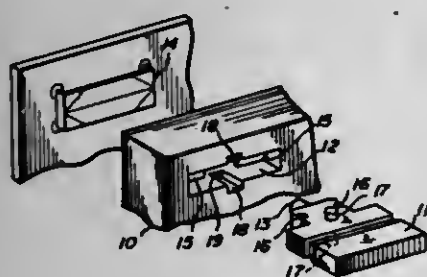
## PUSHBUTTON SWITCH ASSEMBLY

Stephen P. Kopish, Schaumburg, and Richard Costantino, Rolling Meadows, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 30, 1979, Ser. No. 71,324  
Int. Cl.<sup>3</sup> H01H 3/12; H02B 1/02

U.S. Cl. 200—340

14 Claims



1. An electrical switch assembly, comprising: chassis means for housing the electrical contacts of a switch, said chassis having a wall with at least one through opening therein; at least one switch actuator means mounted in said chassis wall opening, said switch actuator being attached to said chassis by flexible retaining means fixed to one of said chassis wall and said switch actuator means and having at least one flexible extending portion cooperating with a recess in the other of said chassis wall and said switch actuator means to form a hand-insertable snap-in subassembly, said flexible retaining means, besides attaching said switch actuator means to said chassis, also biasing said switch actuator means into a first predetermined position with respect to said chassis wall and permitting movement of said actuator means into a second predetermined position with respect to said wall while keeping said actuator means attached to said chassis; and electrical contact means mounted inside said chassis, said actuator means selectively altering the electrical characteristics produced by said contact means in response to said actuator means moving from said first to second positions.

4,286,132

## SNAP-ACTION SWITCH

Harry Greenwald, Whitestone, N.Y., assignor to Greenwald Electro-Mechanical Consultants, Inc., Whitestone, N.Y.

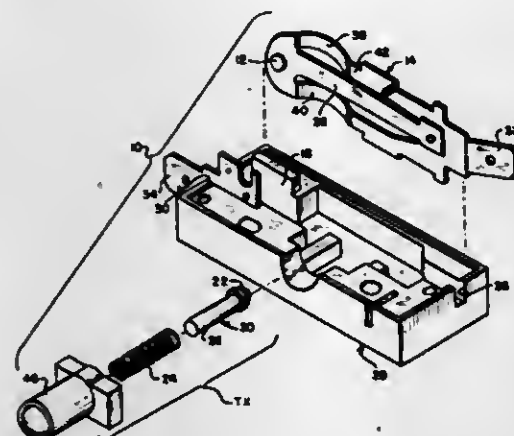
Filed Apr. 18, 1980, Ser. No. 141,410  
Int. Cl.<sup>3</sup> H01H 21/04

U.S. Cl. 200—67 D

3 Claims

1. A snap-action switch for activation by a slow moving switching mechanism comprising: a single over-the-center toggle-like spring armature disposed to snap between a first position and a second position, said armature carrying a movable contact, said armature resist-

ing movement until moved past its deadband zone whereafter said armature snaps from said first position to said second position; a pushing member positioned to move said armature off said first position; a switch activator adapted to be moved by said slow moving switching mechanism; spring means resiliently coupled between said switch activator and said pushing member, said spring means transmitting force from said switch activator to said pushing mem-



ber and absorbing energy as said switch activator is moved; the resilient force exerted by said spring means at the point where said armature starts to move through said deadband zone equalling the resistive force of said armature; said armature when moving through said deadband zone reducing its resistive force at a rate causing said resistive force to be less than said resilient force of said spring means, the unbalanced resilient force causing said armature to rapidly move through said deadband zone and snap said armature to its second position.

4,286,133

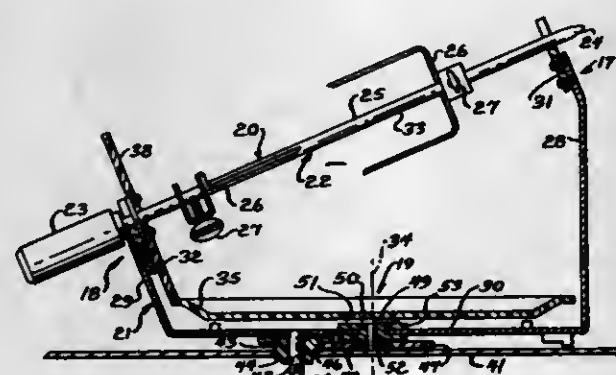
## BI-ROTATIONAL MICROWAVE OVEN TURNTABLE/ROTISSERIE

Eystein Einset, St. Joseph, and James R. Hageman, Berrien Springs, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 29, 1979, Ser. No. 42,770  
Int. Cl.<sup>3</sup> H05B 6/78

U.S. Cl. 219—10.55 F

22 Claims



1. Structure for movably carrying food products in a microwave oven cavity for improved subsection thereof to microwave energy therein, said carrying structure comprising: a spit; support means for supporting said spit in said cavity for rotation about a first, spit axis; drive means for rotatively turning said support means about a second, fixed axis; a turntable for supporting food products;

means rotatively mounting said turntable to said support means for revolving about a third axis spaced from said second axis; means for rotatively driving said turntable about said second axis while revolving about said third axis; and means driven by the turntable for causing said spit to rotate about said first axis as an incident of said turntable being rotatively driven about said second axis.

4,286,134

## TEMPERATURE MEASURING ARRANGEMENTS FOR MICROWAVE OVENS

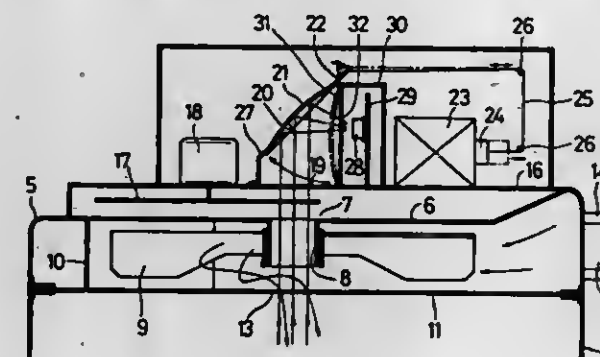
Takeshi Nakata, Takashi Watanabe, and Kiyoshi Harada, all of Otsu, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jul. 9, 1979, Ser. No. 55,759

Claims priority, application Japan, Jul. 13, 1978, 53-97531[U]  
Int. Cl.<sup>3</sup> H05B 6/68

U.S. Cl. 219—10.55 B

16 Claims



1. An electronic oven comprising: a cavity, an infrared converging means having a reflective convergent surface and adapted to reflect and converge infrared rays radiated from food heated in said cavity, a supporting means for movably supporting said infrared converging means, an infrared detector element located in the vicinity of the point where infrared rays are converged by said infrared converging means, and adapted to convert the infrared rays into electrical signals, a plate disposed in front of said infrared detector element, an infrared entrance port being formed in said plate which said reflective convergent surface of said infrared converging means is adapted to cover, and a moving means for moving said infrared converging means to a first position as to reflect and converge infrared rays onto said infrared detector element when the temperature measurement operation is performed, and to a second position as to close said infrared entrance port when the temperature measurement operation is not performed.

4,286,135

## COMPACT MICROWAVE ISOLATOR

Jerome J. Green, Lexington, and Daniel J. Masse, East Walpole, both of Mass., assignors to Raytheon Company, Lexington, Mass.

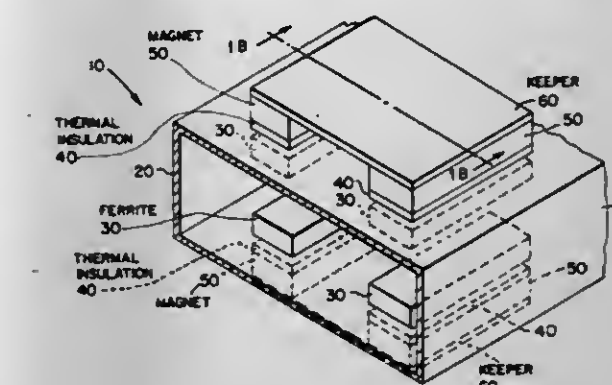
Filed Oct. 9, 1979, Ser. No. 83,149  
Int. Cl.<sup>3</sup> H05B 6/70; H01P 1/365

U.S. Cl. 219—10.55 F

8 Claims

8. In combination: a source of microwave energy; a heating chamber; a three-sided waveguide having a pair of opposite narrow walls connected by a broad wall and adapted to be connected between said energy source and said heating chamber and disposed such that said heating chamber provides a second broad wall for said waveguide; at least one ferrite bar positioned to be in contact with one of said broad walls and disposed longitudinally within said

waveguide in the region where gyroresonance absorption takes place; a plurality of magnets disposed on the outside surface of said



broad walls to provide a transverse magnetic field through said ferrite bar; and means for thermally insulating said magnets positioned between said outside surface and said magnets.

4,286,136

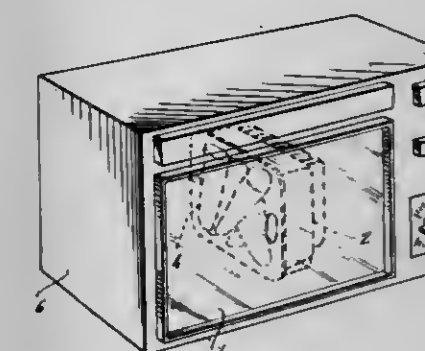
## COOKING CONTAINER FOR MORE EFFICIENT COOKING IN A MICROWAVE OVEN

Stanley I. Mason, Jr., 61 River Rd., Weston, Conn. 06880

Filed Dec. 10, 1979, Ser. No. 101,630  
Int. Cl.<sup>3</sup> H05B 6/64

U.S. Cl. 219—10.55 E

19 Claims

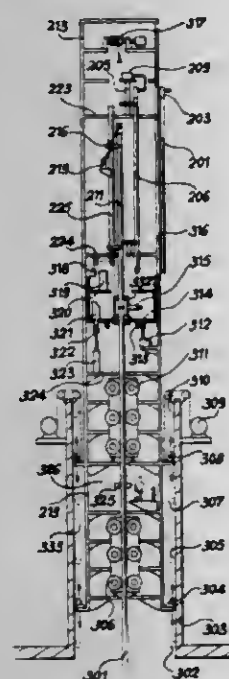


1. A cooking container for use in microwave cooking of food in a microwave oven, said container including: a base and integral upwardly extending sidewalls and end portions to define an open-top food container, said sidewalls and end portions extending upwardly from the periphery of said base, the length of said end portions being no greater than the length of said sidewalls, at least one of said end portions having at least one vertical support extending downwardly from said one end portion, but extending no further than the plane of said base, said container being made of material which is transparent to microwave radiation, said container being so dimensioned such that (1) its center of gravity, when said container is in a vertical position with said vertical support being supported on a supporting surface in said microwave oven and said base of said container being substantially perpendicular to said supporting surface in said microwave oven, is proximate to said base and not substantially aligned above said vertical support to cause said container to be unstable and (2) the center of gravity of said container and contained food is more nearly centered over said vertical support when food is in said container to provide stability to said container in its said vertical position supported on said vertical support, whereby food can be cooked in a microwave oven in said vertical position of said container for absorbing an optimum quantity of both direct microwave radiation and



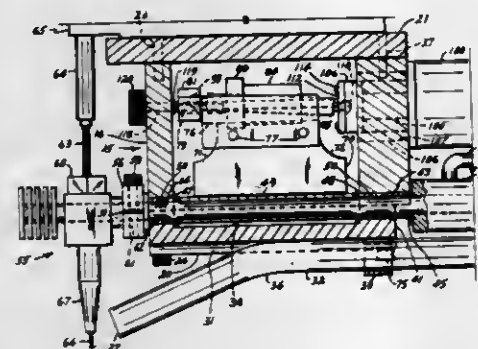
microwave radiation reflected from the microwave oven surfaces.

**4,286,137**  
**METHOD FOR ASSEMBLING VERTICAL DUCTS BY ELECTRON-WELDING**  
 Paul Thome, 8 rue Coutureau, 92210 Saint-Cloud, France  
 Division of Ser. No. 899,681, Apr. 24, 1978, Pat. No. 4,196,334.  
 This application Jul. 16, 1979, Ser. No. 58,032  
 Claims priority, application France, May 2, 1977, 77 13162  
 Int. Cl.<sup>3</sup> B23K 15/00; E21B 19/20  
 U.S. Cl. 219—121 EC 8 Claims



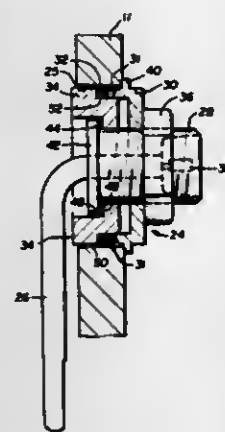
1. An installation for welding ducts to a pipe-line, said installation comprising:  
 inner equipments for said ducts, each comprising means for vacuum-tight connection with the inside of a duct and means protruding from the duct for vacuum tight connection with the pipe-line;  
 an equipping station comprising means for placing one of said inner equipments in each successive duct and for tightly connecting said equipment to said duct, thereby closing an inner vacuum tight space inside the duct;  
 transfer means for transferring said duct and inner equipment from said equipping station to a welding station and for positioning it in said welding station in alignment and abutment end to end with the pipe-line;  
 means for sealingly connecting the protruding means of said inner equipment in the welding station with the pipe-line inside the pipe-line, thereby closing a welding space across the abutted ends of said duct and pipe-line inside said duct and pipe-line;  
 pumping means for evacuating said inner space during said transfer, as well as said welding space;  
 further transfer means for removing said inner equipment from said duct and returning it from said welding station back to said equipping station;  
 a welding apparatus for welding together the abutted ends of said pipe-line and duct;  
 and means for removably connecting said welding apparatus to the duct and pipe-line outside said duct and pipeline in said welding station.

**4,286,138**  
**WELDING METHODS AND APPARATUS INCLUDING ALTERNATE WELD METAL DEPOSITIONS ALONG OPPOSITE SIDES OF A WELD**  
 Clyde M. Slavens, and Edward A. Clavin, both of Houston, Tex., assignors to Midcon Pipeline Equipment Co., Houston, Tex.  
 Filed Aug. 1, 1979, Ser. No. 62,685  
 Int. Cl.<sup>3</sup> B23K 9/09  
 U.S. Cl. 219—137 R 19 Claims



16. Welding method, comprising supporting the welding electrode of a welding torch adjacent a joint between objects to be welded together, oscillating said welding electrode in back and forth motions across said joint by operation of a motor-driven oscillating means, moving said welding torch and electrode longitudinally of said joint, providing a pulsating welding current to said electrode and controlling the welding current pulse frequency thereof, and controlling the operation of said motor-driven oscillating means in response to the pulses of said welding current such that welding current pulses in controlled number occur at the ends of each said back and forth motions of said electrode, whereby weld metal droplets in controlled number are deposited only at opposite sides of said joint in parallel paths to flow together to form a weld across said joint, no weld metal droplets being deposited between said parallel paths.

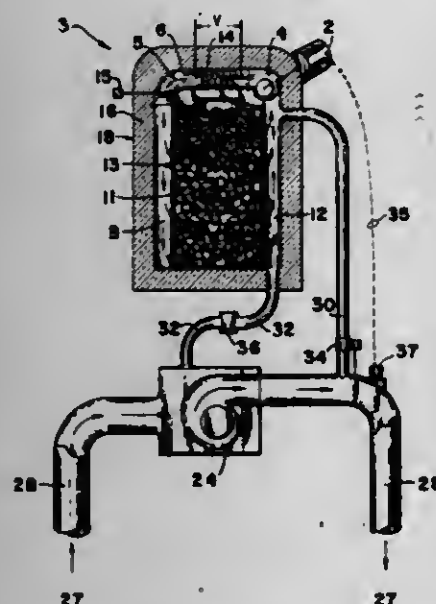
**4,286,139**  
**COUPLING ASSEMBLY FOR HEATING ELEMENT**  
 Eugene D. Taylor, Kenosha, Wis., assignor to J. I. Case Company, Racine, Wis.  
 Filed Dec. 26, 1979, Ser. No. 106,576  
 Int. Cl.<sup>3</sup> H05B 3/02, 3/82; F02N 17/06  
 U.S. Cl. 219—208 1 Claim



1. In an electric heater assembly which is mountable in an opening through a wall in an engine block, said heater assembly including an electric heating element sized and shaped for insertion into the engine block through said opening in said wall, the improvement comprising:  
 a coupling assembly for mounting said heating element to said opening through said engine block wall, said coupling assembly including an elongated clamping sleeve having one end fixed to said heating element, said clamping sleeve



said bottom and upwardly through the interconnecting voids in said pebble bed, thermally insulated walls surrounding said pebble bed container and said storage unit being arranged for permitting air flow to return downwardly from the top to the bottom of said container, an electrical resistance heater element mounted within said insulated walls and positioned below said pebble bed container for causing, when heated, thermogravitational circulation of air to occur passing upwardly through said openings and through said interconnecting voids and returning downwardly for transferring heat energy from said heater element into said pebble bed, said pebble bed storing between 11,000 and 22,000 Btu's of heat energy per cubic foot of said pebble bed at a bed temperature up to 600° F. and being capable of storing



between 28,000 and 56,000 Btu's of heat energy per cubic foot of said pebble bed at a bed temperature up to 1,200° to 1,500° F., said insulated walls having an inlet and an outlet for permitting air to flow from the living space to and from said pebble bed, said inlet communicating with the openings in the bottom of said pebble bed container and said outlet communicating with an outflow from said pebble bed container, a blower associated with said inlet for blowing said air from the living space into communication with the bottom of said pebble bed container for heating the air, with the heated air flowing through said outlet for returning into the living space, and movable damper means operatively associated with said blower for controlling the operation.

4,286,142

## ELECTRIC TUBE FURNACE

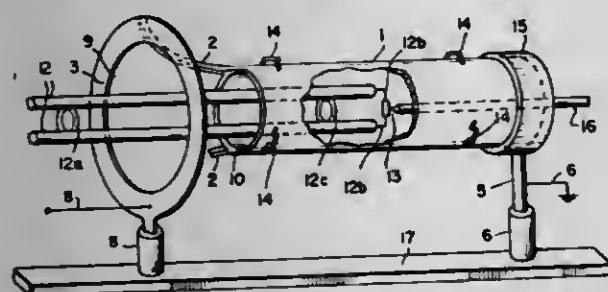
Raymond E. Taylor, West Lafayette, Ind., assignor to Theta Industries, Inc., Port Washington, N.Y.

Filed Oct. 22, 1979, Ser. No. 87,015

Int. Cl.<sup>3</sup> H05B 3/08

U.S. Cl. 219—390

7 Claims



1. Warp resistant high temperature electric tube furnace comprising a rigid metal heating element tube having open

ends and a supporting electric terminal ring coaxially disposed and attached adjacent to each end of said tube, each said ring having an inside diameter at least as large as the inside diameter of said tube and at least one said ring being tandemly spaced from said tube and remotely, compressibly attached through a plurality of flexible elongated rectangular metal strip connectors which are symmetrically spaced about the periphery of said tube and radiate to said remotely attached ring.

4,286,143

## HEATER ASSEMBLY

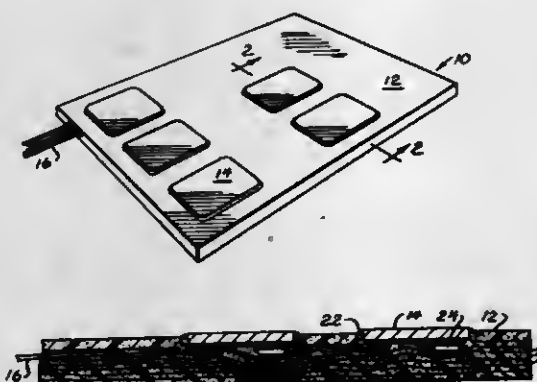
Thomas D. Tadewald, La Crosse, Wis., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 939,764, Sep. 5, 1978. This application Nov. 13, 1979, Ser. No. 93,476

Int. Cl.<sup>3</sup> H05B 3/68

U.S. Cl. 219—443

7 Claims



1. A direct contact heater plate assembly adapted to be periodically and sequentially exposed to containers to be heated and to a hostile atmosphere of steam or very hot water comprising a plurality of superposed laminations which are bonded to each other and to at least one heater portion, said at least one heater portion having a heating means therein and being positioned in a cut-out area formed in at least the uppermost of said plurality of laminations, said at least one heater portion having an upper container contacting surface being surrounded on all its sides by portions of said laminations defining the sides of said cut-out area, said at least one heater portion overlying and being bonded to a portion of at least one lower layer and said uppermost layer of said plurality of laminations, and said at least one heater portion having a greater thermal conductivity through the portion thereof which, during use, is intermediate said heating means therein and the upper container contacting surface thereof than the thermal conductivity of the uppermost laminations which surround said heater portion and are located above the said at least one layer to which the heater portion is bonded.

4,286,144

## ENCODER FOR POSTAGE METER

Philip Pollak, Jr., Westport; Keith E. Schubert, Rowayton, and John L. Lorenzo, Southbury, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 28, 1979, Ser. No. 108,061

Int. Cl.<sup>3</sup> G07G 1/00

U.S. Cl. 235—101

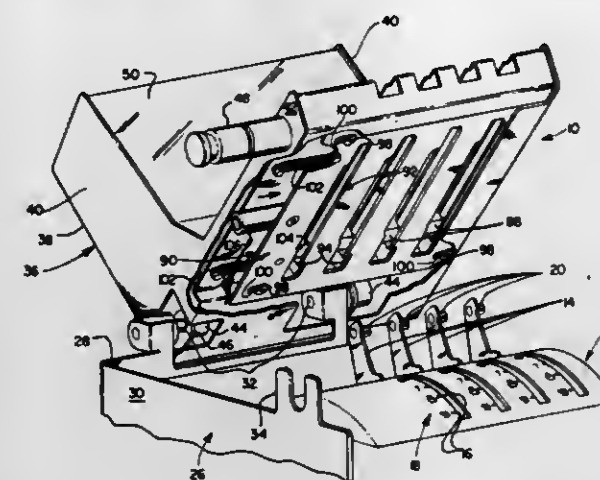
9 Claims

1. An encoder for a postage meter having a lever which is movable between a plurality of postage value selecting positions, said encoder comprising:

- framework adapted for removably mounting said encoder in operating relationship with respect to said postage meter; and
- means for monitoring movement of said postage meter lever when said encoder is mounted in said operating

relationship, said monitoring means including means for providing an electrical signal which varies in response to

teristics different from each other are arranged in a plurality of rows and a plurality of columns, and an area of the coded label surrounding said code pattern having said second physical characteristic, at least one segment of said first physical char-



movement of said postage meter lever from one of said positions to another of said positions.

4,286,145

## FIBER OPTIC BAR CODE READER

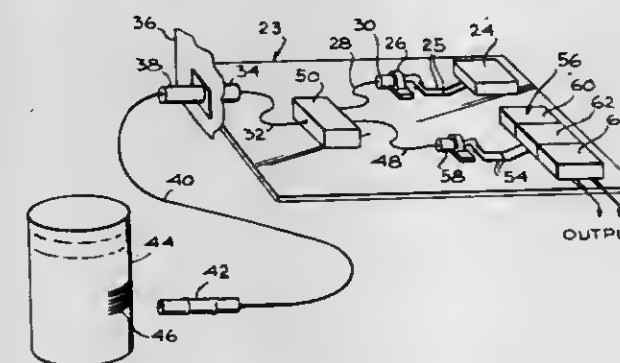
John P. Palmer, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Feb. 20, 1980, Ser. No. 123,039

Int. Cl.<sup>3</sup> G06K 7/10, 7/14

U.S. Cl. 235—454

23 Claims



1. An optical information reader comprising: probe means effective to emit optical signals and receive reflected optical signals; a single optical fiber having two ends, coupled at one end to said probe means for bidirectional transmission of optical signals; optical coupler means having three ports, the first of said ports being coupled to the other end of said fiber; optical signal generating means coupled to the second port of said coupler means in order to provide signals for emission from said probe; and optical signal receiving means coupled to the third port of said coupler means in order to sense reflected signals received by said probe.

4,286,146

## CODED LABEL AND CODE READER FOR THE CODED LABEL

Takeshi Uno; Hirofada Ueda, both of Sayama; Sadahiro Ikeda, Tokyo; Masakazu Ejiri, Tokorozawa, and Shinji Matsuo, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 762,148, Jan. 24, 1977, abandoned. This application Jan. 12, 1979, Ser. No. 3,011

Claims priority, application Japan, Feb. 6, 1976, 51/11478

Int. Cl.<sup>3</sup> G06K 7/10, 19/06, 9/00

U.S. Cl. 235—456

32 Claims

1. A coded label comprising at least one code pattern to be read by a code reader in which segments having a specific shape and assuming either of first and second physical charac-

4,286,147

## IN-FOCUS DETECTING DEVICE

Hiroaki Tsuboi, and Toshihiko Hosaka, both of Tokorozawa, Japan, assignors to Universal Pioneer Corporation, Tokyo, Japan

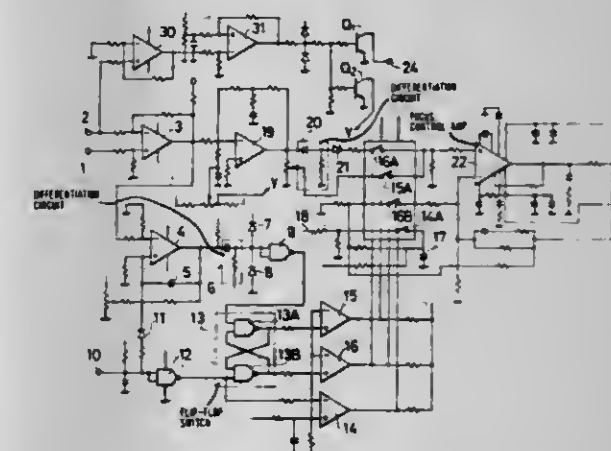
Filed Jul. 19, 1979, Ser. No. 58,647

Claims priority, application Japan, Jul. 19, 1978, 53-88000; Jul. 19, 1978, 53-88002

Int. Cl.<sup>3</sup> G01J 1/20

U.S. Cl. 250—201

14 Claims



1. An in-focus detecting device for a lens of an optical video disk player comprising: light quantity detecting means, comparator means for comparing the output of said light quantity detecting means with a reference voltage; switch means controlled by the output of said comparator means, and means for preventing said lens from contacting a disk being played on said video disk player.

4,286,148

## IMAGE INTENSIFIER TUBE WITH PHOTOCATHODE PROTECTIVE CIRCUIT

Hubertus E. L. Kamps, and Christiaan J. G. H. Wulms, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 861,723, Dec. 19, 1977, abandoned.

This application Jul. 23, 1979, Ser. No. 59,826

Claims priority, application Netherlands, Mar. 3, 1977, 7702262

Int. Cl.<sup>3</sup> H01J 31/50, 40/14

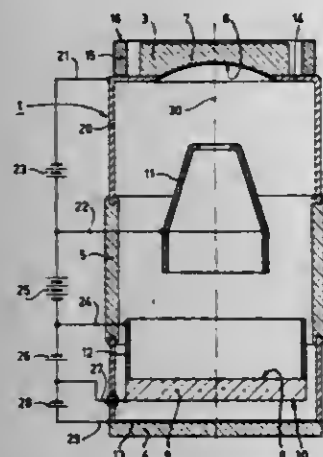
U.S. Cl. 250—213 VT

2 Claims

1. An image intensifier tube comprising: a housing having an entrance window with a photocathode



at one end thereof, and having an exit window at the other end thereof;  
 have an entrance face facing the photocathode,  
 a channel multiplier plate, mounted in the housing between the photocathode and the exit window;  
 an input electrode attached to the channel plate, said input electrode being cylindrically prolonged in the direction of the photocathode;  
 an entrance electrode on the entrance face of the channel multiplier plate, electrically connected to the input electrode;



a cylindrical intermediate electrode, mounted in the housing between the photocathode and the input electrode, said intermediate electrode having a frusto-conical portion with the narrower end nearer to the photocathode is means to apply a given potential to said intermediate electrode; and  
 means to apply to said input electrode a potential lower than said given potential;  
 such that substantially all electrons reflected from the input electrode are intercepted by the intermediate electrode and substantially no ions can reach the photocathode from the channel plate, thereby reducing the formation of ion spots on the photocathode.

4,286,149

# APPARATUS AND METHOD FOR DETECTION OF OVERLAPPING OBJECTS

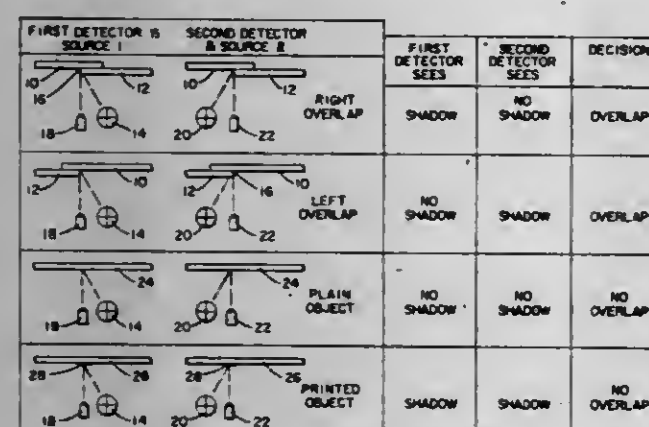
Samuel Ben-Nathan, Waterloo; Marwin G. Neumeister, Kitchener; Mikhail Shatz, Waterloo, and Robert S. McCallum, Erin, all of Canada, assignors to NCR Canada Ltd - NCR Canada Ltd, Mississauga, Canada

Filed Aug. 9, 1979, Ser. No. 65,383

Int. Cl.<sup>3</sup> G01V 9/04

U.S. Cl. 250-223 R

25 Claims



1. An overlapped object detector comprising:  
 means for transporting objects along a defined path;  
 a station including a plurality of detection means aligned substantially perpendicular to the direction of movement of said objects, each detection means including first and

second radiation sources oriented to direct radiation obliquely against said objects as they pass said station, also including first and second radiation sensing means, and first and second lens means associated respectively with said first and second sensing means, each sensing means paired respectively with its corresponding radiation source to receive radiation therefrom which has been reflected from an object passing said station and directed to said sensing means by its associated lens means, said sensing means being able to detect a decrease in reflectivity of an object caused by the edge of one object overlapping another object, or by a mark on an object; and logic means coupled to said detection means for signifying when an overlap has taken place, said overlap being indicated by a detection by one or the other, but not both, of the radiation sensing means of all of said detection means of a decrease in reflectivity.

4,286,150

# NEUTRON-NEUTRON LOGGING

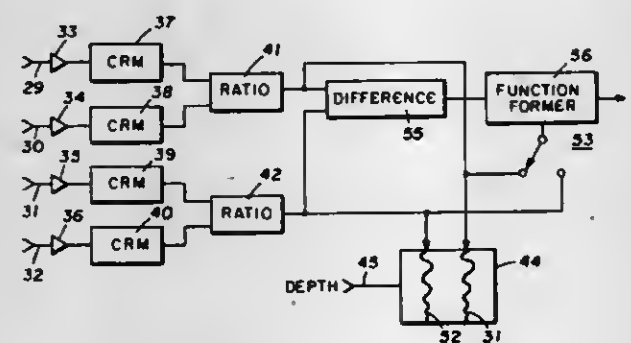
Linus S. Allen, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 23, 1978, Ser. No. 954,053

Int. Cl.<sup>3</sup> G01V 5/00

U.S. Cl. 250-270

4 Claims



1. A system for logging the formations traversed by a borehole, comprising:

- a borehole tool,
- means for moving said borehole tool through a borehole,
- a steady-rate source of fast neutrons located within said borehole tool for irradiating the formations surrounding the borehole with neutrons,
- a pair of thermal neutron detectors located within said borehole tool at spaced-apart positions from said source,
- a pair of gamma ray detectors located within said borehole tool at spaced-apart positions from said source,
- means for producing a first ratio signal representative of the ratio of the numbers of thermal neutrons measured by said thermal neutron detectors, and
- means for producing a second ratio signal representative of the ratio of the numbers of thermal neutron capture gamma rays measured by said gamma ray detectors.

4,286,151

# DEVICE FOR GUIDING THE DISPLACEMENT OF A VEHICLE AND IN PARTICULAR AN AGRICULTURAL MACHINE

Maurice C. J. Lestradet, B.P. 10, 51230 Fere Champenoise, France

Filed Nov. 16, 1979, Ser. No. 94,811

Claims priority, application France, Nov. 21, 1978, 78 32804

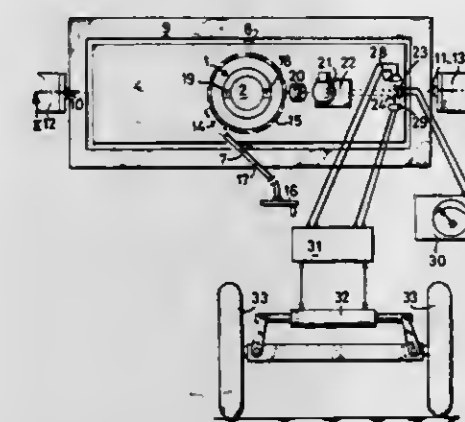
Int. Cl.<sup>3</sup> G01D 5/30

U.S. Cl. 250-230

10 Claims

1. A device for guiding the displacement of a vehicle, having ground-contacting wheels, and in particular an agricultural machine, said device being more particularly adapted to enable the vehicle to effect different parallel passages over an area and comprising a support, a system for automatically maintaining

said support in a horizontal position on a fixed part of the vehicle, a magnetized element acting as a compass and movably mounted on said support, means defining at least one planar light beam reflecting face on said magnetized element, means combined with said magnetized element for angularly orienting said magnetized element, an optical system mounted on said support for locating the position of said reflecting face, an automatic piloting device comprising a system mounted on said support for detecting the intensity of the beam reflected by said reflecting face, means for steering the steering wheels of the vehicle and a servo-control device connecting said intensity detecting system to said wheel steering means, said detect-



ing system detecting the magnitude and direction of the lateral deflection of the beam reflected by said reflecting face and comprising two mirrors disposed at 90° to each other and constituting a vertical dihedral structure which defines a vertical flat surface at the dihedral angle between said two mirrors and having a width which is equal to the width of the image of said reflecting face projected by said optical system, the bisector plane of said dihedral angle coinciding with the plane of the optical axis of the incident beam impinging on said reflecting face and the optical axis of the beam reflected by said reflecting face, and two luminous flux responsive means respectively disposed laterally on both sides of said two mirrors and connected to said servo-control device.

4,286,152

# COLLECTION SHIELD FOR ION SEPARATION APPARATUS

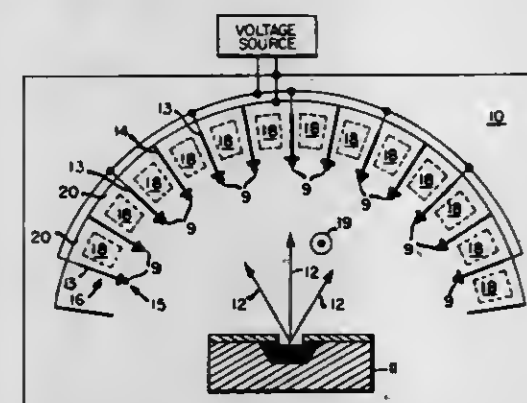
Ralph A. Pugh, and Kenneth L. Ford, both of Richland, Wash., assignors to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Nov. 29, 1979, Ser. No. 98,803

Int. Cl.<sup>3</sup> H01J 39/34; B01D 59/44

U.S. Cl. 250-281

8 Claims



1. An apparatus for separating an isotopic mixture of the type comprising (a) source means for emitting neutral particles of said isotopic mixture, (b) a plurality of spaced apart electrode means disposed in the path of particle emission; (c) in a region between spaced apart electrodes a radiation beam for isotopically selectively ionizing at least some of said neutral particles, said beam occupying less than all of said region, and

(d) means for separating said ionized particles from said neutral particles, the improvement comprising:

at least one collection shield removably engaged to at least one respective electrode having at least one surface projecting from said electrode for collecting those neutral particles from said source which would otherwise pass between electrodes without passing through said beam.

4,286,153

# METHOD AND APPARATUS FOR THE SEPARATION OF ISOTOPE MIXTURES

Karl Janner, Erlangen; Klaus Gregorius, Neunkirchen, and Eberhard Schuster, Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany

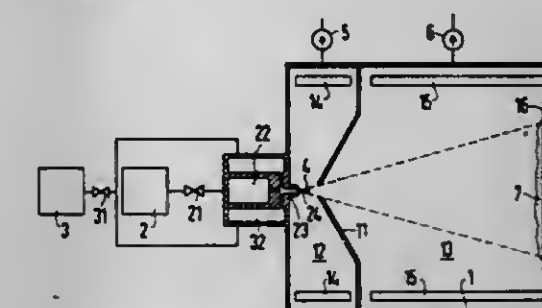
Filed Jul. 9, 1976, Ser. No. 703,784

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1975, 2536940

Int. Cl.<sup>3</sup> B01D 59/00

U.S. Cl. 250-281

6 Claims



1. In apparatus for the separation of an isotope substance from a vaporous mixture of isotope substances involving selective excitation, dissociation or ionization of one substance by adiabatically decompressing the vaporous mixture to cool it to a temperature below 100° K. and irradiating the cooled vaporous mixture by an electromagnetic wave selectively absorbed by an isotope substance, the improvement which comprises a diffuser in which the vaporous mixture, after cooling and irradiation, flows at a velocity greater than the speed of sound and in which shock wave occurs and there is a transition from supersonic to reduced velocity flow, cooling members disposed in the path of flow of the substances, partition members to separate the flow of substances into a flow containing most of the substances which have been subjected to irradiation from substances of which most have not been subjected to irradiation and outlet means for separately discharging said two separated flows.

4,286,154

# METHOD OF DETECTING A MARK BY AN ELECTRON BEAM AND AN APPARATUS THEREFOR

Tsunao Okubo, Hachioji; Nobuo Hamamoto, Hinodemachi, and Kazuo Ichino, Hameiramachi, all of Japan, assignors to Hitachi, Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Nov. 26, 1979, Ser. No. 97,125

Claims priority, application Japan, Nov. 24, 1978, 53-144135

Int. Cl.<sup>3</sup> G01N 23/00

U.S. Cl. 250-307

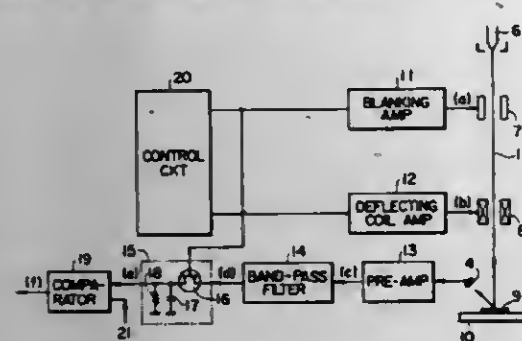
14 Claims

1. A method of detecting a mark on a sample by an electron beam including the steps of:

scanning the electron beam over an area of the mark provided on the sample in such a manner that the electron beam is subjected to chopping by sampling pulses having a higher frequency than the scanning frequency;  
 detecting the electron beam with a detector after the beam has scanned over said mark to produce a detected mark signal representative of the mark;



eliminating a component of noise from the detected mark signal;  
synchronously rectifying the detected mark signal after removal of the noise component;



binary-coding the rectified detected mark signal as compared with a threshold value; and  
detecting the position of the mark by using the binary-coded signal.

4,286,155

## RADIOACTIVE GAS MONITOR

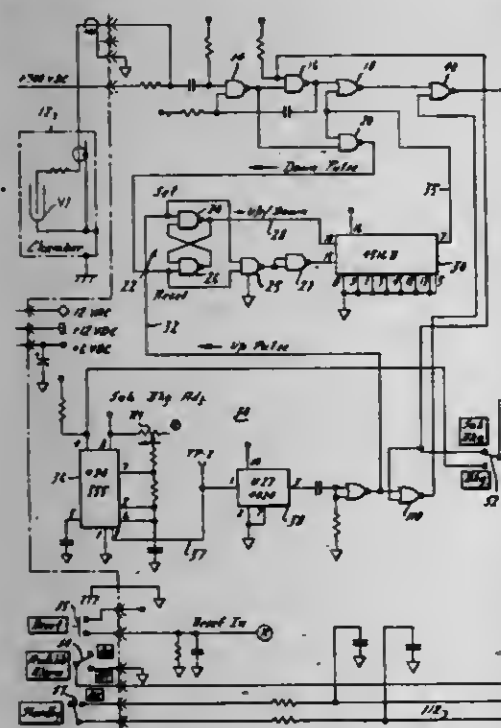
George R. Utting, Satellite Beach, Fla., assignor to Victoreen Incorporated, Cleveland, Ohio

Filed May 31, 1979, Ser. No. 44,195

Int. Cl.<sup>3</sup> G01T 1/00, 1/18

U.S. Cl. 250—336

20 Claims



1. A radioactive gas monitoring device for measuring the total airborne radiation activity in a designated area over an extended period of time and providing a direct readout of said measurement in predefined integrated units, including:

- a detector for detecting radioactive gas and producing a first pulsed output signal at a frequency that is proportional to the concentration of said radioactive gas;
- conversion means for converting said first pulsed output signal to a converted signal by dividing the frequency of said first pulsed output signal by a predetermined conversion factor so that each converted signal pulse corresponds to one of said integrated units; said conversion means including a first digital counter, a digital-to-analog converter for converting the digital output of said first digital counter to an analog signal, a comparator for comparing said analog signal to a reference signal and producing an output signal whenever the value of said analog signal is greater than the value of said reference signal, and calibration means for adjusting said predetermined conversion factor by adjusting the value of said reference signal;
- accumulator means for continuously accumulating the total

number of converted signal pulses produced by said conversion means over the entire extended measurement period; and  
display means for displaying in said integrated units the total number of accumulated converted signal pulses.

4,286,156

## DEVICE FOR DETERMINING THE SPATIAL ABSORPTION DISTRIBUTION IN A PLANE OF EXAMINATION

Wolfgang Wagner, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

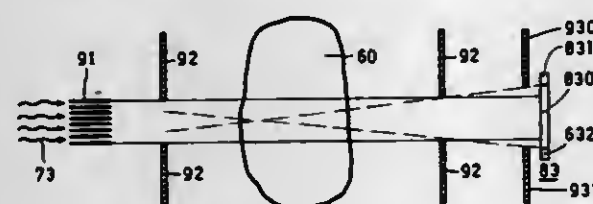
Filed May 9, 1979, Ser. No. 37,266

Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821083

Int. Cl.<sup>3</sup> G01T 1/20; G21F 5/04

U.S. Cl. 250—363 S

4 Claims



1. In a device for determining a spatial absorption distribution in an object, comprising a plurality of radiation sources which are arranged in a plane of examination and which irradiate the plane of examination from different directions, and also comprising a large plurality of detectors which are arranged on an arc of a circle in the plane of examination and which serve to measure the intensity of radiation which passes through the object, at least some of said detectors being struck by radiation from more than one direction, the improvement wherein:

- the detectors comprise a first zone (831, 832) which is active to produce a first signal; and
- an adjoining second zone (830) which is disposed in the plane of examination and detects radiation which passes along straight lines between at least one source and the detectors in said second zone, and is active to produce a second signal; and
- the device further comprises shielding means which function to shield the first zone from radiation which passes along straight lines between the sources and the detectors in said first zone.

4,286,157

## APPARATUS FOR ASCERTAINING AND/OR REGULATING THE AMOUNTS OF RADIATION IN THE MAKING OF X-RAY IMAGES

Rolf Eickel, and Dieter Tolsdorf, both of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 27, 1979, Ser. No. 69,806

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2838057

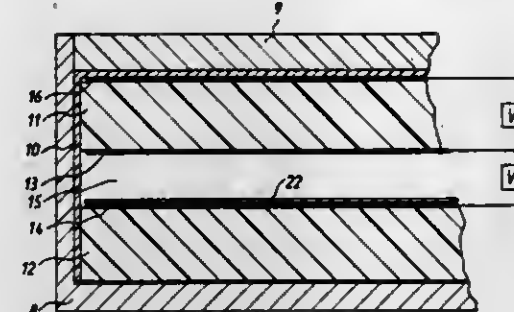
Int. Cl.<sup>3</sup> G01T 1/22

U.S. Cl. 250—370

15 Claims

1. In a dosimeter for X or gamma radiation, a pair of electrodes; a body of foamed material which is electrically non-conductive and generates charge carriers on exposure to said radiation situated intermediate and being in electrically conductive contact with said electrodes; and means for deriving from said electrodes electric current proportionate to the

amount of radiation to which said body has been exposed, including a source of electric potential having terminals of



opposite polarities respectively electrically connected to said electrodes.

4,286,158

## NEUTRAL RADIATION DETECTION AND LOCALIZATION

Georges Charpak, Paris; Hoan N. Ngoc, Verrieres le Buisson, both of France, and Armando Policarpo, Coimbra, Portugal, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), France

PCT No. PCT/FR 78/00046, 8371 Date Aug. 2, 1979, 8102(c) Date Aug. 2, 1979, PCT Pub. No. WO79/00353, PCT Pub. Date Jun. 28, 1979.

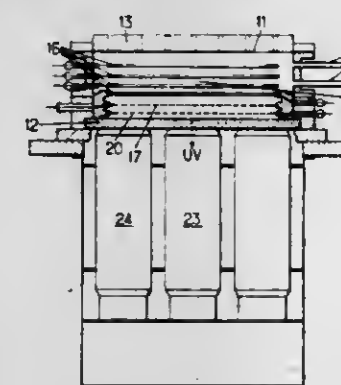
This PCT application filed Dec. 7, 1978, Ser. No. 63,138

Claims priority, application France, Dec. 7, 1977, 77 36893

Int. Cl.<sup>3</sup> G01T 1/18; H01J 39/29

U.S. Cl. 250—374

9 Claims



1. An imaging process for detecting and localizing incident neutral radiations, comprising the steps of:  
subjecting a body of gas to said radiations through collimator means under conditions which result in electron formation upon absorption of the radiations by the gas;  
drifting the electrons toward a photon production space by an electric field;  
subjecting said photon production space to an electric field of sufficient value to produce secondary photons by excitation of atoms of said gas in said space by said electrons;  
receiving said secondary photons on a layer of wavelength shifter material located on an output window retaining said body of gas, and simultaneously determining the locations of light flashes on said layer and the energy of said light flashes.

4,286,159

## DETECTOR COUPLING MECHANISM

Hiroyuki Kitta, Yamato; Shinichi Aizawa, Machida, and Hiroshi Sawa, Yokohama, all of Japan, assignors to Hochiki Corporation, Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,772

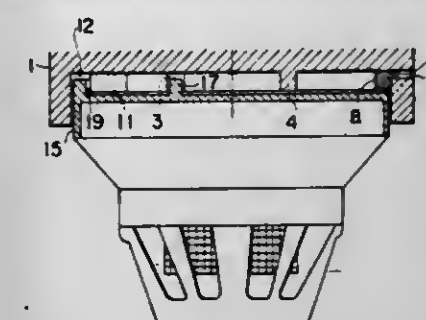
Int. Cl.<sup>3</sup> G01N 23/12

U.S. Cl. 250—381

12 Claims

1. In a fire detector having a socket and a detector head with a fire detector and an electric circuit therein, and at least two different couplings on said socket associated with coupling various types of said detector heads to said socket, the improvement comprising: said socket provided with means for

selectively defining an engaging portion structure for one designated detector head to be coupled to said socket and precluding coupling other detector heads and each engaging portion of said various type of detector heads having specific



structure to engage with a particular engaging portion defined by said means, whereby no detector head other than the designated detector head can be coupled to said socket plate.

4,286,160

## IONIZATION PARTICLE DETECTOR

Lonis Ried, Jr., 1500 Eisenhower Dr., Boulder, Colo. 80301

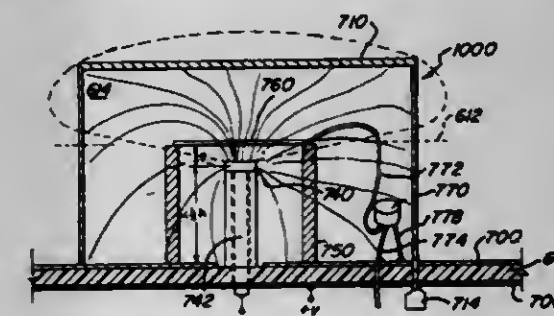
Continuation of Ser. No. 763,011, Jan. 27, 1977, Pat. No.

4,150,373. This application Mar. 5, 1979, Ser. No. 17,638

Int. Cl.<sup>3</sup> H01J 47/02

U.S. Cl. 250—381

10 Claims



1. An ionization detector for indicating the presence of particles comprising:  
a first electrode;

- a second electrode, electrically independent of, and spaced from, said first electrode, said first and second electrodes defining a particle detecting space;
- means, contiguous with said first electrode, for generating ions thereby producing closely concentrated, substantially equipotential, electric lines near said ion generating means and broadly spaced, substantially equipotential, electrical lines farther removed from said ion generating means, said substantially equipotential lines being shiftable due to the presence of said particles in said particle detecting space; and
- means for sensing a shift in said electric equipotential lines, said sensing means being spaced from said ion generating means and located in a region where the electrical equipotential line voltage value is about 0.46 to 0.54 times the voltage differential between said first and second electrodes.

4,286,161

## FILM CASSETTE DRIVE MECHANISM IN DENTAL RADIOGRAPHIC APPARATUS FOR PHOTOGRAPHING ENTIRE JAWS

Kazuo Hozumi, Joyo, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Feb. 14, 1980, Ser. No. 121,499

Claims priority, application Japan, Feb. 14, 1979, 54/18384[U]

Int. Cl.<sup>3</sup> A61B 6/14

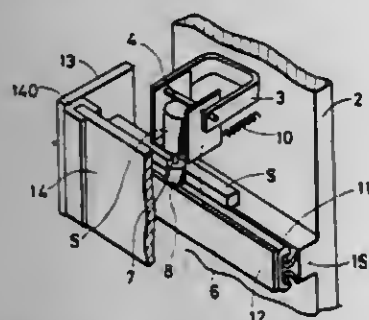
U.S. Cl. 250—439 P

4 Claims

1. A dental radiographic apparatus for photographing the



entire jaw providing an X-ray source and a film holder incorporating a platelike X-ray film cassette therein respectively at one end of a rotary arm and at the other end thereof in an opposed relation with each other and maintaining the same constantly in a mutually opposed relation by bringing the linear travelling speed of the film cassette into synchronism with the travelling speed of the X-ray source following the rotational movement of said arm so as to irradiate X-ray beams convergent from said X-ray source onto said film cassette in a



state of the beams intersecting at right angles with said cassette, characterised by a film cassette drive mechanism including said platelike film cassette fixed to said film holder, a slide bar provided in the direction of travel of said cassette, a roller in rolling contact with said slide bar, and a variable motor for driving said roller, whereby said film holder together with said film cassette are enabled to move linearly along the direction of rotation of said arm through the rolling friction between said roller and said slide bar.

4,286,162

#### SPEED CONTROL SYSTEM IN DENTAL RADIOGRAPHIC APPARATUS

Masakazu Suzuki, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

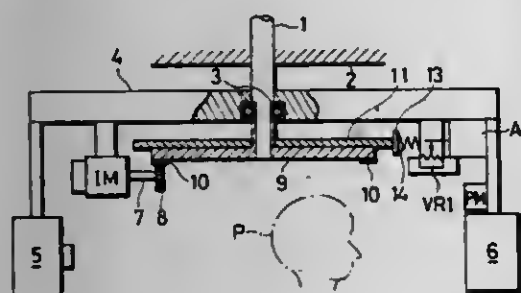
Filed Mar. 19, 1980, Ser. No. 131,689

Claims priority, application Japan, Mar. 23, 1979, 54/34590

Int. Cl.<sup>3</sup> A61B 6/14

U.S. Cl. 250-439 P

10 Claims



1. An X-ray film feed speed control system in a dental radiographic apparatus for photographing the entire jaws, said apparatus including an X-ray generator, a horizontal rotary arm holding an X-ray film cassette having an X-ray film therein and a rotary arm holding an X-ray film cassette having an X-ray film therein and a rotary arm drive motor for rotatingly moving said rotary arm, said generator and said motor being provided respectively at one end of said arm and at the other end thereof with an object interposed therebetween, said apparatus being designed to make a tomogram of the entire jaws of the object by actuating said arm drive motor and simultaneously feeding the X-ray film, said control system comprising:

- providing a film feed motor for said X-ray film feed in a drive control circuit for the film feed motor independent of said rotary arm drive motor;
- converting the number of rotations of said rotary arm drive motor into an electrical signal;
- supplying the electrical signal thus converted to said X-ray

film feed motor drive control circuit in the form of a drive signal;

detecting an X-ray beam irradiation position of said X-ray generator rotating around the dental arch as an electrical signal with respect to the dental arch of said object; and

controlling said drive signal supplied by said detected electrical signal to said drive control circuit, thereby automatically and variably controlling said X-ray film feed motor through the number of rotations responding to the detected electrical signal while said horizontal rotary arm is being rotated.

4,286,163

#### DENTAL RADIOGRAPHIC APPARATUS FOR PHOTOGRAPHING ENTIRE JAWS

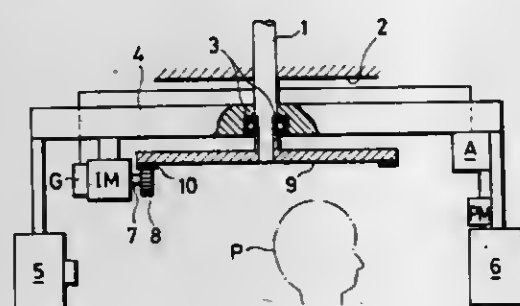
Masakazu Suzuki, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Mar. 19, 1980, Ser. No. 131,709

Int. Cl.<sup>3</sup> A61B 6/14

U.S. Cl. 250-439 P

11 Claims



1. A dental radiographic apparatus for photographing the entire jaws wherein the apparatus includes a horizontal rotary arm and a drive motor for rotating said horizontal rotary arm, said arm having an X-ray generator at one end thereof and having an X-ray film cassette holder for a film cassette containing an X-ray film therein at the other end thereof in such manner as to dispose an object between the generator and the cassette holder and said arm further being designed to make a tomogram of the entire jaws of said object by driving said rotary arm drive motor, said photographic apparatus being characterized in that the apparatus includes a film feed motor different from said rotary arm drive motor and adapted to feed the film in said film cassette holder, a means for converting the number of rotations of said rotary arm drive motor into an electrical signal and a film feed motor drive control circuit for variably controlling the number or rotations of said film feed motor by following and in synchronism with the number of rotations of said rotary arm drive motor.

4,286,164

#### METHOD FOR DETERMINING THE AVERAGE WIDTH OF LUMINESCENT STRIPES OF A VIEWING SCREEN

Frank R. Ragland, Jr., Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,472

Int. Cl.<sup>3</sup> G01N 21/64

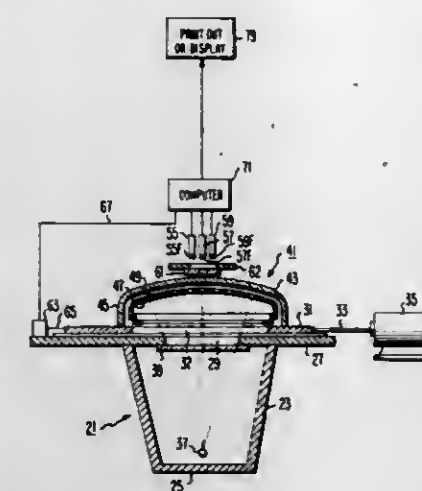
U.S. Cl. 250-461 R

10 Claims

1. A method for determining the average width of luminescent stripes in a localized area of a luminescent viewing screen of the type comprising a plurality of parallel photoluminescent stripes, said method including

- (a) scanning the widths of said stripes by a beam of ultraviolet light, whereby said stripes are excited to emit light along the path of said scan,
- (b) sensing and converting to a train of electrical signals the emissions of light in an identifying spectral band emitted by selected ones of said stripes in said localized region with respect to the position of said spot in said path,

(c) and then calculating the average width of said selected ones of said stripes from the calculated distance over



which the emissions of said signals are continuously above an assigned value.

4,286,165

#### DOSIMETER FOR MEASURING SKIN DOSE AND MORE DEEPLY PENETRATING RADIATION

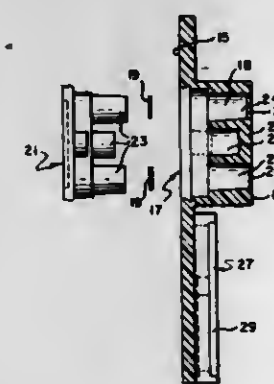
Donald E. Jones, DeRay Parker, and Paul R. Boren, all of Idaho Falls, Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 5, 1979, Ser. No. 55,211

Int. Cl.<sup>3</sup> H05B 33/00; G01T 1/00

U.S. Cl. 250-484

12 Claims



1. A personnel dosimeter for measuring radiation dose to a wearer within a skin layer defined between density thickness limits comprising:

- a holder of thermoplastic material having a front face and a rear wall, said rear wall having an opening therein for access to a plurality of wells;
- a plug adapted to seat within said rear wall opening, said plug having a plurality of posts each of which corresponding to one of said plurality of wells to define a plurality of compartments for containing TLD phosphors behind windows of predetermined density thicknesses from the front face of said holder;
- a first window, within said front face at a first compartment, having a density thickness of at least about that of the lesser limit of said skin layer but no more than about the deeper limit of said skin layer;
- a second window, within said front face at a second compartment, having a density thickness substantially greater than that of said first window and that of the deeper limit of said skin layer, said second window density thickness is greater than that of said first window by at least 5% but no more than 100% of the average density thickness of the phosphors contained within said first and second compartments;
- a third window, within said front face at a third compartment, having a density thickness of more than that of said

second window and more than that of the average density thickness of the phosphors within said first and second compartments to permit estimation of the dose of penetrating radiation into the body of the wearer and thereby determine the ratio of the net dose passing through said first and said second windows being absorbed within the thickness of phosphors within said first and second compartments whereby radiation dose to said defined skin layer can be determined as a function of said ratio of net dose.

4,286,166

#### DEVICE FOR ELECTRON IRRADIATION OF ROLLED MATERIALS

Vasily A. Glukhikh, Belgradskaya ulitsa, 10, korpus 1, kv. 5; Mikhail P. Svinlin, ulitsa Bogaichuka, 4, kv. 25; Mikhail T. Fedotov, ulitsa Polevaya, 22, kv. 58, all of Leningrad; Vladimir P. Shirokov, ulitsa B. Dekabrskaya, 1, kv. 21; Konstantin D. Pismannik, ulitsa Butlerova, 4, korpus 3, kv. 120, both of Moscow; Alexandr I. Schegolev, ulitsa Pochtovaya, 5, kv. 17, Ivanovo, all of U.S.S.R.; Adolf Heger, Zamenhofstrasse, 9, Wohnung 404, Dresden, German Democratic Rep.; Rudolf Hanke, Rufsenbergstrasse, 7, Dresden, German Democratic Rep., and Helmar Pässler, Am. Angerstrasse, 2, Dresden, German Democratic Rep.

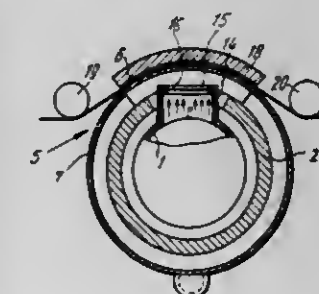
Filed Sep. 7, 1979, Ser. No. 73,376

Claims priority, application U.S.S.R., Sep. 7, 1978, 2663351

Int. Cl.<sup>3</sup> H01J 37/30; H01T 19/04

U.S. Cl. 250-492 B

4 Claims



1. A device for electron irradiation of rolled materials, comprising:

- an electron source;
- a radiation protection chamber in which said electron source is positioned, electrons emitted from said electron source passing through a slot in said radiation protection chamber;
- a rotatable drum in which said radiation protection chamber is positioned, said drum transporting said rolled materials into a zone of electron irradiation, and an outer surface of said drum having at least one opening through which electrons may pass to strike said rolled materials;
- a housing mounted on an external surface of said drum to define said zone of electron irradiation between an end wall of said radiation protection chamber and an internal surface of said housing; and
- rollers positioned on both sides of said zone of irradiation and pressing said rolled material against said drum for free entry to and exit from said zone of irradiation.

4,286,167

#### MULTI-ELEMENT X-RAY EQUALIZING FILTER

Philip D. La Riviere, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 14, 1979, Ser. No. 39,221

Int. Cl.<sup>3</sup> G21K 3/00

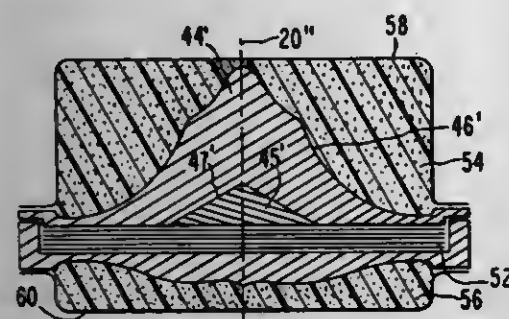
U.S. Cl. 250-510

14 Claims

1. A filter for a high-voltage X-ray beam comprising: a first filter element made of a material having a relatively low effective atomic number and



a second filter element made of a material having a relatively high atomic number, said elements being so shaped and positioned with respect to



said beam that said filter elements absorb energy in a direction-dependent manner so as to make both the intensity and the photon energy distribution substantially uniform over a useful irradiated field.

4,286,168

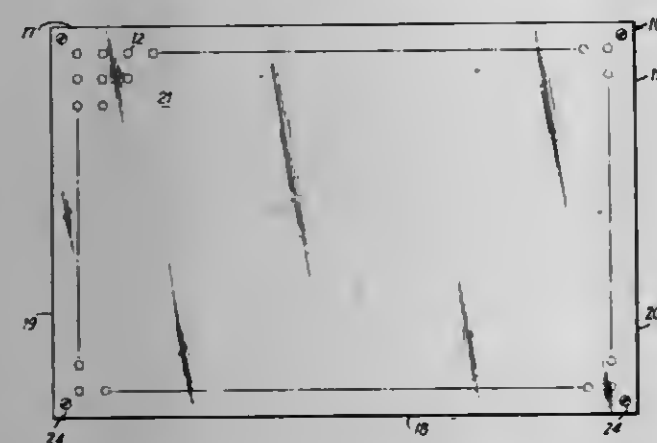
### PHANTOM SIMULATION DEVICE FOR SCINTILLATION CAMERAS

James R. Carr, Silver Spring, Md., assignor to Atomic Products Corp., New York, N.Y.

Filed Jan. 18, 1979, Ser. No. 4,337

Int. Cl.<sup>3</sup> G21K 3/00; G01D 18/00; G09B 23/28

U.S. Cl. 250-510 3 Claims



1. A phantom simulation device for gamma ray imaging cameras comprising: a generally planar base element which is substantially transparent to gamma ray penetration, and a plurality of metallic spheres supported by said base element in predetermined pattern; said base element including a pair of juxtaposed synthetic resinous sheets, said spheres being mounted within bores in the plane of one of said sheets.

4,286,169

### SCREENING DEVICE FOR A GENERATOR PRODUCING RADIO-ISOTOPES

Hendrik V. Rossem, Sint Maartensbrug, Netherlands, assignor to Byk-Mallinckrodt CIL B.V., Netherlands

Filed Oct. 22, 1979, Ser. No. 86,795

Claims priority, application Netherlands, Oct. 20, 1978, 7810503

Int. Cl.<sup>3</sup> G21C 11/00; G21F 1/00

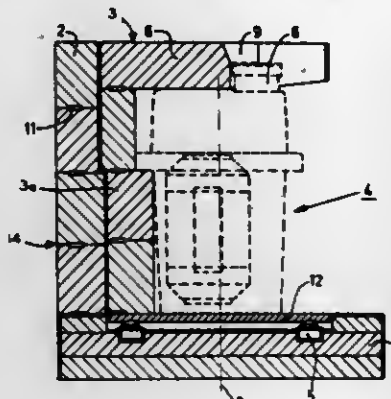
U.S. Cl. 250-515 6 Claims

1. A shielding apparatus for a radioisotope producing generator where radioisotope containing solution is produced, comprising:

(a) a stationary portion comprising a first base and a first wall extending from said first base, said first wall being of substantially semi-cylindrical cross section to provide a first opening;

(b) a moveable portion, moveable between a closed position and an open position, said moveable portion comprising a

second base moveably mounted on said first base, a top and a second wall extending between the second base and said top; said second wall being concentric with said first wall and being of substantially semi-cylindrical cross section to provide a second opening; one of said walls extending through more than 180° so that said walls overlap in the closed position of said moveable portion to insure effective shielding; said moveable portion in its



open position having said second opening aligned with said first opening to provide a passage of sufficient size for movement of the generator therethrough;

(c) said moveable portion and said stationary portion being comprised of material preventing penetration of radiation from the generator;

(d) said stationary portion and said moveable portion each including segments placed vertically one on top of the other.

4,286,170

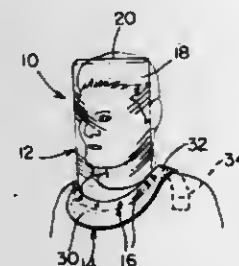
### X-RAY FACE MASK AND CHEST SHIELD DEVICE

Samuel Moti, 280 Mirabeau Pl., Grosse Pointe Farms, Mich. 48234

Filed Feb. 11, 1980, Ser. No. 120,687

Int. Cl.<sup>3</sup> H01J 35/16; G21F 3/02

U.S. Cl. 250-520 20 Claims



1. An improved device for shielding and protecting a person against secondary or scatter radiation to the face, head and neck, and to be worn on the shoulders of such person, wherein the improvement comprises

a face mask of a relatively clear substantially transparent lead containing radiation shielding material and having a facing side and lateral rearwardly extending portions covering the front and at least a portion of the sides of the wearer's face, head and neck, said face mask having upper and lower margins,

a chest shield of a lead-containing rubber or plastic sheet radiation shielding material having

a medial web portion to lie upon the wearer's chest closely adjacent and below said face mask, and distal shoulder strap portions extending from the ends of said web portion to lie upon the wearer's shoulders,

and means securing said chest shield to said face mask to form a unitary radiation shielding device.

4,286,171

### OPTOELECTRIC CROSS-POINT SWITCH

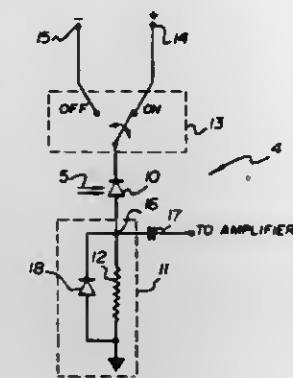
Elmer H. Hara, and R. Ian MacDonald, both of Ottawa, Canada, assignors to Canadian Patents & Dev. Ltd., Ottawa, Canada

Filed Mar. 5, 1979, Ser. No. 17,722

Int. Cl.<sup>3</sup> G02B 27/00

U.S. Cl. 250-551

8 Claims



1. An optoelectronic switch comprising:

a photosensing diode for converting an optic signal to an electronic signal; and

bias means connected to the photosensing diode for selectively reverse biasing the photosensing diode to render the photosensing diode responsive to an optical signal or forward biasing the photosensing diode for rendering the photosensing diode substantially nonresponsive to an optical signal.

4,286,172

### SAFETY JUMPER CABLES

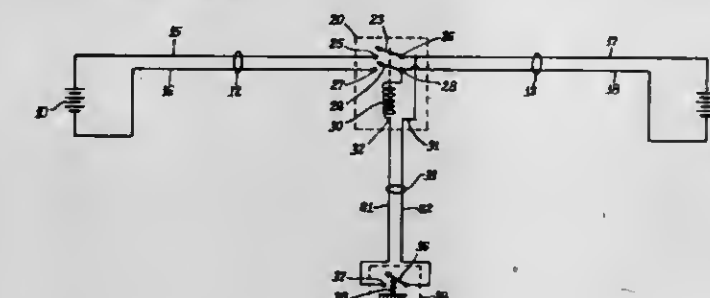
Anthony B. Millonzi, 1427 Jackson, River Forest, Ill. 60305, and Joseph C. Millonzi, 4948 N. Neva, Chicago, Ill. 60656

Filed Oct. 9, 1979, Ser. No. 82,915

Int. Cl.<sup>3</sup> H02J 7/34; H02G 11/00

U.S. Cl. 307-10 R

1 Claim



1. In a jumper cable for use in connecting a relatively weak twelve volt battery in a first automotive vehicle with a relatively strong twelve volt battery in a second automotive vehicle and comprising elongated wire means having clips at each end for engaging the battery terminals of the respective batteries, the improvement comprising:

a relay comprising normally open contact means for completing an electrical circuit when closed and a solenoid having two connections, said contact means comprising a pair of normally open switches, said solenoid being effective when energized by twelve volt direct current to cause said contact means to close;

said wire means comprising a first pair of wires having two ends and with clips at one of said ends for connection to the battery of the first vehicle and a second pair of wires having two ends and with clips at one of said ends thereof for connection to the battery of the second vehicle, the other ends of said wires being connected to said contact means so that when said contact means is closed an electrical circuit is completed between the two batteries through said wires, a first wire of each pair of wires being connected to one of the switches and a second wire of each pair of wires being connected to the other of the switches, the other end of one of the second pair of wires being

connected to one of the solenoid connections, each pair of wires being approximately of equal length whereby the relay will be located intermediate the vehicles;

a normally open, momentary contact switch having two connections and being of a size suited for holding in a person's hand; and

a two wire cable comprising a first wire connecting the other of the solenoid connections with one of the momentary contact switch connections, and a second wire of said cable connecting the other of the momentary contact switch connections with the other end of the other wire of the second pair of wires;

whereby while said clips are being connected to the batteries and said relay solenoid is de-energized an electrical circuit between the batteries will not be completed, and after said clips are all connected to the batteries said solenoid can be energized by closing said momentary contact switch with any spark that then occurs being at the relay or the momentary contact switch and thus remote from the batteries.

4,286,173

### LOGICAL CIRCUIT HAVING BYPASS CIRCUIT

Yuichi Oka, and Yosimitsu Takiguchi, both of Hadann, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

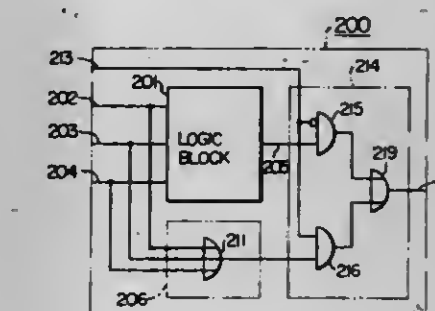
Filed Mar. 22, 1979, Ser. No. 22,949

Claims priority, application Japan, Mar. 27, 1978, 53-34199; Jul. 14, 1978, 53-85101

Int. Cl.<sup>3</sup> H03K 19/00, 17/00, 13/32

U.S. Cl. 307-440

15 Claims



1. A logical circuit comprising:

circuit means for performing logical functions including input means for receiving input signals;

selection means coupled to said circuit means for selecting input signals applied thereto in response to selection signals; and

transmission means for transmitting signals from said input means to said selection means including gate means coupling said input means to said selection means.

4,286,174

### TRANSITION DETECTOR CIRCUIT

Andrew G. F. Dingwall, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,702

Int. Cl.<sup>3</sup> H03K 17/60

U.S. Cl. 307-242

8 Claims

1. The combination comprising:

an input terminal adapted to receive input signals having a first or a second value;

a first point of operating potential;

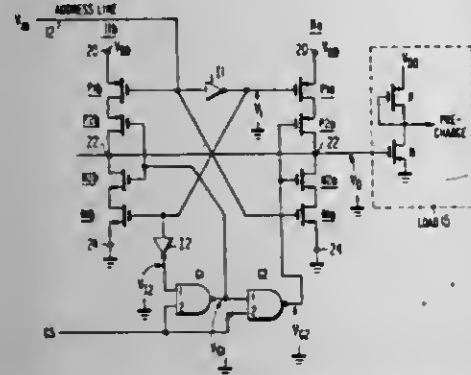
an output point;

first and second signal paths connected in parallel between said first point and said output point; each path including first and second switching means and each path providing a relatively low impedance path between said first and output points when its two switching means are enabled; and



means coupled between said input terminal and said first and second switching means of said first and second signal paths responsive to the signal at said input terminal for:

(a) enabling said first switching means of said first path and disabling said first switching means of said second path for one value of input signal and disabling said first switching means of said first signal path and enabling said first



switching means of said second signal path for the other value of input signal; and

(b) disabling the second switching means of each signal path a first time delay after the first switching means of that path is enabled, and enabling the second switching means of each signal path a second time delay after the first switching means of that path is disabled.

4,286,175

## VMOS/BIPOLAR DUAL-TRIGGERED SWITCH

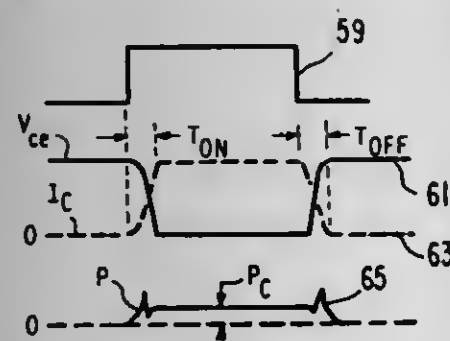
Richard H. Baker, Bedford, Mass., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 21, 1979, Ser. No. 40,989

Int. Cl.<sup>3</sup> H03K 17/04, 17/06, 17/60, 17/687

U.S. Cl. 307—581

37 Claims



1. A switching circuit, comprising:

a power terminal for receiving a first operating voltage;

bipolar switching transistor means having a collector electrode connected to said power terminal, an emitter electrode for receiving a source of reference potential, and a base electrode for receiving a control current;

a first terminal for receiving a first control signal;

programmable current supply means connected between said first terminal and the base electrode of said bipolar switching transistor means responsive to said first control signal having a first level of voltage, sequentially (1) initially supplying current of sufficient magnitude to said base electrode and turning on said transistor means at least into an unsaturated conduction state, (2) a predetermined time thereafter increasing the magnitude of current being supplied to said base electrode to further drive said transistor toward saturation, depending upon the characteristics of a load being driven by said circuit, for minimizing the power dissipation of said transistor means thereafter said current supply means is responsive to said first control signal having a second level of voltage for (3) reducing the magnitude of current being supplied to said base electrode a sufficient amount for ensuring said transistor means is

placed into an unsaturated conduction state, and (4) a predetermined time thereafter further reducing the magnitude of current being supplied to said base electrode to substantially zero, for turning off said transistor.

#### 4,286,176 COMPARATOR WITH HYSTERESIS FOR INTERFACING WITH A GROUND-REFERENCED A.C. SENSOR

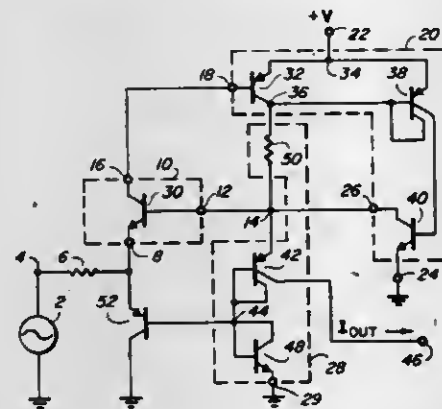
Robert B. Jarrett, and Wilson D. Pace, both of Tempe, Ariz., assignors to Motorola, Inc., Phoenix, Ariz.

Filed Apr. 16, 1979, Ser. No. 30,672

Int. Cl.<sup>3</sup> H03K 5/08, 5/00

U.S. Cl. 307—261

8 Claims



1. A circuit suitable for detecting transitions of an A.C. signal having a voltage which oscillates about a reference potential, the circuit providing hysteresis-type switching action and providing a symmetrical output waveform, the circuit comprising:

- input means including an input terminal for receiving the A.C. signal, a control terminal coupled to a control node for receiving a control voltage, and an output terminal for providing a first output signal, said input means being responsive to the A.C. signal voltage and to the control voltage such that the first output signal is enabled upon the A.C. signal voltage being different from the control voltage by a first predetermined amount;
- feedback means having an input terminal coupled to the output terminal of said input means and having an output terminal coupled to the control node, said feedback means being responsive to the first output signal for switching the output terminal of said feedback means between a first state and a second state, the first state being effective to render the control voltage at the control node substantially equal to the reference potential;
- bias means coupled to the control node for establishing the control voltage at the control node at a bias voltage whenever the output terminal of said feedback means is in the second state, the bias voltage being different from the reference potential by substantially twice the first predetermined amount;
- clamping means coupled between the input terminal of said input means and a source of the reference potential for restricting the voltage of the A.C. signal from being different from the reference potential in excess of a second predetermined amount; and
- circuit output means electrically coupled to said control node and having a symmetrical output signal thereon having a first level when said output terminal of said feedback means is in said first state and having a second level when said output terminal of said feedback means is in said second state.

4,286,177

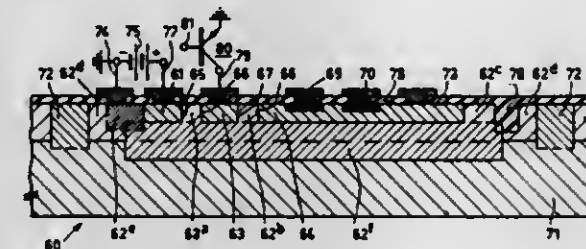
## INTEGRATED INJECTION LOGIC CIRCUITS

Cornelis M. Hart, and Arie Slob, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y. Continuation of Ser. No. 674,065, Apr. 5, 1976, abandoned, which is a continuation of Ser. No. 505,663, Sep. 13, 1974, abandoned, which is a continuation of Ser. No. 253,348, May 15, 1972, abandoned, Ser. No. 653,131, Jan. 28, 1976, Pat. No. 4,056,810, and Ser. No. 653,472, Jan. 29, 1976, Pat. No. 4,078,208, each is a division of Ser. No. 505,663, Sep. 13, 1974, abandoned. This application Feb. 9, 1978, Ser. No. 876,219 Claims priority, application Netherlands, May 22, 1971, 7107040

Int. Cl.<sup>3</sup> H01L 27/02; H03K 19/091

U.S. Cl. 307—296 R

47 Claims



1. A monolithic integrated circuit comprising:

a common semiconductor body provided with a plurality of bipolar transistors adjacent a major surface thereof and each including outer zones and a first type conductivity surface medial active zone making rectifying contact with said outer zones and forming at least three successive active zones through which current can be caused to flow when appropriately biased,

biasing means to cause current flow through the transistors, said biasing means including at least one first type conductivity current injecting elongated surface zone with at least one elongated edge separate from the transistor active zones, said biasing means also including an adjacent zone forming a rectifying junction with said current injecting zone, said current injecting zone being spaced laterally from medial active zones of plural transistors by a common separating intermediate body surface region of second opposite-type conductivity, and means for forward biasing said rectifying junction so as to cause the injection of carriers into said adjacent zone and the collection of carriers by the medial active zones of said plural transistors and via vertical facing sides thereof, thereby tending to cause a rectifying junction between the medial active zones and an adjacent active zone of said transistors to become forward biased tending to produce current flow through said transistors' active zones,

means for reducing carrier injection by the said medial active zones back into the separating region thereby to increase the current amplification factor of said transistors, said carrier injection reducing means comprising at least one generally comb-like surface zone of second type conductivity forming part of the separating region and having a second-type-forming dopant concentration higher than that of an adjoining portion of the separating region and also higher than the first-type-forming dopant concentration of the said medial active zones and extending along the medial active zone sides remote from the current injecting zone and also between the medial active zones toward the current injecting zone edge and located nearer to the said edge than are the medial zones from the said edge,

and means interconnecting said transistors for initiating or utilizing their current flow.

7. A monolithic integrated circuit comprising:

a common semiconductor body provided with a plurality of semiconductor circuit elements including bipolar transistors adjacent a major surface thereof and each bipolar transistor including outer active zones and a first type

conductivity medial active zone forming at least three successive active zones through which current can be caused to flow when appropriately biased,

biasing means to cause current flow through the transistors, said biasing means including at least one current injecting zone separate from the transistor active zones and also including an adjacent zone of second type conductivity opposite said first type conductivity forming a rectifying junction with said current injecting zone, said current injecting zone being spaced from a medial active zone of at least one of the transistors by a separating intermediate body region of second opposite-type conductivity, and means for forward biasing said rectifying junction causing the injection of charge carriers into said adjacent zone and the collection of charge carriers from said separating region by a side of said medial active zone facing said adjacent zone, thereby tending to cause a rectifying junction between the carrier-collecting medial active zone and an adjacent active zone of said one transistor to become forward biased tending to produce current flow through said one transistor's active zones,

said medial active zone of said one transistor having at least one side other than said facing side and which extends transverse to said major surface,

means for reducing carrier injection by the said medial active zone back into the separating region thereby to increase the current amplification factor of said one transistor, said carrier injection reducing means comprising means substantially completely circumscribing all sides of said medial active zone, exclusive of said facing side, which are transverse to said major surface and including a surface region of insulating material inset into the body surface adjacent said at least one transverse side of the medial active zone,

and means interconnecting other circuit elements of the body with said one transistor for initiating or utilizing its current flow.

44. A monolithic integrated circuit comprising:

a common semiconductor body provided with a plurality of circuit elements adjacent a major surface thereof and each including a first surface zone of first conductivity type and a second surface zone making rectifying contact therewith, said first and second surface zones forming a region through which current can be caused to flow when appropriately biased,

biasing means to cause current flow through said regions, said biasing means including at least one first conductivity type current injecting surface zone separate from the first and second zones and nested in and forming a rectifying junction with an adjacent second conductivity type surface zone, said adjacent second conductivity type surface zone extending from said major surface into a first surface zone of at least one of said circuit elements and having a higher dopant concentration than said first surface zone, means for connecting said one current injecting surface zone and said adjacent surface zone continuously to a source of biasing potential so as to forward bias continuously the rectifying junction therebetween causing the injection of charge carriers into said adjacent surface zone and causing collection of charge carriers by said first surface zone, thereby tending to produce current flow through the region of said one circuit element,

and means interconnecting other circuit elements of the body with said one circuit element for initiating or utilizing its current flow.



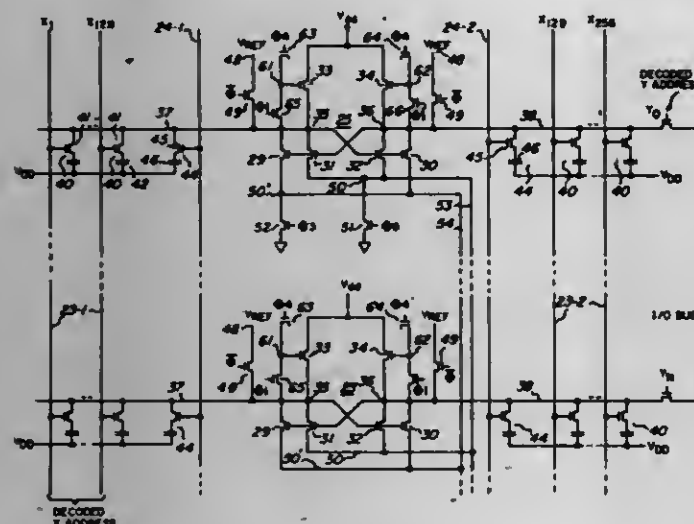
4,286,178

**SENSE AMPLIFIER WITH DUAL PARALLEL DRIVER TRANSISTORS IN MOS RANDOM ACCESS MEMORY**  
G. R. Mohan Rao, and Lionel S. White, Jr., both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 12, 1978, Ser. No. 914,646  
Int. Cl.<sup>3</sup> H03K 5/24, 3/353; G11C 7/06

U.S. Cl. 307—355

11 Claims



1. A memory system of the type having an array of rows and columns of memory cells and a plurality of sense amplifiers, the sense amplifiers having inputs connected to each column, each sense amplifier comprising first and second pairs of cross-coupled driver transistors with each of such transistors having a source-to-drain path and a gate, each of the first pair of driver transistors having one end of its source-to-drain path directly cross connected to the gates of the other of said first and second pairs, each of the second pair of driver transistors having one end of its source-to-drain path directly cross connected to the gates of the other of said first and second pairs, the gates of the opposing transistors of the first and second pairs having the same voltages thereon throughout an operating cycle of the memory system, said one ends of the source-to-drain paths of both said first and second pairs being coupled together and to said columns whereby the source-to-drain paths of the first pair of driver transistors are in parallel with the source-to-drain paths of the second pair of driver transistors, means separately connecting the other ends of said source-to-drain paths of each of the first and second pairs of driver transistors to reference potential to render the first pair conductive prior to a selected time in an operating cycle and both the first and second pair conductive after said selected time in an operating cycle.

4,286,179

**PUSH PULL SWITCH UTILIZING TWO CURRENT SWITCH CIRCUITS**

Richard R. Konian, Poughkeepsie, and James L. Walsh, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

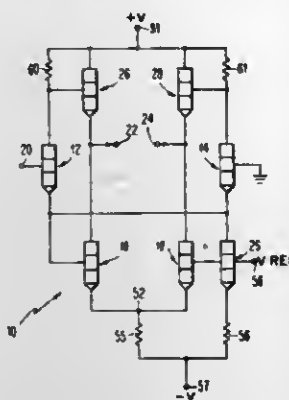
Filed Oct. 27, 1978, Ser. No. 955,551  
Int. Cl.<sup>3</sup> H03K 19/086

U.S. Cl. 307—455

5 Claims

1. A high speed current switch logic circuit comprising: first and second transistors having common emitter connections connected by a circuit means to a negative voltage source and means connecting both collectors to a positive voltage source; said circuit means including a third transistor connected between the emitter connection of said first and second transistors and said negative voltage source, said third transistor having its base connected to a voltage reference, an input connected to the base of the first transistor and means referencing the base of the second transistor

whereby said first and second transistors are operated in a current switching mode; means for connecting the emitters of fourth and fifth transistors to said negative voltage source and means connecting the collectors to said positive voltage source and to opposite sides of a load; and



means connecting the emitter of the first transistor to the base of the fourth transistor and means connecting the base of the fifth transistor to said voltage reference whereby current switching operation of the first and second transistors causes current switching operation of the fourth and fifth transistors, as well as push pull switching of power through said load.

4,286,180

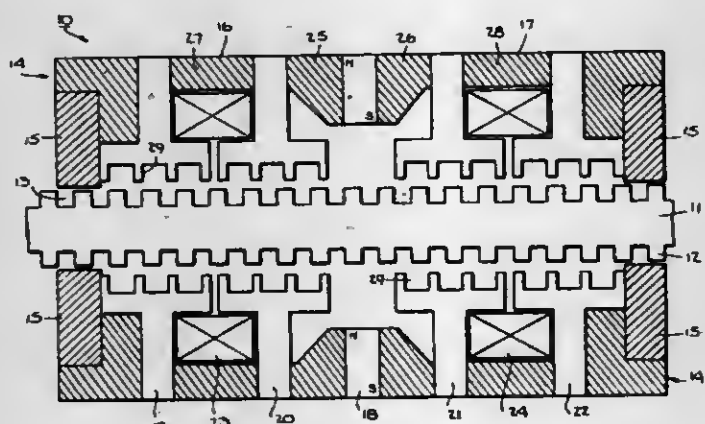
**VARIABLE RELUCTANCE STEPPER MOTOR**

Lawrence W. Langley, Christiansburg, Va., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Jul. 20, 1978, Ser. No. 926,311  
Int. Cl.<sup>3</sup> H02K 37/00

U.S. Cl. 310—12

16 Claims



1. A variable reluctance, bi-directional stepper motor comprising:

- a first member having a plurality of teeth, each of said teeth having both a pitch  $P$  and a width equal to  $P/2$ ; and
- a second member moveable relative to said first member, said second member comprising two poles, each pole having two sets of teeth, each of said teeth having both a pitch  $P$  and a width equal to  $P/4$ , the sets of teeth in each pole being offset from each other by an amount equal to  $(n \pm \frac{1}{2})P$ ,  $n$  being an integer, said poles being offset from each other by an amount equal to  $(m \pm \frac{1}{2})P$ ,  $m$  being an integer, each of said poles having associated therewith a winding adapted for connection to a direct current source, said second member having associated therewith at least one magnet.

4,286,181

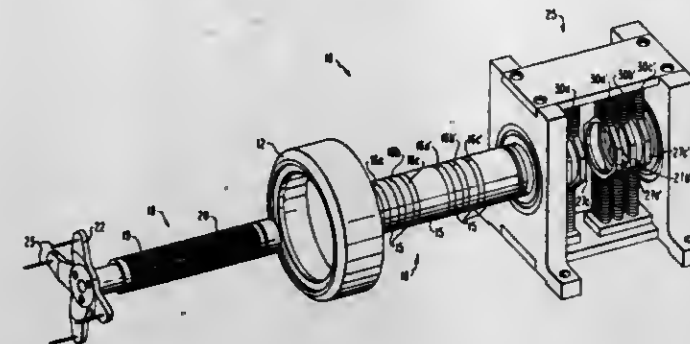
**STEPPING MOTOR FOR ROTARY DEVICE**

Adolfo M. Guzman, and Howard E. Van Winkle, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 12, 1979, Ser. No. 56,770  
Int. Cl.<sup>3</sup> H02K 37/00

U.S. Cl. 310—49 R

8 Claims



1. A stepping motor comprising:

- a frame;
  - an axially elongated armature having a plurality of spaced elongated magnetic flux-concentrating ridges extending in a predetermined direction;
  - a movably mounted ring assembly on the frame and positioned co-axially adjacent to said armature, but radially spaced therefrom, said ring assembly including a plurality of elongated ring members of magnetic material separated by spacers of non-magnetic material, the ring members being adjacent and facing said elongated ridges on said armature for magnetic interaction therewith,
  - a coil carrier of magnetic material fixedly mounted on said frame adjacent to but radially spaced from and axially aligned with each ring member respectively, and
  - an electrical coil mounted on each coil carrier;
- whereby magnetic armature-step-inducing flux may be supplied via a predetermined coil carrier by conducting current through the coil on the coil carrier thereby supplying a magnetic flux in the respective adjacent ring member, and, in turn, aligning the respective ring members and predetermined ones of said ridges on said armature.

4,286,182

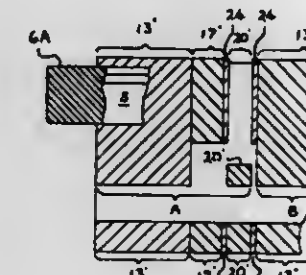
**LAMINATED ROTOR FOR A DYNAMOELECTRIC MACHINE AND METHOD OF MAKING SAME**

Henry G. Lenz, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 16, 1979, Ser. No. 95,024  
Int. Cl.<sup>3</sup> H01K 1/32

U.S. Cl. 310—61

11 Claims



1. A laminated rotor for a dynamoelectric machine having cast axial conductors, and radial ventilating ducts that extend between said conductors at axially spaced points along the conductors, comprising:

- a. a plurality of main rotor laminations each having arcuately spaced conductor slots and arcuately spaced coolant pas-

sageways, said coolant passageways being positioned radially inward from said conductor slots,

- b. a plurality of vent laminations each having arcuately spaced conductor slots and arcuately spaced vent apertures, said vent apertures each having a greater radial length than the radial length of said coolant passageways in the main conductor laminations and each vent aperture being positioned radially inward from said conductor slots,
- c. a plurality of duct laminations each having arcuately spaced conductor slots, coolant passageways and coolant duct slots, each of said coolant duct slots being positioned between a respective pair of conductor slots,
- d. a plurality of transition laminations each having arcuately spaced conductor slots and arcuately spaced vent apertures, said vent apertures being positioned radially inward from said conductor slots,
- e. all of said laminations being stacked to form a laminated rotor having a plurality of sets of laminations, at least one of said transition laminations being positioned in the stack between each of said sets, each of said sets comprising a group of said main rotor laminations stacked next to a group of said vent laminations and at least one transition laminations stacked between said group of vent laminations and a group of duct laminations,
- f. the longitudinal axes of the conductor slots in all of said laminations being in substantial alignment, and all of said coolant passageways being generally aligned and in overlapping relationship with the vent apertures in said vent laminations and the transition laminations, and
- g. a plurality of cast conductors positioned, respectively, in each of said conductor slots.

4,286,183

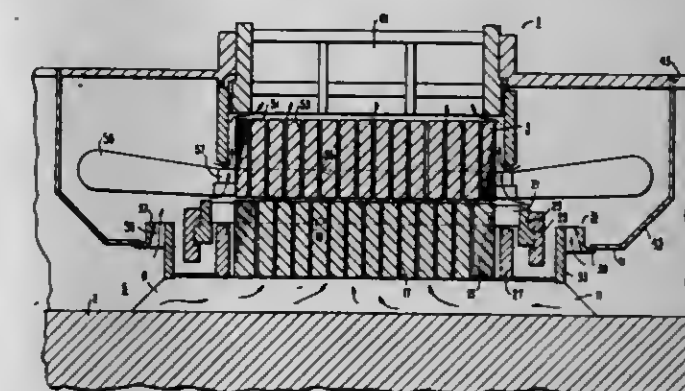
**DYNAMOELECTRIC MACHINE**

Lon W. Montgomery, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 17, 1977, Ser. No. 778,528  
Int. Cl.<sup>3</sup> H02K 9/00

U.S. Cl. 310—62

4 Claims



1. A dynamoelectric machine having

- a stator;
- a rotor;
- a shaft rotatably mounted within the stator and forming a core for the rotor;
- a spider extending radially outwardly from the shaft;
- a plurality of rotor laminations encircling the spider, the rotor laminations being arranged in groups with a space between groups and the rotor laminations having a plurality of notches adjacent their outer periphery, the notches being aligned to form axial grooves;
- rotor bars disposed in the axial grooves in the rotor laminations;
- short circuiting rings disposed on the ends of the rotor bars for electrically connecting the ends thereof;
- fan assemblies, one on each end of the shaft disposed outward and adjacent the short circuiting rings, the fan assemblies being made of austenitic stainless steel;
- a plurality of stator laminations disposed to encircle the



rotor, the stator laminations being disposed in groups with a space between groups, the stator laminations having an inner margin with a plurality of aligned notches disposed adjacent thereto to form axial grooves in the stator laminations; and  
 conductive windings disposed in the axial grooves in the stator laminations, the windings having turns which are formed, as the windings, leave one axial groove in the stator and return to another such groove, the end turns extending axially and outwardly beyond the short circuiting rings and the fan assemblies;  
 whereby when operating the isopotential lines normal to the magnetic field in the end region of the machine are more evenly distributed resulting in lower losses and reduced temperature differentials in the short circuiting rings.

4,286,184

### ELECTRONIC MOTOR HAVING A MULTI-POLE EXTERNAL ROTOR

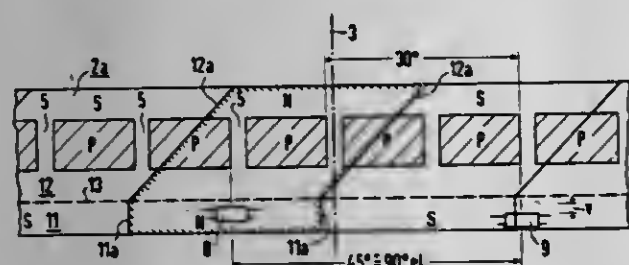
Georg Kögler; Hans Kühnlein, and Karl Schalk, all of Nuremberg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich & Berlin, Fed. Rep. of Germany  
 Filed Nov. 6, 1979, Ser. No. 91,831

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1978, 2850478

Int. Cl.<sup>3</sup> H02K 11/00

U.S. Cl. 310—67 R

3 Claims



1. In an electronic motor having a multipole external rotor comprising a magnet body having north and south poles and adapted to revolve about a rotor axis, a multislot stator fixed inside the external rotor, and at least two magnetic field sensing elements radially disposed between the magnet body and a flux return part and fixed near by the external rotor, the sensing elements furnishing signals dependent on the angular position of the rotor to an electronic commutation device for feeding current to the stator windings, the improvement comprising: the north and south poles of the external rotor being separated by neutral field lines lying parallel to the rotor axis in the region of the magnetic field sensing elements and obliquely to the rotor axis in the region of the laminated stack of the stator.

4,286,185

### OIL DRYING SYSTEM FOR MOTORS

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Filed Jun. 21, 1979, Ser. No. 50,916

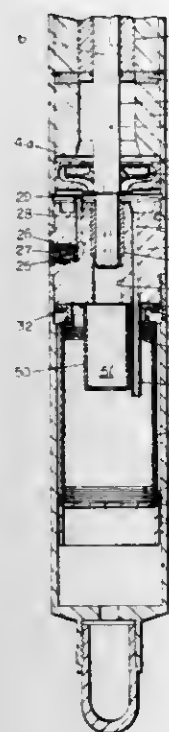
Int. Cl.<sup>3</sup> H02K 5/10

U.S. Cl. 310—87

2 Claims

1. In a submersible oil well pump having an electric motor housing insertable into the bottom of a well casing and containing a hollow rotatable shaft projecting out of the housing through a fluid seal and bearings for supporting the shaft in the housing, a closed lubricating system for the bearings in the motor housing, comprising: a lubricating oil reservoir formed in said housing and having an outlet communicating with the hollow bore in the motor shaft; a plurality of radial passages formed in the shaft communicating between the motor bearings and the shaft bore; pump means mounted on the shaft said pump means having an inlet constructed and arranged to receive spent lubricating oil flowing out of the bearings; conduit

means connecting the pressured fluid outlet of said pump means with the interior of said lubricating oil reservoir; and hygroscopic filter means disposed in said reservoir and connected in the flow path of the pressurized lubricating oil toward the bearings, whereby water is removed from the



circulating oil, said oil reservoir, pump means and all fluid passages and conduit means being initially filled with lubricating oil, and said reservoir having an expandable wall to provide increased volume for fluid leaking through the fluid seal into said reservoir.

4,286,186

### VEHICULAR ALTERNATOR END SHIELD CONSTRUCTION

Walter Hagenlocher, Stuttgart; Heinz Hesse, Gerlingen; Karl Kleebaum, Allmersbach; Christoph Kugel, and Rüdiger Sohnle, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

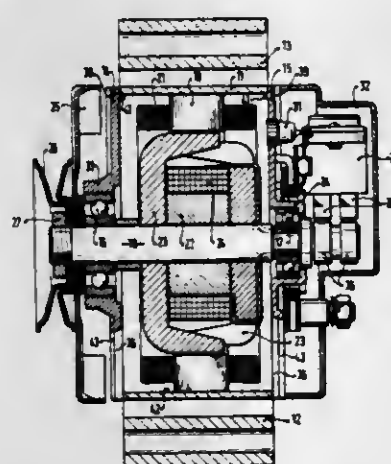
Filed Oct. 15, 1979, Ser. No. 85,116

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1978, 2845665

Int. Cl.<sup>3</sup> H02K 5/00

U.S. Cl. 310—89

7 Claims



1. Vehicular alternator construction, particularly for automotive vehicles comprising  
 a tubular housing (11);  
 a stator (19, 21) secured in the housing;  
 the rotor (22, 23, 24) having a rotor shaft (18);  
 bearings (16, 17) jouralling the rotor;  
 the end covers (14, 15) secured at respective ends of the

housing and retaining said bearings, extending transversely to the axis of rotation of the shaft;  
 at least one of the end covers being a star-shaped sheet metal structure having three arms (35) extending radially symmetrically outwardly from the axis of rotation of the shaft; the area (36) between the arms being large with respect to the area covered by the arms (35) themselves to provide a large air ingress opening for ventilating air for the machine;

a bushing-like structure formed centrally in the respective end cover (14, 15) within which the respective bearing (16, 17) is seated;

the edges of the arms and the central bushing (33, 34) being formed with an essentially right-angle projection extending from the major plane of the star-shaped sheet metal structure to form stiffening ribs along the sides of the arms and said bushing;

inwardly extending projections (41) formed adjacent the ends of the respective arms (35) of the end covers or shields (14, 15) and fitting against the inner surface (42) of the housing shell (11) for the accurate positioning of the respective end cover or shield with respect to the shell (11);

and attachment openings (37) positioned close to the ends of the respective arms (35) to permit attaching the respective end cover or shield to the housing shell (11).

4,286,187

### BEARINGLESS GENERATOR AND ROTARY MACHINE COMBINATION

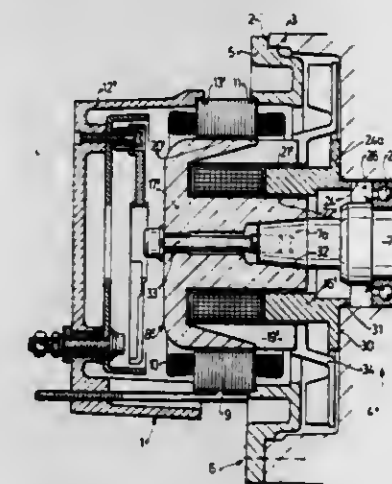
Georg Binder, Bechhofen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany  
 Filed Mar. 20, 1979, Ser. No. 22,283

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816180

Int. Cl.<sup>3</sup> H02K 5/00

U.S. Cl. 310—91

5 Claims



1. The combination of a remote machine (4) comprising  
 a housing;  
 a rotary machine shaft (7);  
 a rotary seating surface coaxial with said shaft formed on a surface portion thereof;  
 and a stationary seating surface (3) formed on the housing, concentrically positioned with respect to the axis of the machine shaft (7),

with  
 a bearingless, remotely journaled generator comprising stationary parts including  
 a frame (5);  
 a stationary engagement surface (2) formed on the frame adapted to fit against the stationary seating surface on the housing in positioned alignment;

an armature structure (9, 10) and a field structure (16');  
 and rotary parts including  
 a rotor (8, 17', 19');  
 a rotary engagement surface formed on a rotary surface

portion of the rotor adapted to interfit with the rotary seating surface on the machine shaft (7) and attaching means (33) securing said surfaces in positioned alignment, and wherein the interfitting engagement surfaces (2) of the stationary parts (5, 9, 16', 31) of the generator and the interfitting engagement surfaces (32) of the rotary parts (8') of the generator are all located at the side of the generator adjacent the housing and the shaft, respectively, of the remote machine (4),

the rotary parts of the generator being secured to and solely supported by the machine shaft (7).

4,286,188

### AMORPHOUS METAL HYSTERESIS MOTOR

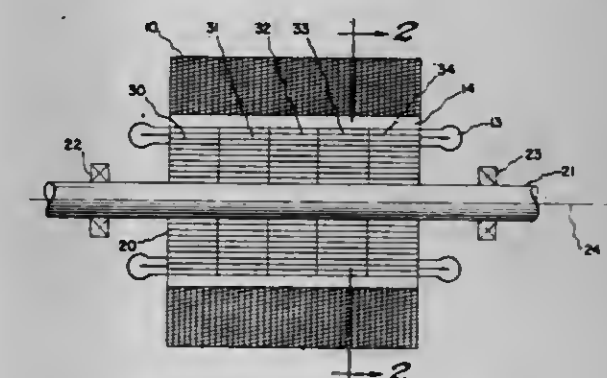
Vernon B. Honsinger, Ballston Lake, and Russell E. Tompkins, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,445

Int. Cl.<sup>3</sup> H02K 15/02, 15/10, 17/00

U.S. Cl. 310—162

6 Claims



1. A hysteresis machine comprising: a stator structure having a central opening and having a central axis and stator winding means for producing a rotating magnetic field which rotates about said central axis; and a rotor structure positioned within said central opening in said stator structure and within said rotating magnetic field and being rotatable relative to said stator structure about said central axis, said rotor structure comprising a plurality of adjacent coils of amorphous metal tape wound substantially concentrically about said axis so as to collectively define a rotating magnetic body having the hysteresis properties of a hysteresis machine rotor, each coil comprised of a plurality of turns of tape and each tape having its flat sides parallel to the rotor axis.

4,286,189

### COLOR CATHODE RAY TUBE WITH SHADOW MASK HAVING INWARDLY BENT SKIRT PORTIONS

Sachio Koizumi, and Akio Yamaguchi, both of Mobar, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

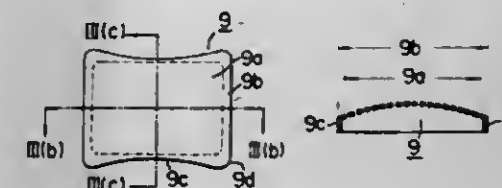
Continuation of Ser. No. 911,394, Jun. 1, 1978, abandoned. This application Feb. 20, 1980, Ser. No. 122,993

Claims priority, application Japan, Nov. 4, 1977, 52-131554

Int. Cl.<sup>3</sup> H01J 29/07

U.S. Cl. 313—402

5 Claims



1. A shadow mask type color cathode ray tube comprising:  
 an electron gun;  
 a fluorescent plane provided on an inner surface of a face plate of said cathode ray tube, said fluorescent plane forming a screen; and



an apertured shadow mask for defining points of bombardment of an electron beam on said fluorescent plane, said shadow mask being provided with a skirt portion at its periphery to give a mechanical strength to said shadow mask, wherein said shadow mask has an effective area having a predetermined radius of curvature and being convexly curved toward said fluorescent plane;

a pair of opposing sides of said skirt portion being bent in a direction toward an axis extending between the center of the effective area of said shadow mask and the electron gun with the radius of curvature thereof being substantially the same as that of the effective area of said shadow mask.

4,286,190

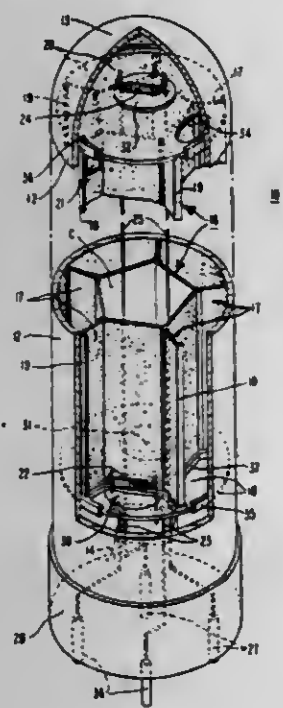
## COMPACT FLUORESCENT LAMP HAVING A PARTITIONED ENVELOPE

Robert G. Young, Nutley, and Henry Skwirut, Verona, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 26, 1979, Ser. No. 79,016  
Int. Cl.<sup>3</sup> H01J 61/16

U.S. Cl. 313-493

10 Claims



1. A low-pressure electric discharge lamp comprising; an elongated envelope of vitreous light-transmitting material that has a sealed portion and contains an ionizable medium and a pair of spaced electrodes, conductor means extending into said envelope and connected to the respective electrodes, and an elongated partition assembly within said envelope having a plurality of panel segments that define a continuous discharge channel which extends between the electrodes and longitudinally traverses the envelope a predetermined number of times in retroverted fashion, the panel segments of said partition assembly extending longitudinally along and inwardly from the walls of said envelope and being so shaped and arranged that they divide the envelope interior into a plurality of interconnected sectors and also form an elongated centrally-located chamber that constitutes the core of said partition assembly but is not part of the discharge channel, the size of the core chamber defined by said partition assembly being correlated with that of the envelope and being such that the maximum cross-sectional dimension of the core chamber at a given location is from about 25% to about 85% of the maximum cross-sectional dimension of the envelope at the same location so that the discharge is displaced outwardly toward the envelope walls as it tra-

verses the respective envelope sectors formed by the partition panel segments, one of said electrodes being disposed at a location within the envelope that is remote from the sealed portion thereof and the associated conductor means being hermetically joined to said sealed portion and extending therefrom along the core chamber of the partition assembly to said remote electrode so that said core chamber thus also serves as a conduit for said associated conductor means.

4,286,191

## DELAY LINE WITH COUPLED CAVITIES

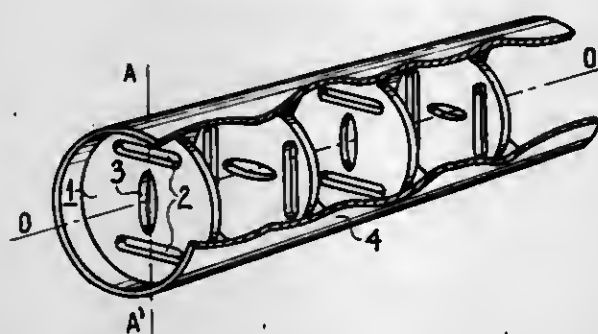
Bernard Epstein, and George Fleury, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 30, 1979, Ser. No. 44,340

Claims priority, application France, Jun. 2, 1978, 78 16552  
Int. Cl.<sup>3</sup> H01P 9/00; H01J 23/24

U.S. Cl. 315-3.6

3 Claims



1. A delay line with coupled cavities constituted by a series of resonant cavities, separated from one another by walls pierced by two cavity coupling openings, symmetrical in relation to the axis of the line, and by an opening to allow through an electron beam, which in operation of the line is focussed along the axis of the line, wherein the opening to allow through the electron beam is substantially elliptical, with the center of the ellipse located on the axis of the line and the large axis of the ellipse aligned with the axis of symmetry of the cavity coupling openings.

4,286,192

## VARIABLE ENERGY STANDING WAVE LINEAR ACCELERATOR STRUCTURE

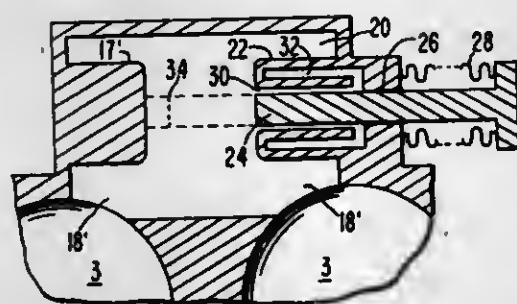
Eiji Tanabe, Sunnyvale, and Victor A. Vaguine, Palo Alto, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Oct. 12, 1979, Ser. No. 84,284

Int. Cl.<sup>3</sup> H01J 25/10

U.S. Cl. 315-5.41

12 Claims



1. In a particle accelerator, a resonant acceleration circuit comprising at least three cavities having substantially the same resonant frequencies and electromagnetically coupled in sequence, a first and third of said cavities comprising holes through their walls for passage of a beam of particles and for coupling electromagnetic energy to said beam, a second cavity coupled to each of said first and third cavities, but uncoupled from said beam, the improvement comprising: means for changing the resonant mode pattern in said second cavity to

provide a change in phase of the wave energy coupled from said first cavity to said third cavity.

4,286,193

## STARTING AND OPERATING CIRCUIT FOR GAS DISCHARGE LAMP

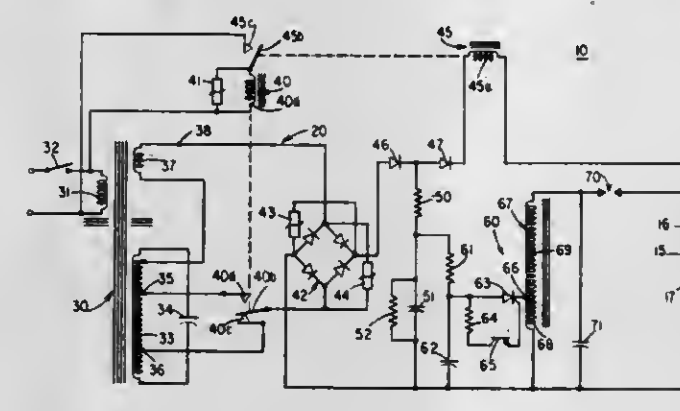
Ralph W. King, Jr., Streamwood, and Hans U. Hjermstad, Chicago, both of Ill., assignors to Johnson Electric Coil Company, Elmhurst, Ill.

Filed Feb. 12, 1979, Ser. No. 11,195

Int. Cl.<sup>3</sup> H05B 41/16

U.S. Cl. 315-175

15 Claims



9. A circuit for starting and operating a gas discharge lamp comprising power supply means connected to the lamp and shiftable between a normal starting condition for applying a relatively high DC voltage to the lamp and a running condition for applying a relatively low DC voltage to the lamp, first control means coupled to said power supply means and operable in first and second conditions respectively for shifting said power supply means to the starting and running conditions thereof, second control means coupled to said first control means and connected in series with the lamp and responsive to the lamp current for shifting said first control means to the second condition thereof in response to starting of the lamp and for shifting said first control means to the first condition thereof in response to extinguishing of the lamp, and starting means coupled to said power supply means and to the lamp and responsive only to the relatively high DC voltage when said power supply means is in the starting condition thereof for producing a transient pulse of starting voltage and applying it to the lamp for starting thereof.

4,286,194

## GENERATOR FOR USE WITH LOADS HAVING CHANGING IMPEDANCE CHARACTERISTICS

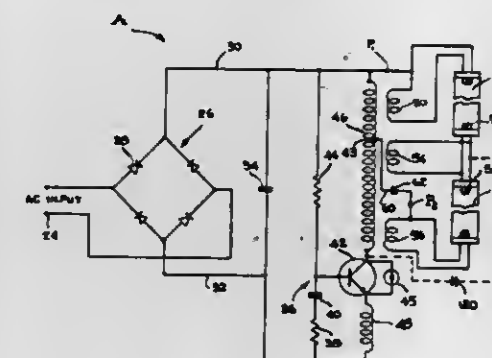
Eli H. Sherman, 12554 Havelock Ave., Los Angeles, Calif. 90066

Continuation-in-part of Ser. No. 961,976, Nov. 20, 1978, abandoned, which is a continuation of Ser. No. 857,220, Dec. 5, 1977, Pat. No. 4,129,805. This application Jun. 7, 1979, Ser. No. 45,111

Int. Cl.<sup>3</sup> H05B 41/29

U.S. Cl. 315-209 R

68 Claims



1. A generator for starting and maintaining operation of a

load which has a relatively high impedance during starting and a substantially lower impedance after starting and during operation, said generator comprising:

- power generating means for generating electrical power of a relatively high first voltage and relatively high impedance in a first mode and which is generally comparable to the impedance of said load during starting, and where the impedance of said load becomes substantially lower after starting, and said power generating means also capable of generating power of a second voltage and lower impedance in a second mode, and which second voltage is delivered from a portion of the power generating means which is different from that which delivers the first voltage, and
- capacitance operable means operatively connected to said means for generating electrical power and being operatively connectable to said load to enable generation and delivery of electrical power having a high impedance during starting of said load, said capacitance operable means being responsive to changes in the impedance of said load and causing a switching to the second mode, said power generating means capable of providing electrical power of a lower impedance generally comparable to the lower impedance of said load during the operation of said load to be delivered to said load after starting and during operation of the load, said capacitance operable means being effectively electrically switched out of a circuit relationship with said power generating means which said power generating means is switched to the second mode.

4,286,195

## DIMMER CIRCUIT FOR FLUORESCENT LAMPS

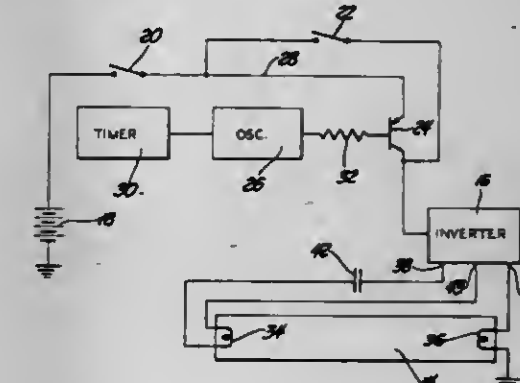
Jessie D. Swinea, Jr., Royal Oak, Mich., assignor to Vultron, Inc., Waterford, Mich.

Filed Jul. 5, 1979, Ser. No. 54,778

Int. Cl.<sup>3</sup> H05B 37/02, 39/04, 41/36

U.S. Cl. 315-224

7 Claims



- The method of dimming a fluorescent lamp comprising the steps of, producing a first pulse train of voltage pulses of substantially constant amplitude having a repetition rate and pulse duration such that the pulse train has a first predetermined average value of on-time over a time interval which includes a plurality of the DC voltage pulses, applying said first pulse train with uniform polarity across the lamp, said constant amplitude and said first predetermined average value of on-time being sufficient to start said lamp and to run said lamp at a given intensity, changing said first pulse train to a second pulse train of DC voltage pulses having an amplitude the same as said substantially constant amplitude but having a second predetermined average value of on-time over a time interval which includes a plurality of the DC voltage pulses of the second pulse train, said second predetermined average value of on-time being less than the first predetermined average value of on-time but sufficient to run said lamp at an intensity less than said given intensity to thereby dim said lamp.
- For use in controlling the intensity of a fluorescent lamp, said lamp being connected in a circuit of the type including an inverter having output terminals connected across the lamp



and having input terminals adapted to be connected with a DC voltage source, said inverter being adapted to produce a train of voltage pulses having a sufficient amplitude to start said lamp and to run said lamp at a given intensity, the improvement for reducing said intensity comprising an electronic switch connected with said inverter for inhibiting the output of said inverter when the electronic switch is actuated, and an oscillator connected with the electronic switch for periodic actuation thereof, each actuation being for a time duration small enough to maintain said lamp ionized whereby the intensity of said lamp is reduced.

4,286,196

# AUTOMATIC DIMMER CUTOFF FOR ARC LAMP OF FIBER OPTIC LIGHT SOURCE

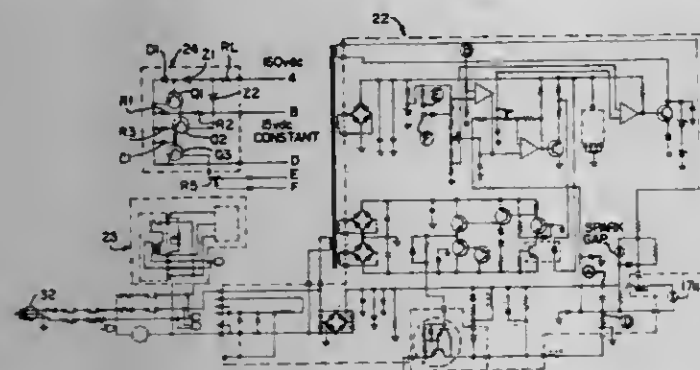
William F. Auer, 1654 E. Walnut, Des Plaines, Ill. 60016

Filed Feb. 14, 1980, Ser. No. 121,477

Int. Cl.<sup>3</sup> G05F 1/00

U.S. Cl. 315—307

7 Claims



1. A control device for initial triggering and subsequent intensity of a high intensity arc lamp having electrodes and receiving an initial high voltage to initiate ionization in the arc lamp to begin illumination, the improvement comprising: sensing and control means having current limiting and switching devices operative between on and off conditions to monitor and permit triggering of the arc lamp and subsequent illumination control of the arc lamp by a dimmer control; means connecting the sensing and control means electrically with the arc lamp to sense the electrical condition existing at the lamp electrodes; said sensing means including a first electrical path for carrying current at an initial high voltage followed by a lower voltage as the lamp begins illumination, and, a second electrical path providing a constant, lower voltage; first current control means in the first electrical path being coupled to a first switch means; a third electrical path with means connected with the first electrical path and having second current limiting means and a second switch means; means connecting the second switch means with the second electrical path carrying the constant voltage; a coupling and connecting path with means connected with the second switch means; and, third switch means with means connected with an arc lamp control resistor and with the coupling and connecting path to connect with the second switch means; whereby after initial high voltage triggering and upon initial illumination of the arc lamp at a high voltage condition, the first switch means is biased into an on condition and thereby maintains the second switch means in an off, non-conducting condition, and, after initial illumination, the voltage in the first electrical path drops and is blocked from the first switch means by the first current control means, thereby permitting the second switch means to switch to the on condition, triggered by said lower, constant control voltage and thereby developing a bias permitting the third switch means to trigger to an on, conducting condition to electrically connect the lamp dimmer

control into the circuit for adjusting the illumination of the arc lamp.

4,286,197

# TWO-COORDINATE POSITIONING DEVICE

Riessland Eberhard, Karl-Rüdich-Strasse 34, DDR-8010 Dresden; Helmut Beyer, Kurt-Schlosser-Strasse 19, DDR-8010 Dresden, and Erich Kossman, Hohe Strasse 28, DDR-8027 Dresden, all of German Democratic Rep.

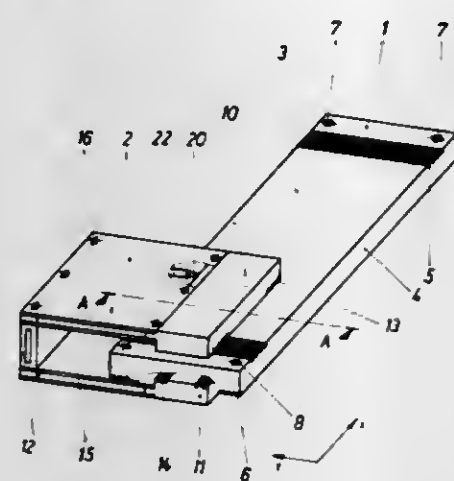
Filed Feb. 26, 1979, Ser. No. 15,283

Claims priority, application German Democratic Rep., Feb. 28, 1978, 203869

Int. Cl.<sup>3</sup> H02K 41/00

U.S. Cl. 318—38

11 Claims



1. A two coordinate positioning device comprising a passive component having a first and a second active surface spaced a fixed distance in a direction transverse to the active surfaces from each other, said first active surface having spaced ridges of magnetizable material extending in the direction of a first coordinate and said second active surface having spaced ridges extending in the direction of a second coordinate; and an active component having only two electromagnetic pole systems, one of said two pole systems having on a surface thereof engaging said first active surface of said passive component ridges of magnetizable material extending in the same direction as those on said first active surface, the other of said electromagnetic pole systems being spaced in said transverse direction from said one pole system and having on a surface thereof engaging said second active surface of said passive component spaced ridges of magnetizable material extending in the same direction as those on said second active surface, and a connecting member connecting said spaced pole systems to each other, whereby said ridges of said pole systems cooperate with those on said active surfaces to generate a relative movement of said components in the direction of one or the other of said coordinates upon imparting timed impulses to the respective pole system.

4,286,198

# DIRECT CURRENT MOTOR UNIT WITHOUT COMMUTATOR

Pierre de Valroger, Paris, France, assignor to Valbrev S.A.R.L., Paris, France

Filed May 11, 1979, Ser. No. 38,188

Claims priority, application France, May 11, 1978, 78 13999

Int. Cl.<sup>3</sup> H02P 6/02

U.S. Cl. 318—138

8 Claims

1. An electro-mechanical motor unit formed of an electronic power supply device for driving a D.C. commutatorless motor, comprising:

a stator having a plurality of driving coils for supplying power to said motor for generating an axial magnetic flux, said coils being housed in respective ferrite half-pots of axial generatrices;

at least one thin-wire control coil magnetically intercon-

ected with said plurality of driving coils and adapted for generating a variable control signal in response to operational speed of said motor;

a rotor having an axially-magnetized ring;

at least one magnetized positioning stud on said stator in a location thereof such as to bring said rotor at rest in a precise angular position relative to said stator;

a motive torque output shaft adjacent to but spaced from said rotor ring;

rotor speed responsive, centrifugal clutch means interposed

constant of said first integrating circuit being larger than the time constant of said second integrating circuit.

4,286,200

# UNIVERSAL INTERMITTENT WINDSHIELD WIPER CIRCUIT

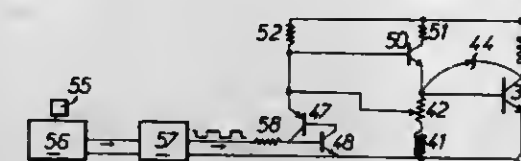
Ralph V. Brown, Cayuta, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Jun. 8, 1979, Ser. No. 47,173

Int. Cl.<sup>3</sup> H02P 1/04

U.S. Cl. 318—443

12 Claims



between said rotor and said shaft for mechanically interconnecting the same only subsequent to the starting of said rotor;

a power transistor for generating pulses of current to drive said driving coils and having a collector electrode connected to said plurality of driving coils, a base electrode controlled by said at least one control coil through a resistor; and

a Zener diode having a nominal breakdown voltage lower than the breakdown voltage of said power transistor and connected between said base and collector electrodes.

4,286,199

# HELICAL SCAN RECORDER HAVING CAPSTAN MOTOR SPEED RESPONSIVE TO A FREQUENCY OF A COMMAND SIGNAL

Yoshio Nagakubo, Kanagawa, and Masayuki Takano, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

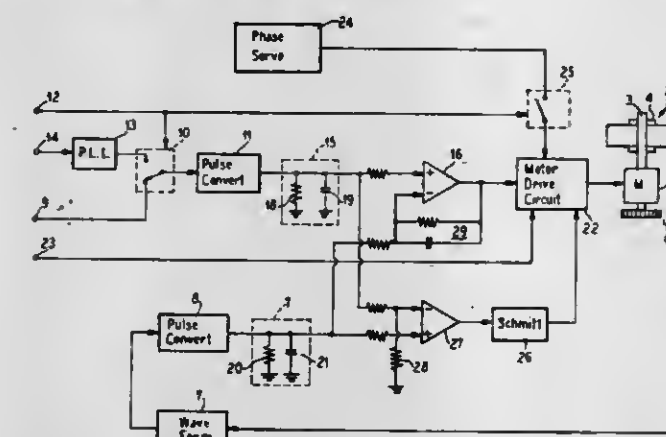
Filed Jan. 29, 1980, Ser. No. 116,586

Claims priority, application Japan, Feb. 8, 1979, 54-13607; Feb. 8, 1979, 54-13608

Int. Cl.<sup>3</sup> H02P 5/16

U.S. Cl. 318—327

2 Claims



1. A motor speed control circuit for a motor of a video tape machine operable to move the tape at normal or at search mode speeds comprising, a rotational speed generator associated with said motor and producing a series of pulses which have a pulse repetition rate indicative of the motor speed, a motor drive circuit supplying a signal to said motor, a first saw tooth wave generator receiving the output of said rotational speed generator, a first integrating circuit receiving the output of said first saw tooth generator, a phase lock loop generator, a second saw tooth generator receiving either the output of said phase lock loop or a variable frequency search command signal, a second integrating circuit receiving the output of said second saw tooth wave generator, a first comparison circuit receiving the outputs of said first and second integrating circuits on its negative and positive input terminals respectively, and supplying an input to said motor drive circuit, and the time

1. An intermittent windshield wiper circuit connectable to the windshield wiper mechanism of a vehicle to provide an intermittent mode of operation comprising: timer means, operative to be energized by the vehicle's source of electrical power for generating pulse signals at predetermined intervals; and switch means actuated by said pulse signal for switching signals between at least a first, a second, a third, a fourth, and a fifth lead, said switch means having a first state in the absence of said pulse signals and switchable to a second state in response to said pulse signals, said switch means in said first state operative to connect the vehicle's source of electrical power to said first lead, to connect said second lead to said third lead, and to connect said fourth lead to said fifth lead, and in said second state operative to connect the vehicle's source of electrical power to said second lead, connect said fourth lead to a common ground potential and wherein said first, third and fifth leads are disconnected from all other leads in said second state.

4,286,201

# AUTOMATIC PART POSITIONING SYSTEM

Carl C. Roecks, and Stuart C. Baker, both of Palos Verdes Estates, Calif., assignors to Amistar Corporation, Torrance, Calif.

Filed Feb. 21, 1979, Ser. No. 13,180

Int. Cl.<sup>3</sup> G05B 1/06

U.S. Cl. 318—640

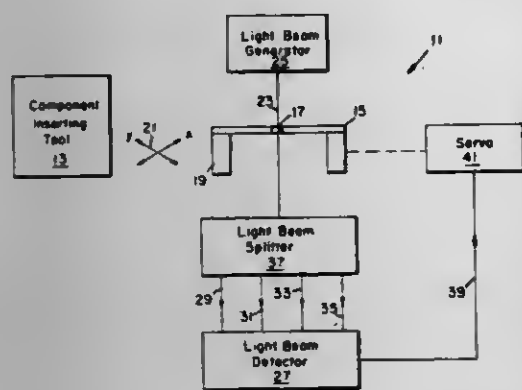
9 Claims

1. An automatic part positioning system for precisely locating, with respect to a component inserting tool, a printed circuit board and the like with at least one hole therethrough, the system comprising

a circuit board-supporting frame movable in a predetermined plane with two degrees of freedom; servo means operatively coupled to said frame for moving said frame in said plane in response to error signals; light generating means positioned adjacent one side of said frame for generating at least one beam of light toward said frame; light detecting means disposed on the side of said frame opposite said light generating means and including two pairs of light detectors, each pair lying on a different one of two orthogonal lines for producing error signals rela-



tive to the direction of said orthogonal lines when said detectors are not illuminated equally; and beam dividing means disposed between said light generating means and said light detecting means on said side of said frame opposite said light generating means and intercept-



ing light beam energy from said light generating means through said hole and directing said light beam energy toward selected ones of said light detectors, said light detectors only receiving such of said light beam energy passing through said plane.

4,286,202

## ELECTRONIC DAMPING OF STEPPER MOTOR

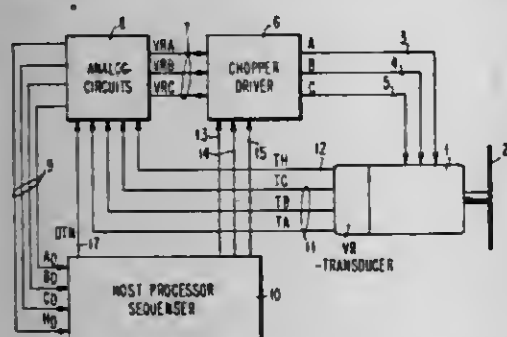
Douglas E. Clancy, Austin; Richard F. Frankeny, Elgin, and George P. Olson, Austin, all of Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 16, 1979, Ser. No. 57,777

Int. Cl.<sup>3</sup> G05B 19/40

U.S. Cl. 318-696

13 Claims



1. A method of controlling a multi phase stepper motor having a set of windings for each of its phases to provide damping and detenting of the rotor of said motor under control of a damping signal at a selected final position in alignment with one of said sets of windings selected as the detent position, said method comprising:

developing an analog feedback signal which is related to the angular velocity and position of said rotor during said damping mode, applying a unique current to each of said phase windings which is related to said analog signal in a direction to produce retardation of said rotor rotation as said rotor approaches said detent position, and applying an additional current to the phase windings of said detent phase.

4,286,203

## SLIP FREQUENCY CONTROL FOR VARIABLE SPEED INDUCTION MOTORS

Robert J. Ehret, Los Altos, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 14, 1979, Ser. No. 20,389

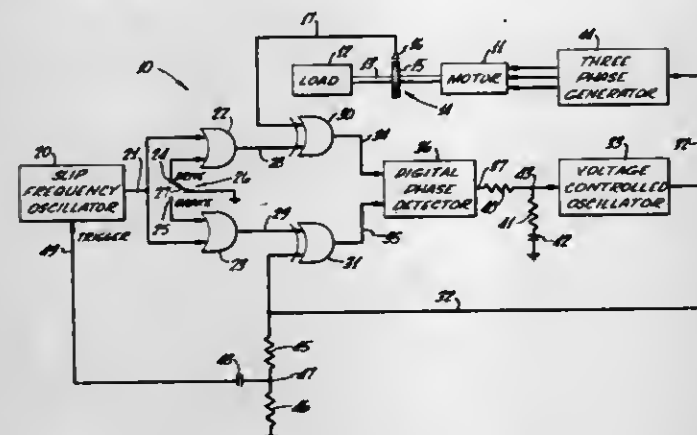
Int. Cl.<sup>3</sup> H02P 5/34, 7/42, 5/28, 5/36

U.S. Cl. 318-901

8 Claims

1. A closed-loop drive system for variable speed induction motors comprising:

means for providing a first pulse train having a frequency proportional to the actual rotational speed of said motor; means for providing a second pulse train having a frequency proportional to the desired slip of said motor; a first exclusive OR gate responsive to said first pulse train and selectively responsive to said second pulse train for providing a third pulse train having a frequency proportional to the sum of the frequencies of said first and second pulse trains during driving of said motor and proportional to the frequency of said first pulse train only during braking of said motor; means for providing a fourth pulse train; means for supplying to said motor a drive signal having a frequency proportional to the frequency of said fourth pulse train;



a second exclusive OR gate responsive to said fourth pulse train and selectively responsive to said second pulse train for providing a fifth pulse train having a frequency proportional to the sum of the frequencies of said second and fourth pulse trains during braking of said motor and proportional to the frequency of said fourth pulse train only during driving of said motor; means responsive to said fourth pulse train for triggering said second pulse train providing means to prevent pulses of said second and fourth pulse trains from having exactly coincident transitions; means responsive to said third and fifth pulse trains for providing an output signal proportional to the frequency or phase difference therebetween; and means for conducting said output signal to said fourth pulse train providing means for controlling the frequency thereof.

4,286,204

## DEVICE FOR CONTROLLING THE CHARGING OF A STORAGE BATTERY

Pierre Belot, Pavillons Sous Bois, France, assignor to Saft-Société des Accumulateurs Fixes et de Traction, Romainville, France

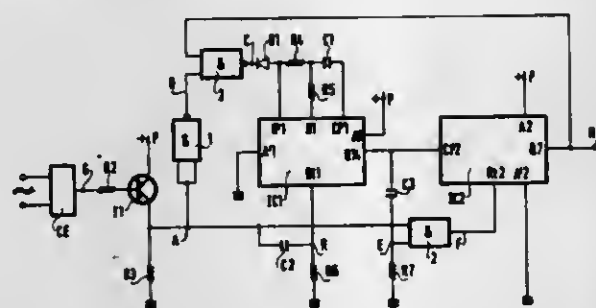
Filed Aug. 14, 1979, Ser. No. 66,384

Claims priority, application France, Aug. 30, 1978, 78 24996

Int. Cl.<sup>3</sup> H02J 7/04, 9/06

U.S. Cl. 320-31

8 Claims



1. A device for controlling the charging of a storage battery which is used for supplying emergency power when mains

current is interrupted, said device including first means for detecting when no mains current is being supplied, second means for comparing the time during which no mains current is supplied with a first predetermined period, third means for measuring a second predetermined period during which the battery is recharged at a given rate and fourth means for controlling the second and third means in response to data given by the first means, wherein:

the data given by the first means comprises a first datum corresponding to the presence of mains current and a second datum corresponding to the absence of mains current,

the second means comprises a first counter and a clock, the third means comprises a second counter connected in series with the first counter, and

the fourth means comprises

a first logic operator having inputs connected to the first means and the second counter for receiving said data given by the first means and additional data which correspond to the state of the second counter and having an output which transmits a third datum upon concurrent receipt of said second datum from the first means when the mains current is supplied and a fourth datum from the second counter corresponding to the second counter having reached a predetermined state, said output of the first logic operator being connected to the clock for allowing the clock to operate in all cases except when said third datum is being emitted;

a means for transmitting said second datum from the first means to the first counter for initiating said first counter when mains current is interrupted; and

a second logic operator having inputs connected to said first means and said first counter and an output which emits a fifth datum upon concurrent receipt of said second datum from the first means and a sixth datum which corresponds to a predetermined state of the first counter for initiating the second counter when mains current is still absent after the first counter has reached said predetermined state.

4,286,205

## INTERFACE CIRCUIT FOR STANDARD VOLTAGE REGULATORS

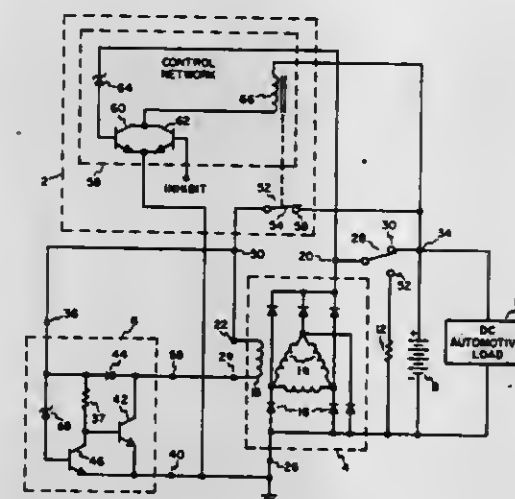
Donald L. Watrous, Liverpool, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,219

Int. Cl.<sup>3</sup> H02J 7/16

U.S. Cl. 322-8

12 Claims



1. In combination with a vehicle alternator employed to energize a standard load and battery, said alternator having a field winding coupled to a standard voltage regulator which together with said alternator provides a field current path through which flows field current that is modulated by said standard regulator for normally regulating the alternator output in accordance with a reference battery voltage, a voltage regulator interface circuit for additionally regulating said alter-

nator output in accordance with a further reference voltage so as to provide energization for an auxiliary load, comprising:

- a current control device coupled in said field current path in series with said battery and being external to said alternator and said standard regulator for providing an added control of said field current;
- switching means for selectively coupling said alternator output to said battery or to said auxiliary load; and
- control means responsive to a variable voltage that is a function of said alternator output for generating a control signal that operates said current control device, whereby an additional voltage regulation of said alternator output in accordance with said further reference voltage may be superimposed upon the normal voltage regulation of said alternator output during energization of said auxiliary load.

4,286,206

## LOAD-RESPONSIVE TREATER CONTROLLER

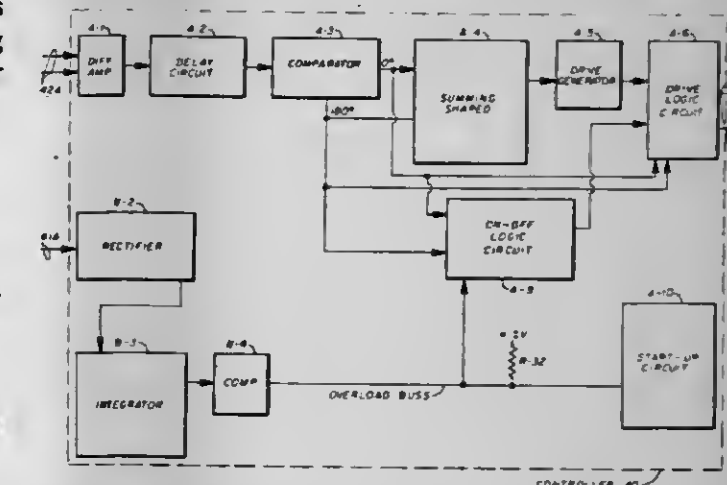
Roger K. Odom, Redwood City, Calif., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 9, 1979, Ser. No. 82,442

Int. Cl.<sup>3</sup> G05F 1/45

U.S. Cl. 323-244

10 Claims



8. A method of controlling the disconnection and reconnection of an electrical a.c. power supply to an inductive load through a solid state switch connected between the supply and load including: sampling the voltage waveform of the supply and establishing a signal representative of the waveform, detecting the zero crossing of the voltage wave form and generating square waves each of which represents zero wave crossings of the mains voltage, shifting the square waves into their relation to the supply zero voltage crossings, establishing timing reference signals at the beginning of each square wave to represent 0° zero crossing reference and at the end of the square wave to represent 180° zero crossing reference utilizing the timing reference signals to generate square waves of relatively short duration which represent each delayed zero voltage crossing, generating a chain of pulses by the square waves of relatively short duration, and actuating the solid state switch by the pulse chain in a sequence controlled by the timing reference signals to disconnect and reconnect the supply to the load, whereby the solid state switch is reconnected at that predetermined delay from the zero crossing of the supply voltage and at that polarity which will balance the residual flux remaining in the inductive load after the preceding disconnection.







conductor in response to current flow through the said conductor.

4,286,214

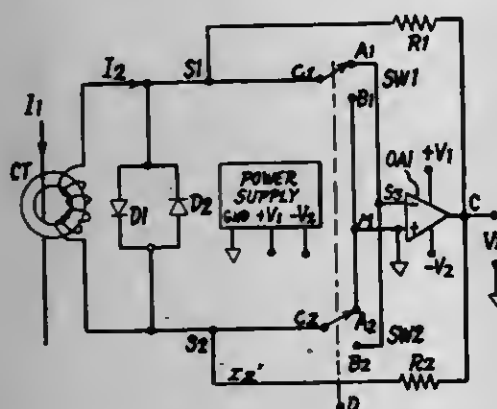
# CURRENT SENSOR FOR PHASE INVERSION-MODULATION OF AC SIGNALS

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Somersworth, N.H.

Filed May 7, 1979, Ser. No. 36,770  
Int. Cl.<sup>3</sup> G01R 27/06

U.S. Cl. 324-142

14 Claims



I. In combination:

- a low impedance current transformer having primary and secondary windings adapted for conducting primary and secondary currents respectively;
- a very low input impedance operational amplifier having first and second input terminals and an output terminal; and
- a switch, having substantially zero resistance, interconnecting the secondary winding of said current transformer with the first and second input terminals of said operational amplifier for switching the polarity of the secondary current of said current transformer between the first and second input terminals of said operational amplifier while providing a very low impedance connected across the secondary winding, resulting in a negligible potential across the first and second input terminals of said operational amplifier, and providing an output voltage from the output terminal of said operational amplifier having an amplitude proportional to the magnitude of the primary current of said current transformer and having a phase, with respect to the phase of the primary current, determined by the polarity of the current applied to the first and second input terminals of said operational amplifier by said switch.

4,286,215

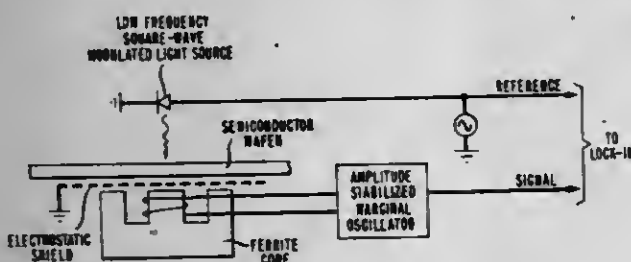
# METHOD AND APPARATUS FOR THE CONTACTLESS MONITORING CARRIER LIFETIME IN SEMICONDUCTOR MATERIALS

Gabriel L. Miller, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 18, 1979, Ser. No. 40,394  
Int. Cl.<sup>3</sup> G01R 31/26

U.S. Cl. 324-158 R

9 Claims



1. A method for contactless steady-state monitoring of mi-

nority carrier lifetime in a sample of semiconductor material, comprising

- electromagnetically coupling the sample into an inductance-capacitance resonant circuit adapted to resonate at a measurement frequency,
- intermittently illuminating, at a switching frequency substantially lower than the inverse of the minority carrier lifetime, at least part of the sample adjacent to the coupling means with electromagnetic radiation adapted to cause photoconductivity in the sample, and
- measuring the difference in measurement frequency voltage across the resonant circuit between the period of illuminating the sample and the period of nonilluminating the sample.

4,286,216

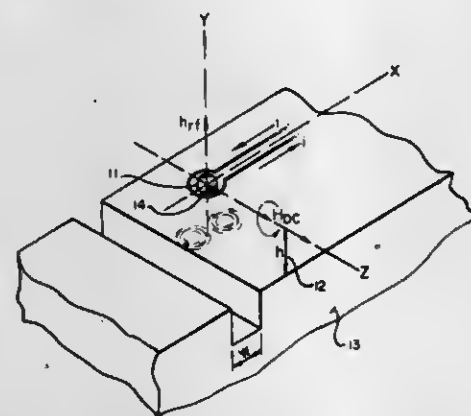
# FERROMAGNETIC RESONANCE PROBE AND METHOD FOR FLAW TESTING IN METALS

Bertram A. Auld, Menlo Park, and Gary W. Elston, Santa Clara, both of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Nov. 15, 1978, Ser. No. 961,046  
Int. Cl.<sup>3</sup> G01R 33/12

U.S. Cl. 324-237

9 Claims



1. A probe for scanning a metal surface to test for flaws in the metal surface comprising a ferromagnetic resonator, means for applying a d.c. bias magnetic field,  $H_{DC}$ , to said resonator, means for applying an rf magnetic field  $H_1$  to said resonator orthogonally to said d.c. magnetic field, and means coupled to said resonator for detecting changes in the resonant frequency of said resonator responsive to flaws in the metal surface under test.

4,286,217

# DEVICE FOR ELECTRODE-TYPE ELECTRICAL LOGGING TOOLS AND TOOL INCORPORATING SAID DEVICE

Jean Planché, Chevilly Larue; Jacques Tromelin, Longjumeau, and Daniel Vannier, Versailles, all of France, assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Feb. 1, 1979, Ser. No. 8,302  
Int. Cl.<sup>3</sup> G01V 3/20

U.S. Cl. 324-347

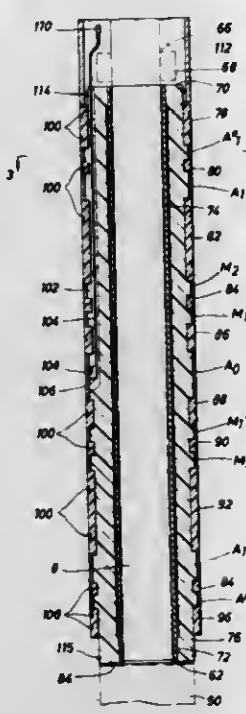
10 Claims

1. A unitized electrode assembly adapted for removable mounting, as a unit, on electrode-type electrical logging tools having a central mandrel and comprising:

- a metal tube having an internal diameter substantially greater than the external diameter of the central mandrel of the tool for which it is adapted, for freely and at least partially and removably receiving therein the central mandrel of such an electrode-type logging tool;
- first electrically-insulating means coaxially arranged on said metal tube;
- second electrode-supporting electrically-insulating means coaxially arranged on said first means;
- a plurality of longitudinally-spaced electrodes spatially ar-

ranged at spaced intervals along and supported upon said second means;

- a plurality of electrically-insulating spacers respectively arranged on said second means between said electrodes and adapted for maintaining said electrodes at selected positions thereon;



means for securing said spacers on said second means; means defining conductor passages extending between said second means and said electrodes and spacers; and conductor means in said conductor passages respectively connected to said electrodes for electrically connecting said electrodes to such a logging tool.

4,286,218

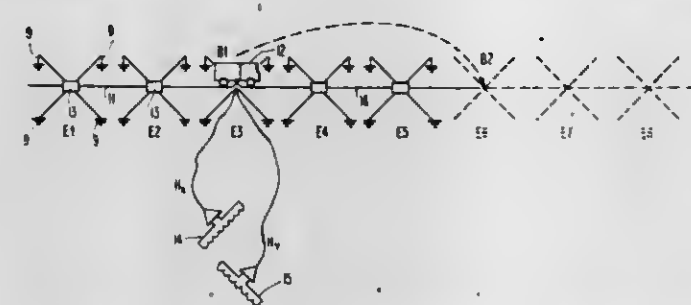
# MULTIPLE SITE MAGNETOTELLURIC MEASUREMENTS

Marvin G. Bloomquist, Arlington; Gustave L. Hoehn, Jr.; Lonnie J. Norton, both of Dallas, and Barry N. Warner, Duncanville, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 6, 1979, Ser. No. 63,491  
Int. Cl.<sup>3</sup> G01V 3/08

U.S. Cl. 324-350

9 Claims



1. A magnetotelluric exploration method comprising: measuring the earth's electric field at a plurality of locations spaced along a line of exploration; transmitting said measurements to a mobile exploration vehicle in a first direction on a cable extending to one side of said mobile exploration vehicle; recording said electric field measurements in said exploration vehicle; measuring the magnetic field of the earth in at least the area of said exploration vehicle simultaneously with the afore-said measurements of electric field; recording said magnetic field measurements in said exploration vehicle; and repeating the steps of measuring the earth's electric field at said plurality of locations transmitting said measurements

1009 O.G.—61

in the other direction to said mobile exploration vehicle on said cable and recording said measurements to obtain overlapping measurements of electric field at each of said locations.

4,286,219

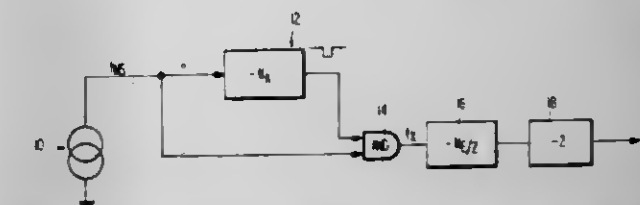
# HIGH RESOLUTION FREQUENCY SYNTHESIZER

Shanti S. Gupta, Gaithersburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Sep. 27, 1979, Ser. No. 79,603  
Int. Cl.<sup>3</sup> H03L 7/00; H03B 19/00

U.S. Cl. 328-14

8 Claims



1. A high resolution frequency synthesizer for producing a pulse train of frequency  $f_D$  comprising: an oscillator producing an output pulse train having a clock frequency of  $f_{ms}$ , a programmable divider receiving an input signal that is a function of  $f_{ms}$  and performing a division thereon in accordance with:  $[(N_E + N_R)f_D]/N_R f_D$  where,

$N_E$  is an even number higher but not exceeding  $f_{ms}/f_D$ , and  $N_R$  is the remainder of  $f_{ms}/f_D - N_E$ , either a whole number or fraction but not a negative quantity to obtain an output  $f_x$ , that is the frequency or number of bits per second which is an even multiple of  $f_D$  and means for obtaining a symmetrical waveform from  $f_x$  which is  $f_D$ .

4,286,220

# METHOD AND DEVICE FOR DISCRIMINATING DIFFERENCE FREQUENCY OF TWO PULSE TRAINS

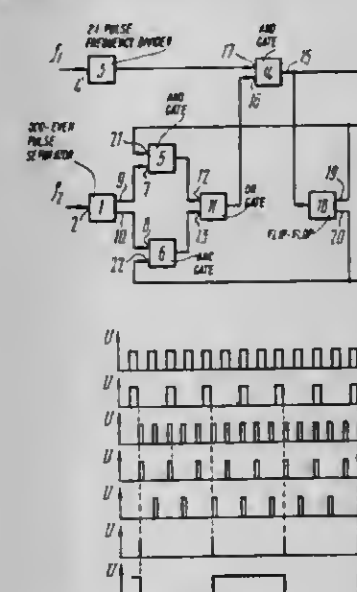
Eduard A. Zalesky, ulitsa Tashkentskaya, 130, kv. 11, and Vladimir V. Smyslyayev, ulitsa Mikhurina, 116 kv. 57, both of Kulbyshev, U.S.S.R.

Filed Jan. 29, 1979, Ser. No. 7,511  
Claims priority, application U.S.S.R., Feb. 10, 1978, 2578262; Feb. 10, 1978, 2600021

Int. Cl.<sup>3</sup> H03K 5/26

U.S. Cl. 328-133

2 Claims



1. A method of determining the frequency difference of two pulse trains, said method comprising the steps of separating the pulses of one pulse train into odd and even pulses; separating every second pulse in another pulse train; checking every second pulse of said other pulse train for coincidence with the even pulses of said one pulse train; checking, after said coincidence, every second pulse of said



other pulse train for coincidence with the odd pulses of said one pulse train;  
discriminating the sequence of said coincidences; and  
determining the frequency of the discriminated sequence of coincidence, which is the frequency difference of said pulse trains.

4,286,221

**MULTI-FREQUENCY SIGNAL RECEIVING APPARATUS**  
Kazuhiko Takaoka, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

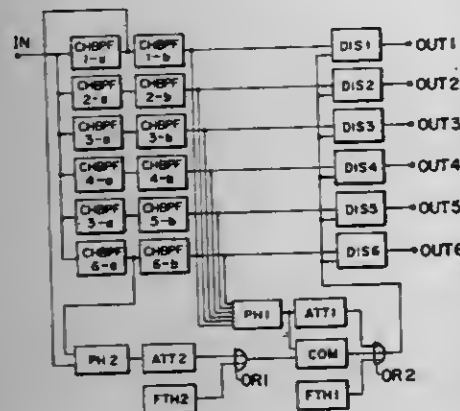
Filed Oct. 3, 1979, Ser. No. 81,359

Claims priority, application Japan, Oct. 4, 1978, 53-121543

Int. Cl.<sup>3</sup> H03K 9/06, 5/26; H04L 27/26

U.S. Cl. 328—140

6 Claims



1. A multi-frequency signal receiving apparatus which receives multi-frequency input signals, separates and selects said multi-frequency input signals comprising:  
means for separating said multi-frequency signals, said means being a plurality of channel filters for discriminating required signals out of said input signals;  
means for discriminating any predominant frequency signals out of the signals filtered by said plurality of channel filters;  
a first maximum value detecting means for detecting the maximum value of the levels of the outputs of said plurality of channel filters;  
a second maximum value detecting means for detecting the maximum value of the levels of the outputs at an intermediate stage of two channel filters which discriminate the signals at both ends of the frequency bands of said plurality of channel filters;  
a comparison means for comparing the detected values of said first and second maximum value detecting means with an appropriate weight; and  
a means for controlling the detection of said input signals in accordance with the result of comparison of said comparison means.

4,286,222

**TIMING WAVEFORM GENERATOR**

William R. Caputo, Wyckoff, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 27, 1979, Ser. No. 61,531

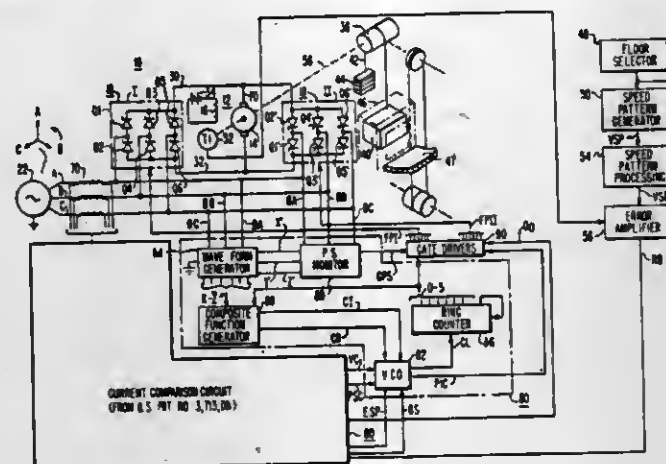
Int. Cl.<sup>3</sup> H03K 12/00

U.S. Cl. 328—155

11 Claims

1. A timing waveform generator, comprising:  
a source of alternating potential,  
transducer means providing a first sine wave signal synchronous with said source of alternating potential,  
and phase shift means providing timing waveform which lags said first sine wave by a predetermined angle,  
said phase shift means including filter means and hysteresis means, said filter means filtering said first sine wave signal to provide a second sine wave signal which lags the first sine wave signal by a first angle, with the filter means being selected such that the first angle is less than said predetermined angle, said hysteresis means generating

said timing waveform in response to said second sine wave signal, with said hysteresis means having a predetermined threshold selected to delay the timing waveform by a



second angle which is equal to the predetermined angle minus the first angle to cause the timing waveform to lag the first sine wave by said predetermined angle.

4,286,223

**WIDEBAND DIGITAL FREQUENCY DISCRIMINATOR AND PHASE AND FREQUENCY DETECTOR**

Harry D. Shearer, St. Petersburg, Fla., assignor to E-Systems, Inc., Dallas, Tex.

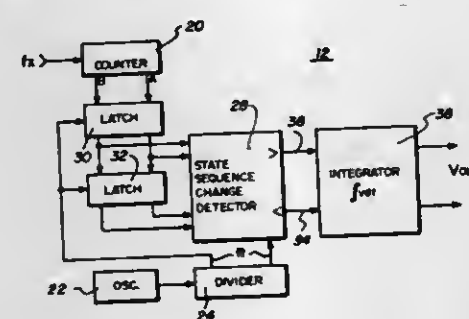
Continuation-in-part of Ser. No. 906,030, May 15, 1978,

abandoned. This application Sep. 26, 1979, Ser. No. 78,916

Int. Cl.<sup>3</sup> H03D 3/18; H03K 9/06

U.S. Cl. 329—50

37 Claims



1. A wideband digital discriminator for demodulating an FM signal comprising:

- (a) timing means for producing a reference signal of known frequency;
- (b) counting means operative at the rate of the FM signal for generating at the output thereof a cyclical signal comprising a repeated series of nonambiguous states;
- (c) means for sampling the state of the cyclical signal generated at the output of said counting means at a rate determined by said reference signal and for storing at least two consecutive sampled states of said cyclical signal; and
- (d) detection means operating at a rate determined by said reference signal and connected to receive said stored sampled states for detecting a state difference between the sampled states of said cyclical signal, said detection means generating an output signal when a state difference is detected.

4,286,224

**FM DATA DEMODULATOR INCLUDING CIRCUIT FOR ELIMINATING STEP DISTORTION**

Werner Paetsch, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

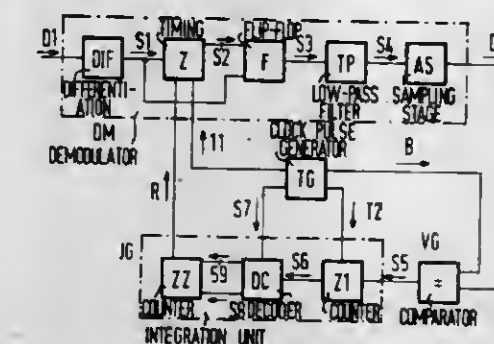
Filed Dec. 12, 1979, Ser. No. 102,669

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1978, 2854833

Int. Cl.<sup>3</sup> H03D 3/00; H03K 9/06; H04L 27/14

U.S. Cl. 329—107

6 Claims



1. A circuit arrangement for the correction of step distortions of given step frequency in a transmission of data by use of frequency-modulated data signals, comprising:  
demodulator means for comparing time durations between edges of the frequency-modulated data signals with a measuring time duration generated by a timing element in the demodulator means, said demodulator means generating filtered demodulated data signals which have step distortions as a result of frequency deviations of the frequency-modulated data signals;  
comparator means for comparing momentary values of the demodulated data signals with momentary values of reference signals generated by a clock pulse generator whose repetition rate is equal to twice the step frequency of the demodulated data signals; and  
integration means for integrating an output signal to said comparator means and emitting control signals to said demodulator means, said control signal being fed to the timing element to oppose said step distortions of the demodulated data signals by changing the measuring time duration of the timing element.

4,286,225

**ISOLATION AMPLIFIER**

William H. Morong, III, Perry, Me., assignor to Analog Devices, Incorporated, Norwood, Mass.

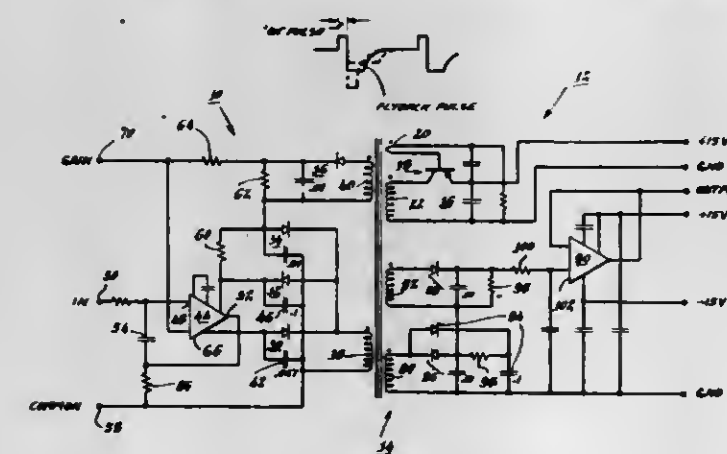
Filed Dec. 31, 1979, Ser. No. 108,540

Int. Cl.<sup>3</sup> H03F 3/38

U.S. Cl. 330—10

28 Claims

U.S. Cl. 330—254



1. An electrical signal isolator comprising:  
input and output sections;  
a transformer coupling said input and output sections;

- a first amplifier forming part of said input section to receive an input signal;
- a second amplifier forming part of said output section to develop an output signal;
- means for generating in said transformer an alternating pulse signal comprising a power pulse followed by a flyback pulse;
- first winding means for said transformer;
- a first diode/capacitor half-wave rectifier circuit forming part of said input section and coupled to said first winding means;
- said first rectifier circuit being poled to respond to said flyback pulse;
- means coupling said first amplifier to said first half-wave rectifier circuit to effect modulation of the magnitude of said flyback pulse in accordance with said input signal;
- a second diode/capacitor half-wave rectifier circuit forming part of said input section and coupled to said first winding means;
- said second rectifier circuit being poled to respond to said power pulse to produce a d-c power voltage for said first amplifier;
- a third diode/capacitor half-wave rectifier circuit forming part of said input section and coupled to said first winding means;
- said third rectifier circuit being poled to respond to said flyback pulse to develop a d-c negative feedback signal for said first amplifier;
- second winding means for said transformer separate from said first winding means;
- a fourth diode/capacitor half-wave rectifier circuit forming part of said input section and coupled to said second winding means;
- said fourth rectifier circuit being poled to respond to said power pulse to produce a d-c level shifting voltage;
- means connecting said level-shifting voltage in series with said feedback signal to provide a feedback voltage level within the operating range of said first amplifier;
- third winding means for said transformer separate from said first and second winding means; and
- diode/capacitor rectifier means coupled to said third winding means to develop an input signal for said second amplifier.

4,286,226

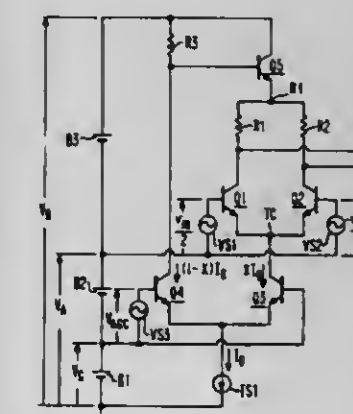
**AMPLIFIER WITH ELECTRICALLY CONTROLLED GAIN, WITH OUTPUT SUITABLE FOR DIRECT COUPLING**

Arthur J. Leidich, Raritan Township, Somerset County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 14, 1979, Ser. No. 66,335

Int. Cl.<sup>3</sup> H03F 1/30, 3/68

9 Claims



1. An amplifier with electrically controlled gain, comprising:  
first and second transistors arranged in long tailed pair connection, with a resistive load of resistance  $R_L$  to which the output electrode of the first transistor connects, means for



applying input signal between their respective input electrodes for causing an output signal across said resistive load, and a tail connection between the common electrodes of said first and second transistors;

constant current generator means for generating a current of magnitude  $I_0$ ;

third and fourth transistors arranged in adjustable current splitter configuration with the current of magnitude  $I_0$  flowing through an interconnection between their common electrodes, provision being made for a control voltage being applied between their input electrodes, the current from the output electrode of said third transistor being applied to said tail connection between the common electrodes of said first and second transistors and having a value  $xI_0$ , with  $x$  of a value depending on said control voltage and lying in a range between zero and unity (whereby the quiescent voltage across said resistive load has a component that changes proportional to  $x$  equalling  $xI_0R_L/2$ ), and the current from the output electrode of said fourth transistor changing proportional to  $(1-x)I_0$ ;

current-to-voltage converter means responsive to said current changing proportional to  $(1-x)I_0$  providing a voltage component proportional to  $(1-x)I_0$  by such scaling factor that the voltage substantially equals  $(1-x)I_0R_L/2$ , wherein said current-to-voltage converter means includes an auxiliary resistor and means for applying said current changing proportional to  $(1-x)I_0$  to said auxiliary resistor to develop thereacross said voltage substantially equal to  $(1-x)I_0R_L/2$ ; and

means for summing the voltage component appearing across said resistive load that changes proportional to  $x$  together with said voltage component proportional to  $(1-x)I_0$  to obtain an output voltage wherein output signal is superimposed on a quiescent voltage that does not substantially change due to change in  $x$ .

4,286,227

**TRANSISTOR AMPLIFYING CIRCUIT FOR PREVENTING THE OPERATION OF AN AMPLIFYING TRANSISTOR IN THE QUASI-SATURATION REGION**  
Tetsuo Sato, Fussa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

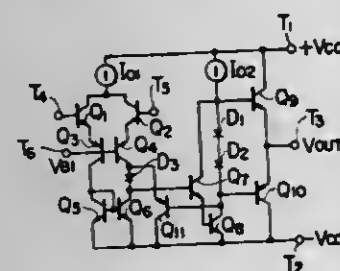
Filed Jan. 26, 1979, Ser. No. 52,206

Claims priority, application Japan, Jan. 24, 1978, 53-89450

Int. Cl.<sup>3</sup> H03F 3/45, 3/18, 1/42

U.S. Cl. 330-255

9 Claims



1. A transistor circuit comprising:

- a first transistor;
  - a second transistor of the same conduction type as said first transistor;
  - a third transistor of the opposite conduction type to said first transistor and having its collector connected to the emitter of said first transistor; and
  - level-shift diode means;
- said first transistor and said second transistor being connected with each other in a Darlington circuit arrangement;
- said second transistor forming the prestage of the Darlington circuit arrangement and said first transistor forming its post-stage;

the base of said third transistor being connected to the collector of said first transistor;

the base of said second transistor being connected to the emitter of said third transistor via said level-shift diode means.

4,286,228

**FREQUENCY SPECTRUM NOISE GENERATOR**

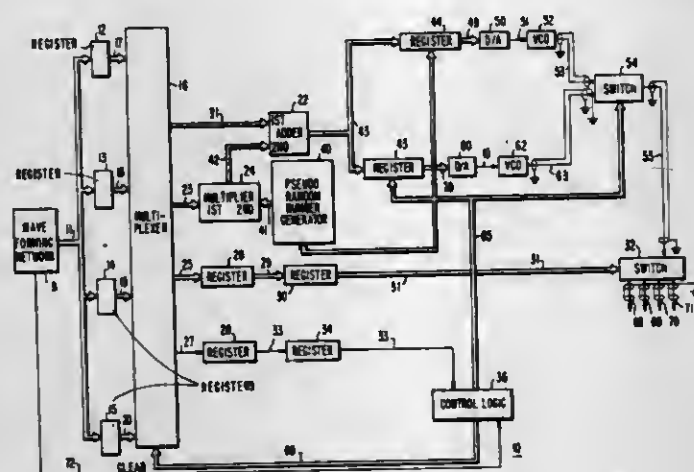
Carl D. Wise, and Vincent M. Heazel, Jr., both of Severna Park, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 31, 1979, Ser. No. 44,792

Int. Cl.<sup>3</sup> H03B 29/00

U.S. Cl. 331-49

5 Claims



1. Apparatus for generating noise comprising:

- means for generating a noise frequency spectrum represented by a sequence of discrete voltages occurring at predetermined time intervals,
- a plurality of voltage controlled oscillators, each having an output,
- first means for coupling a first discrete voltage from said sequence of discrete voltages to a first voltage controlled oscillator to provide a first frequency at said output in response to said first discrete voltage during a first time interval,
- second means for coupling a second discrete voltage from said sequence of discrete voltages to a second voltage controlled oscillator to provide a second frequency at said output in response to said second discrete voltage during a second time interval,
- an output terminal, and
- third means for coupling said outputs of said first and second voltage controlled oscillators to said output terminal.

4,286,229

**WAVEGUIDE STRUCTURE FOR SELECTIVELY COUPLING MULTIPLE FREQUENCY OSCILLATORS TO AN OUTPUT PORT**

Alfred R. Hislop, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 26, 1979, Ser. No. 97,454

Int. Cl.<sup>3</sup> H03B 9/14

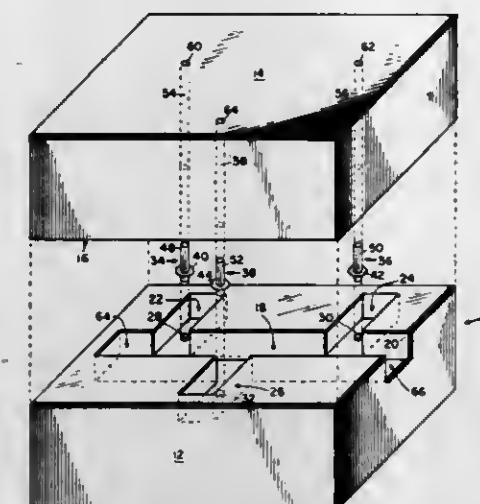
U.S. Cl. 331-49

7 Claims

1. A multiple frequency oscillator comprising:

- a waveguide housing having a waveguide cavity therein, said waveguide cavity comprising a main waveguide manifold cavity and  $n$  shunt waveguide cavities extending from said main waveguide manifold cavity; and
- $n$  oscillators each having a different center frequency of oscillation and each being mounted within one of said  $n$  shunt waveguide cavities, each of said oscillators having an on and an off condition and each appearing as a highly reactive impedance when in said off condition, each of said  $n$  oscillators being so positioned within its respective

said shunt waveguide cavity such that when each said oscillator is in said off condition, it appears as a substan-



tially open circuit at the center of said main waveguide manifold cavity.

4,286,230

**NEAR MILLIMETER WAVE GENERATOR WITH DIELECTRIC CAVITY**

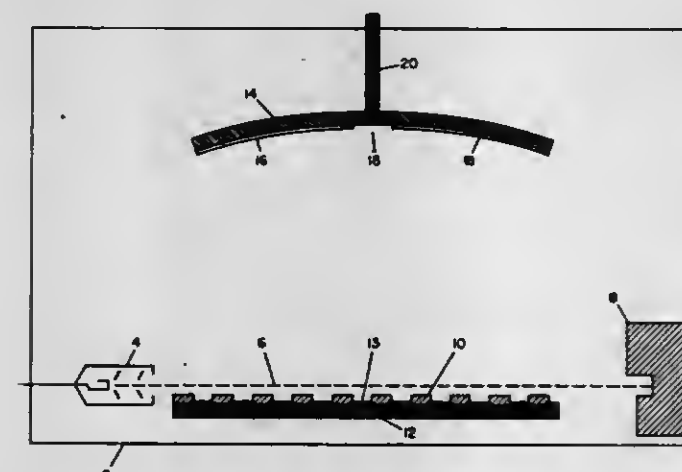
Clyde A. Morrison, Wheaton; Donald E. Wortman, Rockville; Richard P. Leavitt, Berwyn Heights, and Nick Karayianis, Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 10, 1980, Ser. No. 110,955

Int. Cl.<sup>3</sup> H03B 9/01

U.S. Cl. 331-79

8 Claims



1. Apparatus to generate radiation comprising: means to generate a beam of electrons; a diffraction grating generally adjacent the path of said electron beam; and a reflector means cooperating with said diffraction grating to set up a standing electromagnetic wave pattern through which the electron beam passes; wherein said reflector means comprises substantially only dielectric materials.

4,286,231

**SEMICONDUCTOR LASER DEVICE CAPABLE OF RADIATING A VISIBLE RAY**

Yanosuke Makita, Tokyo, Japan, assignor to Agency of Industrial Science & Technology and Ministry of Intl. Trade & Industry, both of Tokyo, Japan

Filed Nov. 28, 1978, Ser. No. 964,124

Claims priority, application Japan, Nov. 28, 1977, 52-141664

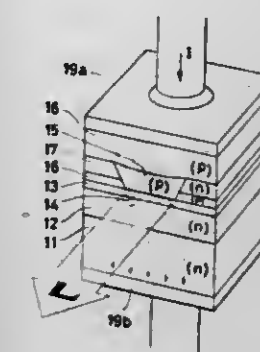
Int. Cl.<sup>3</sup> H01S 3/19

U.S. Cl. 331-94.5 H

2 Claims

1. In a semiconductor laser device capable of radiating a visible laser beam, comprising: an n-type semiconductor substrate layer; an n-type photon-carriers confining layer lying on

the substrate layer; an active layer lying on the n-type confining layer and having an active zone formed by the ion-implantation of nitrogen atoms in the form of stripe extending across the center of the active layer; a p-type photon-carriers confining layer lying on the stripe zone of the active layer; a p-n



junction reverse bias layer adjoining the opposite sides of the p-type photon-carriers confining layer; an electrode-connecting layer lying on the p-type confining layer; and a pair of electrodes, one lying on the electrode-connecting layer and the other provided on the lower surface of the substrate layer.

4,286,232

**LASER WITH DISTRIBUTED REFLECTOR**

Claude Puech; Pierre Leclerc; Baudouin de Cremoux; Pierre Hirtz, and Marie A. Di Forte, all of Paris, France, assignors to Thomson-CSF, Paris, France

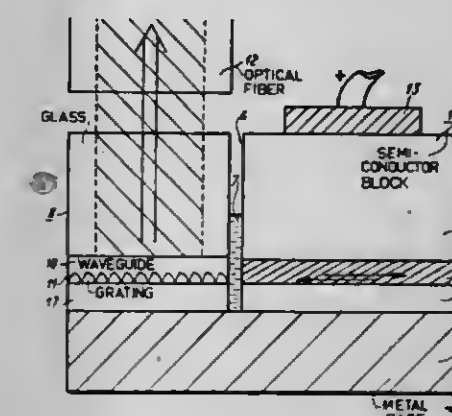
Filed Jun. 7, 1979, Ser. No. 46,316

Claims priority, application France, Jun. 9, 1978, 78 17281

Int. Cl.<sup>3</sup> H01S 3/19

U.S. Cl. 331-94.5 H

9 Claims



1. A solid state laser source comprising a base, a block of semiconductor material positioned on said base, and a further block of refringent material located on said base in a position contiguous of said block; said block comprising epitaxial layers and electrode means for forward biasing at least one active zone of one of said epitaxial layers, said further block comprising an integrated waveguide sized for collecting at one exit end of said zone the stimulated emission arising from said forward biasing and reflected from a cleaved face of said block; a grating of surface irregularities being engraved in that face of said further block wherein said waveguide is integrated; the uniform pitch of said grating being equal to one wavelength pertaining to the wavelength band of said stimulated emission; the lines of said grating being arranged parallel to said cleaved face for simultaneously providing the biasing feedback along a direction normal to said cleaved face and the light output parallel to said cleaved face.



4,286,233

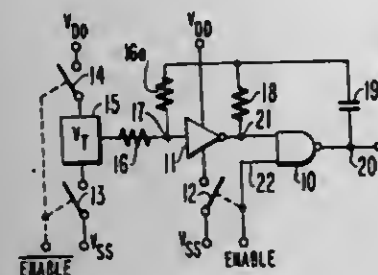
## GATED OSCILLATOR

Nicholas Kucharewski, Lebanon, and James E. Gillberg, N. Plainfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 9, 1979, Ser. No. 55,975  
Int. Cl.<sup>3</sup> H03K 3/26

U.S. Cl. 331-111

23 Claims



15. A selectively disabled or gated oscillator comprising: first and second LOGIC circuits each having a first input connection for receiving a control signal each having an output and a second input connection and characterized by exhibiting an output signal state complementary to the control signal for the control signal in a first logic state and exhibiting an output signal complementary to the signal at its second input connection for the control signal in a second logic state; means for connecting the output connections of the first LOGIC circuit to the input connection of the second LOGIC circuit; a capacitor having a first plate connected to the output connection of the second LOGIC circuit and having a second plate; means connecting the second plate of the capacitor to the input connection of the first LOGIC circuit; an INVERTER circuit having first and second nodes for application of respective relatively positive and relatively negative supply potentials thereto, having an input connected to the output connection of the second LOGIC circuit and having an output connection; switch means between at least one of the first and second nodes and its associative supply potential for interrupting application of supply potential responsive to said control signal whenever the oscillator is disabled; a resistor having a first end connected to the output connection of the INVERTER circuit and a second end connected to the second plate of the capacitor, the resistor and capacitor establishing the frequency oscillation; means for generating a potential  $V_T$ , substantially equal to the steady state d.c. potential occurring at the interconnection of the resistor and capacitor for the oscillator enabled; and means for applying the potential  $V_T$  to the interconnection of one of the first and second nodes and the switch means.

4,286,234

## MULTIVIBRATOR CIRCUIT

Richard W. Denay, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

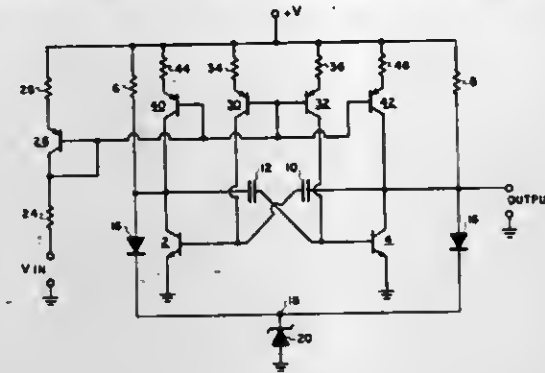
Filed Feb. 13, 1979, Ser. No. 12,056  
Int. Cl.<sup>3</sup> H03K 3/282

U.S. Cl. 331-113 R

3 Claims

1. A multivibrator circuit comprising an input circuit, a first switching transistor having a base electrode and a collector electrode, a second switching transistor having a base electrode and a collector electrode, cross-coupling means interconnecting said first and second transistors for forming a flip-flop circuit, said cross-coupling means including a first capacitor connecting said base electrode of said first transistor to said collector

electrode of said second transistor and a second capacitor connecting said base electrode of said second transistor to said collector electrode of said first transistor, a first current source means for the base electrodes of said first and second transistors, said first current source means including a third transistor connected between said base electrode of said first transistor and an energizing source



and a fourth transistor connected between said base electrode of said second transistor and the energizing source, a second current source means for said collector electrodes of said first and second transistors and, energizing means connecting said input circuit to said first and second current source means for providing concurrent energization thereof.

4,286,235

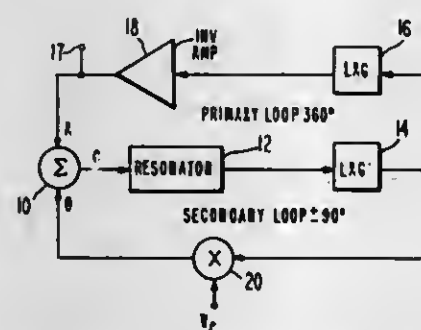
## VFO HAVING PLURAL FEEDBACK LOOPS

James A. Wilber, and Todd J. Christopher, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,826  
Int. Cl.<sup>3</sup> H03B 5/36

U.S. Cl. 331-116 R

12 Claims



1. In an oscillator of the kind comprising a piezoelectric crystal having first and second plates, a primary feedback loop coupled to said crystal for causing output signal oscillations to occur at a desired frequency and a secondary feedback loop coupled to said crystal and including a multiplier for causing variations of said desired frequency in response to a control signal manifestation, the improvement for enhancing spectral purity of the output signal and for suppressing tendencies toward overtone oscillation, said improvement comprising: a cascade connection of first (14) and second (16) 90° phase lag networks in said primary feedback loop (14, 16, 18, 10) for providing a lowpass transfer characteristic and  $\pi$  radians of phase shift in the primary loop, the first network (14) having an input coupled to said second plate of said crystal, the second network (16) having an input coupled to an output of the first network and having an output coupled to said first plate of said crystal; inverter means (18) connected in series with said second network between said output of said first network and said first plate of said crystal for imparting an additional  $\pi$  radians of phase shift to said primary feedback loop; means coupling said output of said first network (14) to a first input of said multiplier (20) whereby the first one of

said networks in said cascade connection is shared in common with the secondary loop and supplies a quadrature input signal to said multiplier; and means for deriving said output signal from the output of the second of said networks in said cascade connection.

4,286,236

## RF POWER AMPLIFIER WITH A MODULATING FACILITY

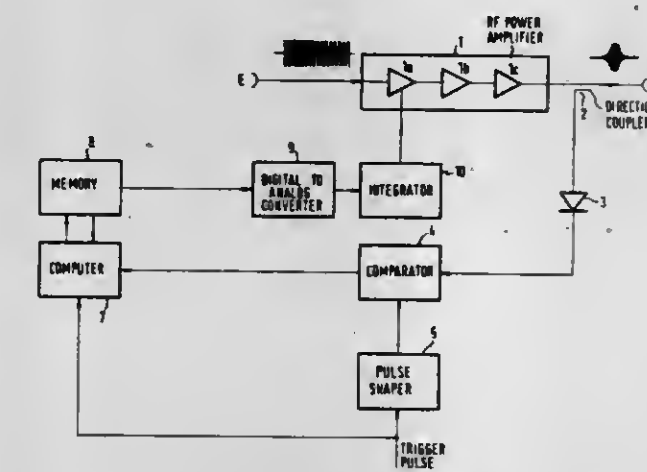
Axel Fischer, Birstadt, Fed. Rep. of Germany, assignor to International Standard Electric Corp., New York, N.Y.

Filed Aug. 2, 1979, Ser. No. 63,218  
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835751

Int. Cl.<sup>3</sup> H03K 7/00

U.S. Cl. 332-10

7 Claims



1. An RF power amplifier capable of being modulated by a pulse modulating signal having an arrangement to pre-emphasize said modulating signal so that an RF modulated output signal of said amplifier has a desired shape, said arrangement comprising:

first means coupled to said amplifier to provide said modulating signal for amplitude modulating an RF carrier coupled to an input of said amplifier, said first means including a memory storing therein a predetermined plurality of amplitude values from which said modulating signal is derived;

second means coupled to the output of said amplifier to rectify a portion of said amplifier output signal; and third means coupled to said second means and said memory to compare said rectified output signal with a reference pulse modulating signal to produce a control signal for said memory, said control signal having at least a first value when said rectified output signal is greater than said reference modulating signal and a second value when said rectified output signal is less than said reference modulating signal, said first and second values altering said stored amplitude values to provide a desired pre-emphasis for said modulating signal.

4,286,237

## WIDE RANGE DRIFT COMPENSATED FM SIGNAL GENERATOR

Jack E. James, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

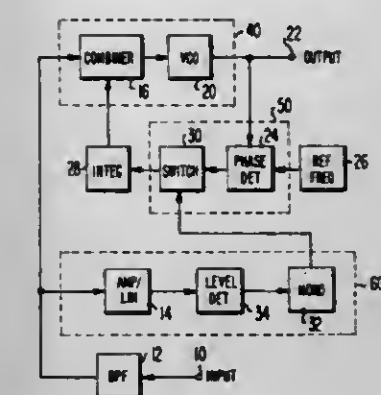
Filed Oct. 18, 1979, Ser. No. 85,869  
Int. Cl.<sup>3</sup> H03C 3/06

U.S. Cl. 332-19

11 Claims

1. An improved FM signal generator comprising a variable frequency oscillator means for producing an output signal having a frequency proportional to the amplitude of a modulating input signal and a drift compensation circuit responsive to a reference frequency signal for regulating the frequency of said oscillator means, the improvement wherein said drift compensation circuit comprises: keyed phase detector means responsive to a keying signal

supplied thereto for comparing the output frequency of said oscillator means with that of said reference signal and producing an error signal; means for integrating said error signal and applying the



resultant integrated error signal as a negative feedback signal to said oscillator means; and pulse generator means synchronized with said modulating input signal for supplying said keying signal to said keyed phase detector means.

4,286,238

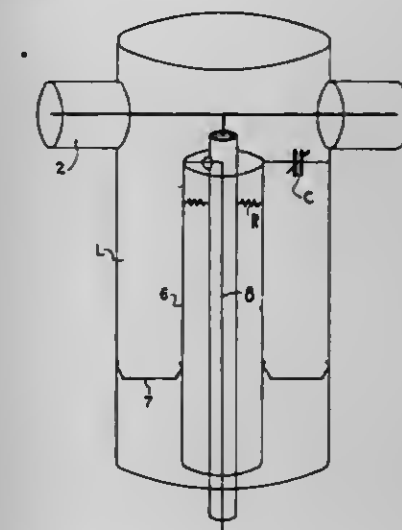
## HARMONIC FILTERING DEVICE FOR RADIO TRANSMITTER

Francois Ursenbach, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 21, 1979, Ser. No. 106,016  
Claims priority, application France, Dec. 29, 1978, 78 36958  
Int. Cl.<sup>3</sup> H01P 1/202, 1/212, 1/22

U.S. Cl. 333-206

3 Claims



1. A harmonic filtering device for a radio transmitter connected to a load by a high frequency line, said device comprising a line section having first and second lines and inserted in said high frequency line and having a first end coupled to said transmitter and a second end for being coupled to said load and  $n$  filtering cells ( $n$  being a positive integer), said cells arranged in series in said line section when  $n$  is greater than 1, wherein at least that one of said cells close to said first end is connected in parallel between said lines on said line section, comprises a circuit made of a resistor connected in series with an inductance and a capacitance connected in parallel, and includes: a coaxial line with a first and a second end, said coaxial line comprising successively, an outer conductor, a first and a second intermediate conductor and an inner conductor, each of these conductors having a first and a second end respectively forming part of the first and second end of said coaxial line; a short circuit and a capacitor each of which being arranged between said outer conductor and said first intermediate conductor to respectively determine said inductance and



said capacitance; an inner load arranged between said first and second intermediate conductors for determining said resistor; and a connection across said second intermediate conductor between the first end of said inner conductor and said first intermediate conductor for determining, with the second end of said inner conductor and the second end of said second intermediate conductor two points for measuring a voltage applied to said resistor.

4,286,239

**GAS-TIGHT, HIGH-FREQUENCY PERMEABLE WINDOW ARRANGEMENT IN A COAXIAL LINE, PARTICULARLY FOR TRAVELING WAVE TUBES**  
Franz Gross, Loerrach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

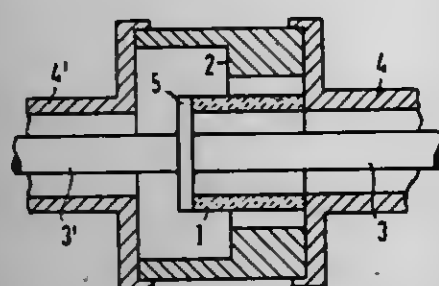
Filed Jan. 7, 1980, Ser. No. 109,805

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1979, 2907762

Int. Cl.<sup>3</sup> H01P 1/08; H01J 23/32

U.S. Cl. 333—245

5 Claims



1. A gas-tight window arrangement for connecting an input side coaxial line with inner and outer conductors to an output coaxial line with inner and outer conductors, comprising:

- a hollow cylinder of dielectric material surrounding an end portion of the input inner conductor and including a first end face connected to the input outer conductor and a second end face; and
- a flange including a first face connected to the output inner conductor and a second face connected to the input inner conductor and to said second end face of said hollow cylinder.

4,286,240

**CIRCULAR ELECTRIC MODE MICROWAVE WINDOW**  
James F. Shively, Los Altos Hills; Steven J. Evans, Mountain View; Howard R. Jory, Menlo Park, and Yosuke M. Mizuhara, Palo Alto, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 3, 1979, Ser. No. 99,768

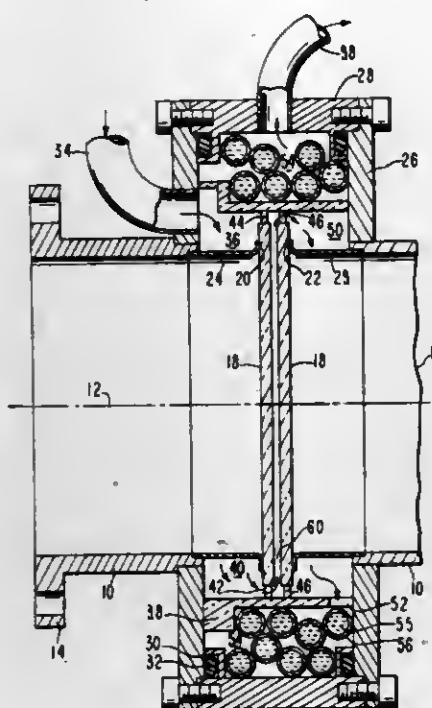
Int. Cl.<sup>3</sup> H01P 1/08, 1/16

U.S. Cl. 333—252

4 Claims

1. A window assembly for waveguide of circular and hollow cross section and having an inner conducting wall in which an axial gap is defined, comprising:
- two dielectric plates extending across said section of said waveguide, sealed to said waveguide on opposing sides of said gap;
  - means for circulating a fluid coolant through said gap and between said plates;

means external to said waveguide for containing waveabsorbing material;



and means extending outward from said inner conducting wall for connecting said gap in wavetransmitting relation with said means for containing waveabsorbing material.

4,286,241

**APPARATUS FOR MOUNTING A REED SWITCH**  
James E. Olivenbaum, Mesa, and Fritz Illgen, Tempe, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Apr. 30, 1979, Ser. No. 34,217

Int. Cl.<sup>3</sup> H01H 1/66

U.S. Cl. 335—151

13 Claims



1. Apparatus for mounting a reed switch in conjunction with microstrip circuitry having an active plane and a ground plane on a substrate, said apparatus comprising:

- (a) an elongated tubularly shaped, electrically conductive member with a longitudinal axis and designed to receive a reed switch axially therein so as to form a substantially coaxial center conductor therethrough, the dimensions of said tubular member being formed to provide an impedance substantially matching the microstrip circuitry;
- (b) grounding means affixed to said tubular member adjacent each end thereof; and
- (c) said substrate defining an opening therethrough for receiving said tubular member therein with the longitudinal axis thereof lying approximately in the active plane of the microstrip circuitry and said grounding means positioned in contact with the ground plane.

4,286,242

**MECHANICAL INTERLOCK FOR LOW VOLTAGE CIRCUIT BREAKERS**

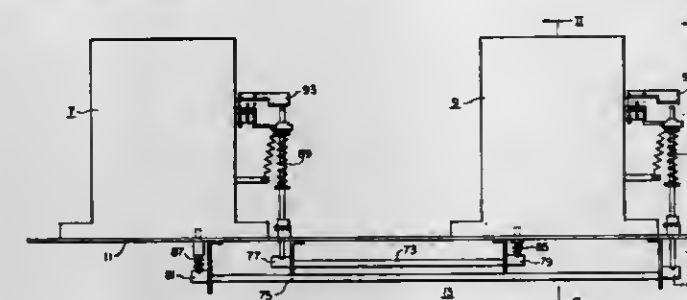
Stephen A. Mrenna, Brighton Township, Lawrence County; Alfred E. Maier, Chippewa, and Glenn R. Thomas, Brighton Township, Lawrence County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 17, 1979, Ser. No. 75,766

Int. Cl.<sup>3</sup> H01H 33/46

U.S. Cl. 335—160

4 Claims



1. An electric control system comprising at least two control devices in spaced adjacent positions and a mechanical interlock, each control device comprising movable contact means and a stationary contact structure, a movable contact carrier movable between open and closed positions of the contacts, operating means releasable from a latched position to effect opening of the contact arm means, trip means operable between latched and unlatched conditions and biased in the unlatched condition for releasing the operating means, the mechanical interlock comprising first and second link means for preventing the contacts of both control devices from being closed simultaneously, the first link means extending between the contact carrier of one control device and the trip means of the other control device, the second link means extending between the contact carrier of the said other control device and the trip means of said one control device, the first link means holding the trip means of said control device in the unlatched condition when the contact carrier of the other control device is in the closed position, and the second link means holding the trip means of said other control device in the latched condition when the movable contact carrier of said one control device is in the open position.

4,286,243

**ELECTRICAL SWITCH CONSTRUCTIONS AND METHODS OF MAKING THE SAME**

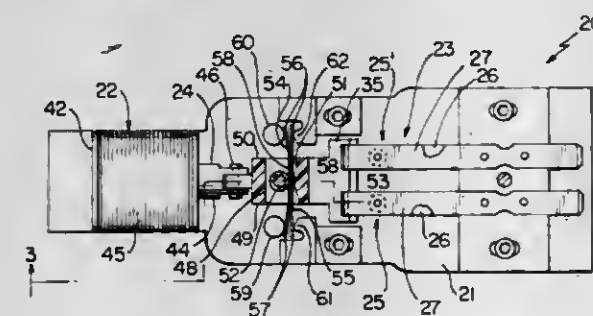
Werner R. Bauer, Radnor, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 1, 1979, Ser. No. 80,573

Int. Cl.<sup>3</sup> H01F 7/12; H01H 3/60

U.S. Cl. 335—193

50 Claims



1. In a switch construction having support means carrying switch contact means and an electrical coil means that has an armature means operatively associated with said switch contact means to cause a switching operation therewith when said coil means is energized to attract said armature means from a first position thereof to a second position thereof relative to said coil means, the improvement comprising mechanical spring means operatively associated with said armature means to continuously resist said movement thereof from said first position to said second position with an increasing force that overcomes the increasing pull in force of said energized coil means on said armature means before said armature means reaches its zero gap with said energized coil means whereby said spring means prevents said armature means from reaching its said zero gap and thereby causes said switch construction to be relatively noiseless in the operation thereof.

4,286,244

**ELECTROMAGNETIC ACTUATOR FOR A LATCH RELAY**

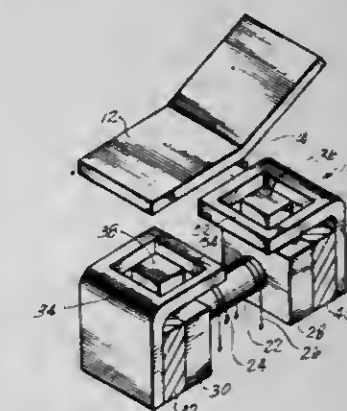
John C. Schuessler, West Covina, and David J. Tapp, Manhattan Beach, both of Calif., assignors to Leach Corporation, Los Angeles, Calif.

Filed Feb. 29, 1980, Ser. No. 126,111

Int. Cl.<sup>3</sup> H01F 7/08

U.S. Cl. 335—230

8 Claims



1. A latch relay comprising: an electromagnet having a pair of spaced pole members, an elongated armature, means pivotally supporting the armature for angular movement about a central axis, the pole members of the electromagnet projecting toward the armature respectively on either side of the pivot axis, whereby rotation of the armature moves one end of the armature toward one pole member and away from the other pole member, and first and second permanent magnets each having a pair of spaced pole members, one of the pole members of each of the permanent magnets being common with respective pole member of the electromagnet, the other pole member of each of the permanent magnets having a first portion projecting toward the armature adjacent the end of the armature and a second portion extending perpendicular to the first portion toward the pivot axis, the second portion of said other pole member of both permanent magnets having an opening therein through which said one pole member of the permanent magnet projects.

4,286,245

**MAGNETIC ROTARY FILE**

Gloria J. McGannon, 2797 Stevens St., Oceanside, N.Y. 11572  
Continuation of Ser. No. 721,055, Sep. 7, 1976, abandoned. This application Jun. 15, 1977, Ser. No. 806,954

Int. Cl.<sup>3</sup> G09F 11/04; H01F 7/02

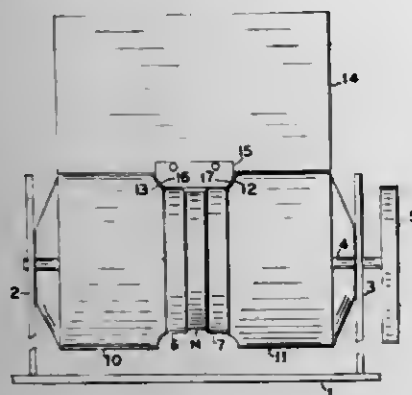
U.S. Cl. 335—286

1 Claim

1. Rotary magnetic file comprising: a base having a bottom and two sides, a shaft mounted between said sides, a magnet mounted on said shaft, a pair of magnetic members, one mounted on said shaft, at each side of said magnet, the magnet and the magnetic members being rotatable with respect to said sides, a pair of spacer members, one mounted on said shaft on the outside of each magnetic members, the average diameter of the magnet and magnetic members being less than the diameter of the spacer members,



the edges of the spacer members adjacent to the magnetic members being gradually decreased to the dimension of the magnetic members, and



a plurality of clips of magnetic material mounted on said magnet and magnetic members, the clips being formed to fit between the spacers in a self-centering manner, the dimension of the clips in the axial direction of the magnet being several times larger than the magnet.

4,286,246

#### HEAT-UP/COOL-DOWN BIMETAL TIMER FOR ELECTRIC TOASTER

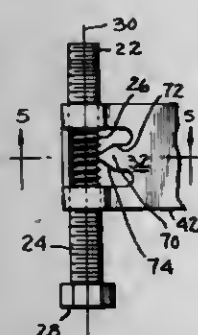
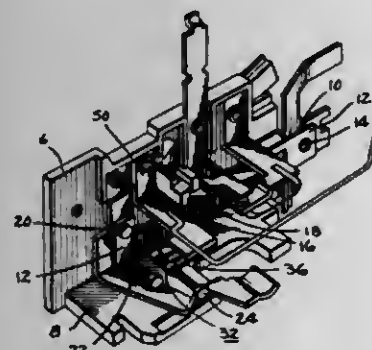
Joseph L. Jacques, Jr., Bethlehem; Michael D. Smith, Allentown, and Gregory C. Yehl, Wescosville, all of Pa., assignors to General Electric Company, New York, N.Y.

Filed Jan. 10, 1980, Ser. No. 110,813

Int. Cl.<sup>3</sup> F27D 11/02; F16B 21/02; H01H 43/30

U.S. Cl. 337-94

6 Claims



5. A fastener construction comprising:

- (a) rigid body member;
- (b) a calibration adjustment screw having a longitudinal axis, a generally cylindrical body portion, an end portion, and a head portion shaped for engagement with calibration equipment for automatically driving the screw to its adjusted position;
- (c) a leaf spring fastener for holding the adjustment screw having two end portions, one end portion being connected to the rigid body member and the other end portion being turned on itself in the general shape of a cylindrical sleeve for gripping the outer periphery of the screw threads;
- (d) said leaf spring fastener being formed from a piece of generally flat spring metal having two major flat surfaces

and edge surfaces, both of the major flat surfaces being in planes generally parallel to the longitudinal axis of the screw so that the direction of movement of equipment for engaging the head of the screw is in a direction toward an edge surface of the fastener so that said fastener will not be deformed when it is being engaged by equipment for adjusting the screw;

- (e) said leaf spring fastener including a projection which is arranged generally perpendicular to the longitudinal axis of the screw and being provided with edge surfaces that are spring urged between the surfaces of adjacent screw threads in order to hold the screw in its calibrated adjusted position upon removal of the adjusting equipment.

4,286,247

#### TEMPERATURE RESPONSIVE DEVICE

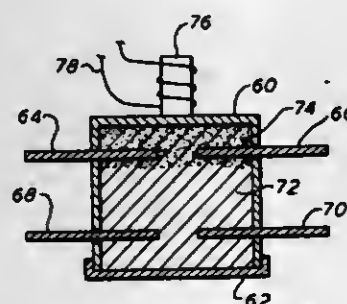
George H. Bishop, Jr., Carlisle, and William J. Croft, Natick, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 15, 1979, Ser. No. 84,965

Int. Cl.<sup>3</sup> H01H 37/76

U.S. Cl. 337-402

5 Claims



1. A resettable temperature responsive device comprising:
  - a container;
  - a meltable body partially filling said container;
  - activating means for translating through said container under the influence of gravity upon the melting of said meltable body;
  - terminal means for providing electrical connections which can be electrically opened and closed upon movement of said activating means; and
  - means for electro-magnetically resetting said device after said meltable body has melted.

4,286,248

#### THERMAL CUT-OFF FUSE

Kunio Hara, Kawasaki, Japan, assignor to Nifco Inc., Kanagawa, Japan

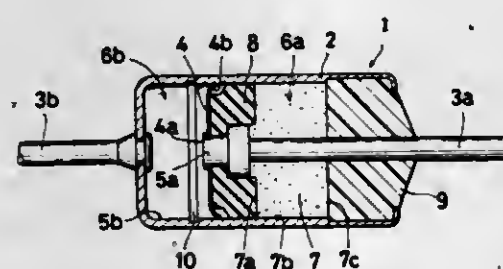
Filed Feb. 21, 1980, Ser. No. 123,131

Claims priority, application Japan, Feb. 22, 1979, 54/19003

Int. Cl.<sup>3</sup> H01H 37/76

U.S. Cl. 337-403

5 Claims



1. A thermal cut-off fuse for breaking electric continuity between first and second lead wires at a prescribed temperature, which comprises a housing, an electrically conductive contact means contained movably within the hollow space of

said housing from the first to the second position, allowed while at the said first position to remain in contact with first and second terminal portions electrically connected within said housing respectively with said first and second lead wires and, while at the second position, to be separated from at least one of the two terminal portions, and a temperature-sensitive member sealed in a space within the housing on the side of the first position of said contact means, with the surface of said member opposed to the contact means, said member being adapted to remain solid under normal conditions and at the prescribed temperature being adapted to melt and undergo voluminal expansion, whereby the melting and voluminal expansion of the temperature-sensitive member at said prescribed temperature causes said surface of the member opposed to the contact means to be moved toward the contact means until the contact means is brought to the second position and the electric continuity between the first and second lead wires is broken.

4,286,249

#### ATTACHMENT OF LEADS TO PRECISION RESISTORS

Kenneth R. Lewis, Broomall, and Anthony C. Meenan, West Chester, both of Pa., assignors to Vishay Intertechnology, Inc., Malvern, Pa.

Continuation of Ser. No. 892,122, Mar. 31, 1978. This application Dec. 13, 1979, Ser. No. 103,549

Int. Cl.<sup>3</sup> H01C 1/034

U.S. Cl. 338-275

25 Claims



1. In a precision resistor which includes a thin resistance foil cemented to a much thicker rigid substrate, and a resistive path between terminal pads defined in the cemented foil, the improvement comprising:
  - at least one aperture located within the confines of each cemented pad and penetrating through the entire thickness of the foil.

4,286,250

#### LASER FORMED RESISTOR ELEMENTS

Peter J. Sacchetti, Manchester, N.H., assignor to New England Instrument Company, Natick, Mass.

Filed May 4, 1979, Ser. No. 36,811

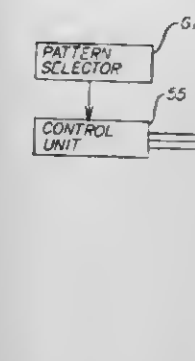
Int. Cl.<sup>3</sup> H01C 1/012

U.S. Cl. 338-306

22 Claims

1. An electrical component comprising:
  - an insulator substrate portion of a homogeneous organic body element and a carburized conductive resistor portion means formed from said homogeneous organic body element;
  - a first electrical conductor electrically connected to one location on said resistor portion means so as to form one terminal for connection to an electrical circuit; and

a second electrical conductor electrically connected to said resistor portion means at a different location spaced from



said one location so as to form another terminal for connection to an electrical circuit.

4,286,251

#### VITREOUS ENAMEL RESISTOR AND METHOD OF MAKING THE SAME

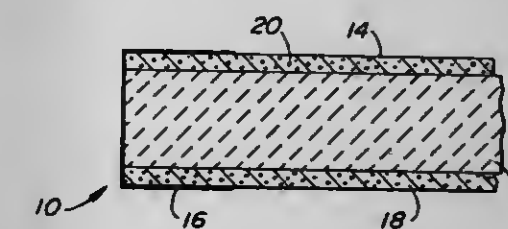
Robert G. Howell, Boone, N.C., assignor to TRW, Inc., Cleveland, Ohio

Filed Mar. 5, 1979, Ser. No. 17,262

Int. Cl.<sup>3</sup> H01C 1/012

U.S. Cl. 338-309

28 Claims



1. A method of making an electrical resistor comprising the steps of

- (a) coating the surface of an insulating substrate with a mixture of a glass frit and particles of a metal oxide selected from the group consisting of iridium oxide, ruthenium oxide, and mixtures thereof;
- (b) firing the mixture in an atmosphere and at a temperature to provide a controlled degree of dissociation of the oxide particles, and then
- (c) cooling the coated substrate to form a resistor film of glass having conductive particles dispersed therethrough and characterized by being terminable by an electroless plated metal film.

4,286,252

#### ACCELERATION RESPONSIVE MONITOR

Alistair D. M. Sligh, Edinburgh, and Brian E. Pitches, Lothian, both of Scotland, assignors to Ferranti Limited, Cheadle, England

Filed Nov. 14, 1979, Ser. No. 94,167

Claims priority, application United Kingdom, Nov. 14, 1978, 44487/78

Int. Cl.<sup>3</sup> G01C 23/00

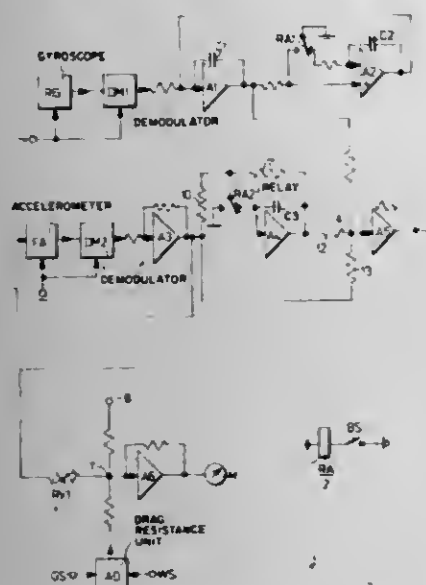
U.S. Cl. 340-27 SS

7 Claims

1. Apparatus for monitoring the acceleration of an aircraft moving on the ground, which includes a linear accelerometer rigidly secured to the aircraft with its sensitive axis along a fore-and-aft axis of the aircraft and, nominally horizontal, first circuit means operable to null the output of the accelerometer while the aircraft is at rest and including a first amplifier responsive to the output of the accelerometer to develop a first current and a second amplifier operable when the aircraft is at rest to develop a second current equal and opposite to the first current, a gyroscope operable to determine the attitude of the sensitive axis of the accelerometer relative to a horizontal



plane, second circuit means responsive to the output of the gyroscope and operable to correct said output for pitch movements of the aircraft while the aircraft is moving on the ground, summation means operable to combine the first and second currents and the output of the second circuit means,



correction means operable to reduce the output of the summation means by an amount dependent upon the aerodynamic drag resistance of the aircraft at any instant, and indication means operable to provide an indication of the corrected output of the summation means.

4,286,253

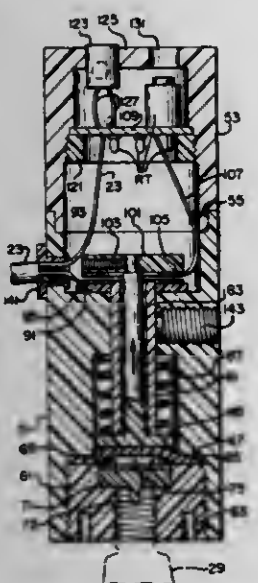
**TIRE PRESSURE SENSING AND ALARM SYSTEM**  
Emery J. Nagy, Rte. 1, Box 86, Yoncalla, Oreg. 97499

Filed Aug. 24, 1979, Ser. No. 69,564

Int. Cl.<sup>3</sup> B60C 23/02

U.S. Cl. 340—58

3 Claims



1. A tire pressure sensor comprising:  
a body,  
means for mounting the body on the valve stem of a tire,  
a pressure sensing piston mounted in said body to react to the pressure of the tire,  
alarm switch means to be actuated by the piston,  
mounting means mounting said switch means in various positions of adjustment relative to said body to adapt said switch means to be actuated at different levels of piston movement, said mounting means includes a sleeve through which said piston extends,  
means mounting said sleeve for sliding movement in said body,  
and means for releasably fixing the position of said sleeve and being accessible from the exterior of said body.

# **4,286,254** **ROTATING SIGNAL LIGHT WITH VARIABLE VOLTAGE LAMP CIRCUIT**

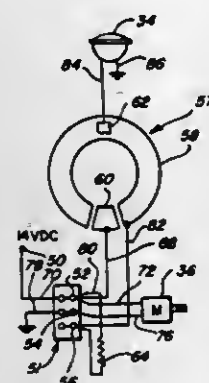
Earl W. Gossweiler, Clarendon Hills, Ill., assignor to Federal Signal Corporation, Oak Brook, Ill.

Filed Dec. 5, 1979, Ser. No. 100,503

Int. Cl.<sup>3</sup> B60Q 1/46; H02P 5/08

U.S. Cl. 340—84

6 Claims



1. A rotatable signal light assembly for use on emergency vehicles comprising, in combination, a lamp mounted for rotation about a generally upright axis for producing light flashes in a plurality of generally radial directions during each 360 degree lamp revolution, drive means for rotating said lamp at a substantially uniform rate of speed, and voltage control means operative during each said revolution to provide increased lamp voltage during a first predetermined portion of said revolution and reduced lamp voltage during a second predetermined portion of said revolution, thereby to produce increased intensity light flashes when said lamp is aimed in predetermined radial directions corresponding to said first predetermined portion of said revolution and light flashes of lesser intensity when said lamp is aimed in other radial directions corresponding to said second predetermined portion of said revolution.

4,286,255

# **SIGNATURE VERIFICATION METHOD AND APPARATUS**

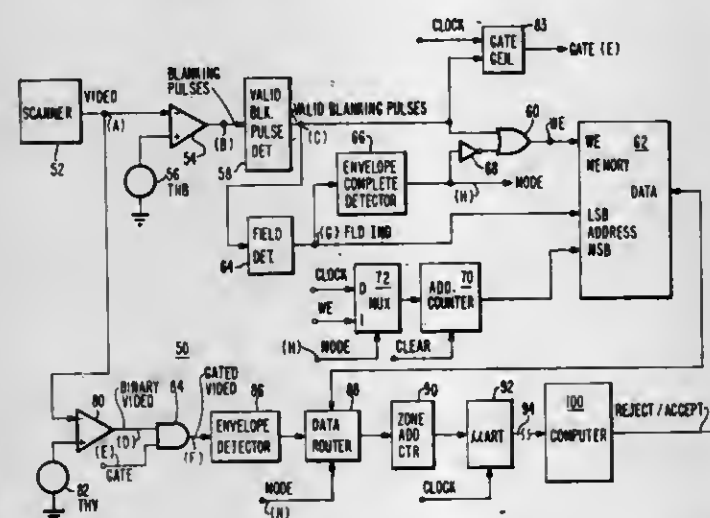
Pepe Siy, Dearborn Heights, Mich., assignor to Burronghs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 14,023, Feb. 22, 1979, abandoned. This application May 2, 1980, Ser. No. 146,134

Int. Cl.<sup>3</sup> G06K 9/52

U.S. Cl. 340—146.3 SY

9 Claims



1. Apparatus for use in signature verification by comparing features of a signature to be validated against features of a signature standard recorded in binary form, comprising:  
scanning means for scanning a document bearing a signature to be validated, said scanning means providing a first

plurality of signals representative of the reflectivity of the signature and the document;  
first means coupled to receive said first plurality of signals and, in response to said signals, generate mode signals, write enable signals, and field indicator signals;  
second means coupled to receive said first plurality of signals and extract a plurality of digital signals representing the electrical values of an envelope formed by a reference line founding the lower part of a signature and a line founding the upper part of the signature where the scanning means scans across the lines of the envelope; and  
a data router coupled responsive to a first set of said mode signals to direct said digital signals for recording in a memory device;  
said data router responding to a second set of said mode signals to direct digital signals recorded in said memory device to a computer for comparison against features of a standard signature recorded therein.

4,286,256

# **METHOD AND MEANS FOR ARITHMETIC CODING UTILIZING A REDUCED NUMBER OF OPERATIONS**

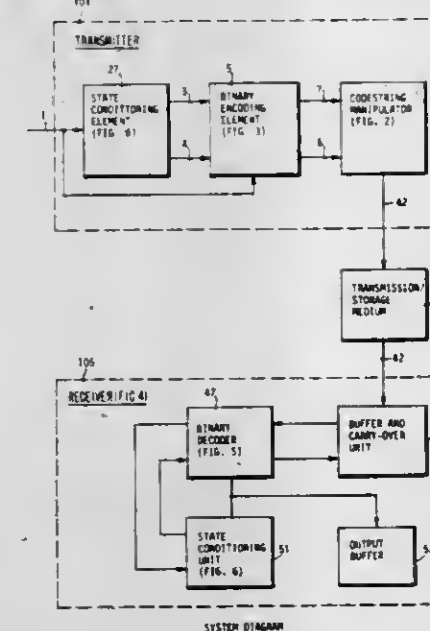
Glen G. Langdon, Jr., San Jose, and Jorma J. Rissanen, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,285

Int. Cl.<sup>3</sup> H03K 13/24

U.S. Cl. 340—347 DD

11 Claims



1. In an apparatus for generating an instantaneous FIFO binary arithmetic code string C(sb) recursively formed by the high-to-low order pairwise combining of digits of a decodable set of relatively shifted finite binary number strings C(s), A(sb) responsive to each binary symbol b in the symbol string s; q of the lowest order bits of each string being combined during each recursion, wherein the improvement comprises:

a first (201 FIG. 7) and second (17 FIG. 3) register means for storing respectively at least q of the lowest order bits of C(s) and a number string T(s);  
first means (2,3 FIG. 2; FIG. 6) responsive to each applied symbol b for obtaining an integer valued parameter k indicative of its relative frequency;  
second means (FIG. 3) responsive to each symbol b and parameter k for forming A(sb), T(sb) such that:

$$T(sb) \text{ or } A(sb) = T(s)(1 - 2^{-k})$$

third means (3,39,31,24) for forming a code string shift amount (SA) either of magnitude k when b is a first-bit value (b(1)=1) or of a second magnitude according to the value in a designated bit position (msb) in the second register; and  
fourth means (6,7,203,205,207) responsive to the shift

amount and A(sb) for combining A(sb) with C(s) in the first register (201) to form C(sb) and for left shifting (6,205) the first register contents according to the shift amount.

4,286,257

# **TONE GENERATOR**

Michael Slavin, Troy, and Juhan Telmet, Fraser, both of Mich., assignors to Lectron Products, Inc., Troy, Mich.

Continuation of Ser. No. 928,447, Jul. 27, 1978, abandoned,

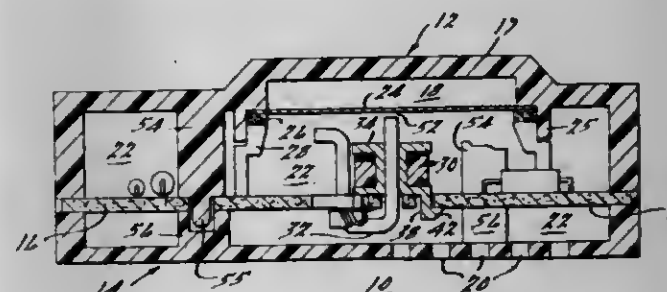
which is a division of Ser. No. 814,417, Jul. 11, 1977. This

application Dec. 19, 1979, Ser. No. 105,383

Int. Cl.<sup>3</sup> G08B 3/10

U.S. Cl. 340—388

25 Claims



1. A sound generator unit comprising a casing housing a diaphragm, an electromagnetic coil for causing said diaphragm to vibrate, and circuit means for energizing said coil; said unit being characterized by said casing having a recessed area formed therein, said diaphragm being placed over said recessed area so as to define a closed sound cavity within said recessed area, and retaining means for securing said diaphragm in position over said recessed area including a resilient element disposed about the periphery of said diaphragm and a retaining element for securing said resilient element against said diaphragm, said retaining means creating a seal at the periphery of said closed sound cavity which permits relatively slow air leaks to pass into and out of said closed sound cavity to allow the steady-state pressure differential across said diaphragm to equalize, but which appears substantially as a tight air seal around the periphery of said closed sound cavity relative to the rapid air movements within said closed sound cavity caused by the vibration of said diaphragm.

4,286,258

# **MOTOR ACTUATED BELL**

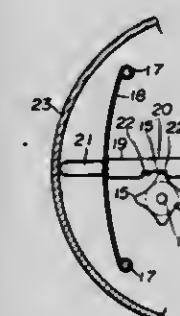
Tadashi Ishii, c/o Kobishi Electric Co., Ltd. No. 4-6, Kaminakazato 3-Chome, Kita-Ku, Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,737

Int. Cl.<sup>3</sup> G10K 1/064; G08B 3/10

U.S. Cl. 340—396

8 Claims



1. A motor actuated bell which comprises:  
(a) a base;  
(b) a motor mounted on said base and having a rotatable drive shaft;  
(c) a gong mounted on said base;  
(d) a hammer for striking against said gong;



- (f) an elongated resilient means for urging said hammer into striking contact with said gong, said resilient means mounted on said base, and said hammer being supported on the central portion of said elongated resilient means; and
- (g) a cam means connected to the motor drive shaft and acting on said hammer to intermittently urge the same away from said gong against the bias of said resilient means.

4,286,259

**ELECTRICALLY OPERATED BELL**

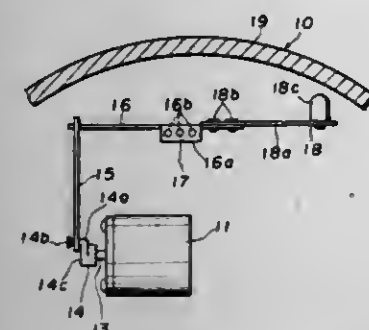
Tadashi Ishii, Tokyo, Japan, assignor to Kobishi Electric Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1980, Ser. No. 169,605

Int. Cl.<sup>3</sup> G10K 1/064; G08B 3/10

U.S. Cl. 340—396

5 Claims



1. An electrically operated bell which comprises:
- a base;
  - a gong mounted on said base;
  - an electric drive means mounted on said base;
  - a hammer means for striking against said gong; and
  - a lever pivotally mounted on said base and supporting said hammer means, said lever being operatively connected to said drive means for intermittently moving said hammer means into striking contact with said gong, and said lever having a pivot adjusting means by which the fulcrum of said pivotal lever can be varied.

4,286,260

**RANGING QUADRATURE DOPPLER MICROWAVE INTRUSION ALARM SYSTEM**

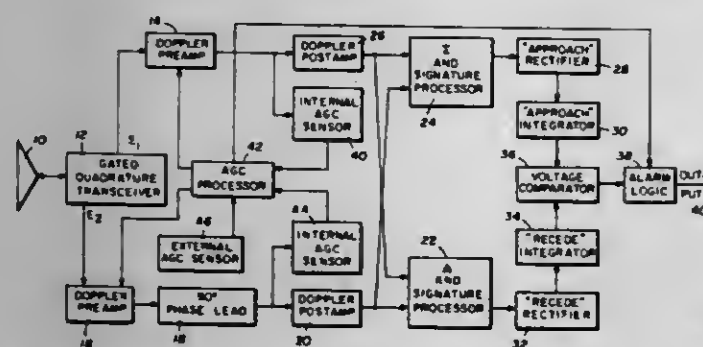
David N. Gersberg, Rockville, Md.; Alexander Y. Lee, Jr., Arlington, and William B. Moore, Falls Church, both of Va., assignors to E-Systems, Inc., Dallas, Tex.

Filed Sep. 11, 1979, Ser. No. 74,502

Int. Cl.<sup>3</sup> G08B 13/18

U.S. Cl. 340—554

19 Claims



1. A ranging intrusion alarm system utilizing microwave energy transmitted from and reflected to a monostatic antenna comprising:

- a transceiver for coupling energy to the antenna and receiving energy reflections therefrom to generate a Doppler frequency signal, said transceiver including:
- a transmit/receive mixer coupled at one terminal to the antenna and having a receive output terminal and an RF input terminal,

an oscillator generating an RF frequency as the transmit frequency,

an RF switch for periodically coupling the RF frequency of said oscillator to the RF input terminal of said mixer, and

means for driving said switch at a rate to produce a transmitted pulse length equal to the out and back propagation time to an object at a selected alarm range,

circuit means responsive to the Doppler frequency signal to generate a time varying signal, and

alarm means actuated by a signal from said circuit means.

4,286,261

**APPARATUS FOR DISCRIMINATING BETWEEN STRAIN AND MAGNETIC STIMULI IN MAGNETIC CORED SOLENOID TYPE TRANSDUCER LINE SENSORS**

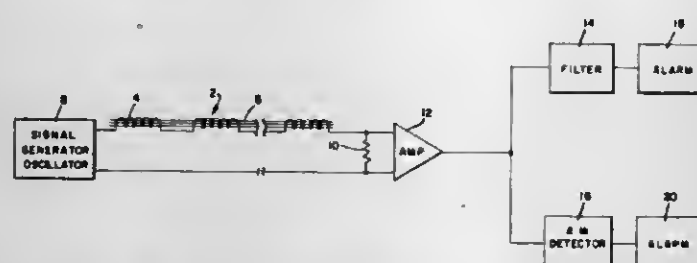
Gilbert F. Wagner, Vienna, and J. Louis Berger, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 1, 1978, Ser. No. 939,027

Int. Cl.<sup>3</sup> G08B 13/02, 13/22

U.S. Cl. 340—565

4 Claims



1. A dual signature perimeter detection system comprising in combination:

- an elongated solenoid type line transducer having a ferro-magnetic core, with said transducer being buried in the ground around an area to be protected, and having an input end and an output end constituting one end and an other end;
  - means to apply a constant frequency oscillator signal across one end of said transducer;
  - resistance means connected across the other end of said transducer;
  - an amplifier having an input coupled to the output of said transducer across said resistance means, said amplifier having an output means;
  - low frequency characteristic of magnetic signature responsive first detection means coupled to said output means of said amplifier for detecting signals produced by said transducer in response to a magnetic stimulus; and
  - oscillator signal modulated by transducer inductive change responsive second detection means coupled to said output means of said amplifier for detecting signals produced by said transducer in response to a strain stimulus;
- said first and second detection means being concurrently operative to indicate perimeter intrusion.

4,286,262

**ELECTRONIC TRANSMITTER DEVICE**

John F. Wahl, Sterling, Ill., assignor to Mallard Manufacturing Corporation, Sterling, Ill.

Filed Sep. 2, 1975, Ser. No. 609,388

Int. Cl.<sup>3</sup> H04B 7/00

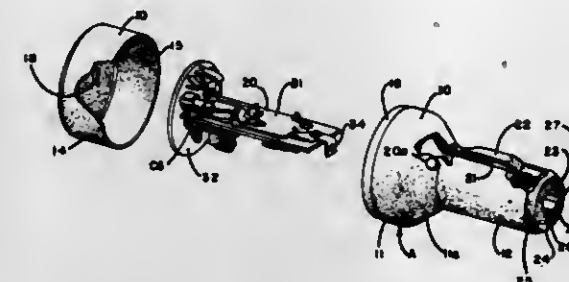
U.S. Cl. 340—694

18 Claims

1. In a system for opening a garage door which includes a radio receiver responsive to a selected radio frequency, means actuated by said receiver for opening said door, and means for transmitting a radio signal of said frequency, the improvement in which said transmitting means includes a socket, a casing having a portion thereof which is insertable into said socket, a

transmitter contained within said casing and tuned to said frequency, and means automatically operable when said por-

tion is inserted to a predetermined position within said socket for energizing said transmitter.



4,286,263

**ILLUMINATED CHANGEABLE-DISPLAY SIGN**

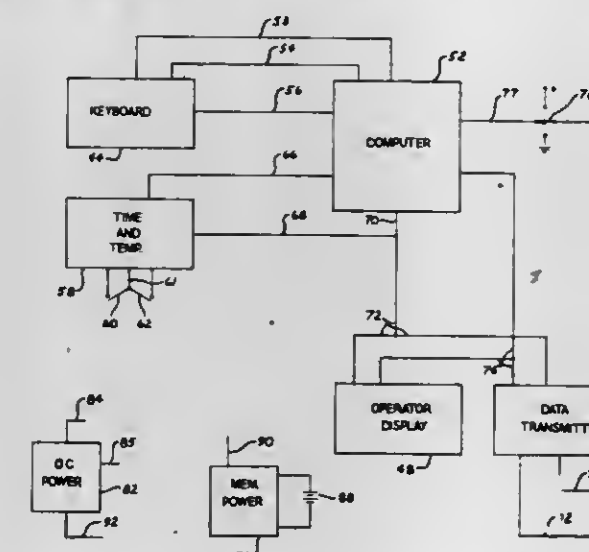
Allan W. Lindberg, 464 N. Taylor Ave., St. Louis, Mo. 63122

Filed Aug. 16, 1979, Ser. No. 67,174

Int. Cl.<sup>3</sup> G08B 5/36

U.S. Cl. 340—717

13 Claims



1. An illuminated changeable-display sign which comprises a first plurality of light sources that are located for general viewing, a second plurality of light sources that are located for viewing by the operator of said sign, said second plurality of light sources being displaceable away from said first plurality of light sources whereby said operator cannot simultaneously view said first plurality of light sources and said second plurality of light sources, said light sources of said first plurality of light sources and said light sources of said second plurality of light sources being similarly arranged in rows and columns, a plurality of shift registers for said first plurality of light sources whereby each row of light sources of said first plurality of light sources has its own shift register, a further shift register which is usable for all of the light sources of said second plurality of light sources, and a multiplexing circuit which recurrently steps into said further shift register data that corresponds to the various rows of said second plurality of light sources and thereupon, for short periods of time, uses said data to appropriately illumine or darken the light sources in said various rows of said second plurality of light sources.

4,286,264

**SIGNAL GENERATOR FOR A GRAPHIC CONSOLE**

Philippe Matherat, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 16, 1979, Ser. No. 39,261

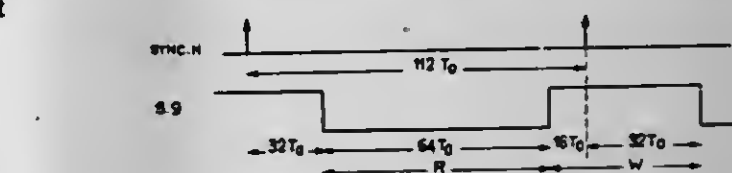
Claims priority, application France, May 18, 1978, 78 14764

Int. Cl.<sup>3</sup> G06F 3/14

U.S. Cl. 340—744

10 Claims

1. A signal generator for displaying on the CRT screen of a



each frame of the graphic image, and means for forming line signals, frame signals and test signals for said image; means for multiplexing the memory address signals generated by said counting means comprising a first multiplexer governed by the format desired for the TV image, a second multiplexer governed by the reading and writing periods associated with said memory unit and a third multiplexer for multiplexing the high and low parts of the memory address signals;

means for controlling the luminance of the graphic image;

means for generating line synchronising pulses and frame synchronising pulses, for said TV image and

means for controlling a graphic unit.

4,286,265

**BAR GRAPH DISPLAY PANEL AND SYSTEM FOR DISPLAYING ANALOG VALUES THEREIN**

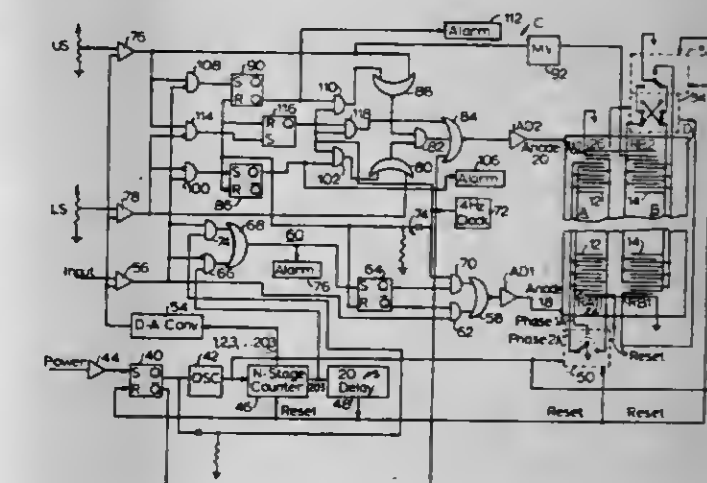
Samuel L. Kauffman, Sunnyvale, Calif., and John O. Morin, Madison, Conn., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 849,555, Nov. 8, 1977, abandoned, which is a division of Ser. No. 574,446, May 5, 1975, Pat. No. 4,163,971. This application Mar. 15, 1979, Ser. No. 20,885

Int. Cl.<sup>3</sup> G01D 7/00; H01J 17/48

U.S. Cl. 340—754

4 Claims





second end of said series, said reset cathodes being adapted to provide excited particles for said first and last cathodes for use in initiating scanning cycles of said series of cathodes at said first and last cathodes separately, a keep-alive cell adjacent to each reset cathode, and an anode electrode means in operative relation with said series of cathodes.

#### 4,286,266 DISPLAY DEVICE

Maarten De Zwart, and Johannes L. A. M. Heldens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

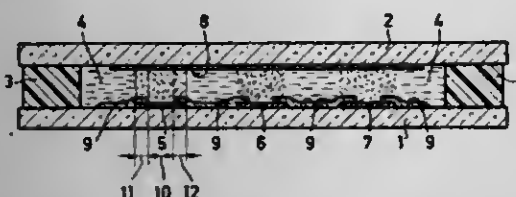
Filed Dec. 13, 1978, Ser. No. 968,958

Claims priority, application Netherlands, Jan. 18, 1978, 7800584

Int. Cl.<sup>3</sup> G08B 5/36

U.S. Cl. 340—765

3 Claims



1. A display device comprising at least two supporting plates; a plurality of control electrodes formed in a pattern on at least one of said supporting plates, said control electrodes being individually energized, a counter electrode formed on the other of said supporting plates; a layer of liquid crystal disposed between said supporting plates and in direct contact with said electrodes; a semi-permanent visible disturbance being induced in said liquid crystal by means of direct voltage and being erased by means of alternating voltage; and insulating means for covering at least the edges of said control electrodes said remaining surfaces of said electrodes remaining in direct contact with said liquid crystal.

#### 4,286,267 DIRECTIONAL ANTENNA SYSTEM WITH ELECTRONICALLY CONTROLLABLE SWEEP OF THE BEAM DIRECTION

Theodor Schwierz, Klingon, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

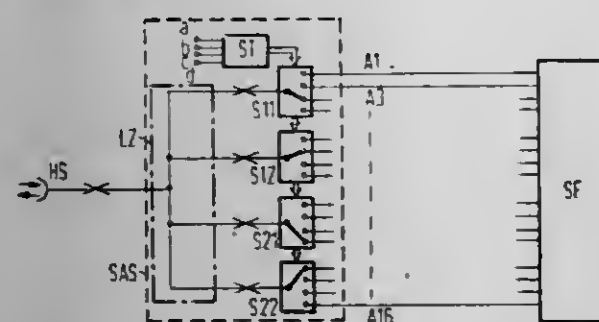
Filed Mar. 23, 1979, Ser. No. 23,308

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2813916

Int. Cl.<sup>3</sup> H04B 7/00

U.S. Cl. 343—100 SA

7 Claims



1. A directional antenna system with electronically controllable beam sweep consisting of a radiator arrangement oriented toward a reflector and of a switching and control installation associated with the radiator arrangement, characterized in that the radiator arrangement consists of  $n \times m$  (whole positive numbers for  $n$  and  $m$ ) radiator elements (1, 2, ..., 16) arranged matrix-like oriented toward said reflector, and in this radiator field (SF), radiator groups of respectively  $k \times l$  (whole positive numbers for  $k$  and  $l$ ) with matrix-like arranged radiator elements are activatable with  $(n-k+1) \times (m-l+1)$  elements, a

line branching (LZ) is provided which divides or, respectively, sums up the total energy substantially without loss in  $k \times l$  branches with nearly equal portions of energy and the branches are formed into star-shaped switching branches  $S_{ij}$  (S11, S12, S21, S22)—for  $l=i=k$  and  $l=j=l$ , and the switching branches respectively have  $(1+Int.n-i/k) \times (1+Int.m-j/l)$  line legs (A1, A2, ..., A16) connected to said radiator elements and switching elements (s1, s2, ..., s16) inserted into each leg and actuatable by a control circuit (ST), and the control circuit for the activation of a selectable group of  $k \times l$  radiator elements always switches only one of the switching elements in each switching branch which are normally in the off-state to the on-state to turn on various combinations to and from said radiator elements to control the directivity of said reflector.

#### 4,286,268 ADAPTIVE ARRAY WITH OPTIMAL SEQUENTIAL GRADIENT CONTROL

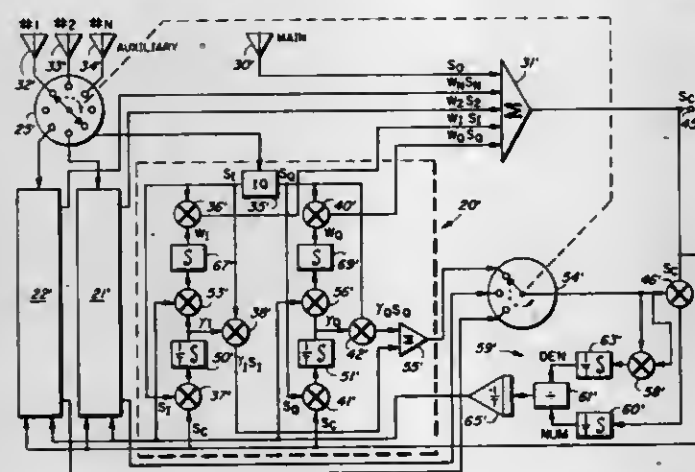
Sam M. Daniel, Tempe, and Michael H. Myers, Scottsdale, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Apr. 13, 1979, Ser. No. 29,805

Int. Cl.<sup>3</sup> H04B 1/10

U.S. Cl. 343—100 LE

7 Claims



1. In an adaptive antenna array having a main antenna and at least one auxiliary antenna, apparatus for sequential gradient control comprising:

- a plurality of weight channels for adjusting the weight of signals from the auxiliary antenna to reduce side lobe interference;
- circuit means for adjusting the gain of each channel for gradient control of the weight;
- switching means connected to said weight channels and said circuit means for periodically connecting said circuit means to each of said weight channels; and
- each of said weight channels including memory means for continued gradient control during periods that said circuit means is connected to other weight channels.

#### 4,286,269 Patent Not Issued For This Number

#### 4,286,270 DOUBLE-CHANNEL SATELLITE NAVIGATION SYSTEM

Alex A. Veselkov, ulitsa Zastavnaya, 13; Ivan F. Glumov, ulitsa Kotovskogo, 13, kv. 59; Leonid A. Zlotnikov, ulitsa Polevaya, 24, kv. 37; Viktor P. Maiko, ulitsa Pionerskaya, 6, kv. 5, all of Gelendzhik, and Jury F. Matusevich, ulitsa Yankovskogo, 102, kv. 21, Krasnodar, all of U.S.S.R.

Filed May 7, 1979, Ser. No. 36,341

Int. Cl.<sup>3</sup> G01S 5/02

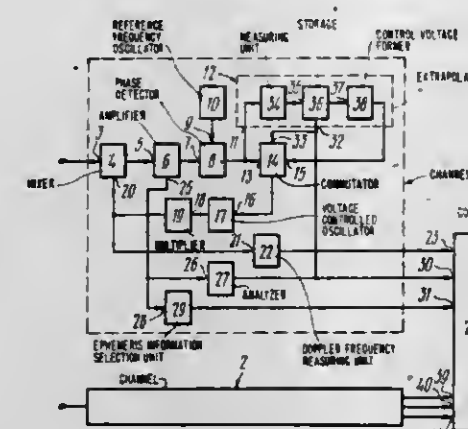
U.S. Cl. 343—113 DE

2 Claims

1. A double-channel satellite navigation system whereof

outputs are electrically connected to a computer, each of its two channels comprising:

- a mixer having a first input intended to receive one frequency component of a double-frequency signal transmitted by the navigation satellite, a second input and an output;
- an amplifier having a first input, a second input and an output, said first input of said amplifier being connected to said output of said mixer;
- a phase detector having a first input, a second input and an output, said first input of said phase detector being connected to said output of said amplifier;
- a reference frequency oscillator having an output connected to said second input of said phase detector;
- an extrapolator having a first input, a second input and an output, said first input of said extrapolator being connected to said output of said phase detector;
- a commutator having a first input, a second input, a third input and an output, said first input of said commutator



being connected to said output of said phase detector, said second input of said commutator being connected to said output of said extrapolator;

- a voltage-controlled oscillator having an output and an input connected to said output of said commutator;
- a frequency multiplier having an input connected to said output of said voltage-controlled oscillator, and an output connected to said second input of said mixer;
- a Doppler frequency measuring unit having an input connected to said output of said frequency multiplier, and an output which serves as an output of the channel;
- a signal level analyzer having an input connected to said output of said amplifier, and an output connected to said second input of said extrapolator and to said third input of said commutator and serving as an output of the channel;
- an ephemeris information selection unit having an input connected to said output of said amplifier, and an output which serves as an output of the channel.

#### 4,286,271 LOG-PERIODIC MONOPOLE ANTENNA

Normand Barbano, Sunnyvale, and Samuel C. Kuo, Saratoga, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Filed Feb. 26, 1979, Ser. No. 15,493

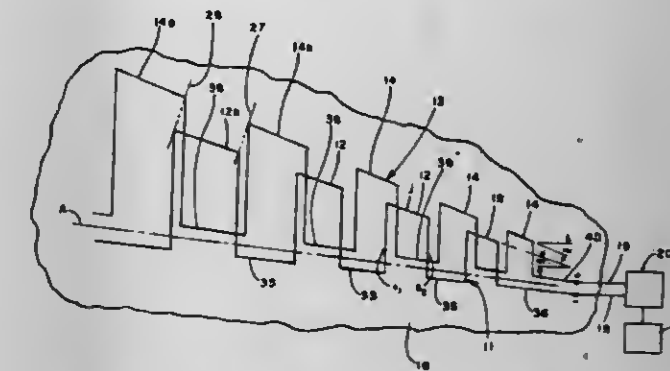
Int. Cl.<sup>3</sup> H01A 11/10

U.S. Cl. 343—792.5

14 Claims

1. A balanced-fed log-periodic vertically polarized monopole antenna comprising first and second angularly spaced arrays proximately spaced from and on the same side of an electrically conductive ground plane, each of said arrays comprising a plurality of longitudinally spaced radiating elements and interelement connector lines connecting said elements in series, said elements of each array extending in a direction away from and in a plane normal to said ground plane, each of said elements being open at the inner end proximate to the ground plane and closed at the outer end remote from the ground plane,

the elements of each of said arrays having dimensions which progressively increase from one end to the other in progressive increments of a predetermined ratio,



the space between adjacent elements of one of said arrays being opposite an element of the other of said arrays, and means to connect said one ends of said arrays to a balanced feed source.

#### 4,286,272 INK JET PRINTER AND START UP METHOD THEREFOR

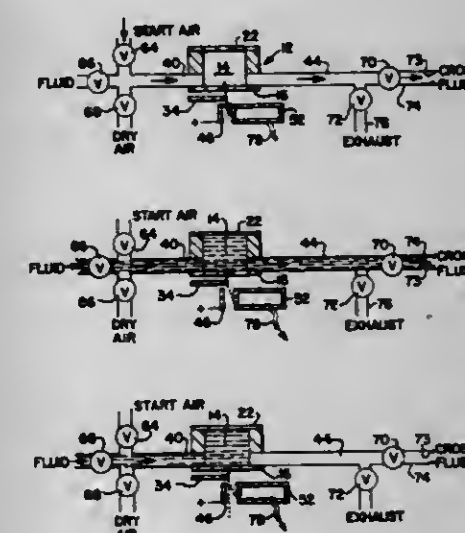
Charles J. Schwob, Kettering, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 13, 1979, Ser. No. 65,786

Int. Cl.<sup>3</sup> G01D 15/18

U.S. Cl. 346—75

12 Claims



1. An ink jet printer for depositing ink drops on a print receiving medium, comprising:

print head means having a fluid receiving reservoir and including an orifice plate defining a row of orifices through which ink from said reservoir passes to form a row of downward extending fluid filaments, means for stimulating said fluid filaments to cause each of said fluid filaments to break up into a jet drop stream, a charge electrode plate positioned beneath said print head means and to one side of said row of fluid filaments, said plate including a plurality of charge electrodes, each of said electrodes positioned adjacent a respective one of said fluid filaments and spaced therefrom by a predetermined distance, ink supply inlet means for supplying ink to said fluid receiving reservoir in a direction substantially perpendicular to said row of orifices and to said fluid filaments, said ink supply inlet means being positioned on the same side of said fluid filaments as said charge electrode plate, ink supply outlet means for removing ink from said fluid receiving reservoir in a direction substantially perpendicular to said row of orifices and to said fluid filaments, said ink supply outlet means being positioned on the side of said fluid filaments opposite said ink supply inlet means, means for selectively applying charging potentials to said



plurality of charge electrodes such that drops in said jet drop streams are selectively charged, means for providing a drop deflection field through which said jet drop streams pass, such that drops in said jet drop streams are separated into catch and print trajectories, means for catching drops in said catch trajectories while permitting drops in said print trajectories to strike said print receiving medium, and fluid supply control means for controlling the application of ink to and removal of ink from said fluid reservoir, whereby fluid flow across said row of orifices from said inlet means to said outlet means is provided at start up of said printer to deflect said filaments away from said charge electrodes by a distance greater than said predetermined distance, and whereby said fluid flow across said row of orifices is terminated after start up such that said fluid filaments are thereafter spaced from said electrodes by said predetermined distance, said fluid supply control means including means for providing a sufficient back pressure within said fluid receiving reservoir during flow from said inlet means to said outlet means at start up to produce fluid flow through said orifices and formation of said fluid filaments.

4,286,273

### DEFLECTION COMPENSATED INK EJECTED PRINTING APPARATUS

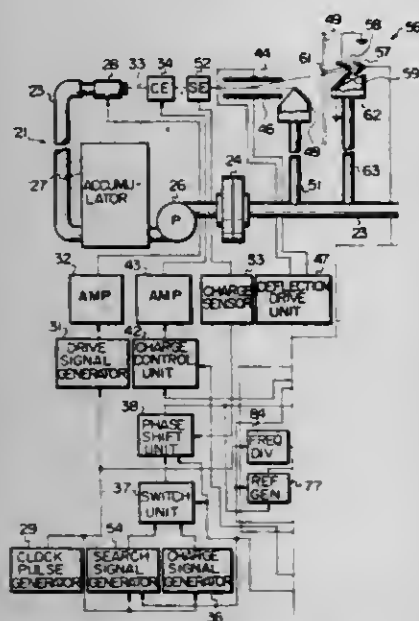
Masanori Horike, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 24, 1979, Ser. No. 87,915

Claims priority, application Japan, Nov. 2, 1978, 53-135427  
Int. Cl.<sup>3</sup> G01D 15/18

U.S. Cl. 346-75

18 Claims



1. An ink ejection apparatus including ink ejection means for ejecting and charging ink and deflecting the ink from an ejection axis in a direction in response to a deflection signal, characterized by comprising:  
target means spaced from the ejection axis in said direction;  
hit sensor means for sensing impingement of the ink on the target means and producing a hit signal in response thereto; and  
deflection sweep means for controlling the ink ejection means to sweepingly vary deflection of the ink until the hit sensor means produces the hit signal;  
the ink ejection means comprising nozzle means for ejecting ink in response to ejection pulses, charging means for charging the ink in response to charging pulses, charge sensor means for sensing when the ink has a predetermined charge and producing a phase set signal in response thereto and phase sweep means for sweepingly varying a phase between the ejection pulses and the charging pulses until the charge sensor means produces the phase set

signal, the deflection sweep means and the phase sweep means being independent of each other.

4,286,274

### INK DROPLET CATCHER ASSEMBLY

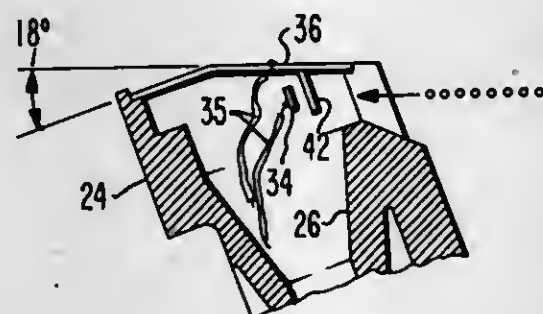
Ronald G. Shell, Birmingham; Wallace F. Brownell, Northville, both of Mich.; Richard C. Fedder, and Kyriakos Christou, both of Longwood, Fla., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 6, 1980, Ser. No. 127,921

Int. Cl.<sup>3</sup> G01D 15/18

U.S. Cl. 346-75

9 Claims



1. An ink droplet catcher assembly for an ink jet printer comprising:  
a housing having an opening for receiving ink droplets;  
a sensor, aligned within the housing to be directly impacted by the ink droplets, the sensor generating varying electrical signals for supply to circuitry controlling ink droplet deflection for an ink jet printer in response to the impact position of the ink droplets on the sensor;  
a coating on the sensor to retard sensor wear and to prevent short circuiting of the generated electrical signals in response to ink droplet impacts;  
means, within the housing, for limiting the size of objects which contact the sensor;  
means for conducting the ink droplets out of the housing to a reservoir; and  
a lid, covering the housing, to deflect air and ink droplets into the means for conducting the ink droplets out of the housing.

4,286,275

### SEMICONDUCTOR DEVICE

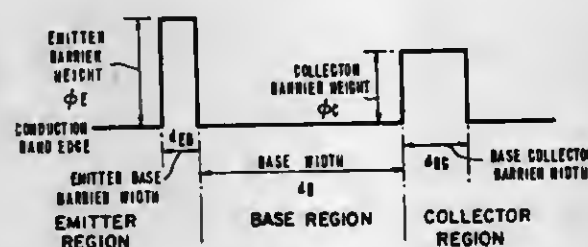
Mordehai Heiblum, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,251

Int. Cl.<sup>3</sup> H01G 29/88

U.S. Cl. 357-12

8 Claims



1. A semiconductor device comprising in combination a base region with a physical dimension of the order of the mean-free path of a majority carrier, an emitter region forming a first barrier of a first height with said base region and having a barrier width of the order to permit quantum mechanical tunneling;  
a collector region forming a barrier with said base region lower than said first barrier and having a barrier width sufficient to inhibit quantum mechanical tunneling and an ohmic contact to each said emitter, said base and said collector regions.

4,286,276

### DUAL SCHOTTKY CONTACT AVALANCHE SEMICONDUCTOR STRUCTURE WITH ELECTRODE SPACING EQUAL TO EPI LAYER THICKNESS

Felix Diamond, Paris, France, assignor to Thomson-CSF, Paris, France

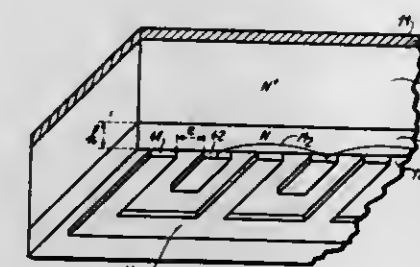
Filed Mar. 19, 1979, Ser. No. 21,767

Claims priority, application France, Mar. 21, 1978, 78 08144

Int. Cl.<sup>3</sup> H01L 29/90

U.S. Cl. 357-13

7 Claims



1. A semiconductor structure based on the avalanche phenomenon, comprising a semiconductor substrate of a predetermined conductivity type, at least one layer of semiconductor material of the same conductivity type doped with a lower density of doping impurities than the substrate, forming the active region of the avalanche structure, having a thickness in the range of  $10^{-6}$  meter to several  $10^{-6}$  meters, and at least one first Schottky contact on the external surface of said layer, the structure further comprising, in the vicinity of said first Schottky contact, a second Schottky contact, the distance between said first and said second Schottky contacts being substantially equal to the thickness of the active region.

4,286,277

### PLANAR INDIUM ANTIMONIDE DIODE ARRAY AND METHOD OF MANUFACTURE

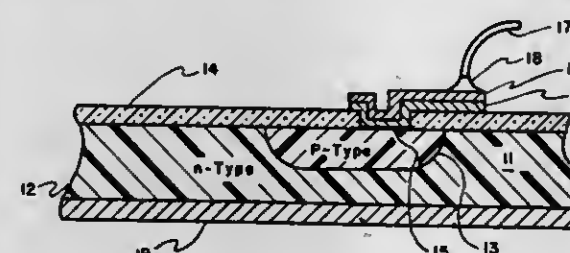
Randolph E. Longshore, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 22, 1977, Ser. No. 854,435

Int. Cl.<sup>3</sup> H01L 27/14

U.S. Cl. 357-30

6 Claims



1. A photodiode comprising:  
a wafer of n-type indium antimonide doped with telluride having a carrier concentration of  $2 \times 10^{15}$  and a mobility between  $1.5$  and  $2$  times  $10^5$ ; said wafer having a planar surface;  
isolated pockets of p-type material imbedded in said wafer

having exposed contact surface areas coplanar with said planar surface;  
a layer of silicon oxide covering said planar surface and contact surface except for a small percentage of said contact surface; and  
a separate electrode at each pocket covering and contacting said small percentage of contact surface and at least a continuous narrow strip of said silicon oxide surrounding said small percentage of contact surface, wherein each electrode comprises: a thin layer of a noble metal covering only said small percentage of contact surface area, a layer of chromium covering said noble metal and some of the surrounding silicon oxide, and a layer of gold covering said chromium.

4,286,278

### HYBRID MOSAIC IR/CCD FOCAL PLANE

Robert V. Lorenze, Jr., Westford, and William J. White, Chelmsford, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

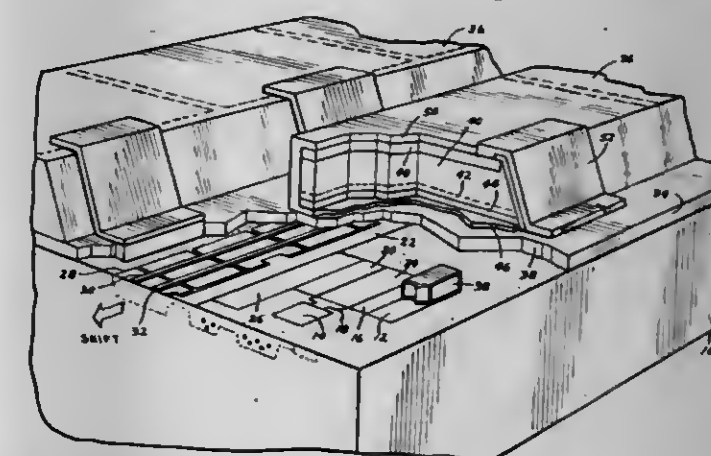
Division of Ser. No. 829,745, Sep. 1, 1977, Pat. No. 4,197,633.

This application Aug. 16, 1979, Ser. No. 67,244

Int. Cl.<sup>3</sup> H01L 27/14

U.S. Cl. 357-30

19 Claims



1. A photodetector system comprising:  
a semiconductor substrate having solid state signal processing circuitry therein;  
an insulator layer over a surface of the semiconductor substrate;  
a plurality of rows of contact pads projecting through the insulator layer to provide electrical contacts to the solid state signal processing circuitry;  
a plurality of rows of photodetector material mounted on the insulator layer, each row of photodetector material having front and back surfaces, a region of first conductivity type proximate the back surface, and a plurality of regions of second conductivity type separated from one another and proximate the front surface;  
first electrical contact means interposed between the back surface and the insulator layer for providing electrical contact to the region of first conductivity type; and  
second electrical contact means for providing electrical contact between the regions of second conductivity type and the contact pads in an adjacent row of contact pads.

4,286,279

### MULTILAYER SEMICONDUCTOR SWITCHING DEVICES

Jearld L. Hutson, 2019 W. Valley View La., Dallas, Tex. 75234

Division of Ser. No. 724,916, Sep. 20, 1976, Pat. No. 4,190,853, which is a continuation of Ser. No. 488,789, Jul. 15, 1974, abandoned. This application Nov. 15, 1979, Ser. No. 94,558

Int. Cl.<sup>3</sup> H01L 29/747

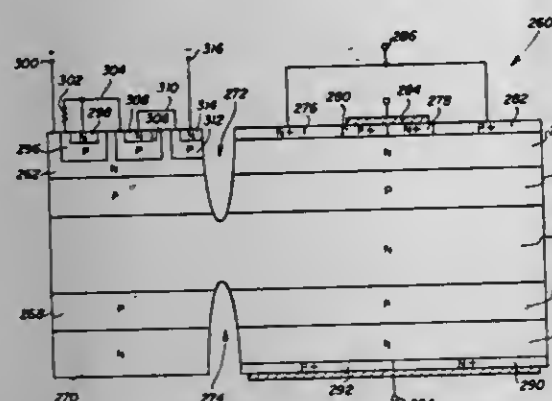
U.S. Cl. 357-39

11 Claims

1. A semiconductor switch and associated circuitry formed in a unitary semiconductor body comprising:  
a semiconductor body having five layers of alternating first



and second semiconductor conductivity types, the outer layers and one of the intermediate layers being constructed from said first conductivity type, a channel formed across one of said outer layers and extending through at least one of said layers to geometrically and electrically isolate first and second areas of said body, said one intermediate layer remaining integral and being common to and electrically available to both said first and second areas of said body, regions of said second conductivity type being formed over said outer layers in said first area,



first electrodes contacting at least one of said outer layers and said regions of said second conductivity type to form a semiconductor switch in said first area, at least one region of said second conductivity type formed in one of said outer layers in said second area, and second electrodes contacting one of said outer layers and said region in said second area to form at least one electronic device which is geometrically and electrically isolated from said semiconductor switch in at least one mode, said electronic device operable in a second mode to provide switching signals through said one intermediate layer to cause switching operation of said semiconductor switch.

4,286,280

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE  
Yoshitaka Sugawara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

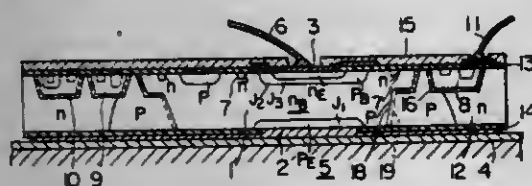
Filed Nov. 6, 1979, Ser. No. 91,707

Claims priority, application Japan, Nov. 8, 1978, 53-136724

Int. Cl.<sup>3</sup> H01L 27/04, 27/12

U.S. Cl. 357-50

9 Claims



1. A semiconductor integrated circuit device comprising:  
a semiconductor polycrystalline substrate having first and second principal surfaces on opposite sides of said polycrystalline substrate;  
a semiconductor monocrystalline region formed in said semiconductor polycrystalline substrate to extend from the first principal surface of said substrate to the second principal surface thereof, said semiconductor monocrystalline region having a first principal surface formed in the first principal surface of said polycrystalline substrate and a second principal surface formed in the second principal surface of the polycrystalline substrate;  
at least one semiconductor monocrystalline island formed in said semiconductor polycrystalline substrate adjacent to said monocrystalline region, said at least one monocrystal-

line island having a principal surface formed in said first principal surface of said polycrystalline substrate; and a dielectric film formed between said at least one semiconductor monocrystalline island and said semiconductor polycrystalline substrate to isolate said at least one semiconductor monocrystalline island from said polycrystalline substrate and said monocrystalline region.

4,286,281

### VIDEO FORMAT SIGNAL RECORDING AND REPRODUCING DEVICE

Tsutomu Suzuki, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

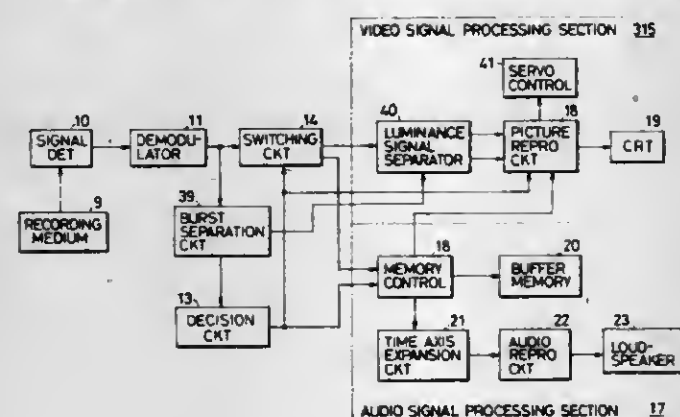
Filed Sep. 26, 1979, Ser. No. 79,006

Claims priority, application Japan, Sep. 30, 1978, 53-120827; Sep. 30, 1978, 53-120829; Oct. 4, 1978, 53-122895; Oct. 5, 1978, 53-123069; Oct. 5, 1978, 53-123070; Oct. 5, 1978, 53-123072; Nov. 9, 1978, 53-138199; Nov. 9, 1978, 53-138200; Feb. 28, 1979, 54-23926

Int. Cl.<sup>3</sup> H04N 5/76

U.S. Cl. 358-4

9 Claims



1. A video format signal recording device for recording a video format signal on a recording medium comprising: means for inserting an identification signal in a blanking portion of each frame of said video format signal, said identification signal identifying whether data within a corresponding frame is video data or audio data, wherein said identifying signal inserting means comprises means for inserting a first video identifying signal corresponding to motion picture data means for inserting a second video identifying signal corresponding to still picture data, and wherein said first and second video identifying signals comprise first and second numbers of cycles of a color burst signal.

4,286,282

### PERIODICALLY BIASED VIDEO DISC PLAYER SERVO SYSTEM

Todd J. Christopher, and James A. Wilber, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,014

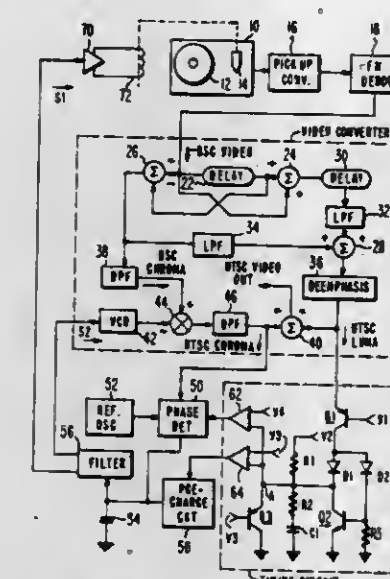
Int. Cl.<sup>3</sup> H04N 5/795

U.S. Cl. 358-8

9 Claims

1. In a video disc player of the kind including a video signal correction servo system comprising a reference oscillator for producing a reference signal, phase detector means responsive when enabled for comparing said reference signal with a first component of a video signal produced by said player and for providing an error voltage in response to said comparison and, a feedback path for applying said error voltage to a point in said player in a sense to minimize errors between said reference signal and said first component of said video signal, the improvement for periodically biasing said servo system to a predetermined point in its control range, comprising:  
holding capacitor means for holding said error voltage;  
precharging circuit means responsive when enabled for charging said holding capacitor means to a predetermined voltage level; and

timing circuit means synchronized with a second component of said video signal for enabling said phase detector means and said precharging circuit means during a first time interval, for enabling said phase detector means and dis-



abling said precharging circuit means during a second time interval and for disabling said phase detector means and said precharging circuit means during a third time interval.

4,286,283

### TRANSCODER

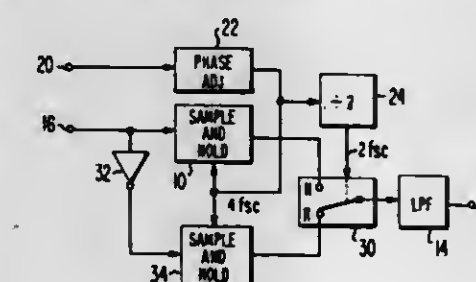
Jon K. Clemens, Skillman, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,548

Int. Cl.<sup>3</sup> H04N 9/42

U.S. Cl. 358-11

17 Claims



1. A transcoder for reversing the phase of one of two signal components of a quadrature amplitude modulated subcarrier, comprising:

first means for producing sequential samples of the amplitude of said subcarrier at times corresponding to each axis crossing of each of said signal components;  
second means for inverting the polarity of alternate ones of said samples; and  
third means for reconstructing said subcarrier from the inverted and non-inverted samples without alteration of the sequence thereof.

4,286,284

COLOR TELEVISION SIGNAL DECODING DEVICE  
Gilles Deban, Viroflay, France, assignor to Sonotec S.A. - Societe Nouvelle de Produits et Techniques, Paris, France

Filed Oct. 15, 1979, Ser. No. 84,696

Claims priority, application France, Oct. 13, 1978, 78 29214

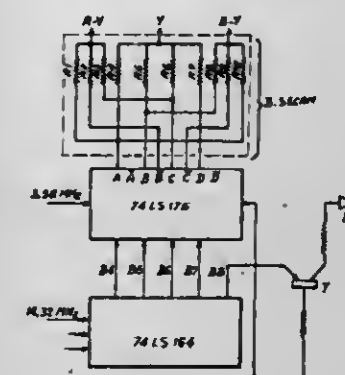
Int. Cl.<sup>3</sup> H04N 9/42

U.S. Cl. 358-11

6 Claims

1. A color decoding device for signals from an NTSC coding source with respect to their coding in any system, characterized by: a shifting circuit for receiving series video signals, displacing them at a reference frequency, and transmitting four bits in parallel, a latch circuit for receiving said four parallel

bits, sampling them at a frequency equal to one fourth of the reference frequency, and producing four signals and their complements, and a matrix of resistors for receiving selected



ones of said four signals and their complements and for transforming them into luminance and chrominance signals for transmittal to a display device.

4,286,285

### CHECKERBOARD COLOR FILTER PROVIDING TOLERANCE

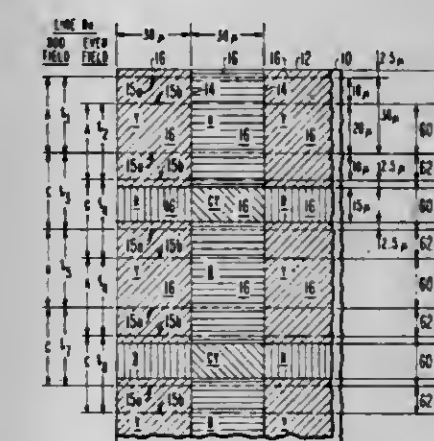
Roland N. Rhodes, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,213

Int. Cl.<sup>3</sup> H04N 9/07

U.S. Cl. 358-44

8 Claims



1. A color filter for use with an image pickup device having a plurality of photosensors, said filter comprising rows of a plurality of horizontally repetitive sets of color areas, the height of a first group of said color areas of alternate rows being less than the height of said color areas of a second group of the remaining alternate rows.

4,286,286

### PHOTO CONTROLLED STEREOSCOPIC TELEVISION SYSTEM

Jaen Jurisson, Anoka County, and Alda S. Khalafalla, Hennepin County, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 2, 1979, Ser. No. 35,173

Int. Cl.<sup>3</sup> H04N 9/54

U.S. Cl. 358-92

4 Claims

1. A stereo television receiving system comprising:  
television camera means for recording a perceptible scene from left and right viewpoints by generating field scans corresponding thereto;  
television receiver in communication with said camera means;  
multiplexing means for interlacing field scans of said images from said left and said right viewpoints during each television frame;











said member, wherein said member comprises a body of material having a rectangular cross section at an end adjacent to and parallel with a surface of said recording medium and extending further in a direction perpendicular to the direction of movement of said recording medium than in a direction parallel to said direction of movement; and

an auxiliary head disposed on an opposite side of said recording medium opposite said main head, said auxiliary head comprising a winding and a magnetic member for producing a magnetic field in response to a current in said winding, wherein said magnetic member has a rectangular cross section at an end adjacent to and parallel with an opposite surface of said recording medium and extending further in a direction perpendicular to the direction of movement of said recording medium than in a direction parallel to said direction of movement.

#### 4,286,300 TAPE CASSETTE

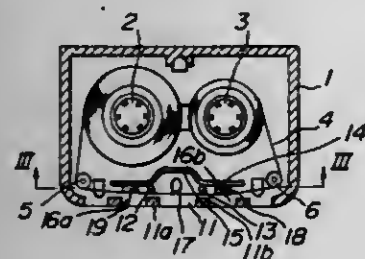
Akira Osanai, and Toshihisa Nakao, both of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Dec. 13, 1978, Ser. No. 968,741

Claims priority, application Japan, Dec. 13, 1977, 52-167361[U]

Int. Cl.<sup>3</sup> G11B 15/60, 23/08

U.S. Cl. 360—130.32



1. A tape cassette, comprising a cassette housing having upper and lower portions and a front edge, a magnetic tape accommodated therein, a pair of openings provided at the front edge of the housing for receiving a magnetic head, an opening for a pinch roller, and a pair of tape press pad springs integrally formed with the cassette housing, the housing forming a capstan opening through the upper and lower portions near the center of the front edge between two head receiving openings, one of said pad springs extending from one side of the capstan opening and around the capstan opening to the head receiving opening at the other side thereof, and the other of said pad springs extending from the other side of the capstan opening and around the capstan opening to the head receiving opening at the one side thereof.

#### 4,286,301

##### H.V. CURRENT CUT-OUT CIRCUIT

Doan Pham Van, Meyzieu, France, assignor to Delle-Alsthom, Villeurbanne, France

Filed Oct. 12, 1979, Ser. No. 84,322

Claims priority, application France, Oct. 12, 1978, 78 29145

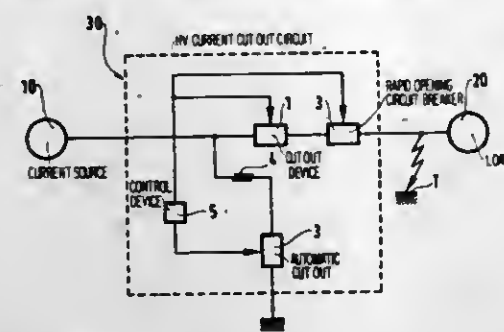
Int. Cl.<sup>3</sup> H01H 33/59

U.S. Cl. 361—3

8 Claims

1. A high-voltage cut-out circuit for an electric installation having an input side and an output side, a current source installed on the input side of the circuit and an earth fault possibly occurring on its output side, the improvement wherein between the input side and the output side, it includes, for each phase, in series, a very rapid opening cut-out device (1) with a high arcing voltage, and a rapid opening circuit-breaker (2) and, shunt-connected between the input of the cut-out device with a high arcing voltage and earth, a resistance (4) for limiting an earthing current and an automatic cut-out (3) with a

very short closing time and a short opening time, said circuit further comprising means (5) for performing the sequence of following operations in a time shorter than half a period: closing the automatic cut-out, opening the high arcing voltage



device, opening the rapid-opening circuit-breaker and the automatic cut-out, and when the current passes through zero, cutting out the high arcing voltage device, the rapid-opening circuit-breaker and the automatic cut-out.

#### 4,286,302 ELECTRICAL CAPACITOR PROTECTIVE ARRANGEMENT

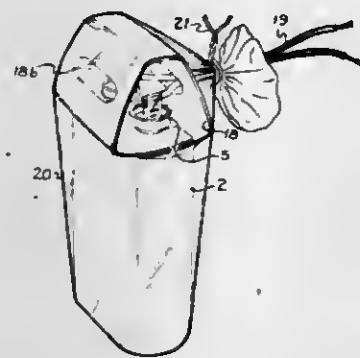
Michael Owens, Hendersonville; Roy W. Waldroup, Fletcher, and Warren Halper, Hendersonville, all of N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed May 25, 1979, Ser. No. 42,585

Int. Cl.<sup>3</sup> H02H 7/16

U.S. Cl. 361—15

5 Claims



1. Capacitor protective apparatus comprising, in combination, an electrical capacitor of a type adapted to be embedded in encapsulating material in a container, said capacitor comprising a sealed casing containing a capacitor section and having external terminal means electrically connected to said capacitor section mounted on a portion of said casing and projecting outwardly therefrom, said capacitor during operation being subject to failure conditions causing outward displacement of said casing portion and said terminal means thereon, interrupter means associated with said casing portion for automatically breaking the electrical connection between said capacitor section and said terminal means upon said outward displacement of said casing portion and said terminal means, and protective means on said capacitor for maintaining a vacant space outwardly adjacent said terminal means when said capacitor is encapsulated in a container, so that said casing portion with said terminal means mounted thereon can be outwardly displaced without restriction by the encapsulating material upon the occurrence of said failure conditions, thereby providing for operation of said interrupter means prior to rupture of said casing, said protective means comprising a guard member arranged on said casing and defining said vacant space adjacent said terminal means, said guard member comprising an elongated tent-like structure open at opposite ends and formed of a folded strip of stiff sheet member.

#### 4,286,303

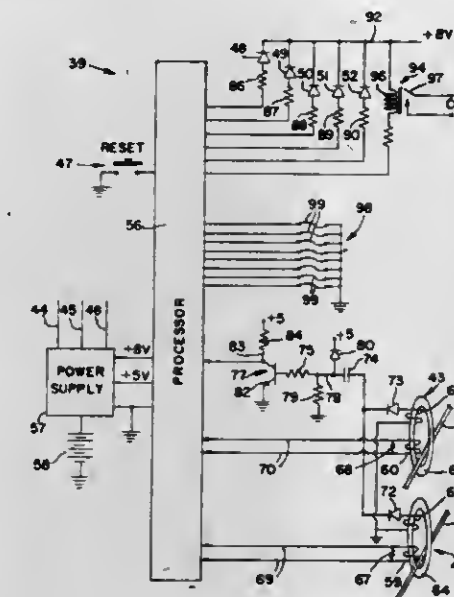
PROTECTION SYSTEM FOR AN ELECTRIC MOTOR  
Stepheo R. Genheimer, Bethany, Okla.; John A. Whitney, Fort Wayne, and Linda M. Reinhard, Bluffton, both of Ind., assignors to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Mar. 19, 1979, Ser. No. 21,613

Int. Cl.<sup>3</sup> H02H 7/085

U.S. Cl. 361—24

15 Claims



1. A method of controlling and protecting an electric load that is adapted to be connected to a power supply by two or more power lines, said method comprising the steps of:

- (a) coupling to at least one of the lines to sense the level of power current flowing through the line;
- (b) comparing the power current level with an upper limit and a lower limit;
- (c) comparing the length of time it is outside the limits with a preselected time interval when the current level is outside of said limits and determining that a fault condition exists when the level is outside said limits longer than said time interval;
- (d) disconnecting the power from the load when a fault condition exists;
- (e) starting a reset time interval;
- (f) reconnecting the power to the load at the end of said reset time interval;
- (g) counting the number of faults that occur due to the current level being above the upper limit; and
- (h) varying the length of said reset time interval dependent on said number of said faults.

#### 4,286,304

##### DEGAUSSING ARRANGEMENT FOR MASER SURROUNDED BY MAGNETIC SHIELDING

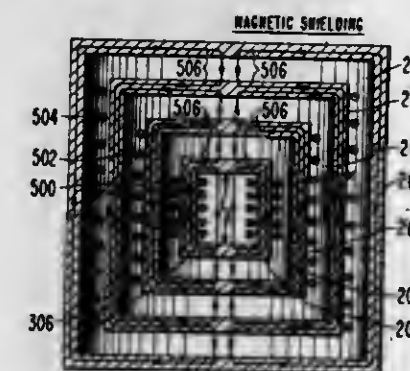
Edwin A. Goldberg, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,246

Int. Cl.<sup>3</sup> H01S 1/00; H01F 13/00

U.S. Cl. 361—149

9 Claims



1. A degaussing arrangement for a maser surrounded by

magnetic shielding, wherein said shielding comprises a plurality of spaced ferromagnetic cans of graduated size each of which encloses all cans smaller than itself, wherein said maser is situated within the interior of the smallest and hence innermost one of said cans, and wherein said maser includes a given helical coil winding situated within the interior of said innermost can and adapted to produce within the interior of said innermost can during operation of the maser a substantially uniform D.C. magnetic field in a direction substantially parallel to the axis of said given helical coil winding in response to a D.C. current flowing through said given helical coil winding; said degaussing arrangement comprising:

said given helical coil winding and at least one additional helical coil winding oriented substantially coaxial with said given helical coil winding, any additional helical coil winding being situated exterior to said innermost can and within a space between two adjacent ones of said cans, whereby degaussing of said shielding is achieved by simultaneously applying A.C. degaussing current to said given and additional helical coil windings.

#### 4,286,305

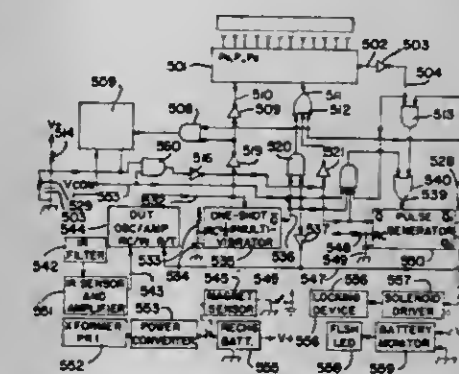
ELECTRONIC SECURITY DEVICE AND METHOD  
Eugene R. Pilat, 2035 Audubon Dr., Glendale Heights, Ill. 60137; George J. Franks, Jr., 261 Whitehall Dr., Palatine, Ill. 60072, and Jerry F. Dyben, 541 Kirkmore Dr., New Haven, Ind. 46779

Filed Apr. 10, 1979, Ser. No. 28,861

Int. Cl.<sup>3</sup> H04Q 9/00

U.S. Cl. 361—172

11 Claims



1. An electronic security assembly comprising, in combination, a lock unit adapted to be mounted on a lockable element, said lock having a bolt unit movable between open and closed positions, said movement between open and closed positions being at least partially controlled by an electronic circuit comprising a key element for transmitting a train of a predetermined number of pulses and an unlocking element for receiving said train of pulses, said key element containing counter means able to be preset to a given number, an oscillator adapted, when energized, to emit a continuous stream of pulses at a predetermined frequency, means in said key for periodically interrupting said stream of pulses from the oscillator under the control of the counter, whereby said stream of output pulses is subdivided into a plurality of trains of pulses, each train comprising said given number of pulses, means for transmitting said trains of pulses from said key element to said unlocking element, said receiving element including a presettable counter for determining the number of pulses in each of said train of pulses, means for comparing the number of pulses actually in said train and said given number, and means for producing an unlocking signal permitting said bolt to move to said open position when said numbers coincide.



4,286,306

## CIRCUIT ARRANGEMENT FOR COMPARING THE SYNCHRONISM OR TRACKING BETWEEN TWO ANALOG SIGNALS

Hermann Kraus, Ottobrunn; Peter Kirchlechner, Siegersbrunn; Robert Rieger, Aying, and Wolf-Dieter Schuck, Neubiberg, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

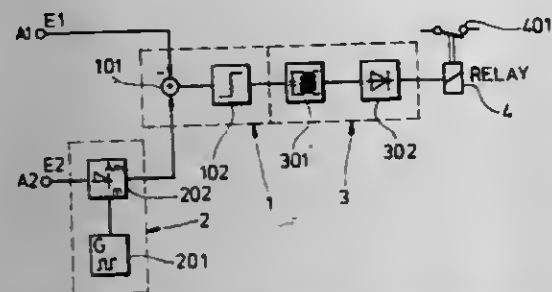
Filed Jul. 31, 1979, Ser. No. 62,497

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834805

Int. Cl.<sup>3</sup> B60K 31/00

U.S. Cl. 361-242

16 Claims



1. A circuit arrangement for the comparing of the synchronism of two analog signals, comprising first and second signal input means for said two analog signals, signal comparator means, means connecting said signal input means to said signal comparator means, said connecting means comprising at least one heterodyning means operatively connecting one of said signal input means to said signal comparator means, whereby at least one of said analog signals is heterodyned by a heterodyning signal having a given frequency and an alternating polarity, said signal comparator means comprising signal difference forming means and signal polarity detecting means operatively connected to said signal difference forming means for producing a difference signal signifying a positive or negative difference between said analog signals, and discriminator circuit means operatively connected to said comparator means for producing an error signal in response to the fact that difference signal zero transitions having said given frequency of said heterodyning signal are absent, said circuit arrangement further comprising feedback circuit means operatively interconnecting said comparator means and said heterodyning means for a self-oscillating operation.

4,286,307

## MULTILAMP PHOTOFLASH UNIT WITH CIRCUIT CROSSOVER

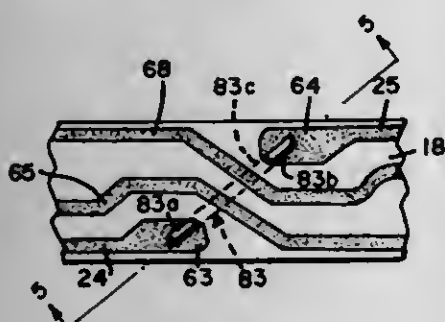
William J. Harvey, Trout Run; Glen E. Flook, Jr., and Randall H. LeFever, both of Williamsport, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Oct. 12, 1979, Ser. No. 84,236

Int. Cl.<sup>3</sup> G03B 15/02

U.S. Cl. 362-115

16 Claims



1. In a multilamp photoflash unit comprising, in combination, a printed circuit board having lamp firing circuitry on a surface thereof, an array of electrically ignitable flashlamps disposed on said circuit board, each of said flashlamps having

a pair of lead-in wires connected to said circuitry, and said circuitry including first and second conductor runs which are spaced apart from each other on said surface of the printed circuit board, means for electrically interconnecting said first and second conductor runs comprising: a staple of conductive material having a pair of legs extending through said printed circuit board and having a center region positioned on the opposite side of said circuit board from said surface thereof, said legs being bent over said surface of the circuit board so as to secure said staple to the circuit board with each of said legs of the staple being in contact with a respective one of said first and second conductor runs, whereby said staple functions as an interconnecting jumper between said first and second conductor runs.

4,286,308

## APPARATUS AND METHOD FOR REDUCING HEADLIGHT GLARE

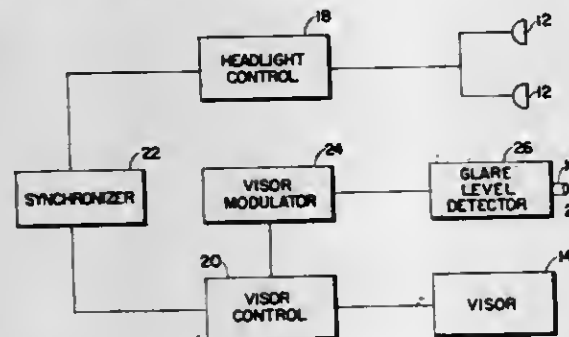
Otto E. Wolff, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 4, 1979, Ser. No. 72,059

Int. Cl.<sup>3</sup> F21V 9/14

U.S. Cl. 362-19

9 Claims



1. An improved glare control system usable on a vehicle for reducing headlight glare from oncoming vehicles traveling along an adjacent path of travel, said control system including a headlight for illuminating the vehicle's path of travel, means for interrupting the light output of said headlight cyclically at a fixed frequency with each headlight cycle consisting of a fixed light emissive interval followed by a fixed nonemissive interval, a visor switchable between light transmissive and opaque states for, respectively, unblocking and blocking the operator's view of his vehicle's path of travel and said adjacent path of travel, and visor switching means operating cyclically in synchronism with said headlight cycle for automatically switching said visor to said transmissive state for a transmissive interval that coincides with said headlight emissive interval and thereafter being responsive to a visor modulation signal for switching said visor to said opaque state wherein said improvement comprises:

means for measuring the headlight glare intensity of said adjacent path of travel and providing a glare level signal that is proportional to the measured intensity; and means responsive to said glare level signal for selectively providing said modulation signal to said visor switching means to automatically adjust the transmissive-to-opaque interval ratio of the visor cycle in accordance with measured glare intensity so that at least between predetermined upper and lower glare intensity limits the apparent density of said visor increases with increasing glare intensity and decreases with decreasing glare intensity.

4,286,309

## DETACHABLE VEHICLE LIGHTING FIXTURE

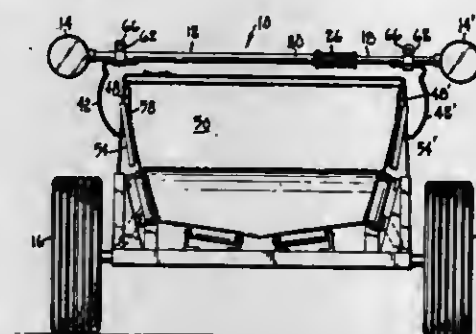
Clarence Rasinski, 2516 W. 70-1/2 St., Richfield, Minn. 55423

Filed Feb. 7, 1980, Ser. No. 119,460

Int. Cl.<sup>3</sup> F21V 21/22

U.S. Cl. 362-61

6 Claims



1. A detachable vehicle lighting fixture, comprising: a length adjustable elongated member having opposite ends; a brake light mounted proximate each end of said elongated member; a pair of resilient cantilever retaining arms, each arm of said pair having a first and a second end; and means mounting each arm of said pair by said first ends to said elongated member; at least one of said arms being adapted for movement along said elongated member toward and away from the other of said arms; said arms biased toward one another.

4,286,310

## LANTERN FED BY AN ELECTRIC BATTERY

Gerard Brankel, Elbeuf, and Alain Battarel, St. Aubin les Elbeuf, both of France, assignors to Compagnie Industrielle des Piles Electriques "Cipel", Levallois-Perret, France

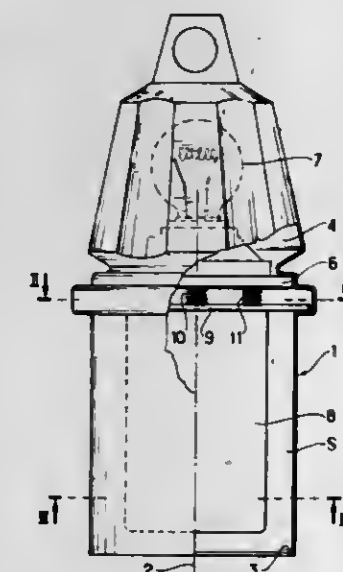
Filed Sep. 25, 1979, Ser. No. 78,677

Claims priority, application France, Oct. 20, 1978, 78 29903

Int. Cl.<sup>3</sup> F21L 7/00

U.S. Cl. 362-203

11 Claims



1. A battery-operated lantern comprising: a housing having a circumferential wall extending about a central axis, a support member positioned transversely to said axis and defining one end of a battery compartment inside the circumferential wall of said housing, the battery compartment having an open end opposite said support member, first guide means in the battery compartment extending parallel to the axis along the inside surface of the circumferential wall, second guide means in the battery compartment extending circumferentially around the inside surface of said wall, and

a stop means on the inside surface of said wall and spaced circumferentially from the first guide means; a light bulb mounted on said support means on the opposite side thereof from the battery compartment; a pair of electrical contacts mounted in the battery compartment and conductively connected to the light bulb; an electric battery removably positioned in the battery compartment, said battery having a pair of terminals; and follower means associated with said battery for slidably engaging said first guide means for permitting said battery to be axially inserted into or withdrawn from the battery compartment at a first predetermined angular position, for slidably engaging the second guide means when the battery is inserted a predetermined distance into the battery compartment for permitting said battery to be rotated inside the said compartment between the first angular relation and a predetermined second angular relation at which the battery terminals conductively touch said electrical contacts, and for engaging said stop means when the battery is in said second angular position.

4,286,311

## FLASHLIGHT

Anthony Maglica, 219 Armsley Sq., Ontario, Calif. 91762

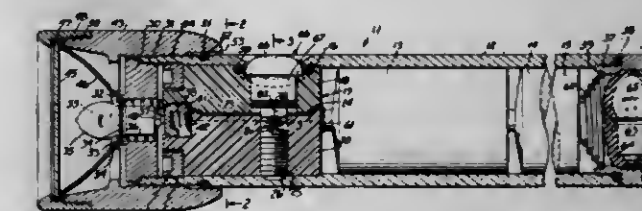
Continuation-in-part of Ser. No. 894,492, Apr. 7, 1978,

abandoned. This application Dec. 11, 1978, Ser. No. 968,468

Int. Cl.<sup>3</sup> F21L 7/00

U.S. Cl. 362-205

5 Claims



3. In a flashlight comprising a casing having a longitudinal axis and a forward end, a reflector disposed adjacent the forward end of said casing, said reflector having a central opening therein, a light bulb support structure disposed rearwardly of said reflector, a light bulb releasably retained in said light bulb support structure, said light bulb extending through said central opening, and means for creating relative movement between said reflector and said light bulb to selectively vary the breadth of the light beam issuing from said flashlight, the improvement comprising:

a reflector support structure rotatably mounted on said casing adjacent said forward end thereof; means connecting said reflector to said reflector support structure for rotation therewith; means mounting said light bulb support structure within said casing for axial movement relative to said reflector support structure; spring means, normally urging said light bulb and said light bulb support structure forwardly in said casing; cooperating camming means connected to said reflector and said light bulb support structure for moving said light bulb support structure axially in response to rotational movement of said reflector; said cooperating camming means including an inclined camming surface connected to said reflector and a cam follower connected to said light bulb support structure; whereby, rotation of said reflector support structure will cause rotation of said reflector which is connected thereto, and rotation of said reflector will, by virtue of said cooperating camming means and said spring means, cause axial movement of said light bulb support structure and said light bulb retained thereby to alter the breadth of the light beam issuing from said flashlight; a pair of spaced conductor strips disposed within said casing, and a switching structure for selectively establishing electrical connection between said spaced conductor strips;



and means establishing electrical connection between one of said conductor strips and said light bulb; said other of said conductor strips being adapted to electrically contact batteries disposed in said casing; said switch structure including:

- a drive plunger and an indexing member;
- said drive plunger and said indexing member having cooperating surfaces, whereby movement of said drive plunger toward said indexing member will tend to cause rotation of said indexing member;
- a bridging contact carried by said indexing member; said bridging contact being adapted to establish an electrical flow path from one of said conductor strips to the other; means for preventing rotational movement of said indexing member until said drive plunger has moved said indexing member so as to engage said bridging contact with each of said conductor strips; said means thereafter permitting said cooperating teeth on said drive plunger and said indexing member to cause rotational movement of said indexing member so as to cause said engaged surface portions of said bridging contact and said spaced conductor strips to wipe any products of oxidation or corrosion therefrom.

4,286,312

### PORTABLE LIGHTING APPARATUS COMPRISING A DIFFUSING LENS

Raymond A. Benoit, Septeuil, France, assignor to Societe les Piles Wonder, France

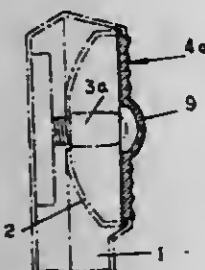
Filed Sep. 5, 1979, Ser. No. 72,651

Claims priority, application France, Oct. 17, 1978, 78 29572

Int. Cl.<sup>3</sup> F21V 7/00

U.S. Cl. 362-309

5 Claims



1. A portable lighting apparatus comprising a case having a parabolic reflector, a bulb whose filament is situated substantially at the focus of the parabolic reflector and a square or rectangular shaped diffusing lens fixed at the periphery of the reflector, perpendicular to the optical axis thereof and comprising a series of rectilinear and adjacent scores on each of its internal and external faces, the scores of each series being formed by concave cylindrical surfaces having the same radius of curvature, the scores of one series being substantially perpendicular to those of the other series, wherein the radii of the scores of the internal face of the lens are slightly smaller than those of the scores in the external face of said lens, and wherein the depth and the radii of the two series of scores are chosen so that the pyramidal light beam therefrom gives substantially uniform illumination in any plane perpendicular to the optical axis.

4,286,313

### BALANCED INDUSTRIAL LUMINAIRE

Honesto D. Quigoe, Blacksburg, Va., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Aug. 15, 1979, Ser. No. 66,814

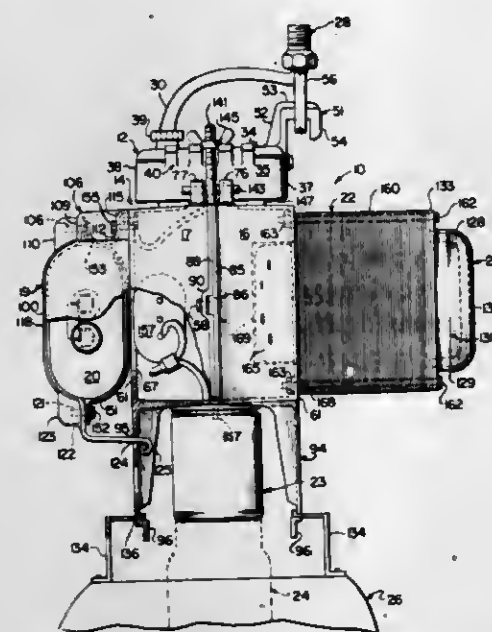
Int. Cl.<sup>3</sup> F21V 21/00

U.S. Cl. 362-370

14 Claims

1. A luminaire assembly comprising:  
a central housing having a lamp socket extending downwardly therefrom;

- a capacitor;
- first means for mounting said capacitor on one side of said housing and externally thereof;
- a ballast;
- second means for mounting said ballast on a side of said housing opposite said capacitor with a major portion of said ballast being outside of said housing;
- a top cover;
- means for coupling said top cover to the top of said housing; and



means for suspending said luminaire assembly from a fixed support,  
said means for suspending being located on said top cover laterally displaced towards said ballast and engaging the fixed support substantially above the center of gravity of said luminaire assembly,  
said means for suspending being the sole load bearing element interconnecting said luminaire assembly and said fixed support.

4,286,314

### INVERTER CIRCUIT FOR MINIMIZING SWITCHING POWER LOSSES

Robert B. Molyneux-Berry, Danbury, England, assignor to The Marconi Company Limited, Chelmsford, England

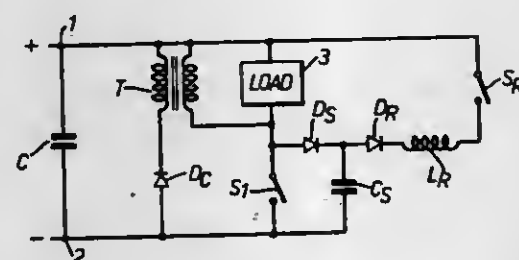
Filed Jul. 18, 1979, Ser. No. 58,522

Claims priority, application United Kingdom, Jul. 20, 1978, 30482/78

Int. Cl.<sup>3</sup> H02M 1/18

U.S. Cl. 363-55

6 Claims



1. An inverter circuit including a switch which is rendered conductive periodically so as to provide pulsed power from a power source to a load; a diode and a capacitor serially connected in a path which is in shunt with said switch, and a further switch coupled to said capacitor by means of which the capacitor is periodically discharged to return the energy stored by the capacitor to the power source, and wherein said capacitor and the further switch are connected in series across the input terminals of the inverter circuit to which, in use, power is applied from the power source so that when said further

switch is rendered conductive, the energy stored by the capacitor flows through the further switch back to the power source.

4,286,315

### CONVERTER APPARATUS

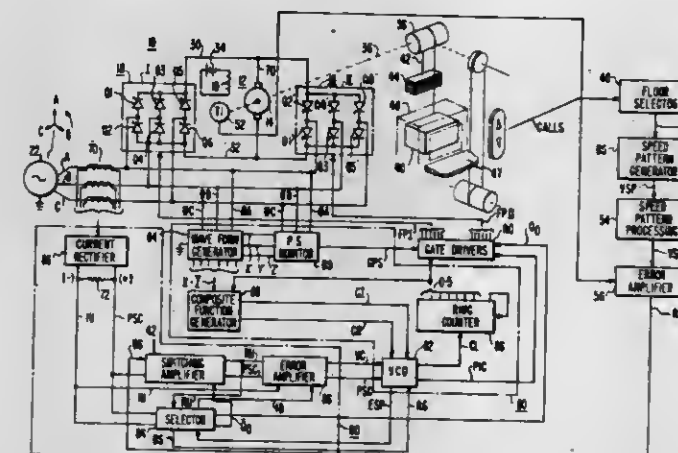
Frederick O. Johnson, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 27, 1979, Ser. No. 61,532

Int. Cl.<sup>3</sup> H02P 13/24

U.S. Cl. 363-87

5 Claims



1. Converter apparatus, comprising:  
a source of alternating potential,  
a load circuit,

converter means having controlled rectifier devices connected, and gateable in a predetermined sequence, to interchange electrical energy between said source of alternating potential and said load circuit,  
gate drive means including pulse means for storing and subsequently releasing electrical energy to provide a gate drive pulse for each controlled rectifier device,  
and control means for said pulse means, said control means providing signals which initiate the storage of electrical energy by the pulse means for each controlled rectifier device, normally a predetermined number of electrical degrees immediately prior to the time the controlled rectifier device is to be gated, and which subsequently triggers a release of the stored energy precisely when the controlled rectifier device is to be gated,  
said predetermined number of electrical degrees being selected such that electrical energy is stored for only one currently non-conductive device at any instant.

4,286,316

### HIGH VOLTAGE SINE WAVE POWER SUPPLY

Clifford K. Friend, Tarzana, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 19, 1980, Ser. No. 122,168

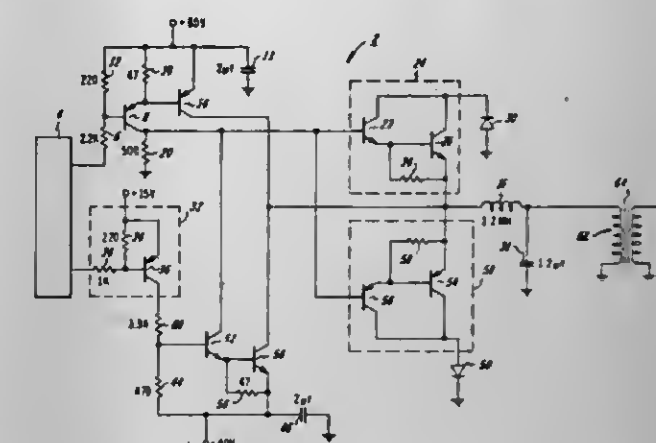
Int. Cl.<sup>3</sup> H02M 7/537

U.S. Cl. 363-131

6 Claims

1. A resonant circuit sine wave power supply comprising, a transformer (64), at least one resonant circuit (16, 18) coupled to the primary (62) of transformer (64), and sources of positive and negative dc voltages, characterized in  
a first switching network (8, 14) coupled between the source of positive dc voltage and the resonant circuit (16, 18), a second switching network (42, 48) coupled between the source of negative dc voltage and the resonant circuit (16, 18), a third switching network (24) coupled between the resonant circuit (16, 18) and a reference potential, a fourth switching network (52) coupled between the resonant circuit (16, 18) and a reference potential, and switching means (a) for alternately switching the first and second switching networks to conduction during portions of the power generation cycle and (b) for alternately rendering

one of the third or fourth switching networks conductive when the first and second switching networks are non-



conductive, whereby non-heat dissipative current flow is provided throughout the entire power generation cycle.

4,286,317

### FORCED COMMUTATION POWER CONVERTER ARRANGEMENT IN REVERSE VOLTAGE FREE CIRCUIT CONFIGURATION

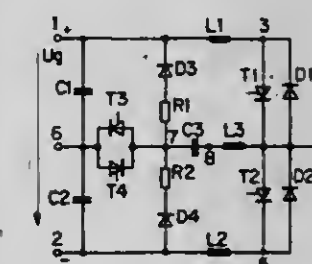
Karl Kommissari, Hemsbach, Fed. Rep. of Germany, assignor to BBC Brown, Boveri & Co. Ltd., Baden, Switzerland

Filed Aug. 16, 1979, Ser. No. 67,179

Int. Cl.<sup>3</sup> H02M 7/515

U.S. Cl. 363-136

8 Claims



1. A forced commutation power converter arrangement in reverse voltage free circuit configuration comprising:  
positive and negative direct current input terminals and an output terminal;  
a pair of series connected capacitors connected across said positive and negative input terminals and also to each other at a first connection point;  
a commutation circuit composed of:  
a first plurality of controllable current converter means arranged in parallel opposition and connected at one side to said first connection point;  
a commutation capacitor connected to the other side of said controllable current converter means;  
a commutator choke connected between said commutation capacitor and a second connection point;  
a load circuit connected across said positive and negative terminals, and composed of:  
a second plurality of controllable current converter means connected between said inputs and said second connecting point;  
a first plurality of non-controllable current converter means connected in parallel opposition to said second controllable current converter means; and  
two first chokes, each connected between one of said inputs and a respective one of said second plurality of controllable current converter means;  
said commutator capacitor being connected between said first plurality of controllable current converter means of said commutation circuit and said pluralities of controlla-



ble and non-controllable current converter means of said load circuit; and  
a damping circuit connected between said commutator capacitor and said first plurality of controllable current converter means, and comprising a plurality of current converter means, so as to receive, through its plurality of current converter means, voltages supplied to said positive and negative input terminals of said power converter arrangement.

#### 4,286,318 CONTROL LOOP

Kornelis A. Immink, and Abraham Hoogendoorn, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

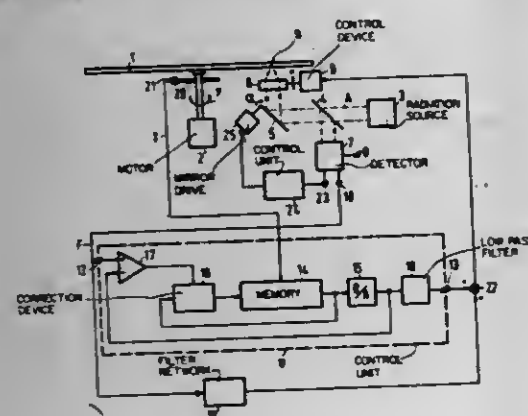
Filed May 21, 1979, Ser. No. 40,794

Claims priority, application Netherlands, May 3, 1979, 7901721

Int. Cl.<sup>3</sup> G05B 11/01

U.S. Cl. 364-118

11 Claims



1. A control loop for controlling a control quantity, said control loop comprising  
a detection system for supplying an error signal which is indicative of the difference between the instantaneous value and the desired value of the control quantity, and  
a control unit having an input terminal, which is coupled to the detection system, for receiving the error signal, and an output terminal, said control unit having a transfer characteristic with a number of peaks at a fundamental frequency and harmonics thereof and including  
a memory device with a plurality of memory locations for storing digitally coded signal values,  
a digital-analog converter, coupled to the memory device, for converting the digitally coded signal values supplied by the memory device into analog signal values,  
means for applying said analog signal values to said output terminal,  
comparison means for comparing the value of a signal value read from the memory device with the value of said error signal supplied by the detection system,  
correction means, coupled to the memory device and to the comparison means, for correcting the signal values obtained from the memory device in dependence on the signal supplied by the comparison means, the correction applied having a maximum value which is small relative to the maximum attainable signal value,  
and means for controlling read out and storage of said signal values in the memory device so that a number of signal values are read out from the memory device in accordance with a recurrent cycle and, after each read out of a signal value, the corrected signal value supplied by the correction means is stored in the memory instead of the signal value previously read, the cycle having a period equal to that associated with the fundamental frequency, said loop further comprising a control device, coupled to said output terminal of said control unit, for changing the control quantity in response to said signal values.

#### 4,286,319 EXPANDABLE INTER-COMPUTER COMMUNICATION SYSTEM

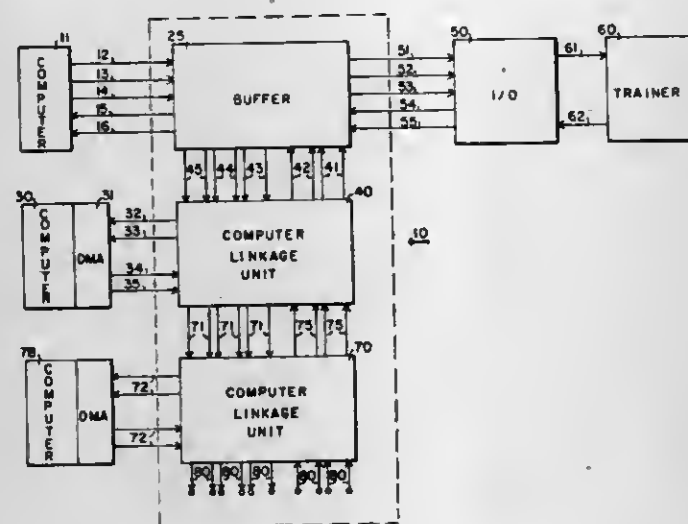
Robert J. Membrino, Silver Spring; Raphael R. Some, Beltsville, and Van A. Quinn, Columbia, all of Md., assignors to The Singer Company, Binghamton, N.Y.

Filed Dec. 6, 1977, Ser. No. 857,916

Int. Cl.<sup>3</sup> G06F 15/16, 15/56; H04B 3/00

U.S. Cl. 364-200

20 Claims



1. A expandable asynchronous parallel intercomputer communication system that provides a two-way communication signal channel between a master computer and a plurality of slave computers, and between said master computer and a plurality of peripheral units which are electrically and functionally compatible with said master computer, said master computer being separated from said plurality of slave computers and said plurality of peripheral units by varying transmission distances, said system comprising:

- a. a buffer unit having at least three bidirectional channels so interconnected that signals received by said buffer unit on said first channel are provided to said second and third channels as described in this claim, and signals received by said buffer unit on said second and third channels are provided to said first channel as described in this claim, the first buffer unit bidirectional channel being electrically compatible with and coupled to said master computer and the second buffer unit bidirectional channel being coupled to at least one of said peripheral units, said second buffer unit bidirectional channel transmits electrical signals which are electrically and functionally identical to the signals that are transmitted on said first bidirectional channel so that the presence of said buffer unit does not affect the communications between said master computer and said plurality of peripheral units; the third buffer unit bidirectional channel comprising a bidirectional differential channel which transmits signals that have been electrically altered by said buffer unit without functionally altering the meaning of said signals so that electrical characteristics of said signals are maintained over long transmission distances; and
- b. a first computer linkage unit for providing functional and electrical interface functions between said first slave computer and said buffer unit, said first computer linkage unit being coupled to said buffer unit at said third buffer unit bidirectional differential channel and coupled to said first slave computer so that said first computer linkage unit may maintain electrical and functional compatibility with said buffer unit and said first slave computer; whereby said first slave computer, and said first computer linkage unit may be added to an existing computer communication system without modifying the existing system.

#### 4,286,320 DIGITAL COMPUTING SYSTEM HAVING AUTO-INCREMENTING MEMORY

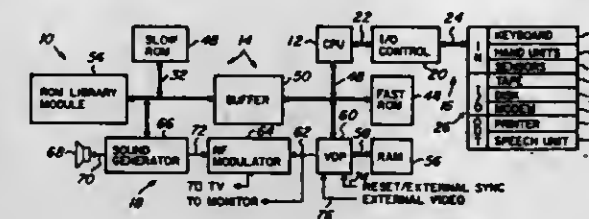
Granville E. Ott, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 12, 1979, Ser. No. 20,111

Int. Cl.<sup>3</sup> G06F 13/00, 13/06

U.S. Cl. 364-200

10 Claims



1. A plug-in library module for use in a digital computing system having a central processing unit which provides the address of a selected one of a plurality of sequentially accessed address location in said library module, provides a read memory signal and is responsive to processing information provided thereto in response to said address, and interface means including a plug-in type port for temporarily receiving the library module and for providing communication between the central processing unit and said library module, said library module comprising:

- memory means disposed within said library module, said memory means having processing information contained therein at sequentially accessed address locations, and outputting the processing information at each of said address locations in response to receiving the address thereof;
- address counter means disposed within said library module for receiving and storing the address provided by said central processing unit, and providing said address stored therein to said memory means in response to the central processing means providing the read memory signal;
- connector means disposed within said library module and connectable to the plug-in port of said interface means, said connector means connecting the address provided by said central processing unit to said address counter means, and connecting the processing information outputted by said memory means to said central processing unit; and
- control means disposed within said library module and connected to said address counter means, said control means incrementing the address in said address counter means to the address of the next sequentially accessed address location in said memory means in response to said memory means outputting the processing information to said central processing unit in response to the address provided thereto by said address counter means, whereby the processing information contained in said next sequentially accessed address location will be provided by said memory means in response to a read memory signal provided by said central processing unit.

#### 4,286,321 COMMON BUS COMMUNICATION SYSTEM IN WHICH THE WIDTH OF THE ADDRESS FIELD IS GREATER THAN THE NUMBER OF LINES ON THE BUS

David C. Baker, Austin, Tex.; David F. Bantz, Chappaqua, and Carlo J. Evangelisti, Jefferson Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,532

Int. Cl.<sup>3</sup> G06F 7/04

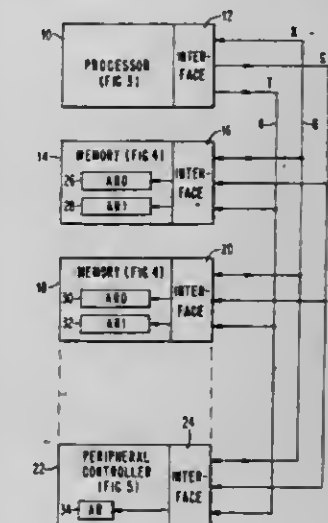
U.S. Cl. 364-200

7 Claims

1. In a common bus communication system connected for information exchange between a processor and a plurality of subsystems which are each coded with a different identification number, with information exchange between said processor and a given subsystem occurring when said processor sends

an information signal over said bus including the identification number of said given subsystem, in which the number of lines  $n$  on the bus are fixed, and any complete address field of an address register in a subsystem, which is to be transmitted over said bus, is  $m$  bytes wide and  $m$  is greater than the number of lines on the bus, where  $m$  and  $n$  are integers, and  $m > n$  the combination comprising:

- a memory array included in each of said subsystems;
- at least one  $m$  byte wide register included in each of said subsystems which stores the address of the last accessed memory location in a given region on said memory array;
- means included in said processor for storing a copy of the contents of said one  $m$  byte wide address register of each subsystem;



means included in said processor for generating said coded identification number of a given one of said subsystems for selecting said given one of said subsystems to exchange information with by providing said coded identification number to said common bus for transmission to said subsystems; and  
means included in said processor for comparing on a byte by byte comparison basis the copy of the contents of said one  $m$  byte wide address register of the selected subsystem with the  $m$  byte wide information signal to be exchanged, and in response to the comparison communicating  $n$  byte at a time over said  $n$  byte wide bus to said one address register of the selected subsystem only the bytes that do not match based on the comparison for updating the address stored in said one register to select the correct address in said memory array.

#### 4,286,322 TASK HANDLING APPARATUS

Roy L. Hoffman, Pine Island; William G. Kempke, Rochester, both of Minn.; John W. McCullough, Atlanta, Ga.; Frank G. Soltis, and Richard T. Turner, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 3, 1979, Ser. No. 54,508

Int. Cl.<sup>3</sup> G06F 9/06

U.S. Cl. 364-200

8 Claims

1. Task handling apparatus for a computer system having an addressable main storage for storing data and instructions including a dispatch task dispatching queue instruction, central processing unit (CPU) with means for fetching and executing instructions including said dispatch task dispatching queue instruction, said CPU having a normal active state and switchable into a wait state and input/output devices, the improvement comprising:  
a plurality of task dispatching queues containing task dispatching elements in priority sequence each having a priority field, task dispatching element chain address field, status field and task dispatching queue address field, one of said task dispatching queues being a prime task dispatch-



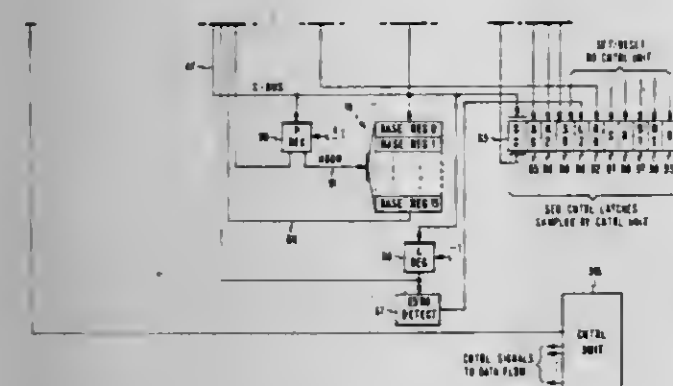
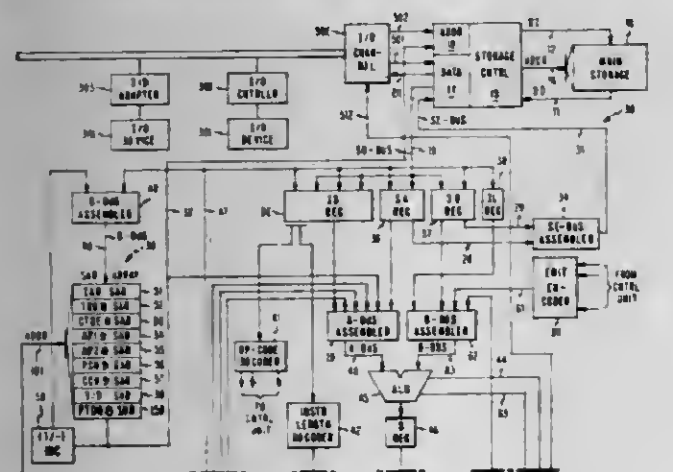
ing queue and all others being non-prime task dispatching queues, said task dispatching queues being addressable and having a task dispatching element chain address for locating the highest priority task dispatching element on the task dispatching queue, said task dispatching element chain address having a particular value for indicating that the task dispatching queue has no task dispatching elements enqueued thereon,

current task dispatching queue register means for containing an address for addressing a current task dispatching queue,

prime task dispatching queue register means for containing an address for addressing said prime task dispatching queue,

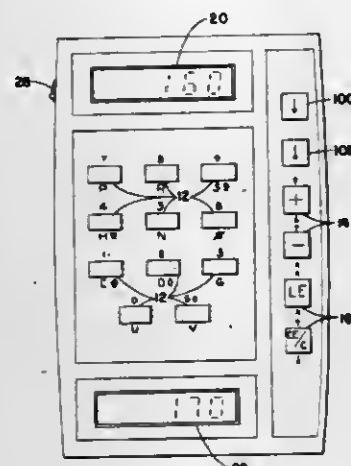
means for loading said current task dispatching queue register means with a task dispatching queue address in response to said CPU executing a dispatch task dispatching queue instruction,

detecting means for detecting said particular value of said task dispatching element chain address,



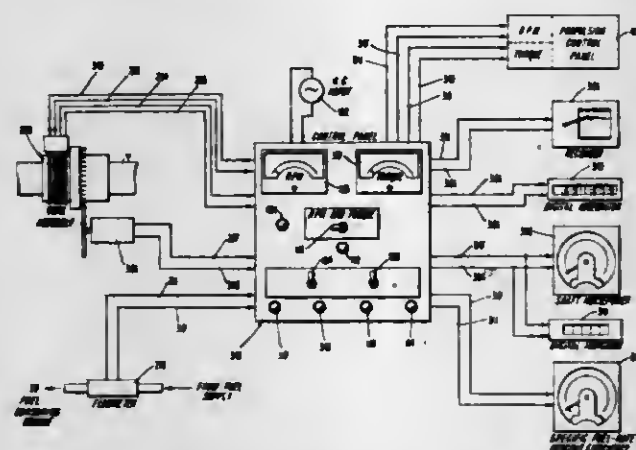
means responsive to said detecting means detecting said particular value of a task dispatching element chain address of a non-prime task dispatching queue for transferring the address in said prime task dispatching queue register means into said current task dispatching queue register means and responsive to said detecting means detecting said particular value of a task dispatching element chain address of said prime task dispatching queue for switching said CPU into said wait state, and task dispatching means having first means for rendering the highest priority task dispatching element of the current task dispatching queue active by loading the contents of its status field into said CPU and having second means for storing task status from said CPU into the status field of the current task dispatching element when said current task dispatching element is not the highest priority task dispatching element on said current task dispatching queue.

**4,286,323**  
**ELECTRONIC SCORING DEVICE**  
Horace H. Meday, 1322 Martino Rd., Lafayette, Calif. 94549  
Filed May 14, 1979, Ser. No. 38,645  
Int. Cl.<sup>3</sup> G06F 15/44; A63B 71/06  
U.S. Cl. 364-411 8 Claims



1. A hand-held electronic scoring device, which comprises:
  - (a) a case,
  - (b) A plurality of double entry score keys on said case, each representing a particular number and an alphabetical letter of a mnemonic code for entry of information of scoring significance in a game being played independent of said device, at least some of the letters representing more than one event of scoring significance, with selection from the more than one event being determined by keystroke sequence for an entry,
  - (c) a plurality of function keys on said case with at least one of said function keys for choosing between entry of the particular number and the letter for a keystroke of one of the double entry score keys and at least one function key for assigning the entry to one of said first and second displays,
  - (d) first and second display means in said case having a distinguishing characteristic from each other and being assignable to opposing sides of a game, and
  - (e) circuit means connected to said double entry score keys, function keys and first and second display means to receive score information, carry out functions thereon and display a resulting score on the one of said displays for which the score information is entered.

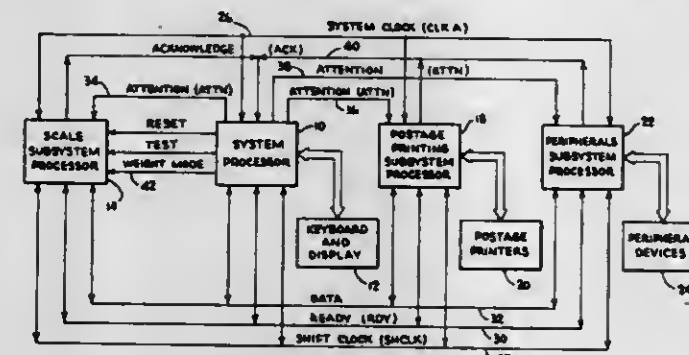
**4,286,324**  
**PRIME MOVER FUEL EFFICIENCY CONTROL SYSTEM**  
Maxwell Ingram, 230 Anderson St., Hackensack, N.J. 07601  
Filed Sep. 24, 1979, Ser. No. 78,089  
Int. Cl.<sup>3</sup> F02C 9/56; G01L 3/26; G05D 17/02  
U.S. Cl. 364-442 12 Claims



12. A system for determining and controlling the power being transmitted through a rotated shaft from a fuel-consuming engine, comprising:

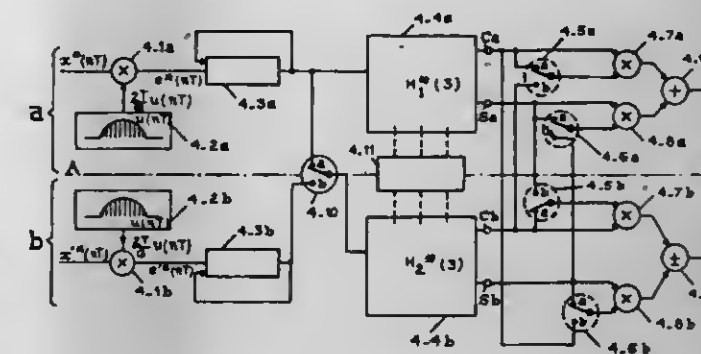
- first means on said shaft for generating a signal representative of torque transmitted through said shaft;
- second means on said shaft for generating a signal representative of shaft rotational speed;
- third means multiplying said signals from said first and second means to produce a signal representative of the horsepower being transmitted through said shaft;
- fourth means coupled to the engine for producing a signal representative of the rate of fuel consumed in the transmission of power through said shaft;
- fifth means dividing the signal from said fourth means by the signal from said third means to produce a signal representative of specific fuel rate, reflecting instantaneous engine efficiency;
- sixth means coupled to said fifth means and responsive to the signal from said fifth means for providing a visually perceptible output of specific fuel rate and instantaneous efficiency;
- seventh means coupled to receive said signal from said first means for producing a variable feedback signal for controlling engine torque; and
- eighth means coupled to receive said signal from said second means for producing a variable feedback signal for controlling engine speed, whereby engine speed and torque operating parameters may be controlled and specific fuel rate may be monitored so as to maximize fuel efficiency.

**4,286,325**  
**SYSTEM AND METHOD FOR COMPUTING DOMESTIC AND INTERNATIONAL POSTAGE**  
Daniel F. Diago, Hantington; Gary G. Hansen, Greenwich, and John H. Steinmetz, Norwalk, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.  
Filed Aug. 27, 1979, Ser. No. 70,234  
Int. Cl.<sup>3</sup> G06F 15/20; G01G 23/42  
U.S. Cl. 364-466 18 Claims



1. A method of calculating a postage value for an article to be mailed to one of a plurality of foreign countries sharing common structured rate data in the form of equation boundary conditions and instructions, said method comprising the steps of:
  - (a) selecting postal information indicative of the carrier-type class and destination of the article to be mailed,
  - (b) obtaining weight information for said article to be mailed,
  - (c) processing said postal information and said weight information to determine whether common structured rate data can be accessed for calculating a postage value for said article,
  - (d) accessing common structured rate data for said article, and
  - (e) generating a postage value for said article to be mailed from at least one equation of an equation set in accordance with said accessed common structured rate data, comprising boundary conditions for said one equation and instructions directing the use of said one equation.

**4,286,326**  
**DIGITAL DEVICES FOR SPECTRUM ANALYSIS**  
Jean P. Houdard, Orsay, France, assignor to Le Materiel Telephonique, Boulogne-Billancourt, France  
Filed Apr. 23, 1979, Ser. No. 32,379  
Claims priority, application France, Apr. 27, 1978, 78 12477  
Int. Cl.<sup>3</sup> G06F 15/31 6 Claims



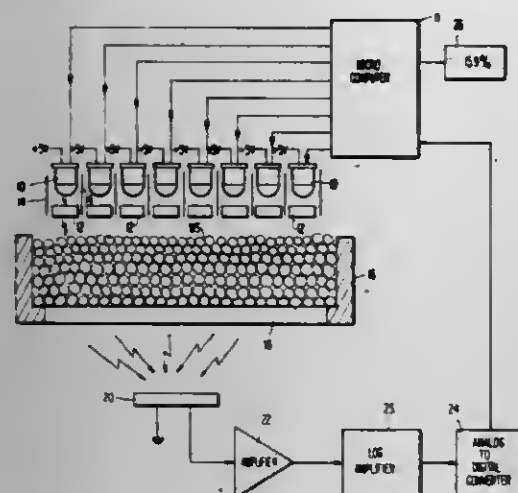
1. A digital device for analyzing the spectrum of a signal  $X(t)$ , said signal having the spectral transform  $X(f)$ ,  $-f_c/2 < f < f_c/2$ , and previously having been sampled at a frequency  $f_s = T$ , and linearly quantized and encoded to produce a digital series  $X^*(nT)$ , said device measuring the power spectral density of said signal and including:
  - (a) a limiting gate of width  $\tau = NT$  connected to the input of the device for processing the incoming signal  $X^*(nT)$ ;
  - (b) a perfect digital resonator, including first and second delay circuits each of delay  $T$ , connected to said limiting gate, said resonator having a first output  $S$ , known as the "sine" output and a second output "C" known as the "cosine" output; and
  - (c) a read-only memory connected to said resonator, said memory storing  $q$  group of three coefficients,  $2 \cos 2\pi f_p T$ , and  $\sin 2\pi f_p T$ , respectively, corresponding to the  $q$  frequencies of the analysis, characterized in that the device further comprises:
    - (d) at least one read-write memory comprising a looped shift-register inserted between the output of said limiting gate and the input of said perfect resonator for storing  $N$  samples of said signal; and
    - (e) means, connected to said first and second delay circuits in said perfect resonator, for resetting said delay circuits after the passage of the  $N$  samples stored in said read-write memory.

**4,286,327**  
**APPARATUS FOR NEAR INFRARED QUANTITATIVE ANALYSIS**  
Robert D. Rosenthal, and Scott B. Rosenthal, both of Gaithersburg, Md., assignors to Trebor Industries, Inc., Gaithersburg, Md.  
Filed Sep. 10, 1979, Ser. No. 73,965  
Int. Cl.<sup>3</sup> G06F 15/20; G01N 21/00; G01J 3/48  
U.S. Cl. 364-498 7 Claims

1. An apparatus for near infrared quantitative analysis comprising:
  - a plurality of pulsed infrared emitting diodes (IREDs) of specific one-half power bandwidth;
  - means for providing pulses to control the on off status of the IREDs;
  - a highly sensitive infrared detector positioned to receive infrared energy reflected or transmitted through a sample;
  - a plurality of stationary bandpass filters each selected to allow passage of a preselected wavelength band through it, which selected band is outside the one-half power bandwidth of the IRED, each of the said bandpass filters



positioned between each of the said IREDs and the infrared detector;



means for performing the said quantitative analysis based on the energy received by said infrared detector.

4,286,328

### INCOHERENT OPTICAL AMBIGUITY FUNCTION GENERATOR

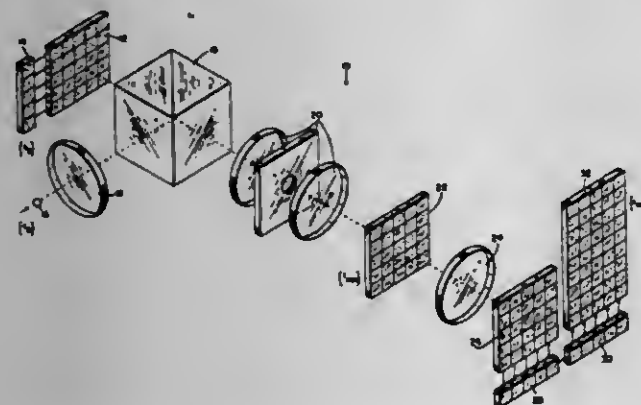
Richard P. Bocker, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 6, 1978, Ser. No. 949,328

Int. Cl.<sup>3</sup> G06G 7/195, 9/00

U.S. Cl. 364-851

12 Claims



1. An electro-optical system for computing the mathematical function of the discrete sample form

$$x_{mn} = \sum_{p=-L}^{+L} s_p s_{p-m} f_{pn}$$

where  $\{s_p\}$  and  $\{x_{mn}\}$  are sets of numbers representing sampled values of the functions  $s(t)$  and  $x(t, w)$ , respectively comprising:

- a photo-responsive programmable mask for storing said sampled values of  $\{s_p\}$  of the signal  $s(t)$ ;
- a light source positioned to illuminate said photo-responsive programmable mask;
- said light source being responsive to input signals for temporally modulating the intensity of the output of said light source as a function of the said values  $\{s_p\}$ ;
- a photographically recorded mask having encoded thereon information representative of the values  $\{f_{pn}\}$ ;
- an imaging lens positioned for transmitting light radiated by said photographically recorded mask;
- a photo-sensor array positioned to be illuminated by the irradiance from said imaging lens.

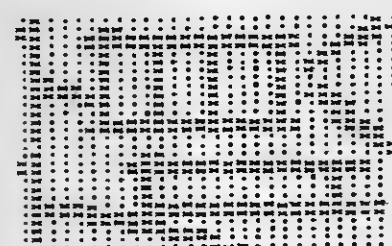
4,286,329  
COMPLEX CHARACTER GENERATOR  
Gerald Goertzel, White Plains; Carl G. Powell, Putnam Valley, and Samuel C. Tseng, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,342

Int. Cl.<sup>3</sup> G06F 3/14, 3/12; G09G 3/00

U.S. Cl. 364-900

6 Claims



1. In character generating apparatus, a method of generating characters in a complex character set on a utilization device, with each character in said complex character set being described by an original  $m$  by  $n$  element matrix, where  $m$  and  $n$  are integers which may or may not be equal, said method comprising the steps of:

defining in terms of elements, three groups of different patterns which occur frequently in said complex character set, namely, a first group which has a fixed size for each pattern, a second group which has one size parameter which must be specified for each pattern, and a third group which has a plurality of size parameters which must be specified for each pattern;

assigning a different symbol to represent each one of said different patterns;

defining a sparse  $m$  by  $n$  character matrix for each character in said complex character set in terms of the combination of symbols assigned to represent the combination of patterns defining the corresponding original character matrix, with at least certain ones of said characters having elements of different patterns which overlap, such that the elements that overlap are generated for each pattern of which they form a part, with each symbol being positioned in the sparse matrix where a predetermined one of the elements forming the pattern defined by that symbol is positioned in the original character matrix;

storing in binary form in a storage device each sparse matrix representation in said complex character set as a compacted character, with the binary information stored for each compacted character being: (a) the symbols in the sparse matrix, (b) the positions of the symbols in the sparse matrix, and (c) the size parameters of the pattern represented by the symbol, if the symbol is in said second or third group of patterns; and

generating on said utilization device a given complex character in response to retrieving and decoding the binary information stored which defines the corresponding compacted complex character, with the elements that overlap patterns being generated for each pattern of which they form a part.

4,286,330

### AUTONOMIC STRING-MANIPULATION SYSTEM

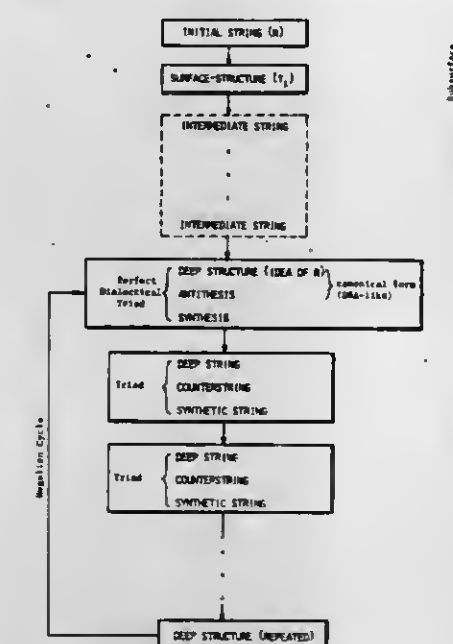
Joel D. Isaacson, 7370 Stratford Ave., University City, Mo. 63130

Continuation of Ser. No. 674,658, Apr. 7, 1976. This application Apr. 26, 1979, Ser. No. 33,623

Int. Cl.<sup>3</sup> G06F 7/04; G06K 9/00

U.S. Cl. 364-900

10 Claims



1. In data processing apparatus, the method of manipulating a physical representation of a finite string, including storing the resulting recurrent cycle of strings, which comprises:

- (a) interfacing said representation of said string with said apparatus; and
- (b) hegelizing the interfaced representation of said string so as to generate and store in said apparatus the resulting recurrent cycle of strings for a finite duration.

Also, please enter the following corrections by amendment in the above mentioned application.

4,286,331

### MONITORING AND SIGNALLING SYSTEM INCLUDING APPARATUS FOR PROCESSING AND ANALYZING SIGNALS PRODUCED BY ACTIVITY MONITORING SENSORS

Richard W. Anderson, Reading; Martin L. Resnick, Chestnut Hill, and J. Edward Schlener, Winchester, all of Mass., assignors to GTE Products Corp., Stamford, Conn. and GTE Laboratories Inc., Waltham, Mass.

Filed Nov. 14, 1979, Ser. No. 94,018

Int. Cl.<sup>3</sup> G06F 3/05

U.S. Cl. 364-900

15 Claims

1. In a monitoring and signalling system, apparatus comprising:

first sensor means operative to monitor the occurrence of predetermined first and second associated activities and in response to monitoring the occurrence of either associated activity to produce a signal indicative of the occurrence of the activity, said signal including data specifying the particular activity monitored by the first sensor means and identifying the first sensor means;

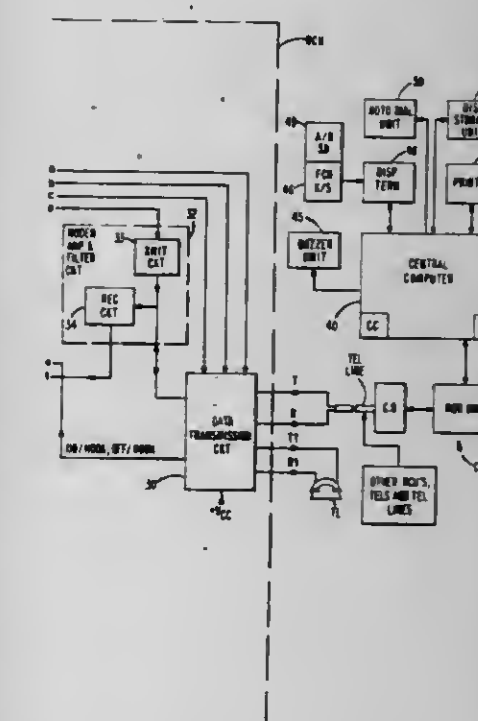
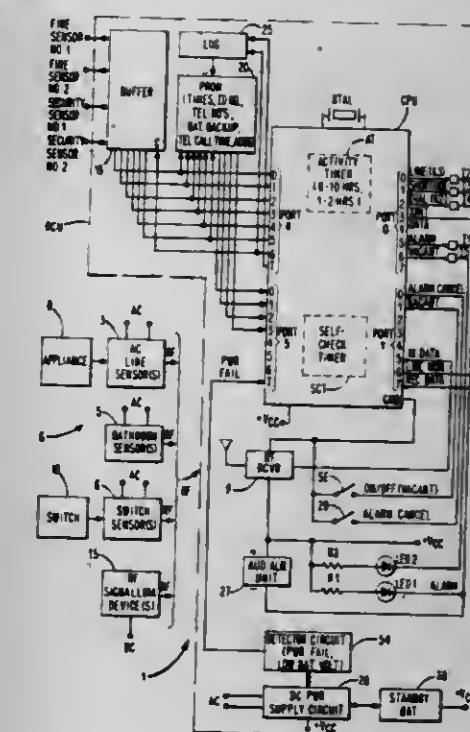
second sensor means operative to monitor the occurrence of a predetermined associated activity and in response to monitoring the occurrence of the activity to produce a signal indicative of the occurrence of the activity, said signal including data identifying the second sensor means;

processing means operative to receive and process signals produced by the first sensor means and the second sensor means, said processing means comprising:

activity timer means for receiving therein either a first count or a second count;

analyzing means arranged to analyze the activity and sensor identification data in signals received by the processing

means from the first and second sensor means to determine the origin of the signals and the particular monitored activities, said analyzing means being operative for each signal identifying the first sensor means and specifying the occurrence of the first associated activity to cause a first count to be placed in the activity timer means, and operative for each signal identifying the first sensor means and specifying the occurrence of the second associated activity or for each signal identifying the second sensor means to cause a second count to be placed in the activity timer means; and



means operative if after a first count has been caused to be placed in the activity timer means as a result of the occurrence of the first activity monitored by the first sensor means and before the occurrence of the second activity monitored by the first sensor means the second sensor means monitors the occurrence of its associated activity and produces a corresponding signal to prevent a second count from being placed in the activity timer means to replace the first count caused to be placed therein as a result of the occurrence of the first activity monitored by the first sensor means.



4,286,332

# METHOD AND APPARATUS FOR PRODUCING SHEAR WAVES FOR SUBSURFACE GEOPHYSICAL INVESTIGATION

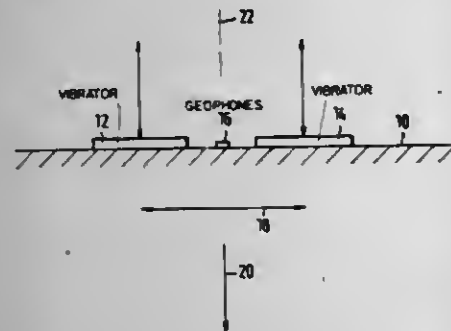
Hans A. K. Edelmann, Hanover, Fed. Rep. of Germany, assignor to Prakla-Seismos GmbH, Fed. Rep. of Germany  
Filed Aug. 7, 1979, Ser. No. 64,589

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835772

Int. Cl.<sup>3</sup> G01V 1/155

U.S. Cl. 367-75

7 Claims



1. A process for producing shear waves in the earth for geophysical examination of the sub-soil comprising the steps of providing at least two vibrators of the type usable for the production of compressional waves in the earth, locating the vibrators in spaced, adjacent relationship with the bottom surfaces thereof in coupling contact with the surface of the earth, and concurrently energizing the vibrators with identical sweep signals in counterphase relationship.

4,286,333

# DATA TRANSMISSION

Donald P. Franklin, Wells, England, assignor to E M I Limited, Hayes, England

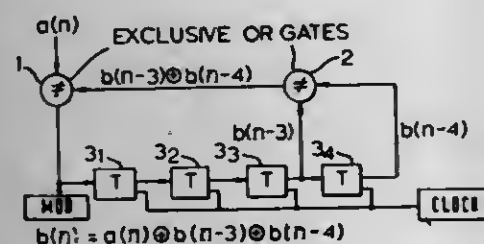
Filed Aug. 28, 1978, Ser. No. 937,521

Claims priority, application United Kingdom, Aug. 27, 1977, 36101/77

Int. Cl.<sup>3</sup> H04B 15/00; H04K 1/04

U.S. Cl. 375-1

11 Claims



1. A spread spectrum system for transmitting and receiving binary data, wherein a spread spectrum transmitter includes: means for deriving according to a first predetermined recurrence relationship a pseudo-random binary pulse train having a greater bit rate than the data signal at least in part from the data signal; means for modulating the pseudo-random pulse train with the data signal to produce an increased bandwidth signal; and means to phase shift key modulate a coherent RF carrier with the increased bandwidth signal to produce a spread spectrum signal; and wherein a spread spectrum receiver includes: an input for receiving the spread spectrum signal; delay line sections coupled to the input and at least one balanced modulator for combining signals subject to different delays in the delay line sections according to a second predetermined recurrence relationship, the said first second predetermined relationships being such that the delay line sections and at least one balanced modulator

derive the said pseudo-random binary pulse train only from the spread spectrum signal, and a further balanced modulator having a first input coupled to the said input for receiving the spread spectrum signal and a second input coupled to receive the said pseudo-random binary pulse train derived from the spread spectrum signal to cross-correlate that pulse train with the signal received at the first input to produce a signal comprising the data demodulated from the pseudo-random binary pulse train.

4,286,334

# MICROPROCESSOR CONTROLLED ITERATIVE SWITCHING FM/PM RECEIVER FOR RECONSTRUCTING NOISE-CORRUPTED REDUNDANTLY TRANSMITTED INFORMATION

Josef Gammel, Munich, and Rainer Fulda, Olching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

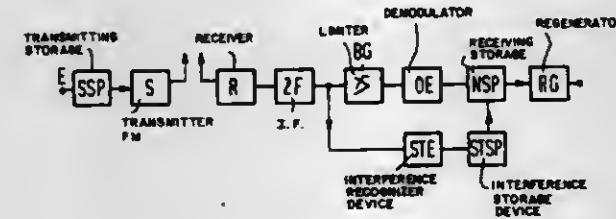
Filed Aug. 18, 1978, Ser. No. 934,950

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1977, 2738800

Int. Cl.<sup>3</sup> H04L 1/02, 1/08

U.S. Cl. 375-40

5 Claims



1. The method of transmitting redundant binary coded data information comprising the steps of: frequency or phase modulating said data on a carrier signal and radiating said signal at least twice with time diversity, receiving and detecting said modulated carrier signal, recognizing times of interference in said detected signal by determining amplitude variations, storing said times of interference, frequency or phase demodulating said received detected signal, storing said demodulated signal, and reconstructing said data from said stored demodulated signal by using said stored times of interference.

4,286,335

# COAXIAL DUAL ANTENNA CONNECTION ARRANGEMENT FOR COMMUNICATIONS APPARATUS

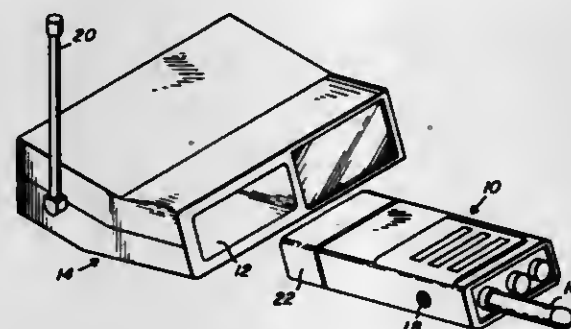
Jay H. Eichler, Boca Raton, and Bernard Gasparaitis, Fort Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 8, 1979, Ser. No. 92,597

Int. Cl.<sup>3</sup> H04B 1/38, 1/08; H01O 1/24

U.S. Cl. 455-89

5 Claims



1. An interconnection arrangement as for ultra high frequency communications apparatus containing radio circuitry, the arrangement comprising in combination: a housing formed of an insulating material and having at least first and second apertures in the walls thereof;

4,286,336

# AUTOMATIC SHUTDOWN ARRANGEMENT FOR STAND-ALONE TELEVISION MODULATOR

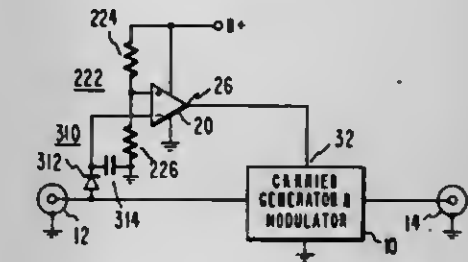
Robert F. Sanford, Titusville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 8, 1979, Ser. No. 10,485

Int. Cl.<sup>3</sup> H04B 1/04

U.S. Cl. 455-117

4 Claims



a coaxial switch/connector retained within the insulating housing and including a conductive housing member having first and second apertures aligned with the first and second apertures respectively of the insulating housing, an insulating sleeve member retained within the conductive housing member and having first and second apertures aligned with the first and second apertures respectively of the conductive housing, a resilient conductive member retained by the insulating sleeve member with a first movable portion within the conductive housing and a second portion projecting from the conductive housing, the first portion having first and second positions, and in both positions being approximately axially aligned in the conductive housing member, a rigid conductive member movably supported within the sleeve member and having a first position in contact with the conductive housing member and a second position for moving the resilient conductive member from the first to the second position, and means for biasing the rigid conductive member into the first position;

a coaxial antenna having a first centrally located conductive element positioned to enter the insulating housing through the first aperture therein for coupling to the resilient conductive member when in the first position, and a second conductive outer element spaced from the first element and coupled to the conductive housing member adjacent the first aperture therein;

a first coaxial cable having a first centrally positioned conductive element for coupling the radio circuitry to the second portion of the resilient conductive member of the coaxial connector, and a second, outer conductive element spaced apart from the first element and coupled to the conductive housing member; and

a second coaxial cable for coupling signals from a second antenna to the radio circuitry and having a first centrally located conductive element adapted to be aligned with the second aperture of the insulating housing for contacting and moving the rigid conductive member of the coaxial connector from the first to the second position, disconnecting the centrally located element of the coaxial antenna from the resilient conductive member, and a second, outer conductive element spaced apart from the first element and coupled to the conductive housing member of the coaxial connector.

1. A stand-alone modulator for modulating a signal carrier with a video information modulating signal obtained from a selected video signal source and applied to a modulating signal input terminal capable of being connected to any one of a plurality of video signal sources, including overmodulation protection circuitry, comprising:

a source of energizing potential;

carrier generating and modulating means coupled to said modulating signal input terminal for generating said signal carrier and modulating said signal carrier in response to variations in the amplitude of said video information modulating signal obtained from said selected one signal source, said carrier generating and modulating means when energized by said energizing potential capable of being operated in an overmodulated condition to overmodulate said signal carrier when the amplitude of said video information modulating signal exceeds a predetermined overmodulation level;

comparator means having first and second switching states, said comparator means being coupled to said source of energizing potential and having an output terminal coupled to said carrier generating and modulating means for applying said energizing potential to at least a portion of said carrier generating and modulating means when said comparator means is in said first switching state when said amplitude of said video information modulating signal is below said predetermined overmodulation level;

means for developing a voltage representative of the amplitude of said video information modulating signal; means for developing a reference voltage representative of an amplitude of said video information modulating signal that is capable of producing said overmodulated condition; and

means for applying the above two recited representative voltages to said comparator means to switch said comparator means into said second switching state upon the occurrence of said overmodulated condition, said comparator means removing energizing potential from said carrier generating and modulating means when in said second switching state, thereby providing overmodulation protection.



# DESIGN PATENTS

GRANTED AUG. 25, 1981

## ERRATA

For  
CLASS

See  
PATENT NO.

D03-073 .....	260,327
D04-025 .....	260,328



# DESIGNS

AUGUST 25, 1981

260,320

## POCKET FOR JEANS OR THE LIKE

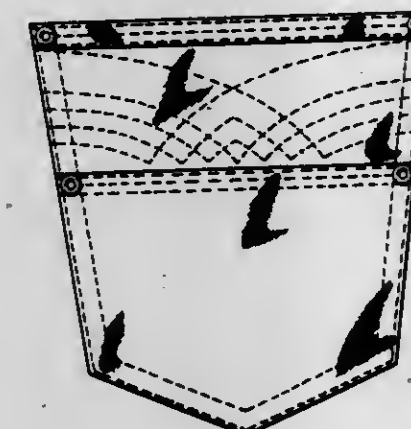
Martin Heinfing, Bayside, N.Y., assignor to Englishtown Sportswear, Ltd., New York, N.Y.

Filed Jan. 29, 1980, Ser. No. 116,424

Term of patent 14 years

Int. Cl. D2-02

U.S. Cl. D2-28



260,322

## UMBRELLA

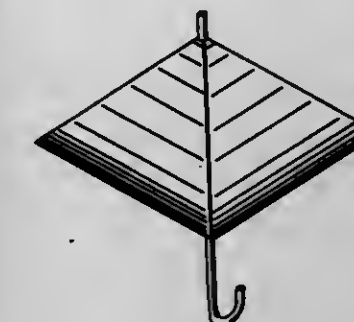
James W. Williams, 652 Lynn Fells Pkwy., Melrose, Mass. 02176

Filed Apr. 26, 1979, Ser. No. 33,468

Term of patent 14 years

Int. Cl. D3-03

U.S. Cl. D3-5



260,323

## FICHE POCKET

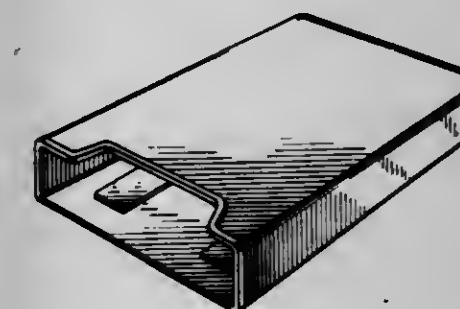
Allen E. Johnson, Hartford, Wis., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jun. 11, 1979, Ser. No. 47,415

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D3-35



260,321

## POCKET FOR JEANS OR THE LIKE

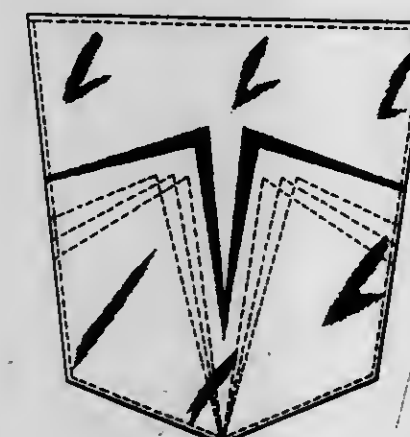
Martin Heinfing, Bayside, N.Y., assignor to Englishtown Sportswear, Ltd., New York, N.Y.

Filed Apr. 11, 1980, Ser. No. 139,602

Term of patent 14 years

Int. Cl. D2-02

U.S. Cl. D2-28



260,324

## CARRYING CASE FOR ARTISTS' MATERIALS OR THE LIKE

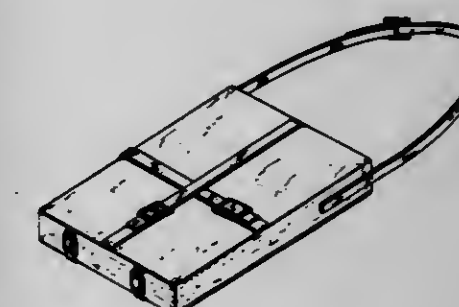
Thomas Koves, 645 N. Cherokee Ave., Los Angeles, Calif. 90004

Filed Sep. 18, 1979, Ser. No. 76,593

Term of patent 14 years

Int. Cl. D3-02

U.S. Cl. D3-42





260,325  
PURSE

Josie M. Davis, 2125 N. 19th St., #4, Baton Rouge, La. 70802  
Filed Sep. 4, 1979, Ser. No. 72,502  
Term of patent 3½ years  
Int. Cl. D3-01

U.S. Cl. D3-44

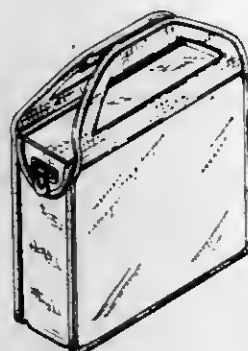


260,327  
TOTE BAG

Harold Rabinowitz, Midlothian, and Maria I. Zappia, Mechanicsville, both of Va., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Apr. 19, 1979, Ser. No. 31,563  
Term of patent 14 years  
Int. Cl. D3-01

U.S. Cl. D3-73



260,328  
TOOTHBRUSH

Gerald C. Neely, Newport Beach, Calif., and Kiyoshi Maekawa, Takatsuki, Japan, assignors to Sunstar, Inc., Newport Beach, Calif.

Filed Nov. 26, 1979, Ser. No. 93,930  
Term of patent 14 years  
Int. Cl. D4-02

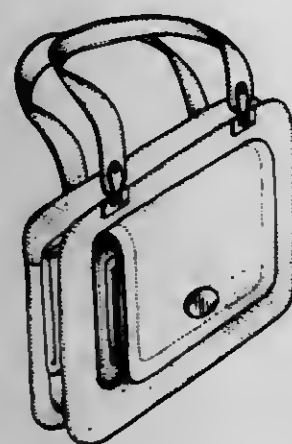
U.S. Cl. D4-25



260,326  
HANDBAG

Milton I. Siegel, Scottsdale, Ariz., assignor to Amba Marketing Systems, Inc., Tempe, Ariz.  
Filed Sep. 18, 1978, Ser. No. 943,438  
Term of patent 14 years  
Int. Cl. D3-01

U.S. Cl. D3-48



260,329  
CHAIR

Hans Ehrlin, Sjöstugan, Hätte, and Christian Haggstam, Sockenstugan, Kyrkskolan, both of Tranås, Sweden (S-573 00)  
Continuation-in-part of Ser. No. 925,317, Jul. 17, 1978, abandoned. This application Sep. 18, 1978, Ser. No. 944,597  
Claims priority, application Sweden, Jan. 16, 1978, 780119  
Term of patent 14 years  
Int. Cl. D6-01

U.S. Cl. D6-27

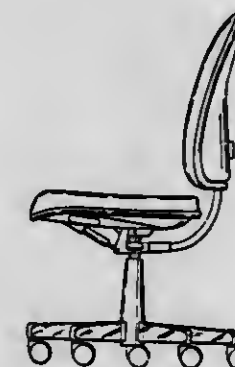


260,330  
CHAIR OR SIMILAR ARTICLE

Fred Ruf, Ariesheim, Switzerland, assignor to Giroflex-Entwicklungs AG, Koblenz, Switzerland  
Division of Ser. No. 714,956, Aug. 16, 1976, Pat. No. D. 249,303.  
This application Apr. 24, 1978, Ser. No. 899,280  
Claims priority, application Switzerland, Mar. 23, 1976, 62766/76

Term of patent 14 years  
Int. Cl. D6-01

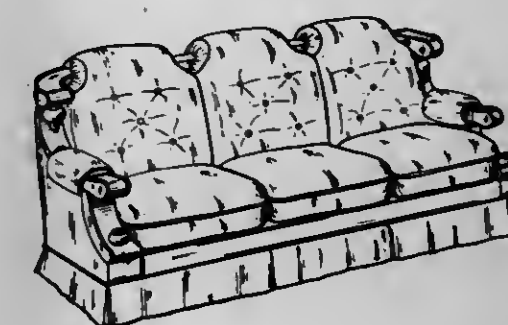
U.S. Cl. D6-30



260,332  
SEAT OR SIMILAR ARTICLE

Stanley P. Nash, Johnson Creek, Wis., assignor to Schweiger Industries, Inc., Jefferson, Wis.  
Filed May 15, 1978, Ser. No. 906,138  
Term of patent 14 years  
Int. Cl. D6-01

U.S. Cl. D6-62

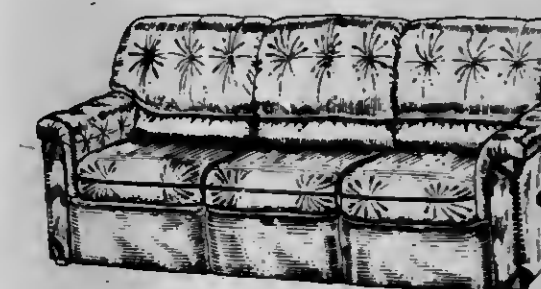


260,333

SEAT OR SIMILAR ARTICLE

Randy R. Culler, High Point, N.C., assignor to Kroehler Mfg. Co., Naperville, Ill.  
Filed May 25, 1979, Ser. No. 42,567  
Term of patent 14 years  
Int. Cl. D6-01

U.S. Cl. D6-63



260,331  
DECORATIVE CHAIR

Jose S. Orosa, 25 McKinley Rd., Forbes Park, Makati, Metro Manila, Philippines  
Filed Mar. 2, 1979, Ser. No. 16,748  
Term of patent 14 years  
Int. Cl. D6-01

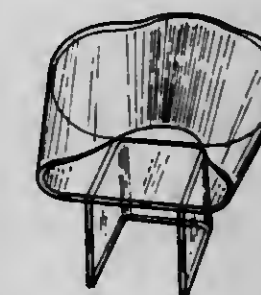
U.S. Cl. D6-57



260,334  
CHAIR

Robert L. Van Horn, 8165 University Blvd., Des Moines, Iowa 50311  
Filed Sep. 12, 1978, Ser. No. 941,725  
Term of patent 14 years  
Int. Cl. D6-01

U.S. Cl. D6-65





260,335  
CHAIR

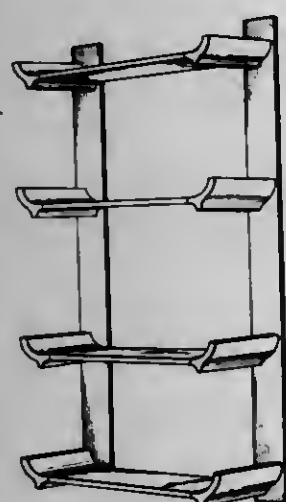
Andrew Y. Thomas, 451 S. Bailey Rd., Northport, Mich. 49670  
Filed Nov. 6, 1978, Ser. No. 958,110  
Term of patent 14 years  
Int. Cl. D6-01

U.S. Cl. D6-70

260,336  
WALL MOUNTED SHELF UNIT

Karl Springer, 425 E. 58th St., New York, N.Y. 10022  
Filed Feb. 6, 1979, Ser. No. 9,773  
Term of patent 14 years  
Int. Cl. D6-04

U.S. Cl. D6-134

260,337  
WINE BOTTLE DISPLAY BIN

Dennis M. Thompson, Fairfax, Calif., assignor to San Martin Winery, San Martin, Calif.  
Filed Jan. 21, 1980, Ser. No. 113,496  
Term of patent 14 years  
Int. Cl. D20-02; D6-04

U.S. Cl. D6-153

260,338  
MACRAME POLE

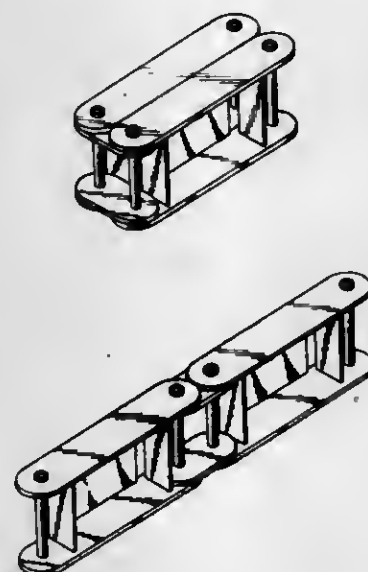
Richard Savage, 3089 Bay Plz., Saginaw, Mich. 48603  
Filed Jul. 14, 1978, Ser. No. 924,877  
Term of patent 14 years  
Int. Cl. D6-06

U.S. Cl. D6-176

260,339  
STORAGE UNIT

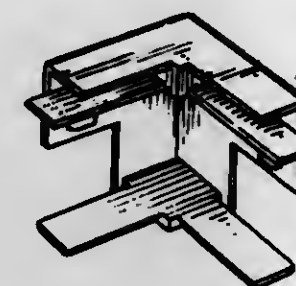
Keiichi Yoshizawa, Chiba, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan  
Filed Dec. 6, 1978, Ser. No. 966,957  
Claims priority, application Japan, Jun. 8, 1978, 53-23527  
Term of patent 14 years  
Int. Cl. D06-04

U.S. Cl. D6-186

260,340  
CORNER CONNECTOR FOR A TRAY OR SIMILAR ARTICLE

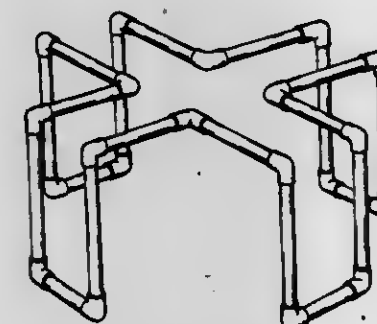
Terence Hardy, Nether Heage, England, assignor to L.B. (Plastics) Limited, Derby, England  
Filed Dec. 20, 1978, Ser. No. 971,328  
Term of patent 14 years  
Int. Cl. D6-06

U.S. Cl. D6-191

260,341  
TABLE BASE

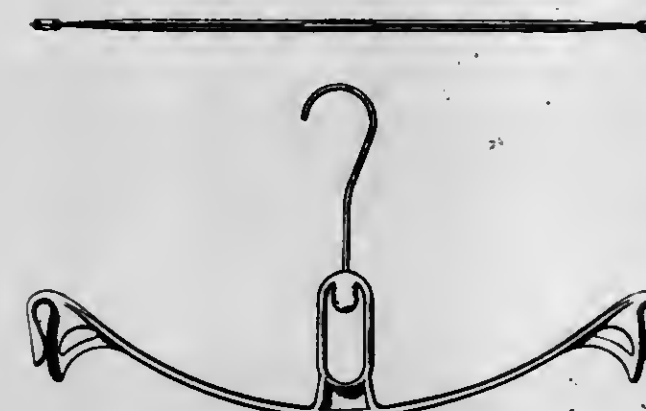
Penelope J. Harrison, 4747 Kester Ave., Apt. 107, Sherman Oaks, Calif. 91403  
Filed Apr. 6, 1979, Ser. No. 28,062  
Term of patent 14 years  
Int. Cl. D6-06

U.S. Cl. D6-196

260,342  
HANGER

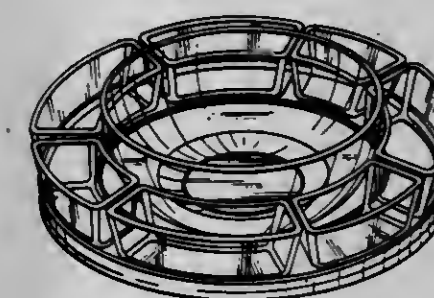
Stanley Elley, Mount Royal, and Joseph Akerman, Ville St. Laurent, both of Canada, assignors to ERA Display Co. Ltd., Montreal, Canada  
Filed Feb. 13, 1979, Ser. No. 11,898  
Term of patent 14 years  
Int. Cl. D6-08

U.S. Cl. D6-252

260,343  
ROTATABLE FOOD SERVING ASSEMBLY

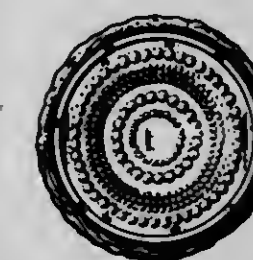
Joseph W. Blake, South Salem, N.Y.; Richard H. Corbin, Westport, and Peggy P. Neale, Bridgeport, both of Conn., assignors to Dart Industries Inc., Los Angeles, Calif.  
Filed Jun. 22, 1979, Ser. No. 51,278  
Term of patent 14 years  
Int. Cl. D07-01

U.S. Cl. D7-2

260,344  
TUMBLER

Edgar F. Trombly, Grosse Pointe Farms, Mich., assignor to Dart Industries Inc., Los Angeles, Calif.  
Filed Apr. 13, 1979, Ser. No. 29,817  
Term of patent 14 years  
The portion of the term of this patent subsequent to Oct. 6, 1998 is disclaimed.  
Int. Cl. D07-01

U.S. Cl. D7-15





260,345

## TRAY OR SIMILAR ARTICLE

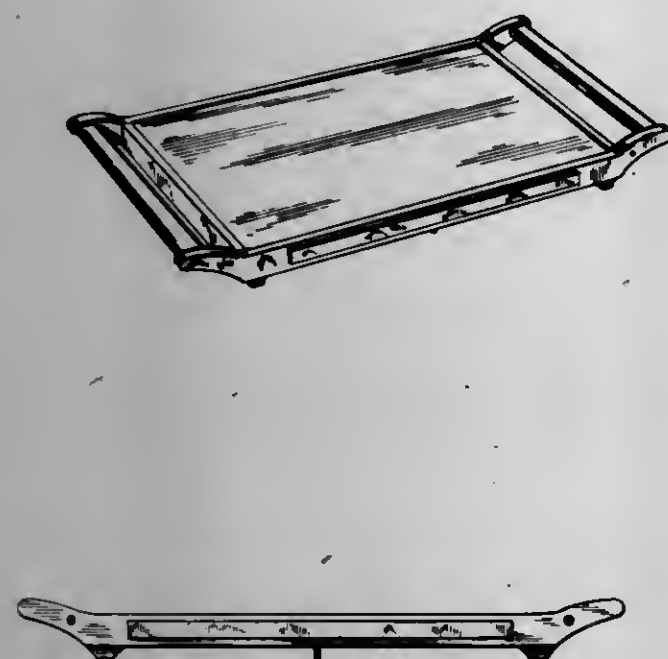
Gordon W. Goodrich, Grand Rapids, Mich., assignor to Bissell, Inc., Grand Rapids, Mich.

Filed May 14, 1979, Ser. No. 38,497

Term of patent 14 years

Int. Cl. D07-99

U.S. Cl. D7-21



260,347

## BARBECUE GRILL

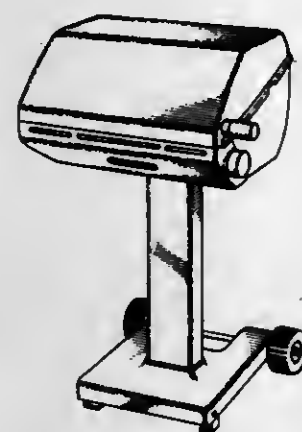
Orville W. Larson, Elmhurst, Ill., assignor to Beatrice Foods Co., Bristol, Wis.

Filed Mar. 18, 1980, Ser. No. 131,418

Term of patent 14 years

Int. Cl. D7-02

U.S. Cl. D7-108



260,346

## SALAD SPINNER

Sam Lebowitz, New York, N.Y., assignor to Copco, Inc., New York, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,256

Term of patent 14 years

Int. Cl. D07-04

U.S. Cl. D7-47



260,348

## BARBECUE GRILL

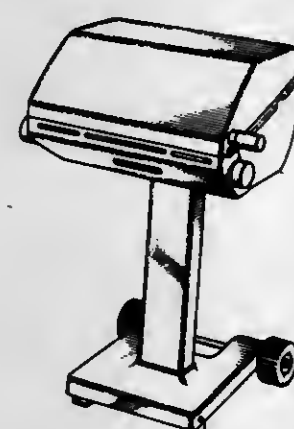
Orville W. Larson, Elmhurst, Ill., assignor to Beatrice Foods Co., Bristol, Wis.

Filed Mar. 20, 1980, Ser. No. 132,288

Term of patent 14 years

Int. Cl. D7-02

U.S. Cl. D7-108



260,349

## KNIFE OR SIMILAR ARTICLE OF FLATWARE

Clark L. Lofgren, Taunton, Mass., assignor to Reed & Barton Corporation, Taunton, Mass.

Filed Aug. 13, 1979, Ser. No. 65,949

Term of patent 14 years

Int. Cl. D07-03

U.S. Cl. D7-137



260,351

## FOOD CHOPPER

So Shun, 77, Hol Yuen Rd., Flat B, 2nd Flr., Yip Fat Industrial Bldg., Kwun Tong, Kowloon, Hong Kong

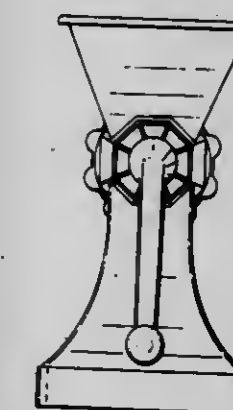
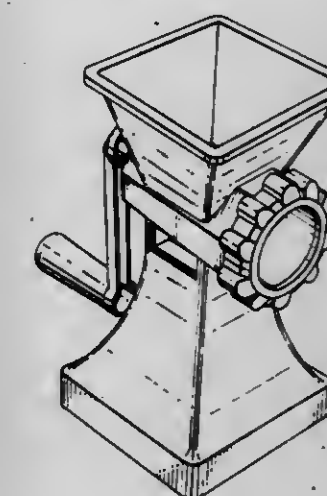
Filed Mar. 12, 1979, Ser. No. 19,489

Claims priority, application United Kingdom, Feb. 26, 1979, 988727/79

Term of patent 14 years

Int. Cl. D07-04

U.S. Cl. D7-155



260,350

## ELECTRIC FOOD BLENDER

Hartwig Kahleke, Bad Soden, Fed. Rep. of Germany, assignor to Braun AG, Frankfurt am Main, Fed. Rep. of Germany

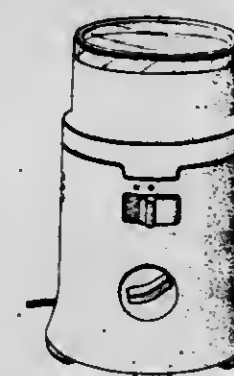
Filed May 17, 1979, Ser. No. 39,640

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 73MR8760

Term of patent 14 years

Int. Cl. D07-04

U.S. Cl. D7-154



260,352

## WASTE BASKET

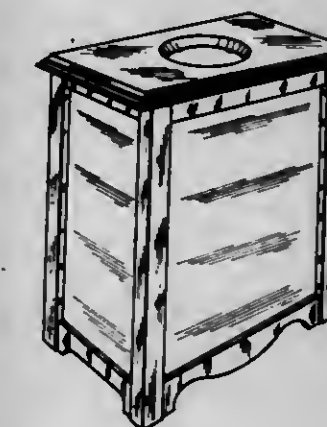
John W. Damon, Holland, Ohio, assignor to Outhouse Creations Corp., Holland, Ohio

Filed Jan. 2, 1979, Ser. No. 916

Term of patent 14 years

Int. Cl. D7-05; D6-04

U.S. Cl. D7-194





260,353

**HAND TOOL OR SIMILAR APPARATUS**

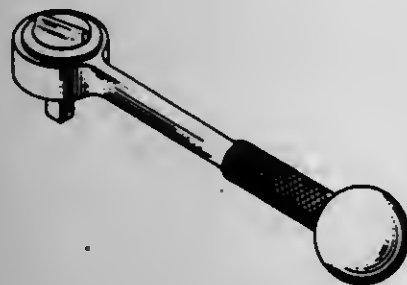
Samuel A. Redman, Dallas, Tex., assignor to Texas Novachem Corporation, Dallas, Tex.

Filed Sep. 11, 1978, Ser. No. 941,417

Term of patent 14 years

Int. Cl. D08—05

U.S. Cl. D8—25



260,354

**NAILER**

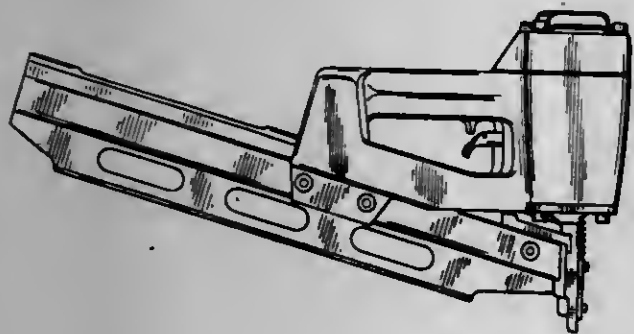
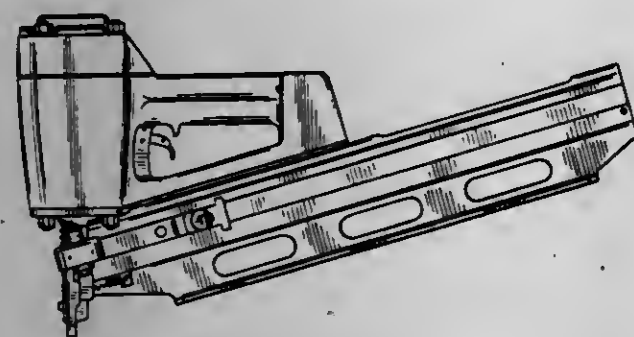
Richard Proops, Wayzata, Minn.; David Haas, Norwalk, and John Coccio, Westport, both of Conn., assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Jun. 19, 1978, Ser. No. 917,001

Term of patent 14 years

Int. Cl. D08—02

U.S. Cl. D8—61



260,355

**ADAPTOR FOR MOTORIZED TOOLS**

Charles H. Buzzell, 613 John Marshall Dr. NE., Vienna, Va. 22180

Filed Oct. 27, 1978, Ser. No. 955,247

Term of patent 14 years

Int. Cl. D08—05

U.S. Cl. D8—70



260,356

**HONING KIT**

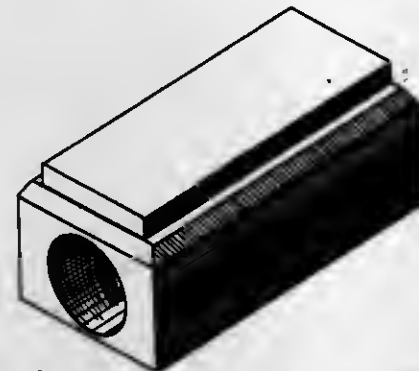
Richard L. Hall, Rte. #1, Box 522, Pearcy, Ark. 71964

Filed Jul. 7, 1978, Ser. No. 923,048

Term of patent 14 years

Int. Cl. D08—05

U.S. Cl. D8—91



260,357

**SANDPAPER HOLDER**

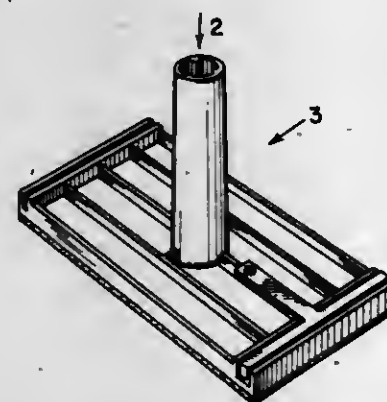
William B. Brannan, 1318 White Oak Cir., Ojai, Calif. 93023

Filed Mar. 26, 1979, Ser. No. 23,840

Term of patent 14 years

Int. Cl. D8—99

U.S. Cl. D8—94



260,358

**ROOFING MATERIAL CUTTER**

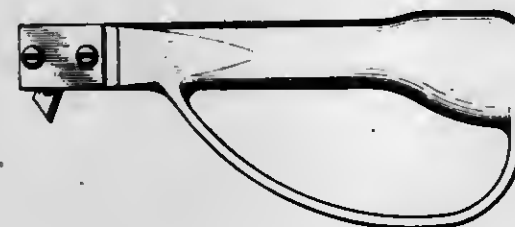
Dale J. Wilson, 1205 Acacia Ave., Sacramento, Calif. 95815, and William F. Birney, 2859 Carmine St., Carson City, Nev. 89701

Filed May 2, 1979, Ser. No. 35,284

Term of patent 14 years

Int. Cl. D8—03

U.S. Cl. D8—98



260,359

**TOOL HANDLE**

Morley L. Smith, Beaconsfield, Canada, assignor to T. S. Simms & Co. Limited, Saint John, Canada

Filed Feb. 16, 1979, Ser. No. 12,840

Term of patent 14 years

Int. Cl. D8—99

U.S. Cl. D8—107



260,361

**DOOR HANDLE AND LOCK UNIT**

Edward H. Meisner, Wyckoff, N.J., assignor to Scovill Inc., Waterbury, Conn.

Filed Jun. 26, 1978, Ser. No. 919,018

Term of patent 14 years

Int. Cl. D8—06, 07

U.S. Cl. D8—301



260,362

**HANDLE ASSEMBLY FOR LUGGAGE**

Michael Davis, New Castle, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.

Filed May 30, 1978, Ser. No. 910,460

Term of patent 14 years

Int. Cl. D8—06

U.S. Cl. D8—306



260,360

**DOOR HANDLE AND LOCK SET**

Edward H. Meisner, Wyckoff, N.J., assignor to Scovill Inc., Waterbury, Conn.

Filed Jun. 26, 1978, Ser. No. 919,017

Term of patent 14 years

Int. Cl. D8—06

U.S. Cl. D8—301



260,363

**COMBINED BRACKET AND LOCKING HOOK UNIT FOR HOLDING TRUCK TIRE CHAINS**

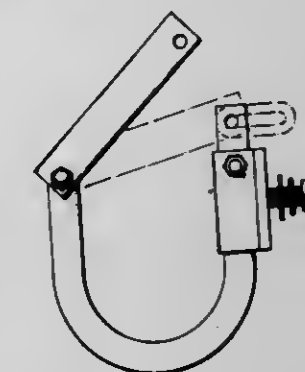
Donald G. Gipson, 221 Manzanita Ave., Red Bluff, Calif. 96080

Filed Jan. 2, 1979, Ser. No. 660

Term of patent 14 years

Int. Cl. D8—07; D12—16

U.S. Cl. D8—333





260,364

## FESTOON HOLDER

Stanley Kleinman, 15 Parson Pl., Colonia, N.J. 07067  
 Filed Mar. 12, 1979, Ser. No. 19,742

Term of patent 14 years  
 Int. Cl. D8—08

U.S. Cl. D8—363



260,365

## COMBINED DECANTER AND STOPPER

James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sep. 13, 1978, Ser. No. 942,015

Term of patent 14 years  
 Int. Cl. D9—01

U.S. Cl. D9—378



260,366

## BOTTLE

Edwin F. Neo, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 17, 1979, Ser. No. 40,011

Term of patent 14 years  
 Int. Cl. D9—01

U.S. Cl. D9—403



260,367

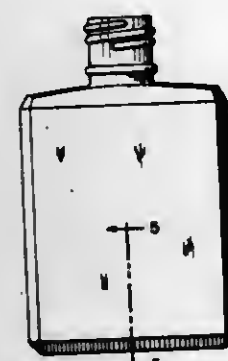
## BOTTLE

John A. Grip, Cheesequake, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 10, 1978, Ser. No. 904,679

Term of patent 14 years  
 Int. Cl. D9—01

U.S. Cl. D9—413



260,368

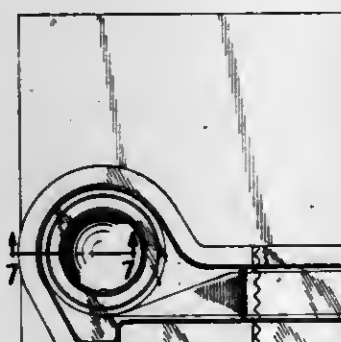
## TAPE PACKAGE

Wayne K. Dunshee, Maplewood, and Thomas J. Watkins, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 8, 1979, Ser. No. 46,994

Term of patent 14 years  
 Int. Cl. D9—03

U.S. Cl. D9—415



260,369

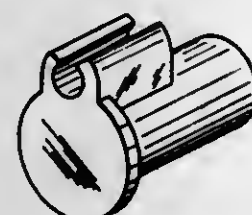
## CAP

Richard C. Massey, 12301 Ballas La., St. Louis, Mo. 63131

Filed Sep. 20, 1978, Ser. No. 945,179

Term of patent 14 years  
 Int. Cl. D09—07

U.S. Cl. D9—436



260,370

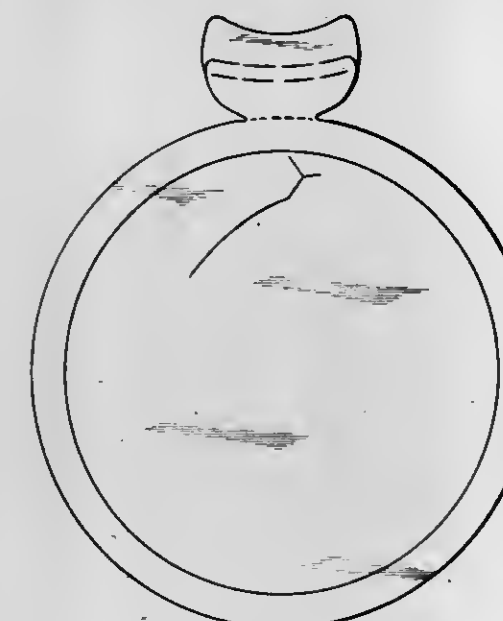
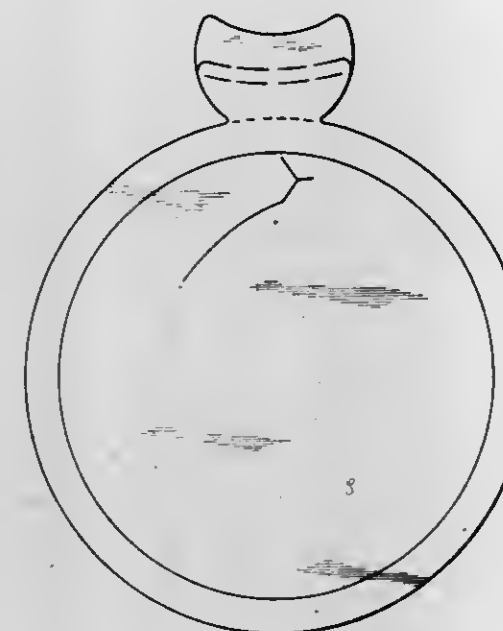
## POPCORN CONTAINER LID

David S. Peterson, Oak Lawn, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed May 10, 1979, Ser. No. 38,004

Term of patent 14 years  
 Int. Cl. D09—99

U.S. Cl. D9—436



260,371

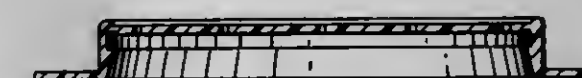
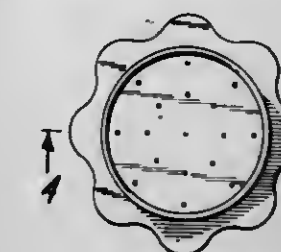
## BAIT CAN COVER

Bernard C. Imm, 116 E. Third St., Blue Earth, Minn. 56013

Filed Aug. 31, 1979, Ser. No. 71,751

Term of patent 14 years  
 Int. Cl. D09—99

U.S. Cl. D9—452



260,372

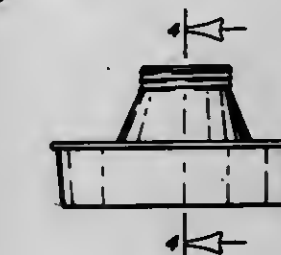
## COMBINED POUR SPOUT AND DRIP GUARD

Carlo A. Fantozzi, 1515 Wilson Ave., Columbus, Ohio 43207

Filed Apr. 23, 1979, Ser. No. 32,463

Term of patent 14 years  
 Int. Cl. D09—07

U.S. Cl. D9—436





260,373

**CAPTIVE SANITARY CAP FOR A BEVERAGE TANK VALVE**

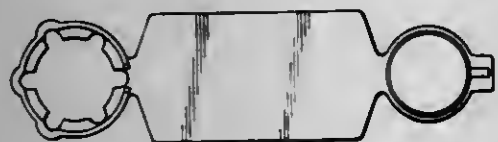
Arthur A. Wood, Greenville, Ohio, assignor to Replicap Products, Inc., Greenville, Ohio

Filed Apr. 20, 1979, Ser. No. 31,752

Term of patent 14 years

Int. Cl. D09-99

U.S. Cl. D9-446

260,375  
**TIMER**

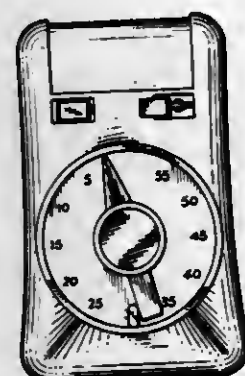
Earl B. Kane, Stamford, Conn., and Edward Sollenberger, Triadelphia, W. Va., assignors to Empire of Carolina, Inc., New York, N.Y.

Filed Feb. 9, 1979, Ser. No. 11,011

Term of patent 14 years

Int. Cl. D10-03

U.S. Cl. D10-40

260,376  
**POSTAGE SCALE**

Edward Lawing, Columbus, Ohio, assignor to Reliance Electric Co., Cleveland, Ohio

Filed Aug. 30, 1979, Ser. No. 71,315

Term of patent 14 years

Int. Cl. D10-04

U.S. Cl. D10-91

260,374  
**CALENDAR CLOCK**

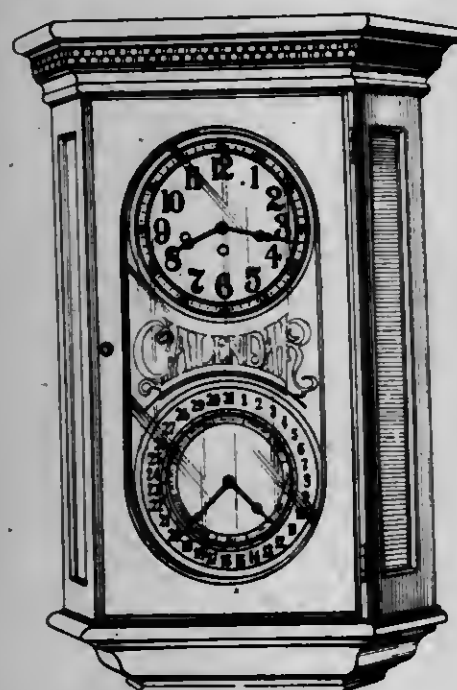
Arthur Umanoff, Ardley, N.Y., assignor to Howard Miller Clock Company, Zeeland, Mich.

Filed Feb. 5, 1979, Ser. No. 9,510

Term of patent 14 years

Int. Cl. D10-01

U.S. Cl. D10-3

260,377  
**WEIGHT SCALE**

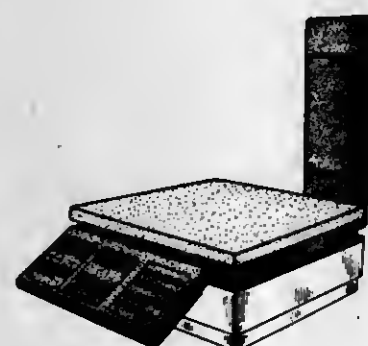
Edward Lawing, Columbus, Ohio, assignor to Reliance Electric Co., Cleveland, Ohio

Filed Aug. 30, 1979, Ser. No. 71,396

Term of patent 14 years

Int. Cl. D10-04

U.S. Cl. D10-91



260,378

**IONIZATION CHAMBER FOR AN ELECTRONIC SMOKE DETECTOR**

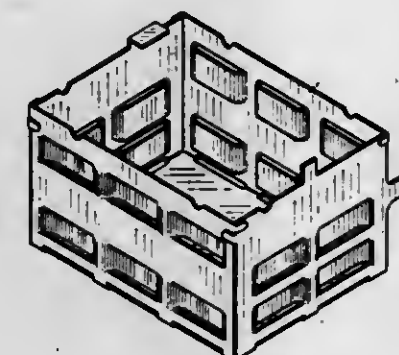
John Mallory, Toronto, Canada, assignor to Isotec Industries Limited, Toronto, Canada

Filed Nov. 2, 1978, Ser. No. 957,240

Term of patent 14 years

Int. Cl. D10-05

U.S. Cl. D10-104



260,381

**THERMOSCOPE**

M. Wayne Adkins, 1802 Glenwood Dr., Stillwater, Okla. 74074

Filed Jun. 15, 1979, Ser. No. 48,948

Term of patent 14 years

Int. Cl. D11-99

U.S. Cl. D11-121



260,379

**COMBINED ALARM CLOCK FACE AND HANDS**

Frank S. Tkac, 619 Brighton Ave., Reading, Pa. 19606

Filed Jun. 28, 1979, Ser. No. 52,912

Term of patent 14 years

Int. Cl. D10-07

U.S. Cl. D10-125



260,380

**PENDANT**

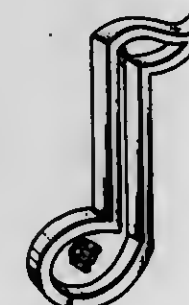
Ralph T. Dickerson, 2439 Deodar Rd., Pomona, Calif. 91766

Filed Sep. 17, 1979, Ser. No. 76,273

Term of patent 7 years

Int. Cl. D11-01

U.S. Cl. D11-81



260,382

**TRAILER JACK FOOT**

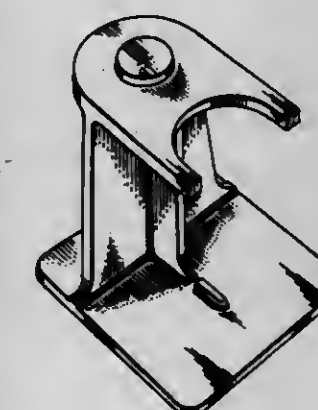
Hugh M. Williams, 34 NE. 37, Oklahoma City, Okla. 73105

Filed Mar. 22, 1979, Ser. No. 22,912

Term of patent 14 years

Int. Cl. D12-05

U.S. Cl. D12-55

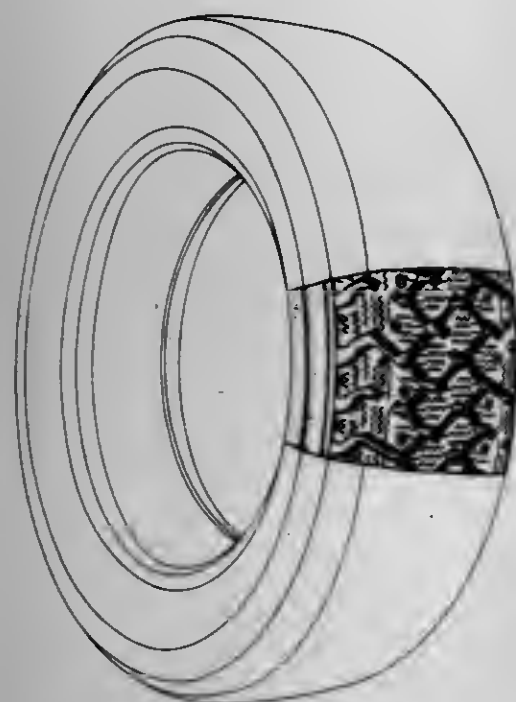




260,383  
TIRE

Andre Debrauwer, and Michel R. de Saint Michel, both of Clermont-Ferrand, France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France  
Filed Mar. 26, 1979, Ser. No. 24,075  
Claims priority, application France, Sep. 25, 1978, 571  
Term of patent 14 years  
Int. Cl. D12-15

U.S. Cl. D12-147

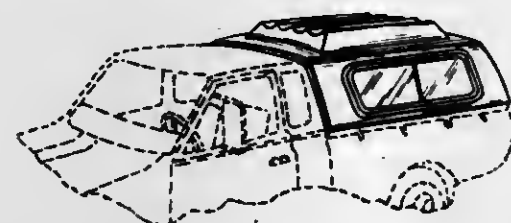


260,385

CAP FOR THE BED OF A PICKUP TRUCK

Donald L. Munoz, Warren, Mich., assignor to Thermoplastics Incorporated, Warren, Mich.  
Filed Dec. 7, 1978, Ser. No. 967,229  
Term of patent 14 years  
Int. Cl. D12-16

U.S. Cl. D12-156

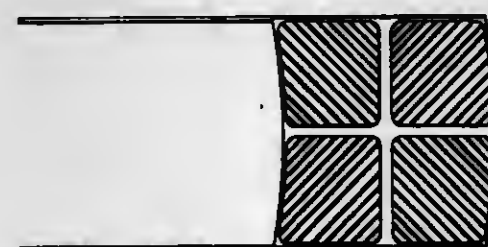


260,386

MOTORCYCLE LUGGAGE RACK

Robert E. Palmer, Los Angeles; Ytzhak I. Gewelber, and William D. Lockhart, both of Cerritos, all of Calif., assignors to Lockhart Industries, Inc., Paramount, Calif.  
Filed Apr. 23, 1979, Ser. No. 32,164  
Term of patent 14 years  
Int. Cl. D12-17

U.S. Cl. D12-158

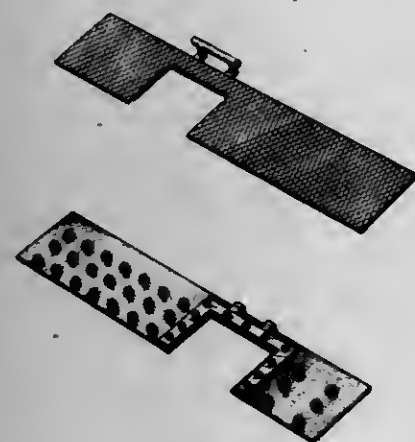


260,384

TRACTION MAT FOR USE WITH VEHICLE WHEELS

Jan Jurusz, 37 Lorrigan Pl., and John Zatorski, 18 Park Ave., both of North Arlington, N.J. 07032  
Filed Apr. 16, 1979, Ser. No. 30,349  
Term of patent 14 years  
Int. Cl. D12-16

U.S. Cl. D12-154

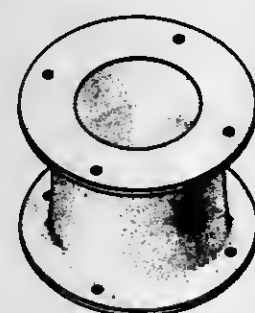


260,387

DOCK FENDER

Yuji Fukuda, Yokohama, and Shinichi Kajigaya, Yokosuka, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan  
Filed Dec. 7, 1978, Ser. No. 967,453  
Claims priority, application Japan, Jun. 7, 1978, 53-23403  
Term of patent 14 years  
Int. Cl. D12-06

U.S. Cl. D12-168



260,388

HEAT SINK OR SIMILAR APPARATUS

David H. Kennington, Highland Park, Tex., assignor to Thermalloy Incorporated, Dallas, Tex.  
Filed Oct. 22, 1979, Ser. No. 86,633  
Term of patent 14 years  
Int. Cl. D13-99

U.S. Cl. D13-23

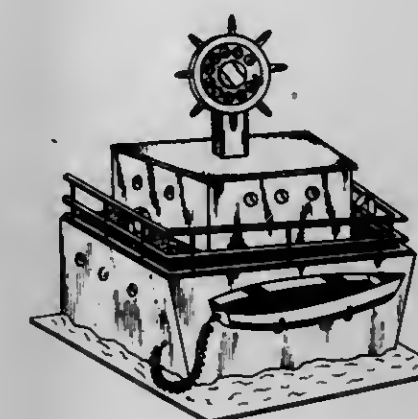


260,391

TELEPHONE

Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004  
Filed Jan. 29, 1979, Ser. No. 7,329  
Term of patent 14 years  
Int. Cl. D14-03

U.S. Cl. D14-53



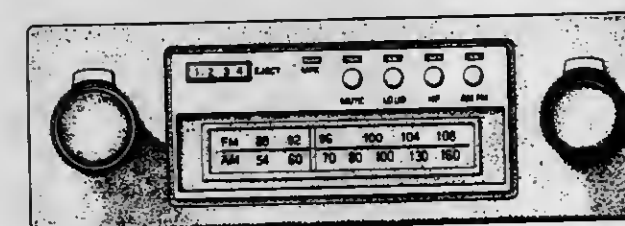
260,389

CONTROL UNIT FOR A COMBINED AUTOMOBILE CARTRIDGE PLAYER AND RADIO

John F. Castagna, Milford, Pa., and Ronald A. Emmerling, New City, N.Y., assignors to Sparkomatic Corporation, Milford, Pa.

Filed Oct. 15, 1979, Ser. No. 85,031  
Term of patent 14 years  
Int. Cl. D14-01, 03

U.S. Cl. D14-10



260,392  
RADIO

Mark A. Muspratt-Williams, Kowloon, Hong Kong, assignor to Deacon & Co. Ltd., Kowloon, Hong Kong  
Filed Jun. 5, 1978, Ser. No. 912,579  
Claims priority, application United Kingdom, Jan. 3, 1978, 982816/78

Term of patent 14 years  
Int. Cl. D14-03

U.S. Cl. D14-69

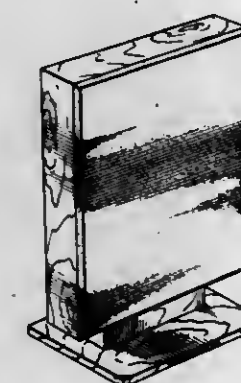


260,390

SPEAKER CABINET AND BASE

Jose J. Bertagni, 1 Coventry St., Newport Beach, Calif. 92660  
Filed Jan. 2, 1979, Ser. No. 300  
Term of patent 14 years  
Int. Cl. D14-01

U.S. Cl. D14-33





260,393

## PORTABLE RADIO OR SIMILAR ARTICLE

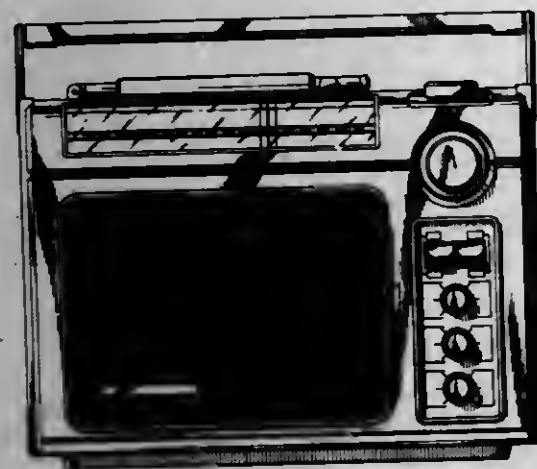
George M. Buckler, Fayetteville, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Apr. 25, 1979, Ser. No. 33,101

Term of patent 14 years

Int. Cl. D14-03

U.S. Cl. D14-70



260,396

## PEDAL OPERATED WINCH FOR GARDEN TOOLS

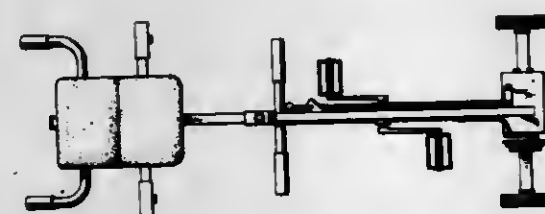
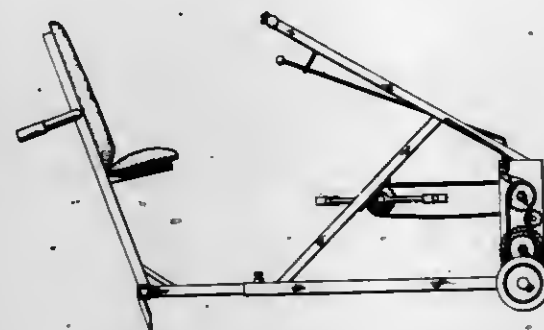
Keith Marks, Bethlehem, Pa., assignor to Rodale Press, Inc., Emmaus, Pa.

Filed Nov. 17, 1978, Ser. No. 961,560

Term of patent 14 years

Int. Cl. D15-03

U.S. Cl. D15-10



260,394

## POWER HANDLE FOR LINE TRIMMER AND THE LIKE

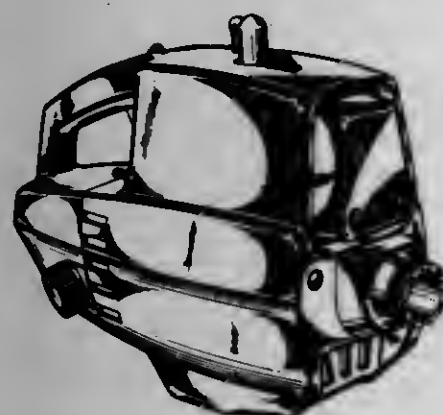
Lloyd H. Tuggle, Shreveport, La., assignor to Beaird-Poulan Division of Emerson Electric, Shreveport, La.

Filed Sep. 18, 1978, Ser. No. 944,600

Term of patent 14 years

Int. Cl. D15-01

U.S. Cl. D15-1



260,395

## HOUSING FOR AN ELECTRIC OUTBOARD MOTOR

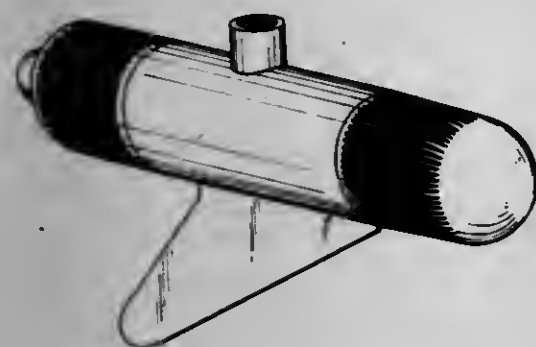
Chris S. Kappan, 5120 Darby Pl., Racine, Wis. 53401

Filed Mar. 23, 1979, Ser. No. 23,080

Term of patent 14 years

Int. Cl. D13-01

U.S. Cl. D15-4



260,397

## BLADE FOR A CULTIVATOR

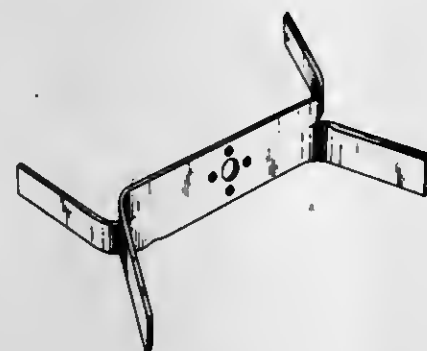
Robert L. Bartlett, Columbia, Mo., and Anthony Jacyno, Libertyville, Ill., assignors to Benchmark Tool Company, Vandalia, Ohio

Filed Nov. 6, 1978, Ser. No. 957,199

Term of patent 14 years

Int. Cl. D15-03

U.S. Cl. D15-11



260,398

## PHOTOFLASH LAMP UNIT

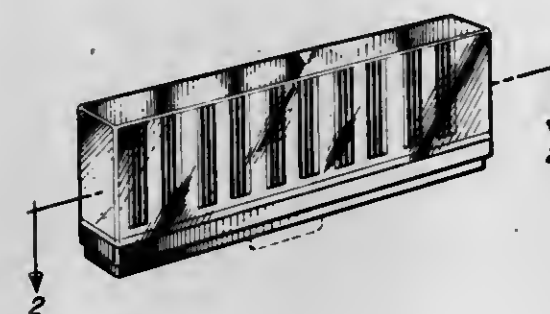
Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,879

Term of patent 14 years

Int. Cl. D16-05

U.S. Cl. D16-42



260,400

## STAND FOR A SLIDE PROJECTOR OR THE LIKE

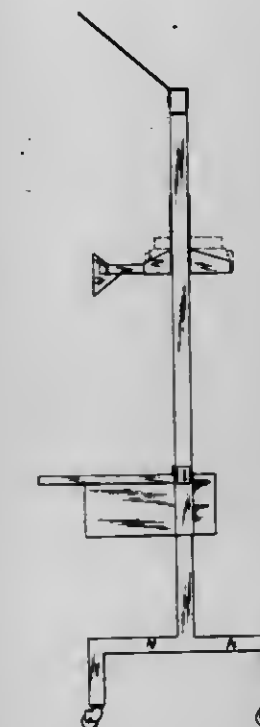
Thomas Carvel, Chauncey, N.Y., assignor to Carvel Corporation, Yonkers, N.Y.

Filed Aug. 1, 1978, Ser. No. 930,104

Term of patent 14 years

Int. Cl. D16-05

U.S. Cl. D16-44



260,399

## ELECTRONIC FLASH DEVICE

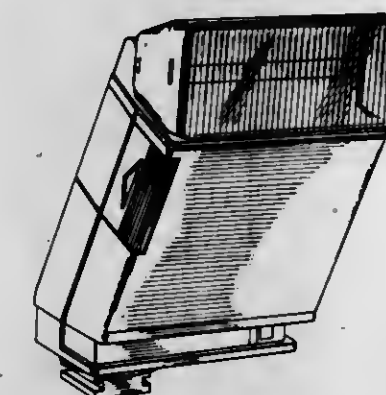
Peter T. Quinn, Littleton, Colo., assignor to Rollei of America, Littleton, Colo.

Filed Sep. 18, 1978, Ser. No. 943,344

Term of patent 14 years

Int. Cl. D16-05

U.S. Cl. D16-42



260,401

## READING LIGHT MAGNIFIER, OR THE LIKE

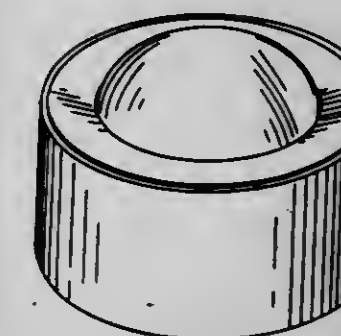
Norbert Leopoldi, 4180 Marine Dr., Chicago, Ill. 60613

Filed Nov. 20, 1978, Ser. No. 962,325

Term of patent 14 years

Int. Cl. D16-06

U.S. Cl. D16-54





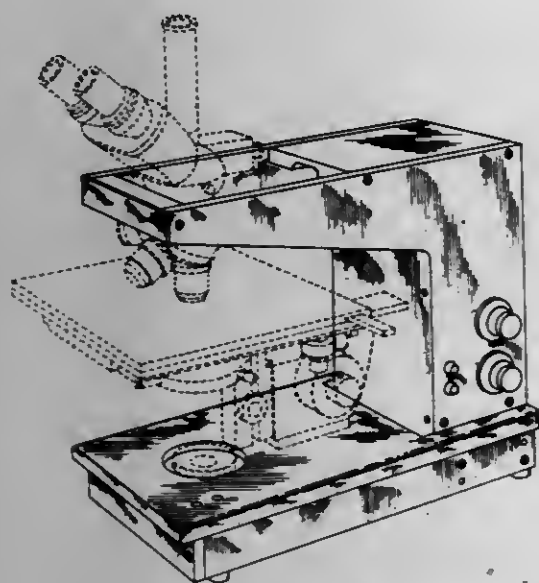
260,402

## MICROSCOPE STAND

R. W. Hodgson, 1680 N. Vine St. #204, Hollywood, Calif. 90028  
 Filed Jun. 5, 1978, Ser. No. 912,931

Term of patent 14 years  
 Int. Cl. D16-06

U.S. Cl. D16-58



260,403

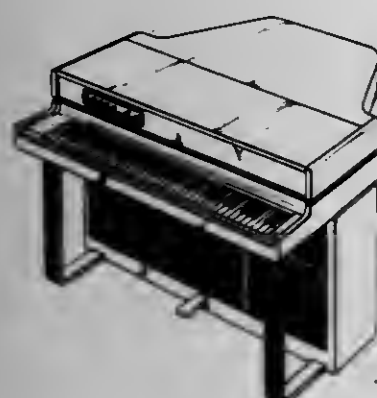
## ELECTRIC PIANO, OR THE LIKE

Sadayoshi Karaki, Hamamatsu, Japan, assignor to Nippon  
 Gakki Seizo Kabushiki Kaisha, Japan

Filed Nov. 16, 1978, Ser. No. 961,233

Claims priority, application Japan, Jun. 1, 1978, 5322734  
 Term of patent 14 years  
 Int. Cl. D17-01

U.S. Cl. D17-7



260,404

## ELECTRIC GUITAR

H. Donald Gabriel, 339 Sussex Dr. NE., Cedar Rapids, Iowa  
 52402

Filed Feb. 21, 1979, Ser. No. 13,130

Term of patent 14 years

Int. Cl. D17-03

U.S. Cl. D17-18



260,405

## CALENDAR BASE

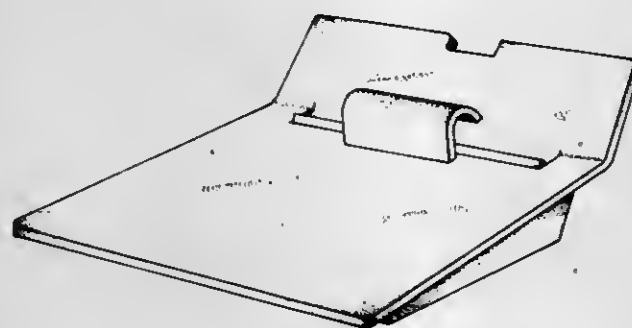
Kent Tarrant, 210 Maple St., Springfield, Mass. 01105, and  
 Gregory Fossella, Boston, Mass., assignors to Kent Tarrant,  
 Springfield, Mass.

Filed Jun. 21, 1979, Ser. No. 50,809

Term of patent 14 years

Int. Cl. D19-03

U.S. Cl. D19-20



260,406

## WRITING BRUSH OR SIMILAR ARTICLE

Kunio Itoh, Tokyo, Japan, assignor to Pentel Kabushiki Kaisha  
 (Pentel Co., Ltd.), Tokyo, Japan

Filed Jan. 14, 1980, Ser. No. 111,679

Claims priority, application Japan, Jul. 27, 1979, 54-31776

Term of patent 14 years

Int. Cl. D19-06

U.S. Cl. D19-44



260,407

## PEN CAP OR SIMILAR ARTICLE

Kunio Itoh, Tokyo, Japan, assignor to Pentel Kabushiki Kaisha  
 (Pentel Co., Ltd.), Tokyo, Japan

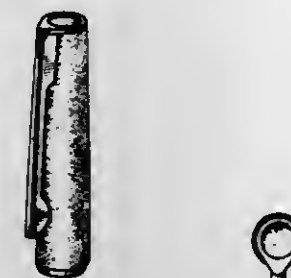
Filed Nov. 2, 1978, Ser. No. 956,902

Claims priority, application Japan, May 11, 1978, 53-19154

Term of patent 14 years

Int. Cl. D19-06

U.S. Cl. D19-57



260,408

## SOFT MATERIAL FACED DISCIPLINE PADDLE

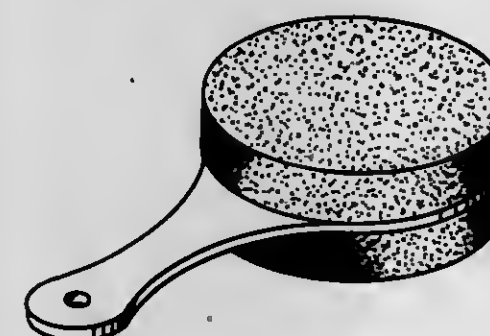
Charles S. Ruffing, 5619 Cornell Rd., Haslett, Mich. 48840

Filed Aug. 22, 1979, Ser. No. 68,602

Term of patent 14 years

Int. Cl. D19-07

U.S. Cl. D19-59



260,409

## PINBALL MACHINE

Koichi Tanaka, Toshio Yamamoto, and Fumio Konuki, all of  
 Nihonbashi, Japan, assignors to Kabushiki Kaisha Universal,  
 Oyama, Japan

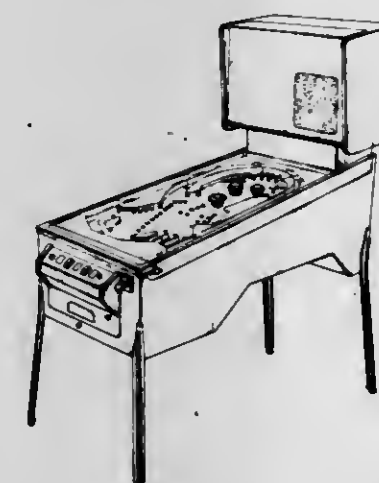
Filed Aug. 24, 1979, Ser. No. 69,500

Claims priority, application Japan, Feb. 28, 1979, 54-7570

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-10



260,410

## SIMULATIVE KITE

Eiichi Nagase, 3-29 Yatse Hts, 7-501 Narashino, Chiba, Japan,  
 and Shuhei Goto, Niigata, Japan, assignors to Eiichi Nagase,  
 Chiba, Japan

Filed Feb. 26, 1979, Ser. No. 15,315

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-83



260,411

## TOY COMMUNICATOR

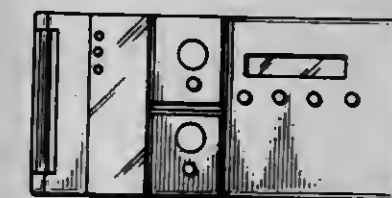
Richard M. Rubin, Hollywood, Calif., assignor to Paramount  
 Pictures Corporation, Los Angeles, Calif.

Filed Apr. 10, 1979, Ser. No. 28,846

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-111



260,412

## TOY TRACKWAY

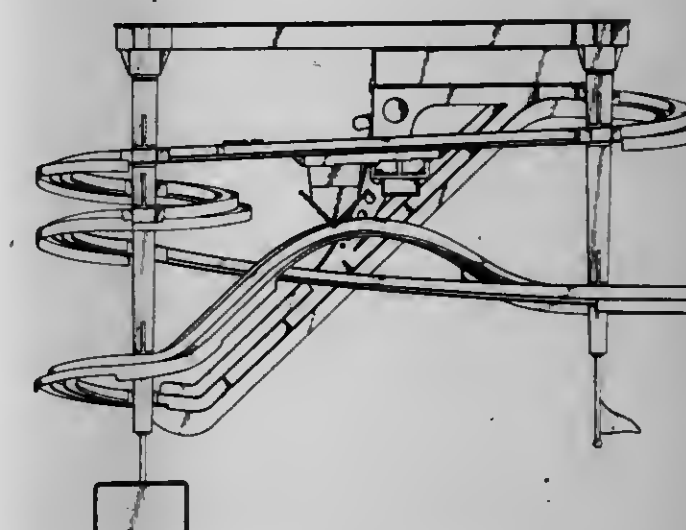
Toru Hirano, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc.,  
 Tokyo, Japan

Filed Mar. 20, 1979, Ser. No. 22,173

Term of patent 14 years

Int. Cl. D21-01

U.S. Cl. D21-143





260,413

## TOY AFRICAN LION

Patricia I. Holstine, 16 N. Main, Conrad, Mont. 59425  
 Filed May 10, 1978, Ser. No. 904,634  
 Term of patent 14 years  
 Int. Cl. D21-01

U.S. Cl. D21-163

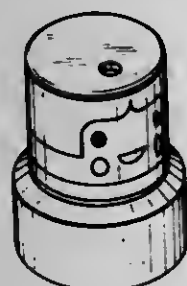


260,414

## TOY FIGURE

Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Kenshun Ishii, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan  
 Filed Jul. 25, 1979, Ser. No. 60,565  
 Term of patent 14 years  
 Int. Cl. D21-01

U.S. Cl. D21-168

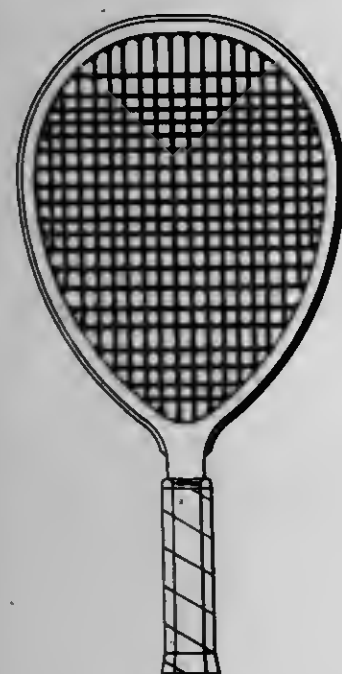


260,415

## RACQUETBALL RACQUET

John R. Erwin, Paradise Valley, Ariz.; Anthony F. Staub, and Norman T. Staub, both of Dayton, Ohio, assignors to Starwin Industries, Inc., Dayton, Ohio  
 Filed Jan. 11, 1979, Ser. No. 2,713  
 Term of patent 14 years  
 Int. Cl. D21-02

U.S. Cl. D21-212



260,416

## TENT

Eugene A. Criqui, 726 S. Brighton, and David A. Lester, 728 S. Brighton, both of Kansas City, Mo. 64124  
 Filed Feb. 7, 1980, Ser. No. 119,513  
 Term of patent 14 years  
 Int. Cl. D21-04

U.S. Cl. D21-253

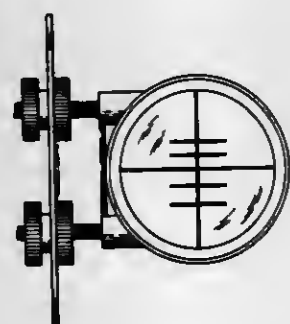


260,417

## ARCHERY SIGHT

August E. Siekman, 6912 E. 66th St., Tulsa, Okla. 74133  
 Filed Jan. 14, 1980, Ser. No. 111,762  
 Term of patent 14 years  
 Int. Cl. D22-01

U.S. Cl. D22-5



260,418

## ADHESIVE TRAP FOR RODENTS

Stanley Z. Baker, Cuyahoga County, and Benjamin H. Baker, Geauga County, both of Ohio, assignors to J. T. Eaton & Company, Inc., Twinsburg, Ohio  
 Filed Jan. 30, 1980, Ser. No. 116,924  
 Term of patent 14 years  
 Int. Cl. D22-06

U.S. Cl. D22-18

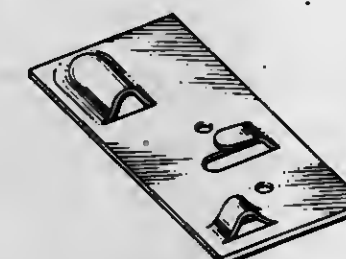


260,419

## FISH STRINGER RETAINER

Raymond N. Oates, 1117 Lakeview Rd., Elgin, Ill. 60120  
 Filed Sep. 6, 1979, Ser. No. 73,063  
 Term of patent 14 years  
 Int. Cl. D22-05

U.S. Cl. D22-22

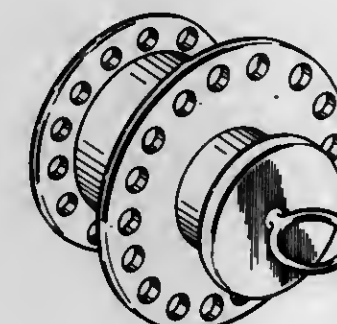


260,420

## FISHING REEL FOR AMPUTEES

Robert Radocy, 2860 Pennsylvania Ave., Boulder, Colo. 80303  
 Filed Nov. 1, 1979, Ser. No. 90,352  
 Term of patent 14 years  
 Int. Cl. D22-05

U.S. Cl. D22-25

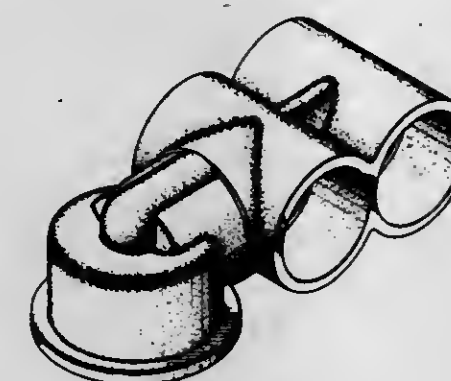


260,421

## FITTING FOR SPAS AND THE LIKE

William W. Conger, IV, Los Osos, Calif., assignor to Conger Brothers Manufacturing Co., Inc., Garden Grove, Calif.  
 Filed Jan. 8, 1979, Ser. No. 1,966  
 Term of patent 14 years  
 Int. Cl. D23-01

U.S. Cl. D23-40



260,422

## HOUSING FOR DOWNSPOUT STRAINER

Gary V. Husted, 835 E. Main St., East Aurora, N.Y. 14052  
 Filed Sep. 7, 1978, Ser. No. 940,490  
 Term of patent 14 years  
 Int. Cl. D23-01

U.S. Cl. D23-45

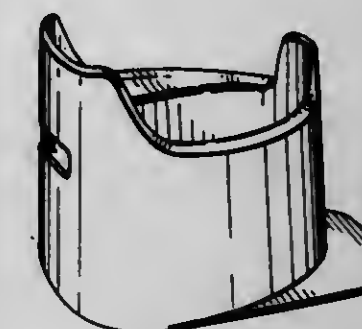


260,423

## CHILDREN'S CHAMBER-POT

Hannele Helkama-Ragard, Helsinki, Finland, assignor to Oy Mä-Tuote AB, Helsinki, Finland  
 Filed Feb. 23, 1979, Ser. No. 14,723  
 Claims priority, application Finland, Sep. 15, 1978, 56178  
 Term of patent 14 years  
 Int. Cl. D23-02

U.S. Cl. D23-53



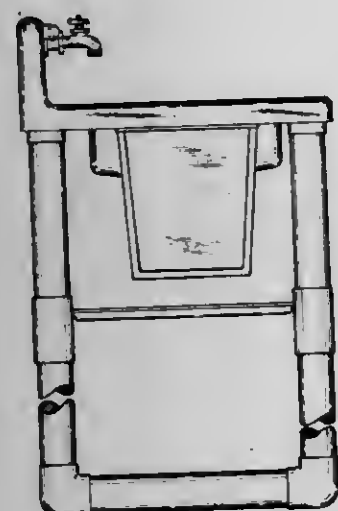
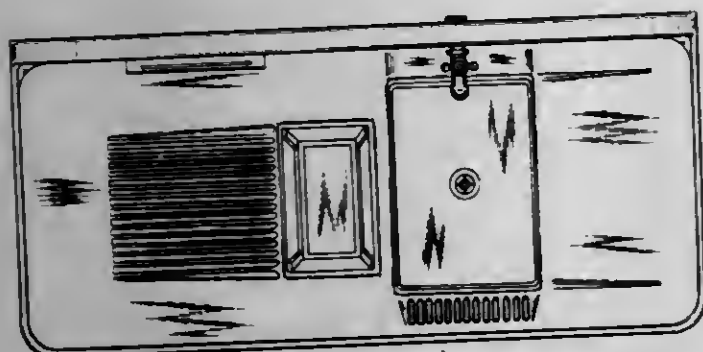


260,424

**COMBINED SINK AND TABLE**

Albert L. Kinsey, 10810 Burbank Dr., Potomac, Md. 20854, and  
James H. Kinsey, 11917 Wilhide Rd., Thurmont, Md. 21788  
Filed Jun. 12, 1979, Ser. No. 47,671  
Term of patent 14 years  
Int. Cl. D23—02

U.S. Cl. D23—61

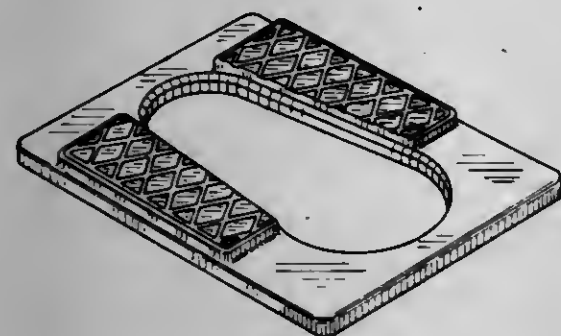


260,425

**TOP FOR A FLOOR TOILET**

Leon J. Macinkiewicz, Erie, Pa., assignor to Zurn Industries,  
Inc., Erie, Pa.  
Filed Mar. 9, 1979, Ser. No. 19,009  
Term of patent 14 years  
Int. Cl. D23—02

U.S. Cl. D23—71

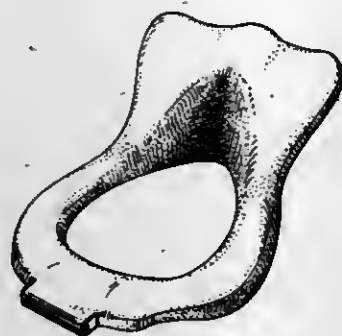


260,426

**TOILET SEAT ACCESSORY**

Willie Hempstead, 4017 Adair St., #1, Los Angeles, Calif. 90011  
Filed Feb. 25, 1980, Ser. No. 124,171  
Term of patent 14 years  
Int. Cl. D23—02

U.S. Cl. D23—71

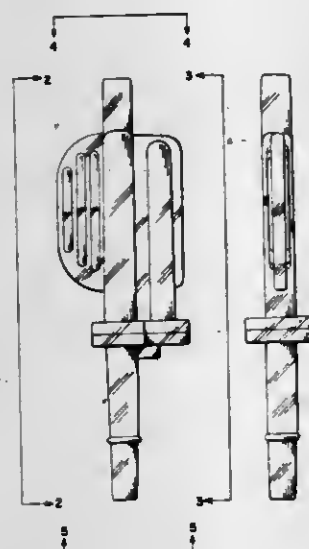


260,427

**OVERPRESSURE DEVICE**

Lee E. McGill, Orinda, and Susan J. Watkins, Berkeley, both of  
Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.  
Filed Mar. 26, 1979, Ser. No. 23,926  
Term of patent 14 years  
Int. Cl. D24—01, 02

U.S. Cl. D24—8

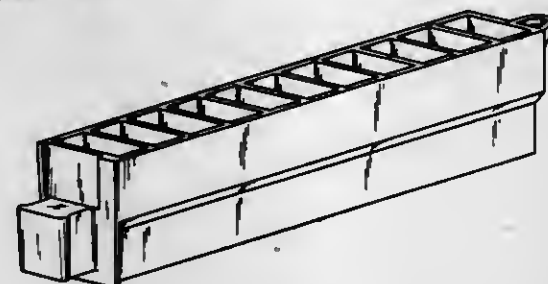


260,428

**CUVETTE ARRAY OR THE LIKE**

Nicholas M. G. Fekete, Richardson, Tex., assignor to Abbott  
Laboratories, North Chicago, Ill.  
Filed Mar. 15, 1979, Ser. No. 20,551  
Term of patent 14 years  
Int. Cl. D24—02

U.S. Cl. D24—29

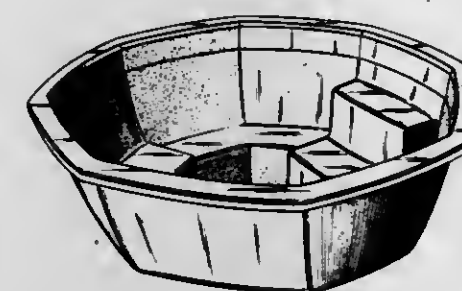


260,429

**HYDROTHERAPY SPA**

Dean W. Myers, 703 W. Washington, Santa Ana, Calif. 92706  
Filed Jul. 9, 1979, Ser. No. 56,055  
Term of patent 14 years  
Int. Cl. D24—01

U.S. Cl. D24—38

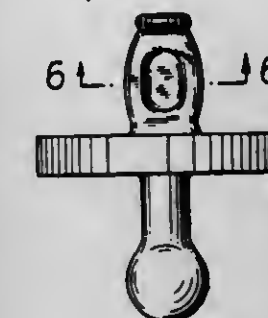


260,431

**BABY SOOTHER**

Eric K. Hurst, London, England, assignor to Lewis Woolf Grip-  
tight Limited, Birmingham, England  
Filed Aug. 1, 1978, Ser. No. 929,975  
Term of patent 14 years  
Int. Cl. D24—04

U.S. Cl. D24—46

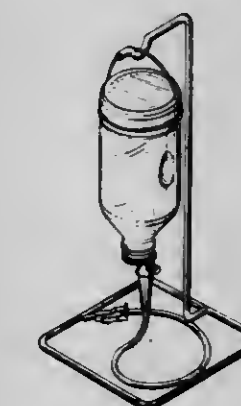


260,432

**COMBINED STAND AND CONTAINER FOR STORING LIQUIDS**

Gabor Kadar, 4635 White Oak Ave., Encino, Calif. 91316  
Filed Nov. 13, 1978, Ser. No. 960,290  
Term of patent 14 years  
Int. Cl. D24—52

U.S. Cl. D24—52

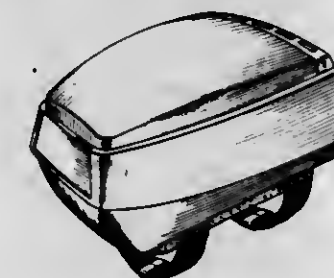


260,430

**HAND HELD MASSAGER**

Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Inc.,  
Chicago, Ill.  
Filed Dec. 4, 1978, Ser. No. 965,772  
Term of patent 14 years  
Int. Cl. D28—03

U.S. Cl. D24—41



260,433

**WOUND DRAINAGE BOTTLE**

Patricia E. Duncan, Bayport, Minn., assignor to Minnesota  
Mining and Manufacturing Company, St. Paul, Minn.  
Filed Feb. 5, 1979, Ser. No. 9,648  
Term of patent 14 years  
Int. Cl. D24—02

U.S. Cl. D24—54





260,434  
PIPETTE

Elmer F. St. Amaand, 12744 Kahlenberg La., N. Hollywood, Calif. 91607

Filed Mar. 2, 1979, Ser. No. 16,911

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—55



## 260,435

## ULTRASONIC NEBULIZER

Herbert Marloth, Siegersbrunn, and Ernst Reichl, Munich, both of Fed. Rep. of Germany, assignors to Bosch Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany

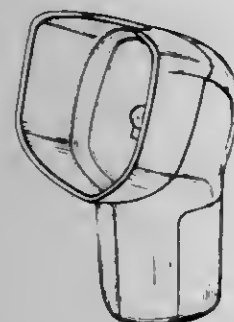
Filed Oct. 2, 1979, Ser. No. 81,153

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 4995

Term of patent 14 years

Int. Cl. D24—02

U.S. Cl. D24—62



## 260,436

## BUILDING WITH SIDE FACING SOLAR PANEL

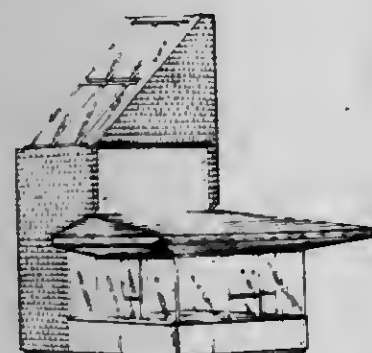
Andrew W. Graybeal, Mountain View; Steve S. Hiller, Menlo Park, and Thomas T. Hisata, Palo Alto, all of Calif., assignors to Hiller Enterprises, Redwood City, Calif.

Filed Jan. 8, 1979, Ser. No. 1,467

Term of patent 14 years

Int. Cl. D25—03

U.S. Cl. D25—30



## 260,437

## BUILDING WITH FORWARD FACING SOLAR PANEL

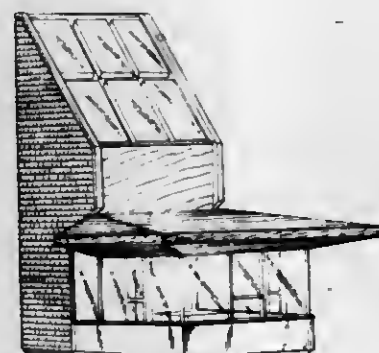
Andrew W. Graybeal, Mountain View; Steve S. Hiller, Menlo Park, and Thomas T. Hisata, Palo Alto, all of Calif., assignors to Hiller Enterprises, Redwood City, Calif.

Filed Jan. 8, 1979, Ser. No. 1,468

Term of patent 14 years

Int. Cl. D25—03

U.S. Cl. D25—30



## 260,438

## DECORATIVE WINDOW PANEL FOR DOORS

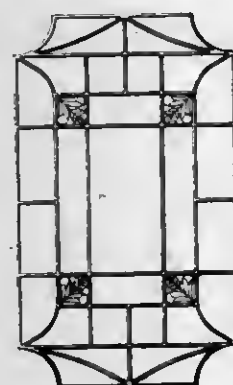
Lawrence R. Martinelli, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Jun. 12, 1978, Ser. No. 914,262

Term of patent 14 years

Int. Cl. D25—01

U.S. Cl. D25—72



## 260,439

## DECORATIVE WINDOW PANEL FOR DOORS

Lawrence R. Martinelli, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Jun. 12, 1978, Ser. No. 914,263

Term of patent 14 years

Int. Cl. D25—01

U.S. Cl. D25—72



## 260,440

## TRANSMISSION TOWER

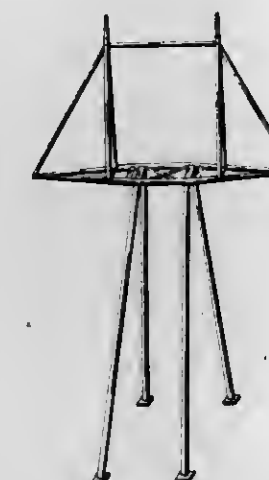
Charles P. Green, Red Wing, Minn., assignor to International Telephone and Telegraph Corp., New York, N.Y.

Filed Dec. 5, 1979, Ser. No. 100,644

Term of patent 14 years

Int. Cl. D13—03; D25—99

U.S. Cl. D25—77



## 260,442

## CANDLESTICK OR THE LIKE

Newton R. Leach, 7241 Woodson Rd., Overland Park, Kans. 66204, assignor to Newton R. Leach, Overland Park, Kans.

Filed May 2, 1978, Ser. No. 902,721

Term of patent 14 years

Int. Cl. D26—01

U.S. Cl. D26—18



## 260,443

## COMBINED HEADLIGHT AND SPEEDOMETER AND BRACKET THEREFOR

Orley R. Courtney, 502 E. Wiley St., Marion, Ind. 46952

Filed Apr. 28, 1978, Ser. No. 900,932

Term of patent 14 years

Int. Cl. D26—06

U.S. Cl. D26—34



## 260,441

## FLUORESCENT LAMP

Kazuo Ariga, and Youichiro Akanuma, both of Tokyo, Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1978, Ser. No. 959,662

Term of patent 14 years

Int. Cl. D26—04

U.S. Cl. D26—3



## 260,444

## COMB SIMULATING A SPORTS CAP

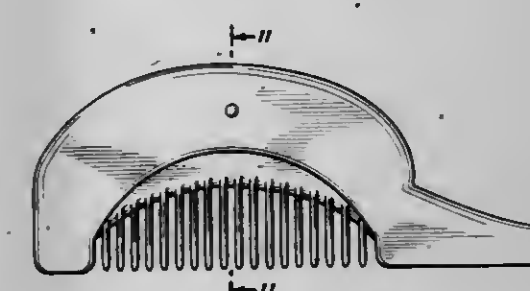
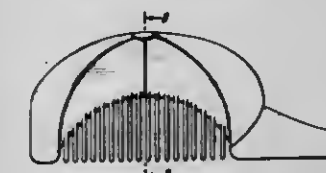
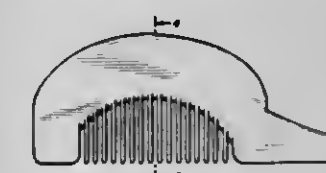
John I. Horner, 914 Electric Ave., Venice, Calif. 90291

Filed Sep. 18, 1979, Ser. No. 76,620

Term of patent 14 years

Int. Cl. D28—03

U.S. Cl. D28—22





# LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF AUGUST, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name  
(in accordance with city and telephone directory practice).

- A. E. McKenzie Co. Ltd.: See—  
Moore, William A., 4,285,164, Cl. 47-69.000.
- Abaskalov, Vladimir D.: See—  
Zitser, Vitaly A.; Bachelis, Leonid V.; Morozov, Jury E.; Melnikov, Alexandr V.; Ivanov, Vladimir A.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,285,599, Cl. 366-17.000.
- Abbott Laboratories: See—  
Bujan, Albert F., 4,285,492, Cl. 251-9.000.
- Abe, Masahiro, to Glory Kogyo Kabushiki Kaisha. Method and apparatus for stacking sheets such as paper currency. 4,285,511, Cl. 271-178.000.
- Abel, William A.: See—  
Massey, Lester G.; George, David A.; Brabets, Robert I.; and Abel, William A., 4,286,111, Cl. 174-15.0BH.
- Abeler, Gerd: See—  
Wehner, Wolfgang; and Abeler, Gerd, 4,285,856, Cl. 260-45.75S.
- Achelpohl, Fritz, to Windmoller & Holscher. Apparatus for forming loops in tube sections for making sacks for the purpose of compensating for different lengths of sections. 4,285,685, Cl. 493-406.000.
- Ackermann, Manfred; and Alfano, Nicholas, to Union Special Corporation. Needle guard for sewing machines. 4,285,291, Cl. 112-184.000.
- Adachi, Akiyoshi: See—  
Hara, Haruichi; Kanzaki, Toshihide; Motomuro, Hisanao; and Adachi, Akiyoshi, 4,285,927, Cl. 423-535.000.
- Adamoli, Contardo: See—  
Bernardis, Francesco; Adamoli, Contardo; and Cretaz, Franco, 4,285,603, Cl. 400-124.000.
- Adams, Gar M., to Tecumseh Products Company. Spill and spit resistant fuel cap. 4,285,440, Cl. 220-202.000.
- Adams, Joan M.: See—  
Yezek, Milton; and Adams, Joan M., 4,285,977, Cl. 426-67.000.
- Adler, Ralph P. I., to GTE Laboratories Incorporated. Method for producing color cathode ray tube aperture masks. 4,285,106, Cl. 29-25.150.
- Aernoudt, Etienne A. D.: See—  
Deruyttere, Andre E. A.; Delaey, Lucas J. A. E.; Aernoudt, Etienne A. D.; and Roos, Josef R., 4,285,739, Cl. 148-11.50C.
- Agence Nationale de Valorisation de la Recherche (ANVAR): See—  
Charpak, Georges; Ngoc, Hoan N.; and Policarpo, Armando, 4,286,158, Cl. 250-374.000.
- Agency of Industrial Science & Technology: See—  
Makita, Yunosuke, 4,286,231, Cl. 331-94.50H.
- Yamamoto, Shigeyuki, 4,285,566, Cl. 350-6.600.
- Agfa-Gevaert Aktiengesellschaft: See—  
Eickel, Rolf; and Tolsdorf, Dieter, 4,286,157, Cl. 250-370.000.
- Stemme, Otto; Wagensonner, Eduard; and Ruf, Wolfgang, 4,285,455, Cl. 226-188.000.
- AGIP NUCLEARE S.p.A.: See—  
Bezzi, Giovanni; Pauluzzi, Ego; and Zanardi, Mauro, 4,285,645, Cl. 425-6.000.
- Agrohol Systems, Inc.: See—  
Rajamannan, A. H. J., 4,285,774, Cl. 202-154.000.
- Agura, Kiyokazu: See—  
Katayama, Toshiyuki; Agura, Kiyokazu; and Matsuda, Masayuki, 4,285,534, Cl. 285-119.000.
- Aida, Kikuo, to Tokyo Juki Kogyo Kabushiki Kaisha. Upper layer feed mechanism in a sewing machine. 4,285,294, Cl. 112-311.000.
- Air Products and Chemicals, Inc.: See—  
Coe, Charles G., 4,286,073, Cl. 521-126.000.
- Airco, Inc.: See—  
Young, Morris S.; and Larbalestier, David C., 4,285,740, Cl. 148-11.50Q.
- Aisin Seiki Kabushiki Kaisha: See—  
Kazaoka, Kenichi; and Hayashi, Masayuki, 4,285,487, Cl. 248-396.000.
- Aizawa, Shinichi: See—  
Kitta, Hiroyuki; Aizawa, Shinichi; and Sawa, Hiroshi, 4,286,159, Cl. 250-381.000.
- Aizawa, Tatsushi: See—  
Hayashi, Masakatsu; Tanaka, Takeo; Natori, Tatsuo; Aizawa, Tatsushi; Kojima, Shigeru; and Senshu, Takao, 4,285,385, Cl. 164-9.000.
- Akai Electric Company Limited: See—  
Watanabe, Hisashi; Urino, Yoshiteru; and Aotsu, Shinichi, 4,285,894, Cl. 264-61.000.
- Akamatsu, Hideaki: See—  
Mizusawa, Shinichiro; Akamatsu, Hideaki; Noda, Fumiyoshi; and Watanabe, Yuji, 4,285,909, Cl. 422-179.000.
- Akin, Cavit; and Murphy, Rose M., to Standard Oil Company (Indiana). Method for accelerating autolysis of yeast. 4,285,976, Cl. 426-60.000.
- Akiya, Kiyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Carburetor. 4,285,887, Cl. 261-34.00A.
- Akiyoshi, Hideki: See—  
Nishizima, Hideyo; Ema, Hideaki; Tamura, Hiroshi; and Akiyoshi, Hideki, 4,286,035, Cl. 430-85.000.
- Aktiebolaget Electrolux: See—  
Doherty, Ian, 4,285,359, Cl. 137-205.000.
- Akune, Mikio, to Nittetu Chemical Engineering Ltd. Process for the treatment of a waste liquid containing boron compounds and organic compounds. 4,285,820, Cl. 210-774.000.
- Akzona Incorporated: See—  
Hoppe, Hans-Joachim; and Ostertag, Karl, 4,285,898, Cl. 264-176.00F.
- Aladdin Industries, Incorporated: See—  
Bourner, Howard, 4,285,391, Cl. 165-30.000.
- Albany International Corp.: See—  
Barthelemy, Kenneth E., 4,285,817, Cl. 210-486.000.
- Alberta Oil Sands Technology and Research Authority: See—  
Taciuk, William, 4,285,773, Cl. 202-100.000.
- Alberto-Culver Company: See—  
Edwards, Diane B., 4,285,973, Cl. 424-358.000.
- Album Graphics, Incorporated: See—  
Richardson, William C.; and Isoldi, Mario, 4,285,150, Cl. 40-312.000.
- Alexander, Robert O., to Cera International Limited. Apparatus for cleaning gas. 4,285,703, Cl. 55-228.000.
- Alexandrova, Natalia A.: See—  
Zuzanov, Georgy I.; Mironkin, Iosif S.; Tsarik, Jury N.; Alexandrova, Natalia A.; Kamensky, Sergei N.; and Nevedomsky, Evgeny N., 4,285,704, Cl. 55-274.000.
- Alfano, Nicholas: See—  
Ackermann, Manfred; and Alfano, Nicholas, 4,285,291, Cl. 112-184.000.
- Allard, Louis R., to Beloit Corporation. Apparatus for feeding material out of silos or from stacks. 4,285,622, Cl. 414-133.000.
- Allen, James H., to Smith International, Inc. Two cone bit with extended diamond cutters. 4,285,409, Cl. 175-336.000.
- Allen, Linus S., to Mobil Oil Corporation. Neutron-neutron logging. 4,286,150, Cl. 250-270.000.
- Allen, Richard B.; and Patten, Thomas E., to Du Pont de Nemours, E. I., and Company. Apparatus for stripping a cover sheet. 4,285,759, Cl. 156-584.000.
- Allied Chemical Corporation: See—  
Bean, Samuel L.; Seeling, Philip F.; Hoffman, Robert J.; and Low, William W., 4,285,923, Cl. 423-385.000.
- Larson, Eric H., 4,285,786, Cl. 204-98.000.
- Mares, Frank; and Jacobson, Stephen E., 4,286,068, Cl. 521-53.000.
- Narasimhan, Mandayam C., 4,285,386, Cl. 164-463.000.
- Poncha, Rustom P., 4,285,925, Cl. 423-425.000.
- Alps Electric Co., Ltd.: See—  
Kondo, Shiro, 4,285,097, Cl. 16-121.000.
- Aluminum Company of America: See—  
Becker, Aaron J.; and Careatti, Don R., 4,285,724, Cl. 75-84.400.
- Sullivan, Daniel A., Jr., 4,285,785, Cl. 204-64.00R.
- Alza Corporation: See—  
Ayer, Atul D.; and Theeuwes, Felix, 4,285,987, Cl. 427-3.000.
- Theeuwes, Felix, 4,286,067, Cl. 521-27.000.
- Ambler, James R., to Gloucester Engineering Co., Inc. V-Board folder for flexible plastic films. 4,285,686, Cl. 493-439.000.
- American Box Company: See—  
Dyer, Harry F., 4,285,439, Cl. 217-45.000.
- American Can Company: See—  
Dunkerly, Cedric A., II, 4,285,647, Cl. 425-82.100.
- Meyers, George L., 4,285,461, Cl. 229-44.00R.
- American Filtrona Corporation: See—  
Berger, Richard M., 4,286,005, Cl. 428-167.000.
- American Hoechst Corporation: See—  
Millington, James E.; and Papetti, Stelvio, 4,286,069, Cl. 521-56.000.
- American Hospital Supply Corporation: See—  
Intengan, Franklin F., 4,285,463, Cl. 233-26.000.
- American Safety Equipment Corporation: See—  
Stamboulia, Nazareth, 4,285,478, Cl. 242-107.000.
- American Seating Company: See—  
Quigley, Robert E., 4,285,172, Cl. 52-10.000.
- American Stair Corporation, Inc.: See—  
Seegers, Glen A., 4,285,177, Cl. 52-179.000.
- AMF Incorporated: See—  
Anderson, Lehman E., 4,285,419, Cl. 192-11.000.
- Amistar Corporation: See—  
Roecks, Carl C.; and Baker, Stuart C., 4,286,201, Cl. 318-640.000.



- AMP Incorporated: See—  
Peppler, Michael S.; and Bakermans, Johannes C. W., 4,285,118, Cl. 29-593,000.  
Teagno, Vladimiro; and Trevisiol, Franco, 4,285,562, Cl. 339-33,000.
- AMSTED Industries Incorporated: See—  
Schuricht, Henry A., 4,285,434, Cl. 209-625,000.
- Analog Devices, Incorporated: See—  
Morong, William H., III, 4,286,225, Cl. 330-10,000.
- Anchor Coupling Co., Inc.: See—  
Gunning, David W., 4,285,228, Cl. 72-402,000.
- Andary, Thomas J.; Berkebile, L. Raymond; Thomas, William R.; and Tse, Daphne C., to Baxter Travenol Laboratories, Inc. Method for making therapeutic enzyme compositions, 4,286,056, Cl. 435-3,000.
- Anders, Dietmar, to Hermann Berstorff Maschinenbau GmbH. Granulating apparatus, 4,285,652, Cl. 425-311,000.
- Anderson, Lehman E., to AMF Incorporated. Brake clutch release control for belt driven riding mowers, 4,285,419, Cl. 192-11,000.
- Anderson, Richard W.; Resnick, Martin L.; and Schlener, J. Edward, to GTE Products Corp.; and GTE Laboratories Inc. Monitoring and signalling system including apparatus for processing and analyzing signals produced by activity monitoring sensors, 4,286,331, Cl. 364-900,000.
- Andreas Stihl: See—  
Zerger, Gerhard; and Beier, Roland, 4,285,127, Cl. 30-276,000.
- Andreoni, Alessandro: See—  
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; and Cesarani, Roberto, 4,285,966, Cl. 424-285,000.
- Angelica Corporation: See—  
Zins, Howard M.; and Morris, Edward L., Jr., 4,286,012, Cl. 428-252,000.
- Aotsu, Shinichi: See—  
Watanabe, Hisashi; Urino, Yoshiteru; and Aotsu, Shinichi, 4,285,894, Cl. 264-61,000.
- Appenzeller, Valentin: See—  
Kusters, Eduard; Hartmann, Werner; and Appenzeller, Valentin, 4,285,107, Cl. 29-129,500.
- Arato, Laszlo. Method for washing by means of a rotating washing equipment, and washing device for the practice of the method, 4,285,736, Cl. 134-6,000.
- ARBED: See—  
Frenzel, Jurgen, 4,285,115, Cl. 29-460,000.
- Arco Polymers, Inc.: See—  
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- Armour-Dial, Inc.: See—  
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- Arrigoni, John P., to United Technologies Corporation. Apparatus and method for refinishing turbine blade airseals, 4,285,108, Cl. 29-156,800.
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- Ashland Oil, Inc.: See—  
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- Atlantic Richfield Company: See—  
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- Audeh, Costandi A.; and Valyocsik, Ernest W., to Mobil Oil Corporation. Method of preparing crystalline zeolite, 4,285,922, Cl. 423-329,000.
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- Ausnit, Steven, to Minigrip, Inc. Reclosable plastic bag construction made from a one piece extrusion, 4,285,376, Cl. 150-3,000.
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- Averill, Robert G., to Minnesota Mining and Manufacturing Company. Prosthetic device, 4,285,070, Cl. 3-1,911.
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- Babcock, Clarence L.; Busdiecker, Robert A.; and Hagedorn, Erwin C., to Owens-Illinois, Inc. Method of making low expansion crystallized glass-ceramics and telescope mirror blanks made thereby, 4,285,728, Cl. 106-39,700.
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- Bachmann, William V. Internal combustion engine, 4,285,304, Cl. 123-52,000.
- Baenziger, Robert C. Touch control for a spin-casting reel, 4,285,476, Cl. 242-84,20A.
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- Baker, David C.; Bantz, David F.; and Evangelisti, Carlo J., to International Business Machines Corporation. Common bus communication system in which the width of the address field is greater than the number of lines on the bus, 4,286,321, Cl. 364-200,000.
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- Baker Perkins Holdings Limited: See—  
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- Baker, Stuart C.: See—  
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- Bakermans, Johannes C. W.: See—  
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- Balchunas, Charles A., to General Electric Company. Thermostat and iron assembly, 4,285,145, Cl. 38-77,700.
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- Bandag Incorporated: See—  
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- Banic, James M., Jr.: See—  
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- Bantz, David F.: See—  
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- Barbano, Normand; and Kuo, Samuel C., to GTE Products Corporation. Log-periodic monopole antenna, 4,286,271, Cl. 343-792,500.
- Bardsley, Harold B., to Spencer Wright Industries, Inc. Grinding of knives, 4,285,170, Cl. 51-288,000.
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- Barnes, Martin S.: See—  
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- Barnes, Mary K. Watch band pin connector assembly, 4,285,450, Cl. 224-164,000.
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- Barron, Ellis. Pianoharp action, 4,285,261, Cl. 84-258,000.
- Barry-Wehmiller Company: See—  
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- Barthelemy, Kenneth E., to Albany International Corp. Disc sector, 4,285,817, Cl. 210-486,000.
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- BASF Aktiengesellschaft: See—  
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- Bauer, Jack N.: See—  
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- Bauer, Johann G. H., to Baucer, Robert K. Apparatus for withdrawing the oil from an internal combustion engine, 4,285,360, Cl. 137-205,000.
- Bauer, Robert K.: See—  
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- Bauer, Werner R., to Robertshaw Controls Company. Electrical switch constructions and methods of making the same, 4,286,243, Cl. 335-193,000.
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- Bausani, Giovanni: See—  
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- Quiring, Bernd; Wenzel, Wolfgang; Niederdelmann, Georg; Wagner, Hans; and Goyert, Wilhelm, 4,286,080, Cl. 525-455,000.
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- Bean, Samuel L.; Seeling, Philip F.; Hoffman, Robert J.; and Low, William W., to Allied Chemical Corporation. Manufacture of calcium nitrate solutions with low nitrate content, 4,285,923, Cl. 423-385,000.
- Beaudette, Richard A.; and Gonsalves, John A., to GTE Laboratories Incorporated. Optical cable connector for connecting an optical fiber with a photodiode, 4,285,572, Cl. 350-96,200.
- Beavers, Allan E., to T. A. Pelsue Company. Multipurpose tent, 4,285,354, Cl. 135-1,000.
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- Becker, Aaron J.; and Careatti, Don R., to Aluminum Company of America. Continuous production of finely divided zirconium powder, 4,285,724, Cl. 75-84,400.
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- Bejed, Inc.: See—  
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- Beker, Martin E.: See—  
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- Bell & Howell Company: See—  
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- Bell, Ted A.; and Cooksey, Timothy S., to Pretty Products, Inc. Sunvisor cassette holder, 4,285,554, Cl. 312-9,000.
- Bell Telephone Laboratories, Incorporated: See—  
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- Bellaff, Leslie, to Weaver, William W. Balancing air device for a heating unit, 4,285,325, Cl. 126-112,000.
- Bellows, Richard J.; Grimes, Patrick G.; and Elspass, Chester W., to Exxon Research & Engineering Co. Annular electrodes for shunt current elimination, 4,285,794, Cl. 204-260,000.
- Beloit Corporation: See—  
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- Ben-Nathan, Samuel; Neumeister, Marwin G.; Shats, Mikhail; and McCallum, Robert S., to NCR Canada Ltd - NCR Canada Ltee. Apparatus and method for detection of overlapping objects, 4,286,149, Cl. 250-223,000.
- Benchmark Tool Company: See—  
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- Bendiberica, S.A.: See—  
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- Bennett, Phillip P.: See—  
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- Bennett, Richard E.; and Hittner, Mary A., to Minnesota Mining and Manufacturing Company. Pressure-sensitive adhesive susceptible to ultraviolet light-induced detachification, 4,286,047, Cl. 430-280,000.
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- Berger, J. Louis: See—  
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- Berges, David A., to SmithKline Corporation. 7-Acyl-3-(substituted tetrazolyl thiomethyl)cephalosporins. 4,286,089, Cl. 544-27.000.
- Berginski, Werner E., to Leopold Kostal, Firma. Ignition switch. 4,286,126, Cl. 200-11.00C.
- Bergstrasser, Werner, to USM Corporation. Cementing press. 4,285,085, Cl. 12-16.400.
- Berkebile, L. Raymond: See—  
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- Bernett, William A.: See—  
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- Berry, James L. Trailer hitch visual alignment device. 4,285,138, Cl. 33-264.000.
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- Bertozi, Richard J.; Pavelek, Joseph M., Jr.; and Wood, Daniel S., to Armour-Dial, Inc. Toilet soap bars imparting improved moistening and skin feel characteristics. 4,285,826, Cl. 252-117.000.
- Bethke, Monika: See—  
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- Betsuda, Yasuhiro; Taguchi, Yoshio; and Takashashi, Yasuo, to Shinwa Seisakusho Co., Ltd. Process for tapering synthetic fibers at the end portion thereof. 4,285,892, Cl. 264-23.000.
- Betti, Pier L., to Dinamyl Pesquisa E. Desenvolvimento Tecnológico S/C Ltda. Tecnologia de Soluções. Protective shoulder structure for roadway joints. 4,285,612, Cl. 404-68.000.
- Betz, Norman L.; Lanter, Kent J.; and Williams, Danny L., to Ralston Purina Company. Intake limiting liquid feed supplement for cattle. 4,285,974, Cl. 426-2.000.
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- Bimber, Russell M.; Buchman, Russell; DePompei, Michael F.; and Powers, Larry J., to Diamond Shamrock Corporation. Synthesis of pyridazinone pharmaceutical intermediates using diketene reactant. 4,286,091, Cl. 544-239.000.
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- Biscomb, Lloyd L. Multiple wind turbine tethered airfoil wind energy conversion system. 4,285,481, Cl. 244-33.000.
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- Blanchard, Floyd W. Stand for supporting a hand-held implement. 4,285,489, Cl. 248-471.000.
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- Block, Aleck; and Hasegawa, Hiroshi, to Merit Abrasive Products, Inc. Abrasive flap drum. 4,285,171, Cl. 51-337.000.
- Blom, Hubert P., to General Motors Corporation. Inertia release for belt retractor winding prevention mechanism. 4,285,479, Cl. 242-107.40A.
- Blomley, Peter F., to International Standard Electric Corporation. Bridge amplifier. 4,286,123, Cl. 179-170.00T.
- Bloomquist, Marvin G.; Hoehn, Gustave L., Jr.; Norton, Lonnie J.; and Warner, Barry N., to Mobil Oil Corporation. Multiple site magnetotelluric measurements. 4,286,218, Cl. 324-350.000.
- Bloxson, Dan E. Solar heater. 4,285,331, Cl. 126-428.000.
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- Boeker, Richard P., to United States of America, Navy. Incoherent optical ambiguity function generator. 4,286,328, Cl. 364-851.000.
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- Linscheid, Larry L.; and Mueller, Philip M., 4,285,466, Cl. 236-13.000.
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- Boges, Klaus P.: See—  
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- Bogren, Robert G.: See—  
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- Bolen, Charles E.: See—  
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- Bonta, Anthony R.; and Gasche, Charles J., to United States Steel Corporation. Sectional hot top. 4,285,491, Cl. 249-102.000.
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- Booker, William G., Jr. Collapsible growing plant enclosure. 4,285,163, Cl. 47-45.000.
- Boose, James R.: See—  
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- Boren, Paul R.: See—  
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- Borg-Warner Corporation: See—  
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- Willis, Gordon A., 4,285,493, Cl. 251-14.000.
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- Bourner, Howard, to Aladdin Industries, Incorporated. Electrical system for food service devices. 4,285,391, Cl. 165-30.000.
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- Bowes, Robert G.; and Chapman, Robert D., to BOC Limited. Heat treatment method. 4,285,742, Cl. 148-16.000.
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- Branson International Plasma Corp.: See—  
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- Braxton, Earl J. Apparatus for extracting proteins from urine. 4,285,077, Cl. 4-462.000.
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- Brinkers, Gerardus C. Holder for packaging, displaying and offering for sale of articles, as well as separate assembly therefor. 4,285,435, Cl. 211-49.00D.
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- Brois, Stanley J.; and Gutierrez, Antonio, to Exxon Research & Engineering Co. Two phase process for the preparation of azole and azoline disulfides. 4,286,096, Cl. 548-130.000.
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- Brown, Timothy A.: See—  
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- Brownell, Wallace F.: See—  
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- Buckman Laboratories, Inc.: See—  
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- Budecker, Ludwig, to ITT Industries, Inc. Accumulator charging valve. 4,285,198, Cl. 60-547.00A.
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- Buffet, Denis, to Robatel S.L.P.I. Centrifuges with hydraulic controls. 4,285,462, Cl. 233-20.00A.
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- Bukin, Vasily N.: See—  
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- Burroughs Corporation: See—  
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- Burson, Bob O.: See—  
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- Burton, John H.: See—  
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- Butler, Robert S.; and Crombie, Lance B. Continuous fermentation and distillation apparatus. 4,286,066, Cl. 435-316.000.
- Butts, Gene A.; and Rhine, Samuel, to Helena Laboratories Corporation. Optical system for densitometer. 4,285,594, Cl. 356-72.000.
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- Cabot Corporation: See—  
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- Cahen, George L., Jr.: See—  
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- Cahill, John W., to PepsiCo Inc. Container redemption apparatus and process. 4,285,426, Cl. 194-4.00C.
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- Calmac Manufacturing Corporation: See—  
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- Canadian Patents & Dev. Ltd.: See—  
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- Yamada, Yu, 4,285,579, Cl. 350-470.000.



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Coats, Graham C.; Elliott, Gary A.; and Bulboaca, Michael A., to Barry-Wehmler Company. Rotary valve for pressure fluid distribution. 4,285,365, Cl. 137-625.150.

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Colvin, Beal H., to Inspiration Consolidated Copper Company. Tuyere sealing means and silencer. 4,285,504, Cl. 266-266.000.

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Odom, Roger K., 4,286,206, Cl. 323-244.000.

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Niebes, Paul; Vincze, Andras; Roba, Joseph; Lambelin, Georges; Matagne, Daniel; Hanon, Etienne; and Franz, Michel, 4,285,964, Cl. 424-283.000.

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Klinteberg, G. Rune; Johansson, N. A. Bertil; Johansson, B. Lenart; and Dahlgren, Christer H., 4,285,526, Cl. 277-153.000.

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Ito, Akira; and Arisaka, Katsuharu, 4,285,677, Cl. 493-43.000.

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- Daimon, Masaru: See—  
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- Dana Corporation: See—  
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- Dancsi, Lajos: See—  
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- Daniel, Sam M.; and Myers, Michael H., to Motorola Inc. Adaptive array with optimal sequential gradient control. 4,286,268, Cl. 343-100.0LE.
- Dannenbergh, Wolfgang; and Schmand, Horst, to Riedel-de Haen Aktiengesellschaft. Process for resolution of racemic DL- $\alpha$ -aminocarboxylic acids. 4,285,884, Cl. 260-501.110.
- Dannenmann, John E., Jr.; and Johnson, Bill E., to Bejed, Inc. Two-wire resistance bridges for private line circuits. 4,286,114, Cl. 179-1.0CN.
- Daroga, Minoo J.; and Jones, Robert E., to Minnesota Mining & Manufacturing Company. Flame barrier. 4,286,013, Cl. 428-266.000.
- Das, Narayan; and Misra, Surya K. Phosphate and ester coating method. 4,285,223, Cl. 72-42.000.
- Dauge, Gilbert V.; and Langlais, Jacques F., to Testut-Aequitas. Load receiver with beam having elastic flexion. 4,285,413, Cl. 177-210.00C.
- David, Karl-Heinz; Nogaj, Alfred; and Rinkler, Heinrich, to Bayer Aktiengesellschaft. Process for stabilizing acrylonitrile polymer spinning solutions. 4,286,076, Cl. 525-221.000.
- David, Nel E. Shoulder protector. 4,285,067, Cl. 2-46.000.
- Davidson, Allen E.: See—  
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- Davidson, Charles F., to United States of America, Interior. Recovery of lithium from low-grade ores. 4,285,914, Cl. 423-179.500.
- Davidson, Michel: See—  
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- Davis, Charles S., to Russo, Leonard. Book marker. 4,285,532, Cl. 281-42.000.
- Davis, John E.; and Cenker, Moses, to BASF Wyandotte Corporation. Amine-terminated graft copolymer dispersions and polyurethanes prepared therefrom. 4,286,074, Cl. 521-137.000.
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- Dean, Joe O. Semi-automatic double action revolver. 4,285,152, Cl. 42-59.000.
- Deban, Gilles, to Sonotec S.A. - Societe Nouvelle de Produits et Techniques. Color television signal decoding device. 4,286,284, Cl. 358-11.000.
- De Brouckere, Lucien C., to International Standard Electric Corporation. Device for growing a crystalline layer on a substrate. 4,285,911, Cl. 422-249.000.
- Deckler, Harry C., to White Farm Equipment Company. Automatic sequencing valve and system. 4,285,268, Cl. 91-517.000.
- de Cremoux, Baudouin: See—  
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- Dehne, Manfred F. Particulate filtration device. 4,285,706, Cl. 55-343.000.
- Dehnert, Johannes: See—  
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- Dejarnett, Donald W. Mini module builder. 4,285,273, Cl. 100-35.000.
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- Delfino, Anthony T. Carburetor. 4,285,886, Cl. 261-30.000.
- Delle-Alstom: See—  
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- Del Pino, Fernando: See—  
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- DeMartino, Edward A., to Owens-Illinois, Inc. Method for producing a plastic sleeve. 4,285,750, Cl. 156-218.000.
- Demchak, Steve; and Spector, George. Fishing line meter. 4,285,131, Cl. 33-134.00R.
- Demeure, Loic: See—  
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- Denis, Jean-Luc: See—  
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- Denny, Richard W., to Honeywell Inc. Multivibrator circuit. 4,286,234, Cl. 331-113.00R.
- de Nora, Vittorio; Nidola, Antonio; and Spaziante, Placido M., to Diamond Shamrock Technologies, S.A. Electrodes for electrolytic processes, especially metal electrowinning. 4,285,799, Cl. 204-290.00F.
- DePompei, Michael F.: See—  
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- DePuy, Ronald G.; and Stevens, George W., to Corning Glass Works. Method of decorating seasonal ornaments. 4,285,746, Cl. 156-79.000.
- Deruyttere, Andre E. A.; Delacy, Lucas J. A. E.; Aernoudt, Etienne A. D.; and Roos, Josef R., to Leuven Research and Development VZW. Process of manufacturing solid bodies of copper-zinc-aluminum alloys. 4,285,739, Cl. 148-11.50C.
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- DeSalve, Dennis W., to United Aircraft Products, Inc. Oiling system for rotor bearings. 4,285,632, Cl. 415-175.000.
- De Silva, Dodwell P.: See—  
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- Desom, Albert. Device for positioning printed caps. 4,285,186, Cl. 53-64.000.
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- Dessau, Ralph M.: See—  
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- De Win, Werner: See—  
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- Dewulf, Roger; Denis, Jean-Luc; Germain, Michel; and Lecointre, Christian, to Commissariat a l'Energie Atomique. Apparatus for raising a liquid to a given temperature. 4,286,140, Cl. 219-306.000.
- De Zwart, Maarten; and Heldens, Johannes L. A. M., to U.S. Philips Corporation. Display device. 4,286,266, Cl. 340-765.000.
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- Diamond Shamrock Corporation: See—  
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- Diamond Shamrock Technologies, S.A.: See—  
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- Diaz Fernandez-Raigoso, Aurelio: See—  
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- Dickstein, Samuel R. Flushing apparatus for ileostomy bag. 4,285,076, Cl. 4-341.000.
- di Donato, Jose E. Ping-pong poker. 4,285,519, Cl. 273-30.000.
- Diesel Kiki Company, Ltd.: See—  
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- Di Forte, Marie A.: See—  
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- DiGiulio, Adolph V.; and Bauer, Jack N., to Arco Polymers, Inc. Fire-retardant, rubber-modified, monocarboxylic acid copolymers. 4,286,070, Cl. 521-88.000.
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- Dinamyk Pesquisa E. Desenvolvimento Tecnologico S/C Ltda. Tecnologia de Solucoes: See—  
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- Dinges, Kenneth N., to Braden Steel Corporation. Concealed fastener panel construction and method of installation. 4,285,182, Cl. 52-478.000.
- Dingwall, Andrew G. F., to RCA Corporation. Transition detector circuit. 4,286,174, Cl. 307-242.000.
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- DiRocco, David J.: See—  
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- DiRocco, Jobbie; and DiRocco, David J. Tire repair patch. 4,285,382, Cl. 152-367.000.
- Drugos, Daniel F.; Hansen, Gary G.; and Steinmetz, John H., to Pitney Bowes Inc. System and method for computing domestic and international postage. 4,286,325, Cl. 364-466.000.
- Dmitrenko, Leonid V.: See—  
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- Dmitrichenko, Viktor A.: See—  
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- Doerig, Robert: See—  
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- Doerr, Richard L.; and Scardera, Michael, to Olin Corporation. Process for inhibiting crust formation in reduced dye baths. 4,285,695, Cl. 8-650.000.
- Doherty, Ian, to Aktiebolaget Electrolux. Interface unit for vacuum sewers. 4,285,359, Cl. 137-205.000.
- Dolfini, Joseph E.: See—  
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- Donahue, Joseph D., to Schweitzer Industrial Corporation. Paint spray booth with flooded floor. 4,285,270, Cl. 98-115.05B.
- Donato, Guido A., to Drexler Industries, Inc. Fork lift truck with plate glass handling attachment. 4,285,626, Cl. 414-622.000.
- Dosco Overseas Engineering Ltd.: See—  
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- Douaud, Andre; and Rialan, Joseph, to Institut Francais du Pétrole. Method and device for automatically adjusting the spark advance of a controlled ignition engine. 4,285,315, Cl. 123-425.000.
- Dow Chemical Company, The: See—  
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- Lowery, Kirby, Jr.; and Vance, Fred L., Jr., 4,285,834, Cl. 252-429.00C.
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- Dowbenko, Rostyslaw; Schimmel, Karl F.; and Seiner, Jerome A., to PPG Industries, Inc. Amidation reaction products of polyamines and polycarboxyl containing materials and coating compositions containing same. 4,285,849, Cl. 260-29.6NR.
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- Drackett Company, The: See—  
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- Draf Tool Co., Inc.: See—  
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- Dresser Industries, Inc.: See—  
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- Drexel Industries, Inc.: See—  
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- Drexler, Ferenc: See—  
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- Du-Al Manufacturing Company, Division of Core Industries, Inc.: See—  
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- Dubach, Harry. Bearing puller alignment tool. 4,285,111, Cl. 29-263.000.
- Dubois, Jean-Claude: See—  
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- Ducourant, Jacques F. Hand held skiing stabilizer. 4,285,530, Cl. 280-809.000.
- Dudynskij, Peter P., to General Motors Corporation. Wheelchair lift device. 4,285,416, Cl. 187-9.00R.
- Dugan, Charles; and Dugan, Timothy, to Farm Fresh Shrimp Corporation. Method and apparatus for rearing post-larvae shrimp. 4,285,298, Cl. 119-2.000.
- Dugan, Timothy: See—  
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- Dugger, Doyle L., to Bandag Incorporated. Method and apparatus for non-destructive inspection of tires. 4,285,235, Cl. 73-146.000.
- Duhl, Daniel, to Polylok Corporation. Single bar, warp lift-off-resistant, lofted fabric construction. 4,285,216, Cl. 66-192.000.
- Dunkerly, Cedric A., II, to American Can Company. Apparatus for the manufacture of fibrous webs. 4,285,647, Cl. 425-82.100.
- Dunmire, David L.: See—  
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- Du Pont de Nemours, E. I., and Company: See—  
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Forster, Ralf-Udo P.; and Metzger, Rolf H. F., 4,286,055, Cl. 430-567.000.  
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- Duppman, Gilbert F.: See—  
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- Durant, Graham J.; and Miles, Peter D., to Smith Kline & French Laboratories Limited. Pyridyl, thiazolyl and isothiazolyl alkyl bisamidines. 4,285,952, Cl. 424-263.000.
- Durst AG Fabrik Fotoelektrischer Apparate: See—  
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- Dyben, Jerry F.: See—  
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- Dye, John F.; and Lowe, Earl L., to Ball Corporation. Plastic preform. 4,286,000, Cl. 428-64.000.
- Dyer, Harry F., to American Box Company. Wall construction for wire-bound boxes having split cleats. 4,285,439, Cl. 217-45.000.
- Dyneer Corporation: See—  
Kraft, Derald H., 4,285,676, Cl. 474-135.000.
- E M I Limited: See—  
Franklin, Donald P., 4,286,333, Cl. 375-1.000.
- E-Systems, Inc.: See—  
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Shearer, Harry D., 4,286,223, Cl. 329-50.000.
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Reed, Kenneth J.; and Lythgoe, Alan L., 4,286,008, Cl. 428-195.000.
- East, Anthony J., to Celanese Corporation. Anisotropic wholly aromatic polyester derived from 4-hydroxy-4'-carboxy azobenzene and process for preparation. 4,285,852, Cl. 260-37.00R.
- Eastman Kodak Company: See—  
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- Eaton Corporation: See—  
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- Eberle, William J.; and Reber, Timothy M., to General Battery Corporation. Apparatus for separating battery plates. 4,285,257, Cl. 83-167.000.
- Eberle, William J.: See—  
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- Edelmann, Hans A. K., to Prakla-Seismos GmbH. Method and apparatus for producing shear waves for subsurface geophysical investigation. 4,286,332, Cl. 367-75.000.
- Edling, Theodore L. Mechanical steel for sharpening blades. 4,285,253, Cl. 76-84.000.
- Edwards, Diane B., to Alberto-Culver Company. Liquid composition for application to the skin. 4,285,973, Cl. 424-358.000.
- Edwards, Lynn D.: See—  
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- Edwards, Philip D.: See—  
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- Egli, Hermann; and Engeler, Emil, to Sandoz Ltd. Alkoxylated fatty amines and polyamines as reserving agents. 4,285,691, Cl. 8-455.000.
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- Ehret, Robert J., to Beckman Instruments, Inc. Slip frequency control for variable speed induction motors. 4,286,203, Cl. 318-801.000.
- Ehrich, Hans-Jurgen: See—  
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- Eichler, Jay H.; and Gasparatis, Bernard, to Motorola, Inc. Coaxial dual antenna connection arrangement for communications apparatus. 4,286,335, Cl. 455-89.000.
- Eickel, Rolf; and Tolksdorf, Dieter, to Agfa-Gevaert Aktiengesellschaft. Apparatus for ascertaining and/or regulating the amounts of radiation in the making of X-ray images. 4,286,157, Cl. 250-370.000.
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- Eilers, Hans-Reiner: See—  
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- Einhorn, Ruediger, to Coats & Clark, Inc. General purpose hollow wall toggle fastener. 4,285,264, Cl. 411-345.000.
- Einstein, Eystein; and Hageman, James R., to Whirlpool Corporation. Bi-rotational microwave oven turntable/rotisserie. 4,286,133, Cl. 219-10.55F.



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Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seiichi; Negi, Shigeto; Kito, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.
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- Ekstrom, Howard B.: See—  
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- Ekstrom, James R.; and Ekstrom, Howard B. Wave power generator, 4,285,196, Cl. 60-499.000.
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- Electro Pneumatic Corporation: See—  
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- Elgart, Alan. Microscope stage, 4,285,568, Cl. 350-90.000.
- Elliott, Gary A.: See—  
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- Ellis, Derrick S.: See—  
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- Elliston, Thomas L. Fire fighting boom assembly for service vessel, 4,285,629, Cl. 414-740.000.
- Elmer, Otto C., to General Tire & Rubber Company; The Adhesion of polyamide or polyester cords to EPDM rubber, 4,285,756, Cl. 156-334.000.
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- Elser, Dieter, to Zahnradfabrik Friedrichshafen, AG. Pressure medium control system for auxiliary power steering systems, 4,285,366, Cl. 137-625.230.
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- Elston, Gary W.: See—  
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- Ely, Stephen R.: See—  
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- Ema, Hideaki: See—  
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- Emhart Industries, Inc.: See—  
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- Vana, John H., 4,285,204, Cl. 62-81.000.
- Empresa Nacional Siderurgica, S.A. (Ensidesa): See—  
Tornos Garcia, Adolfo; Felgueroso Ruiz, Alejandro; and Diaz Fernandez-Raigoso, Aurelio, 4,285,229, Cl. 73-40.000.
- Enga, Bernard E., to Johnson, Matthey & Co., Limited. Engines, 4,285,665, Cl. 431-328.000.
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- Engelhardt & Foster: See—  
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- Engelmann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jürgen; and Sydow, Udo, to VEB Filmfabrik Wolfen. Light sensitive, color photographic silver halide compositions with DIR-couplers, 4,286,054, Cl. 430-544.000.
- Enjoyable Products, Inc.: See—  
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- Environmental Chemicals, Inc.: See—  
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- Envirosol Systems International, Ltd.: See—  
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- Eppendorf Geratebau Netherler + Hinz GmbH: See—  
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- Epsztajn, Bernard; and Fleury, George, to Thomson-CSF. Delay line with coupled cavities, 4,286,191, Cl. 315-3.600.
- Eranian, Armand; Dubois, Jean-Claude; Gizard, Maryse; and Barre, Francoise, to Thomson-CSF. Family of compounds crosslinkable by photon irradiation, 4,285,788, Cl. 204-159.160.
- Erb, Edgar M.: See—  
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- Erhardt, Peter F.: See—  
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- Erickson, Jalmir W. Underground in situ leaching of ore, 4,285,548, Cl. 299-2.000.
- Erickson, John W., to Kobe, Inc. Electric and hydraulic powered thermal stimulation and recovery system and method for subterranean wells, 4,285,401, Cl. 166-303.000.
- Erickson, John W., to Kobe, Inc. Oil drying system for motors, 4,286,185, Cl. 310-87.000.
- Ericson, Alvin E.: See—  
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- Eriksson, Kjell R. A. Apparatus for measuring the particle size range in a suspension, 4,285,231, Cl. 73-63.000.
- Ermachkov, Vladimir G.; and Zhavoronkin, Vladimir G. Rotobaler, 4,285,190, Cl. 56-341.000.
- Ernsberger, Fred M., to PPG Industries, Inc. Stained glass photomasks and method of making by electrodealkalization, 4,285,988, Cl. 427-12.000.
- Ernsberger, Fred M., to PPG Industries, Inc. Method for making stained glass photomasks using stabilized glass, 4,286,052, Cl. 430-330.000.
- Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners, 4,285,112, Cl. 29-407.000.
- Esmil B.V.: See—  
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- Essex Group, Inc.: See—  
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- Estee Lauder Inc.: See—  
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- Etherington, Michael, to Dosco Overseas Engineering Ltd. Tunnel profile control, 4,285,546, Cl. 299-1.000.
- Etschenberg, Eugen; Jacobi, Haidreddin; and Opitz, Wolfgang, to Bayer Aktiengesellschaft. Dehydropeptide compounds, their production and their medical use, 4,285,935, Cl. 424-177.000.
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- Evetts, Jonathan. Roll compression member, 4,285,616, Cl. 405-215.000.
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- Bellows, Richard J.; Grimes, Patrick G.; and Elspace, Chester W., 4,285,794, Cl. 204-260.000.
- Brois, Stanley J.; and Gutierrez, Antonio, 4,286,096, Cl. 548-130.000.
- Lyon, Richard K.; and Freund, Howard, 4,285,283, Cl. 110-347.000.
- Makowski, Henry S.; and Lundberg, Robert D., 4,285,851, Cl. 260-29.65Q.
- Moustakas, Theodore D., 4,285,762, Cl. 156-643.000.
- Shaw, Henry; and Skopp, Alvin, 4,285,193, Cl. 60-39.060.
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- Facet Enterprises, Inc.: See—  
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- Sekella, Thomas C., 4,285,420, Cl. 192-84.00C.
- Fadler, Kurt; and Werner, Karl-Heinz, to Fichtel & Sachs AG. Clutch disc assembly, 4,285,423, Cl. 192-106.200.
- Fagre, Raymond C., Jr., to Pallet Service Corporation. Pallet disassembling device, 4,285,110, Cl. 29-252.000.
- Fahey, Dennis M., to PPG Industries, Inc. Polymer sizing compositions and methods yielding sized glass fibers having reduced tackiness, 4,286,019, Cl. 428-391.000.
- Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., to Hoffmann-La Roche Inc. Adrenergic blocking agents, 4,285,873, Cl. 260-348.450.
- Fairbank, Paul, to Simon-Solitec Limited. Suspension for bin discharging device, 4,285,447, Cl. 222-200.000.
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- metal silicide layers on semiconductor devices, 4,285,761, Cl. 156-628.000.
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- Fedotov, Mikhail T.: See—  
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- Feeman, James F., to Crompton & Knowles Corporation. Disulfonic phenyl-azo-naphthyl-azo-phenyl alkoxy dyes for polyamides, 4,285,864, Cl. 260-191.000.
- Feinberg, Stewart C.; Lundsager, Christian B.; Lundquist, Joseph T., Jr.; and Balouskus, Robert A., to W. R. Grace & Co. Method of forming an improved battery separator, 4,285,751, Cl. 156-242.000.
- Feit, Richard. Method and article for dispersing a volatilizable compound in an environment, 4,285,905, Cl. 422-4.000.
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- Ferranti Limited: See—  
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- Ferres, Harry, to Beecham Group Limited. Penicillin compositions, 4,285,960, Cl. 424-271.000.
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- Filter Specialists, Inc.: See—  
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- Finnemore, Fred M.: See—  
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- Fisch, Michael A.: See—  
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- Fisher, Dennis H.: See—  
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- Flamme, Walter; and Mielke, Willi, to Peltzer & Ehlers GmbH & Co. Wire insertion apparatus, particularly for forming presses, 4,285,453, Cl. 226-142.000.
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- Flinders Surfing Co. Pty. Ltd.: See—  
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- Flinn, David R.; and Manger, Cheryl L., to United States of America, Interior. Process of electroplating a platinum-rhodium alloy coating, 4,285,784, Cl. 204-39.000.
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- Flynn, Charles M., Jr.; Carnahan, Thomas G.; and Lindstrom, Roald E., to United States of America, Interior. Recovery of bismuth from chloride process solutions, 4,285,912, Cl. 423-43.000.
- FMC Corporation: See—  
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- Ragan, Marshall P., 4,285,136, Cl. 33-203.180.
- Follows, James S. Shelf and clothes rod assembly for a closet, 4,285,484, Cl. 248-235.000.
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- Ford Motor Company: See—  
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- Mangels, John A.; and Tennenhouse, Gerald J., 4,285,895, Cl. 264-65.000.
- Forster, Ralf-Udo P.; and Metzger, Rolf H. F., to Du Pont de Nemours, E. I., and Company. Process for the preparation of monodisperse photographic silver halide emulsions of improved sensitivity, 4,286,055, Cl. 430-567.000.
- Fortune, Dennis M.; and Molitor, Victor D., to Stainless Equipment Company. Method of and apparatus for supplying treated air to spaces having different cooling requirements, 4,285,390, Cl. 165-2.000.
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- Franklin, Donald P., to EMI Limited. Data transmission, 4,286,333, Cl. 375-1.000.
- Franklin Electric Co., Inc.: See—  
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- Franklin, Reginald T. Method of using vacuum lifted blade sharpener for rotary mowers, 4,285,169, Cl. 51-288.000.
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- Franks, Lawrence A., to Burr Oak Tool & Gauge Company. Fin collection and transport apparatus, 4,285,256, Cl. 83-100.000.
- Franks, Robert L., Jr., to Well Tools, Inc. Reverse circulating tool, 4,285,408, Cl. 175-325.000.
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- French Masterpieces, Inc.: See—  
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- Frick, Berndt E. Table and a table support, 4,285,281, Cl. 108-147.000.
- Fricker, Rene, to Sandoz Ltd. Detergent compositions, 4,285,840, Cl. 252-546.000.
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Chi, Lawrence L.; and Kudirka, Alvydas A., 4,285,770, Cl. 176-65.000.  
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- Gupta, Shanti S., to Communications Satellite Corporation. High resolution frequency synthesizer. 4,286,219, Cl. 328-14.000.
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- Hartness International, Inc.: See—  
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- Hasegawa, Ryota: See—  
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- Hattori, Tadashi; Takata, Akira; Fukuda, Tamotsu; and Nakase, Takamichi, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Air flow amount adjusting system for an internal combustion engine. 4,285,319, Cl. 123-585.000.
- Hawker, Michael J., to Clayton Dewandre Co. Ltd. Hose coupling. 4,285,364, Cl. 137-614.030.
- Hawker Siddeley Dynamics Engr., Ltd.: See—  
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- Hedstrom, Norman A.; Bogren, Robert G.; and Wright, David M., to Wright Line Inc. Document holder. 4,285,555, Cl. 312-184.000.
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- Heger, Adolf: See—  
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- Heiba, El-Ahmedi I.; and Dessau, Ralph M., to Mobil Oil Corporation. Preparation of gamma-butyrolactones. 4,285,868, Cl. 260-343.600.
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- Henrick, Clive A.: See—  
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- Hermann Berstorff Maschinenbau GmbH: See—  
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- Hernqvist, Karl G., to RCA Corporation. Method for coating a selected portion of the internal neck surface of a CRT. 4,285,990, Cl. 427-39.000.
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- Herrington, F. John, to Mobil Oil Corporation. Tubular extrusion apparatus. 4,285,656, Cl. 425-467.000.
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- Hickson, Charles H., to Borden, Inc. Wood adhesive from phenol, formaldehyde, melamine and urea. 4,285,848, Cl. 260-29.300.
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- Higuchi, Takeru; and Burman, Anand C., to INTERx Research Corporation. Aldehyde adducts of triamterene. 4,285,947, Cl. 424-251.000.
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- Himel, Chester M.; and Cardarelli, Nathan F., to Environmental Chemicals, Inc. In-flight encapsulation of particles. 4,286,020, Cl. 428-407.000.
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- Sato, Tetsuo, 4,286,227, Cl. 330-255.000.
- Sugawara, Yoshitaka, 4,286,280, Cl. 357-50.000.
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- Hohne, Hans-Jurgen: See—  
Mista, Kresimir; and Hohne, Hans-Jurgen, 4,285,217, Cl. 66-205.000.
- Holland, Arvin E.; Wright, Douglas C.; Baker, John R.; and Curington, Alfred R., to Baker International Corporation. Apparatus for setting and orienting a whipstock in a well conduit. 4,285,399, Cl. 166-113.000.
- Hollandsche Beton Groep N.V.: See—  
Romijn, Anthony H., 4,285,237, Cl. 73-300.000.
- Holzhammer, Gunter; and Eilers, Hans-Reiner. Self-supporting staircase with center post consisting of individual structural elements. 4,285,178, Cl. 52-187.000.
- Honda Giken Kogyo Kabushiki Kaisha: See—  
Akiya, Kiyoshi, 4,285,887, Cl. 261-34.00A.
- Honeywell Inc.: See—  
Denny, Richard W., 4,286,234, Cl. 331-113.00R.  
Green, Norman E., 4,285,244, Cl. 73-720.000.  
Jurison, Jaan; and Khalafalla, Aida S., 4,286,286, Cl. 358-92.000.  
Lorenze, Robert V., Jr.; and White, William J., 4,286,278, Cl. 357-30.000.  
Shiga, Tatsuhide; Tsuruoka, Yoshihiro; and Suzuki, Motoo, 4,285,779, Cl. 204-9.000.
- Honjo, Seiichi; Ijichi, Masaaki; Masunaga, Hiroaki; and Hara, Keiji, to Nippon Sheet Glass Co., Ltd. Method of quenching glass sheets. 4,285,716, Cl. 65-114.000.
- Honshu Seishi Kabushiki Kaisha: See—  
Nakamura, Masato; Nishimatsu, Saburo; Itoh, Toshitake; and Moronuki, Katsumi, 4,286,017, Cl. 428-328.000.
- Honsinger, Vernon B.; and Tompkins, Russell E., to General Electric Company. Amorphous metal hysteresis motor. 4,286,188, Cl. 310-162.000.
- Hoogendoorn, Abraham: See—  
Immink, Kornelis A.; and Hoogendoorn, Abraham, 4,286,318, Cl. 364-118.000.
- Hooker Chemicals & Plastics Corp.: See—  
Cook, Edward H., Jr., 4,285,795, Cl. 204-266.000.
- Hoover, Calvin E. Ornament mounting bracket for macrame designs. 4,285,608, Cl. 403-002.000.
- Hoover Universal, Inc.: See—  
Hancock, William L., 4,285,488, Cl. 248-405.000.  
Kitchen, John P.; and Riddle, Neville L., 4,285,080, Cl. 5-186.00R.
- Hoppe, Hans-Joachim; and Ostertag, Karl, to Akzona Incorporated. Process for the manufacture of monofilaments. 4,285,898, Cl. 264-176.00F.
- Horiguchi, Akira: See—  
Masutani, Kenzo; Horiguchi, Akira; and Sumitomo, Hiroyuki, 4,285,395, Cl. 165-110.000.
- Horiike, Masanori, to Ricoh Company, Ltd. Deflection compensated ink ejected printing apparatus. 4,286,273, Cl. 346-75.000.
- Horning, Donald E.: See—  
Garrett, Robert W., Sr.; Horning, Donald E.; and Merkel, Dennis L., 4,285,433, Cl. 209-573.000.
- Hornle, Reinhold: See—  
Schiwy, Willy; Schulze, Jurgen; Hummes, Ferdinand; Schulze, Peter; Hornle, Reinhold; Molls, Hans-Heinz; and Ortmann, Harry, 4,285,692, Cl. 8-499.000.
- Horton, Jack F. Thermal energy storage apparatus. 4,285,389, Cl. 165-1.000.
- Horton, Robert J., to Rexnord Inc. Truck mixer washout reclaim system. 4,285,808, Cl. 209-17.000.
- Horton, Thomas. Concrete mixing apparatus. 4,285,598, Cl. 366-15.000.
- Hosaka, Toshihiko: See—  
Tsuboi, Hiroaki; and Hosaka, Toshihiko, 4,286,147, Cl. 250-201.000.
- Houdaille Industries, Inc.: See—  
Jelinek, Ross R.; Carbone, Victor T.; and Brown, Paul R., 4,285,259, Cl. 83-552.000.
- Houdard, Jean P., to Le Materiel Telephonique. Digital devices for spectrum analysis. 4,286,326, Cl. 364-485.000.
- Houtman, Paul K.: See—  
Woodring, Richard H.; Houtman, Paul K.; Kowalski, Thomas A.; and Whitmore, Charles H., 4,285,639, Cl. 417-218.000.
- Howell, Robert G., to TRW, Inc. Vitreous enamel resistor and method of making the same. 4,286,251, Cl. 338-309.000.
- Hozumi, Kazuo, to Kabushiki Kaisha Morita Seisakusho. Film cassette drive mechanism in dental radiographic apparatus for photographing entire jaws. 4,286,161, Cl. 250-439.00P.
- Hozumi, Shiro: See—  
Takeshita, Isao; Hozumi, Shiro; and Wakamatsu, Nobuhiko, 4,285,208, Cl. 62-141.000.
- HPM Corporation: See—  
Kruder, George A., 4,285,600, Cl. 366-89.000.
- Hubbard, James H.: See—  
Botte, Anthony J.; Hubbard, James H.; and Spivey, Paul R., 4,285,591, Cl. 355-14.00C.
- Huber, Ulrich, to Givaudan Corporation. Flavoring with dialkylaminoalkylene mercaptans and sulfides. 4,285,984, Cl. 426-535.000.
- Hufford, Jack E.; and Mosmeier, William E. Solar grain drying/storage building. 4,285,143, Cl. 34-93.000.
- Hugemann, Bernhard; and von Sengbusch, Guenter, to Battelle Institut e.V. Pipette system for the volumetric extraction and linear deposition of a suspended material. 4,285,907, Cl. 422-100.000.
- Hughes Aircraft Company: See—  
Myer, Jon H., 4,285,760, Cl. 156-617.00H.  
Parsons, J. Howard, 4,285,889, Cl. 264-2.600.
- Hughes, Alfred J.: See—  
Booker, Hazael E.; Davies, Barrie L.; Hughes, Alfred J.; and Shimalla, Charles J., 4,285,748, Cl. 156-167.000.
- Hughes, Larry M.; and George, Kenneth L., to RCA Corporation. Stylus cleaning apparatus for video disc player. 4,285,524, Cl. 369-71.000.
- Hughes, Lisa A.: See—  
Kubela, Rudolf; Edwards, Philip D.; and Hughes, Lisa A., 4,286,095, Cl. 546-213.000.
- Hummes, Ferdinand: See—  
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- Hund, Franz; and Kresse, Peter, to Bayer Aktiengesellschaft. Active anti-corrosion pigments based on calcium oxide, aluminium oxide and iron oxide. 4,285,726, Cl. 106-14.050.
- Huodertmark, James M.; and Wagner, James L., to Brunswick Corporation. Cold start fuel enrichment system. 4,285,308, Cl. 123-187.50R.
- Hundrieser, Dieter H.: See—  
Olszewski, Edward J.; Hundrieser, Dieter H.; and Ostapovitch, Harold J., 4,286,121, Cl. 179-98.000.
- Huston, Charles W. Trig pole for masonry construction. 4,285,139, Cl. 33-407.000.
- Hutson, Jearld L. Multilayer semiconductor switching devices. 4,286,279, Cl. 357-39.000.
- Huxley, Edward E.: See—  
Nash, Martin E.; and Huxley, Edward E., 4,286,099, Cl. 549-87.000.
- Hydraulic Servocontrols Corporation: See—  
Kolm, Harvard B., 4,285,363, Cl. 137-596.170.
- Hyman, Sy. Article for the dispensing of volatiles. 4,285,468, Cl. 239-55.000.
- Iacobucci, Guillermo A.; and Sweeny, James G., to Coca-Cola Company. The Process for enhancing the sunlight stability of anthocyanic pigments. 4,285,982, Cl. 426-250.000.
- Iacobucci, Guillermo A.; and Sweeny, James G., to Coca-Cola Company. The Process for enhancing the sunlight stability of rubrolone. 4,285,985, Cl. 426-540.000.
- Ichino, Kazuo: See—  
Okubo, Tsuneo; Hamamoto, Nobuo; and Ichino, Kazuo, 4,286,154, Cl. 250-307.000.
- Iding, Wilhelm H., to U.S. Philips Corporation. Acoustic electrical conversion device with at least one capacitor electret element connected to an electronic circuit. 4,286,122, Cl. 179-111.00E.
- Ignatiev, Vladimir. Air ion and charge detector. 4,286,210, Cl. 324-72.500.
- Ii, Yoshiro: See—  
Yoshida, Koichi; Hayano, Fusakazu; and Ii, Yoshiro, 4,286,015, Cl. 428-305.000.
- Iio, Toshimitsu, to Yamaha Hatsudoki Kabushiki Kaisha. Two stroke engine having exhaust port timing control valve. 4,285,311, Cl. 123-323.000.

- Iizuka, Takehiko; and Ui, Kunio, to Kabushiki Kaisha Komatsu Seisakusho. Control lever for a transmission. 4,285,250, Cl. 74-473.00P.
- Ijichi, Masaaki: See—  
Honjo, Seiichi; Ijichi, Masaaki; Masunaga, Hiroaki; and Hara, Keiji, 4,285,716, Cl. 65-114.000.
- Ikeda, Sadahiro: See—  
Uno, Takeshi; Ueda, Hirotsada; Ikeda, Sadahiro; Ejiri, Masakazu; and Matsuoka, Shinji, 4,286,146, Cl. 235-456.000.
- Ikeda, Tadashi: See—  
Mihara, Yuji; Takei, Haruo; Inoue, Noriyuki; Ikeda, Tadashi; and Kuwabara, Kenichi, 4,286,044, Cl. 430-264.000.
- Ikeda, Tomoaki: See—  
Nahara, Akira; Ono, Yoshihiro; Namiki, Tomizo; Harada, Shigeo; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,286,045, Cl. 430-270.000.
- Ikuta, Hironori: See—  
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichi; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kiyosuke, 4,285,940, Cl. 424-246.000.
- Illgen, Fritz: See—  
Olivenbaum, James E.; and Illgen, Fritz, 4,286,241, Cl. 335-151.000.
- Illing, Henry; and Newkirk, Chauncey, to Kieley & Mueller, Inc. Stud block for an eccentric rotary valve. 4,285,500, Cl. 251-367.000.
- Imai, Eiji: See—  
Harada, Hideo; and Imai, Eiji, 4,285,540, Cl. 296-192.000.
- Imamura, Saburo; Sugawara, Shungo; and Sato, Hirotugu, to Nippon Telegraph and Telephone Public Corporation. Method of forming a negative resist pattern. 4,286,049, Cl. 430-296.000.
- Imataki, Hiroyuki; Takahashi, Michiko; Kobayashi, Masatsune; and Ohta, Tokuya, to Canon Kabushiki Kaisha. Image display device. 4,285,575, Cl. 350-357.000.
- Immink, Kornelis A.; and Hoogendoorn, Abraham, to U.S. Philips Corporation. Control loop. 4,286,318, Cl. 364-118.000.
- Imperial Chemical Industries Limited: See—  
Cartwright, David; and Collins, David J., 4,285,723, Cl. 71-103.000.  
Crosby, John; and Terry, Bernard W. H., 4,285,778, Cl. 203-48.000.  
Nightingale, Douglas D. J., 4,285,498, Cl. 251-214.000.  
Worthington, Paul A.; and Parry, Keith P., 4,285,722, Cl. 71-92.000.
- Ina, Toshikazu; Kawai, Hisasi; and Matsui, Takeshi, to Nippon Soken, Inc. Apparatus for controlling an ignition coil of an internal combustion engine. 4,285,322, Cl. 123-630.000.
- Inamoto, Hiroshi, to Kato Hatsujo Kaisha, Ltd.; and Nissan Motor Co., Ltd. Element mounting structure. 4,285,103, Cl. 411-508.000.
- Indesit Industria Elettrodomestici Italiana S.p.A.: See—  
Marino, Francesco, 4,286,292, Cl. 358-190.000.
- Industrial Design and Engineering: See—  
Stone, Richard W., 4,285,573, Cl. 350-99.000.
- Industrie Pirelli, S.p.A.: See—  
Manini, Silvio; and Pacciarini, Antonio, 4,285,630, Cl. 414-786.000.
- Industries et Techniques d'Ameublement: See—  
Contastin, Andre, 4,285,893, Cl. 264-54.000.
- Infodetics Corporation: See—  
Stephens, Edwin V., 4,285,623, Cl. 414-278.000.
- Ing, C. Olivetti & C., S.p.A.: See—  
Bernardis, Francesco; Adamoli, Contardo; and Cretaz, Franco, 4,285,603, Cl. 400-124.000.  
Giacone, Felice, 4,285,606, Cl. 400-317.100.
- Ingram, Maxwell. Prime mover fuel efficiency control system. 4,286,324, Cl. 364-442.000.
- Inkomag: See—  
Hiesinger, Edwin; Keplinger, Klaus; and Nessler, Hermann, 4,285,821, Cl. 210-777.000.
- Inland Steel Company: See—  
Gomersall, David W., 4,285,995, Cl. 427-383.900.
- Inman, Billy E., to Spencer Wright Industries, Inc. Apparatus for shifting tufting machine needle bar. 4,285,287, Cl. 112-79.00R.
- Inman, Billy E.; and Phillips, Wheeler E., to Spencer Wright Industries, Inc. Tufting apparatus for preventing sew-thru and tagging. 4,285,288, Cl. 112-79.00R.
- Innocenti Santeustacchio S.p.A.: See—  
Gancia, Emanuele, 4,285,226, Cl. 72-208.000.
- Inoue, Kazuhiro; and Matsui, Fumio, to Nippon Oil and Fats Co., Ltd. Granular propellant and a method of producing the same. 4,285,743, Cl. 149-2.000.
- Inoue, Noriyuki: See—  
Mihara, Yuji; Takei, Haruo; Inoue, Noriyuki; Ikeda, Tadashi; and Kuwabara, Kenichi, 4,286,044, Cl. 430-264.000.
- Inspiration Consolidated Copper Company: See—  
Colvin, Beal H., 4,285,504, Cl. 266-266.000.
- Institut Francais du Pétrole: See—  
Douaud, Andre; and Rialan, Joseph, 4,285,315, Cl. 123-425.000.  
Jacquin, Yves; Davidson, Michel; and Le Page, Jean-Francois, 4,285,804, Cl. 208-48.00R.
- Intengan, Franklin F., to American Hospital Supply Corporation. Decanting centrifuge. 4,285,463, Cl. 233-26.000.
- Interdi Limited: See—  
Wedgwood, Sidney, 4,285,141, Cl. 34-21.000.
- Interfilter S.A.: See—  
Colomer, Pierre, 4,285,353, Cl. 134-181.000.
- Intermountain Research and Development Corp.: See—  
Saldick, Jerome; and Cohen, Bernard, 4,285,915, Cl. 423-206.00T.
- International Business Machines Corporation: See—  
Baker, David C.; Bantz, David F.; and Evangelisti, Carlo J., 4,286,321, Cl. 364-200.000.
- Botte, Anthony J.; Hubbard, James H.; and Spivey, Paul R., 4,285,591, Cl. 355-14.00C.
- Clancy, Douglas E.; Franken, Richard F.; and Olson, George P., 4,286,202, Cl. 318-696.000.
- Cunningham, Earl A., 4,286,296, Cl. 360-77.000.
- Fatula, Joseph J., Jr.; and Roberts, Stanley, 4,285,761, Cl. 156-628.000.
- Goertzel, Gerald; Powell, Carl G.; and Tseng, Samuel C., 4,286,329, Cl. 364-900.000.
- Guzman, Adolfo M.; and Van Winkle, Howard E., 4,286,181, Cl. 310-49.00R.
- Heblum, Mordechai, 4,286,275, Cl. 357-12.000.
- Hoffman, Roy L.; Kempke, William G.; McCullough, John W.; Soltis, Frank G.; and Turner, Richard T., 4,286,322, Cl. 364-200.000.
- Konian, Richard R.; and Walsh, James L., 4,286,179, Cl. 307-455.000.
- Langdon, Glen G., Jr.; and Rissanen, Jorma J., 4,286,256, Cl. 340-347.00D.
- Lloyd, Edward R.; and Marowski, Raymond M., 4,285,605, Cl. 400-310.000.
- Rex, Donald K., 4,285,604, Cl. 400-247.000.
- Rinkleb, Helfried O., 4,286,298, Cl. 360-109.000.
- Root, Ronald R.; Warner, Michael W.; and Watrous, Robert B., 4,286,297, Cl. 360-103.000.
- Shlatz, Myron F., 4,285,512, Cl. 271-233.000.
- International Flavors & Fragrances Inc.: See—  
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,285,349, Cl. 131-276.000.
- International Standard Electric Corporation: See—  
Blomley, Peter F., 4,286,123, Cl. 179-170.00T.  
De Brouckere, Lucien C., 4,285,911, Cl. 422-249.000.  
Fischer, Axel, 4,286,236, Cl. 332-10.000.
- INTERx Research Corporation: See—  
Higuchi, Takeru; and Burman, Anand C., 4,285,947, Cl. 424-251.000.
- Iowa State University Research Foundation, Inc.: See—  
Vander Molen, Gary L.; and Brown, Timothy A., 4,285,445, Cl. 222-49.000.
- Ipolyi, George. Device for erasing visible recorded signals from a recording medium having oriented magnetic components. 4,286,295, Cl. 360-66.000.
- Irie, Yoshio: See—  
Tsubakimoto, Tsuneo; Shimomura, Tadao; Irie, Yoshio; and Masuda, Yoshihiko, 4,286,082, Cl. 526-240.000.
- Irwin, Lawrence F. Hydraulically actuated apparatus. 4,285,126, Cl. 30-180.000.
- Isaacson, Joel D. Autonomic string-manipulation system. 4,286,330, Cl. 364-900.000.
- Isenberg, Arnold O., to Westinghouse Electric Corp. Sensor for oxygen-combustibles gas mixtures. 4,285,790, Cl. 204-195.00R.
- Ishida, Kinji, to Yoshida Kogyo K. K. Dual window assembly. 4,285,166, Cl. 49-63.000.
- Ishida, Nobuyoshi; Kondo, Yoshibide; Konishi, Kunihiko; and Kamio, Hiroyuki, to Babcock-Hitachi Kabushiki Kaisha. Method of producing plate-shaped catalyst unit for NOx reduction of exhaust gas. 4,285,838, Cl. 252-469.000.
- Ishihara, Shunichi: See—  
Ito, Michio; Kitajima, Nobuo; Kasai, Masanao; and Ishihara, Shunichi, 4,286,032, Cl. 430-55.000.
- Ishii, Tadashi. Motor actuated bell. 4,286,258, Cl. 340-396.000.
- Ishii, Tadashi, to Kobishi Electric Co., Ltd. Electrically operated bell. 4,286,259, Cl. 340-396.000.
- Ishikawa, Hiroaki: See—  
Nakamura, Kiyoshi; Ishikawa, Hiroaki; Kiwaki, Hisakatsu; and Ogata, Fumio, 4,286,211, Cl. 324-117.00R.
- Ishikawa, Wataru; Satoh, Ryosuke; Yamashita, Kiyoshi; Usui, Tugumoto; and Kato, Katsunori, to Konishiroku Photo Industry Co., Ltd. Process for forming dye images. 4,286,053, Cl. 430-389.000.
- Ishimaru, Kenzo; and Sharples, Thomas D., to Beckman Instruments, Inc. Method and apparatus for sealing centrifuge tubes. 4,285,904, Cl. 264-322.000.
- Isobe, Yukihiko; Hayama, Masashi; and Hirabayashi, Kenji, to TDK Electronics Co., Ltd. Method of producing magnetic coating material for magnetic recording media. 4,285,825, Cl. 252-62.540.
- Isoldi, Mario: See—  
Richardson, William C.; and Isoldi, Mario, 4,285,150, Cl. 40-312.000.
- Istituto Biologico Chemioterapico "ABC" S.p.A.: See—  
Franzone, Jose S., 4,285,962, Cl. 424-274.000.
- Itani, Seiichi: See—  
Hino, Masamichi; and Itani, Seiichi, 4,285,411, Cl. 177-25.000.
- Itano, Mitsuyoshi: See—  
Uehara, Masafumi; and Itano, Mitsuyoshi, 4,285,727, Cl. 106-22.000.
- Itaoka, Toshinari: See—  
Wada, Juro; and Itaoka, Toshinari, 4,285,928, Cl. 424-5.000.
- Ito, Akira; and Arisaka, Katsuharu, to Daicel Ltd. Method and apparatus for the manufacture of cigarette filters containing particulate material. 4,285,677, Cl. 493-43.000.
- Ito, Michio; Kitajima, Nobuo; Kasai, Masanao; and Ishihara, Shunichi, to Canon Kabushiki Kaisha. Electrophotographic process and apparatus therefor. 4,286,032, Cl. 430-55.000.



Ito, Shimpei; Daimon, Masaru; and Kato, Tadashi, to Nitto Co., Ltd. Cold padding batch dyeing process for tubular knitted fabrics. 4,285,694, Cl. 8-532.000.

Itoh, Tadamasu, to Sumitomo Chemical Company, Limited. Analytical method and apparatus for the determination of total nitrogen contents in samples. 4,285,699, Cl. 23-230.0PC.

Itoh, Toshitake: See—  
Nakamura, Masato; Nishimatsu, Saburo; Itoh, Toshitake; and Moronuki, Katsumi, 4,286,017, Cl. 428-328.000.

ITT Industries, Inc.: See—  
Budecker, Ludwig, 4,285,198, Cl. 60-547.00A.  
Ostwald, Fritz, 4,285,417, Cl. 188-73.300.

Ivanov, Vladimir A.: See—  
Zitser, Vitaly A.; Bachelis, Leonid V.; Morozov, Jury E.; Melnikov, Alexandr V.; Ivanov, Vladimir A.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,285,599, Cl. 366-17.000.

Iwami, Hiroyuki: See—  
Yotsutsuji, Akira; Ueda, Seiichi; and Iwami, Hiroyuki, 4,285,901, Cl. 264-225.000.

Iwao, Soichi; Takiguchi, Shinji; and Sakata, Toshio, to Minolta Camera Kabushiki Kaisha. Fixing device for electrophotographic copying machines. 4,285,295, Cl. 118-60.000.

Izzi, Edmund F. Bread making process and product thereof particularly well suited for freezing and reheating. 4,285,979, Cl. 426-94.000.

J. I. Case Company: See—  
Taylor, Eugene D., 4,286,139, Cl. 219-208.000.

J & J Marquardt: See—  
Schaffeler, Alois; and Stratmann, Uwe, 4,286,125, Cl. 200-6.00B.

J. M. Voith GmbH: See—  
Schell, Christian, 4,285,768, Cl. 162-301.000.

Jablonski, Donald P., to Western Electric Company, Inc. Laser scanning and multiple detection for video image processing. 4,286,293, Cl. 358-199.000.

Jackson, David H.: See—  
Rapp, John S.; and Jackson, David H., 4,285,446, Cl. 222-70.000.

Jacobi, Hareddin: See—  
Etschenberg, Eugen; Jacobi, Hareddin; and Opitz, Wolfgang, 4,285,935, Cl. 424-177.000.

Jacobson, Stephen E.: See—  
Mares, Frank; and Jacobson, Stephen E., 4,286,068, Cl. 521-53.000.

Jacques, Joseph L., Jr.; Smith, Michael D.; and Yehl, Gregory C., to General Electric Company. Heat-up/cool-down bimetal timer for electric toaster. 4,286,246, Cl. 337-94.000.

Jacquin, Yves; Davidson, Michel; and Le Page, Jean-Francois, to Institut Francais du Pétrole. Process for hydrotreating heavy hydrocarbons in liquid phase in the presence of a dispersed catalyst. 4,285,804, Cl. 208-48.00R.

Jagelid, Kjell-Inge, to Hedlund, Kurt. Machine for manufacture of spiral tubing with folded seam. 4,285,222, Cl. 72-28.000.

James, Jack E., to RCA Corporation. Wide range drift compensated FM signal generator. 4,286,237, Cl. 332-19.000.

Jankowski, Edward M., to Du-Al Manufacturing Company, Division of Core Industries, Inc. Grapple system. 4,285,628, Cl. 414-739.000.

Janner, Karl; Gregorius, Klaus; and Schuster, Eberhard, to Kraftwerk Union Aktiengesellschaft. Method and apparatus for the separation of isotope mixtures. 4,286,153, Cl. 250-281.000.

Jansen, Raymond K. Document clamping devices. 4,285,102, Cl. 24-17.00R.

Janson, Richard W. Channel strut for stage equipment support system. 4,285,095, Cl. 16-94.00R.

Jaquiss, Donald B. G.; Mark, Victor; and Mitchell, Lawrence C., to General Electric Company. Process for preparing polycarbonates using substituted pyridine catalysts. 4,286,085, Cl. 528-199.000.

Jarrett, Robert B.; and Pace, Wilson D., to Motorola, Inc. Comparator with hysteresis for interfacing with a ground-referenced A.C. sensor. 4,286,176, Cl. 307-261.000.

Jassal, Avtar S., to Stauffer Chemical Company. Solvent extraction process for preparing purified phosphoric acid and sodium phosphate salts. 4,285,920, Cl. 423-305.000.

Jelinek, Ross R.; Carbone, Victor T.; and Brown, Paul R., to Houdaille Industries, Inc. Turret index system. 4,285,259, Cl. 83-552.000.

Jennie, Fred L. Trajectory compensating device. 4,285,137, Cl. 33-246.000.

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Pugh, Ralph A.; and Ford, Kenneth L., 4,286,152, Cl. 250-281.000.

Jocteur, Robert, to Societe Industrielle de Liaisons Electriques Silec. Apparatus for extruding a cross-linked material. 4,285,648, Cl. 425-97.000.

Joel, Lewin G., III. Simulated athletic game. 4,285,521, Cl. 273-247.000.

Johansson, B. Lennart: See—  
Klinteberg, G. Rune; Johansson, N. A. Bertil; Johansson, B. Lennart; and Dahlgren, Christer H., 4,285,526, Cl. 277-153.000.

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Wilkski, James E., 4,285,713, Cl. 65-27.000.

Johnson, Betty S.: See—  
Pera, John D.; and Johnson, Betty S., 4,285,765, Cl. 162-161.000.

Johnson, Bill E.: See—  
Dannenmann, John E., Jr.; and Johnson, Bill E., 4,286,114, Cl. 179-1.00CN.

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King, Ralph W., Jr.; and Hjermstad, Hans U., 4,286,193, Cl. 315-175.000.

Johnson, Frederick O., to Westinghouse Electric Corp. Converter apparatus. 4,286,315, Cl. 363-87.000.

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Mesek, Frederick K., 4,285,342, Cl. 128-287.000.

Rega, John F., 4,285,747, Cl. 156-164.000.

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Enga, Bernard E., 4,285,665, Cl. 431-328.000.

Pearce, Roy W. J.; Carbert, John; and MacDonald, John P. K., 4,285,994, Cl. 427-222.000.

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Johnson, Russell W.: See—  
Braun, Richard; Johnson, Russell W.; and Gatsis, John G., 4,285,803, Cl. 208-48.00A.

Johnson, Thomas M.: See—  
McMahon, William H.; Fraula, Louis F.; Athey, Stuart E.; Johnson, Thomas M.; and Moore, Terrence W., 4,285,352, Cl. 134-48.000.

Jones, Carmen B., to United States of America, Air Force. Broad spectrum vibration damper assembly fixed stator vanes of axial flow compressor. 4,285,633, Cl. 415-191.000.

Jones, Donald E.; Parker, DeRay; and Borén, Paul R., to United States of America, Energy. Dosimeter for measuring skin dose and more deeply penetrating radiation. 4,286,165, Cl. 250-484.000.

Jones, Edward: See—  
Waldrop, Forrest B.; and Jones, Edward, 4,285,782, Cl. 204-32.00R.

Jones, Gerald M.: See—  
Basily, Basily B.; Sansome, Dennis H.; and Jones, Gerald M., 4,285,234, Cl. 73-862.650.

Jones, Richard A., to Fischer & Porter Co. Pneumatic relay. 4,285,357, Cl. 137-85.000.

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Daroga, Minoo J.; and Jones, Robert E., 4,286,013, Cl. 428-266.000.

Jongsma, Cornelis, to Stamcarbon, B.V. Process for the purification of benzaldehyde. 4,285,777, Cl. 203-32.000.

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Johansson, Rolf A. G., 4,285,309, Cl. 123-195.00C.

Jonte, Patrick B.; and Biener, John K. Protection system for part molding machines. 4,285,649, Cl. 425-137.000.

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Shively, James F.; Evans, Steven J.; Jory, Howard R.; and Mizuhara, Yosuke M., 4,286,240, Cl. 333-252.000.

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Jurisson, Jaan; and Khalafalla, Aida S., to Honeywell Inc. Photo controlled stereoscopic television system. 4,286,286, Cl. 358-92.000.

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Kume, Takeshi, 4,285,249, Cl. 74-89.150.

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Iizuka, Takehiko; and Ui, Kunio, 4,285,250, Cl. 74-473.00P.

Kabushiki Kaisha Morita Seisakusho: See—  
Hozumi, Kazuo, 4,286,161, Cl. 250-439.00P.

Suzuki, Masakazu, 4,286,162, Cl. 250-439.00P.

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Sato, Yo, 4,285,275, Cl. 101-407.00P.

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Mukai, Takamitsu, 4,285,640, Cl. 417-269.000.

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Kaliev, Dostan: See—  
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabortkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.

Kalsec, Inc.: See—  
Todd, Paul H., Jr.; and Haley, Howard E., 4,285,981, Cl. 426-250.000.

Kaltenbach, Kenneth F., to Singer Company, The. Modular work trimmer for a sewing machine. 4,285,290, Cl. 112-125.000.

Kalunians, Kalust A.; Kozhemyakin, Valentin G.; Gracheva, Irina M.; and Voino, Ljudmila I. Apparatus for cultivation of microorganisms on granular nutrient medium. 4,286,065, Cl. 435-315.000.

Kalvoda, Jaroslav, to Ciba-Geigy Corporation. Novel androstadiene-17-carboxylic acid esters. 4,285,937, Cl. 424-243.000.

Kamensky, Sergei N.: See—  
Zuzanov, Georgy I.; Mironkin, Iosif S.; Tsarik, Jury N.; Alexandrova, Natalia A.; Kamensky, Sergei N.; and Nevedomsky, Evgeny N., 4,285,704, Cl. 55-274.000.

Kamio, Hiroyuki: See—  
Ishida, Nobuyoshi; Kondo, Yoshihide; Konishi, Kunihiko; and Kamio, Hiroyuki, 4,285,838, Cl. 252-469.000.

Kampe, Klaus-Dieter; and Granzer, Erno, to Hoechst Aktiengesellschaft. 4-Amino-2-ureido (or -thioureido)-pyrimidine-5-carboxylic acid anilides. 4,285,946, Cl. 424-251.000.

Kamps, Hubertus E. L.; and Wulms, Christiaan J. G. H., to U.S. Philips Corporation. Image intensifier tube with photocathode protective circuit. 4,286,148, Cl. 250-213.0VT.

Kanai, Takeo: See—  
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichi; Negi, Shigeto; Kanai, Takeo; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; and Nagasu, Takeshi, 4,285,941, Cl. 424-246.000.

Kane, Michael P.; and Szmuszkovicz, Jacob, to Upjohn Company, The. N-[ω-(Dimethylamino)alkyl]-3',4'-dichloropropionanilides. 4,286,106, Cl. 564-220.000.

Kane, Thomas J.: See—  
Buckner, Carol E.; Cook, C. Glenn; and Kane, Thomas J., 4,285,327, Cl. 126-143.000.

Kaneko, Tamaki, to Ricoh Co., Ltd. Collator. 4,285,508, Cl. 271-4.000.

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Kaplan, Michael: See—  
Himics, Richard J.; Kaplan, Michael; and Desai, Nitin V., 4,286,050, Cl. 430-296.000.

Karayianis, Nick: See—  
Morrison, Clyde A.; Wortman, Donald E.; Leavitt, Richard P.; and Karayianis, Nick, 4,286,230, Cl. 331-79.000.

Karkhanis, Yashwant D.: See—  
Limjuco, Guadalupe A.; Karkhanis, Yashwant D.; and Carlo, Dennis J., 4,285,931, Cl. 424-92.000.

Karl Mayer Textilmaschinenfabrik GmbH: See—  
Mista, Kresimir; and Hohnke, Hans-Jurgen, 4,285,217, Cl. 66-205.000.

Kasai, Masanao: See—  
Ito, Michio; Kitajima, Nobuo; Kasai, Masanao; and Ishihara, Shunichi, 4,286,032, Cl. 430-55.000.

Kataflox Patentverwaltungs-Gesellschaft mbH: See—  
Herr, Alfons K., 4,285,842, Cl. 252-607.000.

Katayama, Toshiyuki; Agura, Kiyokazu; and Matsuda, Masayuki, to Nichirin Rubber Industrial Co., Ltd. Pulsation-absorbing flexible pipe for pressure fluid device. 4,285,534, Cl. 285-119.000.

Katchka, Jay R.; and Graham, Marvin M., to Robertshaw Controls Company. Gas burner control mechanism. 4,285,662, Cl. 431-53.000.

Kato Hatsujo Kaisha, Ltd.: See—  
Inamoto, Hiroshi, 4,285,103, Cl. 411-508.000.

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Ishikawa, Wataru; Satoh, Ryosuke; Yamashita, Kiyoshi; Usui, Tugumoto; and Kato, Katsunori, 4,286,053, Cl. 430-389.000.

Kato, Masayasu: See—  
Tsushima, Susumu; Matsumoto, Norichika; and Kato, Masayasu, 4,286,088, Cl. 544-16.000.

Kato, Tadashi: See—  
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Sakai, Nobuo; Hayashi, Hiroshi; Toriuchi, Masaharu; and Katoh, Kazunobu, 4,286,042, Cl. 430-216.000.

Katsu, Kanemasa: See—  
Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seiichi; Negi, Shigeto; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.

Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichi; Negi, Shigeto; Kanai, Takeo; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; and Nagasu, Takeshi, 4,285,941, Cl. 424-246.000.

Katsumata, Kunio, to Toshin Kogyo Co., Ltd. Seamless cylindrical printing screen and process for preparation thereof. 4,285,274, Cl. 101-128.210.

Kauffman, Samuel L.; and Morin, John O., to Burroughs Corporation. Bar graph display panel and system for displaying analog values therein. 4,286,265, Cl. 340-754.000.

Kaufman, Vernon R.; and Nelson, Eugene L., to Tecumseh Products Company. Keyed adapter sleeve. 4,285,305, Cl. 123-146.50A.

Kautzer, Ronald E.; and Mueller, Donald M., to D. Mueller Welding, Inc. Method of hydrodynamic forming. 4,285,109, Cl. 29-157.00R.

Kawai, Hisasi: See—  
Ina, Toshikazu; Kawai, Hisasi; and Matsui, Takeshi, 4,285,322, Cl. 123-630.000.

Kawasaki Jukogyo Kabushiki Kaisha: See—  
Suzuki, Takeshi; Hatamori, Takashi; Murao, Mikio; Nezuka, Minoru; Kumagai, Chikanori; and Takagishi, Masaharu, 4,285,142, Cl. 34-57.00E.

Kawasaki, Masahiro; and Urata, Sinji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera controller for flashgun operation. 4,285,586, Cl. 354-34.000.

Kawasaki, Masami; Ohtori, Toshimi; Sukigara, Kunisuke; and Satoh, Mitsuo, to Kubota Ltd. Mulcher. 4,285,161, Cl. 47-9.000.

Kazaoaka, Kenichi; and Hayashi, Masayuki, to Aisin Seiki Kabushiki Kaisha. Assembly for locking and unlocking an automobile seat in selected vertical positions. 4,285,487, Cl. 248-396.000.

Kefalas A/S: See—  
Lassen, Niels; Boges, Klaus P.; Hansen, Peter B.; Buus, Jörn L. M.; and Bigler, Allan J., 4,285,956, Cl. 424-267.000.

Keller, Peter: See—  
Furst, Andor; Keller, Peter; and Muller, Marcel, 4,285,880, Cl. 260-455.00R.

Kelly, Thomas J. Boiler blowdown system. 4,285,302, Cl. 122-382.000.

Kempke, William G.: See—  
Hoffman, Roy L.; Kempke, William G.; McCullough, John W.; Soltis, Frank G.; and Turner, Richard T., 4,286,322, Cl. 364-200.000.

Kennedy, Alvin B., Jr. Chemical reactor, flow distributor, system and method. 4,285,910, Cl. 422-219.000.

Kennedy, Lyn R., to Precision Machine Products, Inc. Method and apparatus for measuring and controlling volumetric flow rate of gases in a line. 4,285,245, Cl. 73-861.000.

Keplinger, Klaus: See—  
Hiesinger, Edwin; Keplinger, Klaus; and Nessler, Hermann, 4,285,821, Cl. 210-777.000.

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Muller, Burkhardt, 4,285,830, Cl. 252-301.10W.

Keuncke, Gerhard; Klopfer, Anton; and Sterck, Lothar, to Davy International Aktiengesellschaft. Process for continuously separating phthalic anhydride from the reaction gases of the catalytic oxidation of o-xylene and/or naphthalene. 4,285,870, Cl. 260-346.700.

Keuncke, Gerhard; Klopfer, Anton; and Sterck, Lothar, to Davy International Aktiengesellschaft. Process for continuously separating phthalic anhydride from the reaction gases of the catalytic oxidation of o-xylene and/or naphthalene. 4,285,871, Cl. 260-346.700.

Keve, Tibor: See—  
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Jurisson, Jaan; and Khalafalla, Aida S., 4,286,286, Cl. 358-92.000.

Kieber, Lothar, to Deutsche Calypsolgesellschaft mbH & Co. Method and device for the refilling of double chamber presspack spray containers. 4,285,372, Cl. 141-2.000.

Kieley & Mueller, Inc.: See—  
Illing, Henry; and Newkirk, Chauncey, 4,285,500, Cl. 251-367.000.

Kiely, Denis M. Multi-function variable speed drive. 4,285,675, Cl. 474-19.000.

Kiencke, Uwe; Jundt, Werner; and Seeger, Karl, to Robert Bosch GmbH. System to decrease operating jolts in a vehicle by controlling fuel and ignition timing of an internal combustion engine therein. 4,285,314, Cl. 123-422.000.

Kierstead, Richard W.: See—  
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., 4,285,873, Cl. 260-348.450.

Kindmann, Peter J.; Yarwood, John C.; Ungarean, Gary L.; and Tyler, Derek E., to Olin Corporation. Transformer-driven shield for electromagnetic casting. 4,285,387, Cl. 164-603.000.

King, John M.: See—  
deVries, Louis; and King, John M., 4,285,822, Cl. 252-46.400.

King, Otis W. Safety valve. 4,285,495, Cl. 251-63.500.

King, Ralph W., Jr.; and Hjermstad, Hans U., to Johnson Electric Coil Company. Starting and operating circuit for gas discharge lamp. 4,286,193, Cl. 315-175.000.

Kiniwa, Hideaki: See—  
Kobayashi, Yoshimichi; Tsuge, Yukio; Hirako, Susumu; and Kiniwa, Hideaki, 4,285,789, Cl. 204-181.00C.

Kintz, Donald P.: See—  
Hardy, John F.; Kintz, Donald P.; and Taylor, Vaughn W., 4,285,846, Cl. 260-29.20E.

Kirby, Edward, to TRW Inc. Electrical connector. 4,285,565, Cl. 339-176.00P.

Kircher, Morton S.: See—  
Specht, Steven J.; and Kircher, Morton S., 4,285,793, Cl. 204-253.000.

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Kraus, Hermann; Kirchlechner, Peter; Rieger, Robert; and Schuck, Wolf-Dieter, 4,286,306, Cl. 361-242.000.

Kirkland, Joseph J.; and Yau, Wallace W., to Du Pont de Nemours, E. I., and Company. Method and apparatus for field flow fractionation. 4,285,810, Cl. 209-155.000.

Kirkland, Joseph J.: See—  
Dilks, Charles H., Jr.; Kirkland, Joseph J.; and Yau, Wallace W., 4,285,809, Cl. 209-155.000.



Kirkpatrick, Allen R., to Spire Corporation. Electrostatic bonding using externally applied pressure. 4,285,714, Cl. 65-40.000.

Kirkpatrick, George F., to Union Carbide Corporation. Colored interlocking closure strips. 4,285,105, Cl. 24-201.00C.

Kiszely, Eniko: See—  
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; Kiszely, Eniko; and Kosoczky, Ibolya, 4,285,942, Cl. 424-248.560.

Kita, Toru, to Nissan Motor Co., Ltd. Intake air flow rate detector. 4,285,246, Cl. 73-861.030.

Kitajima, Nobuo: See—  
Ito, Michio; Kitajima, Nobuo; Kasai, Masanao; and Ishihara, Shunichi, 4,286,032, Cl. 430-55.000.

Kitamoto, Tatsuji: See—  
Shirahata, Ryuji; and Kitamoto, Tatsuji, 4,286,299, Cl. 360-113.000.

Kitano, Nanahiko: See—  
Sato, Nobuhiro; Yamaguchi, Yoshinobu; Kodama, Hitoshi; Koshidama, Isamu; Kitano, Nanahiko; and Tsutsumi, Shigeharu, 4,285,837, Cl. 252-466.00J.

Kitchen, John P., and Riddle, Neville L., to Hoover Universal, Inc. Spring deck for seating structures. 4,285,080, Cl. 5-186.00R.

Kitoh, Kyosuke: See—  
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Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Kanai, Takeo; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; and Nagasu, Takeshi, 4,285,941, Cl. 424-246.000.

Kitta, Hiroyuki; Aizawa, Shinichi; and Sawa, Hiroshi, to Hochiki Corporation. Detector coupling mechanism. 4,286,159, Cl. 250-381.000.

Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Reeves, David L. R.; and Wood, Glenn P., to Ciba-Geigy A.G. Azo compounds useful in a photographic dye diffusion transfer process. 4,285,859, Cl. 260-152.000.

Kiwaki, Hisakatsu: See—  
Nakamura, Kiyoshi; Ishikawa, Hiroaki; Kiwaki, Hisakatsu; and Ogata, Fumio, 4,286,211, Cl. 324-117.00R.

Kleebar, Karl: See—  
Hagenlocher, Walter; Hesse, Heinz; Kleebar, Karl; Kugel, Christoph; and Sohnle, Rudiger, 4,286,186, Cl. 310-89.000.

Klemarczyk, Philip: See—  
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,285,349, Cl. 131-276.000.

Klijnsma, Tiede, to U.S. Philips Corporation. Toaster. 4,285,272, Cl. 99-391.000.

Klingel, Edward R. Mobile wood splitter. 4,285,374, Cl. 144-193.00A.

Klinteberg, G. Rune; Johansson, N. A. Bertil; Johansson, B. Lennart; and Dahlgren, Christer H., to Stefa Industri Aktiebolag. Sealing device for bearings, especially roll bearings. 4,285,526, Cl. 277-153.000.

Klobe, Martin, to Siemens Aktiengesellschaft. Flow measuring device. 4,285,247, Cl. 73-861.240.

Klopper, Anton: See—  
Keunecke, Gerhard; Klopfer, Anton; and Sterck, Lothar, 4,285,870, Cl. 260-346.700.

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Kloster, Kenneth D. Piston rod runout gauge. 4,285,132, Cl. 33-172.00R.

Klotz, Marvin R.; and Ely, Stephen R., to Standard Oil Company (Indiana). Method of preparing a metal-cation-deficient crystalline borosilicate. 4,285,919, Cl. 423-277.000.

Knecht, Eduard: See—  
Habermeyer, Jürgen; Knecht, Eduard; and Gisler, Rudolf, 4,286,097, Cl. 548-309.000.

Knight, Brian V. Building structure. 4,285,174, Cl. 52-81.000.

Knight, Stuart R., to Bayside Holding Corp. Method for removal of hydrogen sulfide from sour gas streams. 4,285,917, Cl. 423-224.000.

Knodler, Reinhard; and Bohme, Gotthold, to Battelle-Institut e.V. Production of a porous aluminum matrix for the negative electrode of a galvanic lithium aluminum metal sulfide element. 4,285,828, Cl. 252-182.100.

Knoll International, Inc.: See—  
Zapf, Otto W., 4,285,544, Cl. 297-440.000.

Kobayashi, Hiroaki: See—  
Asakura, Toshiyuki; Noguchi, Yukio; and Kobayashi, Hiroaki, 4,286,018, Cl. 428-332.000.

Kobayashi, Masatsune: See—  
Imataki, Hiroyuki; Takahashi, Michiko; Kobayashi, Masatsune; and Ohta, Tokuya, 4,285,575, Cl. 350-357.000.

Kobayashi, Robert J.: See—  
Byrne, Joe L.; Kobayashi, Robert J.; and Nancarrow, James H., 4,285,200, Cl. 60-607.000.

Kobayashi, Yoshimichi; Tsuge, Yukio; Hirako, Susumu; and Kuniwa, Hideaki, to Mitsubishi Chemical Industries, Ltd. Cationic electrodeposition process. 4,285,789, Cl. 204-181.00C.

Kobe, Inc.: See—  
Erickson, John W., 4,285,401, Cl. 166-303.000.

Erickson, John W., 4,286,185, Cl. 310-87.000.

Kobishi Electric Co., Ltd.: See—  
Ishii, Tadashi, 4,286,259, Cl. 340-396.000.

Kobylar, Alex W.: See—  
Stelte, David J.; and Kobylar, Alex W., 4,286,119, Cl. 179-18.0FC.

Koch, George B. Combining drawers. 4,285,559, Cl. 312-298.000.

Kochanowski, John E., to General Electric Company. Method of preparing polyester carbonates. 4,286,083, Cl. 528-173.000.

Kodama, Hitoshi: See—  
Sato, Nobuhiro; Yamaguchi, Yoshinobu; Kodama, Hitoshi; Koshidama, Isamu; Kitano, Nanahiko; and Tsutsumi, Shigeharu, 4,285,837, Cl. 252-466.00J.

Koehler Manufacturing Company: See—  
Guimond, Roy A.; Reed, Nancy W.; and Gulliksen, John E., 4,285,121, Cl. 29-623.100.

Kogler, Georg; Kuhnlein, Hans; and Schalk, Karl, to Siemens Aktiengesellschaft. Electronic motor having a multi-pole external rotor. 4,286,184, Cl. 310-67.00R.

Kohn, Gustave K.; and Baer, Ted A., to Ziecon Corporation. Cyclopropyl and phenylisobutylimides. 4,285,879, Cl. 260-453.700.

Koike, Hiroyasu. Mold device for an injection molding machine. 4,285,659, Cl. 425-547.000.

Koike, Tadao: See—  
Kanno, Tadaaki; and Koike, Tadao, 4,285,510, Cl. 271-127.000.

Koizumi, Kyoko: See—  
Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seiichiro; Negi, Shigeto; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.

Koizumi, Sachio; and Yamaguchi, Akio, to Hitachi, Ltd. Color cathode ray tube with shadow mask having inwardly bent skirt portions. 4,286,189, Cl. 313-402.000.

Kojima, Shigeru: See—  
Hayashi, Masakatsu; Tanaka, Takeo; Natori, Tatsuo; Aizawa, Tatsushi; Kojima, Shigeru; and Senshu, Takao, 4,285,385, Cl. 164-9.000.

Kokusai Gijutsu Kaihatsu Co., Ltd.: See—  
Nakauchi, Shunsaku; and Watase, Fumio, 4,286,294, Cl. 360-27.000.

Kolar, Karel, to Racionalizacni a experimentalni laborator. Universal apparatus for evaluating calendar data. 4,285,147, Cl. 40-109.000.

Kolar, Karel, to Racionalizacni a experimentalni laborator. Universal round clock calendar. 4,285,148, Cl. 40-115.000.

Kolbinger, Hans J.: See—  
Hansen, Guenter; Kolbinger, Hans J.; Scheuermann, Horst; and Zeidler, Georg, 4,285,860, Cl. 260-152.000.

Kollmorgen Technologies Corporation: See—  
Langley, Lawrence W., 4,286,180, Cl. 310-12.000.

Kolm, Harvard B., to Hydraulic Servocontrols Corporation. Control valve construction. 4,285,363, Cl. 137-596.170.

Komanduri, Rangachary, to General Electric Company. Tool for trueing and dressing a grinding wheel. 4,285,324, Cl. 125-11.00R.

Kombi-Lift Montage- und Handelsgesellschaft mbH: See—  
Schneider, Erich, 4,285,501, Cl. 254-394.000.

Komhyr, Walter D. Pump piston cylinder assembly with exterior ring seals. 4,285,642, Cl. 417-465.000.

Kommissari, Karl, to BBC Brown, Boveri & Co. Ltd. Forced commutation power converter arrangement in reverse voltage free circuit configuration. 4,286,317, Cl. 363-136.000.

Kondo, Kenshi. Apparatus for soldering printed circuit boards. 4,285,457, Cl. 228-36.000.

Kondo, Shiro, to Alps Electric Co., Ltd. Structure for fixing a knob to a part to be operated through the knob. 4,285,097, Cl. 16-121.000.

Kondo, Yoshihide: See—  
Ishida, Nobuyoshi; Kondo, Yoshihide; Konishi, Kunihiro; and Kamio, Hiroyuki, 4,285,838, Cl. 252-469.000.

Konian, Richard R.; and Walsh, James L., to International Business Machines Corporation. Push pull switch utilizing two current switch circuits. 4,286,179, Cl. 307-455.000.

Konishi, Kunihiro: See—  
Ishida, Nobuyoshi; Kondo, Yoshihide; Konishi, Kunihiro; and Kamio, Hiroyuki, 4,285,838, Cl. 252-469.000.

Konishiroku Photo Industry Co., Ltd.: See—  
Ishikawa, Wataru; Satoh, Ryosuke; Yamashita, Kiyoshi; Usui, Tugumoto; and Kato, Katsunori, 4,286,053, Cl. 430-389.000.

Uehara, Masafumi; and Itano, Mitsuyoshi, 4,285,727, Cl. 106-22.000.

Kononov, Evgeny A.: See—  
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.

Konstant, Anthony N.; and Weider, John J., to Speedshelf International, Inc. Integral locking tab for storage racks. 4,285,436, Cl. 211-192.000.

Kopish, Stephen P.; and Costantino, Richard, to Motorola, Inc. Push-button switch assembly. 4,286,131, Cl. 200-340.000.

Koppers Company, Inc.: See—  
Falck, Glenn H.; and Boose, James R., 4,285,271, Cl. 99-348.000.

Kopse, Odon: See—  
Eblen, Ewald; Hofmann, Karl; and Kopse, Odon, 4,285,471, Cl. 239-533.400.

Koser, Richard, to Draf Tool Co., Inc. Automatic refrigerant recovery, purification and recharge apparatus. 4,285,206, Cl. 62-126.000.

Koshidama, Isamu: See—  
Sato, Nobuhiro; Yamaguchi, Yoshinobu; Kodama, Hitoshi; Koshidama, Isamu; Kitano, Nanahiko; and Tsutsumi, Shigeharu, 4,285,837, Cl. 252-466.00J.

Kosoczky, Ibolya: See—  
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; Kiszely, Eniko; and Kosoczky, Ibolya, 4,285,942, Cl. 424-248.560.

Kossman, Erich: See—  
Eberhard, Riessland; Beyer, Helmut; and Kossman, Erich, 4,286,197, Cl. 318-38.000.

Kostan, Charles C.: See—  
Fox, David H.; Kuhn, Robert L.; and Kostan, Charles C., 4,285,306, Cl. 123-146.50A.

Koster, Robertus J. C.: See—  
Barrat, Christian R.; Wevers, Jean; and Koster, Robertus J. C., 4,285,841, Cl. 252-559.000.

Kovach, Stephen M., to Ashland Oil, Inc. Catalyst for alkylating aromatics with olefins. 4,285,835, Cl. 252-432.000.

Kowalski, Joseph W., to B-Line Systems, Inc. Fastener. 4,285,379, Cl. 411-85.000.

Kowalski, Thomas A.: See—  
Woodring, Richard H.; Houtman, Paul K.; Kowalski, Thomas A.; and Whitmore, Charles H., 4,285,639, Cl. 417-218.000.

Koyama, Kazuo: See—  
Furukawa, Takashi; and Koyama, Kazuo, 4,285,741, Cl. 148-12.00D.

Koyama, Kenichi: See—  
Nomura, Hachiko; Koyama, Kenichi; and Terao, Kazuhiko, 4,285,120, Cl. 29-599.000.

Kozawa, Akiya, to Union Carbide Corporation. Heat-treated, organic solvent-treated manganese dioxide. 4,285,122, Cl. 29-623.100.

Kozhemyanin, Valentin G.: See—  
Kalunians, Kalust A.; Kozhemyanin, Valentin G.; Gracheva, Irina M.; and Voyno, Ljudmila I., 4,286,065, Cl. 435-315.000.

Kraft, Derald H., to Dyneer Corporation. Mechanical belt tensioner construction. 4,285,676, Cl. 474-135.000.

Kraftwerk Union Aktiengesellschaft: See—  
Janner, Karl; Gregorius, Klaus; and Schuster, Eberhard, 4,286,153, Cl. 250-281.000.

Niemann, Hans-Joachim, 4,285,705, Cl. 55-277.000.

Kramer, Petrus A.; and Verbrugge, Pieter A., to Shell Oil Company. Trihalocyclopropyl carbonates. 4,285,882, Cl. 260-463.000.

Kraus, Helmut: See—  
Boisch, Franz; and Kraus, Helmut, 4,286,078, Cl. 525-317.000.

Kraus, Hermann; Kirchlechner, Peter; Rieger, Robert; and Schuck, Wolf-Dieter, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Circuit arrangement for comparing the synchronism or tracking between two analog signals. 4,286,306, Cl. 361-242.000.

Kremer, Gilbert V. H.; Pechmeze, Jacques P. E.; and Sureau, Robert F. M., to P C U K Produits Chimiques Ugine Kuhlmann. Dyestuffs derived from triphenylmethane, their preparation and use. 4,285,696, Cl. 8-654.000.

Kress, Edward S. Method and apparatus for handling and dry quenching coke. 4,285,772, Cl. 201-39.000.

Kresse, Peter: See—  
Hund, Franz; and Kresse, Peter, 4,285,726, Cl. 106-14.050.

Kruder, George A., to HPM Corporation. Injection molding machine with multichannel wave screw. 4,285,600, Cl. 366-89.000.

Kruger, Wolfgang: See—  
Rossman, Axel; Hoffmuller, Wilhelm; and Kruger, Wolfgang, 4,285,634, Cl. 416-97.00A.

Kruse, Jürgen: See—  
Kuehnle, Manfred R.; and Kruse, Jürgen, 4,286,031, Cl. 430-44.000.

Kubela, Rudolf; Edwards, Philip D.; and Hughes, Lisa A., to Canada Packers Inc. 4-Arylpiperidine derivatives. 4,286,095, Cl. 546-213.000.

Kuberski, Lawrence F.: See—  
Luebbert, William K.; Blankenship, Thomas O.; and Kuberski, Lawrence F., 4,285,620, Cl. 408-212.000.

Kubota Ltd.: See—  
Hino, Masamichi; and Itani, Seiichi, 4,285,411, Cl. 177-25.000.

Kawasaki, Masami; Ohtori, Toshimi; Sukigara, Kunisuke; and Satoh, Mitsuo, 4,285,161, Cl. 47-9.000.

Kucharski, Nicholas; and Gillberg, James E., to RCA Corporation. Gated oscillator. 4,286,233, Cl. 331-111.000.

Kudirka, Alvydas A.: See—  
Chi, Lawrence L.; and Kudirka, Alvydas A., 4,285,770, Cl. 176-65.000.

Kuehnle, Manfred R.; and Kruse, Jürgen, to Coulter Stork U.S.A., Inc. Electrostatic multicolor composite printing method and apparatus. 4,286,031, Cl. 430-44.000.

Kugel, Christoph: See—  
Hagenlocher, Walter; Hesse, Heinz; Kleebar, Karl; Kugel, Christoph; and Sohnle, Rudiger, 4,286,186, Cl. 310-89.000.

Kuhn, Robert L.: See—  
Fox, David H.; Kuhn, Robert L.; and Kostan, Charles C., 4,285,306, Cl. 123-146.50A.

Kuhnlein, Hans: See—  
Kogler, Georg; Kuhnlein, Hans; and Schalk, Karl, 4,286,184, Cl. 310-67.00R.

Kumagai, Chikanori: See—  
Suzuki, Takeshi; Hatamori, Takashi; Murao, Mikio; Nezuka, Minoru; Kumagai, Chikanori; and Takagishi, Masaharu, 4,285,142, Cl. 34-57.00E.

Kumano, Hiroshi: See—  
Murakami, Kaoru; Okahisa, Mitsugu; Arita, Tomohiko; and Kumano, Hiroshi, 4,286,029, Cl. 429-219.000.

Kume, Takeshi, to Kabushiki Kaisha I.T.L. Apparatus for causing axial movement. 4,285,249, Cl. 74-89.150.

Kundin, Jane I. Carpet holder baseboard. 4,285,093, Cl. 16-17.000.

Kunz, Walter: See—  
Gatzl, Karl; Baumann, Hanspeter; Kunz, Walter; and Gloor, Bernhard, 4,285,959, Cl. 424-270.000.

Kuo, Samuel C.: See—  
Barbano, Normand; and Kuo, Samuel C., 4,286,271, Cl. 343-792.500.

Kureha Kagaku Kogyo Kabushiki Kaisha: See—  
Wagu, Masakatsu; Fukuda, Makoto; and Suzuki, Shirou, 4,285,797, Cl. 204-290.00R.

Kurmeier, Hans-Adolf: See—  
Prucher, Helmut; Uhl, Jürgen; Kurmeier, Hans-Adolf; Rudolph, Volkmar; and Wahlig, Helmut, 4,285,961, Cl. 424-273.00R.

Kusters, Eduard; Hartmann, Werner; and Appenzeller, Valentin, to Kusters, Eduard. Coolable roller. 4,285,107, Cl. 29-129.500.

Kutseva, Lidia S.: See—  
Gluschenko, Nina V.; Bukin, Vasily N.; Beker, Martin E.; Dmitrenko, Leonid V.; Utenkova, Varvara A.; Kuzmina, Mariya A.; Kutseva, Lidia S.; Bazdyreva, Natalia M.; Liepinsh, Gunar K.; Trusle, Eleonora B.; and Pavlova, Tamara A., 4,286,060, Cl. 435-110.000.

Kuwabara, Kenichi: See—  
Mihara, Yuji; Takei, Haruo; Inoue, Noriyuki; Ikeda, Tadashi; and Kuwabara, Kenichi, 4,286,044, Cl. 430-264.000.

Kuzmina, Mariya A.: See—  
Gluschenko, Nina V.; Bukin, Vasily N.; Beker, Martin E.; Dmitrenko, Leonid V.; Utenkova, Varvara A.; Kuzmina, Mariya A.; Kutseva, Lidia S.; Bazdyreva, Natalia M.; Liepinsh, Gunar K.; Trusle, Eleonora B.; and Pavlova, Tamara A., 4,286,060, Cl. 435-110.000.

Kwasnitsa, Hans-Dieter, to De La Rue Giori S.A. Method and apparatus for forming a stream of partly overlapping paper sheets or the like. 4,285,513, Cl. 271-270.000.

Labaw, Clifford S.; and Webb, Robert L., to SmithKline Corporation. N-Phenyl-N'-cyano-O-phenylisoureas. 4,285,878, Cl. 260-453.700.

La Grouw, Johannes: See—  
Van Loghem, Johannes J.; and La Grouw, Johannes, 4,285,181, Cl. 52-404.000.

Laliberte, Laurent H.: See—  
Garner, Andrew; and Laliberte, Laurent H., 4,285,787, Cl. 204-147.000.

Lambelin, Georges: See—  
Niebes, Paul; Vincze, Andras; Roba, Joseph; Lambelin, Georges; Matagne, Daniel; Hanon, Etienne; and Franz, Michel, 4,285,964, Cl. 424-283.000.

Lambert, Gerard L., to Mattel, Inc. Toy racing set. 4,285,157, Cl. 46-202.000.

Lambert, Gordon K.: See—  
Misiura, Thaddeus D.; and Lambert, Gordon K., 4,285,369, Cl. 138-149.000.

Lamm, Guenther; and Dehnert, Johannes, to BASF Aktiengesellschaft. Dyeing of surface coatings, organic solvents and petroleum products. 4,285,693, Cl. 8-521.000.

Lammel, Georg: See—  
Willeitner, Eberhard; Hirschmann, Wilhelm; Maier, Erwin; Lammel, Georg; and Hass, Jürgen, 4,285,611, Cl. 403-374.000.

Lamprecht, Josef; and Ley, Gregor, to BASF Aktiengesellschaft. Goniophotometer for measuring the gloss and/or light diffusion of surfaces. 4,285,597, Cl. 356-446.000.

Lamy, Jacques E., to Compagnie Generale pour les Developpements. Structure allowing the attainment of a precise seabed location. 4,285,614, Cl. 405-203.000.

Landa, Benzon; Swidler, Ronald; and Gardiner, Kenneth W., to Savin Corporation. Method and apparatus for removing excess developing liquid from photoconductive surfaces. 4,286,039, Cl. 430-119.000.

Landa, Isaac J., to Neotec Corporation. Holographic diffraction grating system for rapid scan spectral analysis. 4,285,596, Cl. 356-308.000.

Landel, Robert F.: See—  
Yen, Shiao-Ping S.; Rembaum, Alan; and Landel, Robert F., 4,285,819, Cl. 210-679.000.

Lando, Olga E.: See—  
Chipens, Gunar I.; Mutulis, Felix K.; Lando, Olga E.; and Myshlyakova, Natalia V., 4,285,857, Cl. 260-112.50R.

Langdon, Glen G., Jr.; and Rissanen, Jorma J., to International Business Machines Corporation. Method and means for arithmetic coding utilizing a reduced number of operations. 4,286,256, Cl. 340-347.0DD.

Langlais, Jacques F.: See—  
Dauge, Gilbert V.; and Langlais, Jacques F., 4,285,413, Cl. 177-210.00C.

Langley, Lawrence W., to Kollmorgen Technologies Corporation. Variable reluctance stepper motor. 4,286,180, Cl. 310-12.000.

Lanter, Kent J.: See—  
Betz, Norman L.; Lanter, Kent J.; and Williams, Danny L., 4,285,974, Cl. 426-2.000.

Larbaestier, David C.: See—  
Young, Morris S.; and Larbaestier, David C., 4,285,740, Cl. 148-11.50Q.

La Riviere, Philip D., to Varian Associates, Inc. Multi-element X-ray equalizing filter. 4,286,167, Cl. 250-510.000.

Larsen, Henry. Wind-instrument fingering guide. 4,285,263, Cl. 84-382.000.



- Larson, Eric H., to Allied Chemical Corporation. Apparatus and method of monitoring temperature in a multi-cell electrolyzer. 4,285,786, Cl. 204-98.000.
- Lassen, Niels; Boges, Klaus P.; Hansen, Peter B.; Buus, Jorn L. M.; and Bigler, Allan J., to Kefalas A/S. Xanthene and thioxanthene derivatives, compositions thereof and treatment therewith. 4,285,956, Cl. 424-267.000.
- Latham, Allee, Jr., to Haemonetics Corporation. Apparatus for separation of blood into components thereof. 4,285,464, Cl. 233-26.000.
- Latham, George R., Jr.: See—  
Staebler, David L.; and Latham, George R., Jr., 4,286,212, Cl. 324-125.000.
- Lay nee Konya, Aranka: See—  
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; Kiszely, Eniko; and Kosoczky, Ibolya. 4,285,942, Cl. 424-248.560.
- Le Materiel Telephonique: See—  
Houdard, Jean P., 4,286,326, Cl. 364-485.000.
- Leach, Charles. Swash plate internal combustion engine. 4,285,303, Cl. 123-51.0BA.
- Leach Corporation: See—  
Schuessler, John C.; and Tapp, David J., 4,286,244, Cl. 335-230.000.
- Leary, John E. Portable auxiliary door lock. 4,285,535, Cl. 292-293.000.
- Leather Life, Inc.: See—  
Willis, Monte B., 4,285,688, Cl. 8-94.10R.
- Leavitt, Richard P.: See—  
Morrison, Clyde A.; Wortman, Donald E.; Leavitt, Richard P.; and Karayianis, Nick, 4,286,230, Cl. 331-79.000.
- Leclerc, Pierre: See—  
Puech, Claude; Leclerc, Pierre; de Cremoux, Baudouin; Hirtz, Pierre; and Di Forte, Marie A., 4,286,232, Cl. 331-94.50H.
- Lecointre, Christian: See—  
Dewulf, Roger; Denis, Jean-Luc; Germain, Michel; and Lecointre, Christian, 4,286,140, Cl. 219-306.000.
- Lectron Products, Inc.: See—  
Slavin, Michael; and Telmet, Juhan, 4,286,257, Cl. 340-388.000.
- Lee, Alexander Y., Jr.: See—  
Gersberg, David N.; Lee, Alexander Y., Jr.; and Moore, William B., 4,286,260, Cl. 340-554.000.
- Lee, Charles A., to Fairchild, Incorporated. Dewatering system. 4,285,816, Cl. 210-401.000.
- Lee, Jannan G.: See—  
Hagerly, Robert O.; Lee, Jannan G.; and Yi, Kenneth C., 4,285,602, Cl. 366-177.000.
- LeFever, Randall H.: See—  
Harvey, William J.; Flook, Glen E., Jr.; and LeFever, Randall H., 4,286,307, Cl. 362-15.000.
- Lehmann, Helmut, to Artos Dr.-Ing. Meier-Windhorst KG (GmbH). System for fixing prints with reactive and vat dyes. 4,285,218, Cl. 68-5.00D.
- Leiber, Heinz, to Robert Bosch GmbH. Hydraulic brake booster. 4,285,199, Cl. 60-550.000.
- Leidich, Arthur J., to RCA Corporation. Amplifier with electrically controlled gain, with output suitable for direct coupling. 4,286,226, Cl. 330-254.000.
- Leinberry, W. Stanley, to Enjoyable Products, Inc. Refillable dispensing apparatus. 4,285,074, Cl. 4-227.000.
- Leistikow, Gerard K.; and Hales, Henry R., to Mattel, Inc. Toy toilet. 4,285,156, Cl. 46-14.000.
- Leithauer, Horst: See—  
Rigler, Josef K.; Ratajczak, Hans-Josef; Leithauer, Horst; and Trukenbrod, Karl, 4,286,071, Cl. 521-96.000.
- Leland Stanford Junior University, Board of Trustees of the: See—  
Auld, Bertram A.; and Elston, Gary W., 4,286,216, Cl. 324-237.000.
- Lemelson, Jerome H. Adhesive bandage. 4,285,338, Cl. 128-155.000.
- Lemelson, Jerome H. Game aiming device securable to television receiver cabinet. 4,285,523, Cl. 273-313.000.
- Lemelson, Jerome H. Molding system. 4,285,903, Cl. 264-310.000.
- Lenz, Henry G., to General Electric Company. Laminated rotor for a dynamoelectric machine and method of making same. 4,286,182, Cl. 310-61.000.
- Leonov, Ivan P.: See—  
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Konoov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.
- Leopold Kostal, Firma: See—  
Berginski, Werner E., 4,286,126, Cl. 200-11.00C.
- Le Page, Jean-Francois: See—  
Jacquin, Yves; Davidson, Michel; and Le Page, Jean-Francois, 4,285,804, Cl. 208-48.00R.
- Lerman, Russell E., to United States of America, Army. Low profile grenade fuze. 4,285,277, Cl. 102-487.000.
- Le Roux, Yvon: See—  
Le Rouzic, Jean; Demeure, Loic; and Le Roux, Yvon, 4,285,781, Cl. 204-15.000.
- Le Rouzic, Jean; Demeure, Loic; and Le Roux, Yvon. Metal support for an electronic component interconnection network and process for manufacturing this support. 4,285,781, Cl. 204-15.000.
- Les Manufactures de Saint Marcel: See—  
Frau, Giuliano, 4,286,001, Cl. 428-68.000.
- Leskinen, Seppo J.; and Pukkila, Olli J., to Oy Mercantile A.B. Impeller in a centrifugal blower. 4,285,635, Cl. 416-185.000.
- Lestrade, Maurice C. J. Device for guiding the displacement of a vehicle and in particular an agricultural machine. 4,286,151, Cl. 250-230.000.
- Leuven Research and Development VZW: See—  
Deruyttere, Andre E. A.; Delaey, Lucas J. A. E.; Aernoudt, Etienne A. D.; and Roos, Josef R., 4,285,739, Cl. 148-11.50C.
- LeVeen, Harry H.: See—  
Morcher, Kurt A.; Loones, Leo H.; and Binkhorst, Cornelius D., 4,285,072, Cl. 3-13.000.
- LeVeen, Harry V.: See—  
Armitage, David, 4,285,346, Cl. 128-422.000.
- Levings, Nelson, Jr. Door closing apparatus. 4,285,094, Cl. 16-52.000.
- Levinson, Vladimir A.: See—  
Zitser, Vitaly A.; Bachelis, Leonid V.; Morozov, Jury E.; Melnikov, Alexandr V.; Ivanov, Vladimir A.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,285,599, Cl. 366-17.000.
- Lewis, Delbert S., to Boeing Company. The Wing leading edge high lift device. 4,285,482, Cl. 244-207.000.
- Lewis, J. Stephen, to Mattel, Inc. Toy shaving set for a doll. 4,285,155, Cl. 46-1.00R.
- Lewis, Kenneth R.; and Meenan, Anthony C., to Vishay Intertechnology, Inc. Attachment of leads to precision resistors. 4,286,249, Cl. 338-275.000.
- Lewis, Reuben. Method for preparing molded poultry product. 4,285,980, Cl. 426-249.000.
- Lewis, Roger N.: See—  
Pastorino, Ronald L.; and Lewis, Roger N., 4,285,866, Cl. 260-338.000.
- Ley, Gregor: See—  
Lamprecht, Josef; and Ley, Gregor, 4,285,597, Cl. 356-446.000.
- Liau, Kwei-Liang: See—  
Halle, Reider; Peterson, David; Fisch, Michael A.; and Liauw, Kwei-Liang, 4,285,877, Cl. 260-453.0RZ.
- Liepinsh, Gunar K.: See—  
Gluschenko, Nina V.; Bukin, Vasily N.; Beker, Martin E.; Dmitrenko, Leonid V.; Utenkova, Varvara A.; Kuzmina, Mariya A.; Kutseva, Lidia S.; Bazdyreva, Natalia M.; Liepinsh, Gunar K.; Trusle, Eleonora B.; and Pavlova, Tamara A., 4,286,060, Cl. 435-110.000.
- Likhtie, Vilas V. Antigens comprising immunostimulant adjuvants and their use in immunotherapy. 4,285,930, Cl. 424-92.000.
- Limjoco, Guadalupe A.; Karkhanis, Yashwant D.; and Carlo, Dennis J., to Merck & Co., Inc. *E. coli* enterotoxin vaccine for veterinary and human use. 4,285,931, Cl. 424-92.000.
- Lindberg, Allan W. Illuminated changeable-display sign. 4,286,263, Cl. 340-717.000.
- Lindstrom, Roald E.: See—  
Flynn, Charles M., Jr.; Carnahan, Thomas G.; and Lindstrom, Roald E., 4,285,912, Cl. 423-43.000.
- Linscheid, Larry L.; and Mueller, Philip M., to Boeing Co., The. Apparatus for mixing high and low pressure air from a jet engine. 4,285,466, Cl. 236-13.000.
- Lipschutz, Paul, to Neiman S.A. Device for reading coded notches on keys. 4,285,574, Cl. 350-114.000.
- Lissau, Frederic, to Sloan Valve Company. Slow closing faucet. 4,285,361, Cl. 137-454.600.
- Lloyd, Edward R.; and Marowski, Raymond M., to International Business Machines Corporation. Escapement mechanism and back-space mechanism for a moving paper carriage typewriter having dual pitch capability. 4,285,605, Cl. 400-310.000.
- Loeffel, Emil. Tool chest. 4,285,556, Cl. 312-244.000.
- Logan, David J.; and Pavone, Robert J., to Gulf & Western Corporation. Device for translating and rotating a cutting platen with respect to a reciprocal cutter. 4,285,258, Cl. 83-410.000.
- Long, Donald A.: See—  
Charles, Stanley E.; Long, Donald A.; and Schimmelman, Arthur H., 4,285,146, Cl. 40-21.00C.
- Long, William E.: See—  
Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Reeves, David L. R.; and Wood, Glenn P., 4,285,859, Cl. 260-152.000.
- Longoni, Angelo: See—  
Galli, Remo; Gozzo, Franco; Palla, Ottorino; and Longoni, Angelo, 4,285,969, Cl. 424-304.000.
- Longshore, Randolph E., to United States of America, Army. Planar indium antimonide diode array and method of manufacture. 4,286,277, Cl. 357-30.000.
- Loones, Leo H.: See—  
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- Lorenze, Robert V., Jr.; and White, William J., to Honeywell Inc. Hybrid mosaic IR/CCD focal plane. 4,286,278, Cl. 357-30.000.
- Lorenzo, John L.: See—  
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- Low, William W.: See—  
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- Lowe, Earl L.: See—  
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- Lowery, Kirby, Jr.; and Vance, Fred L., Jr., to Dow Chemical Company. The Dual, independently supported catalyst mixtures. 4,285,834, Cl. 252-429.00C.
- Lu, Chin H.; and Erhardt, Peter F., to Xerox Corporation. Positive toners containing alkyl picolinium compounds. 4,286,038, Cl. 430-108.000.

- Lub, Dirk J. C. Device for keeping constant the tensile stress in a cable. 4,285,502, Cl. 254-398.000.
- Lubrizol Corporation, The: See—  
Bryant, Charles P., 4,285,824, Cl. 252-56.00D.
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- MacDonald, R. Ian: See—  
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Herrington, F. John, 4,285,656, Cl. 425-467.000.

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Moore, William B.: See—  
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- Mosmeier, William E.: See—  
Hufford, Jack E.; and Mosmeier, William E., 4,285,143, Cl. 34-93.000.
- Moss, Edward L., to Moss Machinery Manufacturers, Inc. Carton erecting machine, 4,285,682, Cl. 493-316.000.
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- Moss, Robert G., to Preway Inc. Fireplace construction with adaptable combustion air inlet, 4,285,326, Cl. 126-121.000.
- Moti, Samuel. X-Ray face mask and chest shield device, 4,286,170, Cl. 250-520.000.
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- Motoren-und Turbinen-Union Munchen GmbH: See—  
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- Motorola Inc.: See—  
Daniel, Sam M.; and Myers, Michael H., 4,286,268, Cl. 343-100.0LE.
- Eichler, Jay H.; and Gasparitis, Bernard, 4,286,335, Cl. 455-89.000.
- Jarrett, Robert B.; and Pace, Wilson D., 4,286,176, Cl. 307-261.000.
- Kopish, Stephen P.; and Costantino, Richard, 4,286,131, Cl. 200-340.000.
- Olivenbaum, James E.; and Illgen, Fritz, 4,286,241, Cl. 335-151.000.
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- Mueller Co.: See—  
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- Mueller, Donald M.: See—  
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- Mueller, Philip M.: See—  
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- Mueller, Walter, to Ewikon Entwicklung und Konstruktion GmbH & Co. Kommanditgesellschaft. Nozzle for a plastics injection molding machine, an extruder orifice, or a hot-chamber tool, 4,285,660, Cl. 425-549.000.
- Mukai, Takamitsu, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Swash plate type compressor, 4,285,640, Cl. 417-269.000.
- Mukanov, Arstan S.: See—  
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- Murphy, Rose M.: See—  
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- Murr, William C., to Synemed, Inc. Color vision perception testing device, 4,285,580, Cl. 351-35.000.
- Murray, E. Donald; Myers, Chester D.; and Barker, Larry D., to General Foods, Limited. Protein isolate product, 4,285,862, Cl. 260-123.500.
- Muskat, Josef, to Passavant-Werke Michelbacher Huette. Process of treating wastewater with oxygen, 4,285,818, Cl. 210-614.000.
- Muster, Hans: See—  
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- Mutulis, Felix K.: See—  
Chipens, Gunar I.; Mutulis, Felix K.; Lando, Olga E.; and Myshlyakova, Natalia V., 4,285,857, Cl. 260-112.50R.
- Myer, Jon H., to Hughes Aircraft Company. Zone purification of cylindrical ingots, 4,285,760, Cl. 156-617.00H.
- Myers, Chester D.: See—  
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- Nagasu, Takeshi: See—  
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- Nagy, Emery J. Tire pressure sensing and alarm system, 4,286,253, Cl. 340-58.000.
- Nahara, Akira; Ono, Yoshihiro; Namiki, Tomizo; Harada, Shigeo; Mizobuchi, Yuzo; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Image forming materials and image forming process, 4,286,045, Cl. 430-270.000.
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- Nakamura, Kiyoshi; Ishikawa, Hiroaki; Kiwaki, Hisakatsu; and Ogata, Fumio, to Hitachi, Ltd. Direct current detecting device using saturable reactors, 4,286,211, Cl. 324-117.00R.
- Nakamura, Masato; Nishimatsu, Saburo; Itoh, Toshitake; and Moronuki, Katsumi, to Honshu Seishi Kabushiki Kaisha. Heat-sensitive recording paper, 4,286,017, Cl. 428-328.000.
- Nakamura, Teruo: See—  
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- Nakao, Toshihisa: See—  
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- Nakase, Takamichi: See—  
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- Nakata, Takeshi; Watanabe, Takashi; and Harada, Kiyoshi, to Sanyo Electric Co., Ltd. Temperature measuring arrangements for microwave ovens, 4,286,134, Cl. 219-10.55B.
- Nakauchi, Shunsaku; and Watase, Fumio, to Kokusai Gijutsu Kaihatsu Co., Ltd. Recording/reproducing system, 4,286,294, Cl. 360-27.000.
- Nakazeki, Tsugito; and Yasuda, Yoshinobu, to NTN Toyo Bearing Co., Ltd. Air flow measuring device for internal combustion engines, 4,285,312, Cl. 123-378.000.
- Nakazeki, Tsugito; and Yasuda, Yoshinobu. Air flow measuring device, 4,285,313, Cl. 123-389.000.
- Nalco Chemical Company: See—  
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- Namiki, Tomizo: See—  
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Byrne, Joe L.; Kobayashi, Robert J.; and Nancarrow, James H., 4,285,200, Cl. 60-607.000.
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- Nash, Martin E.; and Huxley, Edward E., to Phillips Petroleum Company. Sulfone hydrogenation, 4,286,099, Cl. 549-87.000.
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Basily, Basil B.; Sansome, Dennis H.; and Jones, Gerald M., 4,285,234, Cl. 73-862.650.
- Pratt, Michael W. T., 4,285,924, Cl. 423-390.000.
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- Nazarova, Sima I.: See—  
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- NCR Canada Ltd - NCR Canada Ltee: See—  
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- Neamt, Nicolae, to Gillette Company, The. Chuck assembly, 4,285,528, Cl. 279-2.00R.
- Neary, Michael P. Food spoilage indicator, 4,285,697, Cl. 23-230.0LC.
- Neef, Rutger: See—  
Braden, Rudolf; and Neef, Rutger, 4,285,874, Cl. 260-376.000.
- Negi, Shigeto: See—  
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- Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichi; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kyosuke, 4,285,940, Cl. 424-246.000.
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- Neiman S.A.: See—  
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- Nelson, Carl L.; Haynes, Darrel W.; and Weber, Michael J. Method of securing a prosthesis using cement spacers, 4,285,071, Cl. 3-1.912.
- Nelson, Eugene L.: See—  
Kaufman, Vernon R.; and Nelson, Eugene L., 4,285,305, Cl. 123-146.50A.
- Neotec Corporation: See—  
Landa, Isaac J., 4,285,596, Cl. 356-308.000.
- Nessler, Hermann: See—  
Hiesinger, Edwin; Keplinger, Klaus; and Nessler, Hermann, 4,285,821, Cl. 210-777.000.
- Neubert, Terry C., to General Tire & Rubber Company, The. Adhesion of polyamide or polyester cords to rubber, 4,285,850, Cl. 260-29.6RB.
- Neukirch, Ed: See—  
Hawrylo, Stan; Neukirch, Ed; and Eberle, William J., 4,285,537, Cl. 294-93.000.
- Neumeister, Marwin G.: See—  
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- Nevedomsky, Evgeny N.: See—  
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- New England Instrument Company: See—  
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- Newkirk, Chauncey: See—  
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- Newroyd Limited: See—  
Chambers, George; and Hall, Kenneth F., 4,285,285, Cl. 112-79.00F.
- Neyhart, James H.; Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., to Xerox Corporation. Trapping layer overcoated inorganic photoresponsive device, 4,286,033, Cl. 430-58.000.
- Nezuka, Minoru: See—  
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- Ngoc, Hoan N.: See—  
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- NHK Spring Co., Ltd.: See—  
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- Nichirin Rubber Industrial Co., Ltd.: See—  
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- Nidola, Antonio: See—  
de Nora, Vittorio; Nidola, Antonio; and Spaziente, Placido M., 4,285,799, Cl. 204-290.00F.
- Niebes, Paul; Vincze, Andras; Roba, Joseph; Lambelin, Georges; Magagne, Daniel; Hanon, Etienne; and Franz, Michel, to Continental Pharma. Salts of (+)-catechine, their preparation and use, and compositions containing these salts, 4,285,964, Cl. 424-283.000.
- Niederdelmann, Georg: See—  
Quiring, Bernd; Wenzel, Wolfgang; Niederdelmann, Georg; Wagner, Hans; and Goyert, Wilhelm, 4,286,080, Cl. 525-455.000.
- Niemann, Hans-Joachim, to Kraftwerk Union Aktiengesellschaft. Apparatus for influencing the boundary layers at walls, 4,285,705, Cl. 55-277.000.
- Niemeyer, Wolfgang: See—  
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- Nifco Inc.: See—  
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- Nightingale, Douglas D. J., to Imperial Chemical Industries Limited. Control valves, 4,285,498, Cl. 251-214.000.
- Nigrin, Jaroslava M., to Corning Glass Works. Lead-free and cadmium-free frits, 4,285,731, Cl. 106-48.000.
- Nippon Contact Lens Manufacturing Ltd.: See—  
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- Nippon Electric Company, Ltd.: See—  
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- Sakoe, Hiroaki, 4,286,115, Cl. 179-1.0SD.
- Nippon Kayaku Kabushiki Kaisha: See—  
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- Nippon Kogaku K.K.: See—  
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- Nippon Oil and Fats Co., Ltd.: See—  
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- Tanabe, Rippel; Yokoyama, Yuji; and Hirano, Jiro, 4,285,872, Cl. 260-348.120.
- Nippon Sheet Glass Co., Ltd.: See—  
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- Nippon Shokubai Kagaku Kogyo Co., Ltd.: See—  
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- Tsubakimoto, Tsuneo; Shimomura, Tadao; Irie, Yoshio; and Masuda, Yoshihiko, 4,286,082, Cl. 526-240.000.
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- Ina, Toshikazu; Kawai, Hisasi; and Matsui, Takeshi, 4,285,322, Cl. 123-630.000.
- Nippon Steel Corporation: See—  
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- Nippon Telegraph and Telephone Public Corporation: See—  
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- Okubo, Tsuneo; Hamamoto, Nobuo; and Ichino, Kazuo, 4,286,154, Cl. 250-307.000.
- Nippondenso Co., Ltd.: See—  
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- Nishimatsu, Saburo: See—  
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- Nishiyama, Hissai, to Yoshida Kogyo K. K. Method for guiding warp threads with a back reed, 4,285,371, Cl. 139-97.000.
- Nishizima, Hideyo; Ema, Hideaki; Tamura, Hiroshi; and Akiyoshi, Hideki, to Ricoh Company, Ltd. Halogen doped selenium-tellurium alloy electrophotographic photoconductor, 4,286,035, Cl. 430-85.000.
- Nissan Motor Co., Ltd.: See—  
Harada, Hideo; and Imai, Eiji, 4,285,540, Cl. 296-192.000.
- Inamoto, Hiroshi, 4,285,103, Cl. 411-508.000.
- Kita, Toru, 4,285,246, Cl. 73-861.030.
- Takahashi, Koichi; and Kato, Yoshiaki, 4,285,089, Cl. 15-250.020.
- Yamaki, Kiyoshi; and Morimoto, Yoshiro, 4,285,252, Cl. 74-866.000.
- Yoneda, Kenji; Yamamoto, Tadahi; and Sugihara, Kunihiko, 4,285,318, Cl. 123-568.000.
- Nittetu Chemical Engineering Ltd.: See—  
Akune, Mikio, 4,285,820, Cl. 210-774.000.
- Nittobo Itamikako Co., Ltd.: See—  
Ito, Shimpei; Daimon, Masaru; and Kato, Tadashi, 4,285,694, Cl. 8-532.000.
- Noar, Raymond; and Blache, Louis J., to Rockwell International Corporation. Two-degree-of-freedom gyroscope, 4,285,248, Cl. 74-5.00F.
- Noda, Fumiyoshi: See—  
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- Nogaj, Alfred: See—  
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- Noguchi, Yukio: See—  
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- Nommensen, Johan P., to Stamicarbon, B.V. Device for mixing two fluids, 4,285,367, Cl. 137-888.000.
- Nomoto, Seiichi: See—  
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- Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichi; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kyosuke, 4,285,940, Cl. 424-246.000.
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- Nomura, Harehiko; Koyama, Kenichi; and Terao, Kazuhiko. Superconductor covered with reinforced aluminum matrix and method for manufacture thereof, 4,285,120, Cl. 29-599.000.
- Norda, Incorporated: See—  
Saldarini, Albert V.; and Doerig, Robert, 4,285,983, Cl. 426-534.000.
- Nortene: See—  
Pavy, Michel; and Casaert, Rene, 4,285,899, Cl. 264-180.000.
- North, Bernard F., to Sun Chemical Corporation. Novel reactants for crosslinking textile fabrics, 4,285,690, Cl. 8-186.000.
- North, Royston J., to Walker Crossweller & Company Limited. Thermostatic devices, 4,285,465, Cl. 236-12.00A.
- Northern Telecom Limited: See—  
Olszewski, Edward J.; Hundrieser, Dieter H.; and Ostapovitch, Harold J., 4,286,121, Cl. 179-98.000.
- Norton, Lonnie J.: See—  
Bloomquist, Marvin G.; Hoehn, Gustave L., Jr.; Norton, Lonnie J.; and Warner, Barry N., 4,286,218, Cl. 324-350.000.



Norton, Richard V.; and Fisher, Dennis H., to Ashland Oil, Inc. High density fuel compositions. 4,286,109, Cl. 585-14.000.

Novak, John D., to Owens-Illinois, Inc. Method of initiating operation of tubular heat exchanger for preheating pulverous glass batch. 4,285,717, Cl. 65-134.000.

Novak, John D.: See—  
Mathias, Richard G.; Novak, John D.; Rough, Robert R., Sr.; Small, Owen M.; and Willinger, Sigmund, 4,285,718, Cl. 65-134.000.

Novinsky, Vladislav K.: See—  
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.

NTN Toyo Bearing Co., Ltd.: See—  
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Numata, Saburo, to Fuji Photo Optical Co., Ltd. Exposure control compensating means for close-up photography. 4,285,585, Cl. 354-33.000.

Nyffenegger, Alfred, to Autelca AG. Monitoring device for the coin container of a coin collecting mechanism. 4,285,351, Cl. 133-1.00R.

Oakland Corporation, The: See—  
Wallace, Richard B., 4,285,378, Cl. 411-258.000.

Oce-Nederland B.V.: See—  
Hendriksma, Roelof R., 4,286,036, Cl. 430-100.000.  
van Lomm, Gerard J. E. H., 4,286,040, Cl. 430-127.000.

Oce-van der Grinten: See—  
van de Vorle, Wilhelmus J. M., 4,286,041, Cl. 430-149.000.

Oce-van der Grinten N.V.: See—  
Hectors, Adrianus M. P.; and Crommentuyn, Gerardus J., 4,286,037, Cl. 430-107.000.

Odioso, Raymond C.: See—  
Dimond, Harold L.; Odioso, Raymond C.; and Reavill, Roger E., 4,286,016, Cl. 428-311.000.

Odom, Roger K., to Combustion Engineering, Inc. Load-responsive treater controller. 4,286,206, Cl. 323-244.000.

Oebser, Alfred L.; and Porter, David L., to Orthomedics, Inc. Scoliosis orthotic system. 4,285,336, Cl. 128-78.000.

Oellerking, Willi, to Schleswiger Tauwerkfabrik Christian Oellerking. Repair patch for container and lorry sheets. 4,286,007, Cl. 428-194.000.

Ogata, Fumio: See—  
Nakamura, Kiyoshi; Ishikawa, Hiroaki; Kiwaki, Hisakatsu; and Ogata, Fumio, 4,286,211, Cl. 324-117.00R.

Ogata, Kazumi, to Senju Pharmaceutical Co., Ltd. Cleaning composition for contact lenses. 4,285,738, Cl. 134-26.000.

Ohmure, Keiichi: See—  
Yoshida, Mitsuo; Nakamura, Akira; Ohmure, Keiichi; and Ono, Atsuo, 4,285,798, Cl. 204-290.00F.

Ohno, Akira: See—  
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Ohta, Tokuya: See—  
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Ohtori, Toshimi: See—  
Kawasaki, Masami; Ohtori, Toshimi; Sukigara, Kunisuke; and Satoh, Mitsuo, 4,285,161, Cl. 47-9.000.

Ohya, Yukio: See—  
Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seiichi; Negi, Shigeto; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.

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Oka, Yuichi; and Takiguchi, Yosimitsu, to Hitachi, Ltd. Logical circuit having bypass circuit. 4,286,173, Cl. 307-440.000.

Okada, Hiroaki; Sonoda, Takefumi; and Shoji, Osamu, to Toyo Soda Manufacturing Co., Ltd. Water dropping type irrigation pipe. 4,285,472, Cl. 239-542.000.

Okahisa, Mitsugu: See—  
Murakami, Kaoru; Okahisa, Mitsugu; Arita, Tomohiko; and Kumano, Hiroshi, 4,286,029, Cl. 429-219.000.

Okubo, Tsuneo; Hamamoto, Nobuo; and Ichino, Kazuo, to Hitachi, Ltd.; and Nippon Telegraph & Telephone Public Corporation. Method of detecting a mark by an electron beam and an apparatus therefor. 4,286,154, Cl. 250-307.000.

Olin Corporation: See—  
Doerr, Richard L.; and Scardera, Michael, 4,285,695, Cl. 8-650.000.  
Kindlmann, Peter J.; Yarwood, John C.; Ungarean, Gary L.; and Tyler, Derek E., 4,285,387, Cl. 164-603.000.  
Specht, Steven J.; and Kircher, Morton S., 4,285,793, Cl. 204-253.000.

Olivenbaum, James E.; and Illgen, Fritz, to Motorola Inc. Apparatus for mounting a reed switch. 4,286,241, Cl. 335-151.000.

Oliver, John S.: See—  
French, George R.; and Oliver, John S., 4,286,208, Cl. 324-61.00R.

Oliveri, Anthony; and Macrina, Anthony. Method and apparatus involving adhesive backed photographs. 4,285,999, Cl. 428-40.000.

Olson, George P.: See—  
Clancy, Douglas E.; Frankeny, Richard F.; and Olson, George P., 4,286,202, Cl. 318-696.000.

Olzewski, Edward J.; Hundrieser, Dieter H.; and Ostapovitch, Harold J., to Northern Telecom Limited. Telephone line crossover apparatus and switch. 4,286,121, Cl. 179-98.000.

Olympus Optical Company Limited: See—  
Osana, Akira; and Nakao, Toshihisa, 4,286,300, Cl. 360-130.320.  
Suzuki, Yoshiro, 4,285,297, Cl. 118-657.000.  
Yamashita, Nobuo; and Maeda, Miwako, 4,285,578, Cl. 350-410.000.

Omnichem Societe Anonyme: See—  
Hannart, Jean A. A. J., 4,285,949, Cl. 424-256.000.

Ongchin, Lucio, to Union Carbide Corporation. Article of manufacture, the cross-linked product of a semi-conductive composition bonded to a crosslinked polyolefin substrate. 4,286,023, Cl. 428-516.000.

Onishi, Tetsuo. Combined chair and bed. 4,285,541, Cl. 297-84.000.

Onizawa, Masao, to Sanyo Trading Co., Inc. Curable composition. 4,286,079, Cl. 525-346.000.

Ono, Atsuo: See—  
Yoshida, Mitsuo; Nakamura, Akira; Ohmure, Keiichi; and Ono, Atsuo, 4,285,798, Cl. 204-290.00F.

Ono, Yoshihiro: See—  
Nahara, Akira; Ono, Yoshihiro; Namiki, Tomizo; Harada, Shigeo; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,286,045, Cl. 430-270.000.

Opitz, Wolfgang: See—  
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Oppermann, Robert A.: See—  
Messing, Ralph A.; Oppermann, Robert A.; Simpson, Lynn B.; and Takeguchi, Milton M., 4,286,061, Cl. 435-176.000.

Orega Electronique et Mecanique: See—  
Petit, Julien, 4,286,129, Cl. 200-159.00B.

Organisation Europeenne de Recherches Spatiales: See—  
Robinson, Alan A., 4,285,553, Cl. 308-10.000.

O'Rourke, Thomas J.: See—  
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,285,349, Cl. 131-276.000.

Orth, George O., Jr. Method of recovering residual vegetable oil contained in spent bleaching clay and processing the bleaching clay for reuse. 4,285,832, Cl. 252-424.000.

Orthomedics, Inc.: See—  
Oebser, Alfred L.; and Porter, David L., 4,285,336, Cl. 128-78.000.

Ortmann, Harry: See—  
Schlwy, Willy; Schulze, Jurgen; Hummes, Ferdinand; Schulze, Peter; Hornle, Reinhold; Molls, Hans-Heinz; and Ortmann, Harry, 4,285,692, Cl. 8-499.000.

Osaka City: See—  
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Osana, Akira; and Nakao, Toshihisa, to Olympus Optical Company Limited. Tape cassette. 4,286,300, Cl. 360-130.320.

Osberg, Hans. Process for preparing hydrazines. 4,286,108, Cl. 564-464.000.

Oshima, Mitsuru: See—  
Mizutani, Yutaka; Miwa, Yoshiharu; and Oshima, Mitsuru, 4,285,890, Cl. 264-1.100.

Ostapovitch, Harold J.: See—  
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Ostbo, John D. B. Heat-exchangers with plate-like heat exchange elements. 4,285,397, Cl. 165-163.000.

Osterreichische Hing-Werke Aktiengesellschaft: See—  
Mayerhoffer, Herbert, 4,285,843, Cl. 260-17.300.

Ostertag, Karl: See—  
Hoppe, Hans-Joachim; and Ostertag, Karl, 4,285,898, Cl. 264-176.00F.

Ostwald, Fritz, to ITT Industries, Inc. Floating caliper disc brake. 4,285,417, Cl. 188-73.300.

Oswald, Norman D.; and Mankey, Harry S., to Standard Manufacturing Company, Incorporated. Undercarriage for adverse terrain vehicle. 4,285,627, Cl. 414-695.300.

Ott, Granville E., to Texas Instruments Incorporated. Digital computing system having auto-incrementing memory. 4,286,320, Cl. 364-200.000.

Ottesen, Robert B.; and Morris, Gerald L., to United States of America. Army. Touch screen target designator. 4,286,289, Cl. 358-125.000.

Otto, Susan E.; and Dunmire, David L., to Peanut Research & Testing Laboratories, Inc. Analysis of aflatoxins in peanuts by high pressure liquid chromatograph. 4,285,698, Cl. 23-230.00B.

Overholser, Loyal M.: See—  
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Owens-Corning Fiberglass Corporation: See—  
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,285,734, Cl. 106-273.00R.

Owens-Corning Fiberglass Corporation: See—  
Thompson, Thomas K., 4,285,712, Cl. 65-2.000.

Owens-Illinois, Inc.: See—  
Babcock, Clarence L.; Busdiecker, Robert A.; and Hagedorn, Erwin C., 4,285,728, Cl. 106-39.700.  
DeMartino, Edward A., 4,285,750, Cl. 156-218.000.

Mathias, Richard G.; Novak, John D.; Rough, Robert R., Sr.; Small, Owen M.; and Willinger, Sigmund, 4,285,718, Cl. 65-134.000.

Novak, John D., 4,285,717, Cl. 65-134.000.

Owens, Michael; Waldrup, Roy W.; and Halper, Warren, to General Electric Company. Electrical capacitor protective arrangement. 4,286,302, Cl. 361-15.000.

Oxendahl, Terrence L.; and Davidson, Allen E. Construction line reel. 4,285,477, Cl. 242-96.000.

Oxon Italia S.p.A.: See—  
Motta, Raimondo, 4,286,092, Cl. 544-241.000.

Oy Mercantile AB: See—  
Leskinen, Seppo J.; and Pukkila, Olli J., 4,285,635, Cl. 416-185.000.

P C U K Produits Chimiques Ugine Kuhlmann: See—  
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Pacciarini, Antonio: See—  
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Pace, Wilson D.: See—  
Jarrett, Robert B.; and Pace, Wilson D., 4,286,176, Cl. 307-261.000.

Pacesetter Management Corp.: See—  
Weiss, Gary A., 4,286,112, Cl. 178-23.00R.

Paetsch, Werner, to Siemens Aktiengesellschaft. FM data demodulator including circuit for eliminating step distortion. 4,286,224, Cl. 329-107.000.

Page, Robert E., to Beloit Corporation. Headbox having adjustable flow passages. 4,285,767, Cl. 162-216.000.

Paine, John C., to Towmotor Corporation. Friction coupling control system. 4,285,418, Cl. 188-109.000.

Paitson, John L. Acoustic impulse generator. 4,285,415, Cl. 181-120.000.

Paladino, Angelo; and Campolo, Arnold, Jr., to Palco Industries, Inc. Storage tray for packaged articles. 4,285,557, Cl. 312-246.000.

Palco Industries, Inc.: See—  
Paladino, Angelo; and Campolo, Arnold, Jr., 4,285,557, Cl. 312-246.000.

Palla, Ottorino: See—  
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Pallet Service Corporation: See—  
Fagre, Raymond C., Jr., 4,285,110, Cl. 29-252.000.

Palmer, John P., to General Dynamics, Pomona Division. Fiber optic bar code reader. 4,286,145, Cl. 235-454.000.

Pampus, Gottfried: See—  
Beck, Manfred; and Pampus, Gottfried, 4,285,833, Cl. 252-428.000.

Paper Converting Machine Company: See—  
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Papetti, Stelvio: See—  
Millington, James E.; and Papetti, Stelvio, 4,286,069, Cl. 521-56.000.

Parker, Dane K., to Goodyear Tire & Rubber Company, The. Process for the preparation of antioxidant amides. 4,286,105, Cl. 564-205.000.

Parker, DeRay: See—  
Jones, Donald E.; Parker, DeRay; and Boren, Paul R., 4,286,165, Cl. 250-484.000.

Parker-Hannifin Corporation: See—  
Misiura, Thaddeus D.; and Lambert, Gordon K., 4,285,369, Cl. 138-149.000.

Woodring, Richard H.; Houtman, Paul K.; Kowalski, Thomas A.; and Whitmore, Charles H., 4,285,639, Cl. 417-218.000.

Parker, Ralph, to Harris Corporation. Cassette loading system and self-threading cassette for use therewith. 4,285,480, Cl. 242-195.000.

Parry, Keith P.: See—  
Worthington, Paul A.; and Parry, Keith P., 4,285,722, Cl. 71-92.000.

Parsons, J. Howard, to Hughes Aircraft Company. Method for fabricating thin panel illuminator. 4,285,889, Cl. 264-2.600.

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Passler, Helmar: See—  
Glukhikh, Vasily A.; Svinin, Mikhail P.; Fedotov, Mikhail T.; Shirokov, Vladimir P.; Pismannik, Konstantin D.; Schegolev, Alexandr I.; Heger, Adolf; Hanke, Rudolf; and Passler, Helmar, 4,286,166, Cl. 250-492.00B.

Pastorino, Ronald L.; and Lewis, Roger N., to Argus Chemical Corporation. Cyclic perketals and their use for cross-linking high density polyethylene. 4,285,866, Cl. 260-338.000.

Patten, Thomas E.: See—  
Allen, Richard B.; and Patten, Thomas E., 4,285,759, Cl. 156-584.000.

Paulsen, Gunther. Quick stranding machine. 4,285,191, Cl. 57-58.340.

Pauluzzi, Ego: See—  
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Pavelek, Joseph M., Jr.: See—  
Bertozzi, Richard J.; Pavelek, Joseph M., Jr.; and Wood, Daniel S., 4,285,826, Cl. 252-117.000.

Pavlova, Tamara A.: See—  
Gluschenko, Nina V.; Bakin, Vasily N.; Beker, Martin E.; Dmitrenko, Leonid V.; Utenkova, Varvara A.; Kuzmina, Mariya A.; Kutseva, Lidia S.; Bazyreva, Natalia M.; Liepinsh, Gunar K.

Trusle, Eleonora B.; and Pavlova, Tamara A., 4,286,060, Cl. 435-110.000.

Pavone, Robert J.: See—  
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Pavy, Michel; and Casaert, Rene, to Nortene. Method and apparatus for making helical plastic members, and the members produced. 4,285,899, Cl. 264-180.000.

Peanut Research & Testing Laboratories, Inc.: See—  
Otto, Susan E.; and Dunmire, David L., 4,285,698, Cl. 23-230.00B.

Pearce, Roy W. J.; Carbert, John; and MacDonald, John P. K., to Johnson, Matthey & Co., Limited. Process for production of free flowing dust-free pigments. 4,285,994, Cl. 427-222.000.

Pearo, John M. Basketball goal. 4,285,518, Cl. 273-1.50R.

Pechmeze, Jacques P. E.: See—  
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Pelsue, Bradley A.; and Beavers, Allan E., to T. A. Pelsue Company. Portable ventilating apparatus for purging underground installations and the like. 4,285,269, Cl. 98-33.00R.

Peltzer & Ehlers GmbH & Co.: See—  
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Pepe, Robert D. Pressurized gas seal for furnace atmosphere containment. 4,285,668, Cl. 432-19.000.

Peppier, Michael S.; and Bakermans, Johannes C. W., to AMP Incorporated. Cable harness assembly and electrical testing machine. 4,285,118, Cl. 29-593.000.

PepsiCo Inc.: See—  
Cahill, John W., 4,285,426, Cl. 194-4.00C.

Pera, John D.; and Johnson, Betty S., to Buckman Laboratories, Inc. Slime control compositions and methods of using the same. 4,285,765, Cl. 162-161.000.

Perez, Michael A. Toilet paper dispenser with biasing means for restraining the unwinding of the paper. 4,285,474, Cl. 242-55.200.

Permlip Products Corporation: See—  
Corey, Joseph T.; and Corey, Thomas J., 4,285,104, Cl. 24-153.000.

Persson, Torsten H. Arrangement in a gate. 4,285,165, Cl. 49-30.000.

Peterson, David: See—  
Halle, Reidar; Peterson, David; Fisch, Michael A.; and Liauw, Koei-Liang, 4,285,877, Cl. 260-453.0RZ.

Peterson, Harold S.: See—  
Brady, Joseph M.; and Peterson, Harold S., 4,285,084, Cl. 10-73.000.

Petit, Julien, to Orega Electronique et Mecanique. Keyboard having sudden trip tactile effect keys. 4,286,129, Cl. 200-159.00B.

Petocz, Lujza: See—  
Budai, Zoltan; Lay nec Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; Kiszely, Eniko; and Kosoczky, Ibolya, 4,285,942, Cl. 424-248.560.

Pfabe, Siegfried: See—  
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Pfaff Industriemaschinen GmbH: See—  
Bolldorf, Kurt; and Schmidt, Gottfried, 4,285,289, Cl. 112-98.000.

Pfeiffer, Francis R., to SmithKline Corporation. 7,8-Dihydroxy-1-(sulfonylphenyl)-2,3,4,5-tetrahydro-1H-3-benzazepine derivatives. 4,285,938, Cl. 424-244.000.

Pfenninger, Hans, to BBC Brown, Boveri & Company Limited. Dust separator for separating dust from flowing gaseous media. 4,285,707, Cl. 55-396.000.

Pfizer Inc.: See—  
Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,285,867, Cl. 260-338.000.

Sarges, Reinhard, 4,286,098, Cl. 548-309.000.

Pham Van, Doan, to Delle-Alstom. H.V. current cut-out circuit. 4,286,301, Cl. 361-3.000.

Phelon, Russell D.; and Burson, Bob O., to R. E. Phelon Company, Inc. Capacitor discharge ignition system. 4,285,321, Cl. 123-599.000.

Phillips Petroleum Co.: See—  
Chapman, Charles C., 4,286,110, Cl. 585-719.000.  
Cheng, I.aul J.; and Mills, King L., 4,285,926, Cl. 423-450.000.  
Nash, Martin E.; and Huxley, Edward E., 4,286,099, Cl. 549-87.000.  
Politte, Leo L.; and Washer, Stone P., 4,285,708, Cl. 62-28.000.  
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- Rossmen, Hendrik V., to Byk-Mallinckrodt CIL B.V. Screening device for a generator producing radio-isotopes. 4,286,169, Cl. 250-515.000.
- Rossmann, Axel; Hoffmuller, Wilhelm; and Kruger, Wolfgang, to Motoren-und Turbinen-Union Munchen GmbH. Composite ceramic gas turbine blade. 4,285,634, Cl. 416-97.00A.
- Roth, David W., to 2500 Corporation, The. Self-contained headlamp washer system. 4,285,470, Cl. 239-284.00A.
- Roth, Robert B., to Sandvik Coastal Inc. Arbor for mounting tools in a chuck. 4,285,167, Cl. 51-168.000.
- Rothman, Robert L.: See—  
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- Rotoplas Ltd.: See—  
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- Rough, Robert R., Sr.: See—  
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- Ruf, Wolfgang: See—  
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- Ruffieux, Stanislaus; and Schade, Ekkehard, to BBC Brown, Boveri & Company Ltd. Electric gas-switch. 4,286,128, Cl. 200-148.00R.
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- Runkle, Paul S. Shelter truss. 4,285,176, Cl. 52-93.000.
- Runyon, John F. Hinge joint assembly. 4,285,609, Cl. 403-172.000.
- Rusch, Richard B. Structural members and assemblies. 4,285,610, Cl. 403-189.000.
- Russell, Robert F., to Scott Bader Company Limited. Unsaturated polyester resins. 4,285,845, Cl. 260-28.00R.
- Russo, Leonard: See—  
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- Ruyter, Herman P.: See—  
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- Ryder, Leonard B. Injection blow molding apparatus. 4,285,657, Cl. 425-525.000.
- Rynne, George B. Zinc-nickel alloy electroplating bath. 4,285,802, Cl. 204-43.00Z.
- Sacchetti, Peter J., to New England Instrument Company. Laser formed resistor elements. 4,286,250, Cl. 338-306.000.
- Sadoff, Jerald C.: See—  
Pier, Gerald B.; and Sadoff, Jerald C., 4,285,936, Cl. 424-180.000.
- Sadou, Jean-Claude B., to Thomson-CSF. Device for the processing of voice signals. 4,286,116, Cl. 179-1.00P.
- Sacki, Tatsushi: See—  
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- Sahnas, George. Carburetor for internal combustion engines. 4,285,888, Cl. 261-59.000.
- St. Clair, David J.; and Ewins, Earle E., to Shell Oil Company. Weather resistant adhesive composition. 4,286,077, Cl. 525-232.000.
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- Sakai, Nobuo; Hayashi, Hiroshi; Toriuchi, Masaharu; and Katoh, Kazunobu, to Fuji Photo Film Co., Ltd. Light reflecting layer for color diffusion transfer photographic system. 4,286,042, Cl. 430-216.000.
- Sakai, Yoshihiro; Takahashi, Jun; Satoh, Toshiaki; and Ohno, Akira, to NHK Spring Co., Ltd. Edge roll assembly for manufacturing a taper leaf spring. 4,285,227, Cl. 72-240.000.
- Sakata, Toshio: See—  
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- Sakoe, Hiroaki, to Nippon Electric Co., Ltd. System for recognizing words continuously spoken according to a format. 4,286,115, Cl. 179-1.0SD.
- Salan, Antonio: See—  
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- Saldarini, Albert V.; and Doerig, Robert, to Norda, Incorporated. Fixing volatile flavoring agent in starch hydrolysate. 4,285,983, Cl. 426-534.000.
- Saldick, Jerome; and Cohen, Bernard, to Intermountain Research and Development Corp. Recovery of alkali values from trona ore. 4,285,915, Cl. 423-206.00T.
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- Salvia, Nazzareno, to Beloit Corporation. Method and apparatus for producing corrugated combined board. 4,285,764, Cl. 162-132.000.
- Samford, Travis L. Straight hole drill. 4,285,407, Cl. 175-323.000.
- Samford, Travis L. Broach for incorporation in a drill string. 4,285,410, Cl. 175-394.000.
- Sanders, James M.: See—  
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,285,349, Cl. 131-276.000.
- Sandoz, Inc.: See—  
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- Sandoz Ltd.: See—  
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- Fricker, Rene, 4,285,840, Cl. 252-346.000.
- Gerber, Hans, 4,285,996, Cl. 427-389.900.
- Sandvik Coastal Inc.: See—  
Roth, Robert B., 4,285,167, Cl. 51-168.000.
- Sanford, Leon M.; and Tick, Paul A., to Corning Glass Works. Moldable glasses. 4,285,730, Cl. 106-47.00R.
- Sanford, Robert F., to RCA Corporation. Automatic shutdown arrangement for stand-alone television modulator. 4,286,336, Cl. 455-117.000.
- Sansome, Dennis H.: See—  
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- Sanyo Electric Co., Ltd.: See—  
Nakata, Takeshi; Watanabe, Takashi; and Harada, Kiyoshi, 4,286,134, Cl. 219-10.55B.
- Sanyo Trading Co., Inc.: See—  
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- Sapronetti, Giuseppe. Hairbrush shield. 4,285,087, Cl. 15-159.00R.
- Sarges, Reinhard, to Pfizer Inc. Process for the preparation of chiral hydantoins. 4,286,098, Cl. 548-309.000.
- Sassenberg, Richard. Multidirectional photographic compound stage. 4,285,592, Cl. 355-53.000.
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Imamura, Saburo; Sugawara, Shungo; and Sato, Hirotosugu, 4,286,049, Cl. 430-296.000.
- Sato, Nobuhiro; Yamaguchi, Yoshinobu; Kodama, Hitoshi; Koshidama, Isamu; Kitano, Nanabiko; and Tsutsumi, Shigeharu, to Fujimi Kenmatsai Kogyo Co., Ltd.; and Toyo Engineering Corporation. Catalyst for steam reforming of hydrocarbons. 4,285,837, Cl. 252-466.00J.
- Sato, Tetsuo, to Hitachi, Ltd. Transistor amplifying circuit for preventing the operation of an amplifying transistor in the quasi-saturation region. 4,286,227, Cl. 330-255.000.
- Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Printing platen for hand labeler, or the like. 4,285,275, Cl. 101-407.0BP.
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Kawasaki, Masami; Ohtori, Toschimi; Sukigara, Kunisuke; and Satoh, Mitsuo, 4,285,161, Cl. 47-9.000.

- Satoh, Ryosuke: See—  
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- Satoh, Toshiaki: See—  
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- Savin Corporation: See—  
Landa, Benzion; Swidler, Ronald; and Gardiner, Kenneth W., 4,286,039, Cl. 430-119.000.
- Sawa, Hiroshi: See—  
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- Sawyer, Craig D.: See—  
Specker, Steven R.; Sawyer, Craig D.; Crowther, Russell L.; Ginnick, Bennett J.; Walters, Kenneth V.; Brown, Robert E.; and Fennern, Larry E., 4,285,769, Cl. 176-30.000.
- Scardera, Michael: See—  
Doerr, Richard L.; and Scardera, Michael, 4,285,695, Cl. 8-650.000.
- Schachter, Herbert I. Method of making a multi-level circuit board. 4,285,780, Cl. 204-15.000.
- Schade, Ekkehard: See—  
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- Schaffeler, Alois; and Stratmann, Uwe, to J & J Marquardt. Electric switch with two switching parts acting at different times. 4,286,125, Cl. 200-6.00B.
- Schalk, Karl: See—  
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- Scharfe, Merlin E.: See—  
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- Scheetz, Howard A., to Polymer Corporation, The. Fiber lubricated bearings. 4,285,168, Cl. 51-281.00R.
- Schegolev, Alexander I.: See—  
Glukhikh, Vasily A.; Svinin, Mikhail P.; Fedotov, Mikhail T.; Shirokov, Vladimir P.; Pismannik, Konstantin D.; Schegolev, Alexander I.; Heger, Adolf; Hanke, Rudolf; and Passler, Helmar, 4,286,166, Cl. 250-492.00B.
- Scher, Herbert B., to Stauffer Chemical Company. Encapsulation process and capsules produced thereby. 4,285,720, Cl. 71-88.000.
- Schering AG: See—  
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- Schetina, Otto: See—  
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- Scheuermann, Horst: See—  
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- Schiel, Christian, to J. M. Voith GmbH. Apparatus for dewatering fiber suspension for producing a web of fiber. 4,285,768, Cl. 162-301.000.
- Schiff, Otto M.; and Rikis, Vitolds, to Schiff Photo Mechanics. Compact multiple image camera. 4,285,587, Cl. 354-124.000.
- Schiff Photo Mechanics: See—  
Schiff, Otto M.; and Rikis, Vitolds, 4,285,587, Cl. 354-124.000.
- Schimmel, Karl F.: See—  
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- Schimmelman, Arthur H.: See—  
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- Schiwy, Willy; Schulze, Jurgen; Hummes, Ferdinand; Schulze, Peter; Hornle, Reinhold; Molls, Hans-Heinz; and Ortmann, Harry, to Bayer Aktiengesellschaft. Granular preparation of vat dyestuffs and/or disperse dyestuffs. 4,285,692, Cl. 8-499.000.
- Schjeldahl, Gilmore T. Intermittent feed mechanism for stacked containers. 4,285,187, Cl. 53-282.000.
- Schlegel (UK) Ltd.: See—  
Hinton, Kevin; and Barnes, Martin S., 4,285,180, Cl. 52-396.000.
- Schlener, J. Edward: See—  
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- Schlenker, Ralph F. Method for separating isotopes using a vortex tube. 4,285,701, Cl. 55-17.000.
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- Schlumberger Technology Corporation: See—  
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- Schmand, Horst: See—  
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- Schmanski, Thomas G. Shingle locating gauge. 4,285,134, Cl. 33-188.000.
- Schmidt, Gottfried: See—  
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- Schmidt, Guenther, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung. Receiver for solar power stations. 4,285,667, Cl. 126-438.000.
- Schmidt-Rabenau, Hartmut; and Berger, Hans-Werner, to Eppendorf Gerätebau Netherler + Hinz GmbH. Electrode system. 4,285,791, Cl. 204-195.00M.
- Schmidt, Sheldon P.: See—  
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- Schmitz, Hans, to Vorwerk & Co. Interholding GmbH. Bottom plate for a carpet power cleaner. 4,285,092, Cl. 15-378.000.
- Schneider, Erich, to Kombi-Lift Montage- und Handelsgesellschaft mbH. Apparatus for retaining guide pulleys for load cables of a building front cable lift in a housing stationarily arranged at the top of a building. 4,285,501, Cl. 254-394.000.
- Schnell, John W.; and Haenel, Max K., to Benchmark Tool Company. Spool feed mechanism for line fed grass trimmer. 4,285,128, Cl. 30-276.000.
- Scholes, Addison B., to Ball Corporation. Lubricating apparatus. 4,285,296, Cl. 118-630.000.
- Scholz, D. Thomas. Tremolo device. 4,285,262, Cl. 84-313.000.
- Schreiber, Bruno, to Ciba-Geigy Corporation. Crack-resistant epoxy resin molding composition with wollastonite. 4,285,853, Cl. 260-37.00EP.
- Schreiber, William L.: See—  
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- Schreyer, Karlheinz; and Thilo, Peer, to Siemens Aktiengesellschaft. Danger alarm system. 4,286,117, Cl. 179-5.00R.
- Schubert, Keith E.: See—  
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- Schuck, Wolf-Dieter: See—  
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- Schuessler, John C.; and Tapp, David J., to Leach Corporation. Electromagnetic actuator for a latch relay. 4,286,244, Cl. 335-230.000.
- Schuler, Norman W., to Polaroid Corporation. Window system comprising light polarizers. 4,285,577, Cl. 350-403.000.
- Schulze, Jurgen: See—  
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- Schulze, Peter: See—  
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- Schuricht, Henry A., to AMSTED Industries Incorporated. Walking-beam conveyor with adjustable width gauging aperture. 4,285,434, Cl. 209-625.000.
- Schuster, Eberhard: See—  
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- Schwab Safe Co., Inc.: See—  
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- Schwarz, Eckhard C. A., to Biax Fiberfilm Corporation. Apparatus for stretching a non-woven web or an orientable polymeric material. 4,285,100, Cl. 19-161.100.
- Schweitzer Industrial Corporation: See—  
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- Schwierz, Theodor, to Siemens Aktiengesellschaft. Directional antenna system with electronically controllable sweep of the beam direction. 4,286,267, Cl. 343-100.05A.
- Schwob, Charles J., to Mead Corporation. The Ink jet printer and start up method therefor. 4,286,272, Cl. 346-75.000.
- Schwoerer, Frank; and Wachter, William J., to Wachter Associates, Inc. Steam generator tube support system. 4,285,396, Cl. 165-162.000.
- Science Union Et Cie: See—  
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- SCM Corporation: See—  
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- Scott Bader Company Limited: See—  
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- Scott, Curtis E.: See—  
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- Scott, Sandra F.: See—  
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- Sea Log Corporation: See—  
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- Seeger, Karl: See—  
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- Seegers, Glen A., to American Stair Corporation, Inc. Reinforced tread assembly. 4,285,177, Cl. 52-179.000.
- Seeling, Philip F.: See—  
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- Seiner, Jerome A.: See—  
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- Sekella, Thomas C., to Facet Enterprises, Inc. Air gap adjuster for electric clutches. 4,285,420, Cl. 192-84.00C.
- Seki, Kazuichi: See—  
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- Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Aqueous coatings based on copolymers with a mixture of polymeric polyol and bisphenol-propylene oxide adduct. 4,285,844, Cl. 260-23.00EP.



- Seko, Maomi: See—  
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- Senju Pharmaceutical Co., Ltd.: See—  
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- Senshu, Takao: See—  
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- Serlin, Irving: See—  
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- Seton Company: See—  
Cioca, Gheorghe; and Siegler, Marcel, 4,285,986, Cl. 426-657.000.
- Siegler, Marcel, 4,285,689, Cl. 8-94.260.
- Sevastakis, Gus. Cooling system for continuous casting of bar products. 4,285,388, Cl. 164-444.000.
- Sevastyanov, Boris A.: See—  
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- Shah, Raj: See—  
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- Shanley, Stephen E., Jr. Rotary milling cutter. 4,285,618, Cl. 407-54.000.
- Sharples, Thomas D.: See—  
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- Shartner, Eduard G.: See—  
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- Shats, Mikhail: See—  
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- Shaw, Henry; and Skopp, Alvin, to Exxon Research & Engineering Co. Minimizing NO<sub>x</sub> production in operation of gas turbine combustors. 4,285,193, Cl. 60-39.060.
- Shearer, Harry D., to E-Systems, Inc. Wideband digital frequency discriminator and phase and frequency detector. 4,286,223, Cl. 329-50.000.
- Shell Oil Company: See—  
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- Haynes, George R., 4,285,970, Cl. 424-304.000.
- Kramer, Petrus A.; and Verbrugge, Pieter A., 4,285,882, Cl. 260-463.000.
- St. Clair, David J.; and Ewins, Earle E., 4,286,077, Cl. 525-232.000.
- van Raam, Leopold; Ruyter, Herman P.; and van Breugel, Josefus W., 4,285,140, Cl. 34-15.000.
- Shell, Ronald G.; Brownell, Wallace F.; Fedder, Richard C.; and Christou, Kyriakos, to Burroughs Corporation. Ink droplet catcher assembly. 4,286,274, Cl. 346-75.000.
- Shelukha, Nikolai N.: See—  
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- Sheng-Wei, Wu. Consecutively nailing machine. 4,285,456, Cl. 227-147.000.
- Sherman, Eli H. Generator for use with loads having changing impedance characteristics. 4,286,194, Cl. 315-209.00R.
- Shibata, Kunio: See—  
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- Shibata, Norio: See—  
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- Shiga, Tatsuhide; Tsuruoka, Yoshihiro; and Suzuki, Motoo, to Honeywell Inc. Method of making a fluid circuit device. 4,285,779, Cl. 204-9.000.
- Shilov, Gennady G.: See—  
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- Shimalla, Charles J.: See—  
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- Shimizu, Kitao: See—  
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- Shimizu, Yoshio: See—  
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- Shimokawa, Kenji: See—  
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- Shimomura, Tadao: See—  
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- Suzuki, Takeshi: See—  
Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seichiro; Negi, Shigetō; Kito, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.
- Suzuki, Tsutomu, to Pioneer Electronic Corporation. Video format signal recording and reproducing device. 4,286,281, Cl. 358-4.000.
- Suzuki, Yoshiro, to Olympus Optical Company Limited. Magnetic brush developing devices. 4,285,297, Cl. 118-657.000.
- Svinini, Mikhail P.: See—  
Glukhikh, Vasily A.; Svinini, Mikhail P.; Fedotov, Mikhail T.; Shirokov, Vladimir P.; Pismannik, Konstantin D.; Schegolev, Alexandr I.; Heger, Adolf; Hanke, Rudolf; and Passler, Helmar, 4,286,166, Cl. 250-492.00B.
- Swaim, Martin H., to Van Putten, Theron A. Indestructible handle for mop or broom and method of making same. 4,285,096, Cl. 16-114.00R.
- Swaminathan, Krishnasami: See—  
Soni, Vasantlal B.; and Swaminathan, Krishnasami, 4,285,913, Cl. 423-50.000.
- Swars, Helmut: See—  
Maus, Wolfgang; Niemeyer, Wolfgang; and Swars, Helmut, 4,285,393, Cl. 165-76.000.
- Swartout, Bruce E., to U.S. Flywheels, Inc. Rim for use in flywheels for kinetic energy storage. 4,285,251, Cl. 74-572.000.
- Sweeny, James G.: See—  
Iacobucci, Guillermo A.; and Sweeny, James G., 4,285,982, Cl. 426-250.000.  
Iacobucci, Guillermo A.; and Sweeny, James G., 4,285,985, Cl. 426-540.000.
- Swidler, Ronald: See—  
Landa, Benzion; Swidler, Ronald; and Gardiner, Kenneth W., 4,286,039, Cl. 430-119.000.
- Swinea, Jessie D., Jr., to Vultrol Inc. Dimmer circuit for fluorescent lamps. 4,286,195, Cl. 315-224.000.

- Swis, Philip E., to Sun Electric Corporation. System for hot testing engines. 4,285,233, Cl. 73-116.000.
- Sydow, Udo: See—  
Englemann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, 4,286,054, Cl. 430-544.000.
- Synemed, Inc.: See—  
Murr, William C., 4,285,580, Cl. 351-35.000.
- Szabo, Lajos: See—  
Szantay, Csaba; Szabo, Lajos; Kalas, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,285,865, Cl. 260-239.30P.  
Szantay, Csaba; Szabo, Lajos; Kalas, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,285,950, Cl. 424-256.000.  
Szantay, Csaba; Szabo, Lajos; Kalas, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, to Richter Gedeon Vegyeszeti Gyar Rt. Process for the preparation of halogenated 15-hydroxy-E-homoeburnane compounds. 4,285,865, Cl. 260-239.30P.  
Szantay, Csaba; Szabo, Lajos; Kalas, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, to Richter Gedeon Vegyeszeti Gyar Rt. 10-halo-E-homoeburnane derivatives, a process for the preparation thereof, a process for the use thereof as vasodilators, and vasodilating compositions thereof. 4,285,950, Cl. 424-256.000.
- Szlam, Aleksander: See—  
Mehaffey, Joseph H.; and Szlam, Aleksander, 4,286,118, Cl. 179-18.0AD.
- Szmuskovicz, Jacob: See—  
Kane, Michael P.; and Szmuskovicz, Jacob, 4,286,106, Cl. 564-220.000.
- Szycher, Michael, to Thermo Electron Corporation. Keratoprosthetic polyurethane. 4,285,073, Cl. 3-13.000.
- T. A. Pelsue Company: See—  
Beavers, Allan E., 4,285,354, Cl. 135-1.00R.  
Pelsue, Bradley A.; and Beavers, Allan E., 4,285,269, Cl. 98-33.00R.
- Tabacek, Joseph A.: See—  
Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., 4,285,807, Cl. 208-216.00R.  
Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., 4,285,836, Cl. 252-438.000.
- Taback, Israel; and Frosch, Robert A. Small conductive particle sensor. 4,286,209, Cl. 324-71.0CP.
- Taciuk, William, to Alberta Oil Sands Technology and Research Authority. Apparatus and process for recovery of hydrocarbon from inorganic host materials. 4,285,773, Cl. 202-100.000.
- Tadewald, Thomas D., to UOP Inc. Heater assembly. 4,286,143, Cl. 219-443.000.
- Taguchi, Yoshio: See—  
Betsuda, Yasuhiro; Taguchi, Yoshio; and Takashashi, Yasuo, 4,285,892, Cl. 264-23.000.
- Takagishi, Kenichiro; and Tsuda, Yutaka. Apparatus for forming and installing underground drainpipe. 4,285,613, Cl. 405-156.000.
- Takagishi, Masaharu: See—  
Suzuki, Takeshi; Hatamori, Takashi; Murao, Mikio; Nezuka, Minoru; Kumagai, Chikanori; and Takagishi, Masaharu, 4,285,142, Cl. 34-57.00E.
- Takahara, Yasuo; Hayashi, Shigeo; Yamada, Shizuo; and Shibata, Norio, to Nippondenso Co., Ltd., and Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system. 4,285,317, Cl. 123-568.000.
- Takahashi, Jun: See—  
Sakai, Yoshihiro; Takahashi, Jun; Satoh, Toshiaki; and Obno, Akira, 4,285,227, Cl. 72-240.000.
- Takahashi, Kazuo: See—  
Takizawa, Masaaki; Matsubara, Noboru; and Takahashi, Kazuo, 4,285,310, Cl. 123-308.000.
- Takahashi, Koichi; and Kato, Yoshiaki, to Nissan Motor Company, Limited. Windshield washer of motor vehicle. 4,285,089, Cl. 15-250.020.
- Takahashi, Michiko: See—  
Imataki, Hiroyuki; Takahashi, Michiko; Kobayashi, Masatsune; and Ohta, Tokuya, 4,285,575, Cl. 350-357.000.
- Takalo, Kauko A. Expansion or compression machine with interengaging members rotating on perpendicular axes. 4,285,644, Cl. 418-195.000.
- Takano, Masayuki: See—  
Nagakubo, Yoshio; and Takano, Masayuki, 4,286,199, Cl. 318-327.000.
- Takaoka, Kazuhiko, to Hitachi, Ltd. Multi-frequency signal receiving apparatus. 4,286,221, Cl. 328-140.000.
- Takashashi, Yasuo: See—  
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- Takata, Akira: See—  
Hattori, Tadashi; Takata, Akira; Fukuda, Tamotsu; and Nakase, Takamichi, 4,285,319, Cl. 123-585.000.
- Takeda Chemical Industries, Ltd.: See—  
Tsushima, Susumu; Matsumoto, Norichika; and Kato, Masayasu, 4,286,088, Cl. 544-16.000.
- Takeda, Kunihiko: See—  
Miyake, Tetsuya; Takeda, Kunihiko; Miyata, Naoki; Sacki, Tatsushi; and Seko, Maomi, 4,285,811, Cl. 568-422.000.
- Takeguchi, Milton M.: See—  
Messing, Ralph A.; Oppermann, Robert A.; Simpson, Lynn B.; and Takeguchi, Milton M., 4,286,061, Cl. 435-176.000.
- Takei, Haruo: See—  
Mihara, Yuji; Takei, Haruo; Inoue, Noriyuki; Ikeda, Tadashi; and Kuwabara, Kenichi, 4,286,044, Cl. 430-264.000.
- Takeshita, Isao; Hozumi, Shiro; and Wakamatsu, Nobuhiko, to Matsushita Electric Industrial Co., Ltd. Absorption type refrigerating machine of hybrid constructions. 4,285,208, Cl. 62-141.000.
- Tagiguchi, Shinji: See—  
Iwao, Soichi; Tagiguchi, Shinji; and Sakata, Toshio, 4,285,295, Cl. 118-60.000.
- Tagiguchi, Yosimitsu: See—  
Oka, Yuichi; and Tagiguchi, Yosimitsu, 4,286,173, Cl. 307-440.000.
- Takizawa, Masaaki; Matsubara, Noboru; and Takahashi, Kazuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Dual intake valve type internal combustion engine. 4,285,310, Cl. 123-308.000.
- Tamura, Hiroshi: See—  
Nishizima, Hideyo; Ema, Hideaki; Tamura, Hiroshi; and Akiyoshi, Hideki, 4,286,035, Cl. 430-85.000.
- Tanabe, Eiji; and Vaguine, Victor A., to Varian Associates, Inc. Variable energy standing wave linear accelerator structure. 4,286,192, Cl. 315-5.410.
- Tanabe, Rippei; Yokoyama, Yuji; and Hirano, Jiro, to Nippon Oil and Fats Company, Ltd. Method for producing glycidyl (meth)acrylate. 4,285,872, Cl. 260-348.120.
- Tanaka, Minoru; Yagi, Kenkichi; and Shimizu, Kitao, to Toray Industries, Incorporated. Composite sheet material. 4,286,014, Cl. 428-290.000.
- Tanaka, Takeo: See—  
Hayashi, Masakatsu; Tanaka, Takeo; Natori, Tatsuo; Aizawa, Tatsushi; Kojima, Shigeru; and Senshu, Takao, 4,285,385, Cl. 164-9.000.
- Tanaka, Yasuo; Shimokawa, Kenji; and Nagatomo, Muneshige, to Director-General of Agency of Industrial Science and Technology. Solar energy collecting system. 4,285,333, Cl. 126-433.000.
- Tapp, David J.: See—  
Schuessler, John C.; and Tapp, David J., 4,286,244, Cl. 335-230.000.
- Taylor, Eugene D., to J. I. Case Company. Coupling assembly for heating element. 4,286,139, Cl. 219-208.000.
- Taylor, Harvey W., Jr., to Du Pont de Nemours, E. I., and Company. Negative-working dry peel apart photopolymer element with polyvinylformal binder. 4,286,043, Cl. 430-253.000.
- Taylor, Henry D., to Sperry Corporation. Power transmission. 4,285,362, Cl. 137-489.000.
- Taylor, Peter J., to Plessey Handel und Investments AG. Radial flow centrifugal impeller. 4,285,631, Cl. 415-143.000.
- Taylor, Raymond E., to Theta Industries, Inc. Electric tube furnace. 4,286,142, Cl. 219-390.000.
- Taylor, Richard J.; and Bennett, Phillip P., to Micro Consultants Limited. Digital video processor. 4,286,291, Cl. 358-138.000.
- Taylor, Vaughn W.: See—  
Hardy, John F.; Kintz, Donald P.; and Taylor, Vaughn W., 4,285,846, Cl. 260-29.20E.
- TDK Electronics Co., Ltd.: See—  
Isobe, Yukihiko; Hayama, Masashi; and Hirabayashi, Kenji, 4,285,825, Cl. 252-62.540.
- Teagno, Vladimiro; and Trevisol, Franco, to AMP Incorporated. Dual purpose electrical connector. 4,285,562, Cl. 339-33.000.
- Teal, William F.: See—  
Weaver, Nyal J.; and Teal, William F., 4,285,506, Cl. 270-30.000.
- Tecumseh Products Company: See—  
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- Kaufman, Vernon R.; and Nelson, Eugene L., 4,285,305, Cl. 123-146.50A.
- Teijin Chemicals Ltd.: See—  
Tokuda, Toshimasa, 4,285,855, Cl. 260-45.750.
- Teleprompter Corporation: See—  
Waldo, James K., 4,286,288, Cl. 358-114.000.
- Teletype Corporation: See—  
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- Telmet, Juhan: See—  
Slavin, Michael; and Telmet, Juhan, 4,286,257, Cl. 340-388.000.
- Temple, Davis L., Jr., to Mead Johnson & Company. 9-Cyclohexyl-2-alkoxy-9H-adenine process. 4,286,093, Cl. 544-276.000.
- Tennenhouse, Gerald J.: See—  
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- Terao, Kazuhiko: See—  
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- Terrill, Garrett D.; and Edwards, Lynn D., to Mueller Co. Pipeline stopper and pipe fitting. 4,285,368, Cl. 138-89.000.
- Terry, Bernard W. H.: See—  
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- Testut-Aequitas: See—  
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- Texaco Development Corp.: See—  
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- Texaco Inc.: See—  
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- Sung, Rodney L.; and Zoleski, Benjamin H., 4,285,823, Cl. 252-50.000.
- Texas Instruments Incorporated: See—  
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- Rao, G. R. Mohan; and White, Lionel S., Jr., 4,286,178, Cl. 307-355.000.
- Textron Inc.: See—  
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Theeuwes, Felix, to ALZA Corporation. Article of manufacture comprising semipermeable polymer and dextran derivative. 4,286,067, Cl. 521-27.000.

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Thermocycle, Inc., See—  
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Theta Industries, Inc., See—  
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Thomas, Mark A. Color demonstration device and method. 4,285,673, Cl. 434-98.000.

Thomas, William R., See—  
Andary, Thomas J.; Berkebile, L. Raymond; Thomas, William R.; and Tse, Daphne C., 4,286,056, Cl. 435-3.000.

Thome, Paul. Method for assembling vertical ducts by electron-welding. 4,286,137, Cl. 219-121.0EC.

Thompson, Gregory J.; and Vickers, Anthony G., to UOP Inc. Catalyst regeneration apparatus. 4,285,908, Cl. 422-143.000.

Thompson, Richard R. Propeller assembly. 4,285,637, Cl. 416-202.000.

Thompson, Thomas K., to Owens-Corning Fiberglass Corporation. Apparatus and method for the production of glass fibers. 4,285,712, Cl. 65-2.000.

Thomson-CSF, See—  
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Epstein, Bernard; and Fleury, George, 4,286,191, Cl. 315-3.600.

Erannian, Armand; Dubois, Jean-Claude; Gazard, Maryse; and Barre, Françoise, 4,285,788, Cl. 204-159.160.

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Todd, Paul H., Jr.; and Haley, Howard E., to Kalsec, Inc. Liquid seasoning compositions III. 4,285,981, Cl. 426-250.000.

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Toshin Kogyo Co., Ltd., See—  
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Takahara, Yasuo; Hayashi, Shigeo; Yamada, Shizuo; and Shibata, Norio, 4,285,317, Cl. 123-568.000.

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- van Breugel, Josefus W.: See—  
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- van der Lely, Cornelis. Seeder with pivoting soil breakers. 4,285,284, Cl. 111-85.000.
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- Vander Molen, Gary L.; and Brown, Timothy A., to Iowa State University Research Foundation, Inc. Concentrate metering apparatus. 4,285,445, Cl. 222-49.000.
- van de Vorle, Wilhelmus J. M., to Océ-van der Grinten. Composition and process for developing diazotype material. 4,286,041, Cl. 430-149.000.
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- van Lomm, Gerard J. E. H., to Océ-Nederland B.V. Process for preparing an electrophotographic element. 4,286,040, Cl. 430-127.000.
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- Van Winkle, Howard E.: See—  
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- Vasishth, Ramesh C.; and De Silva, Dodwell P., to Envirosol Systems International, Ltd. Wood stabilizing/treating compositions and method. 4,285,997, Cl. 427-393.000.
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- Velsicol Chemical Corporation: See—  
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- Venetia, Henry J. Shaker conveyor construction. 4,285,670, Cl. 432-88.000.
- Verbrugge, Pieter A.: See—  
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- Vermillion, Russell L.; and Bennett, William A., to Minnesota Mining and Manufacturing Company. Coating of fine particles in polyurethane block copolymer binder. 4,286,022, Cl. 428-423.100.
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- Veselkov, Alex A.; Glumov, Ivan F.; Zlotnikov, Leonid A.; Maiko, Viktor P.; and Matusovich, Yuri F. Double-channel satellite navigation system. 4,286,270, Cl. 343-113.0DE.
- Vickers, Anthony G.: See—  
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- Vinals, Joaquin F.: See—  
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- Vinatzer, Alex, to Durst AG Fabrik Fototechnischer Apparate. Circuit for the control of exposure time in photographic enlarging equipment. 4,285,593, Cl. 355-68.000.
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- Vince, Andras: See—  
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- Voorheis, James T. Burner for a plurality of fluid streams. 4,285,664, Cl. 431-284.000.
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- Vought Corporation: See—  
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- VSI Corporation: See—  
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- Wagner, Eugene R.: See—  
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- Wagner, Hans: See—  
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- Wagner, Ulrich. Methods of engraving workpiece surfaces by etching. 4,286,051, Cl. 430-323.000.
- Wagner, Wolfgang, to U.S. Philips Corporation. Device for determining the spatial absorption distribution in a plane of examination. 4,286,156, Cl. 250-363.00S.
- Wagu, Masakatsu; Fukuda, Makoto; and Suzuki, Shiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Cathode for the electrolytic treatment of alkali halide. 4,285,797, Cl. 204-290.00R.
- Wahl, John F., to Mallard Manufacturing Corporation. Electronic transmitter device. 4,286,262, Cl. 340-694.000.
- Wahle, Peter, to Sundpasma Aktiebolag. Apparatus for setting up slit-boxes. 4,285,679, Cl. 493-125.000.
- Wahlig, Helmut: See—  
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- Wait, Hershey, to General Box Company. Pallet box. 4,285,438, Cl. 217-43.00A.
- Waite, Roland, to Fiber Industries, Inc. Apparatus for quenching melt-spun filaments. 4,285,646, Cl. 425-72.00S.
- Wakamatsu, Nobuhiko: See—  
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- Waldo, James K., to Teleprompter Corporation. Apparatus and method for tamper resistant channel attenuation in subscription television converter. 4,286,288, Cl. 358-114.000.
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- Chen, Evan N.; Crainich, Lawrence; and Ferraro, Frank A., 4,285,125, Cl. 30-53.000.
- Hoefle, Milton L., 4,285,951, Cl. 424-263.000.
- Meltzer, Robert J.; and Hansen, Donald H., 4,285,906, Cl. 422-64.000.
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- Watanabe, Takashi: See—  
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- Watrous, Donald L., to General Electric Company. Interface circuit for standard voltage regulators. 4,286,205, Cl. 322-8.000.
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- Weber, Jürgen: See—  
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- Webinger, George, to Champion International Corporation. Folding shirt card and blank therefor. 4,285,427, Cl. 206-292.000.
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- Wedzik, Theresa M. Drinking cup lid. 4,285,442, Cl. 220-270.000.
- Wehinger, Egbert; and Bossert, Friedrich, to Bayer Aktiengesellschaft. 1,4-Dihydropyridinecarboxylic acids. 4,285,955, Cl. 424-266.000.
- Wehner, Wolfgang; and Abeler, Gerd, to Ciba-Geigy Corporation. Organo-tin compounds, process for their preparation and their use. 4,285,856, Cl. 260-45.75S.
- Weichman, Bernard E., to Multi Mineral Corporation. Integrated in situ shale oil and mineral recovery process. 4,285,547, Cl. 299-2.000.
- Weider, John J.: See—  
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- Weidman, William H.: See—  
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- Weir, Casper J., Jr. Oscillator for reciprocating tool or other device. 4,285,405, Cl. 173-162.00R.
- Weiss, Gary A., to Pacesetter Management Corp. Message preparation timing apparatus. 4,286,112, Cl. 178-23.00R.
- Welch, Kimo M., to Varian Associates, Inc. Cryogenic device for restricting the pumping speed of selected gases. 4,285,710, Cl. 62-40.000.
- Well Tools, Inc.: See—  
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- Welty, Joseph M., to Branson International Plasma Corp. Gas plasma reactor for circuit boards and the like. 4,285,800, Cl. 204-298.000.
- Wenger, Lavon G.; Rokey, Galen J.; and Ben-Gera, Itamar, to Wenger Manufacturing. Enzymatic conversion of high moisture shear extruded and gelatinized grain material. 4,286,058, Cl. 435-99.000.
- Wenger Manufacturing: See—  
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- Wenzel, Wolfgang: See—  
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- West, Gerd: See—  
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- Western Electric Co., Inc.: See—  
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- Garrett, Robert W., Sr.; Horning, Donald E.; and Merkel, Dennis L., 4,285,433, Cl. 209-573.000.
- Jablonowski, Donald P., 4,286,293, Cl. 358-199.000.
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- Caputo, William R., 4,286,222, Cl. 328-155.000.
- Downs, Robert E., 4,285,771, Cl. 176-76.000.
- Isenberg, Arnold O., 4,285,790, Cl. 204-195.00R.
- Johnson, Frederick O., 4,286,315, Cl. 363-87.000.
- Montgomery, Lon W., 4,286,183, Cl. 310-62.000.
- Mrenna, Stephen A.; Maier, Alfred E.; and Thomas, Glenn R., 4,286,242, Cl. 335-160.000.
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- Spreadbury, Robert J.; and Banic, James M., Jr., 4,286,207, Cl. 323-263.000.
- Williams, Charles F., 4,286,287, Cl. 358-100.000.
- Wise, Carl D.; and Heazel, Vincent M., Jr., 4,286,228, Cl. 331-49.000.
- Yoldas, Bulent E., 4,286,024, Cl. 428-446.000.
- Young, Robert G.; and Skwirut, Henry, 4,286,190, Cl. 313-493.000.
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- Whirlpool Corporation: See—  
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- White Farm Equipment Company: See—  
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- White, Harvey C. Rotary fluid pressure device. 4,285,643, Cl. 418-61.00B.
- White, Lionel S., Jr.: See—  
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- White, William J.: See—  
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- Whitear, Brian R. D.: See—  
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- Whitmore, Charles H.: See—  
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- Wickman, David L., to United States of America, Navy. Inflatable blade bag. 4,285,431, Cl. 206-522.000.
- Wilber, James A.; and Christopher, Todd J., to RCA Corporation. VFO having plural feedback loops. 4,286,235, Cl. 331-116.00R.
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- Wilkinson, Walter J.; and Serlin, Irving, to Monsanto Company. Electrographic recording material, method of making and using. 4,285,989, Cl. 427-14.100.
- Wilkuski, James E., to Johns-Manville Corporation. Method and apparatus for feeding batch material. 4,285,713, Cl. 65-27.000.
- Willeitner, Eberhard; Hirschmann, Wilhelm; Maier, Erwin; Lammell, Georg; and Hass, Jürgen, to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft. Arrangement for the retaining of tubes. 4,285,611, Cl. 403-374.000.
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- Williams, Charles F., to Westinghouse Electric Corp. Irradiation specimen installation apparatus with television inspection. 4,286,287, Cl. 358-100.000.
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- Willis, Gordon A., to Borg-Warner Corporation. Valve operator. 4,285,493, Cl. 251-14.000.
- Willis, John H. Method and apparatus for the production of glass fibres. 4,285,711, Cl. 65-1.000.
- Willis, Monte B., to Leather Life, Inc. Saddle oil. 4,285,688, Cl. 8-94.10R.
- Wilson, Jonathan H., to Flinders Surfing Co. Pty. Ltd. Improved leg rope. 4,285,083, Cl. 9-310.00E.
- Wilson Research & Development, Inc.: See—  
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- Winzelberg, Abraham. Apparatus for use in forming a finish on a jewelry band. 4,285,505, Cl. 269-50.000.
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- Woodring, Richard H.; Houtman, Paul K.; Kowalski, Thomas A.; and Whitmore, Charles H., to Parker-Hannifin Corporation. Electronic control for variable displacement pumps. 4,285,639, Cl. 417-218.000.
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- Wortman, Donald E.: See—  
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- Wright, David M.: See—  
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- Wright, Douglas C.: See—  
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- Wulff, Karl; Stahler, Fritz; and Gruber, Wolfgang, to Boehringer Mannheim GmbH. Method and reagent for the determination of creatine kinase. 4,286,057, Cl. 435-8.000.
- Wulms, Christian J. G. H.: See—  
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- Wunder, William G., to Ex-Cell-O Corporation. Apparatus and method for tie bar nut drive system. 4,285,384, Cl. 164-1.000.
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- Yamashita, Kiyoshi: See—  
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- Yamashita, Nobuo; and Maeda, Miwako, to Olympus Optical Co., Ltd. Photo eyepiece for endoscopes. 4,285,578, Cl. 350-410.000.
- Yamazaki, Masaru, to Copal Company Limited. Light measuring apparatus. 4,285,582, Cl. 354-23.00D.
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- Kirkland, Joseph J.; and Yau, Wallace W., 4,285,810, Cl. 209-155.000.
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- Yen, Shiao-Ping S.; Rembaum, Alan; and Landel, Robert F., to California Institute of Technology. Functional magnetic microspheres. 4,285,819, Cl. 210-679.000.
- Yezeck, Milton; and Adams, Joan M., to General Foods Corporation. Process for preparing carbonated liquids. 4,285,977, Cl. 426-67.000.
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- Yoldas, Bulent E., to Westinghouse Electric Corp. Transparent high temperature resistant aluminum silicon oxide monolithic member or coating. 4,286,024, Cl. 428-446.000.
- Yoneda, Kenji; Yamamoto, Tadahi; and Sugihara, Kunihiko, to Nissan Motor Company, Ltd. Exhaust gas recirculation system having flow control valve combined with supersonic nozzle. 4,285,318, Cl. 123-568.000.
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- Nishiyama, Hissai, 4,285,371, Cl. 139-97.000.
- Yoshida, Koichi; Hayano, Fusakazu; and Ii, Yoshiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyaryl ether sulfone semipermeable membrane and process for producing same. 4,286,015, Cl. 428-305.000.
- Yoshida, Masatoshi; and Hirai, Minoru, to Toho Beslon Co., Ltd. Process for production of activated carbon fibers. 4,285,831, Cl. 252-423.000.
- Yoshida, Mitsuo; Nakamura, Akira; Ohmure, Keiichi; and Ono, Atsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Method of producing an electrode. 4,285,798, Cl. 204-290.00F.
- Yoshikawa, Hiroshi, to Nippon Kayaku Kabushiki Kaisha. Process for producing 2-chloro-6-nitrobenzonitrile. 4,285,883, Cl. 260-465.00G.
- Yotsutsuji, Akira; Ueda, Seiichi; and Uemura, Kiyoshi, to Osaka City. Valve nozzle of injection molding machine. 4,285,661, Cl. 425-563.000.
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- Young, Morris S.; and Larbaletstier, David C., to Aircor, Inc. Wrapped tantalum diffusion barrier. 4,285,740, Cl. 148-11.50Q.
- Young, Robert G.; and Skwirut, Henry, to Westinghouse Electric Corp. Compact fluorescent lamp having a partitioned envelope. 4,286,190, Cl. 313-493.000.
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- Zahnradfabrik Friedrichshafen, AG.: See—  
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- Zakaria, Moneeb; and Slovinsky, Manuel, to Nalco Chemical Company. Water-based anti-bleemish paint. 4,285,897, Cl. 264-130.000.
- Zalesky, Edward A.; and Smyshlyayev, Vladimir V. Method and device for discriminating difference frequency of two pulse trains. 4,286,220, Cl. 328-133.000.
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- Zandmer, Herbert M., executor: See—  
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- Zandmer, Solis M.; deceased; and by Zandmer, Herbert M., executor. Device for temporarily closing duct-formers in well completion apparatus. 4,285,398, Cl. 166-100.000.
- Zapl, Otto W., to Knoll International, Inc. Furniture construction. 4,285,544, Cl. 297-440.000.
- Zeidler, Georg: See—  
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- Zerrer, Gerhard; and Beier, Roland, to Andreas Stihl. Apparatus for trimming plants. 4,285,127, Cl. 30-276.000.
- Zhavoronkin, Vladimir G.: See—  
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- Ziegler, George: See—  
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- Zimmerman, Michael T.: See—  
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- Zimmerman, Robert L.: See—  
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- Zins, Howard M.; and Morris, Edward L., Jr., to Angelica Corporation. Long wetting time woven fabric. 4,286,012, Cl. 428-252.000.
- Ziskind, Stephen A., to Foxy Products, Inc. Ventable steam cover for culinary vessels. 4,285,441, Cl. 220-231.000.
- Zitser, Vitaly A.; Bachelis, Leonid V.; Morozov, Jury E.; Melnikov, Alexandr V.; Ivanov, Vladimir A.; Dreishev, Igor I.; Shartner, Edward G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A. Apparatus for preparation of fluidized sand. 4,285,599, Cl. 366-17.000.
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- Kohn, Gustave K.; and Baer, Ted A., 4,285,879, Cl. 260-453.700.
- Zoleski, Benjamin H.: See—  
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- Zukauskys, Keith E., to Eaton Corporation. Cam actuated butterfly valve. 4,285,499, Cl. 251-229.000.
- Zuzanov, Georgy I.; Mironkin, Isosif S.; Tsarik, Jury N.; Alexandrova, Natalia A.; Kamensky, Sergei N.; and Nevedomsky, Evgeny N. Apparatus for purifying air. 4,285,704, Cl. 55-274.000.
- 2500 Corporation, The: See—  
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# LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF AUGUST, 1981

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Amerock Corporation: See—  
Dargene, Carl J., Re. 30,717, Cl. 16-135.000.  
Carter, Russell P., Jr.: See—  
Heiss, Herbert L.; Yeater, Robert P.; and Carter, Russell P., Jr., Re. 30,721, Cl. 260-45.8NZ.  
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Greischar, Richard H.: See—  
Klayum, Milton A.; and Greischar, Richard H., Re. 30,724, Cl. 361-124.000.  
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Heiss, Herbert L.; Yeater, Robert P.; and Carter, Russell P., Jr., to Mobay Chemical Corporation. Stabilized thermoplastic polyesterurethanes. Re. 30,721, Cl. 260-45.8NZ.  
Klayum, Milton A.; and Greischar, Richard H., to Reliable Electric Company. Line protector having arrester and fail-safe circuit bypassing the arrester. Re. 30,724, Cl. 361-124.000.  
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Mobay Chemical Corporation: See—  
Heiss, Herbert L.; Yeater, Robert P.; and Carter, Russell P., Jr., Re. 30,721, Cl. 260-45.8NZ.  
Olds, Dale F.; Allan, Arnold M.; and Warren, Charles H., to Patent Technology, Inc. Topping for frozen desserts and method of manufacture. Re. 30,722, Cl. 426-613.000.  
Patent Technology, Inc.: See—  
Olds, Dale F.; Allan, Arnold M.; and Warren, Charles H., Re. 30,722, Cl. 426-613.000.  
Reliable Electric Company: See—  
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Heinfling, Martin, to Englishtown Sportswear, Ltd. Pocket for jeans or the like. 260,321, 8-25-81, Cl. D2-28.000.  
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- Martinelli, Lawrence R., to United States Gypsum Company. Decorative window panel for doors. 260,439, 8-25-81, Cl. D25-72.000.
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- Meisner, Edward H., to Scovill Inc. Door handle and lock unit. 260,361, 8-25-81, Cl. D8-301.000.
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- Meisner, Edward H., 260,361, Cl. D8-301.000.
- Shun, So. Food chopper. 260,351, 8-25-81, Cl. D7-155.000.
- Siegel, Milton L., to Amba Marketing Systems, Inc. Handbag. 260,326, 8-25-81, Cl. D3-48.000.
- Siekman, August E. Archery sight. 260,417, 8-25-81, Cl. D22-5.000.
- Smith, Morley L., to T. S. Simms & Co. Limited. Tool handle. 260,359, 8-25-81, Cl. D8-107.000.
- Sollenberger, Edward: See—  
Kane, Earl B.; and Sollenberger, Edward, 260,375, Cl. D10-40.000.
- Soules, Thomas F.: See—  
Schindler, Donald R.; and Soules, Thomas F., 260,398, Cl. D16-42.000.
- Sparkomatic Corporation: See—  
Castagna, John F.; and Emmerling, Ronald A., 260,389, Cl. D14-10.000.
- Springer, Karl. Wall mounted shelf unit. 260,336, 8-25-81, Cl. D6-134.000.
- Stanley Electric Co., Ltd.: See—  
Ariga, Kazuo; and Akanuma, Youichiro, 260,441, Cl. D26-3.000.
- Starwin Industries, Inc.: See—  
Erwin, John R.; Staub, Anthony F.; and Staub, Norman T., 260,415, Cl. D21-212.000.
- Staub, Anthony F.: See—  
Erwin, John R.; Staub, Anthony F.; and Staub, Norman T., 260,415, Cl. D21-212.000.
- Staub, Norman T.: See—  
Erwin, John R.; Staub, Anthony F.; and Staub, Norman T., 260,415, Cl. D21-212.000.
- Sunstar, Inc.: See—  
Neely, Gerald C.; and Maekawa, Kiyoshi, 260,328, Cl. D4-25.000.
- T. S. Simms & Co. Limited: See—  
Smith, Morley L., 260,359, Cl. D8-107.000.
- Tanaka, Koichi; Yamamoto, Toshio; and Konuki, Fumio, to Kabushiki Kaisha Universal. Pinball machine. 260,409, 8-25-81, Cl. D21-10.000.
- Tarrant, Kent; and Fossella, Gregory, to Tarrant, Kent. Calendar base. 260,405, 8-25-81, Cl. D19-20.000.
- TDK Electronics Co., Ltd.: See—  
Yoshizawa, Keiichi, 260,339, Cl. D6-186.000.
- Texas Novachem Corporation: See—  
Redman, Samuel A., 260,353, Cl. D8-25.000.
- Thermalloy Incorporated: See—  
Kennington, David H., 260,388, Cl. D13-23.000.
- Thermoplastics Incorporated: See—  
Munoz, Donald L., 260,385, Cl. D12-156.000.
- Thomas, Andrew Y. Chair. 260,335, 8-25-81, Cl. D6-70.000.
- Thomas, Wesley L. Telephone. 260,391, 8-25-81, Cl. D14-53.000.
- Thompson, Dennis M., to San Martin Winery. Wine bottle display bin. 260,337, 8-25-81, Cl. D6-153.000.
- Tkac, Frank S. Combined alarm clock face and hands. 260,379, 8-25-81, Cl. D10-125.000.
- Tomy Kogyo Co., Inc.: See—  
Hirano, Toru, 260,412, Cl. D21-143.000.
- Trombly, Edgar F., to Dart Industries Inc. Tumbler. 260,344, 8-25-81, Cl. D7-15.000.
- Tuggle, Lloyd H., to Beaird-Poulan Division of Emerson Electric. Power handle for line trimmer and the like. 260,394, 8-25-81, Cl. D15-1.000.
- Umanoff, Arthur, to Howard Miller Clock Company. Calendar clock. 260,374, 8-25-81, Cl. D10-3.000.
- United States Gypsum Company: See—  
Martinelli, Lawrence R., 260,438, Cl. D25-72.000.
- Martinelli, Lawrence R., 260,439, Cl. D25-72.000.
- Van Horn, Robert L. Chair. 260,334, 8-25-81, Cl. D6-65.000.
- Watkins, Susan J.: See—  
McGill, Lee E.; and Watkins, Susan J., 260,427, Cl. D24-8.000.
- Watkins, Thomas J.: See—  
Dunshee, Wayne K.; and Watkins, Thomas J., 260,368, Cl. D9-415.000.
- Williams, Hugh M. Trailer jack foot. 260,382, 8-25-81, Cl. D12-55.000.
- Williams, James W. Umbrella. 260,322, 8-25-81, Cl. D3-5.000.
- Wilson, Dale J.; and Birney, William F. Roofing material cutter. 260,358, 8-25-81, Cl. D8-98.000.
- Wood, Arthur A., to Replicap Products, Inc. Captive sanitary cap for a beverage tank valve. 260,373, 8-25-81, Cl. D9-446.000.

- Yamamoto, Toshio: See—  
Tanaka, Koichi; Yamamoto, Toshio; and Konuki, Fumio, 260,409, Cl. D21-10.000.
- Yoshizawa, Keiichi, to TDK Electronics Co., Ltd. Storage unit. 260,339, 8-25-81, Cl. D6-186.000.
- Zappia, Maria I.: See—  
Rabinowitz, Harold; and Zappia, Maria I., 260,327, Cl. D3-73.000.
- Zatorski, John: See—  
Jurusz, Jan; and Zatorski, John, 260,384, Cl. D12-154.000.
- Zurn Industries, Inc.: See—  
Maciukiewicz, Leon J., 260,425, Cl. D23-71.000.

## LIST OF PLANT PATENTEES

- Stirnadel, Alfred. Euphorbia plant. 4,761, 8-25-81, Cl. 68.000.
- Wells, Verlie W., Jr. Miniature rose plant. 4,760, 8-25-81, Cl. 7.000.



## CLASSIFICATION OF PATENTS

ISSUED AUGUST 25, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

46	CLASS 2	623.1	4,285,121	CLASS 53	49.4	4,285,230	CLASS 110	CLASS 131			
202	4,285,067	764	4,285,122	48	4,285,185	63	4,285,231	276	4,285,349		
314	4,285,068		4,285,123	64	4,285,186	86	4,285,232		CLASS 132		
	4,285,069	CLASS 30		282	4,285,187	116	4,285,233	9	4,285,350		
		34.1	4,285,124	420	4,285,188	146	4,285,235		CLASS 133		
1.911	4,285,070	53	4,285,125	CLASS 55	151	4,285,236	85	4,285,284	CLASS 134		
1.912	4,285,071	180	4,285,126	17	4,285,701	300	4,285,237	1 R	4,285,351		
13	4,285,072	276	4,285,127	33	4,285,702	346	4,285,238		CLASS 135		
	4,285,073		4,285,128	228	4,285,703	434	4,285,239	79 FF	4,285,285		
		392	4,285,129	274	4,285,704	462	4,285,240	79 R	4,285,286		
227	4,285,074	CLASS 33		277	4,285,705	572	4,285,241		4,285,287		
252 A	4,285,075	152 A	4,285,130	343	4,285,706	625	4,285,242	98	4,285,288		
341	4,285,076	134 R	4,285,131	396	4,285,707	720	4,285,243	125	4,285,289		
462	4,285,077	172 R	4,285,132	CLASS 56		861	4,285,244	184	4,285,290		
661	4,285,078	179.5 R	4,285,133	27.5	4,285,189	861.03	4,285,245	262.1	4,285,291		
		188	4,285,134	341	4,285,190	862.65	4,285,246	281	4,285,292		
84	4,285,079	189	4,285,135	CLASS 57			4,285,247	311	4,285,293		
186 R	4,285,080	203.18	4,285,136	58.34	4,285,191	CLASS 74	4,285,248		4,285,294		
434	4,285,081	246	4,285,137	58.89	4,285,192	5 F	4,285,249	60	4,285,295		
		264	4,285,138	CLASS 58		89.15	4,285,249	630	4,285,296		
		407	4,285,139	CLASS 60		473 P	4,285,250	657	4,285,297		
94.1 R	4,285,688	CLASS 34		39.06	4,285,193	866	4,285,251		CLASS 118		
94.26	4,285,689	15	4,285,140	261	4,285,194	CLASS 75		2	4,285,298		
186	4,285,690	21	4,285,141	450	4,285,195	84.4	4,285,724	17	4,285,299		
455	4,285,691	57 E	4,285,142	499	4,285,196	128 A	4,285,725	58	4,285,300		
499	4,285,692	93	4,285,143	525	4,285,197				CLASS 122		
521	4,285,693	CLASS 36		347 A	4,285,198	84	4,285,253	382	4,285,302		
532	4,285,694	44	4,285,144	550	4,285,199	CLASS 81			CLASS 123		
630	4,285,695	CLASS 38		607	4,285,200	58.1	4,285,254	51 BA	4,285,303		
634	4,285,696	77.7	4,285,145	641 A	4,285,201	451	4,285,255	52 B	4,285,304		
310 E	4,285,082	CLASS 40		650	4,285,202	CLASS 83		146.5 A	4,285,305		
	4,285,083	21 C	4,285,146	652	4,285,203	100	4,285,256	179 BG	4,285,306		
73	4,285,084	109	4,285,147	CLASS 62		167	4,285,257	187.5 R	4,285,307		
		115	4,285,148	28	4,285,708	410	4,285,258	195 C	4,285,308		
16.4	4,285,085	124.5	4,285,149	36	4,285,709	552	4,285,259		4,285,309		
		312	4,285,150	40	4,285,710	835	4,285,260	308	4,285,310		
CLASS 15		455	4,285,151	81	4,285,711	CLASS 84		323	4,285,311		
119 A	4,285,086	CLASS 42		131	4,285,208	258	4,285,261	378	4,285,312		
159 R	4,285,087	99	4,285,152	238.3	4,285,209	313	4,285,262	389	4,285,313		
193	4,285,088	84	4,285,153	325	4,285,210	382	4,285,263	422	4,285,314		
250.02	4,285,089	CLASS 43		335	4,285,211			425	4,285,315		
256.51	4,285,090	17	4,285,154	344	4,285,212	CLASS 91		514	4,285,316		
310	4,285,091	CLASS 46		3	4,285,213	375 A	4,285,266	568	4,285,317		
378	4,285,092	1 R	4,285,155	15 B	4,285,214	434	4,285,267	585	4,285,318		
		14	4,285,156	23.5	4,285,215	517	4,285,268	593	4,285,319		
17	4,285,093	202	4,285,157	CLASS 65		33 R	4,285,269	599	4,285,321		
52	4,285,094	227	4,285,158	1	4,285,712	115 SB	4,285,270	630	4,285,322		
94 R	4,285,095	262	4,285,159	2	4,285,713			638	4,285,323		
114 R	4,285,096	CLASS 47		27	4,285,714	CLASS 99			CLASS 125		
121	4,285,097	1.5	4,285,160	40	4,285,715	348	4,285,271	11 R	4,285,324		
135	Re.30,717	9	4,285,161	106	4,285,716	391	4,285,272		CLASS 126		
145	4,285,098	29	4,285,162	114	4,285,716				2	4,285,743	
		45	4,285,163	134	4,285,717	CLASS 100				CLASS 150	
53	4,285,099	69	4,285,164	192	4,285,718	35	4,285,273	112	4,285,325	3	4,285,376
CLASS 17		CLASS 48		205	4,285,216	CLASS 101		121	4,285,326		CLASS 152
161.1	4,285,100	180 C	4,285,700	CLASS 66		128.21	4,285,274	143	4,285,327	362 R	4,285,381
		CLASS 49		CLASS 68		407 BP	4,285,275	225	4,285,328	367	4,285,382
230 B	4,285,698	30	4,285,165	5 D	4,285,218	415.1	Re.30,718	247	4,285,329		CLASS 156
230 LC	4,285,699	63	4,285,166	19.2	4,285,219	451	4,285,276	425	4,285,330	59	4,285,744
230 PC	4,285,697	CLASS 51		CLASS 70		CLASS 102		428	4,285,331	64	4,285,745
		168	4,285,167	276	4,285,220	487	4,285,277	429	4,285,332	79	4,285,746
3 L	4,285,101	281 R	4,285,168	416	4,285,221			433	4,285,333	164	4,285,747
17 R	4,285,102	288	4,285,169	CLASS 71		96	4,285,278	437	4,285,334	167	4,285,748
153	4,285,104	337	4,285,171	13	4,285,719	CLASS 105		438	4,285,335	180	4,285,749
201 C	4,285,105	CLASS 52		88	4,285,720	118	4,285,279	447		218	4,285,750
		10	4,285,172	92	4,285,721	168	4,285,280			242	4,285,751
25.15	4,285,106	73	4,285,173	103	4,285,722	CLASS 106		78	4,285,336	250	4,285,752
129.5	4,285,107	81	4,285,174	CLASS 72		14.05	4,285,726	133	4,285,337	251	4,285,753
156.8 B	4,285,108	90	4,285,175	28	4,285,222	22	4,285,727	155	4,285,338	264	4,285,754
157 R	4,285,109	93	4,285,176	42	4,285,223	39.7	4,285,728	204.23	4,285,339	294	4,285,755
232	4,285,110	179	4,285,177	36	4,285,224	47 Q	4,285,729	205.24	4,285,340	334	4,285,756
263	4,285,111	187	4,285,178	114	4,285,225	47 R	4,285,730	214 R	4,285,341	350	4,285,757
407	4,285,112	309.12	4,285,179	208	4,285,226	48	4,285,731		4,285,342	498	4,285,758
413	4,285,113	396	4,285,180	240	4,285,227	57	4,285,732	318	4,285,343	584	4,285,759
451	4,285,114	404	4,285,181	402	4,285,228	98	4,285,733	419 PG	4,285,344	617 H	4,285,760
460	4,285,115	478	4,285,182	CLASS 73		273 R	4,285,734		4,285,345	628	4,285,761
571	4,285,116	514	4,285,183	40	4,285,229	CLASS 108		30 H	4,285,346	643	4,285,762
	4,285,117	741	4,285,184	CLASS 74		147	4,285,281		4,285,347		4,285,763
593	4,285,118			CLASS 75							
596	4,285,119										
599	4,285,120										



## CLASSIFICATION OF PATENTS

CLASS 162	67 D 4,286,132	270 4,285,442	492 B 4,286,166	180 4,285,899	89 4,286,186
132 4,285,764	83 J 4,286,127	CLASS 221	510 4,286,167	182 4,285,900	91 4,286,187
161 4,285,765	148 R 4,286,128	155 4,285,443	515 4,286,169	225 4,285,901	162 4,286,188
199 4,285,766	159 B 4,286,129	211 4,285,444	520 4,286,170	229 4,285,902	
216 4,285,767	303 4,286,130	CLASS 222	551 4,286,171	310 4,285,903	
301 4,285,768	340 4,286,131	49 4,285,445	CLASS 251	322 4,285,904	
CLASS 164	CLASS 201	70 4,285,446	9 4,285,492	184 4,285,555	9 4,285,554
1 4,285,384	39 4,285,772	200 4,285,447	14 4,285,493	244 4,285,556	184 4,285,555
9 4,285,385	CLASS 202	613 4,285,448	63 4,285,494	246 4,285,557	244 4,285,556
444 4,285,388	100 4,285,773	CLASS 224	63.5 4,285,495	278 4,285,558	278 4,285,558
463 4,285,386	154 4,285,774	164 4,285,450	130 4,285,496	298 4,285,559	331 4,285,560
603 4,285,387	160 4,285,775	CLASS 225	138 4,285,497	CLASS 313	
CLASS 165	187 4,285,776	2 4,285,451	214 4,285,498	402 4,286,189	493 4,286,190
1 4,285,389	CLASS 203	CLASS 226	229 4,285,499	CLASS 315	
2 4,285,390	32 4,285,777	7 4,285,452	367 4,285,500	3.6 4,286,191	3.6 4,286,191
30 4,285,391	48 4,285,778	142 4,285,453	CLASS 252	5.41 4,286,192	5.41 4,286,192
30 4,285,392	CLASS 204	174 4,285,454	46.4 4,285,822	175 4,286,193	175 4,286,193
76 4,285,393	9 4,285,779	188 4,285,455	56 D 4,285,824	209 R 4,286,194	209 R 4,286,194
104.21 4,285,394	15 4,285,780	CLASS 227	62.54 4,285,825	224 4,286,195	224 4,286,195
110 4,285,396	32 R 4,285,781	147 4,285,456	117 4,285,826	307 4,286,196	307 4,286,196
162 4,285,396	35 N 4,285,783	CLASS 228	182.1 4,285,828	CLASS 318	
163 4,285,397	39 4,285,784	36 4,285,457	299.63 4,285,829	38 4,286,197	38 4,286,197
CLASS 166	43 Z 4,285,802	49 B 4,285,458	301.1 W 4,285,830	138 4,286,198	138 4,286,198
100 4,285,398	64 R 4,285,785	119 4,285,459	424 4,285,832	327 4,286,199	327 4,286,199
113 4,285,399	98 4,285,786	212 4,285,460	428 4,285,833	443 4,286,200	443 4,286,200
179 4,285,400	147 4,285,787	CLASS 229	429 C 4,285,834	640 4,286,201	640 4,286,201
303 4,285,401	159.16 4,285,788	44 R 4,285,461	432 4,285,835	696 4,286,202	696 4,286,202
311 4,285,402	181 C 4,285,789	CLASS 233	438 4,285,836	801 4,286,203	801 4,286,203
CLASS 169	195 M 4,285,791	20 A 4,285,462	466 J 4,285,837	CLASS 320	
28 4,285,403	195 R 4,285,792	26 4,285,463	469 4,285,838	31 4,286,204	31 4,286,204
CLASS 172	253 4,285,793	CLASS 235	519 4,285,839	CLASS 322	
708 4,285,404	260 4,285,794	101 4,286,144	546 4,285,840	8 4,286,205	8 4,286,205
CLASS 173	266 4,285,795	454 4,286,145	559 4,285,841	CLASS 323	
162 R 4,285,405	290 F 4,285,798	456 4,286,146	607 4,285,842	12 4,286,206	12 4,286,206
CLASS 174	290 R 4,285,799	CLASS 236	394 4,285,501	153 4,286,207	153 4,286,207
15 BH 4,286,111	298 4,285,800	12 A 4,285,465	398 4,285,502	235 B 4,286,207	235 B 4,286,207
CLASS 175	299 R 4,285,801	13 4,285,466	CLASS 260	CLASS 279	
195 4,285,406	299 R 4,285,801	86 4,285,467	17.3 4,285,843	61 R 4,286,208	61 R 4,286,208
323 4,285,407	292 4,285,427	CLASS 239	23 EP 4,285,844	71 CP 4,286,209	71 CP 4,286,209
325 4,285,408	354 4,285,428	55 4,285,468	28 R 4,285,845	72.5 4,286,210	72.5 4,286,210
336 4,285,409	387 4,285,429	184 4,285,469	29.2 EP 4,285,846	117 R 4,286,211	117 R 4,286,211
394 4,285,410	471 4,285,430	284 A 4,285,470	29.2 EP 4,285,847	125 4,286,212	125 4,286,212
CLASS 176	522 4,285,431	289 4,285,432	29.6 NR 4,285,848	127 4,286,213	127 4,286,213
30 4,285,769	591 4,285,432	533.4 4,285,472	29.6 NR 4,285,849	142 4,286,214	142 4,286,214
65 4,285,770	48 AA 4,285,803	CLASS 241	29.6 RB 4,285,850	158 R 4,286,215	158 R 4,286,215
76 4,285,771	48 R 4,285,804	37.5 4,285,473	29.6 RB 4,285,851	237 4,286,216	237 4,286,216
CLASS 177	113 4,285,805	CLASS 242	37 EP 4,285,853	347 4,286,217	347 4,286,217
179 4,285,412	120 4,285,806	55.2 4,285,474	37 N 4,285,854	350 4,286,218	350 4,286,218
210 C 4,285,413	216 R 4,285,807	56.2 4,285,475	45.75 4,285,855	CLASS 328	
CLASS 178	17 4,285,808	84.2 A 4,285,476	45.75 S 4,285,856	14 4,286,219	14 4,286,219
23 R 4,286,112	155 4,285,809	96 4,285,477	45.75 NZ 4,285,857	133 4,286,220	133 4,286,220
CLASS 179	573 4,285,810	107 4,285,478	112.5 R 4,285,858	140 4,286,221	140 4,286,221
1 CN 4,286,114	625 4,285,811	107.4 A 4,285,479	123.5 4,285,859	155 4,286,222	155 4,286,222
1 MN 4,286,113	107 4,285,812	154 4,285,861	123.5 4,285,860	CLASS 329	
1 P 4,286,116	162 4,285,813	176 4,285,863	123.5 4,285,861	50 4,286,223	50 4,286,223
1 SD 4,286,115	169 4,285,814	191 4,285,864	123.5 4,285,862	107 4,286,224	107 4,286,224
5 R 4,286,117	177 4,285,815	239.3 P 4,285,865	123.5 4,285,863	CLASS 330	
18 AD 4,286,118	179 4,285,816	338 4,285,866	123.5 4,285,864	10 4,286,225	10 4,286,225
18 FC 4,286,119	207 4,285,817	343.6 4,285,867	123.5 4,285,865	254 4,286,226	254 4,286,226
90 K 4,286,120	210 4,285,818	346.7 4,285,868	123.5 4,285,866	255 4,286,227	255 4,286,227
98 4,286,121	216 4,285,819	348.12 4,285,869	123.5 4,285,867	CLASS 331	
111 E 4,286,122	217 4,285,820	348.45 4,285,870	123.5 4,285,868	49 4,286,228	49 4,286,228
170 T 4,286,123	218 4,285,821	348.7 4,285,871	123.5 4,285,869	79 4,286,229	79 4,286,229
179 4,286,124	219 4,285,822	348.87 4,285,872	123.5 4,285,870	94.5 H 4,286,230	94.5 H 4,286,230
CLASS 180	220 4,285,823	348.87 4,285,873	123.5 4,285,871	111 4,286,231	111 4,286,231
126 4,285,414	221 4,285,824	348.87 4,285,874	123.5 4,285,872	113 R 4,286,232	113 R 4,286,232
CLASS 181	222 4,285,825	348.87 4,285,875	123.5 4,285,873	116 R 4,286,233	116 R 4,286,233
120 4,285,415	223 4,285,826	348.87 4,285,876	123.5 4,285,874	CLASS 332	
9 R 4,285,416	224 4,285,827	348.87 4,285,877	123.5 4,285,875	10 4,286,236	10 4,286,236
52 R 4,285,417	225 4,285,828	348.87 4,285,878	123.5 4,285,876	19 4,286,237	19 4,286,237
CLASS 182	226 4,285,829	348.87 4,285,879	348.87 4,285,877	CLASS 333	
75.3 4,285,418	227 4,285,830	348.87 4,285,880	348.87 4,285,878	206 4,286,238	206 4,286,238
109 4,285,419	228 4,285,831	348.87 4,285,881	348.87 4,285,879	245 4,286,239	245 4,286,239
CLASS 192	229 4,285,832	348.87 4,285,882	348.87 4,285,880	252 4,286,240	252 4,286,240
11 4,285,420	230 4,285,833	348.87 4,285,883	348.87 4,285,881	CLASS 338	
84 C 4,285,421	231 4,285,834	348.87 4,285,884	348.87 4,285,882	151 4,286,241	151 4,286,241
105 B 4,285,422	232 4,285,835	348.87 4,285,885	348.87 4,285,883	160 4,286,242	160 4,286,242
106.2 4,285,423	233 4,285,836	348.87 4,285,886	348.87 4,285,884	193 4,286,243	193 4,286,243
111 B 4,285,424	234 4,285,837	348.87 4,285,887	348.87 4,285,885	230 4,286,244	230 4,286,244
CLASS 193	235 4,285,838	348.87 4,285,888	348.87 4,285,886	286 4,286,245	286 4,286,245
27 4,285,425	236 4,285,839	348.87 4,285,889	348.87 4,285,887	CLASS 337	
CLASS 194	237 4,285,840	348.87 4,285,890	348.87 4,285,888	94 4,286,246	94 4,286,246
4 C 4,285,426	238 4,285,841	348.87 4,285,891	348.87 4,285,889	402 4,286,247	402 4,286,247
CLASS 200	239 4,285,842	348.87 4,285,892	348.87 4,285,890	403 4,286,248	403 4,286,248
6 B 4,286,125	240 4,285,843	348.87 4,285,893	348.87 4,285,891	275 4,286,249	275 4,286,249
11 C 4,286,126	241 4,285,844	348.87 4,285,894	348.87 4,285,892	306 4,286,250	306 4,286,250
		348.87 4,285,895	348.87 4,285,893	309 4,286,251	309 4,286,251
		348.87 4,285,896	348.87 4,285,894		
		348.87 4,285,897	348.87 4,285,895		
		348.87 4,285,898	348.87 4,285,896		

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CLASS 339	92 4,286,286	203 4,285,614	243 4,285,937	95 4,286,003	CLASS 455
14 R 4,285,561	100 4,286,287	211 4,285,615	244 4,285,938	4,286,004	89 4,286,335
33 4,285,562	114 4,286,288	215 4,285,616	246 4,285,939	4,286,005	117 4,286,336
45 M 4,285,563	125 4,286,289	CLASS 406	4,285,940	4,286,006	CLASS 474
89 C 4,285,564	128.5 4,286,290	171 4,285,617	4,285,941	4,286,007	19 4,285,675
176 MP 4,285,565	138 4,286,291	CLASS 407	4,285,942	4,286,008	135 4,285,676
	190 4,286,292	54 4,285,618	4,285,943	4,286,009	CLASS 493
	199 4,286,293	248.56 4,285,619	4,285,944	4,286,010	43 4,285,677
CLASS 340	27 SS 4,286,252	248.57 4,285,620	4,285,945	4,286,011	48 4,285,678
58 4,286,253	27 4,286,294	251 4,285,621	4,285,946	4,286,012	125 4,285,679
84 4,286,254	66 4,286,295	256 4,285,622	4,285,947	4,286,013	132 4,285,680
146.3 SY 4,286,255	77 4,286,296	263 4,285,623	4,285,948	4,286,014	194 4,285,681
347 DD 4,286,256	103 4,286,297	266 4,285,624	4,285,949	4,286,015	316 4,285,682
388 4,286,257	109 4,286,298	267 4,285,625	4,285,950	4,286,016	325 4,285,683
396 4,286,258	113 4,286,299	270 4,285,626	4,285,951	4,286,017	355 4,285,684
428.259 4,286,259	130.32 4,286,300	271 4,285,627	4,285,952	4,286,018	406 4,285,685
534 4,286,260	CLASS 360	272 4,285,628	4,285,953	4,286,019	439 4,285,686
565 4,286,261	27 4,286,294	273 4,285,629	4,285,954	4,286,020	444 4,285,687
694 4,286,262	66 4,286,295	274 4,285,630	4,285,955	4,286,021	CLASS 521
717 4,286,263	77 4,286,296	275 4,285,631	4,285,956	4,286,022	27 4,286,067
744 4,286,264	103 4,286,297	276 4,285,632	4,285,957	4,286,023	53 4,286,068
754 4,286,265	109 4,286,298	277 4,285,633	4,285,958	4,286,024	56 4,286,069
765 4,286,266	113 4,286,299	278 4,285,634	4,285,959	4,286,025	96 4,286,071
CLASS 343	130.32 4,286,300	279 4,285,635	4,285,960	4,286,026	118 4,286,072
100 LE 4,286,268	CLASS 361	280 4,285,636	4,285,961	4,286,027	126 4,286,073
100 SA 4,286,267	27 4,286,294	281 4,285,637	4,285,962	4,286,028	137 4,286,074
113 DE 4,286,270	66 4,286,295	282 4,285,638	4,285,963	4,286,029	CLASS 525
792.5 4,286,271	77 4,286,296	283 4,285,639	4,285,964	4,286,030	68 4,286,075



## CLASSIFICATION OF DESIGNS

D2—	28	260,320	196	260,341	306	260,362	147	260,383	18	260,404	71	260,425
		260,321	252	260,342	333	260,363	154	260,384	20	260,405		260,426
D3—	5	260,322	2	260,343	363	260,364	156	260,385	44	260,406	8	260,427
	35	260,323	15	260,344	378	260,365	158	260,386	57	260,407	29	260,428
	42	260,324	21	260,345	403	260,366	168	260,387	59	260,408	38	260,429
	44	260,325	47	260,346	413	260,367	23	260,388	10	260,409	41	260,430
	48	260,326	108	260,347	415	260,368	10	260,389	83	260,410	46	260,431
	73	260,327		260,348	436	260,369	33	260,390	111	260,411	52	260,432
D4—	25	260,328	137	260,349		260,370	53	260,391	143	260,412	54	260,433
D6—	27	260,329	154	260,350		260,372	69	260,392	163	260,413	55	260,434
	30	260,330	155	260,351	446	260,373	70	260,393	168	260,414	62	260,435
	57	260,331	194	260,352	452	260,371	1	260,394	212	260,415	30	260,436
	62	260,332	25	260,353	3	260,374	4	260,395	253	260,416	72	260,437
	63	260,333	61	260,354	40	260,375	10	260,396	5	260,417		260,438
	65	260,334	70	260,355	91	260,376	11	260,397	18	260,418		260,439
	70	260,335	91	260,356		260,377	42	260,398	22	260,419	77	260,440
	134	260,336	94	260,357	104	260,378		260,399	25	260,420		260,441
	153	260,337	98	260,358	125	260,379	44	260,400	40	260,421	18	260,442
	176	260,338	107	260,359	81	260,380	54	260,401	45	260,422	34	260,443
	186	260,339	301	260,360	121	260,381	58	260,402	53	260,423	22	260,444
	191	260,340		260,361	55	260,382	7	260,403	61	260,424		

## CLASSIFICATION OF PLANTS

P—	7	4,760	68	4,761			
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6 :	Re.30,723	4,285,261	4,286,067	4,286,144	4,285,293	4,285,848
01 :	4,285,163	4,285,303	4,286,112	4,286,210	4,285,302	4,285,995
	4,285,299	4,285,336	4,286,113	4,286,325	4,285,330	4,286,000
	4,285,335	4,285,358	4,286,145	4,285,809	4,285,342	4,286,084
	4,285,598	4,285,375	4,286,167	4,285,810	4,285,361	4,286,085
	4,285,737	4,285,377	4,286,185	4,286,064	4,285,368	4,286,086
	4,286,120	4,285,380	4,286,192	4,286,087	4,285,436	4,286,093
	4,286,289	4,285,389	4,286,194	4,285,481	4,285,438	4,286,142
04 :	4,285,320	4,285,401	4,286,201	4,285,067	4,285,467	4,286,235
	4,285,477	4,285,405	4,286,203	4,285,075	4,285,476	4,286,237
	4,285,504	4,285,409	4,286,206	4,285,152	4,285,492	4,286,282
	4,285,543	4,285,459	4,286,216	4,285,225	4,285,499	4,286,290
	4,285,552	4,285,478	4,286,229	4,285,298	4,285,516	4,285,235
	4,285,680	4,285,483	4,286,240	4,285,332	4,285,517	4,285,419
	4,285,826	4,285,489	4,286,244	4,285,347	4,285,561	4,285,445
	4,286,176	4,285,493	4,286,256	4,285,425	4,285,565	4,285,701
	4,286,241	4,285,514	4,286,265	4,285,463	4,285,681	4,285,355
	4,286,268	4,285,522	4,286,271	4,285,480	4,285,687	4,285,466
	4,286,298	4,285,532	4,286,311	4,285,503	4,285,700	4,285,608
05 :	4,285,071	4,285,550	4,286,316	4,285,604	4,285,767	4,285,947
	4,285,136	4,285,559	4,286,323	4,285,682	4,285,772	4,285,968
06 :	Re.30,722	4,285,563	4,286,328	4,285,683	4,285,803	4,286,058
	4,285,074	4,285,569	4,285,269	4,286,155	4,285,806	4,285,080
	4,285,076	4,285,576	4,285,354	4,286,223	4,285,844	4,285,210
	4,285,079	4,285,580	4,285,390	4,286,335	4,285,888	4,285,212
	4,285,082	4,285,587	4,285,443	4,285,221	4,285,897	4,285,214
	4,285,087	4,285,595	4,285,512	4,285,286	4,285,905	4,285,429
	4,285,091	4,285,616	4,285,591	4,285,509	4,285,908	4,285,488
	4,285,093	4,285,623	4,285,642	4,285,802	4,285,919	4,285,605
	4,285,099	4,285,662	4,285,713	4,285,886	4,285,973	4,285,835
	4,285,101	4,285,674	4,285,847	4,285,982	4,285,975	4,285,399
	4,285,126	4,285,710	4,286,160	4,285,985	4,285,976	4,285,408
	4,285,129	4,285,720	4,286,181	4,286,003	4,286,119	4,286,208
	4,285,131	4,285,749	4,286,234	4,286,020	4,286,131	4,286,225
	4,285,137	4,285,760	4,286,090	4,286,118	4,286,172	4,285,078
	4,285,146	4,285,769	4,285,108	4,286,293	4,286,193	4,285,175
	4,285,153	4,285,770	4,285,125	4,285,201	4,286,196	4,285,396
	4,285,155	4,285,800	4,285,145	4,285,278	4,286,254	4,285,515
	4,285,156	4,285,801	4,285,258	4,286,165	4,286,262	4,285,518
	4,285,157	4,285,819	4,285,263	Re.30,717	4,286,305	4,285,596
	4,285,158	4,285,822	4,285,276	Re.30,718	4,285,119	4,285,719
	4,285,159	4,285,866	4,285,340	Re.30,724	4,285,268	4,285,733
	4,285,171	4,285,877	4,285,387	4,285,094	4,285,296	4,285,751
	4,285,183	4,285,879	4,285,428	4,285,105	4,285,341	4,285,784
	4,285,184	4,285,889	4,285,431	4,285,117	4,285,424	4,285,916
	4,285,185	4,285,904	4,285,473	4,285,172	4,285,446	4,285,918
	4,285,196	4,285,917	4,285,695	4,285,173	4,285,491	4,285,978
	4,285,200	4,285,954	4,285,759	4,285,177	4,285,506	4,285,979
	4,285,239	4,285,987	4,285,867	4,285,213	4,285,524	4,286,168
	4,285,240	4,285,997	4,286,023	4,285,223	4,285,560	4,286,219
	4,285,248	4,286,002	4,286,050	4,285,228	4,285,643	4,286,228
	4,285,251	4,286,056	4,286,098	4,285,279	4,285,765	4,286,230
	4,285,253	4,286,059	4,286,136	4,285,291	4,285,814	4,286,260



## GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

25	4,286,319 4,286,327 Re. 30,720 4,285,073 4,285,081 4,285,086 4,285,106 4,285,121 4,285,262 4,285,321 4,285,386 4,285,464 4,285,521 4,285,528 4,285,555 4,285,572 4,285,577 4,285,581 4,285,583 4,285,584 4,285,589 4,285,610 4,285,668 4,285,671 4,285,686 4,285,714 4,285,846 4,285,930 4,285,936 4,285,989 4,285,999 4,286,026 4,286,030 4,286,031 4,286,048 4,286,069 4,286,083 4,286,135 4,286,175 4,286,247 4,286,278 4,286,308 4,286,331 4,285,077 4,285,096 4,285,124 4,285,134 4,285,233 4,285,238 4,285,256 4,285,270 4,285,282 4,285,304 4,285,306 4,285,362 4,285,378 4,285,384 4,285,416 4,285,434 4,285,470 4,285,474 4,285,479 4,285,527 4,285,618 4,285,624 4,285,639 4,285,649 4,285,669 4,285,695 4,285,896 4,285,951 4,285,981 4,286,074 4,286,090 4,286,100 4,286,102 4,286,103 4,286,104 4,286,106 4,286,133 4,286,170	4,286,195 4,286,255 4,286,257 4,286,274 4,286,287 4,285,110 4,285,114 4,285,176 4,285,187 4,285,427 4,285,485 4,285,538 4,285,542 4,285,573 4,285,609 4,285,774 4,285,998 4,286,006 4,286,011 4,286,013 4,286,022 4,286,066 4,286,286 4,286,296 4,286,297 4,286,309 4,286,322 4,285,439 4,285,936 4,285,128 4,285,365 4,285,379 4,285,520 4,285,539 4,285,620 4,285,698 4,285,974 4,286,012 4,286,263 4,286,330 4,285,328 4,285,403 4,285,912 4,285,337 4,285,363 4,286,010 4,286,250 Re. 30,719 4,285,070 4,285,084 4,285,130 4,285,193 4,285,204 4,285,277 4,285,283 4,285,290 4,285,325 4,285,338 4,285,349 4,285,369 4,285,370 4,285,523 4,285,531 4,285,536 4,285,602 4,285,637 4,285,664 4,285,689 4,285,735 4,285,740 4,285,747 4,285,762 4,285,765 4,285,794 4,285,813 4,285,851 4,285,852 4,285,868 4,285,873 4,285,903 4,285,906 4,285,915	4,285,922 4,285,931 4,285,938 4,285,944 4,285,963 4,285,983 4,285,986 4,285,990 4,286,027 4,286,046 4,286,068 4,286,075 4,286,141 4,286,174 4,286,190 4,286,212 4,286,215 4,286,222 4,286,226 4,286,233 4,286,283 4,286,285 4,286,304 4,286,324 4,286,336 4,285,402 4,285,422 4,285,697 4,285,104 4,285,135 4,285,151 4,285,167 4,285,174 4,285,203 4,285,205 4,285,206 4,285,216 4,285,234 4,285,239 4,285,264 4,285,324 4,285,329 4,285,337 4,285,654 4,285,658 4,285,666 4,285,670 4,285,673 4,285,676 4,285,712 4,285,717 4,285,718 4,285,721 4,285,728 4,285,734 4,285,730 4,285,756 4,285,792 4,285,793 4,285,824 4,285,830 4,285,957 4,285,958 4,286,016 4,286,081 4,286,091 4,286,105 4,286,109 4,286,111 4,286,272 4,285,182 4,285,356 4,285,839 4,285,850 4,285,858 4,285,920 4,285,923 4,285,925 4,285,967 4,285,980 4,286,009 4,286,033 4,286,038	4,286,061 4,286,108 4,286,132 4,286,179 4,286,182 4,286,188 4,286,200 4,286,205 4,286,214 4,286,245 4,286,275 4,286,295 4,286,329 4,285,255 4,285,327 4,285,646 4,285,748 4,286,019 4,286,251 4,286,302 4,285,095 4,285,122 4,285,132 4,285,139 4,285,143 4,285,194 4,285,195 4,285,344 4,285,352 4,285,382 4,285,388 4,285,418 4,285,421 4,285,475 4,285,507 4,285,536 4,285,554 4,285,600 4,285,632 4,285,633 4,285,651 4,285,654 4,285,658 4,285,666 4,285,670 4,285,673 4,285,676 4,285,712 4,285,717 4,285,718 4,285,817 4,285,138 4,285,230 4,285,394 4,285,567 4,285,690 4,285,711 4,285,753 4,285,977 4,285,628 4,285,287 4,285,288 4,285,334 4,285,391 4,285,437 4,285,782 4,285,816 4,285,098 4,285,149 4,285,160 4,285,169 4,285,211 4,285,215 4,285,236 4,285,245 4,285,273 4,285,331 4,285,330 4,285,400 4,285,406	42	4,286,253 4,285,112 4,285,118 4,285,168 4,285,241 4,285,244 4,285,257 4,285,271 4,285,357 4,285,374 4,285,433 4,285,442 4,285,451 4,285,537 4,285,617 4,285,626 4,285,637 4,285,715 4,285,724 4,285,745 4,285,771 4,285,783 4,285,785 4,285,790 4,285,807 4,285,836 4,285,849 4,285,861 4,285,864 4,285,878 4,285,948 4,285,972 4,285,988 4,286,021 4,286,024 4,286,028 4,286,043 4,286,052 4,286,070 4,286,073 4,286,089 4,286,164 4,286,183 4,286,207 4,286,242 4,286,243 4,286,246 4,286,249 4,286,307 4,286,315 4,285,817 4,285,138 4,285,230 4,285,394 4,285,567 4,285,690 4,285,711 4,285,753 4,285,977 4,285,628 4,285,287 4,285,288 4,285,334 4,285,391 4,285,437 4,285,782 4,285,816 4,285,098 4,285,149 4,285,160 4,285,169 4,285,211 4,285,215 4,285,236 4,285,245 4,285,273 4,285,331 4,285,330 4,285,400 4,285,406	4,285,407 4,285,410 4,285,415 4,285,444 4,285,458 4,285,460 4,285,490 4,285,533 4,285,547 4,285,594 4,285,627 4,285,629 4,285,706 4,285,752 4,285,805 4,285,834 4,285,910 4,285,953 4,285,970 4,285,993 4,286,072 4,286,077 4,286,099 4,286,107 4,286,138 4,286,150 4,286,202 4,286,218 4,286,279 4,286,288 4,286,320 4,286,321 4,285,111 4,285,530 4,285,641 4,285,688 4,285,914 4,285,123 4,285,144 4,285,339 4,285,343 4,285,414 4,285,796 4,286,005 4,286,180 4,286,209 4,286,261 4,286,277 4,286,315 4,285,300 4,285,348 4,285,452 4,285,482 4,285,486 4,285,684 4,285,758 4,285,832 4,285,891 4,285,945 4,285,992 4,286,152 Re. 30,721 4,285,100 4,285,109 4,285,154 4,285,305 4,285,308 4,285,326 4,285,440 4,285,461 4,285,621 4,285,647 4,285,808 4,286,047 4,286,139 4,286,143 4,286,213 4,285,548 4,285,601
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## DESIGN PATENTS

04 :	260,326 260,415 05 :	260,356 260,324 260,328 260,337 260,341 260,337 260,338 260,363 260,380 260,386 260,390 260,391 260,402 260,411 260,421	260,426 260,427 260,429 260,432 260,434 260,436 260,437 260,444 260,399 260,420 260,375 260,347 260,348 260,370 260,401 260,419 260,430	18 :	260,438 260,439 260,443 260,334 260,404 260,442 260,325 260,394 260,424 260,322 260,349 260,405 260,335 260,338 260,344 260,345 260,385	27 :	260,408 260,354 260,368 260,371 260,435 260,440 260,369 260,397 260,416 260,413 260,360 260,361 260,364 260,367 260,384 260,320 260,321	29 :	260,336 260,343 260,346 260,374 260,393 260,400 260,422 260,333 260,397 260,352 260,365 260,366 260,372 260,373 260,376 260,377 260,398 260,418	37 :	260,336 260,397 260,352 260,365 260,366 260,372 260,373 260,376 260,377 260,398 260,418	40 :	260,381 260,382 260,417 260,362 260,379 260,389 260,396 260,425 260,353 260,388 260,428 260,327 260,355 260,323 260,332 260,395
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## PLANT PATENTS

47 :	4,760				
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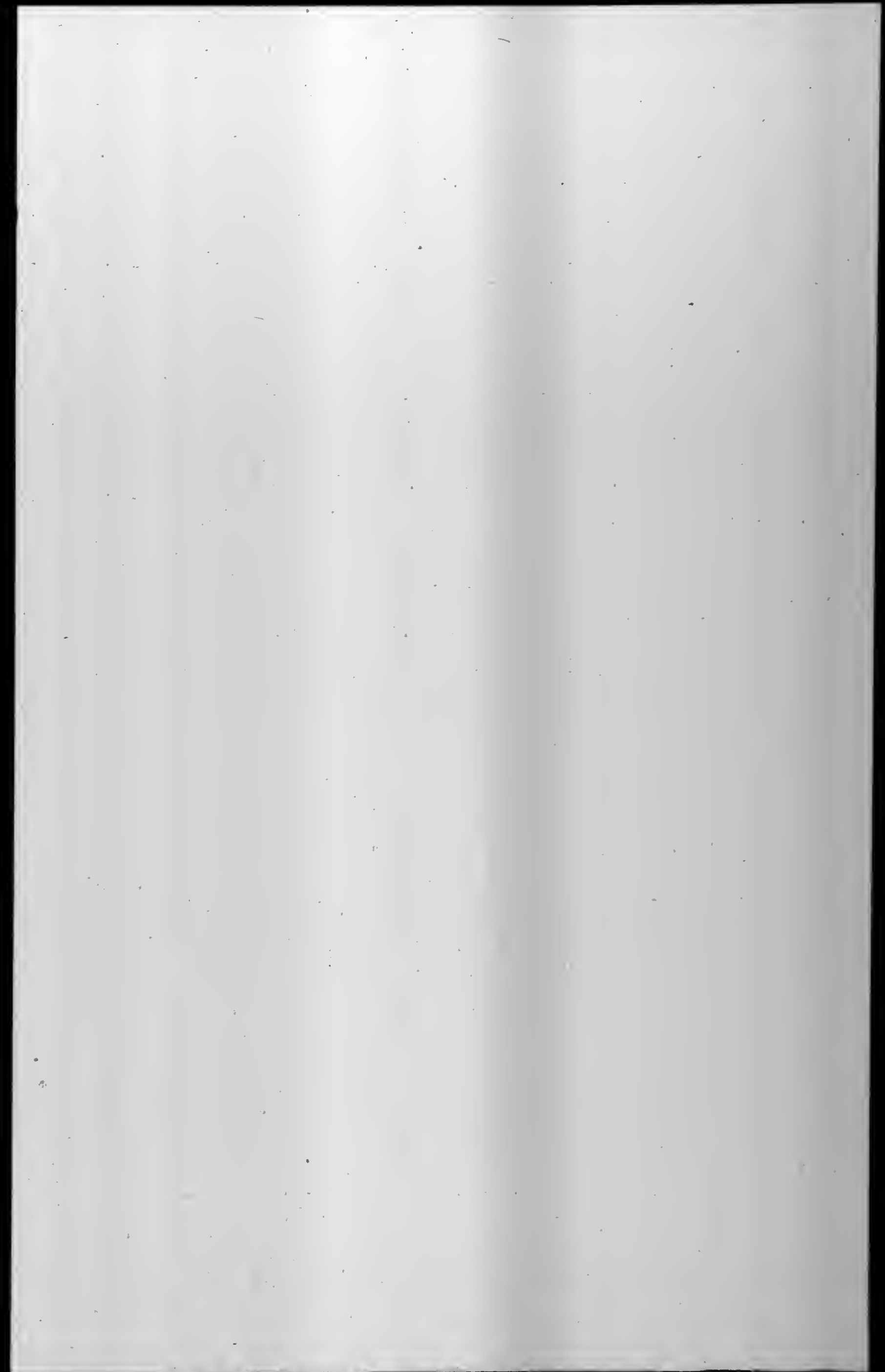
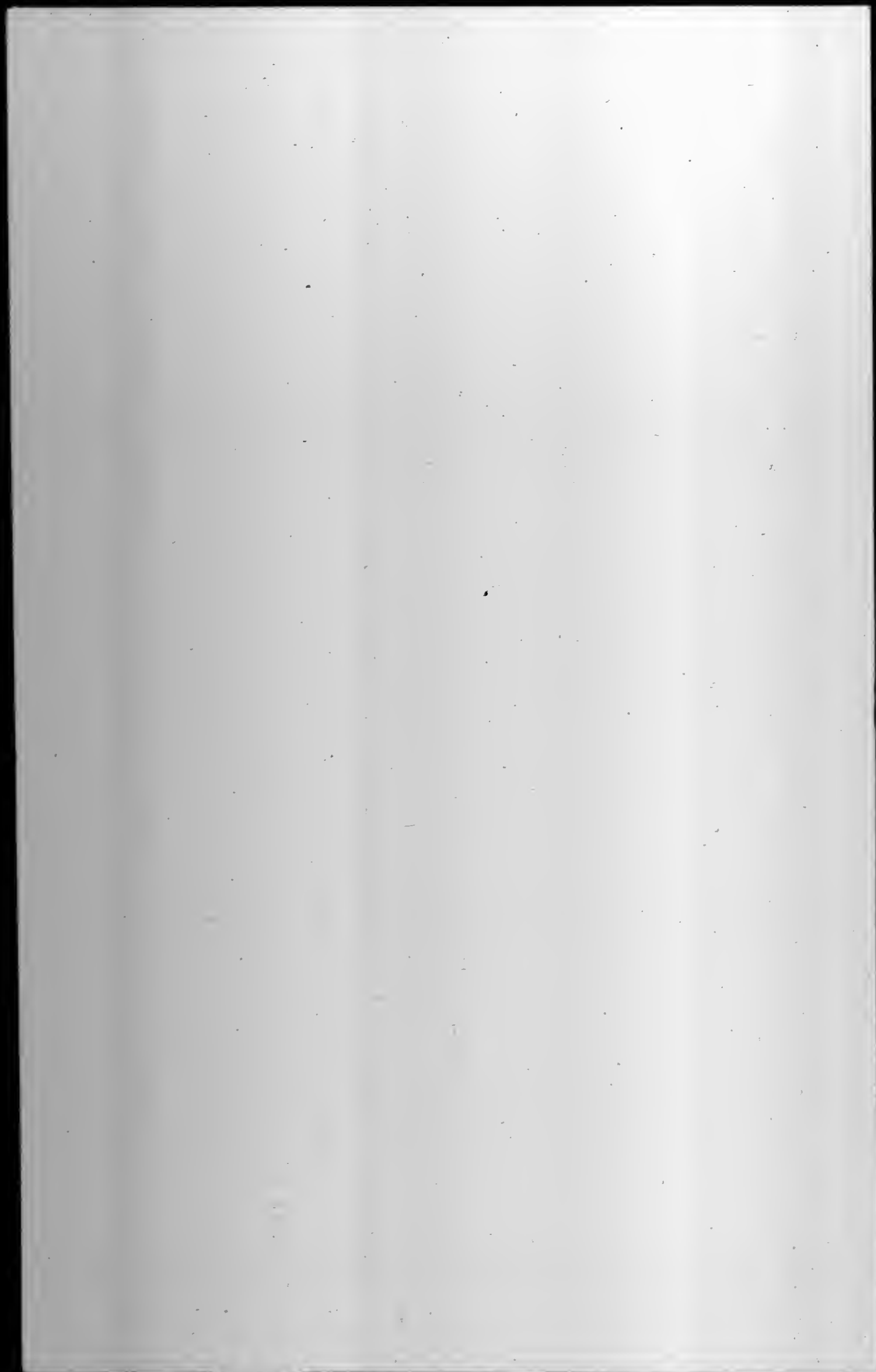
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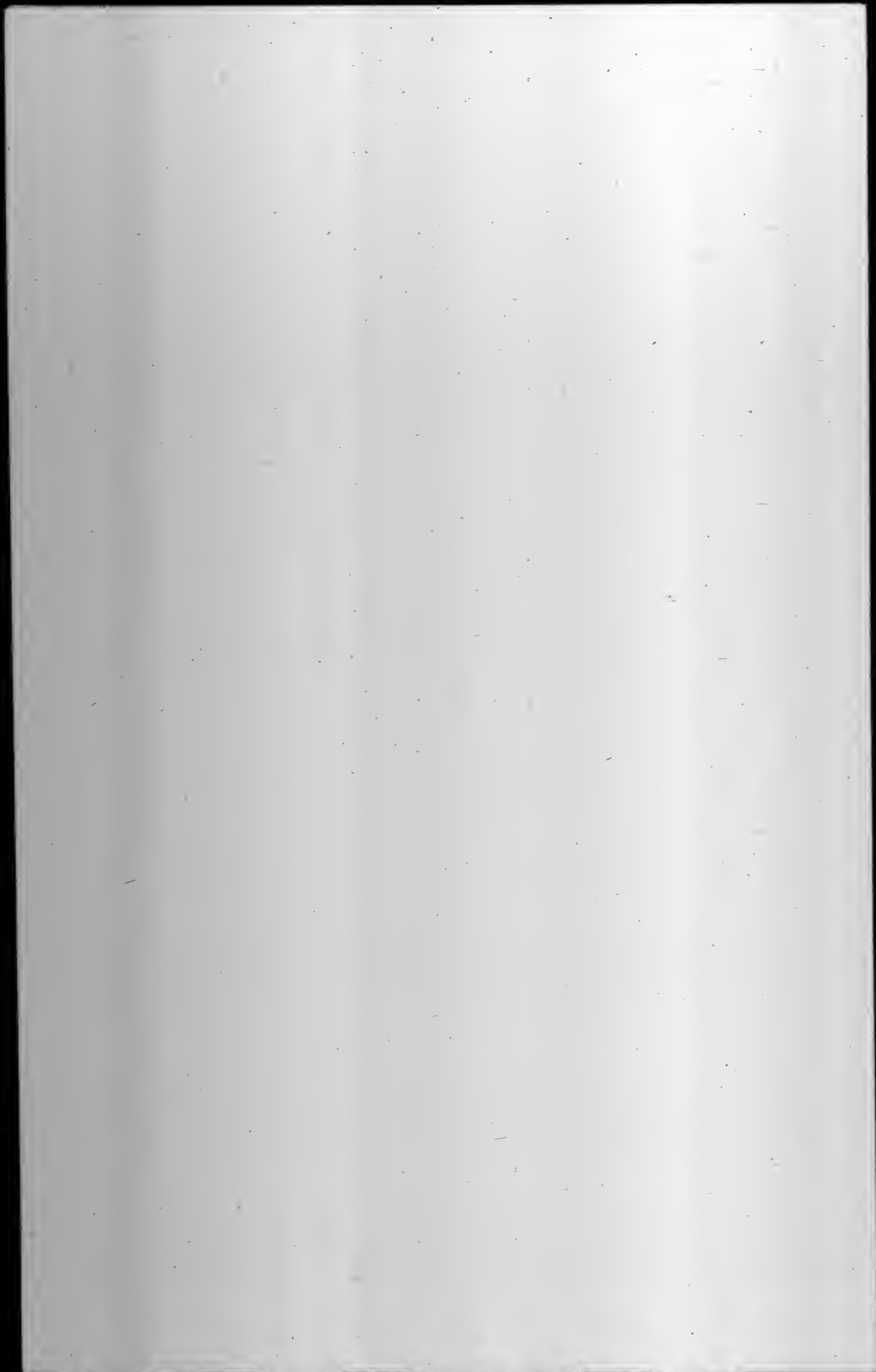
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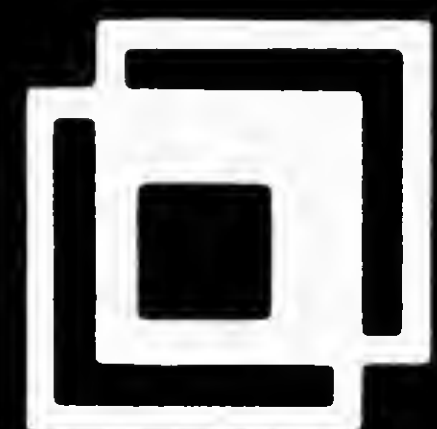


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